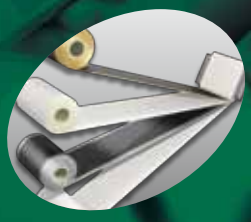
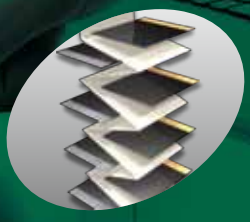
CKD

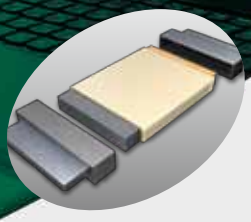
Equipment related to rechargeable batteries P4* Series

Equipment related to rechargeable batteries P4* Series

Material restrictions | Countermeasures for dust generation | Countermeasures for dust | Dry environment


Winding


Stacking


TAB Welding


Immersion

CKD Corporation
CC-1226A 3

Compatible with rechargeable battery manufacturing processes

Each manufacturing process in the manufacturing of rechargeable batteries requires support for a variety of environments, such as dust/explosion-proof/vacuum/ultra-dry and material restrictions.

1 Electrode material

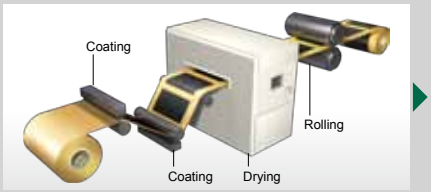


1 Electrode 2 Electrolyte 3 Separator material

2 Electrode manufacturing process



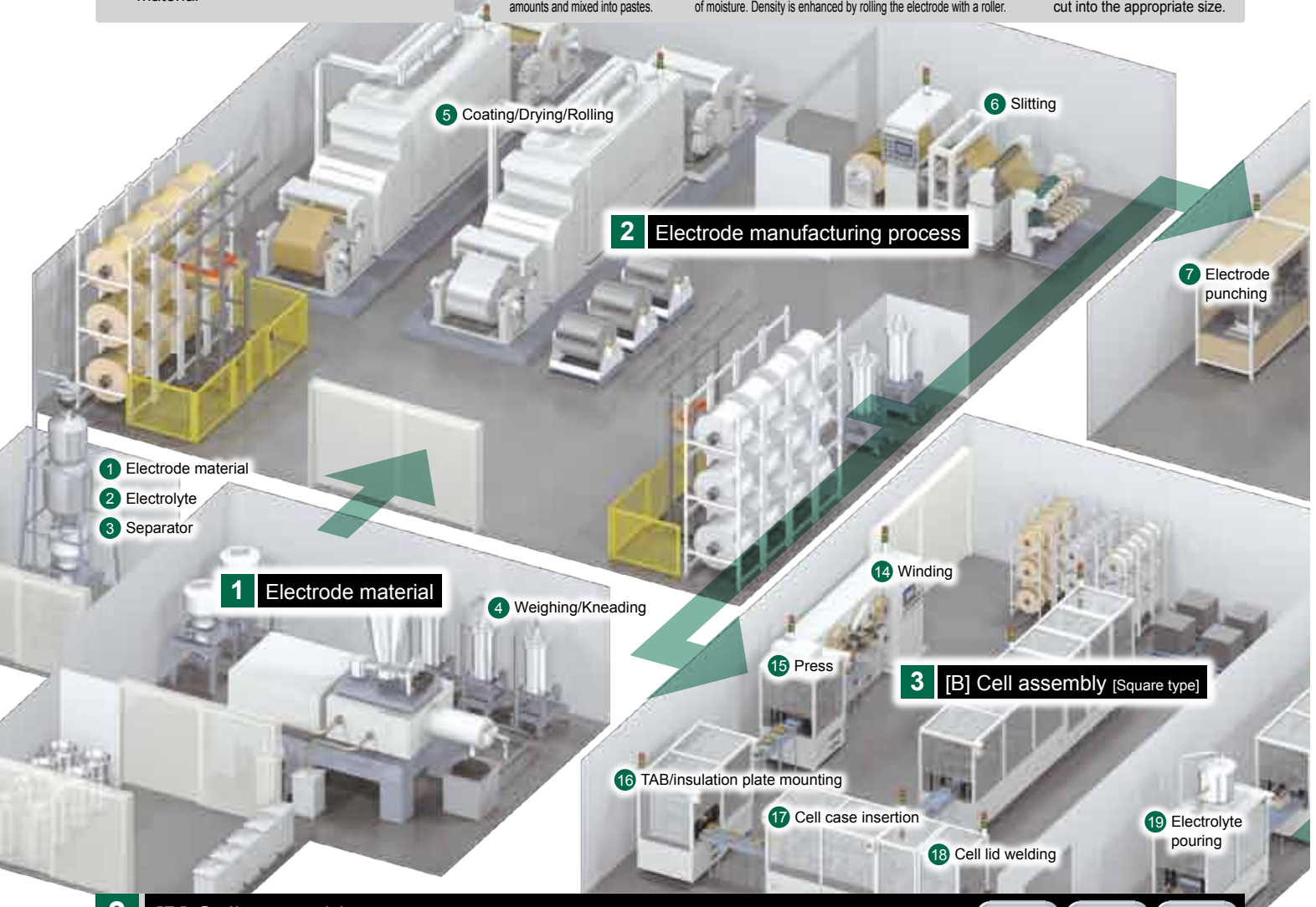
4 Weighing/Kneading
The positive and negative electrode materials are measured out in suitable amounts and mixed into pastes.



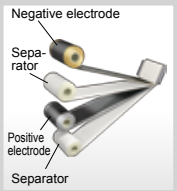
5 Coating/Drying/Rolling
The electrode material is uniformly applied to the metal foil. The applied electrode material is speed dried by hot air discharge and rapid absorption of moisture. Density is enhanced by rolling the electrode with a roller.



6 Slitting
The rolls of electrode material and separator are cut into the appropriate size.



3 [B] Cell assembly [Square type]



14 Winding
Separators are sandwiched between the positive and negative elements and wound up.



15 Press
The wound up element is pressed.



16 TAB/insulation plate mounting
The connection terminals (TAB) and insulating plates are joined for power input and output.



17 Cell case insertion
The wound body is inserted into the cell case.



18 Cell lid welding
The cell case and lid are laser-welded.



19 Electrolyte pouring
Electrolyte is injected into the battery.



20 Pouring plug welding
The pouring plug is welded and the battery cell is completely sealed.

3 [A] Cell assembly [Laminate type]

Material Restrictions | Countermeasures for dust generation | Dry environment



7 Electrode punching
The positive and negative electrode plates are punched into a predetermined size with a mold.

8 Stacking
The electrode and separator are alternately stacked with high speed and high-precision.

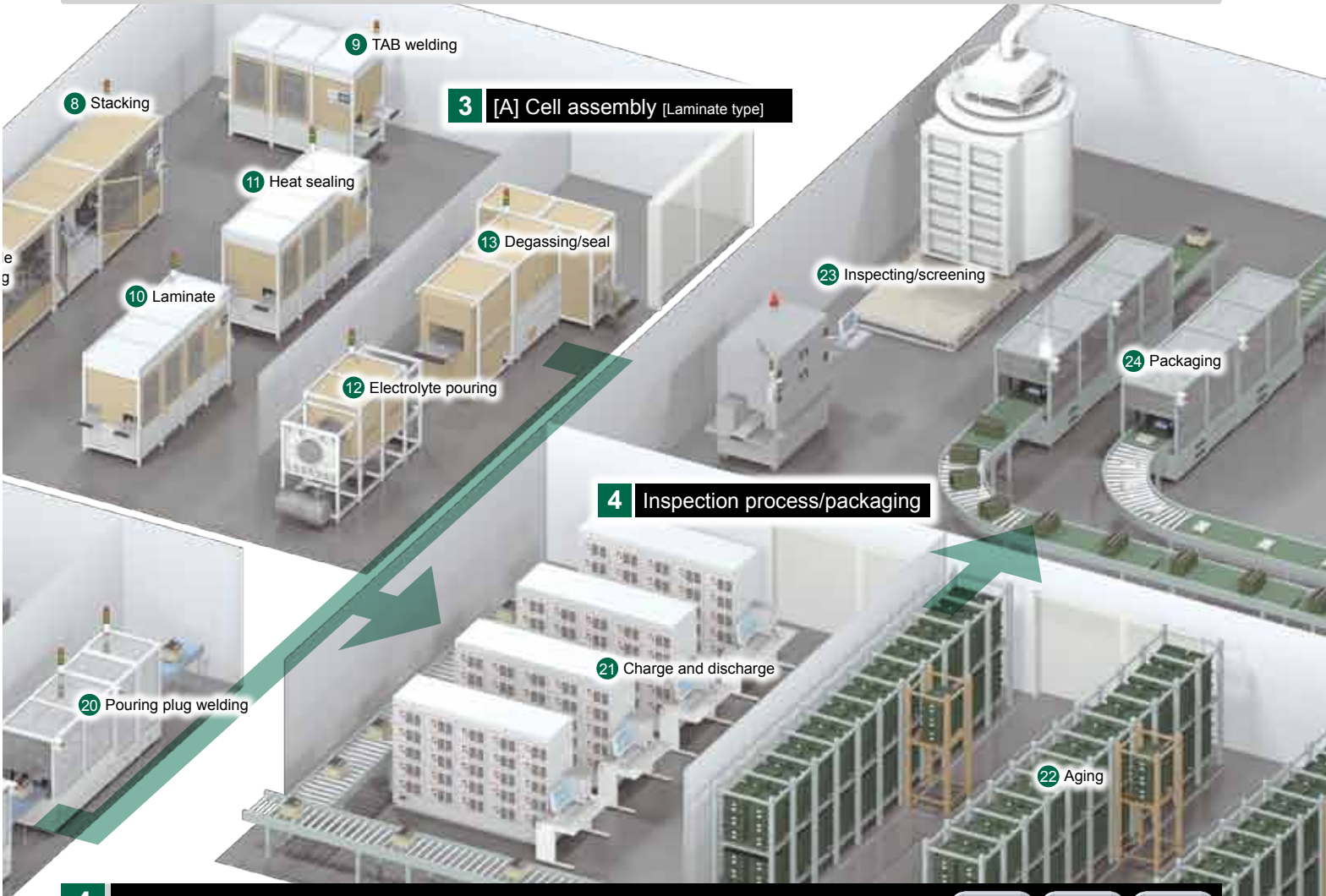
9 TAB welding
The connection terminals (TAB) are joined for power input and output.

10 Laminate
The electrode laminate is wrapped with exterior coating.

11 Heat sealing
Heat is applied to adhere the 3 sides of the cell.

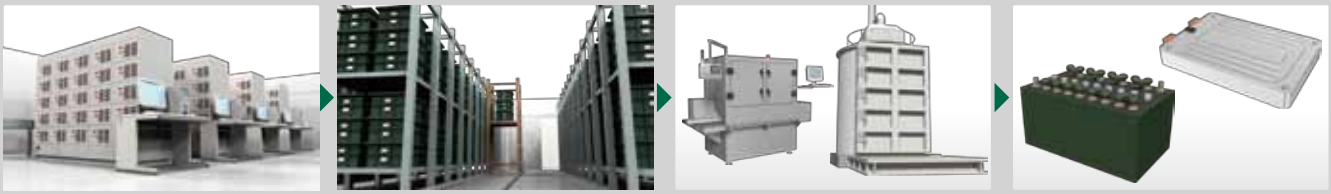
12 Electrolyte pouring
Electrolyte is injected into the battery.

13 Degassing/seal
The generated gas is removed, and heat is applied to seal the battery cell.



4 Inspection process/packaging

Material Restrictions | Countermeasures for dust generation | Dry environment



21 Charge and discharge
The battery is activated by repeatedly charging and discharging.

22 Aging
The fully charged battery cell is left at a predetermined temperature for a fixed period.

23 Inspecting/screening
Various performances as a product are determined.

24 Packaging
The batteries are stacked and attached in the case.

CKD responds to the needs of rechargeable battery manufacturing, with products conforming to production safety in the manufacturing process, from electrode manufacturing to packaging.

Material Restrictions — Component material limitation

Limited use of inappropriate material and surface treatment in the rechargeable battery manufacturing process. Product failure of rechargeable batteries is reduced.

- Cu — Limited copper material
- Zu — Limited zinc material
- Ni — Limited nickel-based material
- EZu — Limited zinc plating
- ENi — Limited electrolytic nickel plating

Countermeasures for dust — Long service life even in dusty environments

Strong dust-proof mechanisms such as scraper/rod packing are used. Suppresses dust entry into the cylinder.

Countermeasures for dust generation — Suppresses dust generation of metal wear powder

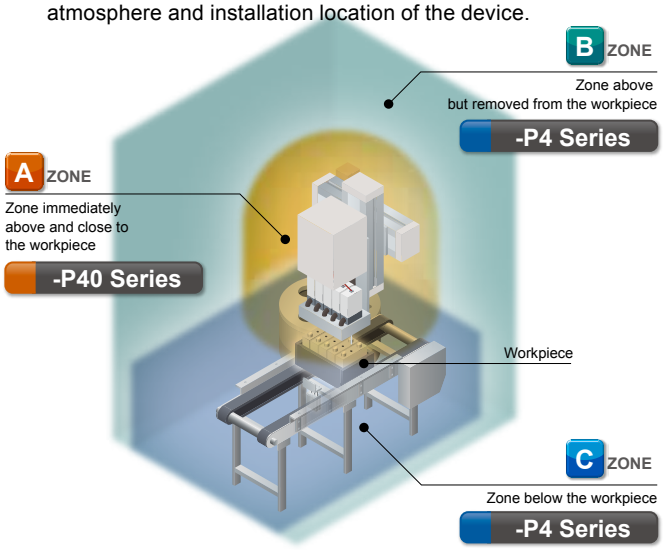
Equipped with a local exhaust function (vacuum treatment port). Prevents contamination to the electrodes or cell by not leaking the metal wear powder outside.

Dry environment — Long service life even in ultra-dry environments

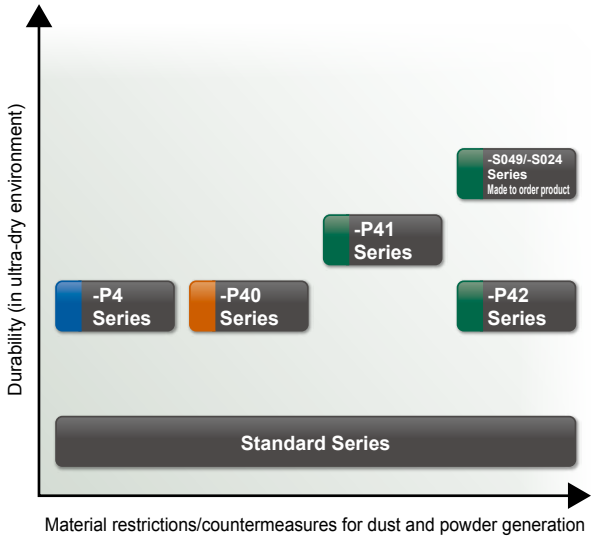
Ultra-dry environment compatible grease is used. Retains the smooth operation of the sliding part for long periods, even in dry environments.

Series Zoning

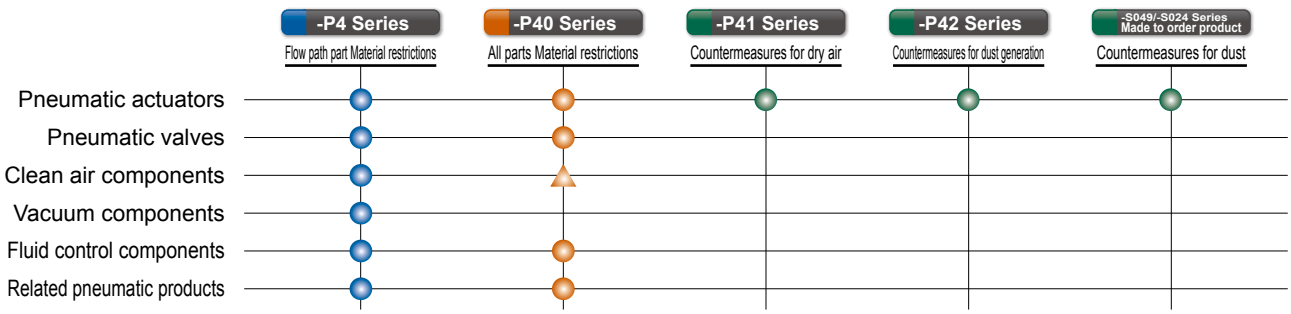
Compatible models are available in 2 grades according to the atmosphere and installation location of the device.



Series Overview



Series Variation



Material limitations for the flow path part/sliding part

* Small amounts present in the alloy are excluded.

-P4 Series

Same mounting size as standard

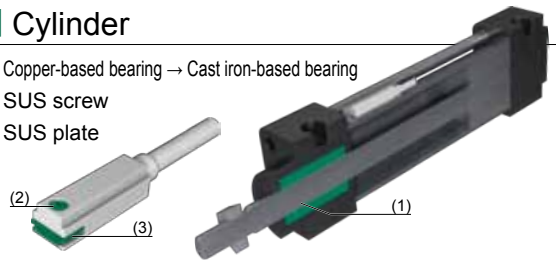
Material Restrictions | Cu | Zu | Ni | EZu | ENi

Countermeasures for dust | Countermeasures for dust generation | Dry environment

The use of copper, zinc, and nickel-based materials and electrolytic nickel plating is limited in the construction of the flow path part and sliding part.

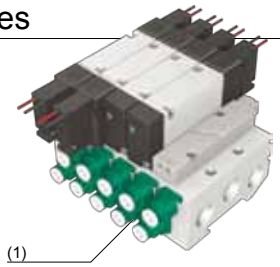
Cylinder

(1) Copper-based bearing → Cast iron-based bearing
(2) SUS screw
(3) SUS plate



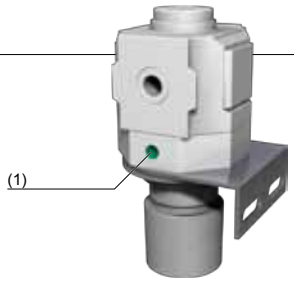
Pneumatic valves

(1) SUS fitting



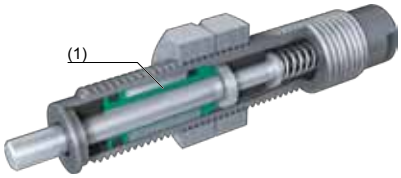
Regulator

(1) Exhaust port



Shock absorber

(1) Aluminum



Material limitations for all parts

* Electrical components (coil, circuit, wiring section, etc.) are excluded.
* Small amounts present in the alloy are excluded.

-P40 Series

Same mounting size as standard

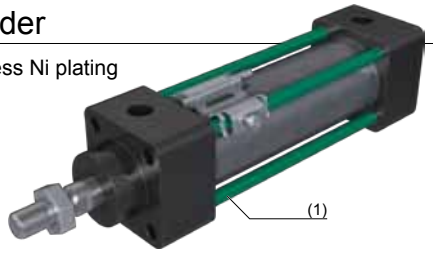
Material Restrictions | Cu | Zu | Ni | EZu | ENi

Countermeasures for dust | Countermeasures for dust generation | Dry environment

The use of copper, zinc, and nickel-based materials, zinc plating, and electrolytic nickel plating is limited in the construction of all parts.

Cylinder

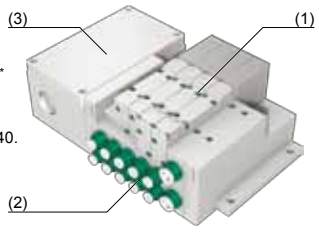
(1) Electroless Ni plating



Pneumatic valves

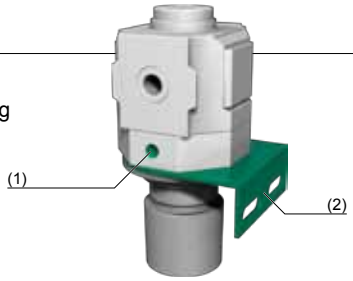
(1) SUS screw
(2) SUS fitting
(3) Electric circuit unit IP65 *

* D sub-connector specification is IP40.



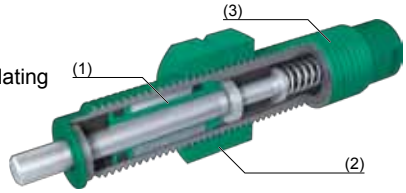
Regulator

(1) Exhaust port
(2) Electroless Ni plating



Shock absorber

(1) Aluminum
(2) SUS nut
(3) Hard chrome plating



Ultra-dry environment durability test, cleared 20 million cycles

* Based on CKD test conditions.

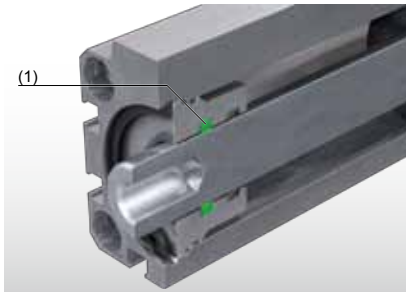
-P41 Series

Material Restrictions | Cu | Zu | Ni | EZu | ENi

Countermeasures for dust | Countermeasures for dust generation | Dry environment

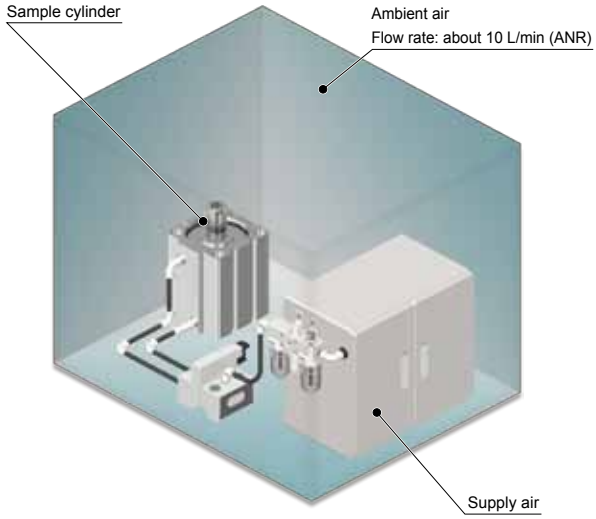
A fiber assemblage (lubricator) soaked with grease is added to P40 specifications. Enables stable supply of lubrication to the sliding section over a long period of time and achieves long service life in ultra-dry environments. In addition, SUS is used in piston rods.

Cylinder



(1) Countermeasures for dry air (lubricator)

* Dimensions differ from the standard.



Test method

The cylinder is installed vertically upward.
Durability test is conducted by operating in ultra-dry environments.

Test conditions

Supply pressure	0.5 MPa
Cylinder speed	300 mm/s
Supply air atm dew point	-61°C
Ambient environment atm dew point	-61°C
Load	No load

1/5 or less dust generation rate achieved

* Our standard cylinder comparison

-P42 Series

Material Restrictions | Cu | Zu | Ni | EZu | ENi

Countermeasures for dust | Countermeasures for dust generation | Dry environment

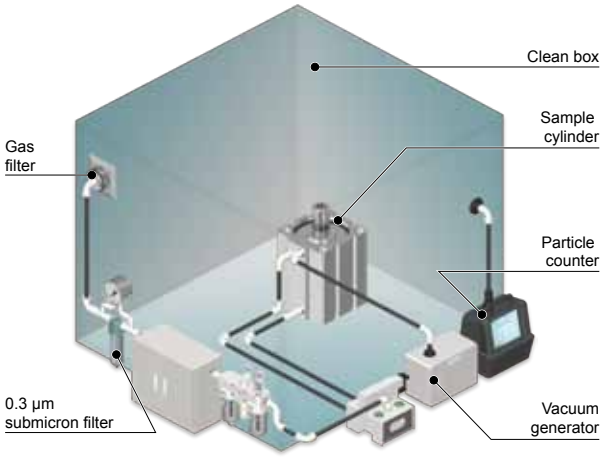
Local exhaust function (vacuum treatment port) is added to P40 specifications. Prevents metal powder from contaminating the electrode and cell, and reduces product failure of rechargeable batteries.
In addition, SUS is used in piston rods.

Cylinder



(1) Vacuum treatment

* Dimensions differ from the standard.



Test method

The cylinder is operated in a clean box, and dust generation rate is measured.

Test conditions

Supply pressure	0.5 MPa
Cylinder speed	200 mm/s
Frequency	30 cpm
Load	No load

2 types of dust countermeasures to choose from

* This series is a made to order product.
Contact CKD for compatible models.

-S049/-S024 Series

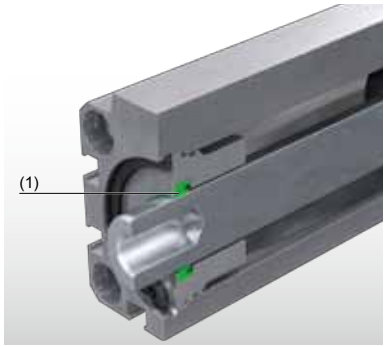
Material Restrictions | Cu | Zu | Ni | EZu | ENi

Countermeasures for dust | Countermeasures for dust generation | Dry environment

Select from two types: "-S049 Series" to introduce countermeasures for dust without design changes to the existing system and "-S024 Series" to introduce stronger countermeasures for dust.
* -S024 Series is dry environment compatible.

-S049 Series

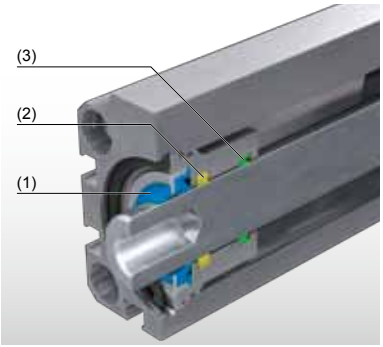
Same mounting size as standard



(1) Scraper and rod packing integrated

- Long service life is achieved by changing the standard rod packing material and shape.
- Compatible with standard product dimensions, space saving is achieved without the need for design change.
- Also compatible with dimensions of other products.

-S024 Series



(1) Rubber scraper
(2) Lubricator
(3) Rod packing

* Dimensions differ from the standard.

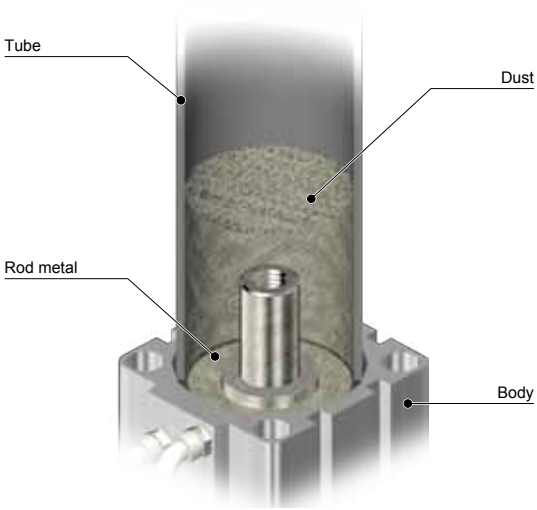
- Long service life is achieved by introducing an effective countermeasure for particle generation: rubber scraper (SCB) + lubricator + rod packing structure.
- Proven track record in dusty environments such as source processes.

Test method

The cylinder is installed vertically upward. It is operated embedded in dust by covering the rod metal section with the tube.

Test conditions

Supply pressure	0.5 MPa
Cylinder speed	200 mm/s
Frequency	30 cpm
Load	No load



Type	Sample No.	Durability course (10,000 times) 0 10 30 50 75 100 125 150
Standard products	Standard-1	○ ○
	Standard-2	○ ○
-S049 Series (compatible with standard product dimensions)	S049-1	○ ○ ○ ○ ○ ○ ○ ○
	S049-2	○ ○ ○ ○ ○ ○ ○ ○ ○
-S024 Series (rubber scraper)	S024-1	○ ○ ○ ○ ○ ○ ○ ○ ○
	S024-2	○ ○ ○ ○ ○ ○ ○ ○ ○

Dry air supply

Super heatless dryer

SHD Series



High polymer membrane air dryer

SU Series



Super dryer (High polymer membrane air dryer)

SD Series



2, 3-port solenoid valve for dry air

AB/ADK-Z Series



Fluid supply

Air operated valve for chemical liquids

AMD part **3R** Series



Clean cylinder valve

LAD Series



Air operated ball valve

CHB/CHG Series



Tension control

Air bearing actuator

LBC Series



Precision regulator

RP/RPE Series



Electro pneumatic regulator

EVD/EVR Series



Pneumatic cylinder Low friction

SCM-U/SCG-U/ SSD2-KU Series



EVR does not conform to the standards of P4 Series as defined by CKD.

Explosion-proof environment

Diaphragm cylinder valve

NAD Series



Air operated 3-port valve

NAP11 Series



Pilot operated explosion-proof 5-port valve

4F0E** Series



Contact CKD for model numbers.

Vacuum control

Valve for high vacuum

AVB Series



Valve for process gas

AGD*R Series



Vacuum components

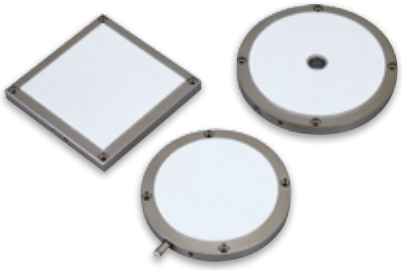
SELVACS Series



Suction transport

Precise suction plate

PVP Series



Fine buffer

FBU2 Series



Direct acting 3-port valve

3QR Series



Assembling/inspection process

Compact cylinder

SSD2 Series



Guided cylinder

STG Series



Rodless cylinder

SRL3 Series



Compact cylinder

SMG Series



Twin rod cylinder

STR2 Series



Linear slide cylinder
Standard model

LCR Series



Linear slide cylinder
Ultra-high-rigidity model

LCG Series



Table rotary actuator

GRC Series



Compact wide parallel hand

HMF Series



Linear guide hand
with rubber cover

LHAG Series



Pilot operated
3, 5-port valve

4G Series



Direct acting 3-port valve

3QR Series



Labor-saving

Direct drive actuator

AX Series



Does not conform to the standards of P4 Series as defined by CKD.

Electric actuator Ball screw drive/ low dust specifications

ETS/ECS Series



Electric actuator Belt drive

ETV Series



Does not conform to the standards of P4 Series as defined by CKD.

Electrolyte/pouring-related

Valve for process gas

AGD*R Series



Pneumatic piping components



Valve for high vacuum

AVB Series



Air blow-related

General purpose 2, 3-port solenoid valve

AB-Z/AG-Z/ADK-Z Series



Compact flow rate sensor

FSM2 Series



Compatible products
P4 Series .... Material restrictions (sliding part)
P40 Series... Material restrictions (all parts)
P41 Series .....Material restrictions (all parts) + fiber assemblage (lube keeping structure)
P42 Series .....Material restrictions (all parts) + vacuum treatment port

Standards compliant products
CE : European Standards compliant products
Ex : ATEX Directive compliant products

Pneumatic actuators

Note Metal wear powder (copper-based metal is not included) from the mounting part will occur in oscillation mounting formats such as clevis mounting.
To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

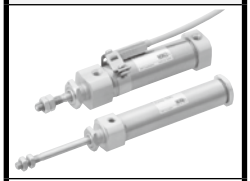
Standard

*1: Zinc plating is used for the sealing washer.
*2: Zinc plating is used for the cushion packing.

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▨ : Not applicable

SCPD3

Pencil shaped cylinder



Page 1

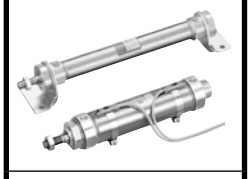
How to order: SCPD3-[Variation]L-[Mounting]-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ high load	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ fine speed	Double acting/ low speed	Double acting/ heat resistance	Double acting/ rubber-air cushioned	Double acting/ rotation-stop	Double acting/ with valve
			K	SCPS3	SCPH3	D	F	O	T	*C	M	V
ø6 to 16	P4	●		○	○	○	○	○	○	○	○	
	P40	●		○	○	○	○	○	○	○	○	
	P41											
	P42	▲				▲	▲	▲		▲		

CMK2

Ex

Small bore size cylinder



Page 3

How to order: CMK2-[Variation]-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Option]-P4□[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ back to back	Stroke adjustable (push)	Stroke adjustable (pull)	Double acting/ fine speed	Double acting/ heat resistance	Double acting/ rubber-air cushioned	Double acting/ with speed controller	Double acting/ rotation-stop	Double acting/ coolant proof	Double acting/ low hydraulic	Double acting/ air cushion
			Q	S	SR	D	B	P	R	F	T	*C	Z	M	G2/G3	H	C
ø20 to 40	P4	●	●	○	○	○	○	○	○	○	▲	○	○	▲			○
	P40	●	●	○	○	○	○	○	○ *1	○	▲	○	▲	▲			○ *2
	P41	▲	▲			▲	▲	▲	▲ *1			▲	▲				▲ *2
	P42																

SCM

Ex

Round shaped cylinder



Page 5

How to order: SCM-[Variation]-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Switch mounting][Option]-P4□[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Stroke adjustable (push)	Stroke adjustable (pull)	Double acting/ low speed	Double acting/ low friction	Double acting/ heat resistance	Double acting/ rubber scraper	Double acting/ tandem	Double acting/ direct mounting foot	Double acting/ rotation-stop
			Q	X	Y	D	B	W	P	R	O	U	T	G	W4	LD	M
ø20 to 100	P4	●	●	○	○	○	○	○	○	○	○	○	○	○ ø40 and over	○	○	▲
	P40	● *2	● *2	○	○	○ *2	○	○	○	○ *1	○	○	○ *2	○ *2 ø40 and over	○	○	▲
	P41	▲ *2	▲ *2			▲ *2	▲	▲	▲	▲ *1				▲ *2	▲	▲	
	P42	▲ *2	▲ *2			▲ *2	▲	▲	▲	▲ *1	▲	▲			▲	▲	

SCG

Ex

Tie rod cylinder



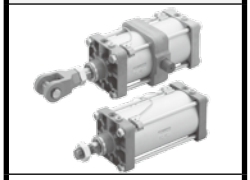
Page 7

How to order: SCG-[Variation]-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Option]-P4□Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ double rod	Double acting/ low speed	Double acting/ low friction	Double acting/ rubber scraper	Double acting/ rotation-stop	Double acting/ coolant proof	Double acting/ anti-spatter adherence
			Q	D	O	U	G	M	G2/G3	G1/G4
ø32 to 100	P4	●	●	○	○	○	○			
	P40	● *2	● *2	○ *2	○	○	○ *2			
	P41	▲ *2	▲ *2	▲ *2			▲ *2			

SCS2

Selex cylinder



Page 9

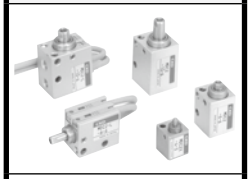
How to order: SCS2-N-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Option]P4[Accessories]

Applicable bore size		Double acting/ lubrication	Double acting/ no lubrication	Double acting/ with switch	Stroke adjustable (push)	Double acting/ heat resistance	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Double acting/ low hydraulic	Double acting/ rubber scraper
			N	LN	P	T	D	B	W	H	G
ø125 to 250	P4		○	○	▲	▲	▲	▲	▲		▲

Space saving structure

MDC2

Small direct mounting cylinder



Page 11

How to order: MDC2-L-[Bore size]-[Stroke length]-[Switch]-[Number]-P4□

Applicable bore size		Double acting/ single rod	Single acting/ push	Single acting/ pull	Double acting/ fine speed
			X	Y	F
ø6 to 10	P4	●	○	○	○
	P40	●	○	○	○
	P41				
	P42	▲			▲

Pneumatic actuators

Note Metal wear powder (copper-based metal is not included) from the mounting part will occur in oscillation mounting formats such as clevis mounting.
To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

Space saving structure

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▨ : Not applicable

SSD2

Compact cylinder



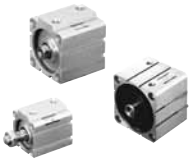
Page 13

How to order: SSD2-[Variation]L-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□-[Mounting bracket]-[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ single rod high load	Double acting/ single rod long stroke length	Single acting/ push	Single acting/ pull	Double acting/ rubber-air cushioned high load	Double acting/ position locking	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Double acting/ fine speed	Double acting/ low speed	Double acting/ low friction/ high load	Double acting/ heat resistance	Double acting/ packing fluoro rubber	Double acting/ rubber scraper	Double acting/ rotation-stop
			K		X	Y	KC	Q	D	B	W	F	0	KU	T1	T2	G	M
ø12 to 200	P4	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	▲
	P40	●	●	○	○	○	○	○	○	○	▲	○	○	○	○	○	○	▲
	P41	▲	▲	▲	▨	▨	▲	▲	▲	▲	▲	▨	▨	▨	▨	▨	▲	▨
	P42	▲	▲	▲	▨	▨	▲	▲	▲	▲	▲	▲	▲	▲	▨	▲	▨	▨

SSD

Compact cylinder



Page 17

How to order: SSD-[Variation]L-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□-[Mounting bracket]-[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Double acting/ fine speed	Double acting/ low speed	Double acting/ heat resistance	Double acting/ rubber scraper	Double acting/ anti-spatter adherence	Double acting/ coolant proof	Double acting/ double rod/ anti-spatter adherence	Double acting/ rotation-stop
			Q	X	Y	D	B	W	F	O	T	G	G1/G4	G2/G3	DG1 DG4	M
ø12 to 160	P4	●	●	○	○	○	○	○	○	○	○	○	▨	▨	▨	▲
	P40	●	●	○	○	○	○	○	○	○	○	○	▨	▨	▨	▲
	P41	▲	▲	▨	▨	▲	▲	▲	▨	▨	▨	▲	▨	▨	▨	▨
	P42	▲	▲	▨	▨	▲	▲	▲	▲	▲	▨	▨	▨	▨	▨	▨

SSD-K

Compact cylinder High load



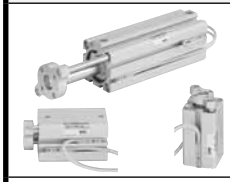
Page 19

How to order: SSD-K[Variation]L-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□-[Mounting bracket]-[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ fine speed	Double acting/ low friction	Double acting/ rubber-air cushioned	Double acting/ rubber scraper	Double acting/ anti-spatter adherence	Double acting/ coolant proof
			F	U	*C	G	G1/G4	G2/G3
ø12 to 160	P4	●	○	○	○	○	▨	▨
	P40	●	○	○	○	○	▨	▨
	P41	▲	▨	▨	▲	▲	▨	▨
	P42	▲	▲	▲	▲	▨	▨	▨

SSG

Guided super compact cylinder



Page 21

How to order: SSG-L-[Bore size]-[Stroke length]-[Switch]-[Number]-P4□

Applicable bore size		Double acting
ø12 to 100	P4	●
	P40	●
	P41	▨
	P42	▨

MSD/MSDG

Small compact cylinder



Page 23

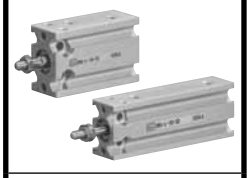
How to order: MSD/MSDG-L-[Bore size]-[Stroke length]-[Switch]-[Number]-[Piping port position]P4□

Applicable bore size		Double acting/ single rod	Double acting/ single rod high load	Single acting/ push	Single acting/ pull	Double acting/ fine speed
			K	X	Y	F
MSD ø6 to 16	P4	●	●	○	○	○
	P40	●	●	○	○	○

Applicable bore size		Double acting/ guided	Double acting/ guided/ fine speed
			F
MSDG ø6 to 16	P4	●	○
	P40	●	○

SMG

Compact cylinder



Page 27

How to order: SMG-L-[Mounting]-[Bore size]-[Stroke length]-[Switch]-[Number]-P4□

Applicable bore size		Double acting/ single rod	Single acting/ push	Single acting/ pull	Double acting/ fine speed	Double acting/ rotation-stop
			X	Y	F	M
ø6 to 32	P4	●	○	○	▲	○
	P40	●	○	○	▲	○
	P41	▨	▨	▨	▨	▨
	P42	▲	▨	▨	▲	▲

Pneumatic actuators

Note Metal wear powder (copper-based metal is not included) from the mounting part will occur in oscillation mounting formats such as clevis mounting.
To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

Space saving structure

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

FC*

Flat cylinder



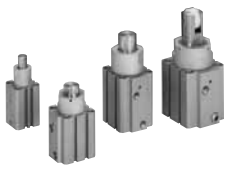
Page 29

How to order: FCD/FCS/FCH-L-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ single rod	Single acting/ push	Single acting/ pull	Double acting/ double rod
		FCD	FCS	FCH	FCD-D
ø25 to 63	P4	○	○	○	○
	P40	○	○	○	○

STK

Stopper cylinder



Page 31

How to order: STK-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ single rod	Single acting/ push	Single acting/ pull	
			X	Y	
ø20 to 50	P4	●		○	Contact CKD for other variations.
	P40	●		○	

MVC

Small cylinder with suction pad



Page 33

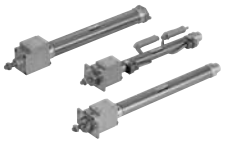
How to order: MVC-[Bore size]-[Stroke length]-[Switch]-[Number]-[Pad]-[Buffer]-P4□

Applicable bore size		Double acting
ø6, ø10	P4	●
	P40	●

With brake

ULK/ULKP

Brake cylinder



Page 35

How to order: ULK-[Mounting]-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]-P4□[Accessories]

Applicable bore size		Double acting	Double acting/ with solenoid valve
			V
ø16 to 40	P4	▲	
	P40	▲	

Note: Standard grease used

USSD

Position locking compact cylinder



Page 39

How to order: USSD-L-[Bore size]-[Stroke length]-[Lock direction]-[Switch]-[Number]-[Option]-P4□-[Mounting bracket]

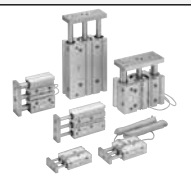
Applicable bore size		Double acting	Double acting/ high load
			K
ø20 to 100	P4	○	○
	P40	○	○

Note: Standard grease used

Combined functions

STG-B/M

Guided cylinder



Page 41

How to order: STG-[Bearing]-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ rubber-air cushioned	Double acting/air cushioned	Double acting/ rubber scraper	Double acting/ coil scraper	Double acting/ coolant proof	Double acting/ anti-spatter adherence
			Q	*C	C	G	G1	G2/G3	G4
ø12 to 100	P4	●	●	○	○	○			
	P40	●	●	○	○	○			
	P41	▲	▲	▲	▲	▲			
	P42	▲	▲	▲	▲				

*1: Not compatible with STG-K.
*2: Port plugs of ø12 and ø16 are changed from FPL-M5 to hexagon socket head and female thread. Sealant is required when the plug position is changed.

Pneumatic actuators

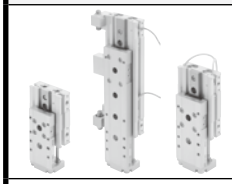
Note Metal wear powder (copper-based metal is not included) from the mounting part will occur in oscillation mounting formats such as clevis mounting.
To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

Combined functions

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

LCR

Linear slide cylinder



Page 43

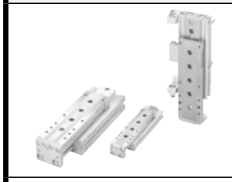
How to order: LCR-[Variation]-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ fine speed
			Q	F
ø6 to 25	P4	●	●	●
	P40	●	●	●
	P41			
	P42	▲	▲	▲

*1: Even when P40 is selected for the external stopper option, electrolytic nickel plating is used for the stopper part.

LCG

Linear slide cylinder



Page 47

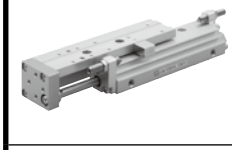
How to order: LCG-[Variation]-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ single rod	Double acting/ position locking
			Q
ø6 to 25	P4	●	●
	P40	●	●
	P41		
	P42	▲	▲

*1: Even when P40 is selected for the external stopper option, electrolytic nickel plating is used for the stopper part.
*2: If P4 is chosen, rust proofing (option code: U) is recommended for LCG-20, 25. (P40 of ø20, ø25 are rust proofed.)

LCW

Linear slide cylinder



Page 50

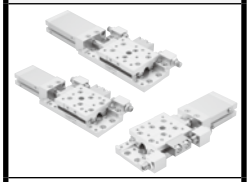
How to order: LCW-[Variation]-[Bore size]-[Stroke length]-[Piping direction]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ single rod	Double acting/ position locking
			Q
ø12 to 20	P4	▲	▲
	P40	▲	▲
	P41		
	P42		

*1: P4 is not available for shock absorber.

LCX

Linear slide cylinder



Page 52

How to order: LCX-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ single rod
ø25/ 32	P4	●
	P40	●

*1: Even when P40 is selected for the external stopper option, electrolytic nickel plating is used for the stopper part.

STR2

Twin rod cylinder



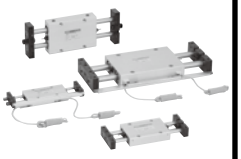
Page 54

How to order: STR2-[Bearing][Variation]-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ fine speed	Double acting/ low speed	Double acting/ double rod
			Q	F	O	D
ø6 to 32	P4	●	●	○	○	○
	P40	●	●	○	○	○
	P41					
	P42	▲	▲	▲	▲	▲

UCA2

Unit cylinder



Page 56

How to order: UCA2-[Fixing method]-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Metal bush bearing	Ball bearing
			B
ø10 to 32	P4	●	●
	P40	●	●

Compatible products
P4 Series .... Material restrictions (sliding part)
P40 Series .. Material restrictions (all parts)
P41 Series .....Material restrictions (all parts) + fiber assemblage (lube keeping structure)
P42 Series .....Material restrictions (all parts) + vacuum treatment port

Standards compliant products
CE : European Standards compliant products
Ex : ATEX Directive compliant products

Pneumatic actuators

Note: To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Combined functions

STA2

Stopper cylinder



Page 58

How to order: STA2-[Variation]-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4

Applicable bore size		Double acting	Double acting/ spring integrated
			Y1
ø50	P4	▲	▲

Rodless

SRL3

Rodless cylinder



Page 60

How to order: SRL3-[Variation]-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ standard	Double acting/ position locking	Double acting/ resin guide	Resin guide/ position locking
			Q	G	GQ
ø12 to 100	P4	●	●		
	P40	●	●		

*1: Port plugs of ø12 and ø16 are changed from FPL-M5 to hexagon socket head and female thread. Sealant is required when the plug position is changed.

SRM3

Rodless cylinder with high precision guide



Page 62

How to order: SRM3-[Variation]-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ standard	Double acting/ position locking
			Q
ø25/32/ 40/63	P4	●	●
	P40	●	●

*1: Square nut, a standard attachment, is not attached.
*2: The grease nipple is not assembled.
*3: If the switch model No. is not selected, select "CO" (for reed switch), "C1" (for proximity switch) after [Stroke length].

MRL2 Ex

Magnet rodless cylinder



Page 64

How to order: MRL2-[Variation]-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Option]P4□

Applicable bore size		Double acting/ basic
ø6 to 32	P4	●
	P40	●

*1: Port plugs of ø6, ø10, and ø16 are changed from FPL-M5 to hexagon socket head and female thread. Sealant is required when the plug position is changed.
*2: Electrolytic nickel plating is used in the magnet.

MRG2

Magnet rodless cylinder with high precision guide



Page 66

How to order: MRG2-[Variation]-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Option]P4□

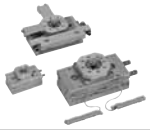
Applicable bore size		Double acting/ basic
ø10/16/25	P4	●
	P40	▲

*1: Port plugs of ø10 and ø16 are changed from FPL-M5 to hexagon socket head and female thread. Sealant is required when the plug position is changed.
*2: Electrolytic nickel plating is used in the magnet.

Rotary actuator

GRC

Table rotary actuator



Page 68

How to order: GRC-[K]-[Torque size]-[Angle]-[Switch]-[Number]-[Option]P4□

Applicable size		Standard	High accuracy	Fine speed	High accuracy/ fine speed
			K	F	KF
Torque 0.5 to 8.1 N·m	P4	●	●	▲	▲
	P40	● (*1)	● (*1)	▲	▲
	P41				
	P42	▲	▲	▲	▲

*1: Even when P40 is selected for the external stopper option, electrolytic nickel plating is used for the stopper part.
*2: Zinc plating is used in part of the bearings - the sealing washer of the angle adjustment unit.

SFR/SFRT

Fine speed fan rotary actuator



Page 70

How to order: SFR-[Size]-[Oscillating angle]-[Switch]-[Number]-P4

Applicable bore size		Shaft	Table
		SFR	SFRT
Torque 0.35 to 2.71 N·m	P4	●	●

Pneumatic actuators

Hand/chuck

Note: To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

□ are listed in this catalog.

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

HAP

Parallel hand



Page 72

How to order	HAP-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø20/ 25/40	P4	●	●	●
	P40	●	●	●

BHA

Compact cross roller parallel hand



Page 74

How to order	BHA-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø12/16/ 20/25	P4	●	●	●
	P40	●	●	●

LHA

Linear guide hand



Page 76

How to order	LHA-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø6 to 32	P4	●	●	●
	P40	●	●	●

LHAG

Linear guide hand (with rubber cover)



Page 78

How to order	LHAG-[Size]-[Option]-[Switch]-[Number]P4□

Applicable bore size		Double acting	Single acting/ Normally open	Single acting/ Normally closed
			O	C
ø12 to 32	P4	●	●	●
	P40	●	●	●

BHG

Compact cross roller parallel hand (with rubber cover)



Page 80

How to order	BHG-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø12/16/ 20/25	P4	●	●	●
	P40	●	●	●

Pneumatic actuators

Note: To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

Hand/chuck

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

HKP

Cross roller parallel hand



Page 82

How to order: HKP-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed	Rubber cover (nitrile rubber)
			O	C	G
ø32 to 80	P4	●	●	●	●
	P40	●	●	●	●

Note: 80 cs is double acting only

HCP

Lateral parallel hand



Page 84

How to order: HCP-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting
ø12/20/32	P4	●
	P40	●

HLBG

Bearing thin parallel hand (with rubber cover)



Page 86

How to order: HLBG-[Size]-[Switch]-[Number]-P4□

Applicable bore size		Double acting
ø12/15/20	P4	●
	P40	●

HMF

Compact wide parallel hand



Page 88

How to order: HMF-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting		
		Standard	Long stroke 1	Long stroke 2
			L1	L2
ø12×2 to ø40×2	P4	●	●	●
	P40	●	●	●

HLC

Thin long stroke parallel hand



Page 90

How to order: HLC-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting
ø8×2 to ø30×2	P4	●
	P40	●

HLD

Ultra thin parallel hand



Page 93

How to order: HLD-[Size]-[Switch]-[Number]-P4□

Applicable bore size		Double acting
ø8×4 to ø20×4	P4	●
	P40	●

Pneumatic actuators

Note: To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Hand/chuck

HMD

Thin wide angle hand



Page 95

How to order: HMD-[Size]-[Switch]-[Number]-P4□

Applicable bore size		Double acting
		Standard
ø16/25	P4	●
	P40	●

BHE

Centering hand



Page 97

How to order: BHE-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting			
		Standard	Open stroke adjustment mechanism	Close stroke adjustment mechanism	Open/close stroke adjust mech
			D	E	DE
ø12 to 32	P4	●	●	●	●
	P40	●	●	●	●

CKG

3-way jaw bearing chuck (with rubber cover)



Page 99

How to order: CKG-[Size]-[Option]G-[Switch]-[Number]-P4□

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø16/25/32/40/50	P4	●	●	●
	P40	●	●	●

CKL2

Powerful chuck



Page 101

How to order: CKL2-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø20/25/32/40/50/63/80/100	P4	●	●	●
	P40	●	●	●

CKLB2

2-way powerful chuck



Page 103

How to order: CKLB2-[Size]-[Option]-[Switch]-[Number]-P4□

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø20/25/32/40/50/63/80/100	P4	●	●	●
	P40	●	●	●

X/Z Module

● : Standard ○ : Made to order ▲ : Contact CKD

HRL-1

Guided cylinder (single axis unit)



Page 108

How to order: HRL-1-[Load capacity]-[Stroke length]-[Switch]-[Number]-P4□

Applicable bore size		Basic
ø20 to 63	P4	●
	P40	▲
	P41	

Pneumatic actuators

Note: To order a switch, refer to the switch compatibility table on Intro Pages 21 to 24 and order using the listed order model No.

Low friction cylinder

*1: Zinc plating is used for the sealing washer.
*2: Zinc plating is used for the cushion packing.

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

SCM-U

Round shaped cylinder



Page 110

How to order: SCM-U-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Switch mounting][Option]P4□[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Stroke adjustable (push)	Stroke adjustable (pull)	Double acting/ low speed	Double acting/ low friction	Double acting/ heat resistance	Double acting/ rubber scraper	Double acting/ tandem	Double acting/ direct mounting foot	Double acting/ rotation-stop
			Q	X	Y	D	B	W	P	R	O	U	T	G	W4	LD	M
ø20 to 100	P4	●	●	○	○	○	○	○	○	○	○	○	○	○ ø40 and over	○	○	▲
	P40	● *2	●	○	○	○ *2	○	○	○	○ *1	○	○	○ *2	○	○	○	▲
	P41	▲ *2	▲			▲ *2	▲	▲	▲	▲ *1				▲	▲	▲	
	P42	▲ *2	▲			▲ *2	▲	▲	▲	▲ *1	▲	▲			▲	▲	

SCG-U

Tie rod cylinder



Page 112

How to order: SCG-U-[Mounting]-[Bore size][Cushion]-[Stroke length]-[Switch]-[Number]-[Option]P4□[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ double rod	Double acting/ low speed	Double acting/ low friction	Double acting/ rubber scraper	Double acting/ rotation-stop	Double acting/ coolant proof	Double acting/ anti-spatter adherence
			Q	D	O	U	G	M	G2/G3	G1/G4
ø32 to 100	P4	●	●	○	○	○	○			
	P40	●	●	○	○	○	○			
	P41	▲	▲	▲			▲			

SSD2-KU

Compact cylinder



Page 114

How to order: SSD2-KUL-[Bore size]-[Stroke length]-[Switch]-[Number]-[Option]P4□-[Mounting bracket]-[Accessories]

Applicable bore size		Double acting/ single rod	Double acting/ single rod high load	Double acting/ single rod long stroke length	Single acting/ push	Single acting/ pull	Double acting/ rubber-air cushioned high load	Double acting/ position locking	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Double acting/ fine speed	Double acting/ low speed	Double acting/ low friction/ high load	Double acting/ heat resistance	Double acting/ packing fluoro rubber	Double acting/ rubber scraper	Double acting/ rotation-stop
			K		X	Y	KC	Q	D	B	W	F	O	KU	T1	T2	G	M
ø12 to 200	P4	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	▲	▲
	P40	●	●	○	○	○	○	○	○	○	▲	○	○	○	○	○	▲	▲
	P41	▲	▲	▲			▲	▲	▲	▲	▲						▲	
	P42	▲	▲	▲			▲	▲	▲	▲	▲	▲	▲	▲		▲		

Related products

NCK

Shock absorber



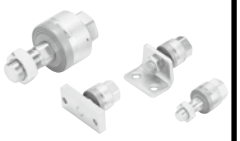
Page 118

How to order: NCK-[Mounting]-[Series]-[Option]-P4□

Applicable size		Basic
All sizes	P4	●
	P40	●

FJ

Floating fitting



Page 121

How to order: FJ-*-3-P4/FJ-*-4-P4/FJ-*-5-P4

Applicable size		Basic	Foot	Flange
FJ-*-3 FJ-*-4 FJ-*-5	P4	●	●	●
	P40	▲	▲	▲
FJ-*-6 to 45	P4	Supports P4 specifications as standard		
	P40	▲		

FCK

Shock absorber



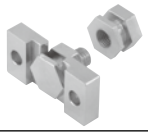
Page 119

How to order: FCK-[Series]-[Option]-P4

Applicable size		Low speed	Medium speed	High speed
		L	M	H
FCK-*-0.15 to 8.1	P4	●	●	●

FK

Simplified floating fitting



Page 122

How to order: FK-[Thread size]-P40

Applicable size		Male thread	Female thread
		N	
All sizes	P4	Supports P4 specifications as standard	
	P40	●	●

PVP

Precise suction plate



Page 123

How to order: PVP-[Shape]-[Porous material size]-[Vacuum port position]-[Option]

Note: Supports P4 specifications as standard

LBC

Air bearing actuator



Page 125

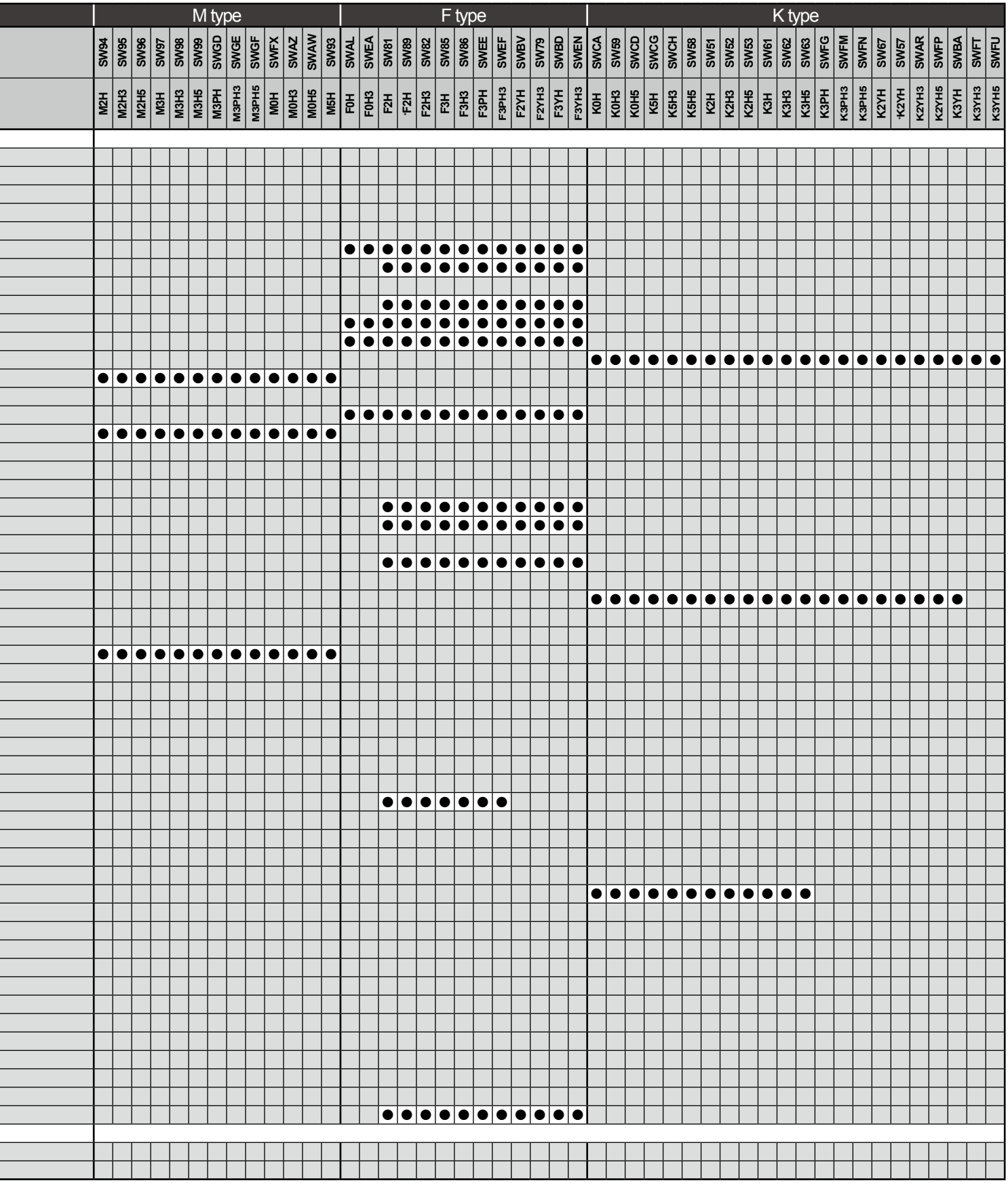
How to order: LBC-[Thrust]

Note: Supports P4 specifications as standard

Switch Compatibility Table (axial lead wire takeout)

*1: Refer to Intro Page 25 for switch specifications.
*2: The cylinder equipped model No. is the order model No. in the table below.
*3: For single switch model numbers, add -P4 to the end of the basic switch model in the table below.
*4: Products indicated with * have a resin connector.

Compatibility \ Shape		T type																																							
Order model No.		SW69	SW28	SWAK	SW17	SW29	SW27	SW11	SW18	SW12	SW13	SW49	SW21	SW22	SW23	SW40	SW39	SW47	SWAG	SWAJ	SWBK	SWBL	SW19	SWBW	SWCC	SWAN	SWCU	SWCV	SWCZ	SWAQ	SWBE	SW31	SW38	SW32	SW33	SW41	SW42	SW43	SWDU	SWDV	SWDW
Basic model No.		T0H	T0H3	T0H5	T5H	T5H3	T5H5	T2H	*T2H	T2H3	T2H5	T2HR3	T3H	T3H3	T3H5	T2WH	*T2WH	T2WH3	T2WH5	T3WH	T3WH3	T3WH5	T8H	T8H3	T8H5	T1H	T1H3	T1H5	T3PH	T3PH3	T3PH5	T2YH	*T2YH	T2YH3	T2YH5	T3YH	T3YH3	T3YH5	T2JH	T2JH3	T2JH5
Cylinder model No.	Catalog page																																								
SCPD3	1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																			
CMK2	3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SCM	5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SCG	7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SCS2	9	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MDC2	11																																								
SSD2	13	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SSD2 (Large bore size)	15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SSG	21	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MSD	23																																								
MSDG-L	23																																								
SMG	27																																								
FCD	29																																								
STK	31	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MVC	33																																								
ULKP	35																																								
ULK	35	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
USSD	39	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
STG	41	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LCR	43	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●										
LCG	47	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●										
LCG (ø20 or more)	47	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●										
LCW	50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																			
LCX	52	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●										
STR2	54																												●	●	●										
UCA2-B	56	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●										
STA2	58	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●
SRL3	60															●	●	●	●	●	●	●										●	●	●	●	●	●	●			
SRM3	62	●	●	●	●	●	●									●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●	●			
MRL2	64							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●	●			
MRG2	66	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●			
GRC	68							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●			
SFR/SFRT	70																																							
HAP	72							●	●	●	●	●	●	●	●																									
BHA	74							●	●	●	●	●	●	●	●																									
LHA	76							●	●	●	●	●	●	●	●																									
LHAG	78							●	●	●	●	●	●	●	●																									
BHG	80							●	●	●	●	●	●	●	●																									
HKP	82							●	●	●	●	●	●	●	●																									
HCP	84							●	●	●	●	●	●	●	●																									
HLBG	86							●	●	●	●	●	●	●	●																									
HMF	88							●	●	●	●	●	●	●	●																									
HLC	90							●	●	●	●	●	●	●	●																									
HLD	93							●	●	●	●	●	●	●	●																									
HMD	95							●	●	●	●	●	●	●	●																									
BHE	97							●	●	●	●	●	●	●	●																									
CKG	99							●	●	●	●	●	●	●	●																									
CKL2	101							●	●	●	●	●	●	●	●																									
CKLB2	103							●	●	●	●	●	●	●	●																									
HRL-1	108	●	●	●	●	●	●	●	●	●	●	●	●	●	●																●	●	●	●	●	●	●	●	●	●
SCM-U	110	●	●	●	●	●	●	●	●	●	●	●	●	●	●								●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SCG-U	112	●	●	●	●	●	●	●	●	●	●	●	●	●	●								●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SSD2-KU	114	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
High vacuum valve model No.	Catalog page																																								
AVB**3	317	●	●	●	●	●	●	●	●	●	●		●	●	●																										
AVB*17	318	●	●	●	●	●	●	●	●	●	●		●	●	●																										


M type
F type
K type
SW94 SW95 SW96 SW97 SW98 SW99 SWGD SWGE SWGF SWFX SWAZ SWAW SW93
SWAL SWEA SW81 SW89 SW82 SW85 SW86 SWEE SWEF SWBV SW79 SWBD SWEN
SWCA SW59 SWCD SWCG SWCH SW58 SW51 SW52 SW53 SW61 SW62 SW63 SWFG SWFM SWFN SW67 SW57 SWAR SWFP SWBA SWFT SWFU
M2H M2H3 M2H5 M3H M3H3 M3H5 M3PH M3PH3 M3PH5 M0H M0H3 M0H5 M5H
F0H F0H3 F2H *F2H F2H3 F3H F3H3 F3PH F3PH3 F2YH F2YH3 F3YH F3YH3
K0H K0H3 K0H5 K5H K5H3 K5H5 K2H K2H3 K2H5 K3H K3H3 K3H5 K3PH K3PH3 K3PH5 K2YH *K2YH K2YH3 K2YH5 K3YH K3YH3 K3YH5

Switch Compatibility Table (lead wire V takeout)

*1: Refer to Intro Page 25 for switch specifications.
*2: The cylinder equipped model No. is the order model No. in the table below.
*3: For single switch model numbers, add -P4 to the end of the basic switch model in the table below.
*4: Products indicated with * have a resin connector.

Compatibility \ Shape		T type																																M type					
Order model No.		SW70	SWBG	SWBH	SW20	SWBJ	SW30	SW14	SW15	SW16	SW24	SW25	SW26	SW37	SW48	SWAH	SWBM	SWBN	SWBP	SWDK	SWDL	SWDM	SWCW	SWCY	SWCX	SWDE	SWAS	SWDF	SW34	SW35	SW36	SW44	SW45	SW46	SWDY	SWDX	SWDZ	SW71	SW72	SW73	SW80	SW77	SWBS
Basic model No.		T0V	T0V3	T0V5	T5V	T5V3	T5V5	T2V	T2V3	T2V5	T3V	T3V3	T3V5	T2WV	T2WV3	T2WV5	T3WV	T3WV3	T3WV5	T8V	T8V3	T8V5	T1V	T1V3	T1V5	T3PV	T3PV3	T3PV5	T2YV	T2YV3	T2YV5	T3YV	T3YV3	T3YV5	T2JV	T2JV3	T2JV5	M2V	M2V3	M2V5	M2WV	M2WV	M2WV3
Cylinder model No.	Catalog page																																									
SCPD3	1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																							
CMK2	3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SCM	5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SCG	7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SCS2	9	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
MDC2	11																																									
SSD2	13	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SSD2 (Large bore size)	15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SSG	21	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
MSD	23																																									
MSDG-L	23																																									
SMG	27																																									
FCD	29																																				●	●	●	●	●	●
STK	31	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
MVC	33																																									
ULKP	35																																				●	●	●	●	●	●
ULK	35	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
USSD	39	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
STG	41	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
LCR	43	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●														
LCG	47	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●														
LCG (ø20 or more)	47	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●														
LCW	50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																							
LCX	52	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●														
STR2	54																																									
UCA2-B	56	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●														
STA2	58	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●						
SRL3	60													●	●	●	●	●	●										●	●	●	●	●	●				●	●	●	●	●	●
SRM3	62	●	●	●	●	●	●							●	●	●	●	●	●	●	●	●							●	●	●	●	●	●									
MRL2	64							●	●	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●	●								
MRG2	66	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●								
GRC	68							●	●	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●	●								
SFR/SFRT	70																																									
HAP	72							●	●	●	●	●	●																													
BHA	74							●	●	●	●	●	●																													
LHA	76							●	●	●	●	●	●																													
LHAG	78							●	●	●	●	●	●																													
BHG	80							●	●	●	●	●	●																													
HKP	82							●	●	●	●	●	●																													
HCP	84							●	●	●	●	●	●																													
HLBG	86							●	●	●	●	●	●																													
HMF	88							●	●	●	●	●	●																													
HLC	90							●	●	●	●	●	●																													
HLD	93							●	●	●	●	●	●																													
HMD	95							●	●	●	●	●	●																													
BHE	97							●	●	●	●	●	●																													
CKG	99							●	●	●	●	●	●																													
CKL2	101							●	●	●	●	●	●																													
CKLB2	103							●	●	●	●	●	●																													
HRL-1	108	●	●	●	●	●	●	●	●	●	●	●	●																●	●	●	●	●	●	●	●	●						
SCM-U	110	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SCG-U	112	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SSD2-KU	114	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
High vacuum valve model No.	Catalog page																																								
AVB**3	317	●	●	●	●	●	●	●	●	●	●	●	●																													
AVB*17	318	●	●	●	●	●	●	●	●	●	●	●	●																													

| | M type | | | | | | | | | | | | | | | | F type | | | | | | | | | | | | | | | | K type | | | | | | | | | | | | | | | |



Cylinder switch T/F/M/K Series

* There are bore sizes which cannot be combined.



F*S



F*V

F*H



F*YV
F3PV



F*YH
F3PH

Specifications (F Series)

Descriptions	Reed 2-wire	Proximity 2-wire		Proximity 3-wire	Proximity 3-wire	Proximity 3-wire
	F0H/V	F2H/V / F2S	F2YH/F2YV	F3H/V / F3S	F3PH/V	F3YH/F3YV
Applications	Dedicated for programmable controller			For programmable controller, relay		
Output method	-			NPN output	PNP output	NPN output
Power supply voltage	-			10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	24 VDC	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20 mA (*1)			50 mA or less		
Current consumption	-			10 mA or less with 24 VDC		
Internal voltage drop	4 V or less			0.5 V or less	0.5 V or less at 30 mA	0.5 V or less
Indicator lamp	Yellow LED (Lit when ON) *3		Red/green LED (Lit when ON)	Yellow LED *3 (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less			10 μA or less		
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.15 mm^2)			1 m (oil resistant vinyl cabtyre cable 3-conductor 0.15 mm^2)		
Shock resistance	294 m/s^2	980 m/s^2				
Insulation resistance	20 MΩ and over with 500 VDC megger					
Withstand voltage	No failure after 1 minute of 1,000 VAC application.					
Ambient temperature	-10 to +60°C					
Degree of protection	IEC Standard IP67, JIS C0920 (water-tight), oil resistance					
Contact protection circuit *4	None	-				
Weight	1 m:10 g 3 m:29 g			1 m:10 g 3 m:29 g		

*1: Max. load current: 20 mA at 25˚C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25˚C. (5 to 10 mA at 60°C)
*2: With F2S and F3S, if mounting two switches in one groove to enable detection at both ends, mount them so that their set screws face outward.
*3: Indicator lamps for F2S and F3S are red.
*4: Refer to page 373 for contact protective measures.

[How to order switch]

If you order switches for the P4 Series separately, do as follows.
SW-□□□-P4 Example SW-T2H-P4
(*1) When ordering Low-Voltage Directive compliant products separately, do as follows.
SW-□□□-ST-P4 Example SW-T5H-ST-P4
(*2) If you order products with resin connector separately, do as follows.
Applies to the above T2H, T2YH, T2WH, K2YH, M2WV, F2H only.
SW-□□□-P4J Example SW-T2H-P4J

[Incorporated switch]

For cylinder specification P4 and P40, switch indicating "P4" is supplied. Cylinder mountable switch differs according to each cylinder.
Refer to the switch compatibility table on Intro Pages 21 to 24.
Example: GRC: Reed switch TO*, T5* cannot be installed.
SRM3: Proximity 1-color display T2*, T3* cannot be installed.


K*H
K*PH


K*V
K*PV


K*YH


K*YV

Specifications (K Series)

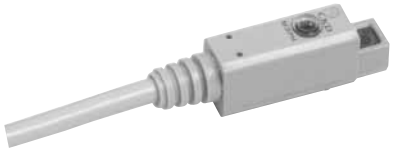
Descriptions	Proximity 2-wire		Proximity 3-wire		
	K2H/K2V	K2YH/K2YV	K3H/V (NPN output)	K3PH/V (PNP output)	K3YH/V (2-color display)
Applications	Dedicated for programmable controller		For programmable controller, relay		
Output method	-		NPN output	PNP output	NPN output
Power supply voltage	-		10 to 28 VDC		
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 20 mA (*1)		50 mA or less		
Current consumption	-		10 mA or less with 24 VDC	10 mA or less with 24 VDC	10 mA or less with 24 VDC
Internal voltage drop	4 V or less		0.5 V or less		
Indicator lamp	RED LED (Lit when ON)	Red/green LED (Lit when ON)	RED LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less		10 μA or less		
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm^2)	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.3 mm^2)	1 m (oil resistant vinyl cabtyre cable 3-conductor 0.2 mm^2)		1 m (oil resistant vinyl cabtyre cable 3-conductor 0.2 mm^2)
Shock resistance	980 m/s^2				
Insulation resistance	20 MΩ and over with 500 VDC megger	100 MΩ and over at 500 VDC megger	20 MΩ and over with 500 VDC megger		100 MΩ and over at 500 VDC megger
Withstand voltage	No failure after 1 minute of 1,000 VAC application.				
Ambient temperature	-10 to +60°C				
Degree of protection	IEC Standard IP67, JIS C0920 (water-tight), oil resistance				
Weight	1 m:18 g 3 m:49 g 5 m:80 g	1 m:31 g 3 m:85 g 5 m:139 g	1 m:18 g 3 m:49 g 5 m:80 g		1 m:31 g 3 m:85 g 5 m:142 g

Descriptions	Reed 2-wire			
	K0H/K0V		K5H/K5V	
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (without indicator lamp), serial connection	
Power supply voltage	-			
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Current consumption	-			
Internal voltage drop	3 V or less		0.1 V or less (*3)	
Indicator lamp	RED LED (Lit when ON)		Without indicator lamp	
Leakage current	0 mA			
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm^2)			
Shock resistance	294 m/s^2			
Insulation resistance	20 MΩ and over with 500 VDC megger			
Withstand voltage	No failure after 1 minute of 1,000 VAC application.			
Ambient temperature	-10 to +60°C			
Degree of protection	IEC Standard IP67, JIS C0920 (water-tight), oil resistance			
Contact protection circuit *4	None			
Weight	1 m:18 g 3 m:49 g 5 m:80 g			

*1: The above max. load current is the value at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*2: Installation of K3PH, K3PV onto compatible cylinders is made to order.
*3: Internal resistance 0.5 Ω or less.
*4: Refer to page 373 for contact protective measures.



M*V



M*H

Specifications (M Series)

Descriptions	Proximity 2-wire		Proximity 3-wire		
	M2V/M2H	M2WV (2-color display)	M3H/V (NPN output)	M3PH/V (PNP output)	M3WV (2-color display)
Applications	Dedicated for programmable controller		For programmable controller, relay, IC circuit, compact solenoid valve		
Output method	-		NPN output	PNP output	NPN output
Power supply voltage	-		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 30 mA		100 mA or less	100 mA or less	100 mA or less
Current consumption	-		10 mA or less with 24 VDC	10 mA or less with 24 VDC	15 mA or less with 24 VDC
Internal voltage drop	4 V or less		0.5 V or less		
Indicator lamp	Red LED (Lit when ON)	Red/green LED (Lit when ON)	Red LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less		10 μA or less	0.05 mA or less	10 μA or less
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm^2)		1 m (oil resistant vinyl cabtyre cable 3-conductor 0.15 mm^2)		
Shock resistance	980 m/s^2				
Insulation resistance	100 MΩ and over at 500 VDC megger				
Withstand voltage	No failure after 1 minute of 1,000 VAC application.				
Ambient temperature	-10 to +60°C				
Degree of protection	IEC Standard IP67, JIS C0920 (water-tight), oil resistance				
Weight	1 m:22 g 3 m:57 g 5 m:93 g		1 m:22 g 3 m:57 g 5 m:93 g		

Descriptions	Reed 2-wire			
	M0V/M0H		M5V/M5H	
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (No indicator lamp), serial connection	
Power supply voltage	-			
Load voltage	12/24VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Current consumption	-			
Internal voltage drop	3 V or less		0.1 V or less (*4)	
Indicator lamp	Red LED (Lit when ON)		Without indicator lamp	
Leakage current	0 mA			
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm^2)			
Shock resistance	294 m/s^2			
Insulation resistance	100 MΩ and over at 500 VDC megger			
Withstand voltage	No failure after 1 minute of 1,000 VAC application.			
Ambient temperature	-10 to +60°C			
Degree of protection	IEC Standard IP67, JIS C0920 (water-tight), oil resistance			
Contact protection circuit *5	None			
Weight	1 m:22 g 3 m:57 g 5 m:93 g			

*1: M*H is available for SRL3, SRG3, and SRT3.
*2: Refer to the switch compatibility table on Intro Pages 21 to 24 for switch model numbers that can be equipped on cylinders.
*3: Contact CKD separately for cylinder switch with connector.
*4: Internal resistance 0.5 Ω or less.
*5: Refer to page 373 for contact protective measures.

CE
(excluding T1 and T8)


T*H/T*WH


T*V/T*WV


T1H


T1V


T8H/T*YH


T8V/T*YV

Specifications (T Series)

Descriptions	Proximity 2-wire						Proximity 3-wire			
	T1H/T1V	T2H/T2V	T2HR/T2VR3 (Bending resistant lead wire)	T2JH/T2JV (Off-delay)	T2YH/T2YV (2-color display)	T2WH/T2WV (2-color display)	T3H/T3V	T3PH/T3PV (PNP output)	T3YH/T3YV (2-color display)	T3WH/T3WV (2-color display)
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller					For programmable controller, relay			
Output method	-						NPN output	PNP output	NPN output	NPN output
Power supply voltage	-						10 to 28 VDC			
Load voltage	85 to 265 VAC	10 to 30 VDC				24 VDC ±10%	30 VDC or less			
Load current	5 to 100 mA	5 to 20 mA (*1)					100 mA or less		50 mA or less	
Current consumption	-	-					10 mA or less with 24 VDC	10 mA or less with 24 VDC	10 mA or less with 24 VDC	
Internal voltage drop	10% or less of load voltage	4 V or less					0.5 V or less			
Off-delay time	-			200±50 ms	-		-			
Indicator lamp	Red LED (Lit when ON)				Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	Red LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	
Leakage current	1 mA or less with 100 VAC, 2 mA or less with 200 VAC	1 mA or less					10 μA or less			
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.3 mm²)	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm²)	3 m (elasticity, oil resistant vinyl cabtyre cable 2-conductor 0.2 mm²)	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.3 mm²)		1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm²)	1 m (oil resistant vinyl cabtyre cable 3-conductor 0.2 mm²)		1 m (oil resistant vinyl cabtyre cable 3-conductor 0.3 mm²)	1 m (oil resistant vinyl cabtyre cable 3-conductor 0.2 mm²)
Shock resistance	980 m/s²									
Insulation resistance	100 MΩ and over at 500 VDC megger	20 MΩ and over with 500 VDC megger		100 MΩ and over at 500 VDC megger		20 MΩ and over with 500 VDC megger	20 MΩ and over with 500 VDC megger		100 MΩ and over at 500 VDC megger	20 MΩ and over with 500 VDC megger
Withstand voltage	No failure after 1 minute of 1,500 VAC application.	No failure after 1 minute of 1,000 VAC application.								
Ambient temperature	-10 to +60°C									
Degree of protection	IEC Standard IP67, JIS C0920 (water-tight), oil resistance									
Weight	1 m:33 g 3 m:87 g 5 m:142 g	1 m:18 g 3 m:49 g 5 m:80 g		1 m:33 g 3 m:87 g 5 m:142 g		1 m:18 g 3 m:49 g 5 m:80 g	1 m:18 g 3 m:49 g 5 m:80 g		1 m:33 g 3 m:87 g 5 m:142 g	1 m:18 g 3 m:49 g 5 m:80 g

Descriptions	Reed 2-wire						
	T0H/T0V		T5H/T5V		T8H/T8V		
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (without indicator lamp), serial connection		For programmable controller, relay		
Power supply voltage	-						
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Current consumption	-						
Internal voltage drop	3 V or less		0.1 V or less (*5)		4 V or less		
Indicator lamp	Red LED (Lit when ON)		Without indicator lamp		Red LED (Lit when ON)		
Leakage current	0 mA						
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm²)				1 m (oil resistant vinyl cabtyre cable 2-conductor 0.3 mm²)		
Shock resistance	294 m/s²						
Insulation resistance	20 MΩ and over with 500 VDC megger				100 MΩ and over at 500 VDC megger		
Withstand voltage	No failure after 1 minute of 1,000 VAC application.				No failure after 1 minute of 1,500 VAC application		
Ambient temperature	-10 to +60°C						
Degree of protection	IEC Standard IP67, JIS C0920 (water-tight), oil resistance						
Contact protection circuit *6	None				Yes		
Weight	1 m:18 g 3 m:49 g 5 m:80 g				1 m:33 g 3 m:87 g 5 m:142 g		

*1: The above max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*2: T2HR3, T2VR3, T3PH and T3PV switches are available as made to order when installed onto compatible cylinders.
*3: T2JH and T2JV switches are available as made to order when installed onto SRL3 (ø32 to ø100), MRL2, LCR, UCAC2 or Hand-chuck.
*4: Switch types are limited depending on cylinder. Refer to Intro Pages 21 to 24 for details.
*5: Internal resistance 0.5 Ω or less.
*6: Refer to page 373 for contact protective measures.

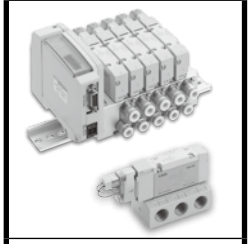
Pneumatic valves

Pilot operated 3, 5-port valve

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

4G CE

Pilot operated 5-port valve
4G Series



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How to order	
Single unit	$\frac{3}{4}$GA[Size][Switching section]0R-[Bore size]-[Wiring][Option]-[Voltage]-P4
Manifold Replacement valve	$\frac{3}{4}$GA[Size][Switching section]9R-[Bore size]-[Wiring][Option]-[Voltage]-P4
M4G Series (Metal base)	M$\frac{3}{4}$G$\frac{A}{B}$[Size][Switching section]0R-[Bore size]-[Wiring][Option][Mounting]-[Station No.]-[Voltage]-P4
MN4G Series (Block manifold)	MN$\frac{3}{4}$G$\frac{A}{B}$[Size][Switching section]0R-[Bore size]-[Wiring][Option]-[Station No.]-[Voltage]-P4
Single unit (Large flow rate)	4G$\frac{A}{B}$4[Switching section]0-[Bore size]-[Wiring][Option]-[Voltage]-P4

	4G1 Series	4G2 Series	4G3 Series	4G4 Series
Flow characteristics C[dm³/(s·bar)]	1.1 to 1.3	2.2 to 2.6	3.4 to 4.2	12 to 15

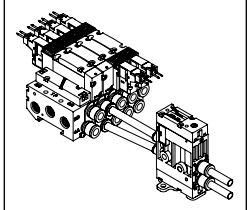
Note: Flow characteristics of base piping.

	4G Series		M4G Series *5) *6)			MN4G Series *7) *9)	
	Push-in fitting Straight (Model No.: C□)	Screw-in (Model No.: M5, 06, 08)	Push-in fitting Straight (Model No.: C□)	Push-in fitting Elbow (Model No.: CL□, CD□)	Screw-in (Model No.: M5, 06, 08)	Push-in fitting Straight (Model No.: C□)	Push-in fitting Elbow (Model No.: CL□, CD□)
P4	● *8)	●	● *8)		●	● *8)	

*1: Base piping (B) single units and 4GA1-M5 are standard products and equivalent to P4 specifications.
*2: Copper-free material applies to flow rate part.
*3: Refer to "Pneumatic Valves (Catalog No. CB-023SA)" for serial communication specifications.
*4: Push-in fitting elbow is not supported.
*5: Due to the attached M5 plug change, external pilot is available with P4 specification with or without fitting.
*6: In-stop valve spacer and spacer pilot check valve are not supported.
*7: External pilot specification is not available as standard.
*8: The following are not supported for push-in fitting straight.
$\frac{3}{4}$G$\frac{A}{B}$1,MN4G$\frac{A}{B}$1:CF,C18
$\frac{3}{4}$GA3:C6,C10
$\frac{3}{4}$GB3:C6
$\frac{3}{4}$GA4:C10,C12
*9: Atmosphere opening type cannot be selected for MN4G end block and supply and exhaust block.
*10: Contact CKD for European Standards compliant products.

4G2R-PCS

Pilot check valve



4GA/B / 4GD/E R Series
Catalog No.CC-1273A

How to order	
Single unit	4G2R-PCS-[Port size]-[Option]-P4

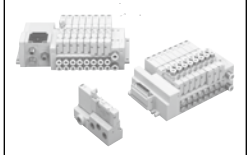
	4G2R-PCS-P4 Pilot check valve
P4	●

*1: Residual pressure release mechanism is not available.

Pilot operated 3, 5-port valve

W4G CE

Plug-in manifold
W4G Series



Pneumatic Valves
Catalog No. CB-023SA

How to order	
Single unit	W4G$\frac{B}{Z}$[Size][Switching section]0-[Bore size]-[Wiring][Option]-[Voltage]-P40
Manifold Replacement valve	W$\frac{3}{4}$G$\frac{A}{B}$[Size][Switching section]9-[Bore size]-[Option]-[Voltage]-P40
Individual wiring manifold	MW$\frac{3}{4}$G$\frac{A}{B}$[Size][Switching section]0-[Bore size]-[Wiring][Option]-[Station No.]-[Voltage]-P40
Reduced wiring manifold	

	W4G2 Series	W4G4 Series
Flow characteristics C[dm³/(s·bar)]	2.1 to 2.5	6.4 to 7.3

	MW4G$\frac{A}{B}$2 Series	MW4G$\frac{B}{Z}$4 Series
Electrical connections	R1, T10, T20, T30, T51, T8D*, T8G*	R1, T10, T6D1, T6G1, T7EC*
Manual override	Blank, M	
Available options	H, A, F, Z6	H, A, F, Z1, Z3

	W4G2 Series	W4G4 Series	
	Push-in fitting Straight (Model No.: C□)	Screw-in fitting (Model No.: 08, 10)	Push-in fitting Straight (Model No.: C□)
P40	●	●	● * Excluding C12

*1: Refer to "Pneumatic Valves (Catalog No. CB-023SA)" for serial communication specifications.
*2: M12 connector is resin connector.
*3: End block atmosphere release/common exhaust type is not available.
*4: Manifold external pilot specification is not available as standard.
*5: Maximum size is C10 for push-in fitting straight.
*6: Push-in fitting elbow is not applicable.
*7: The degree of protection is equivalent to IP40 for T30 and T51.
8: T7EC M12 connector and T8G* FG terminal are copper-based metal + nickel plating.
*9: Contact CKD when ordering parts only.
*10: Contact CKD for other options.
*11: Attachments cannot be selected from the manifold specifications sheet. Contact CKD separately.
*12: Contact CKD for European Standards compliant products.

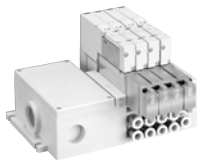
Pneumatic valves

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Pilot operated 3, 5-port valve

W4G2-PC

Spacer pilot check valve



Pneumatic Valves
Catalog No. CB-023SA

How to order	
Single unit	W4G2-PC-P40

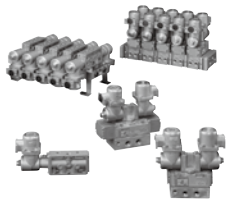
	W4G2-PC-P40 Spacer pilot check valve
P40	●

*1: Residual pressure release mechanism is not available.

Pilot operated explosion-proof 5-port valve

4F0E**

Explosion-proof solenoid valve



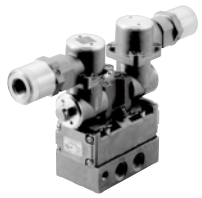
Pneumatic Valves
Catalog No. CB-023SA

How to order	
Single unit	Contact CKD for model numbers.
Manifold replacement valve (4F3)	Contact CKD for model numbers.
Manifold replacement valve (4F4 to 7)	Contact CKD for model numbers.
M4F**E Series (Individual wiring manifold)	Contact CKD for model numbers.

	4F**E Series
P4	▲

4F0EX**

Pilot operated explosion-proof 5-port valve



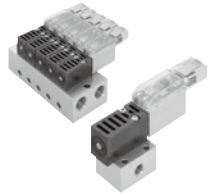
Separate catalog
Catalog No. CC-1159A

How to order	
Single unit	Contact CKD for model numbers.
Manifold replacement valve (4F3)	Contact CKD for model numbers.
Manifold replacement valve (4F4 to 7)	Contact CKD for model numbers.
M4F**E Series (Individual wiring manifold)	Contact CKD for model numbers.

	4F**E Series
P4	▲

3QRA/B CE

Direct acting 3-port solenoid valve



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How to order	
Single unit	3QRB1[Switching position section]0-M5-[Connection method][Flow rate]-[Voltage]
Replacement valve	3QRA1[Switching position section]9-M5-[Connection method][Flow rate]-[Voltage]
	3QRB1[Switching position section]9-00-[Connection method][Flow rate]-[Voltage]
Manifold	M3QRA1[Switching position section]0-M5-[Connection method][Flow rate]-[Station No.]-[Voltage]

Note: Supports P4 specifications as standard

Pneumatic auxiliary components

Clean air components

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

SU300$^{D}_{E}$-W/SU400$^{D}_{E}$-W

Super dryer (High polymer membrane air dryer)



Page 141

How to order	SU301$^{D}_{E}$/302$^{D}_{E}$/401$^{D}_{E}$/402$^{D}_{E}$-[Inlet air pressure]-W-[Unit]-[Option]-P4□

	SU
Port size	Rc3/8
P4	●
P40	▲

*1: Applicable only for common exhaust.
*2: Auto-drain is not available.

SD300$^{D}_{E}$-W/SD400$^{D}_{E}$-W

Super dryer (High polymer membrane air dryer)



Page 141

How to order	SD30□□/SD40□□-[Inlet air pressure]-W-[Option]-P4□

	SD
Port size	Rc3/8
P4	●
P40	▲

*1: Applicable only for common exhaust.

SU3000-W/SU4000-W

Super dryer (High polymer membrane air dryer)



Page 147

How to order	SU30□□/SU40□□-[Outlet air atmospheric dew point]-[Inlet air pressure]-W-[Option]-P4□

	SU
Port size	Rc3/8, 1/2
P4	●
P40	▲

*1: Applicable only for common exhaust.
*2: Auto-drain is not available.

SD

Super dryer (High polymer membrane air dryer)



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How to order	SD30□□/SD4□□□-[Outlet air atmospheric dew point]-[Inlet air pressure]-W-[Option]-P4□

	SD
Port size	Rc3/8, 1/2
P4	●
P40	▲

*1: Applicable only for common exhaust.

SHD

Desiccant air dryer



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How to order	Contact CKD for models

	SHD
P4	▲

AF2

Medium main line filter



Page 155

How to order	AF2-[Flow rate classification][Element][Bore size]-P4

	AF2
Port size	Rc1, 1 1/4, 1/2, 2, 2 1/2
P4	▲

AF3000/AF5000

Large main line filter



Page 156

How to order	AF3□□□/AF5□□□-[Bore size]-[Option]-P4

	AF3000/AF5000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

Pneumatic auxiliary components

Clean air components

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

RB500

Compact regulator



Page 168

How to order	RB500-[Direction][Bore size]-NT[Option]P4□

	RB500 -N
Port size	Push-in fitting ø4/ø6
P4	●
P40	▲

*1: Pressure gauge/pressure sensor must be ordered separately. (Pressure gauge option is "T" only)
*2: Non-relief only is available.
*3: Only straight direction is available for fittings.
*4: For pressure adjustment springs without gas contact and pressure adjustment screw units in P40, zinc plating is used.

RP1000/2000

Precision regulator



Page 169

How to order	RP1000/2000-[Bore size]-[Pressure range]P4□-[Bracket]

	RP1000	RP2000
Port size	Rc1/4	Rc3/8
P4	●	●
P40	▲	▲

*1: Pressure gauge/pressure sensor must be ordered separately. (Attachment options not available.)
*2: RP1000 dimensions are different from the standard dimensions.
*3: Zinc plating is used for pressure adjustment springs without gas contact in P40.
*4: Dimensions are different from the standard products. There are mounting restrictions because of bleed port connection. Check the dimensions for each case.

RPE

Precision regulator



Page 173

How to order	RPE1000-[Port size]-[Pressure range]-[Option]P4-[Bracket]

	RPE1000
P4	●

*1: Pressure gauge/pressure sensor must be ordered separately. (Attachment options not available.)
*2: RPE1000 dimensions are different from the standard dimensions.

EVD CE

Electro pneumatic regulator



Page 175

How to order	EVD-1/3-[Pressure specifications]-[Input specifications/Port size]-[Option]-3-P4□

	EVD-1100/1500/1900	EVD-3100/3500/3900
Port size	Rc1/4	Rc1/4, Rc3/8
P4	●	●
P40	▲	●

Note: Bracket option for EVD-1500/1900-*-P4 is blank or L11 (L type, wall mounting for exhaust fittings). Standard B1 and L1 types cannot be selected.

F1000/F2000/F3000/ F4000/F6000/F8000

Filter



Page 180

How to order	F1000/2000/3000/4000/6000/8000-[Bore size]-W-[Option]P4□-[Bracket]

	F1000-W	F2000-W	F3000-W	F4000-W	F6000-W	F8000-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1	Rc3/4,1
P4	●	●	●	●	●	●
P40		●	●	●	●	

*1: Auto-drain is not available.
*2: Metal bowl is not available.

M1000/M2000/M3000/ M4000/M6000/M8000

Oil mist filter



Page 183

How to order	M1000/2000/3000/4000/6000/8000-[Bore size]-W-[Option]P4□-[Bracket]

	M1000-W	M2000-W	M3000-W	M4000-W	M6000-W	M8000-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1	Rc3/4,1
P4	●	●	●	●	●	●
P40		●	●	●	●	

*1: Auto-drain is not available.
*2: Metal bowl is not available.
*3: With M4000 differential pressure indicator option is not available.

R1000/R2000/R3000/ R4000/R6000/R8000

Regulator
Reverse regulator



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How to order	R1□00/2□00/3□00/4□00/6□00/8□00-[Bore size]-W-[Option T6/T8]P4□-[Bracket]

	R1000-W R1100-W	R2000-W R2100-W	R3000-W R3100-W	R4000-W R4100-W	R6000-W R6100-W	R8000-W R8100-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1	Rc3/4,1
P4	●	●	●	●	●	●
P40		▲	▲	▲	▲	

*1: Pressure gauge/pressure sensor must be ordered separately. (Pressure gauge option is "T", "T8", "T6" only)
*2: R1 option is not available.
*3: R6000 dimensions are different from the standard dimensions.
*4: For pressure adjustment springs without gas contact and pressure adjustment screw units in P40, zinc plating is used.
*5: R2 option is not available.
*6: For R1000, R1100, R8000, and R8100, only non-relief (option code: N) is available.

Compatible products: P4 Series .....Material restrictions (sliding part)
P40 Series ...Material restrictions (all parts)

Standards compliant products: CE : European Standards compliant products
Ex : ATEX Directive compliant products

Pneumatic auxiliary components

Clean air components

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

W1000/W2000/W3000/ W4000/W8000

Filter/Regulator
Reverse regulator/Regulator



Page 195

How to order	W1□00/2□00/3□00/4□00/8□00-[Bore size]-W-[Option T6/T8]P4□-[Bracket]				
	W1000-W W1100-W	W2000-W W2100-W	W3000-W W3100-W	W4000-W W4100-W	W8000-W W8100-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1
P4	●	●	●	●	●
P40		▲	▲	▲	

*1: Pressure gauge/pressure sensor must be ordered separately. (Pressure gauge option is "T", "T8", "T6" only)
*2: Auto-drain is not available.
*3: Metal bowl is not available.
*4: R1 option is not available.
*5: For pressure adjustment springs without gas contact and pressure adjustment screw units in P40, zinc plating is used.
*6: R2 option is not available.
*7: For W1000, W1100, W8000, and W8100, only non-relief (option code: N) is available.

FX

Drain separator



Page 205

How to order	FX1004/1011/1037-[Port size]-W-[Option]-P4-[Attachment]		
	FX1004	FX1011	FX1037
Port size	Rc1/4, 3/8	Rc1/4, 3/8, 1/2	Rc3/4, 1
P4	●	●	●
P40	▲	▲	▲

*1: Auto-drain is not available.
*2: Metal bowl is not available.

G40D/G41D/G49D/G59D

Pressure gauge



Page 209

How to order	G40D-[Bore size]-P[Pressure]-P4			
	G40D	G41D	G49D	G59D
	Display ø42.5 with safety marker	Display ø42 with limit marker	Display ø42	Display ø52
Port size	R1/8	R1/8, 1/4	R1/8	1/4
P4	●	●	●	●

FCS500/FCS1000

Inline clean filter



Page 212

How to order	FCS500-[H push-in fitting bore size]-[Attachment]-P40			
	FCS500		FCS1000	
Port size	Push-in fitting ø4 to 8	Screw type/ SUS type (P9)	Push-in fitting ø8 to 12	Screw type/ SUS type (P9)
P4		Supports P4 specifications as standard		Supports P4 specifications as standard
P40	▲	Supports P40 specifications as standard	▲	Supports P40 specifications as standard

P4100 CE

Pressure switch



Page 213

How to order	P4100-[Bore size][Branch direction]-W-P4-[Attachment]-[Lead wire length]		
	P1100	P4100	P8100
Port size	Rc1/8, 1/4	Rc1/4, 3/8, 1/2	Rc3/4, 1
P4	▲	●	▲

*1: The atmospheric pressure inlet port is M5.
*2: Fitting attachment option for atmospheric introduction port is not available.

APS CE

Compact mechanical pressure switch



Page 215

How to order	APS-[Piping port position/Bore size/Scale plate direction] [Lead wire length]-[Option]-P4□
	APS
Port size	Rc1/8
P4	●

*1: The atmospheric pressure inlet port is M5.
*2: Fitting attachment option for atmospheric introduction port is not available.

Compatible products: P4 Series .....Material restrictions (sliding part) / P40 Series ...Material restrictions (all parts)

Standards compliant products: CE : European Standards compliant products / Ex : ATEX Directive compliant products

Pneumatic auxiliary components

Clean air components

□ are listed in this catalog.

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

PPX CE

Digital pressure sensor



Page 217

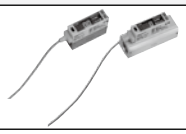
How to order	PPX-R10P-6M-J-P40/PPX-R10N-6M-J-P40

	PPX
Port size	Rc1/8, M5 female thread
P4	Supports P4 specifications as standard
P40	● Product is limited to the above model numbers

*1: Bracket mounting is not possible for P40.
*2: P40 is compatible only with PPX-R10P-6M-J-P40/PPX-R10N-6M-J-P40.
*3: P40 connector must be ordered separately. PPX-C2-FL401967-P40

FSM2

Compact flow rate sensor (RAPIFLOW)



Page 219

How to order	FSM2-[Output][Analog output][Flow direction][Flow rate range]-[Port size][Gas type][Cable][Brackets][Traceability]-[Clean-room specifications]

*1: Stainless steel body and aluminum body are P4 compatible as standard.
*2: Resin body and products with needle valve are not P4 compatible.

V3301

Slow start valve



Page 226

How to order	V3301-[Bore size]-W-[Manual operation/Electrical connection]-[Voltage]-P4□-[Attachment options]

	V3301	
Port size	Rc1/4 to Rc1/2	
P4	▲	(*1) (*2)
P40	▲	(*1) (*2)

*1: Only LS is available for electrical connection.
*2: Valve is vertical mounting.

V3000/V3010/V6010

Shut-off valve



Page 227

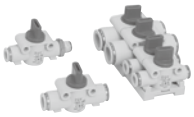
How to order	V3000/V3010/V6010-[Bore size]-W-[Option]-P4□-[Attachment]

	V3000/V3010	V6010
Port size	Rc1/4 to Rc1/2	Rc3/4, Rc1
P4	●	●
P40	▲	▲

*1: In P40, parts without gas contact use zinc plating.

2QV

Quick valve



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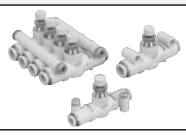
How to order	2QV-[Bore size]-P4

	2QV
Port size	ø4, ø6, ø8, ø10, ø12
P4	▲

Speed controller

SCL2/SCD2

Speed controller Line type



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How to order	SCL2-[Body size]-[Compatible tube O.D.]-P4 * Needle valve is not currently supported.

	SCL2/SCD2
Port size	ø4, ø6, ø8, ø10
P4	●

Note: Only ● part of the table below is supported.

		Body size			
		04	06	08	10
Compatible tube O.D.	H44	●			
	H66		●		
	H88			●	
	H1010				●

SC3W

Speed controller, elbow



Page 232

How to order	SC3W-[Piping size]-[Compatible tube O.D.]-[Option]-P4

	SC3W
Port size	M3, M5, R1/8, 1/4, 3/8, 1/2
P4	●

*1: The product dimensions of pipe size M5 are different from the standard SC3W.
*2: Compatible tube O.D. 3 (ø3, 2) is not available.
*3: Option is meter-in only.

Pneumatic auxiliary components

Speed controller

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

DSC

Speed controller with adjusting dial



Page 234

How to order	
Standard	DSC-[Port size]-[Compatible tube O.D.]-[Control method][Flow rate]-P4
Compact	DSC-C-[Port size]-[Compatible tube O.D.]-[Control method][Flow rate]-P4

How to order	DSC-[Port size]-[Compatible tube O.D.]-[Control method][Flow rate]-P4

	DSC
Port size	M5, R1/8, 1/4, 3/8, 1/2
P4	●

SC3F/SCLF

Speed controller
Polypropylene resin



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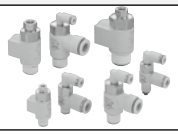
How to order	SC3F/SCLF-[Piping size]-[Compatible tube O.D.]-[Option]-P4	
	SC3F	SCLF
Port size	M3, M5, R1/8, R1/4, R3/8, R1/2	ø4, ø6, ø8, ø10, ø12
P4	●	●

Other auxiliary valves

FPV

Block valve



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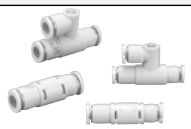
How to order	FPV-[Port size]-[Compatible tube O.D.]-FLNo.

	FPV
Port size	M5, R1/8, 1/4, 3/8, 1/2
P4	▲

QEL

Quick exhaust valve Line type



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How to order	QEL-[Tube O.D.]-P4

	QEL
Port size	ø4, ø6
P4	▲

*1: Applicable only for type with exhaust port fitting.

QEV2

Quick exhaust valve



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How to order	QEV2-[Port size]-[Option][Accessory]

	QEV2
Port size	Rc1/8 to 1
P4	Standard compliance

SHV2

Shuttle valve



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How to order	SHV2-[Port size]-[Option][Accessory]

	SHV2
Port size	Rc1/8 to 1
P4	Standard compliance

Note: Select a fluoro rubber specification

CHV2

Check valve



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How to order	CHV2-[Port size]-[Flow rate]-[Option][Accessory]

	CHV2
Port size	Rc1/8 to 1 1/2
P4	Standard compliance

Note: Select a fluoro rubber specification

Pneumatic auxiliary components

Other auxiliary valves

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

HMV/HSV

Manual selector valve



Page 246

How to order	HMV/HSV[Switching position section]2-[Port size]-4[Piping]	
	HMV	HSV
Port size	Rc1/4	Rc1/4, 3/8, 1/2, 3/4
P4	▲	

Fittings/tubes

FTS4/FPL

Miniature fitting



Page 247

How to order	FTS4-M3-P4, FPL-M5-P4	
	FTS4	FPL
Port size	M3	M5
P4	▲	▲

Note: M3 gasket dimensions are different from the standard dimensions.

ZW

Fitting (stainless steel)



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How to order	ZW-[Shape][Compatible tube O.D.]-[Piping size]-P4
	ZW
Port size	ø4, ø6, ø8, ø10, ø12
P4	●

ZSF

Fitting (polypropylene resin)

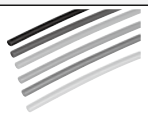


Page 255

How to order	ZSF-[Shape][Compatible tube O.D.]-[Piping size]-P4
	ZSF
Port size	ø4, ø6, ø8, ø10, ø12
P4	●

UP/F/U/NU/KX/SR

Tube



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How to order	Tube type-[Size]-[Option]
	UP/F/U/NU/KX/SR
O.D.	ø1.8, ø3.2, ø4, ø6, ø8, ø10, ø12, ø15
P4	Standard compliance

Compatible products: P4 Series .....Material restrictions (sliding part) / P40 Series ...Material restrictions (all parts)

Standards compliant products: CE : European Standards compliant products / Ex : ATEX Directive compliant products

Pneumatic auxiliary components

Fittings/tubes

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

ET

Fluoro resin tube



Page 261

How to order	ET-[Size]-[Option]

	ET
O.D.	ø4, ø6, ø8, ø10, ø12
P4	Standard compliance

PFH/S

Polyolefin tube



Page 262

How to order	PF[Type]-[Size]-[Option]-P4

	PFH/S
O.D.	ø4, ø6, ø8, ø10, ø12
P4	●

Vacuum components

VFA1000/3000/4000

Vacuum filter



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How to order	VFA1000/3000/4000-[Bore size]-[Option]-P4-[Attachment]

	VFA1000	VFA3000	VFA4000
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc3/8, 1/2
P4	●	●	●

Note: Metal bowl is not available.

VRA2000

Vacuum regulator



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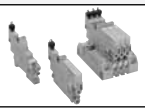
How to order	VRA2000-[Bore size]-[Option]P4

	VRA2000
Port size	Rc1/4, 3/8
P4	●

*1: Available pressure gauge is PPX only.
*2: Pressure gauge/pressure sensor must be ordered separately. (Attachment options not available.)

VSX/VSXM

Vacuum ejector (SELVACS)



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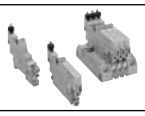
How to order	
Single unit	VSX-[Vacuum characteristics][Nozzle diameter][Valve]-[Port]-3-[Switch specifications]-[Mounting method]-P4
Manifold	VSXM-[Vacuum characteristics][Nozzle diameter][Valve]-[Port]-3-[Station No.]-[Switch specifications]-P4

	VSX	VSXM
Port size	ø4, ø6	ø4, ø6, ø8, ø10
P4	●	▲

*1: Applicable only for common exhaust.

VSXP/VSXPM

Vacuum switching unit (SELVACS)



Vacuum system equipment SELVACS Catalog No. CC-796A

How to order	
Single unit	VSXP-[Valve]-[Port]-3-[Switch specifications]-[Mounting method]-P4
Manifold	VSXPM-[Valve]-[Port]-3-[Station No.]-[Switch specifications]-P4

	VSXP	VSXPM
Port size	ø4, ø6	ø4, ø6, ø8, ø10
P4	●	▲

*1: Applicable only for 2-way valve.

VSP

Suction pad



Page 268

How to order	VSP-[Holder shape/Pad diameter/Pad material]-[Port size]-P4

	VSP
P4	▲

*1: Holder shape is only available for fixed type.
*2: Free holder and position locking valve are not supported.
*3: For pad material, only S, U, F, SE, FS and Blank are supported.
*4: Pad shapes K, F, Q cannot be selected.

Pneumatic auxiliary components

Vacuum components

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

VSFU

Vacuum filter (SELVACS)



Page 269

How to order	VSFU-[Filter size]-[Bore size]-P4, FSL[Filter size]-[Bore size]-[Bracket]-P4	
	VSFU	FSL
Port size	ø4, ø6, ø8, ø10	ø4, ø6, ø8, ø10
P4	●	▲

FBU2

Fine buffer



Page 270

How to order	FBU2-[External dimensions]-[Bearing precision]-[Pressing pressure]-[Buffer stroke]-[Tail shape]-[Head shape]
	FBU2
P4	Standard compliance

Fluid control components

Fluid control components

AB3/AB4-Z GAB3/GAB4-Z

General purpose valve For dry air



Page 273

How to order	
Single unit	AB[Model No.]-[Bore size]-[Orifice]-[Body material/Seal combination][Coil][Option]ZP4□-[Voltage]
Manifold	GAB[Model No.][Thread]-[Orifice]-[Station No.]-[Body material/Seal combination][Coil][Option]ZP4□-[Voltage]

	AB3/AB4-Z GAB3/GAB4-Z
Classification	Direct acting 2-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

AG3/AG4-Z GAG3/GAG4-Z

General purpose valve For dry air



Page 277

How to order	
Single unit	AG[Model No.][Bore size]-[Orifice]-[Body material/Seal combination][Coil][Option]ZP4□-[Voltage]
Manifold	GAG[Model No.][NO port size][Thread]-[Orifice]-[Station No.]-[Body material/Seal combination][Coil][Option]ZP4□-[Voltage]

	AG3/AG4-Z GAG3/GAG4-Z
Classification	Direct acting 3-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

ADK11-Z

General purpose valve For dry air



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How to order	ADK11-[Bore size]-[Body material/Seal combination][Coil][Option]ZP4□-[Voltage]
	ADK11-Z
Classification	Pilot kick 2-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

CHB

Air operated 2-port ball valve



Page 285

How to order	CHB-[Bore size]-[Body material]-P4
	CHB-N
Port size	Rc3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2, 2
P4	●

Note: Body material code N only.

Fluid control components

Fluid control components

☐ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

CHG

Air operated
3-port ball valve



Page 287

How to order	CHG-[Bore size]-[Body material]-P4

	CHG-N
Port size	Rc1/2, 3/4, 1, 1 1/4, 1 1/2, 2
P4	●

Note: Body material code N only.

SAB/SVB

Air operated 2-port valve



Page 289

How to order	SAB/SVB[Actuation][Fluid category]-[Port size][Thread]-[Body/Sealant combination][Other options]-[Assembly direction]-P4

	SAB/SVB
Port size	Rc1/4 to Rc2, 32 flange, 40 flange, 50 flange
P4	●

NAD

Air operated 2-port valve
Diaphragm



Page 298

How to order	NAD[Actuation]-[Bore size]-[Body/Sealant][Option]-P4

	NAD
Port size	Rc3/8
P4	●

LAD

Clean cylinder valve



Page 300

How to order	LAD[Actuation]-[Bore size]-[Material combination][Option]-P4

	LAD
Port size	Rc3/8, 1/2, 3/4, 1
P4	●

NP13/NP14 CE

3-port solenoid valve
for air



Page 302

How to order	NP1[Actuation]-[Bore size]-1[Coil][Option]-[Voltage]-P4

	NP13/NP14
Bore size	Rc3/8 to Rc1
P4	●

*1: Coil option is 2G, 2H, 2GS, 2HS only.
*2: Voltage: 24 VDC only.
*3: Rc1 1/4 to Rc2 are made to order.

NAP11

Air operated 3-port valve



Page 304

How to order	NAP11-[Bore size]-[Body/sealant combination]-P4

	NAP11
Port size	Rc3/8 to 2
P4	●

NVP11 CE

Air operated 3-port valve
with solenoid valve



Page 305

How to order	NVP11-[Bore size]-[Body/sealant combination][Coil housing][Option]-[Voltage]-P4

	NVP11
Port size	Rc3/8 to 2
P4	●

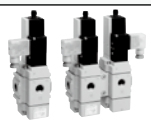
*1: Coil option is 2G, 2H, 2GS, 2HS only.
*2: Voltage: 24 VDC only.
*3: Rc1 1/4 to Rc2 are made to order.

Fluid control components

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

SNP

3-port solenoid valve with spool position detection



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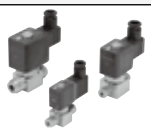
How to order	SNP-[Station No.]-[Port size]-[Sealant][Coil option][Limit switch][Bracket][Silencer]-[Voltage]-P4

	SNP
Port size	Rc3/8, 1/2, 3/4
P4	●

HVB

Solenoid valve for high vacuum



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How to order	HVB2 to 5 Series HVB[Series size]12-[Connection method]-[Orifice]-[Coil option][Mounting plate]-[Voltage]
	HVB6, 7 Series HVB[Series size]12-[Connection method]-[Orifice]-[Thermal class]-[Option]-[Voltage]

	HVB2 to 5	HVB6, 7
P4	Standard compliance	

*1: Fluorine grease is used.
*2: Refer to this volume for the connection method.

Wet Fine system

AMD**3R

Air operated valve for chemical liquids



Page 313

How to order	AMD[Size][Actuation]3R-[Connection method]-[Actuator option][Body option][Operating port direction][Mounting method]

	AMDZ*3R	AMD0*3R	AMD3*3R	AMD4*3R	AMD5*3R
Connection	1/4"	1/4", 3/8"	3/8", 1/2"	3/4"	1"

*1: P4 compliant as standard.
*2: Refer to Wet Fine System/High Purity Chemical Liquid System (Catalog No. CB-031A) for details of the AMDZ*3R, 0*3R, 4*3R and 5*3R specifications.

Dry Fine system

AGD*R

Air operated valve for process gas



Page 315

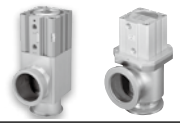
How to order	AGD0*R-*-X****, AGD**R-*-X****

	AGD0*R	AGD1*R	AGD2*R
Port size	1/4" double barbed fitting, 1/4" JXR fitting	1/4" double barbed fitting, 1/4" JXR fitting	3/8" double barbed fitting, 3/8" JXR fitting
P4	▲	▲	▲

Note: Use after checking the compatibility of the working fluid with the wetted part materials.

AVB

Air operated valve for high vacuum



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How to order	AVB**7-X****, AVB**3-X****

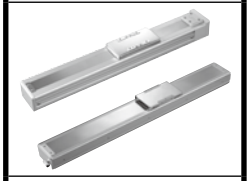
	AVB**7	AVB**3
Port size	NW16, NW25, NW40, NW50, NW63	NW25, NW40, NW50, NW80
P4	▲	

Note: Use after checking the compatibility of the working fluid with the gas-contacting materials.

Electric actuator

ETS/ECS

Electric actuator



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How to order	ETS-[Body size]-[Screw lead][Stroke length]-[Motor mounting method][Mounted motor specification][Motor size][Brake] [Origin sensor][Limit sensor][Grease nipple][Positioning pin hole]-[Special specifications]-[Anti-rust treatment]-P4

	ETS	ECS
P4	●	●

Electric actuators

Peripheral devices

☐ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable
Does not conform to the standards of P4 Series as defined by CKD. Contact CKD for details.

JSC3/JSC4

Large bore size cylinder



Page 325

How to order	JSC3-[Brake release pressure]-[Mounting]-[Bore size][Port thread][Cushion]-[Stroke length]-[Switch model No.]-[Number of switches]-[Option][Accessory]

	JSC3	JSC4
Bore size	ø40, 50, 63, 80, 100	ø125, 140, 160, 180

EVR

High precision electro pneumatic regulator



Page 330

How to order	EVR-2[Pressure control range][Body]-[Input signal][Port size]-[Option]

EVS2

Electro pneumatic regulator



Page 334

How to order	EVS2-[Pressure control range]-[Input signal][Port size][Analog output]-[Cable option]-3

FAC

Clean exhaust filter



Page 335

How to order	FAC10/100-[Port size] FAC3000-[Port size]-[Attachment]

	FAC10	FAC100	FAC200	FAC3000
Port size	ø4, 6, 8, 10	R1/8, 1/4	R3/8, 1/2	Rc3/8, 1/2
P4	Standard compliance			
P40	▲			

SMW2

Metering valve with silencer



Page 339

How to order	SMW2-[Port size]

	SMW2
Port size	R1/8, 1/4
P4	Standard compliance
P40	▲

FA

Exhaust cleaner



Page 340

How to order	FA[Series classification]31-[Port size]-[Option]

	FA
Port size	Rc3/8 to 2
P4	Standard compliance

Peripheral devices

□ are listed in this catalog.
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable
Does not conform to the standards of P4 Series as defined by CKD. Contact CKD for details.

AX*000T

ABSODEX high response



Page 341

How to order	AX1/2/4[Torque size][Driver type]-[Mounting base]-[Cable length]-[Brake]-[Driver power voltage]-[Positioning pin hole]-[Body surface treatment]-[Interface]		
	AX1000T	AX2000T	AX4000T
Torque (N·m)	22, 45, 75, 150, 210	6, 12, 18	9, 22, 45, 75, 150, 300, 500, 1000

AX6000M

ABSODEX compact



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How to order	AX6[Torque size]MU-[Mounting base]-[Cable length]-[Interface]
	AX6000M
Torque (N·m)	1.2, 3

AX7000X

ABSODEX high precision

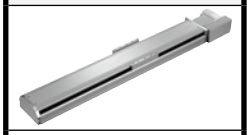


Page 356

How to order	AX7[Torque size]XS-[Mounting base]-[Cable length]-[Driver power voltage]-[Interface specification]
	AX7000X
Torque (N·m)	22, 45

ETV/ECV

Electric actuator



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How to order	ETV/ECV-[Body size]-[Lead equivalent][Stroke length]-[Motor mounting method][Mounted motor specification][Motor size][Drive belt][Origin sensor][Limit sensor][Grease nipple][Positioning pin hole]

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Dry Fine system
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Peripheral devices

■ Detailed specifications/How to order

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		Small bore size cylinder	**CMK2**	Stainless steel tube for high corrosion resistance	3
		Round shaped cylinder	**SCM**	Smart type with wide range of bore sizes/options	5
		Tie rod cylinder	**SCG**	Eco-friendly tie rod cylinder	7
		Large bore size cylinder	**SCS2**	Wide range of choices and high rigidity	9
	Space saving	Small direct mounting cylinder	**MDC2**	Can be mounted directly from 4 directions	11
		Compact cylinder	**SSD2**	Compact with wide range of bore sizes/options	13
		Compact cylinder	**SSD2 Large bore size**	Compact Large bore size	15
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		Flat cylinder	**FC***	It can also be mounted in narrow spaces. With rotation-stop function	29
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		Unit cylinder	**UCA2**	Stable position accuracy with double rod structure	56
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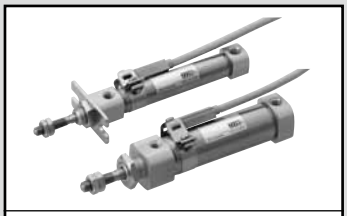
	Technical data				368
	Precautions				372



Pneumatic Cylinders I
Catalog No. CB-029SA

Pencil shaped cylinder Double acting/single rod

SCPD3 Series

●Bore size: ø6/ø10/ø16

JIS symbol 

RoHS

Specifications

Descriptions	SCPD3 SCPD3-L		
Bore size mm	ø6	ø10	ø16
Actuation	Double acting		
Working fluid	Compressed air		
Max. working pressure MPa	1.0		
Min. working pressure MPa	0.15	0.1	
Proof pressure MPa	1.6		
Ambient temperature °C	-10 to 60 (no freezing)		
Port size	M5		
Stroke tolerance mm	+1.0 0		
Working piston speed mm/s	50 to 750		
Cushion	Rubber cushion		
Lubrication	Not available		
Allowable absorbed energy J	0.012	0.041	0.162

Stroke length

Bore size (mm)		Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)
SCPD3	ø6	15/30/45/60	100	105	5
	ø10		200	210	
	ø16		260	270	

Note: The custom stroke length is available in 1 mm increments.

How to order switch mounting bracket

P4	SCPD3-T-[Bore size]
P40	SCPD3-T-[Bore size]-P40

How to order mounting bracket P4

Bore size / Mounting bracket	ø6	ø10	ø16
Foot (LS)	P2-LS-6	P2-LS-10	P2-LS-16
Flange (FA)	P2-FA-6	P2-FA-10	P2-FA-16

Note: The foot (LS) type mounting bracket is provided as 1 pc./set.

Brackets for rotation stop (M)

Bore size (mm) / Mounting bracket	ø10	ø16
Foot (LS)	P2-LS-10M	P2-LS-16M
Flange (FA)	P2-FA-10M	P2-FA-16M

Note: The foot (LS) type mounting bracket is provided as 1 pc./set.

How to order mounting bracket P40

Bore size / Mounting bracket	ø6	ø10	ø16
Foot (LS)	P2-LS-6-P40	P2-LS-10-P40	P2-LS-16-P40
Flange (FA)	P2-FA-6-P40	P2-FA-10-P40	P2-FA-16-P40

Note: The foot mounting bracket is provided as 1 pc./set.

Brackets for rotation stop (M)

Bore size (mm) / Mounting bracket	ø10	ø16
Foot (LS)	P2-LS-10M-P40	P2-LS-16M-P40
Flange (FA)	P2-FA-10M-P40	P2-FA-16M-P40

Note: The foot (LS) type mounting bracket is provided as 1 pc./set.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ high load	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ fine speed	Double acting/ low speed	Double acting/ heat resistance	Double acting/ rubber-air cushioned	Double acting/ rotation-stop (*6)	Double acting/ with valve
			K	SCPS3	SCPH3	D	F	O	T	*C	M	V
ø6 to 16	P4	●		○	○	○	○	○	○	○	○	
	P40	●		○	○	○	○	○	○	○	○	
	P41											
	P42	▲				▲	▲	▲		▲		

● : Standard ○ : Made to order ▲ : Contact CKD : Not applicable

How to order

Without switch

SCPD3 - 00 - 10 - 15 - O — P4 / P40 — Y

With switch

SCPD3-L - 00 - 10 - 15 - O - SW11 - R - P4 / P40 - Y

Code	Content
Ⓐ Model No.	
SCPD3	Double acting
SCPD3-L	Double acting/with switch

Ⓑ Mounting *1

Code	Content	Bore size (ø) 6	10	16
00	Basic	●	●	●
LS	Axial foot (one side) (rod side)	●	●	●
FA	Rod side flange	●	●	●
CB	Clevis bracket (pin and snap ring attached)		●	●

Ⓒ Bore size (mm)

Code	Content
6	ø6
10	ø10
16	ø16

Ⓓ Stroke length (mm)

Bore size	Stroke length	Available stroke length	Custom stroke length
ø6	**5 to 100**	**105**	In 1 mm increments
ø10	**5 to 200**	**210**	
ø16	**5 to 260**	**270**	

Ⓔ Head side port direction *1

Code	Content
Blank	Vertical
O	Axial direction

Ⓕ Switch model No. *2, *5

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓖ Switch quantity

Code	Content
R	1 on rod side
H	1 on head side
D	2
T	3

Ⓗ Accessory *3

Code	Content	Bore size (ø) 6	10	16
I	Rod eye		●	●
Y	Rod clevis (pin and snap ring attached)		●	●
B1	Eye bracket		●	●
B2	Clevis bracket		●	●

Precautions for model No. selection

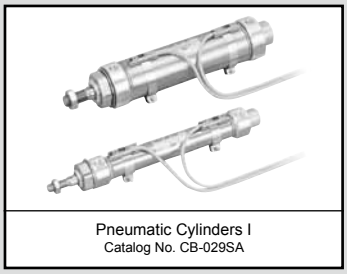
*1: "CB" mounting is not available when the port direction is "0" (axial direction).
*2: Magnet is not built into the type without switch.
*3: "I" and "Y" cannot be selected together.
*4: Copper and PTFE free as standard.
*5: Switches are shipped with the product.
*6: Bore size 6 of rotation-stop is not available.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)	Compatible tube O.D.		Page
		M5	4(ø4)	6(ø6)	
SC3W-M5-*-P4		●	●	●	232

Specify the compatible tube O.D. code for *.



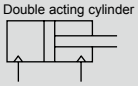
Pneumatic Cylinders I
Catalog No. CB-029SA

Small bore size cylinder
Double acting/single rod

CMK2 Series

●Bore size: ø20/ø25/ø32/ø40

JIS symbol ● Double acting cylinder single rod



RoHS CAD

Specifications

Descriptions		CMK2			
Bore size	mm	ø20	ø25	ø32	ø40
Actuation		Double acting			
Working fluid		Compressed air			
Max. working pressure	MPa	1.0			
Min. working pressure	MPa	0.1			
Proof pressure	MPa	1.6			
Ambient temperature	°C	-10 to 60 (no freezing)			
Port size		Rc1/8			
Stroke tolerance	mm	$^{+2.0}_{0}$ (Up to 200), $^{+2.4}_{0}$ (More than 200)			
Working piston speed	mm/s	50 to 500			
Cushion		Rubber cushion			
Lubrication		Not available			
Allowable absorbed energy	J	0.166	0.308	0.424	0.639

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø20	25/50/75/100/150/200/250/300	750	5
ø25			
ø32			
ø40			

*1: The custom stroke length is available in 1 mm increments.
*2: One side foot (LS) has the max. stroke length of 50 mm.

How to order switch mounting bracket

P4	CMK2-T-[Bore size]
P40	CMK2-T-[Bore size]-P40

How to order mounting bracket P4

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40
Axial foot (LB/LS)	M1-LB-20	M1-LB-30	M1-LB-30	M1-LB-30
Flange (FA/FB)	M1-FA-20	M1-FA-30	M1-FA-30	M1-FA-30
Trunnion (TA/TB)	M1-TA-20	M1-TA-30	M1-TA-30	M1-TA-40
Eye bracket (CA)	M1-CA-20	M1-CA-30	M1-CA-30	M1-CA-30
Clevis bracket (CB)	M1-CB-20	M1-CB-30	M1-CB-30	M1-CB-30

*1: Regarding mounting brackets, mounting nuts and toothed washers are attached with the axial foot type and flange type. Trunnions are supplied with mounting nuts.
*2: For axial foot types (two-sided), 2 sets of "M1-LB0** or [Bore size]" in the table above are required.

How to order mounting bracket P40

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40
Axial foot (LB/LS)	M1-LB-20-P40	M1-LB-25-P40	M1-LB-30-P40	M1-LB-30-P40
Flange (FA/FB)	M1-FA-20-P40	M1-FA-25-P40	M1-FA-30-P40	M1-FA-30-P40
Trunnion (TA/TB)	M1-TA-20-P40	M1-TA-25-P40	M1-TA-30-P40	M1-TA-30-P40
Eye bracket (CA)	M1-CA-20-P40	M1-CA-25-P40	M1-CA-30-P40	M1-CA-30-P40
Clevis bracket (CB)	M1-CB-20-P40	M1-CB-25-P40	M1-CB-30-P40	M1-CB-30-P40

*1: For axial foot types (two-sided), 2 sets of "M1-LB-** or [Bore size]-P40" in the table above are required.
*2: Regarding mounting brackets, mounting nuts are attached with the axial foot type, flange type and trunnion type.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ back to back	Stroke adjustable (push)	Stroke adjustable (pull)	Double acting/ fine speed	Double acting/ heat resistance	Double acting/ rubber-air cushioned	Double acting/ with speed controller	Double acting/ rotation-stop	Double acting/ coolant proof	Double acting/ low hydraulic	Double acting/ air cushion
			Q	S	SR	D	B	P	R	F	T	*C	Z	M	G2/G3	H	C
ø20 to 40	P4	●	●	○	○	○	○	○	○	○	▲	○	○	▲			○
	P40	●	●	○	○	○	○	○	○ *1	○	▲	○	▲	▲			○ *2
	P41	▲	▲			▲	▲	▲	▲ *1			▲	▲				▲ *2
	P42																

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

*1: Zinc plating is used for the sealing washer.
*2: Zinc plating is used for the cushion packing.

How to order

Without switch

CMK2 - 00 - 20 - 100 ——— P4 / P40 Y

With switch

CMK2 - 00 - 20 - 100 - SW11 - R - M P4 / P40 Y

Ⓐ Mounting *1
Ⓑ Bore size
Ⓒ Stroke length
Ⓓ Switch model No.
Ⓔ Switch quantity *4
Ⓕ Option
Ⓖ Accessory *2

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot (both sides)
LS	Axial foot (one side)
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CC	Eye bracket integrated
CB	Clevis bracket (pin and split washer pin attached)
TA	Rod side trunnion
TB	Head side trunnion
Ⓑ Bore size (mm)	
20	ø20 *5
25	ø25 *5
32	ø32
40	ø40

Ⓒ Stroke length (mm)

Bore size	Stroke length *2	Custom stroke length
ø20	**5 to 750**	**In 1 mm increments**
ø25	**5 to 750**	
ø32	**5 to 750**	
ø40	**5 to 750**	

Ⓓ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
Ⓕ Option	
M	Piston rod, rod nut material (stainless steel) *5
V	Boss cutoff
Ⓖ Accessory	
I	Rod eye
Y	Rod clevis (pin and split washer pin attached)
B2	Clevis bracket (pin and snap ring attached)

⚠ Precautions for model No. selection

*1: One side foot (LS) has the max. stroke length of 50 mm.
*2: "I" and "Y" cannot be selected together.
*3: Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for custom specifications of rod end form.
*4: Up to three switches can be installed. If four or more switches are required, switch mounting brackets for the extra switches must be prepared separately.
*5: For 20 or 25 bore size, the rod is stainless steel as standard and the rod nut is zinc chromate. If a stainless steel rod nut is necessary, select the "M" option code.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)	Compatible tube O.D.			Page
		1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-6-*-P4		●	●	●	●	232

Specify the compatible tube O.D. code for *.



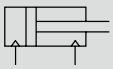
Pneumatic Cylinders I
Catalog No. CB-029SA

Round shaped cylinder Double acting/single rod

SCM Series

●Bore size: ø20/ø25/ø32/ø40/
ø50/ø63/ø80/ø100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCM							
Bore size mm		ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation		Double acting							
Working fluid		Compressed air							
Max. working pressure MPa		1.0							
Min. working pressure MPa		0.1				0.05			
Proof pressure MPa		1.6							
Ambient temperature °C		-10 to 60 (no freezing)							
Port size	With rubber cushion	Rc1/8				Rc1/4		Rc3/8	Rc1/2
	With air cushion	M5		Rc1/8		Rc1/4		Rc3/8	Rc1/2
Stroke tolerance mm	With rubber cushion	$^{+1.4}_{0}$ (to 1000)			$^{+1.4}_{0}$ (to 1500)	$^{+2.3}_{0}$ (to 1000), $^{+2.7}_{0}$ (to 1500)			
	With air cushion	$^{+1.4}_{0}$ (to 1000)			$^{+1.4}_{0}$ (to 1500)	$^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1500)			
Working piston speed mm/s		30 to 1000 (Operate within the allowable absorbed energy.)							
Cushion		Either rubber cushion or air cushion can be selected.							
Effective air cushion length mm		8.1	8.1	8.6	8.6	13.4	13.4	15.4	15.4
Lubrication		Not available							
Allowable absorbed energy J	With rubber cushion	0.1	0.2	0.5	0.9	1.6	1.6	3.3	5.8
	With air cushion	0.8	1.2	2.5	3.7	8.0	14.4	25.4	45.6
	Without cushion	-	-	-	-	0.057	0.057	0.112	0.153

*1: The values of "No cushion" of allowable absorbed energy are the allowable absorbed energy of either the head side for air cushion code "R" or the rod side for air cushion "H".
*2: Without any cushion, this product cannot absorb large energy generated by an external load. Provide a shock absorber on the outside.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø 20	25, 50, 75, 100, 125, 150, 200, 250, 300	1000	10
ø 25			
ø 32			
ø 40		1500	
ø 50			
ø 63			
ø 80			
ø100			

*1: The custom stroke length is available in 1 mm increments.

How to order switch mounting bracket

	[Rail] Mounting rail	[Band] Mounting bracket set + Band
P4	SCM-T-[Bore size] -[Stroke length]	SCM-Z-[Bore size]
P40		SCM-Z-[Bore size]-P40

*1: Indicate X if the stroke length exceeds 300 mm. If exceeding 300 mm, a short rail (with 100 mm switch adjustment travel distance) will be included per switch.
*2: If indicating X when ordering mounting rails only, order the same number of rails as that of applicable switches.

How to order mounting bracket P4

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCM-LB-20	SCM-LB-25	SCM-LB-32	SCM-LB-40	SCM-LB-50	SCM-LB-63	SCM-LB-80	SCM-LB-100
Flange (FA/FB)	SCM-FA-20	SCM-FA-25	SCM-FA-32	SCM-FA-40	SCM-FA-50	SCM-FA-63	SCM-FA-80	SCM-FA-100
Eye bracket (CA)	SCM-CA-20	SCM-CA-25	SCM-CA-32	SCM-CA-40	SCM-CA-50	SCM-CA-63	-	-
Clevis bracket (CB)	-	-	-	-	-	-	SCM-CB-80	SCM-CB-100
Trunnion (TA/TB)	SCM-TA-20	SCM-TA-25	SCM-TA-32	SCM-TA-40	SCM-TA-50	SCM-TA-63	-	-

How to order mounting bracket P40

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCM-LB-20-P40	SCM-LB-25-P40	SCM-LB-32-P40	SCM-LB-40-P40	SCM-LB-50-P40	SCM-LB-63-P40	SCM-LB-80-P40	SCM-LB-100-P40
Flange (FA/FB)	SCM-FA-20-P40	SCM-FA-25-P40	SCM-FA-32-P40	SCM-FA-40-P40	SCM-FA-50-P40	SCM-FA-63-P40	SCM-FA-80-P40	SCM-FA-100-P40
Eye bracket (CA)	SCM-CA-20-P40	SCM-CA-25-P40	SCM-CA-32-P40	SCM-CA-40-P40	SCM-CA-50-P40	SCM-CA-63-P40	-	-
Clevis bracket (CB)	-	-	-	-	-	-	SCM-CB-80-P40	SCM-CB-100-P40
Trunnion (TA/TB)	SCM-TA-20-P40	SCM-TA-25-P40	SCM-TA-32-P40	SCM-TA-40-P40	SCM-TA-50-P40	SCM-TA-63-P40	-	-

*1: All mounting brackets have mounting bolts attached.
*2: The foot mounting bracket is provided as 2 pcs./set.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Stroke adjustable (push)	Stroke adjustable (pull)	Double acting/ low speed	Double acting/ low friction	Double acting/ heat resistance	Double acting/ rubber scraper	Double acting/ tandem	Double acting/ direct mounting foot	Double acting/ rotation-stop
			Q	X	Y	D	B	W	P	R	O	U	T	G	W4	LD	M
ø20 to 100	P4	●	●	○	○	○	○	○	○	○	○	○	○	○ ø40 and over	○	○	▲
	P40	● *2	● *2	○	○	○ *2	○	○	○	○ *1	○	○	○ *2	○ *2 ø40 and over	○	○	▲
	P41	▲ *2	▲ *2			▲ *2	▲	▲	▲	▲ *1				▲ *2	▲	▲	
	P42	▲ *2	▲ *2			▲ *2	▲	▲	▲	▲ *1	▲	▲			▲	▲	

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

*1: Zinc plating is used for the sealing washer.
*2: Zinc plating is used for the cushion packing. (excluding ø50, ø63)

How to order

Without switch

SCM - LB - 40 B - 100 ——— M P4/P40 I

With switch

SCM - LB - 40 B - 100 - SW11 - D - ○ M P4/P40 I

Ⓐ Mounting *1
Ⓑ Bore size
Ⓒ Cushion
Ⓓ Stroke length
Ⓔ Switch model No. *3
Ⓕ Switch quantity
Ⓖ Switch mounting
Ⓗ Option *4
Ⓘ Accessory *5

Code	Content								
Ⓐ Mounting									
	Bore size (ø)	20	25	32	40	50	63	80	100
00	Basic	●	●	●	●	●	●	●	●
LB	Axial foot	●	●	●	●	●	●	●	●
FA	Rod side flange	●	●	●	●	●	●	●	●
FB	Head side flange	●	●	●	●	●	●	●	●
CA	Eye bracket	●	●	●	●	●	●		
CB	Clevis bracket (pin and snap ring attached)							●	●
TA	Rod side trunnion	●	●	●	●	●	●		
TB	Head side trunnion	●	●	●	●	●	●		

Ⓑ Bore size (mm)	
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

Ⓒ Cushion	
B	With two-sided air cushion
R	Rod side air cushioned
H	Head side air cushioned
D	With two-sided rubber cushion

Ⓓ Stroke length (mm)		
Bore size	**Stroke length *2**	**Custom stroke length**
ø20 to ø32	**10 to 1000**	**In 1 mm increments**
ø40 to ø100	**10 to 1500**	

Ⓔ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4 (when there are more than 4 switches, indicate switch quantity.)

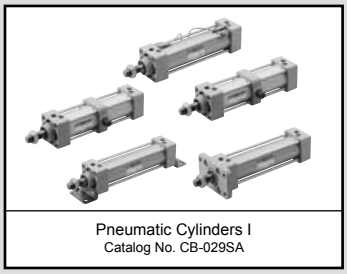
Ⓖ Switch mounting	
Blank	Rail method
Z	Band method

Ⓗ Option	
Q	Switch rail attached at shipment
M	Piston rod, rod nut material (stainless steel)

Ⓘ Accessory									
	Bore size (ø)	20	25	32	40	50	63	80	100
I	Rod eye	●	●	●	●	●	●	●	●
Y	Rod clevis (pin and snap ring attached)	●	●	●	●	●	●	●	●
B1	Eye bracket							●	●
B2	Clevis bracket	●	●	●	●	●	●		

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped with the product.
*2: Refer to the previous page for the min. stroke length.
*3: SW19, SWBW, SWCC, SWDK, SWDL, and SWDM cannot be mounted when the bore size is from ø20 to ø40 and switch mounting is the rail type.
*4: "Q" (switch rail attached at shipment) is not available for "Z" switch mounting.
*5: "I" and "Y" cannot be selected together.
*6: Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for custom specifications of rod end form.
*7: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.
*8: Speed controllers are available as a related product. Contact CKD for details.



Pneumatic Cylinders I
Catalog No. CB-029SA

Tie rod cylinder Double acting/single rod

SCG Series

●Bore size: ø32/ø40/ø50/ø63/ø80/ø100

JIS symbol 

Specifications

Descriptions		SCG					
Bore size mm		ø32	ø40	ø50	ø63	ø80	ø100
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0					
Min. working pressure MPa		0.05					
Proof pressure MPa		1.6					
Ambient temperature °C		-10 to 60 (no freezing)					
Port size		Rc1/8	Rc1/4		Rc3/8		Rc1/2
Stroke tolerance mm	With rubber cushion	$^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (1001 to 1500)					
	With air cushion	$^{+1.0}_{0}$ (to 360), $^{+1.4}_{0}$ (361 to 1000), $^{+1.8}_{0}$ (1001 to 1500)					
Working piston speed mm/s		30 to 1000 (Operate within the allowable absorbed energy.)					
Cushion		Either air cushion or rubber cushion can be selected					
Effective air cushion length mm		8.6	8.6	13.4	13.4	15.4	15.4
Lubrication		Not available					
Allowable absorbed energy J	With rubber cushion	0.5	0.9	1.6	1.6	3.3	5.8
	With air cushion	2.5	3.7	8.0	14.4	25.4	45.6

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)
ø32	25/50/75/100 150/200/250 300/350/400 450/500	600	700	1
ø40			800	
ø50			1200	
ø63			1200	
ø80		700	1400	
ø100		800	1500	

*1: The custom stroke length is available in 1 mm increments.
*2: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

How to order switch mounting bracket

P4	SCG-T-[Bore size]
P40	SCG-T-[Bore size]-P40

How to order mounting bracket P4

Bore size (mm) / Mounting bracket	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCG-LB-32	SCG-LB-40	SCG-LB-50	SCG-LB-63	SCG-LB-80	SCG-LB-100
Flange (FA) (FB) *1	SCG-FA-32	SCG-FA-40	SCG-FA-50	SCG-FA-63	SCG-FA-80	SCG-FA-100
Eye bracket (CA)	SCG-CA-32	SCG-CA-40	SCG-CA-50	SCG-CA-63	SCG-CA-80	SCG-CA-100
Clevis bracket (CB)	SCG-CB-32-P4	SCG-CB-40-P4	SCG-CB-50-P4	SCG-CB-63-P4	SCG-CB-80-P4	SCG-CB-100-P4

How to order mounting bracket P40

Bore size (mm) / Mounting bracket	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCG-LB-32-P40	SCG-LB-40-P40	SCG-LB-50-P40	SCG-LB-63-P40	SCG-LB-80-P40	SCG-LB-100-P40
Flange (FA) (FB) *1	SCG-FA-32-P40	SCG-FA-40-P40	SCG-FA-50-P40	SCG-FA-63-P40	SCG-FA-80-P40	SCG-FA-100-P40
Eye bracket (CA)	SCG-CA-32-P40	SCG-CA-40-P40	SCG-CA-50-P40	SCG-CA-63-P40	SCG-CA-80-P40	SCG-CA-100-P40
Clevis bracket (CB)	SCG-CB-32-P40	SCG-CB-40-P40	SCG-CB-50-P40	SCG-CB-63-P40	SCG-CB-80-P40	SCG-CB-100-P40

Note: The foot mounting bracket (LB) is provided as 2 pcs./set.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ double rod	Double acting/ low speed	Double acting/ low friction	Double acting/ rubber scraper	Double acting/ rotation-stop	Double acting/ coolant proof	Double acting/ anti-spatter adherence
			Q	D	O	U	G	M	G2/G3	G1/G4
ø32 to 100	P4	●	●	○	○	○	○			
	P40	● Note	● Note	○ Note	○	○	○ Note			
	P41	▲ Note	▲ Note	▲ Note			▲ Note			

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Note: Zinc plating is used for the cushion packing.

How to order

Without switch

SCG - LB - 40 B - 100 ——— M P4/P40 I

With switch

SCG - LB - 40 B - 100 - SW11 - R - M P4/P40 I

Model No.

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Cushion

Ⓓ Stroke length

Ⓔ Switch model No.

Ⓕ Switch quantity *2

Ⓖ Option

Ⓗ Accessory *3

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and split pin attached)
TA	Rod side trunnion
TB	Head side trunnion
TC	Intermediate trunnion
Ⓑ Bore size (mm)	
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100
Ⓒ Cushion	
B	Two-sided air cushion (basic)
D	Two-sided rubber cushion
Note: The rubber cushioned type has a longer total length than the air cushioned type.	

Ⓓ Stroke length (mm)

Bore size	Stroke length *2	Available stroke length	Custom stroke length
ø32	1 to 600	700	In 1 mm increments
ø40		800	
ø50		1200	
ø63			
ø80	1 to 700	1400	
ø100	1 to 800	1500	

Ⓔ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Code	Content
Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
Ⓖ Option	
M	Piston rod, rod nut material (stainless steel)
Ⓗ Accessory	
I	Rod eye
Y	Rod clevis (pin and split pin attached)
B1	Eye bracket
B2	Clevis bracket (pin and split pin attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped with the product. Trunnion types (TA, TB, TC) are assembled at shipment.

*2: When selecting TA or TB mounting, the switch quantity is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.

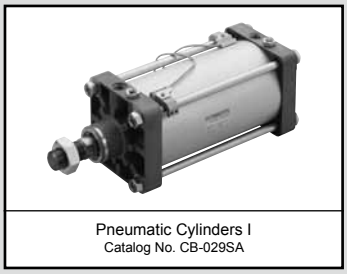
*3: "I" and "Y" cannot be selected together.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R) 1/8	1/4	3/8	1/2	Compatible tube O.D. 4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	Page
SC3W-6-*-P4		●				●	●	●			232
SC3W-8-*-P4			●				●	●	●		
SC3W-10-*-P4				●				●	●	●	
SC3W-15-*-P4					●				●	●	

Specify the compatible tube O.D. code for *.



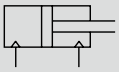
Pneumatic Cylinders I
Catalog No. CB-029SA

Medium bore size cylinder
Double acting/single rod/no-lubrication

SCS2 Series

●Bore size: ø125/ø140/ø160/ø180/ø200/ø250

JIS symbol



RoHS

Specifications

Descriptions		SCS2-N/SCS2-LN					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0					
Min. working pressure MPa		0.05					
Proof pressure MPa		1.6					
Ambient temperature °C		-5 to 60 (no freezing)					
Port size		Rc1/2	Rc3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 1200)					
Working piston speed mm/s		20 to 1000 (Operate within the absorbed energy.)					
Cushion		Air cushion					
Effective air cushion length mm		21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Not available					
Allowable absorbed energy J	Cushioned	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)	Trunnion min. stroke length (mm)
ø125	50/75/100/150/200/250/300	800	2000	1	23
ø140					25
ø160			1947		27
ø180		900	1525		28
ø200		945	945		28
ø250		751	751		28

*1: The custom stroke length is available in 1 mm increments.
*2: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

Compatibility table by variation

Applicable bore size		Double acting/ lubrication	Double acting/no lubrication	Double acting/ with switch	Stroke adjustable (push)	Double acting/ heat resistance	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Double acting/ low hydraulic	Double acting/ rubber scraper
			N	LN	P	T	D	B	W	H	G
ø125 to 250	P4		○	○	▲	▲	▲	▲	▲		▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

●No-lubrication without switch

SCS2-N — LB - 125 B - 50 ——— P4 Y

●No-lubrication with switch

SCS2-LN — LB - 125 B - 50 — SW11 - R - P4 Y

Model No. | Ⓐ Mounting *1 | Ⓑ Bore size | Ⓒ Cushion | Ⓓ Stroke length | Ⓔ Switch model No. | Ⓕ Switch quantity | Ⓖ Option *2 | Ⓗ Accessory *3

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring attached)
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion

Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250

Ⓒ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓒ Stroke length (mm)

Bore size	Stroke length	Available stroke length	Custom stroke length
ø125 to ø140	**1 to 800**	**2000**	**In 1 mm increments**
ø160	**1 to 800**	**1947**	
ø180	**1 to 900**	**1525**	
ø200	**1 to 945**	**945**	
ø250	**1 to 751**	**751**	

Ⓔ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4

Ⓖ Option		
M	Piston rod, rod nut material (stainless steel)	
Blank	Cushion needle position (standard)	Standard T R S
R	Cushion needle position R	
S	Cushion needle position S	
T	Cushion needle position T	

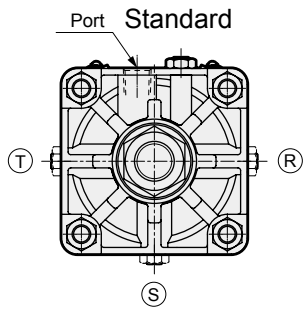
Ⓗ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)

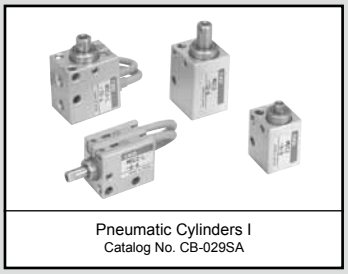
⚠ Precautions for model No. selection

*1: Supporting hole is available as made to order for ø125 to 160 only. Contact CKD for details.
*2: Check below for the cushion needle position indication.
*3: "I" and "Y" cannot be selected together.
*4: Made to order. Contact CKD for details.

Cushion needle position

(Needle position with the port on the top when viewed from the rod end)





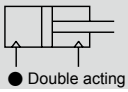
Pneumatic Cylinders I
Catalog No. CB-029SA

Compact direct mounting cylinder Double acting/single rod

MDC2 Series

●Bore size: ø6, ø8, ø10

JIS symbol



● Double acting

Specifications

Descriptions	MDC2/MDC2-L (with switch)		
Bore size mm	ø6	ø8	ø10
Actuation	Double acting		
Working fluid	Compressed air		
Max. working pressure MPa	0.7		
Min. working pressure MPa	0.15		0.1
Proof pressure MPa	1.05		
Ambient temperature °C	-10 to 60 (no freezing) *1		
Port size	M3		M5
Stroke tolerance mm	+0.5 0		
Working piston speed mm/s	50 to 500		
Cushion	No		
Lubrication	Not available		
Allowable absorbed energy J	This product cannot absorb the energy generated by an external load mounted on the cylinder. When using the product with no load, separately provide a shock absorber on the outside.		

*1: When using the proximity switch, use the cylinder at 40°C or less.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length with two switches (mm)		Min. stroke length with one switch (mm)	
			Reed switch	Proximity switch	Reed switch	Proximity switch
ø6	4/6/8	8	6	4(8)	4	4
ø8	4/6/8	8	8	4(8)	4	4
ø10	4/6/10	10	6	4(10)	4	4

*1: Products with stroke length other than standard stroke length are not available.
*2: For F2Y, F3Y or F3P, the min. stroke length will be the dimensions in ( ).

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Single acting/ push	Single acting/ pull	Double acting/ fine speed
			X	Y	F
ø6 to 10	P4	●	○	○	○
	P40	●	○	○	○
	P41				
	P42	▲			▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Without switch

MDC2 - 6 - 4 ——— P4 / P40

● With switch

MDC2-L - 6 - 4 - SW81 - R - P4 / P40

Ⓐ Model No.
Ⓑ Bore size
Ⓒ Stroke length
Ⓓ Switch model No. *1 *2 *3
Ⓔ Switch quantity

Code	Content	
Ⓐ Model No.		
MDC2	Double acting/single rod	Without switch
MDC2-L	Double acting/single rod	With switch
Ⓑ Bore size		
6	ø6	
8	ø8	
10	ø10	
Ⓒ Stroke length (mm)		
4	4(ø6 to ø10)	
6	6(ø6 to ø10)	
8	8(ø6, ø8)	
10	10(ø10)	
Ⓓ Switch model No.		
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.		
Ⓔ Switch quantity		
R	1 on rod side	
H	1 on head side	
D	2	

⚠ Precautions for model No. selection

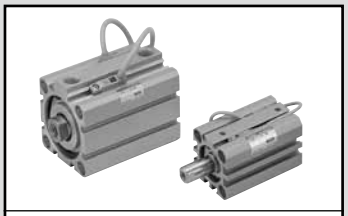
*1: Min. stroke length with two reed switches is 6 mm for ø6, 8 mm for ø8, or 6 mm for ø10.
*2: For MDC2 with reed switch, the cylinder cannot be mounted on a magnetic substance (iron plate, etc.). Otherwise, this could lead to switch detection malfunction.
*3: When using MDC2-L-6 with reed switch, use a non-magnetic bolt (stainless steel hexagon socket head cap screw, etc.) for cylinder mounting bolt. Otherwise, this could lead to switch detection malfunction.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.			Page
		M3	M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M3-*-P4		●			●			232
SC3W-M5-*-P4			●		●	●		

Specify the compatible tube O.D. code for *.

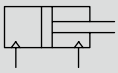


Pneumatic Cylinders I
Catalog No. CB-029SA

Compact cylinder Double acting/single rod

SSD2 Series

●Bore size: ø12/ø16/ø20/ø25/ø32/ø40/
ø50/ø63/ø80/ø100

JIS symbol 

RoHS CAD

Specifications

Descriptions		SSD2 SSD2-L (with switch)									
Bore size mm		ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation		Double acting									
Working fluid		Compressed air									
Max. working pressure MPa		1.0									
Min. working pressure MPa		0.1							0.05		
Proof pressure MPa		1.6									
Ambient temperature °C		-10 to 60 (no freezing)									
Port size		M5				Rc1/8 *1		Rc1/4		Rc3/8	
Stroke tolerance mm	With rubber cushion	$^{+2.0}_{0}$									
	Without cushion	$^{+1.0}_{0}$									
Working piston speed mm/s		50 to 500							50 to 300		
Cushion		With or without cushion can be selected									
Lubrication		Not available									
Allowable absorbed energy J	With rubber cushion	0.03	0.05	0.10	0.16	0.16	0.44	0.75	0.78	2.51	3.92
	Without cushion	0.004	0.01	0.016	0.021	0.025	0.092	0.1	0.12	0.27	0.56

*1: The ø32 bore size with a 5 mm stroke and without a switch has a port size of M5.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø12	5/10/15/20/25/30	30	1
ø16			
ø20	5/10/15/20/25/30/35/40/45/50	50	
ø25			
ø32	5/10/15/20/25/30/35/40/45/50/75/100	100	
ø40			
ø50	10/15/20/25/30/35/40/45/50/75/100		
ø63			
ø80			
ø100			

*1: If the stroke exceeds the max. stroke length, consult with CKD.

[Stroke length table]

Stroke length (mm)		Applicable bore size									
		12	16	20	25	32	40	50	63	80	100
Standard stroke length	5	●	●	●	●	●	●				
	10	●	●	●	●	●	●	●	●	●	●
	15	●	●	●	●	●	●	●	●	●	●
	20	●	●	●	●	●	●	●	●	●	●
	25	●	●	●	●	●	●	●	●	●	●
	30	●	●	●	●	●	●	●	●	●	●
	35			●	●	●	●	●	●	●	●
	40			●	●	●	●	●	●	●	●
	45			●	●	●	●	●	●	●	●
	50			●	●	●	●	●	●	●	●
	75					●	●	●	●	●	●
	100					●	●	●	●	●	●
Min. stroke length (mm) *1		1									
Max. stroke length (mm)		30		50		100					
Custom stroke length *2		In 1 mm increments									

1: Less than 5 mm for 1-color display switch and less than 10 mm for the 2-color display, off-delay, AC magnetic field proof, T1 or T8* switch are not available. Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for the min. stroke length with switch.

*2: The total length when using a custom stroke length is the same as that when using the next longer standard stroke length.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ single rod high load	Double acting/ single rod long stroke length	Single acting/ push	Single acting/ pull	Double acting/ rubber-air cushioned high load	Double acting/ position locking	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Double acting/ fine speed	Double acting/ low speed	Double acting/ low friction/ high load	Double acting/ heat resistance	Double acting/ packing fluoro rubber	Double acting/ rubber scraper	Double acting/ rotation-stop
			K		X	Y	KC	Q	D	B	W	F	0	KU	T1	T2	G	M
ø12 to 200	P4	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	▲
	P40	●	●	○	○	○	○	○	○	○	▲	○	○	○	○	○	○	▲
	P41	▲	▲	▲			▲	▲	▲	▲	▲						▲	
	P42	▲	▲	▲			▲	▲	▲	▲	▲	▲	▲	▲		▲		

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

How to order

Without switch

SSD2 - 12 ○ - 5 ——— N P4/P40 - LB - I

With switch

SSD2-L - 12 ○ - 10 - SW11 R - N P4/P40 - LB - I

Ⓐ Model No.
Ⓑ Bore size
Ⓒ Cushion
Ⓓ Stroke length
Ⓔ Switch model No. *1 *2 *3 *8 *9
Ⓕ Switch quantity
Ⓖ Option *4
Ⓗ Mounting bracket *5 *6
Ⓘ Accessory *7

Code	Content
Ⓐ Model No.	
SSD2	Double acting/single rod
SSD2-L	Double acting/single rod/with switch
Ⓑ Bore size (mm)	
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100
Ⓒ Cushion	
Blank	Without cushion
D	With rubber cushion
Ⓓ Stroke length (mm)	
	Refer to the stroke length table.
Ⓔ Switch model No.	
	Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.
Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓖ Option

	Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Blank	Rod end female thread	●	●	●	●	●	●	●	●	●	●
N	Rod end male thread	●	●	●	●	●	●	●	●	●	●
M *4	Piston rod material (stainless steel)	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●

Ⓗ Mounting bracket	
Blank	Without mounting bracket
LB	Axial foot
CB	Clevis bracket (pin and snap ring attached)
FA	Rod side flange
FB	Head side flange
Ⓘ Accessory (available when rod end male thread "N" is selected)	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)

⚠ Precautions for model No. selection

1: The T2YD switch cannot be mounted on the ø12 and ø16 bore sizes.
2: The T8 switch cannot be mounted on the ø12 to ø32 bore sizes.
*3: The F type switch can only be mounted on the piping port surface of bore sizes ø20 and ø25.
*4: Piston rod of ø12 to ø25 is stainless steel as standard. C type snap ring is stainless steel instead of steel. The rod end male thread nut is stainless steel.
*5: The mounting bracket is attached at shipment.
*6: The projection dimension of piston rod WF when LB or FA is selected is different from that of the standard. Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for details. The number of the specified protruding dimension will be added at the end of the model No. printed on the metal plate on the body.
*7: "I" and "Y" cannot be selected together.
*8: The F type switch with L type lead wire on ø20 models cannot be selected on stroke lengths 15 mm or under.
*9: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.
*10: 5 m lead wire for the F switch is a made to order product.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.				Page
		M5	1/8	1/4	4(ø4)	6(ø6)	8(ø8)	10(ø10)	
SC3W-M5-*-P4		●			●	●			232
SC3W-6-*-P4			●		●	●	●		
SC3W-8-*-P4				●		●	●	●	

Specify the compatible tube O.D. code for *.

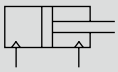


Pneumatic Cylinders I
Catalog No. CB-029SA

Compact cylinder Double acting/single rod (large bore size)

SSD2 Series

●Bore size: ø125/ø140/ø160/ø180/ø200

JIS symbol 

Specifications

Descriptions		SSD2 SSD2-L (with switch)				
Bore size mm		ø125	ø140	ø160	ø180	ø200
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0			0.7	
Min. working pressure MPa		0.05				
Proof pressure MPa		1.6			1.05	
Ambient temperature °C		-10 to 60 (no freezing)				
Port size		Rc3/8			Rc1/2	
Stroke tolerance mm		$^{+2.0}_{0}$				
Working piston speed mm/s		50 to 300			20 to 300	
Cushion		With rubber cushion (standard)				
Lubrication		Not available				
Allowable absorbed energy J	With rubber cushion	6.52	6.52	7.78	12.4	
	Without cushion	-				

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø125	10, 20, 30, 40, 50 75, 100, 125, 150 175, 200, 250, 300	300	1
ø140			
ø160			
ø180			
ø200			

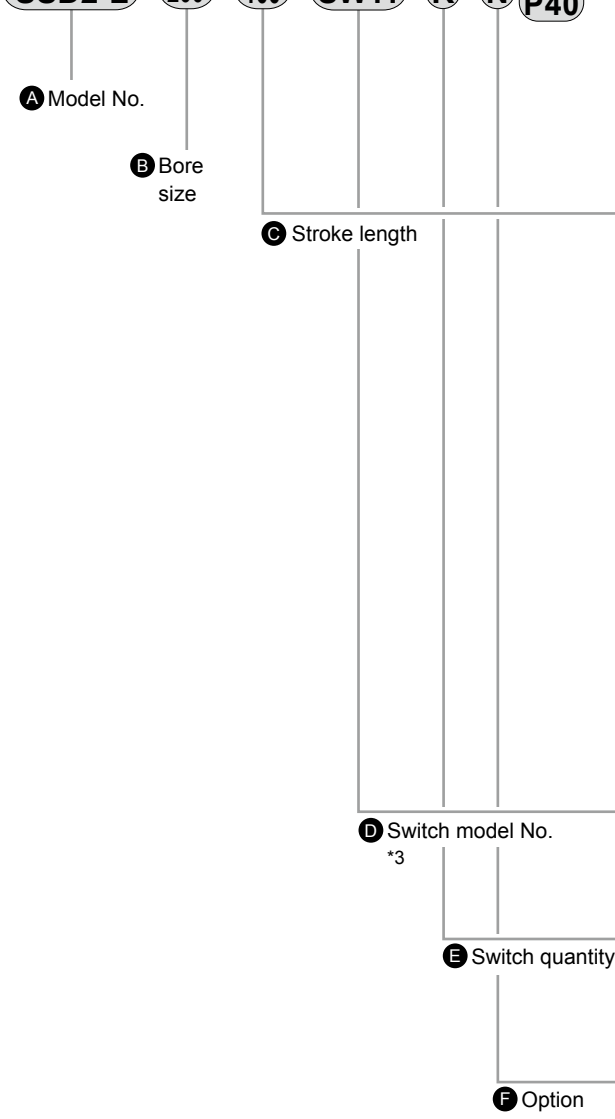
How to order

Without switch

SSD2 - **125** - **50** ——— **N** **P4** **P40**

With switch

SSD2-L - **200** - **100** - **SW11** - **R** - **N** **P4** **P40**



Code	Content
Ⓐ Model No.	
SSD2	Double acting/single rod
SSD2-L	Double acting/single rod/with switch

Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200

Ⓒ Stroke length (mm)		**Applicable bore size**				
		ø125	**ø140**	**ø160**	**ø180**	**ø200**
Standard stroke length	10	●	●	●	●	●
	20	●	●	●	●	●
	30	●	●	●	●	●
	40	●	●	●	●	●
	50	●	●	●	●	●
	75	●	●	●	●	●
	100	●	●	●	●	●
	125	●	●	●	●	●
	150	●	●	●	●	●
	175	●	●	●	●	●
	200	●	●	●	●	●
	250	●	●	●	●	●
	300	●	●	●	●	●
Min. stroke length (mm) *1		1				
Max. stroke length (mm)		300				
Custom stroke length *2		In 1 mm increments				

Ⓓ Switch model No.
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓕ Option	
Blank	Rod end female thread
N	Rod end male thread

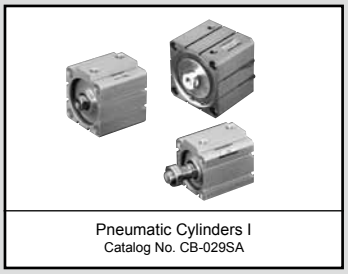
⚠ Precautions for model No. selection

1: Less than 5 mm for 1-color display switch and less than 10 mm for the 2-color display, off-delay, AC magnetic field proof, T1 or T8* switch are not available. Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for the number of installed switches and the minimum stroke length.
*2: Total length dimension with custom stroke length is handled as the custom stroke dedicated length.
*3: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

Related products

Speed controller												
Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		1/8	1/4	3/8	1/2	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-10-*-P4				●				●	●	●	232
SC3W-15-*-P4					●				●	●	

Specify the compatible tube O.D. code for *.



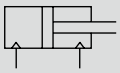
Pneumatic Cylinders I
Catalog No. CB-029SA

Compact cylinder Double acting/single rod

SSD Series

●Bore size: ø12/ø16/ø20/ø25/ø32/ø40/ø50/
ø63/ø80/ø100/ø125/ø140/ø160

JIS symbol



RoHS CAD

Specifications

Descriptions		SSD SSD-L (with switch)												
Bore size mm		ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160
Actuation		Double acting												
Working fluid		Compressed air												
Max. working pressure MPa		1.0												
Min. working pressure MPa		0.1							0.05					
Proof pressure MPa		1.6												
Ambient temperature °C		-10 to 60 (no freezing)												
Port size		M5				Rc 1/8		Rc 1/4	Rc 3/8					
Stroke tolerance mm	With rubber cushion	$^{+2.0}_{0}$												
	Without cushion	$^{+1.0}_{0}$										-		
Working piston speed mm/s		50 to 500							50 to 300					
Cushion		With or without cushion can be selected										With rubber cushion (standard)		
Lubrication		Not available												
Allowable absorbed energy J	With rubber cushion	0.03	0.05	0.10	0.16	0.16	0.44	0.75	0.78	2.51	3.92	6.52	6.52	7.78
	Without cushion	0.004	0.01	0.016	0.021	0.025	0.092	0.1	0.12	0.27	0.56	-		

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø12	5, 10, 15, 20, 25, 30	*1) 30	1
ø16			
ø20	5, 10, 15, 20, 25, 30, 40, 50	*1) 50	
ø25			
ø32			
ø40			
ø50			
ø63	5, 10, 20, 30, 40, 50	*1) 50	
ø80			
ø100			
ø125	10, 20, 30, 40 50, 60, 70, 80 90, 100	300	
ø140			
ø160			

*1) For ø12 to ø100, if the standard stroke is exceeded, the high load type is used. Refer to page 19 for specifications.

[Stroke length table]

Stroke length (mm)	Applicable bore size												
	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160
Standard stroke length 5	●	●	●	●	●	●	●	●	●	●			
10	●	●	●	●	●	●	●	●	●	●	●	●	●
15	●	●	●	●	●	●	●						
20	●	●	●	●	●	●	●	●	●	●	●	●	●
25	●	●	●	●	●	●	●						
30	●	●	●	●	●	●	●	●	●	●	●	●	●
40			●	●	●	●	●	●	●	●	●	●	●
50			●	●	●	●	●	●	●	●	●	●	●
60											●	●	●
70											●	●	●
80											●	●	●
90											●	●	●
100											●	●	●
Min. stroke length (mm) *1	1												
Max. stroke length (mm)	30	50									300		
Custom stroke length *2	In 1 mm increments												

If the standard stroke is exceeded, the high load type (K) is used. Refer to page 19 for specifications and "Pneumatic Cylinders I (Catalog No. CB-029SA)" for details.

1: Less than 5 mm for 1-color display switch and less than 10 mm for the 2-color display, off-delay, AC magnetic field proof, T1 or T8* switch are not available. Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for the number of installed switches and the minimum stroke length.

*2: Total length when using a custom stroke length is different between ø12 to ø100 and ø125 to ø160 as below. Please be careful. The dimensions of the total length with the custom stroke length [ø12 to ø100] are handled the same as the next longer standard stroke length. Total length dimension with custom stroke length [ø125 to ø160] is handled as the custom stroke dedicated length.

How to order mounting bracket P4

Bore size (mm) / Mounting bracket	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160
Foot (LB)	SSD-LB-12	SSD-LB-16	SSD-LB-20	SSD-LB-25	SSD-LB-32	SSD-LB-40	SSD-LB-50	SSD-LB-63	SSD-LB-80	SSD-LB-100	SSD-LB-125	SSD-LB-140	SSD-LB-160
Foot (LB2)	SSD-LB2-12	SSD-LB2-16	SSD-LB2-20	SSD-LB2-25	SSD-LB2-32	SSD-LB2-40	SSD-LB2-50	SSD-LB2-63	SSD-LB2-80	SSD-LB2-100	-	-	-
Flange (FA/FB)	SSD-FA-12	SSD-FA-16	SSD-FA-20	SSD-FA-25	SSD-FA-32	SSD-FA-40	SSD-FA-50	SSD-FA-63	SSD-FA-80	SSD-FA-100	-	-	-
Clevis bracket (CB)	SSD-CB-12	SSD-CB-16	SSD-CB-20	SSD-CB-25	SSD-CB-32	SSD-CB-40	SSD-CB-50	SSD-CB-63	SSD-CB-80	SSD-CB-100	SSD-CB-125	SSD-CB-140	SSD-CB-160
Clevis bracket (CB2)	SSD-CB2-12	SSD-CB2-16	SSD-CB2-20	SSD-CB2-25	SSD-CB2-32	SSD-CB2-40	SSD-CB2-50	SSD-CB2-63	SSD-CB2-80	SSD-CB2-100	-	-	-

*1: The foot mounting bracket is provided as 2 pcs./set.

*2: Specify -P40 at the end of the model No. for P40 Series mounting brackets.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Double acting/ fine speed	Double acting/ low speed	Double acting/ heat resistance	Double acting/ rubber scraper	Double acting/ anti-spatter adherence	Double acting/ coolant proof	Double acting/ double rod/ anti-spatter adherence	Double acting/ rotation-stop
			Q	X	Y	D	B	W	F	O	T	G	G1/G4	G2/G3	DG1 DG4	M
ø12 to 160	P4	●	●	○	○	○	○	○	○	○	○	○				▲
	P40	●	●	○	○	○	○	○	○	○	○	○				▲
	P41	▲	▲			▲	▲	▲				▲				
	P42	▲	▲			▲	▲	▲	▲	▲						

● : Standard
○ : Made to order
▲ : Contact CKD
▭ : Not applicable

How to order

Without switch

SSD – 12 ◯ - 5 ——— N P4/P40 - LB - I

With switch

SSD-L - 12 ◯ - 5 - SW11 - R - N P4/P40 - LB - I

2-color display/off-delay, with T1* switch (ø12/ø16 only)

SSD-L1 - 12 ◯ - 10 - SW31 - R - N P4/P40 - LB - I

Ⓐ Model No.
Ⓑ Bore size
Ⓒ Cushion
Ⓓ Stroke length
Ⓔ Switch model No.
*1
*2
*9
Ⓕ Switch quantity
Ⓖ Option
*3
Ⓗ Mounting bracket
*5
*6
*10
Ⓘ Accessory
*6

Code	Content
Ⓐ Model No.	
SSD	Double acting/single rod
SSD-L	Double acting/single rod/with switch
SSD-L1	ø12, ø16 2-color display, off-delay, with T1* switch
Ⓑ Bore size (mm)	
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100
125	ø125
140	ø140
160	ø160
Ⓒ Cushion	
Blank	Without cushion (with rubber cushion for ø125 and over)
D	With rubber cushion (ø12 to ø100)
Ⓓ Stroke length (mm)	
Refer to the stroke length table.	
Ⓔ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓖ Option

	Bore size (mm)	12	16	20	25	32	40	50	63	80	100	125	140	160
Blank	Rod end female thread	●	●	●	●	●	●	●	●	●	●	●	●	●
N	Rod end male thread	●	●	●	●	●	●	●	●	●	●	●	●	●
P6	Copper and PTFE free specifications	Supported as standard							●	●	●			
S	Dedicated unit for custom stroke length	●	●	●	●	●	●	●	●	●	●	Supported as standard		
M	Piston rod material (stainless steel)	●	●	●	●	●	●	●	●	●	●			

Ⓗ Mounting bracket	
LB	Axial foot
LB2	Axial foot (compact)
CB	Clevis bracket (pin and snap ring attached)
CB2	Clevis bracket (compact) (pin and snap ring attached)
FA	Rod side flange
FB	Head side flange

Ⓘ Accessory (available when rod end male thread "N" is selected)	
I	Rod eye
I2	Rod eye (compact)
Y	Rod clevis (pin and snap ring attached)
Y2	Rod clevis (compact) (pin and snap ring attached)

⚠ Precautions for model No. selection

*1: Strong magnetic field proof switch cannot be installed on ø12 and ø16.
2: T8 switch cannot be installed on ø12 to ø32.
*3: Piston rod of ø12 to ø25 is stainless steel as standard. C type snap ring is stainless steel instead of steel. The rod end male thread nut is stainless steel.
*4: The mounting bracket is attached at shipment.
*5: The projection dimension of piston rod WF when LB2 or FA is selected is different from that of the standard. Dimensions are in "Pneumatic Cylinders I (Catalog No. CB-029SA)" and the number of the specified projection dimension will be added at the end of the model No. printed on the metal plate on the body.
*6: "I" and "Y" cannot be selected together.
*7: Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for custom specifications of rod end form.
*8: Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for combinations of variations and options.
*9: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.
*10: Only LB and CB are available for ø125 to ø160.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M5-*-P4		●				●	●				232
SC3W-6-*-P4			●			●	●	●			
SC3W-8-*-P4				●			●	●	●		
SC3W-10-*-P4					●			●	●	●	

Specify the compatible tube O.D. code for *.



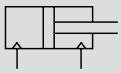
Pneumatic Cylinders I
Catalog No. CB-029SA

Compact cylinder Double acting/single rod/high load

SSD-K Series

●Bore size: ø12/ø16/ø20/ø25/ø32/
ø40/ø50/ø63/ø80/ø100

JIS symbol



RoHS CAD

Specifications

Descriptions	SSD-K SSD-KL (with switch)									
Bore size mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation	Double acting									
Working fluid	Compressed air									
Max. working pressure MPa	1.0									
Min. working pressure MPa	0.1							0.05		
Proof pressure MPa	1.6									
Ambient temperature °C	-10 to 60 (no freezing)									
Port size	M5				Rc1/8		Rc1/4		Rc3/8	
Stroke tolerance mm	+2.0 0									
Working piston speed mm/s	50 to 500							50 to 300		
Cushion	Rubber cushion									
Lubrication	Not available									
Allowable absorbed energy J	0.04	0.09	0.16	0.16	0.40	0.63	0.98	1.56	2.51	3.92

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø12 ø16	5, 10, 15, 20, 25, 30, 40, 50	*2) 100	1
ø20		*2) 200	
ø25 ø32 ø40 ø50	10, 15, 20, 25, 30, 40 50, 60, 70, 80, 90, 100	*2) 300	
ø63 ø80 ø100	10, 20, 30, 40, 50 60, 70, 80, 90, 100		

*1) The custom stroke length is available in 1 mm increments. However, the total length is the same as that of the next longer standard stroke length.
*2) Stroke length over standard to maximum is available in increments of 10.
(Example) ø16: 60, 70, 80, 90, 100
*3) From 101 to 200 for ø20, 151 to 300 for ø25 to ø50, or 201 to 300 for ø63 to ø100, internal structure and total length are different in some products.

[Stroke length table]

Stroke length (mm)		Applicable bore size									
		ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Standard stroke length	5	●	●	●							
	10	●	●	●	●	●	●	●	●	●	●
	15	●	●	●	●	●	●	●			
	20	●	●	●	●	●	●	●	●	●	●
	25	●	●	●	●	●	●	●			
	30	●	●	●	●	●	●	●	●	●	●
	40	●	●	●	●	●	●	●	●	●	●
	50	●	●	●	●	●	●	●	●	●	●
	60				●	●	●	●	●	●	●
	70				●	●	●	●	●	●	●
	80				●	●	●	●	●	●	●
	90				●	●	●	●	●	●	●
	100				●	●	●	●	●	●	●
Min. stroke length (mm) *1		1									
Max. stroke length (mm)		100		200	300						
Custom stroke length *2		In 1 mm increments									

1: Less than 5 mm with 1-color display switch and less than 10 mm with the 2-color display, off-delay, AC magnetic field proof, T1 or T8* switch are not available. Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for the number of installed switches and the minimum stroke length.
*2: The total length is the same as that of the next longer standard stroke length.

How to order mounting bracket P4

Bore size (mm) / Mounting bracket	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SSD-LB-12	SSD-LB-16	SSD-LB-20	SSD-LB-25	SSD-LB-32	SSD-LB-40	SSD-LB-50	SSD-LB-63	SSD-LB-80	SSD-LB-100
Foot (LB2)	SSD-LB2-12	SSD-LB2-16	SSD-LB2-20	SSD-LB2-25	SSD-LB2-32	SSD-LB2-40	SSD-LB2-50	SSD-LB2-63	SSD-LB2-80	SSD-LB2-100
Flange (FA/FB)	SSD-FA-12	SSD-FA-16	SSD-FA-20	SSD-FA-25	SSD-FA-32	SSD-FA-40	SSD-FA-50	SSD-FA-63	SSD-FA-80	SSD-FA-100
Clevis bracket (CB)	SSD-CB-12	SSD-CB-16	SSD-CB-20	SSD-CB-25	SSD-CB-32	SSD-CB-40	SSD-CB-50	SSD-CB-63	SSD-CB-80	SSD-CB-100
Clevis bracket (CB2)	SSD-CB2-12	SSD-CB2-16	SSD-CB2-20	SSD-CB2-25	SSD-CB2-32	SSD-CB2-40	SSD-CB2-50	SSD-CB2-63	SSD-CB2-80	SSD-CB2-100

*1: The foot mounting bracket is provided as 2 pcs./set.
*2: Specify -P40 at the end of the model No. for P40 Series mounting brackets.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ fine speed	Double acting/ low friction	Double acting/ rubber-air cushioned	Double acting/ rubber scraper	Double acting/ anti-spatter adherence	Double acting/ coolant proof
			F	U	*C	G	G1/G4	G2/G3
ø12 to 160	P4	●	○	○	○	○		
	P40	●	○	○	○	○		
	P41	▲			▲	▲		
	P42	▲	▲	▲	▲			

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

SSD-K - 12 - 5 ——— N P4/P40 - LB - I

With switch

SSD-KL - 12 - 5 - SW11 - R - N P4/P40 - LB - I

Ⓐ Bore size

Ⓑ Stroke length

Ⓒ Switch model No. *1 *8

Ⓓ Switch quantity

Ⓔ Option *2

Ⓕ Mounting bracket *3 *4

Ⓖ Accessory *5

Code	Content
Ⓐ Bore size (mm)	
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100
Ⓑ Stroke length (mm)	
Refer to the stroke length table.	
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Option

Bore size (ø)		12	16	20	25	32	40	50	63	80	100
Blank	Rod end female thread	●	●	●	●	●	●	●	●	●	●
N	Rod end male thread	●	●	●	●	●	●	●	●	●	●
S	Dedicated unit for custom stroke length	●	●	●	●	●	●	●	●	●	●
M	Piston rod material (stainless steel)	●	●	●	●	●	●	●	●	●	●

Ⓕ Mounting bracket	
LB	Axial foot
LB2	Axial foot (compact)
CB	Clevis bracket (pin and snap ring attached)
CB2	Clevis bracket (compact) (pin and snap ring attached)
FA	Rod side flange
FB	Head side flange

Ⓖ Accessory (available when rod end male thread "N" is selected)	
I	Rod eye
I2	Rod eye (compact)
Y	Rod clevis (pin and snap ring attached)
Y2	Rod clevis (compact) (pin and snap ring attached)

⚠ Precautions for model No. selection

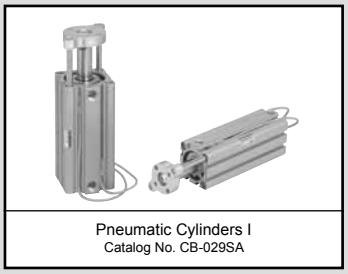
1: AC magnetic field proof switch and T8 switch cannot be installed on ø12 and ø16.
*2: Piston rod of ø12 to ø25 is stainless steel as standard. C type snap ring is stainless steel instead of steel. The rod end male thread nut is stainless steel.
*3: The mounting bracket is attached at shipment.
*4: The projection dimension of piston rod WF when LB2 or FA is selected is different from that of the standard. Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for dimensions. The number of the specified protruding dimension will be added at the end of the model No. printed on the metal plate on the body.
*5: "I" and "Y" cannot be selected together.
*6: Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for custom specifications of rod end form.
*7: Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for combinations of variations and options.
*8: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M5-*-P4		●				●	●				232
SC3W-6-*-P4			●			●	●	●			
SC3W-8-*-P4				●			●	●	●		
SC3W-10-*-P4					●			●	●	●	

Specify the compatible tube O.D. code for *.

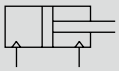


Pneumatic Cylinders I
Catalog No. CB-029SA

Guided super compact cylinder Double acting/single rod

SSG Series

●Bore size: ø12/ø16/ø20/ø25/ø32/ø40/ø50/ø63/ø80/ø100

JIS symbol 

RoHS CAD

Specifications

Descriptions			SSG									
Bore size		mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation			Double acting									
Working fluid			Compressed air									
Max. working pressure		MPa	1.0									
Min. working pressure		MPa	0.15				0.1					
Proof pressure		MPa	1.6									
Ambient temperature		°C	-10 to 60 (no freezing)									
Port size			M5				Rc1/8 *1		Rc1/4		Rc3/8	
Stroke tolerance	mm	Without cushion	$^{+1.0}_{0}$									
		With rubber cushion	$^{+2.0}_{0}$									
Working piston speed		mm/s	50 to 500						50 to 300			
Cushion			With a rubber cushion or without can be selected.									
Lubrication			Not available									
Allowable absorbed energy	J	Without cushion	0.004	0.01	0.016	0.021	0.025	0.092	0.1	0.12	0.27	0.56
		With rubber cushion	0.03	0.05	0.10	0.16		0.44	0.75	0.78	2.51	3.92

*1: The ø32 bore size with a 5 mm stroke and without a switch has a port size of M5.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø12	5/10/15/20/25/30	30	1
ø16			
ø20	5/10/15/20/25/30/35/40/45/50	50	
ø25			
ø32	5/10/15/20/25/30/35/40/45/50/75/100	100	
ø40			
ø50	10/15/20/25/30/35/40/45/50/75/100		
ø63			
ø80			
ø100			

*1: The custom stroke length is available in 1 mm increments.
The dimensions of the total length with the custom stroke length are handled the same as the next longer standard stroke length.

Related products

Speed controller												
Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M5-*-P4		●				●	●				232
SC3W-6-*-P4			●			●	●	●			
SC3W-8-*-P4				●			●	●	●		
SC3W-10-*-P4					●		●	●	●	●	

Specify the compatible tube O.D. code for *.

Compatibility table by variation

Applicable bore size		Double acting
ø12 to 100	P4	●
	P40	●
	P41	
	P42	

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

SSG-12D-10-P4/P40

With switch

SSG-L-12D-10-SW11-R-P4/P40

2-color display/off-delay, with T1* switch (ø12/ø16 only)

SSG-L1-12D-10-SW31-R-P4/P40

Ⓐ Model No.

Ⓑ Bore size

Ⓒ Cushion

Ⓓ Stroke length

The custom stroke length is available in increments of 1 mm. (Less than 5 mm with switch is not available) Note that the dimensions of the total length with the custom stroke length are handled the same as the longer standard stroke length.

Ⓔ Switch model No.
*1
*2
*3
*4
*5

Ⓕ Switch quantity

Code	Content
Ⓐ Model No.	
SSG	Double acting/single rod
SSG-L	Double acting/single rod/with switch
SSG-L1	ø12, ø16 2-color display, off-delay, with T1* switch

Ⓑ Bore size (mm)	
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

Ⓒ Cushion	
Blank	Without cushion
D	With two-sided rubber cushion

Ⓓ Stroke length (mm)

		Bore size (ø)									
		12	**16**	**20**	**25**	**32**	**40**	**50**	**63**	**80**	**100**
5	5	●	●	●	●	●	●				
10	10	●	●	●	●	●	●	●	●	●	●
15	15	●	●	●	●	●	●	●	●	●	●
20	20	●	●	●	●	●	●	●	●	●	●
25	25	●	●	●	●	●	●	●	●	●	●
30	30	●	●	●	●	●	●	●	●	●	●
35	35			●	●	●	●	●	●	●	●
40	40			●	●	●	●	●	●	●	●
45	45			●	●	●	●	●	●	●	●
50	50			●	●	●	●	●	●	●	●
75	75					●	●	●	●	●	●
100	100					●	●	●	●	●	●

Ⓔ Switch model No.
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

⚠ Precautions for model No. selection

1: The T0 and T5* switches cannot be mounted on the 5 mm stroke length of the ø12 and ø16 bore sizes.
2: The T2YD switch cannot be mounted on the ø12 and ø16 bore sizes.
3: The T8 switch cannot be mounted on the ø12 to ø32 bore sizes.
*4: The F type switch can only be mounted on the piping port surface of bore size ø25.
*5: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.



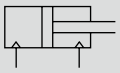
Pneumatic Cylinders I
Catalog No. CB-029SA

Small compact cylinder Double acting/single rod

MSD Series

●Bore size: ø6/ø8

JIS symbol



Double acting

Specifications

Descriptions	MSD MSD-L (with switch)
Bore size mm	ø6, ø8
Actuation	Double acting
Working fluid	Compressed air
Max. working pressure MPa	1.0
Min. working pressure MPa	0.15
Proof pressure MPa	1.6
Ambient temperature °C	-10 to 60 (no freezing)
Port size	M3
Stroke tolerance mm	+0.5 0
Working piston speed mm/s	50 to 500
Cushion	No
Lubrication	Not available
Allowable absorbed energy J	This product cannot absorb the energy generated by an external load mounted on the cylinder. When using the product with no load, separately provide a shock absorber on the outside.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length with two switches (mm)		Min. stroke length with one switch (mm)	
			Reed switch	Proximity switch	Reed switch	Proximity switch
ø6	5/10/15/20/25/30	30	10	5(10)	5	5
ø8	5/10/15/20/25/30	30	10	5(10)	5	5

*1: Products with stroke length other than standard stroke length are not available.
*2: For F2Y, F3Y or F3P, the min. stroke length will be the dimensions in ( ).

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ single rod high load	Single acting/ push	Single acting/ pull	Double acting/ fine speed
			K	X	Y	F
MSD ø6 to 16	P4	●	●	○	○	○
	P40	●	●	○	○	○

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Without switch

MSD - 6 - 5 ——— R - P4 / P40

● With switch

MSD-L - 6 - 5 - SW81 - R - R - P4 / P40

Ⓐ Model No.
Ⓑ Bore size
Ⓒ Stroke length
Ⓓ Switch model No. *1
Ⓔ Switch quantity
Ⓕ Piping port position *2

Code	Content	
Ⓐ Model No.		
MSD	Double acting/single rod	Without switch
MSD-L		With switch
Ⓑ Bore size (mm)		
6	ø6	
8	ø8	
Ⓒ Stroke length (mm)		
5	5	
10	10	
15	15	
20	20	
25	25	
30	30	
Ⓓ Switch model No.		
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.		
Ⓔ Switch quantity		
R	1 on rod side	
H	1 on head side	
D	2	
Ⓕ Piping port position		
Blank	Body side surface port	
R	Rear common port	

⚠ Precautions for model No. selection

*1: For ø6 or ø8 with switch, use a non-magnetic (stainless steel, etc.) mounting bolt.
*2: For rear common port, body side installation is possible. Note that 2 bolts are used for rod side mounting and head side mounting.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.			Page
		M3	M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M3-*-P4		●			●			232

Specify the compatible tube O.D. code for *.



Pneumatic Cylinders I
Catalog No. CB-029SA

Small guided compact cylinder
Double acting/guided/with switch

MSDG-L Series

●Bore size: ø6/ø8/ø12/ø16

RoHS CAD

Specifications

Descriptions		MSDG-L (with switch)			
Bore size mm		ø6	ø8	ø12	ø16
Actuation		Double acting			
Working fluid		Compressed air			
Max. working pressure MPa		1.0			
Min. working pressure MPa		0.2	0.15	0.1	
Proof pressure MPa		1.6			
Ambient temperature °C		5 to 60			
Port size	Body side surface port	M3		M5	
	Rear common port	M3		M3	
Stroke tolerance mm		+2.0 0			
Working piston speed mm/s		50 to 500			
Cushion		With rubber cushion			
Lubrication		Not available			
Allowable absorbed energy J		0.004	0.014	0.044	0.110

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length with two switches (mm)		Min. stroke length with one switch (mm)	
			Reed switch	Proximity switch	Reed switch	Proximity switch
ø6	5/10/15/20/25/30	30	10	5	5	5
ø8	5/10/15/20/25/30	30	10	5	5	5
ø12	5/10/15/20/25/30	30	10	5	5	5
ø16	5/10/15/20/25/30	30	10	5	5	5

Note: Products with stroke length other than standard stroke length are not available.

Compatibility table by variation

Applicable bore size		Double acting/ guided	Double acting/ guided/ fine speed
			F
MSDG ø6 to 16	P4	●	○
	P40	●	○

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● With switch

MSDG-L - 6 - 30 - SW81 - D - R P4/P40

Double acting/ guided

Ⓐ Bore size

Code	Content
Ⓐ Bore size (mm)	
6	ø6
8	ø8
12	ø12
16	ø16

Ⓑ Stroke length

Code	Content
Ⓑ Stroke length (mm)	
5	5
10	10
15	15
20	20
25	25
30	30

Ⓒ Switch model No. *1 *2

Code	Content
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	

Ⓓ Switch quantity

Code	Content
Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Piping port position *3

Code	Content
Ⓔ Piping port position	
Blank	Body side surface port
R	Rear common port

⚠ Precautions for model No. selection

*1: For ø6 or ø8 with switch, use a non-magnetic (stainless steel, etc.) mounting bolt.
*2: For ø12 or ø16 with proximity switch, use a non-magnetic (stainless steel, etc.) through bolt.
*3: For rear common port, body side installation is possible.

Related products

Speed controller								
Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.			Page
		M3	M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M3-*-P4		●			●			232
SC3W-M5-*-P4			●		●	●		

Specify the compatible tube O.D. code for *.



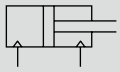
Pneumatic Cylinders I
Catalog No. CB-029SA

Compact cylinder Double acting/single rod

SMG Series

●Bore size: ø6/ø10/ø16/ø20/ø25/ø32

JIS symbol



Double acting

Specifications

Descriptions	SMG SMG-L (with switch)					
Bore size mm	ø6	ø10	ø16	ø20	ø25	ø32
Actuation	Double acting					
Working fluid	Compressed air					
Max. working pressure MPa	0.7					
Min. working pressure MPa	0.12	0.06		0.05		
Proof pressure MPa	1.05					
Ambient temperature °C	-10 to 60 (no freezing)					
Port size	M5					Rc1/8
Stroke tolerance mm	+1.5 0					
Working piston speed mm/s	50 to 500					
Cushion	With rubber cushion					
Lubrication	Not available					
Allowable absorbed energy J	0.012	0.036	0.1	0.1	0.19	0.5

Stroke length

Bore size (mm)	Standard stroke length (mm)	Min. stroke length (mm)
ø 6	5, 10, 15, 20, 25, 30, 40, 50, 60	5
ø10		
ø16		
ø20	5, 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100	
ø25		
ø32		

*1: The custom stroke length is available in 5 mm increments.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Single acting/ push	Single acting/ pull	Double acting/ fine speed	Double acting/ rotation-stop
			X	Y	F	M
ø6 to 32	P4	●	○	○	▲	○
	P40	●	○	○	▲	○
	P41					
	P42	▲			▲	▲

● : Standard ○ : Made to order ▲ : Contact CKD : Not applicable

How to order

Without switch

SMG - 32 - 25 ——— P4 / P40

With switch

SMG-L - 32 - 25 - SW51 - R - P4 / P40

Code	Content
Ⓐ Model No.	
SMG	Double acting
SMG-L	Double acting/with switch

Ⓐ Model No.

Ⓑ Bore size (mm)	
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

Ⓑ Bore size

Ⓒ Stroke length (mm)		Applicable bore size					
		ø6	ø10	ø16	ø20	ø25	ø32
Standard stroke length	**5**	●	●	●	●	●	●
	10	●	●	●	●	●	●
	15	●	●	●	●	●	●
	20	●	●	●	●	●	●
	25	●	●	●	●	●	●
	30	●	●	●	●	●	●
	40	●	●	●	●	●	●
	50	●	●	●	●	●	●
	60	●	●	●	●	●	●
	70				●	●	●
	80				●	●	●
	90				●	●	●
	100				●	●	●

Ⓒ Stroke length

Ⓓ Switch model No.
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓓ Switch model No.

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Switch quantity

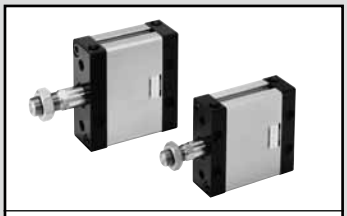
⚠ Precautions for model No. selection

*1: Copper and PTFE free as standard.

Related products

Speed controller							
Model No.	Appearance	Port size (Rc or R)		Compatible tube O.D.			Page
		M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M5-*-P4		●		●	●		232
SC3W-6-*-P4			●	●	●	●	

Specify the compatible tube O.D. code for *.

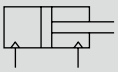


Pneumatic Cylinders I
Catalog No. CB-029SA

Flat compact cylinder Double acting/single rod

FCD Series

●Bore size: ø25/ø32/ø40/ø50/ø63

JIS symbol 

RoHS CAD

Specifications

Descriptions	FCD FCD-L				
Bore size mm	ø25 or equiv.	ø32 or equiv.	ø40 or equiv.	ø50 or equiv.	ø63 or equiv.
Actuation	Double acting				
Working fluid	Compressed air				
Max. working pressure MPa	0.7				
Min. working pressure MPa	0.07				
Proof pressure MPa	1.05				
Ambient temperature °C	-10 to 60 (no freezing)				
Port size	M5		Rc1/8		Rc1/4
Stroke tolerance mm	$^{+0.5}_{0}$ (to 50)				
Working piston speed mm/s	50 to 500				
Cushion	No				
Lubrication	Not available				
Allowable absorbed energy J	0.015	0.02	0.026	0.04	0.05

Rotation-stop precision/Allowable torque

Descriptions	ø25 or equiv.	ø32 or equiv.	ø40 or equiv.	ø50 or equiv.	ø63 or equiv.
Non-rotating accuracy *2	±1°	±0.8°	±0.5°	±0.5°	±0.5°
Allowable torque N·m	1	1.6	2.5	3.9	5.9

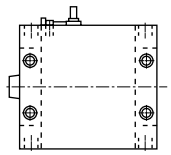
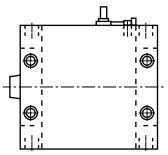
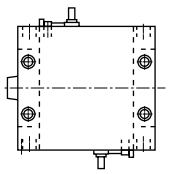
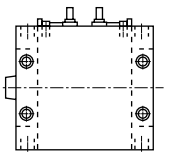
*1: Avoid applying rotation torque with impact, or with violent changes in torque load direction.
*2: "Non-rotating accuracy" is the value when a torque load equivalent to 10% of "allowable torque" is applied to the end of the piston rod.

Stroke length

Model No.	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
FCD	ø25, ø32 ø40, ø50 ø63 or equiv.	5/10/15/20/25 30/40/50	50	1

*1: The custom stroke length is available in 1 mm increments.
*2: The min. stroke length varies depending on switch mounting method. Refer to the following table.

Min. stroke length with switch

1		2	
Rod side mount	Head side mount	Different surface mounting	Same surface mounting
			
10 mm		15 mm	35 mm (ø25/32/40/50) 30 mm (ø63)

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Single acting/ push	Single acting/ pull	Double acting/ double rod
		FCD	FCS	FCH	FCD-D
ø25 to 63	P4	○	○	○	○
	P40	○	○	○	○

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

FCD - 25 - 10 ——— N P4 P40

With switch

FCD-L - 25 - 10 - SW71 - R - N P4 P40

Ⓐ Model No.

Ⓑ Bore size

Ⓒ Stroke length

Ⓓ Switch model No.

Ⓔ Switch quantity

Ⓕ Option

Code	Content
Ⓐ Model No.	
FCD	Double acting
FCD-L	Double acting/with switch
Ⓑ Bore size (mm)	
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63

Ⓒ Stroke length (mm)		
Bore size	**Stroke length *1**	**Custom stroke length**
ø25 to ø63	**1 to 50**	**In 1 mm increments**

Ⓓ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

Ⓕ Option	
Blank	Rod end female thread
M	Piston rod, rod nut material (stainless steel)
N	Rod end male thread
R	With spigot

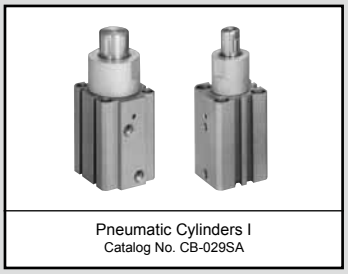
⚠ Precautions for model No. selection

*1: Made to order. Contact CKD for details.

Related products

Speed controller									
Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.				Page
		M5	1/8	1/4	4(ø4)	6(ø6)	8(ø8)	10(ø10)	
SC3W-M5-*-P4		●			●	●			232
SC3W-6-*-P4			●		●	●	●		
SC3W-8-*-P4				●		●	●	●	

Specify the compatible tube O.D. code for *.



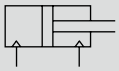
Pneumatic Cylinders I
Catalog No. CB-029SA

Stopper cylinder Double acting/round rod end form

STK Series

●Bore size: ø20/ø32/ø40/ø50

JIS symbol



Double acting

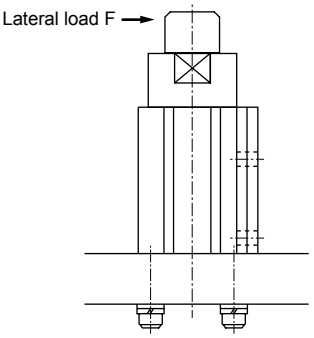
Specifications

Descriptions		STK			
Bore size	mm	ø20	ø32	ø40	ø50
Actuation		Double acting			
Working fluid		Compressed air			
Max. working pressure	MPa	1.0			
Min. working pressure	MPa	0.15	0.1		
Proof pressure	MPa	1.6			
Ambient temperature	°C	-10 to 60 (no freezing)			
Port size		M5	Rc1/8		Rc1/4
Stroke tolerance	mm	+2.0 0			
Working piston speed	mm/s	50 to 500			
Cushion		With rubber cushion			
Lubrication		Not available			
Rod end form		Round rod type			
Allowable absorbed energy	J	Refer to the following figure.			

Allowable lateral load

Unit: N

Bore size	Stroke length				
	10	15	20	25	30
ø20	106.5	99.4	93.2	-	-
ø32	272.8	254.6	238.7	-	-
ø40	-	-	371.3	352.1	334.8
ø50	-	-	582.8	552.8	525.8



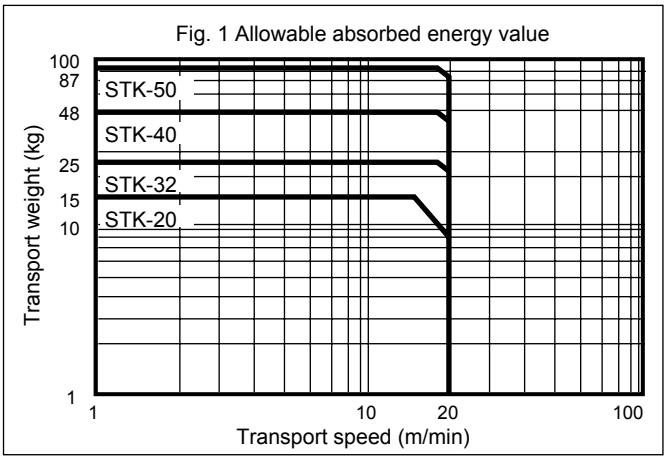
Stroke length

Bore size (mm)	Stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke with switch (mm)
ø20	10, 15, 20	20	10	10
ø32				
ø40	20, 25, 30	30	20	20
ø50				

Note: Products other than standard stroke length are made to order products.

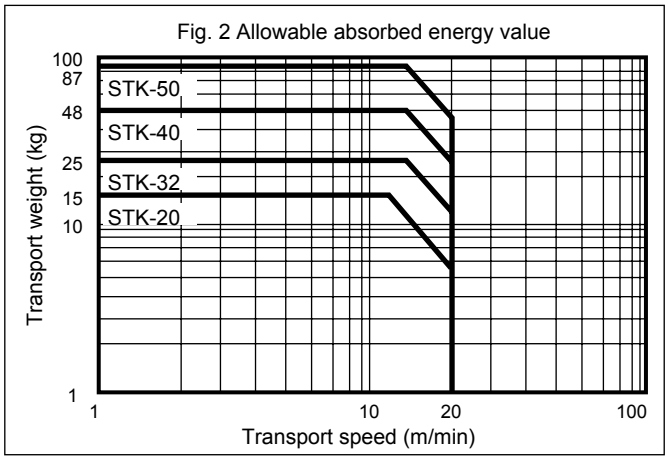
A. Rod side mount

Fig. 1 Allowable absorbed energy value



B. Head side mount

Fig. 2 Allowable absorbed energy value



(Note) Rod end form: Compatible with all round rod types/chamfered types/ rollers.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Single acting/ push	Single acting/ pull	
			X	Y	Contact CKD for other variations.
ø20 to 50	P4	●		○	
	P40	●		○	

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

STK - 20 - 10 ——— N11 P4 P40

With switch

STK - 20 - 10 - SW11 - R - N11 P4 P40

Ⓐ Bore size

Ⓑ Stroke length

Ⓒ Switch model No. *1

Ⓓ Switch quantity

Ⓔ Option

Code	Content
Ⓐ Bore size (mm)	
20	ø20
32	ø32
40	ø40
50	ø50

Ⓑ Stroke length (mm)

Bore size		ø20	ø32	ø40	ø50
10	10	●	●		
15	15	●	●		
20	20	●	●	●	●
25	25			●	●
30	30			●	●

Ⓒ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Option	
Blank	Rod end no thread
N11	With rod end female thread

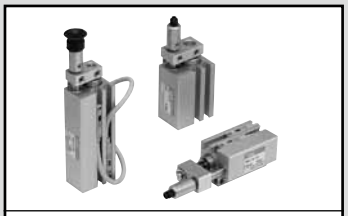
⚠ Precautions for model No. selection

*1: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.

Related products

Speed controller									
Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.				Page
		M5	1/8	1/4	4(ø4)	6(ø6)	8(ø8)	10(ø10)	
SC3W-M5-*-P4		●			●	●			232
SC3W-6-*-P4			●		●	●	●		
SC3W-8-*-P4				●		●	●	●	

Specify the compatible tube O.D. code for *.



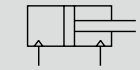
Pneumatic Cylinders I
Catalog No. CB-029SA

Small cylinder with suction pad Double acting

MVC Series

●Bore size: ø6, ø10

JIS symbol



● Double acting

Specifications

Descriptions		MVC	
Bore size	mm	ø6	ø10
Actuation		Double acting	
Working fluid		Compressed air	
Max. working pressure	MPa	0.7	
Min. working pressure	MPa	0.15	0.1
Proof pressure	MPa	1.05	
Vacuum port pressure		-101 kPa to 0.6 MPa *1	
Ambient temperature	°C	0 to 60 (no freezing) *2	
Port size		M3	M5
Stroke tolerance	mm	+1.0 0	
Working piston speed	mm/s	50 to 500	
Cushion		Rubber cushion	
Non-rotating accuracy	degree	±0.5 (*3)	
Lubrication		Not available	
Applicable pad		Refer to "How to order" on the following page or the table below for details.	
Allowable absorbed energy	J	0.0046	0.035

With buffer specifications

Specifications other than below are the same as at left.

Descriptions		MVC-*-*-B
Buffer stroke length	mm	4
Buffer part spring load	N	When set: 1.3 Operating: 1.62 (buffer stroke length of 4 mm operating)
Non-rotating accuracy (reference value)	degree	±2.6 (ø6), ±2.0 (ø10) (*3)

*1: Use the cylinder within buffer stroke length of 4 mm. Otherwise, malfunctions may result.
*2: The value of non-rotating accuracy indicates the value of the pull end (pull). As the value of the push end (push) varies depending on the stroke length, contact CKD separately.
*3: Initial value at the pull end.

*1: Application of pressure from the vacuum port can be performed only at vacuum burst. In addition, use burst pressure equal to the cylinder working pressure or less for this process.
*2: When using MVC with proximity switch, use the cylinder at an ambient temperature of 40°C or less. Otherwise, this could lead to switch detection malfunction.
*3: Initial value at the pull end.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length with two switches (mm)		Min. stroke length with one switch (mm)	
			Reed switch	Proximity switch	Reed switch	Proximity switch
ø6	5/10/15/20/25/30	30	10	5(10)	5	5
ø10	5/10/15/20/25/30	30	10	5(10)	5	5

*1: Products with stroke length other than standard stroke length are not available.
*2: For F2Y, F3Y or F3P, the min. stroke length is the dimensions in ( ).

■ Theoretical lifting force

● Circular pad

(N)

Pad diameter (ømm)	2	3.5	5	6	8	10
Suction area (cm^2) / Vacuum pressure	0.031	0.096	0.196	0.282	0.502	0.785
-93.3KPa	0.284	0.873	1.765	2.550	4.511	7.061
-80.8KPa	0.245	0.745	1.569	2.158	3.923	6.080
-66.7KPa	0.206	0.618	1.275	1.863	3.236	5.099
-53.4KPa	0.167	0.500	0.981	1.471	2.550	4.021
-40.0KPa	0.118	0.373	0.785	1.079	1.961	3.040

Values in table are calculated values.

■ Pad material and characteristics

Descriptions / Material	Hardness HS	Tensile strength N/cm^2	Tearing strength N/cm^2	Stretch %	Heat resistance temperature °C	Oil resistance	Sunlight resistance	Ozone resistance	Acid resistance	Alkali resistance	Abrasion resistance	Electrical insulation property	Gas permeation resistance
Nitrile rubber (NBR)	50° to 90°	686 to 1961	313 to 490	150 to 620	-26 to 120	◎	×	×	△	○	◎	×	○
Silicone rubber (SI)	54° to 80°	441 to 784	117 to 411	100 to 300	-60 to 250	△	◎	◎	△	○	×	◎	×
Urethane rubber (U)	50° to 80°	686 to 4315	588 to 1961	310 to 750	-20 to 75	△	◎	◎	×	×	◎	○	○
Fluoro rubber (FKM)	58° to 90°	931 to 1765	166 to 470	100 to 350	-10 to 230	◎	◎	◎	◎	△	◎	◎	◎

This table shows the general characteristics of synthetic rubber available from CKD.
◎: Ideal for use ○: Suitable for use △: Suitable for use under some conditions ×: Unsuitable for use

Compatibility table by variation

Applicable bore size		Double acting
		MVC
ø6, ø10	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Without switch

MVC - 6 - 10 ——— P2A - B - P4 / P40

● With switch

MVC - 6 - 10 - SW81 - R - P2A - B - P4 / P40

Model No.

Ⓐ Bore size

Ⓑ Stroke length

Ⓒ Switch model No.

Ⓓ Switch quantity

Ⓔ Pad type

Ⓕ Buffer

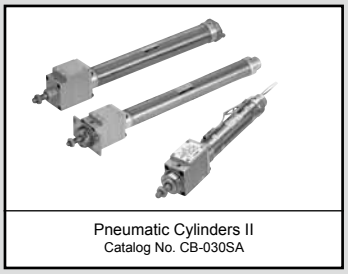
Code	Content
Ⓐ Bore size (mm)	
6	ø6
10	ø10
Ⓑ Stroke length (mm)	
5,10,15,20,25,30	
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
Ⓔ Pad type	
Blank	Without pad
P2A	Material: Nitrile rubber
P3.5A	
P5A	
P6A	
P8A	
P10A	
P2AU	Material: Urethane rubber
P3.5AU	
P5AU	
P6AU	
P8AU	
P10AU	
P2AS	Material: Silicone rubber
P3.5AS	
P5AS	
P6AS	
P8AS	
P10AS	
P2AF	Material: Fluoro rubber
P3.5AF	
P5AF	
P6AF	
P8AF	
P10AF	
Ⓕ Buffer	
Blank	Without buffer
B	With buffer

* Consult with CKD as support is also available for pad types other than the above.

Related products

Speed controller						
Model No.	Appearance	Port size (Rc or R)		Compatible tube O.D.		Page
		M3	M5	4(ø4)	6(ø6)	
SC3W-M3-*-P4		●		●		232
SC3W-M5-*-P4			●	●	●	

Specify the compatible tube O.D. code for *.



Pneumatic Cylinders II
Catalog No. CB-030SA

Brake cylinder Double acting/single rod

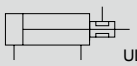
ULK Series

Brake cylinder Double acting/single rod

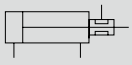
ULKP Series

● Bore size: ø16/ø20/ø25/ø32/ø40

JIS symbol ● Double acting



ULK



ULKP

RoHS CAD

Specifications

Descriptions		ULKP/ULKP-L	ULK			
Bore size mm		ø16	ø20	ø25	ø32	ø40
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0				
Min. working pressure	Brake section MPa	0.3				
	Cylinder section MPa	0.15				
Proof pressure MPa		1.6				
Ambient temperature °C		-10 to 60 (no freezing)				
Port size	Brake section	M5	Rc1/8			
	Cylinder	M5	Rc1/8			
Stroke tolerance mm		$^{+1.0}_{0}$	$^{+2.0}_{0}$ (to 200)		$^{+2.4}_{0}$ (201 to)	
Working piston speed mm/s		50 to 500				
Cushion		Rubber cushion				
Lubrication		Not available				
Stopping accuracy mm		±1.5 (300 mm/s, no load) *1	±1.0 (300 mm/s, no load)			
Holding force N		160	251	393	643	1005
Allowable absorbed energy J		0.162	0.166	0.308	0.424	0.639

*1: If the brake section is left pressurized, a delayed response may occur resulting in misalignment of the stop position.

Stroke length

Model No.	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ULKP/ULKP-L	ø16	15/30/45/60	260	5
ULK	ø20	25/50/75/100/150 200/250/300	700	5
	ø25			
	ø32			
	ø40			

*1: The custom stroke length is available in 1 mm increments.

Related products

Speed controller					
Model No.	Appearance	Port size (Rc or R)	Compatible tube O.D.		Page
		M5	4(ø4)	6(ø6)	
SC3W-M5-*-P4		●	●	●	232

Specify the compatible tube O.D. code for *.

Compatibility table by variation

Applicable bore size		Double acting
ø16 to 40	P4	▲
	P40	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Note: Standard grease used

How to order

Without switch

ULKP — 00 - 16 - 60 - 0 ——— P4 P40 Y

With switch

ULKP-L - 00 - 16 - 60 - 0 - SW71 - R - P4 P40 Y

Ⓗ Accessory

Ⓐ Model

Ⓑ Mounting

Ⓒ Bore size

Ⓓ Stroke length

Ⓔ Head side port direction

Ⓕ Switch model No.

Ⓖ Switch quantity *2

Code	Content
Ⓐ Model	
ULKP	Double acting
ULKP-L	Double acting with switch
Ⓑ Mounting	
00	Basic
LS	Axial foot (one side) (rod side)
FA	Rod side flange
CB	Clevis bracket
Ⓒ Bore size	
16	ø16
Ⓓ Stroke length	
Bore size	**Stroke length *1** / **Custom stroke length**
ø16	**5 to 260** / **In 1 mm increments**
Ⓔ Head side port direction	
Blank	Vertical
0	Axial direction (*1)
Ⓕ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
Ⓗ Accessory	
I	Rod eye
Y	Rod clevis (pin, washer, split pin attached)
B1	Eye bracket
B2	Clevis bracket (pin, snap ring attached)

⚠ Precautions for model No. selection

*1: CB mounting is not available for port direction/axial direction.
*2: "I" and "Y" cannot be selected together.
*3: Made to order. Contact CKD for details.

How to order

Without solenoid valve

ULK - 00 - 20 - 100 - SW11 - R - V - P4/P40 - I

- ULK: Model No.
- 00: A Mounting
- 20: B Bore size
- 100: C Stroke length
- SW11: D Switch model No.
- R: E Switch quantity *2
- V: F Option
- P4/P40: Port size
- I: G Accessory *1

Code	Content
A Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
CA	Eye bracket
CC	Eye bracket integrated
TA	Rod side trunnion
TB	Head side trunnion
B Bore size (mm)	
20	ø20
25	ø25
32	ø32
40	ø40

C Stroke length (mm)

Bore size	Stroke length	Custom stroke length
ø20	**5 to 700**	**In 1 mm increments**
ø25	**5 to 700**	
ø32	**5 to 700**	
ø40	**5 to 700**	

D Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Code	Content
E Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
F Option	
M	Piston rod, rod nut material (stainless steel)
V	Boss cutoff
G Accessory	
I	Rod eye
Y	Rod clevis (pin, washer, split pin attached)
B2	Clevis bracket (pin, snap ring attached)

⚠ Precautions for model No. selection

*1: "I" and "Y" cannot be selected together.
*2: Up to three switches can be installed. If four or more switches are required, switch mounting brackets for the extra switches must be prepared separately.
*3: Refer to "Pneumatic Cylinders I (Catalog No. CB-030SA)" for custom specifications of rod end form.
*4: Made to order. Contact CKD for details.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)	Compatible tube O.D.			Page
		1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-6-*-P4		●	●	●	●	232

Specify the compatible tube O.D. code for *.

How to order ULKP Series mounting bracket P4/P40

Bore size (mm) / Mounting bracket	P4	P40
	ø16	ø16
Foot (LS)	P2-LS-16	P2-LS-16-P40
Flange (FA)	P2-FA-16	P2-FA-16-P40

Note: The foot mounting bracket is provided as 1 pc./set.

How to order ULK Series mounting bracket P4

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40
Axial foot (LB)	M1-LB-20	M1-LB-30	M1-LB-30	M1-LB-30
Flange (FA)	M1-FA-20	M1-FA-30	M1-FA-30	M1-FA-30
Eye bracket (CA)	M1-CA-20	M1-CA-30	M1-CA-30	M1-CA-30
Trunnion (TA/TB)	M1-TA-20	M1-TA-30	M1-TA-30	M1-TA-40

*1: Regarding mounting brackets, mounting nuts and toothed washers are attached with the axial foot type and flange type. Trunnions are supplied with mounting nuts.
*2: For axial foot types (two-sided), 2 sets of "M1-LB0** or [Bore size]" in the table above are required.

How to order ULK Series mounting bracket P40

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40
Axial foot (LB)	M1-LB-20-P40	M1-LB-30-P40	M1-LB-30-P40	M1-LB-30-P40
Flange (FA)	M1-FA-20-P40	M1-FA-30-P40	M1-FA-30-P40	M1-FA-30-P40
Eye bracket (CA)	M1-CA-20-P40	M1-CA-30-P40	M1-CA-30-P40	M1-CA-30-P40
Trunnion (TA/TB)	M1-TA-20-P40	M1-TA-30-P40	M1-TA-30-P40	M1-TA-40-P40

*1: For axial foot types (two-sided), 2 sets of "M1-LB-** or [Bore size]-P40" in the table above are required.
*2: Regarding mounting brackets, mounting nuts are attached with the axial foot type, flange type and trunnion type.



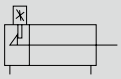
Pneumatic Cylinders II
Catalog No. CB-030SA

Position locking compact cylinder

USSD/USSD-K Series

● Bore size: ø20/ø25/ø32/ø40/ø50/ø63/ø80/ø100

JIS symbol



Common specifications

Descriptions		USSD/USSD-K							
Bore size	mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation		Double acting							
Working fluid		Compressed air							
Max. working pressure	MPa	1.0							
Min. working pressure	MPa	0.25 (no load) Note							
Proof pressure	MPa	1.6							
Ambient temperature	°C	-10 to 60 (no freezing)							
Port size		M5		Rc1/8		Rc1/4		Rc3/8	
Stroke tolerance	mm	USSD: $^{+1.0}_{0}$				USSD-K: $^{+2.0}_{0}$			
Working piston speed	mm/s	50 to 500					50 to 300		
Cushion		USSD: None, USSD-K: Rubber cushion							
Lubrication		Not available							
Lock force	N	150	235	386	603	943	1497	2464	3847
Option		Rod end male thread (N)							
Allowable absorbed energy J	Without cushion	0.016	0.021	0.025	0.092	0.1	0.12	0.27	0.56
	With cushion	0.157	0.157	0.402	0.628	0.98	1.56	2.51	7.92

Note: Depending on the installation condition, piston rod may start moving at 0.05 MPa. Therefore, pay attention to residual and exhaust pressure.

Individual specifications

Model No.		USSD (double acting single rod)	USSD-K (double acting single rod/high load)
Stroke tolerance	mm	+1.0 0	+2.0 0
Cushion		No	Rubber cushion

Stroke length

Model	Bore size (mm)	Standard stroke length (mm) (*4)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke with switch (mm)
USSD	ø20	5, 10, 15, 20, 25, 30	30	1 (*3)	5 (*4)
	ø25, ø32, ø40, ø50	5, 10, 15, 20, 25, 30, 40, 50	50		
	ø63, ø80, ø100	5, 10, 20, 30, 40, 50			
USSD-K	ø20	5, 10, 15, 20, 25, 30, 40, 50	200 (*1)		5 (*4)
	ø25, ø32, ø40, ø50	10, 15, 20, 25, 30, 40, 50 60, 70, 80, 90, 100	300 (*1)		
	ø63, ø80, ø100	10, 20, 30, 40, 50, 60, 70 80, 90, 100			

*1: Stroke length over standard to maximum is available in increments of 10. (Example) USSD-K-20: 60, 70, 80, 90, 100 .....
Dimensions of custom stroke length (example: 64 mm stroke length) are the same as the following increment of stroke length (example: 70 mm stroke length).
*2: The custom stroke length is available in 1 mm increments. However, the total length is the same as that of the next longer standard stroke length.
*3: The min. stroke length is available from 1 mm. Take into account the stroke tolerance when placing an order.
4: Less than 10 mm is not available for 2-color display, off-delay, strong magnetic field proof, or with T1 or T8* switch.

Dimensions for ordering mounting bracket P4

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	USSD-LB-20	USSD-LB-25	USSD-LB-32	USSD-LB-40	USSD-LB-50	USSD-LB-63	USSD-LB-80	USSD-LB-100
Clevis bracket (CB)	SSD-CB-20	SSD-CB-25	SSD-CB-32	SSD-CB-40	SSD-CB-50	SSD-CB-63	SSD-CB-80	SSD-CB-100

*1: The foot mounting bracket is provided as 2 pcs./set.

Related products

Speed controller											
Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M5-*-P4		●				●	●				232
SC3W-6-*-P4			●			●	●	●			
SC3W-8-*-P4				●			●	●	●		
SC3W-10-*-P4					●			●	●	●	

Specify the compatible tube O.D. code for *.

Compatibility table by variation

Applicable bore size		Double acting	Double acting/ high load
			K
ø20 to 100	P4	○	○
	P40	○	○

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable
Note: Standard grease used

How to order

● Without switch

USSD-K — 20 - 5 - F ——— N P4/P40 - LB

● With switch

USSD-KL - 20 - 5 - F - SW11 - R - N P4/P40 - LB

Ⓐ Model No.

Code	Content
Ⓐ Model No.	
USSD	Double acting
USSD-L	Double acting/with switch
USSD-K	Double acting/high load
USSD-KL	Double acting/high load/with switch

Ⓑ Bore size (mm)

Ⓑ Bore size (mm)	
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

Ⓒ Stroke length (mm)

Ⓒ Stroke length (mm)
Refer to the stroke length table.

Ⓓ Lock direction

Ⓓ Lock direction	
F	Forward locking
B	Backward locking

Ⓔ Switch model No. *2 *3

Ⓔ Switch model No.
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓕ Switch quantity

Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓖ Option

Ⓖ Option	
Blank	Rod end female thread
N	Rod end male thread

Ⓗ Mounting bracket *1 *3

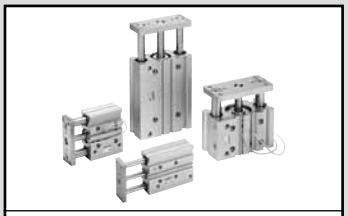
Ⓗ Mounting bracket	
LB	Axial foot
CB	Clevis bracket (pin and snap ring attached)

Ⓒ Stroke length

Series	Stroke length (mm)		Bore size (mm)							
			ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
USSD	Standard stroke length	5	●	●	●	●	●	●	●	●
		10	●	●	●	●	●	●	●	●
		15	●	●	●	●	●			
		20	●	●	●	●	●	●	●	●
		25	●	●	●	●	●			
		30	●	●	●	●	●	●	●	●
		40		●	●	●	●	●	●	●
		50		●	●	●	●	●	●	●
	Min. stroke length *5		1							
	Custom stroke length *5, *2		1							
USSD-K	Standard stroke length	5	●							
		10	●	●	●	●	●	●	●	●
		15	●	●	●	●	●			
		20	●	●	●	●	●	●	●	●
		25	●	●	●	●	●			
		30	●	●	●	●	●	●	●	●
		40	●	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●	●
		60		●	●	●	●	●	●	●
		70		●	●	●	●	●	●	●
		80		●	●	●	●	●	●	●
		90		●	●	●	●	●	●	●
		100		●	●	●	●	●	●	●
	Min. stroke length *5		1							
	Custom stroke length *5, *2		1							

⚠ Precautions for model No. selection

*1: The mounting bracket is attached at shipment.
2: T8 switch cannot be mounted for USSD-*L with bore size ø20 to ø32.
*3: Switches and mounting brackets are shipped with the product.
Contact CKD if assembling before shipment is necessary.
*4: Made to order. Contact CKD for details.
*5: The total length is the same as that of the next longer standard stroke length.
(Less than 5 mm with switch is not available)
Less than 10 mm with 2-color display, off-delay T1* or T8* switch is not available.



Pneumatic Cylinders II
Catalog No. CB-030SA

Guided cylinder Double acting/single rod

STG-$^{M}_{B}$ Series

● Bore size: ø12/ø16/ø20/ø25/ø32/ø40/ø50/ø63/ø80/ø100

JIS symbol 

RoHS CAD

Specifications

Descriptions	STG-M/B									
Bore size mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation	Double acting									
Working fluid	Compressed air									
Max. working pressure MPa	1.0									
Min. working pressure MPa	0.15				0.1					
Proof pressure MPa	1.6									
Ambient temperature °C	-10 to 60 (no freezing)									
Port size	M5		Rc1/8				Rc1/4		Rc3/8	Rc3/8
Stroke tolerance mm	+2.0 0									
Working piston speed mm/s	50 to 500							50 to 300		
Cushion	With rubber cushion									
Lubrication	Not available									
Allowable absorbed energy J	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510	3.92

Stroke length

Bore size	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke with switch (mm)
ø12	10/20/30/40/50/75/100 125/150/175/200/250	250	5	5(10) *2
ø16				
ø20	20/30/40/50/75/100/125 150/175/200/250/300/350/400	400		
ø25				
ø32	25/50/75/100 125/150/175 200/250/300 350/400			
ø40				
ø50				
ø63				
ø80				
ø100				

*1: The custom stroke length is available in 5 mm increments. However, the total dimensions are the same as the longer standard stroke length. A dedicated body with dimensions matched to the stroke length is available. Contact CKD for details.

*2: For types with one or two switches. The value in ( ) is the min. stroke length for switches of the 2-color display and AC magnetic field proof.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M5-*-P4		●				●	●				232
SC3W-6-*-P4			●			●	●	●			
SC3W-8-*-P4				●			●	●	●		
SC3W-10-*-P4					●			●	●	●	

Specify the compatible tube O.D. code for *.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ rubber-air cushioned	Double acting/air cushioned	Double acting/ rubber scraper	Double acting/ coil scraper	Double acting/ coolant proof	Double acting/ anti-spatter adherence
			Q	*C	C	G	G1	G2/G3	G4
ø12 to 100	P4	●	●	○	○	○			
	P40	●	●	○	○	○			
	P41	▲	▲	▲	▲	▲			
	P42	▲	▲	▲	▲				

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Not compatible with STG-K.

*2: Port plugs of ø12 and ø16 are changed from FPL-M5 to hexagon socket head and female thread. Sealant is required when the plug position is changed.

How to order

Without switch

STG - **M** - **32** - **25** ——— **P4 P40**

With switch

STG - **M** - **32** - **25** - **SW11** - **R** - **P4 P40**

Model No.

Ⓐ Bearing

Ⓑ Bore size

Ⓒ Stroke length

Ⓓ Switch model No. *1 *2

Ⓔ Switch quantity

Code	Content
Ⓐ Bearing	
M	Metal bush bearing
B	Ball bearing
Ⓑ Bore size (mm)	
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

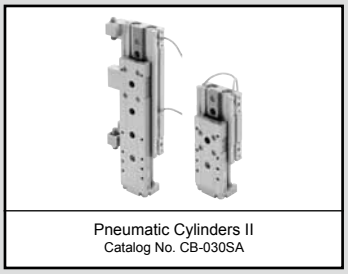
Ⓒ Stroke length (mm)		Applicable bore size									
		ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Standard stroke length	10	●	●								
	20	●	●	●	●						
	25					●	●	●	●	●	●
	30	●	●	●	●						
	40	●	●	●	●						
	50	●	●	●	●	●	●	●	●	●	●
	75	●	●	●	●	●	●	●	●	●	●
	100	●	●	●	●	●	●	●	●	●	●
	125	●	●	●	●	●	●	●	●	●	●
	150	●	●	●	●	●	●	●	●	●	●
	175	●	●	●	●	●	●	●	●	●	●
	200	●	●	●	●	●	●	●	●	●	●
	250	●	●	●	●	●	●	●	●	●	●
	300			●	●	●	●	●	●	●	●
	350			●	●	●	●	●	●	●	●
	400			●	●	●	●	●	●	●	●
Min. stroke length *5		**5(10)**									
Custom stroke length *3, *4		**In 5 mm increments**									

Ⓓ Switch model No.
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

⚠ Precautions for model No. selection

*1: T8H/V switch cannot be installed on STG-12 or 16.
*2: Switches are shipped with the product.
*3: The total dimensions are the same as the longer standard stroke length.
*4: A dedicated body with dimensions matched to the stroke length is available. Contact CKD for details.
*5: The value in ( ) is the min. stroke length for switches of the 2-color display and AC magnetic field proof.

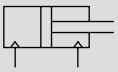


Pneumatic Cylinders II
Catalog No. CB-030SA

Linear slide cylinder Double acting/single rod

LCR Series

● Bore size: ø6/ø8/ø12/ø16/ø20/ø25

JIS symbol 

RoHS CAD

Specifications

Descriptions		LCR					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		0.7					
Min. working pressure MPa		0.15 (*1)					
Proof pressure MPa		1.05					
Ambient temperature °C		-10 to 60 (no freezing)					
Port size	Main body side	M3	M5			Rc1/8	
	Main body back	-	M3			M5	Rc1/8
Stroke tolerance mm		+2.0 0 (*2)					
Working piston speed mm/s		50 to 500 (*3)					
Cushion		With rubber cushion					
Lubrication		Not available					
Allowable absorbed energy J		Refer to the following table.					

*1: 0.2 MPa when using ø6 shock absorber stopper.
*2: Note that there will be a slight gap between the end plate and floating bush if no stopper is attached.
*3: Keep within 50 to 200 mm/s when using a stroke adjusting stopper.
*4: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing type.

Stroke length

Bore size (mm)	Standard stroke length (mm)
ø6	10, 20, 30, 40, 50
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

Note: Products with stroke lengths other than the above are not available.

With buffer specifications

Specifications other than those below are same as the above common specifications.

Descriptions		Content					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Buffer stroke length mm		4		9		10	
Buffer part	When set N	3	5	10	13	17	21
Spring load	Operating N	7	8	14	20	25	29

*1: In the type with buffer, adjusting the rod side stroke length will shorten the buffer stroke length and increase the spring load when set.
*2: Keep the buffer stroke length less than the stroke length above. Otherwise, malfunctions or damage may result.

LCR allowable absorbed energy (Eo)

Bore size	Standard (J)	With stroke adjusting stopper (J)	With shock absorber stopper (J)
ø6	0.025	0.0032	0.14
ø8	0.058	0.0032	0.25
ø12	0.112	0.014	0.25
ø16	0.176	0.043	0.65
ø20	0.314	0.055	1.3
ø25	0.314	0.14	1.3

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)					Compatible tube O.D.					Page
		M3	M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M3-*-P4		●	●				●					232
SC3W-M5-*-P4			●				●	●				
SC3W-6-*-P4				●			●	●	●			

Specify the compatible tube O.D. code for *.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ fine speed
			Q	F
ø6 to 25	P4	●	●	●
	P40	●	●	●
	P41			
	P42	▲	▲	▲

● : Standard ○ : Made to order ▲ : Contact CKD □ : Not applicable

*1: Even when P40 is selected for the external stopper option, electrolytic nickel plating is used for the stopper part.

How to order

Without switch

LCR - 8 - 40 ——— S506 DTBLN P4 P40

With switch

LCR - 12 - 40 - SW81 - R - S506 DTBLN P4 P40

Model No.
Ⓐ Bore size
Ⓑ Stroke length
Ⓒ Switch model No.
Ⓓ Switch quantity
Ⓔ Stopper
Ⓕ Option

Code	Content
Ⓐ Bore size	
6	ø6
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

Ⓑ Stroke length (mm)

		Bore size (ø)					
		6	8	12	16	20	25
10	10	●	●	●	●	●	●
20	20	●	●	●	●	●	●
30	30	●	●	●	●	●	●
40	40	●	●	●	●	●	●
50	50	●	●	●	●	●	●
75	75		●	●	●	●	●
100	100			●	●	●	●
125	125				●	●	●
150	150					●	●

Ⓒ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

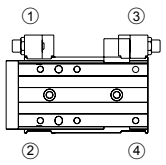
Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Stopper

Refer to "Stopper" on page 45.

Ⓕ Option		
Blank	Port on stopper: without port	
D	Port on stopper: side and bottom ports	*2, *9
Blank	Stopper block material: steel	
T	Stopper block material: steel (nitriding)	*2
B With buffer		*3
B	Without switch groove	
BL	With switch groove	
Plug attached		
Blank	No	
N	With side piping port plug (not available for ø6, ø25)	*6

● Stopper position



⚠ Precautions for model No. selection

*1: The port positions of the standard without stopper are ① and ③ in the figure below.
*2: Can be selected for the type with stopper only.
*3: Refer to the selection table on page 46 for combinations of options.
*4: A1**, A2**, A5** and A6** of ø6 to ø8 with 10 mm stroke length or less and ø12 to ø25 with 20 mm stroke length or less are made to order since adjustment is not possible with the standard stopper.
*5: When two switches are necessary for the type with S*** or A***of ø6 to ø8 with 30 mm stroke length or less, select the F □ H type switch.
*6: Select when using rear piping.
*7: Can be selected only when using stroke adjusting stopper (S) and one side mixed type (C).
*8: When two switches are necessary or a switch is installed on the head side of W3 to 6 (two-sided combined stopper) of ø6 (all stroke lengths), ø8 with 20 or 30 mm stroke length, ø12 with 30 to 50 mm stroke length or ø16 with 30 to 50 mm stroke length, select the axial lead wire.
*9: Cannot be selected when choosing two-sided combined type (W).
*10: The adjustable stroke range when choosing two-sided combined type (W) is ø6: 9 mm, ø8: 13.5 mm, ø12: 14.5 mm, ø16: 15 mm, ø20: 13 mm, ø25: 10 mm.
*11: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing type.

[Ⓔ Stopper]

Code	Content	
Ⓔ Stopper		
Blank	No option	
S Stroke adjusting stopper		
S1**	Stopper position ① (can be changed to ④)	Stopper installation position
S2**	Stopper position ② (can be changed to ③)	
S3**	Stopper position ③ (can be changed to ②)	
S4**	Stopper position ④ (can be changed to ①)	
S5**	Stopper position ①, ③	
S6**	Stopper position ②, ④	
A Shock absorber stopper		
A1**	Stopper position ① (can be changed to ④)	Stopper installation position
A2**	Stopper position ② (can be changed to ③)	
A3**	Stopper position ③ (can be changed to ②)	
A4**	Stopper position ④ (can be changed to ①)	
A5**	Stopper position ①, ③	
A6**	Stopper position ②, ④	
W Two-sided combined double stopper (shock absorber stopper, metal stopper) *8/*10		
W1**	A1 + metal stopper	Stopper installation position
W2**	A2 + metal stopper	
W3**	A3 + metal stopper	
W4**	A4 + metal stopper	
W5**	A5 + metal stopper	
W6**	A6 + metal stopper	

Code	Content	
C One side hybrid stopper mix (shock absorber stopper, stroke adjusting stopper)		
C1**	A1+S3	Stopper installation position
C2**	A2+S4	
C3**	A3+S1	
C4**	A4+S2	

**** part Adjustable stroke range ● Compatible with all. ▲ Compatible with some. *7**

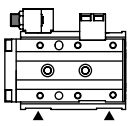
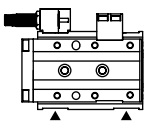
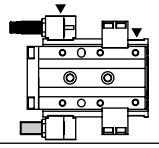
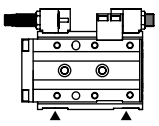
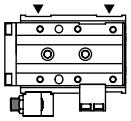
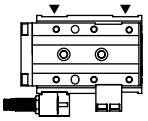
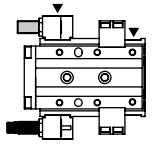
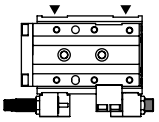
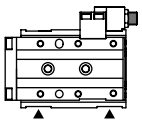
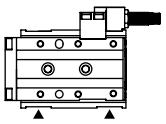
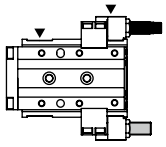
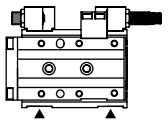
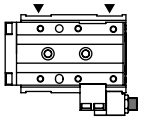
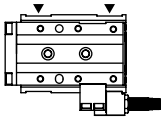
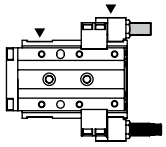
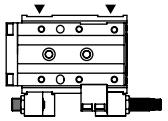
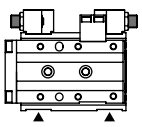
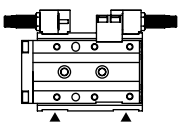
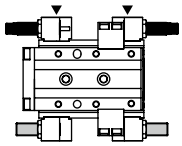
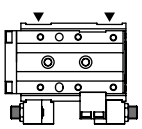
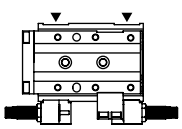
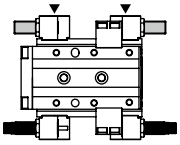
	Protruding end	Return end	Stopper model No. S	A	W	C
Blank	5 mm or none	5 mm or none	●	-	-	●
02	15 mm or none	15 mm or none	●			●
03	25 mm or none	25 mm or none	●			●
04	15 mm	5 mm	▲			-
05	25 mm	5 mm	▲			-
06	5 mm	15 mm	▲			-
07	5 mm	25 mm	▲			-

Note: When changing the stopper position from the head side to the rod side, the stopper must be purchased separately according to the stroke length and adjustable stroke length. Refer to "Precautions when purchasing the stopper separately" on the following page. A1, A2 and adjustable stroke length of 15 mm and 25 mm may not be available depending on the stroke length.

Stopper model No. selection method

1 Stopper combination table

Model No.-[①Stopper type][②Stopper position][③] Example) LCR-8-40-[S][5]06

Stopper position model No. [②]	Stroke adjustable (one side) [S]	Shock absorber (one side) [A]	Two-sided combined double stopper [W]	One side hybrid stopper mix [C]
	Stopper model No. [①]			
[1]	[S1] 	[A1] 	[W1] 	[C1] 
[2]	[S2] 	[A2] 	[W2] 	[C2] 
[3]	[S3] 	[A3] 	[W3] 	[C3] 
[4]	[S4] 	[A4] 	[W4] 	[C4] 
[5]	[S5] 	[A5] 	[W5] 	
[6]	[S6] 	[A6] 	[W6] 	

▲ shows the piping direction.
If two-sided combined type (W) is selected, the stopper bracket comes with piping on both sides, ▲ (piping direction) and the reverse side stopper bracket comes with a plug.

■: Shock absorber stopper
■: Stroke adjusting stopper (adjusting range 5 mm)
■: Metal adjusting stopper (adjusting range 15 mm)

LCR Double acting/single rod selection table

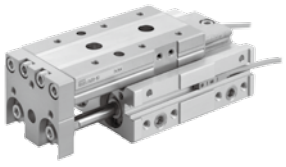
(Combination with stroke adjusting stopper, shock absorber stopper)

●: Available —: Not available

Model No.	Stopper type		Stroke adjustable																									
	Stopper code		S1			S2			S3			S4			S5							S6							
			Adjustment length code																									
	Bore size	Stroke length	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	04	05	06	07	Blank	02	03	04	05	06	07
LCR	ø6,ø8	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20 or more	●	●	-	●	●	-	●	●	-	●	●	-	●	●	-	●	-	●	-	●	●	-	●	-	●	-
	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LCR-B, BL	ø6,ø8	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20 or more	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●
		30 or more	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●

Model No.	Stopper type		Shock absorber						Two-sided combined double stopper						One side hybrid stopper mix											
	Stopper code		A1	A2	A3	A4	A5	A6	W1	W2	W3	W4	W5	W6	C1			C2			C3			C4		
															Adjustment length code											
	Bore size	Stroke length													Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03
LCR	ø6,ø8	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-	●	●	-	●	●	-
	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	●	●	-
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LCR-B, BL	ø6,ø8	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-	●	-	-	●	-	-
	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	●	●	-
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-

The table above also applies to combinations with option code D (with port on stopper) or T (steel stopper block (nitriding)).

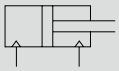


Pneumatic Cylinders II
Catalog No. CB-030SA

Linear slide cylinder Double acting/single rod

LCG Series

● Bore size: ø6/ø8/ø12/ø16/ø20/ø25

JIS symbol 

RoHS CAD

Specifications

Descriptions		LCG					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		0.7					
Min. working pressure MPa		0.15 (*1)					
Proof pressure MPa		1.05					
Ambient temperature °C		-10 to 60 (no freezing)					
Port size	Main body side	M3	M5			Rc1/8	
	Main body back	M3				M5	Rc1/8
Stroke tolerance mm		+2.0 0 (*2)					
Working piston speed mm/s		50 to 500 (*3)					
Cushion		With rubber cushion					
Lubrication		Not available					
Allowable absorbed energy J		Refer to the following table.					

*1: 0.2 MPa when using ø6 shock absorber stopper.
*2: Note that there will be a slight gap between the end plate and floating bush if no stopper is attached.
*3: Keep within 50 to 200 mm/s when using a stroke adjusting stopper.
*4: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing type.

Stroke length

Bore size (mm)	Standard stroke length (mm)
ø6	10, 20, 30, 40, 50
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

Note: Products with stroke lengths other than the above are not available.

With buffer specifications

Specifications other than the below are same as the above common specifications.

Descriptions		Content					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Buffer stroke length mm		4		9		10	
Buffer part spring load	When set N	3	5	10	13	17	21
	Operating N	7	8	14	20	25	29

*1: In the type with buffer, adjusting the rod side stroke length will shorten the buffer stroke length and increase the spring load when set.
*2: Keep the buffer stroke length less than the stroke length above. Otherwise, malfunctions or damage may result.

LCG allowable absorbed energy (Eo)

Bore size	Standard (J)	With stroke adjusting stopper (J)	With shock absorber stopper (J)
ø6	0.025	0.0032	0.14
ø8	0.058	0.0032	0.25
ø12	0.112	0.014	0.25
ø16	0.176	0.043	0.65
ø20	0.314	0.055	1.3
ø25	0.314	0.14	1.3

Related products

Speed controller								
Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.			Page
		M3	M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M3-*-P4		●			●			232
SC3W-M5-*-P4			●		●	●		
SC3W-6-*-P4				●	●	●	●	

Specify the compatible tube O.D. code for *.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking
			Q
ø6 to 25	P4	●	●
	P40	●	●
	P41		
	P42	▲	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Even when P40 is selected for the external stopper option, electrolytic nickel plating is used for the stopper part.
*2: If P4 is chosen, rust proofing (option code: U) is recommended for LCG-20, 25.
(P40 of ø20, ø25 are rust proofed.)

How to order (ø6 to ø16)

Without switch

LCG - 8 - 40 ——— S5 P4 P40

With switch

LCG - 12 - 40 - SW81 - R - A1DT P4 P40

Model No.
A Bore size
B Stroke length
C Switch model No. *8
D Switch quantity
E Option

Code	Content
A Bore size	
6	ø6
8	ø8
12	ø12
16	ø16

B Stroke length (mm)

		Bore size (ø)			
		6	8	12	16
10	10	●	●	●	●
20	20	●	●	●	●
30	30	●	●	●	●
40	40	●	●	●	●
50	50	●	●	●	●
75	75		●	●	●
100	100			●	●
125	125				●

C Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

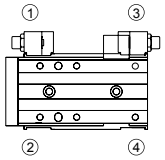
D Switch quantity	
R	1 on rod side
H	1 on head side
D	2

E Option		
Blank	No option	
S Stroke adjusting stopper		
5 mm stroke adjustment on one side		*2, *4
S1**	Stopper position ① (can be changed to ④)	Stopper installation position
S2**	Stopper position ② (can be changed to ③)	
S3**	Stopper position ③ (can be changed to ②)	
S4**	Stopper position ④ (can be changed to ①)	
S5**	Stopper position ①, ③	
S6**	Stopper position ②, ④	
A Shock absorber stopper		*2, *4
A1**	Stopper position ① (can be changed to ④)	Stopper installation position
A2**	Stopper position ② (can be changed to ③)	
A3**	Stopper position ③ (can be changed to ②)	
A4**	Stopper position ④ (can be changed to ①)	
A5**	Stopper position ①, ③	
A6**	Stopper position ②, ④	
**** part**		
Blank	Port on stopper: without port	
D	Port on stopper: side and bottom ports	*3
Blank	Stopper block material: steel	
T	Stopper block material: steel (nitriding)	*3
B With buffer		*4
B	Without switch groove	
BL	With switch groove	
Plug attached		
Blank	No	
N	With side piping port plug (not available for ø6)	

⚠ Precautions for model No. selection

*1: The port positions of the standard without stopper are ① and ③ in the figure below.
*2: Combination of the stroke adjusting stopper and shock absorber stopper is made to order.
*3: Can be selected for the type with stopper only.
*4: Refer to the selection table below for combinations of options.
*5: A1**, A2**, A5** and A6** of ø6 to ø8 with 10 mm stroke length or less and ø12/ø16 with 20 mm stroke length or less are made to order since adjustment is not possible with the standard stopper.
*6: When two switches are necessary for the type with S*** or A***of ø6 to ø8 with 30 mm stroke length or less, select the F□H type switch.
*7: The anti-rust type is made to order.
*8: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing type.

● Stopper position



LCG Double acting/single rod selection table

(Combination with stroke adjusting stopper, shock absorber stopper)

○: Available — : Not available

Model No. code	Option code		Stroke adjusting stopper						Shock absorber stopper					
	Bore size	Stroke length	S1	S2	S3	S4	S5	S6	A1	A2	A3	A4	A5	A6
LCG LCG -B, BL	ø6, ø8	10	○	○	○	○	○	○	-	-	○	○	-	-
		20 or more	○	○	○	○	○	○	○	○	○	○	○	○
	ø12 to ø25	10 to 20	○	○	○	○	○	○	-	-	○	○	-	-
		30 or more	○	○	○	○	○	○	○	○	○	○	○	○

The table above also applies to combinations with option code D (with port on stopper) or T (steel stopper block (nitriding)).

How to order (ø20, ø25)

Without switch

LCG - 20 - 40 ——— S5 U P4 P40

With switch

LCG - 20 - 40 - SW81 - R - A1DT U P4 P40

Model No.

Ⓐ Bore size

Ⓑ Stroke length

Ⓒ Switch model No.

Ⓓ Switch quantity

Ⓔ Option

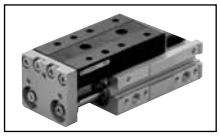
Ⓕ Anti-rust treatment

Code	Content
Ⓐ Bore size	
20	ø20
25	ø25
Ⓑ Stroke length (mm)	
10	10
20	20
30	30
40	40
50	50
75	75
100	100
125	125
150	150
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
Ⓔ Option	
Blank	No option
S Stroke adjusting stopper	
5 mm stroke adjustment on one side	*2, *4
S1**	Stopper position ① (can be changed to ④) — Stopper installation position
S2**	Stopper position ② (can be changed to ③)
S3**	Stopper position ③ (can be changed to ②)
S4**	Stopper position ④ (can be changed to ①)
S5**	Stopper position ①, ③
S6**	Stopper position ②, ④
A Shock absorber stopper	*2, *4
A1**	Stopper position ① (can be changed to ④) — Stopper installation position
A2**	Stopper position ② (can be changed to ③)
A3**	Stopper position ③ (can be changed to ②)
A4**	Stopper position ④ (can be changed to ①)
A5**	Stopper position ①, ③
A6**	Stopper position ②, ④
**** part**	
Blank	Port on stopper: without port
D	Port on stopper: side and bottom ports *3
Blank	Stopper block material: steel
T	Stopper block material: steel (nitriding) *3
B With buffer	*4
B	Without switch groove
BL	With switch groove
Plug attached	
Blank	No
N	With side piping port plug (not available for ø25)
Ⓕ Anti-rust treatment	
Blank	No
U	Anti-rust treatment (guide only) *6

Precautions for model No. selection

*1: The port positions of the standard without stopper are ① and ③ in the figure below.
*2: Combination of the stroke adjusting stopper and shock absorber stopper is made to order.
*3: Can be selected for the type with stopper only.
*4: Refer to the selection table below for combinations of options.
*5: A1**, A2**, A5** and A6** with 20 mm stroke length or less are made to order since adjustment is not possible with the standard stopper.
*6: The table is alloy steel. To prevent rust, select "U" for an environment where the temperature and humidity is high or condensation may occur on the product surface.
*7: The stroke adjusting stopper for 0.3 MPa and over working pressure is the metal sealing type.

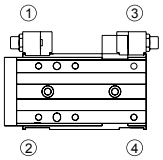
Anti-rust (ø20, 25)



The table and rail surface rustproofing reduces rust in high-humidity environments and near ionizers.

The table and rail are black.

● Stopper position



Related products

Speed controller								
Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.			Page
		M3	M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M3-*-P4		●			●			232
SC3W-M5-*-P4			●		●	●		
SC3W-6-*-P4				●	●	●	●	

Specify the compatible tube O.D. code for *.

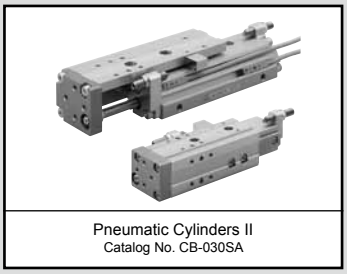
LCG Double acting/single rod selection table

(Combination with stroke adjusting stopper, shock absorber stopper)

○: Available — : Not available

Model No. code	Option code		Stroke adjusting stopper						Shock absorber stopper					
	Bore size	Stroke length	S1	S2	S3	S4	S5	S6	A1	A2	A3	A4	A5	A6
LCG	ø6, ø8	10	○	○	○	○	○	○	-	-	○	○	-	-
		20 or more	○	○	○	○	○	○	○	○	○	○	○	○
	ø12 to ø25	10 to 20	○	○	○	○	○	○	-	-	○	○	-	-
		30 or more	○	○	○	○	○	○	○	○	○	○	○	○

The table above also applies to a combination with option code D (with port on the stopper) or T (alloy steel stopper block (nitriding)).

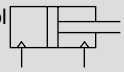


Pneumatic Cylinders II
Catalog No. CB-030SA

Linear slide cylinder Double acting/single rod

LCW Series

● Bore size: ø12/ø16/ø20

JIS symbol 

RoHS

Specifications

Descriptions		LCW		
Bore size	mm	ø12	ø16	ø20
Actuation		Double acting		
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.15 (*1)		
Proof pressure	MPa	1.05		
Ambient temperature	°C	-10 to 60 (no freezing) (*2)		
Port size		M5		
Working piston speed	mm/s	50 to 500 (*3)		
Cushion		Rubber cushion		
Lubrication		Not available		
Allowable absorbed energy	J	Refer to the following table.		

*1: Use at a pressure of 0.4 MPa and over when using a metal stopper with rubber cushion in order to allow metal contact at the end of the stroke.
*2: Operate at -5 to 60°C when using a shock absorber stopper.
*3: Keep within 50 to 200 mm/s when using a metal stopper with rubber cushion.

Stroke length

Bore size (mm)	Standard stroke length (mm)
ø12	30/50/75
ø16	
ø20	

Note: Products with stroke lengths other than the above are not available.

LCW allowable absorbed energy

Bore size (mm)	Rubber cushion (standard) (J)	Metal type with rubber cushion (J)	Shock absorber (J)
ø12	0.027	0.0053	0.054
ø16	0.055	0.0053	0.11
ø20	0.11	0.043	0.22

Adjustable stroke range

(Unit: mm)

Bore size (mm)	Standard rubber cushion				Metal type with rubber cushion				Shock absorber	
	Standard stroke length		Custom stroke compatible (S)		Standard stroke length (M)		Custom stroke compatible (MS)		Standard stroke length (A)	
	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side
ø12	10	10	28	10	9	11.5	28	11.5	4	6.5
ø16	7.5	7.5	25	7.5	6	8.5	25	8.5	1.5	3.5
ø20	8	8	25	8	7.5	12	25	12	12.5	17

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking
			Q
ø12 to 20	P4	▲	▲
	P40	▲	▲
	P41		
	P42		

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

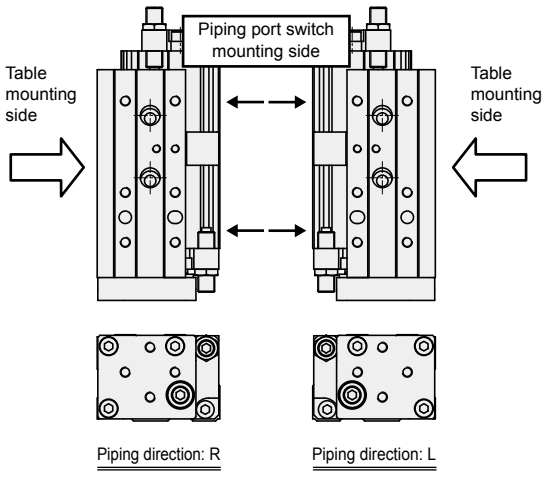
*1: P4 is not available for shock absorber.

How to order

LCW - 16 - 30 - R - SW81 - R - S - P4 / P40

Code	Content
Ⓐ Bore size (mm)	
12	ø12
16	ø16
20	ø20
Ⓑ Stroke length (mm)	
30	30
50	50
75	75
Ⓒ Piping direction	
R	Right from rod side
L	Left from rod side
Ⓓ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
Ⓕ Stopper	
Blank	Cushion stopper
S	Rubber cushioned long stopper (custom stroke compatible)
M	Metal stopper with rubber cushion
MS	Long metal stopper with rubber cushion (custom stroke compatible)

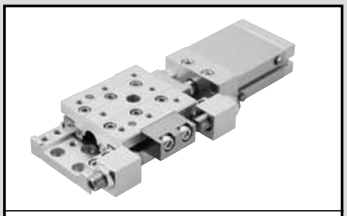
*1: Made to order. Contact CKD for details.



Related products

Speed controller												
Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M5-*-P4		●				●	●				232

Specify the compatible tube O.D. code for *.



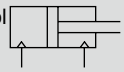
Pneumatic Cylinders II
Catalog No. CB-030SA

Linear slide cylinder Double acting/single rod

LCX Series

● Bore size: ø25/ø32

JIS symbol



RoHS CAD

Specifications

Descriptions	LCX	
Bore size mm	ø25	ø32
Actuation	Double acting	
Working fluid	Compressed air	
Max. working pressure MPa	0.7	
Min. working pressure MPa	0.15	
Proof pressure MPa	1.05	
Ambient temperature °C	-10 to 60 (no freezing) (*1)	
Port size	M5	
Stroke tolerance mm	$^{+2.0}_{0}$ (*2)	
Working piston speed mm/s	20 to 500 (*3)	
Cushion	With rubber cushion	
Lubrication	Not available	
Allowable absorbed energy J	Refer to the following.	

*1: Contact CKD if the use environment is always cold (5°C or below) or hot (40°C and above).
*2: Note that there will be a slight gap between the end plate and floating bush if no stopper is attached.
*3: Keep within 20 to 200 mm/s when using a metal stopper.

Stroke length

Bore size (mm)	Standard stroke length (mm)
ø25	10, 20, 30, 40, 50
ø32	10, 20, 30, 40, 50

Note: Products with stroke lengths other than the above are not available.

LCX allowable absorbed energy (E_0)

Bore size	Standard (J)	Cushion stopper (J)	Metal stopper (J)	Shock absorber stopper (J)
ø25	0.34	0.14	0.07	1.3
ø32				

Compatibility table by variation

Applicable bore size		Double acting/ single rod
ø25/ 32	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Even when P40 is selected for the external stopper option, electrolytic nickel plating is used for the stopper part.

How to order

Without switch

LCX - 25 - 40 ——— S5 P4 P40

With switch

LCX - 25 - 40 - SW11 - R - A1T P4 P40

Ⓐ Bore size

Model No.

Ⓑ Stroke length

Ⓒ Switch model No.

Ⓓ Switch quantity

Ⓔ Stopper

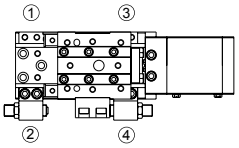
Code	Content
Ⓐ Bore size	
25	ø25
32	ø32
Ⓑ Stroke length (mm)	
10	10
20	20
30	30
40	40
50	50
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
Ⓔ Stopper	
Blank	Without stopper
S Rubber cushion stopper	***2**
S1*	Stopper position ① (can be changed to ④)
S2*	Stopper position ② (can be changed to ③)
S3*	Stopper position ③ (can be changed to ②)
S4*	Stopper position ④ (can be changed to ①)
S5*	Stopper position ①, ③
S6*	Stopper position ②, ④
M Metal stopper	***1, *2, *3**
M1*	Stopper position ① (can be changed to ④)
M2*	Stopper position ② (can be changed to ③)
M3*	Stopper position ③ (can be changed to ②)
M4*	Stopper position ④ (can be changed to ①)
M5*	Stopper position ①, ③
M6*	Stopper position ②, ④
A Shock absorber stopper	***2, *5**
A1*	Stopper position ① (can be changed to ④)
A2*	Stopper position ② (can be changed to ③)
A3*	Stopper position ③ (can be changed to ②)
A4*	Stopper position ④ (can be changed to ①)
A5*	Stopper position ①, ③
A6*	Stopper position ②, ④
*** part**	
Blank	Stopper block material: steel
T	Stopper block material: steel (nitriding) *4

Stopper installation position

⚠ Precautions for model No. selection

*1: The steel stopper block (nitriding) (code: T) is recommended for a metal stopper.
*2: Combination of the rubber cushion stopper, metal stopper and shock absorber stopper is made to order.
*3: Keep within 20 to 200 mm/s when using a metal stopper.
*4: Can be selected for the type with stopper only.
5: A5 and A6* cannot be selected for 10 mm stroke length.
*6: The positioning hole enables assembling of the crossed unit and two-stage unit without adjusting the position. Use a positioning bolt as well.

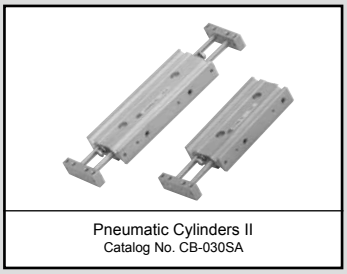
● Stopper position



Related products

Speed controller												
Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M5-*-P4		●				●	●				232

Specify the compatible tube O.D. code for *.



Pneumatic Cylinders II
Catalog No. CB-030SA

Twin rod cylinder Double acting/standard

STR2-$^{M}_{B}$ Series

● Bore size: ø6/ø10/ø16/ø20/ø25/ø32

JIS symbol



RoHS CAD

Specifications

Descriptions		STR2-M (metal bush bearing) STR2-B (ball bearing)					
Bore size mm		ø6	ø10	ø16	ø20	ø25	ø32
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		0.7					
Min. working pressure MPa		0.2	0.15	0.1			
Proof pressure MPa		1.05					
Ambient temperature °C		-10 to 60 (no freezing)					
Port size		M5					Rc1/8
Stroke tolerance mm		+2.0 0					
Adjustable stroke range mm		0 to -5					
Working piston speed mm/s		50 to 500					
Non-rotating accuracy	STR2-M	±0.4°	±0.3°			±0.2°	
	STR2-B	±0.2°	±0.1°			±0.3°	
Piston rod bearing	STR2-M	Metal bush bearing					
	STR2-B	Ball bearing					
Cushion		Rubber cushion					
Lubrication		Not available					
Allowable absorbed energy J	PUSH	0.008	0.061	0.181	0.303	0.68	1.3
	PULL	0.059	0.083	0.083	0.127	0.237	0.311

Stroke length

Bore size	Stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke with switch (mm)
ø6	10, 20, 30, 40, 50	50	5	10
ø10				
ø16	10, 20, 30, 40, 50 60, 70, 80, 90, 100	100 *1		
ø20				
ø25				
ø32				

*1: In the case of rear piping:
- ø16: 70
- ø20/ø25: 60
- ø32: 50

*2: The custom stroke length is available in 1 mm increments.
However, the total length is the same as that of the next longer standard stroke length.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ fine speed	Double acting/ low speed	Double acting/ double rod
			Q	F	O	D
ø6 to 32	P4	●	●	○	○	○
	P40	●	●	○	○	○
	P41					
	P42	▲	▲	▲	▲	▲

● : Standard ○ : Made to order ▲ : Contact CKD : Not applicable

How to order

Without switch

STR2 - M - 16 - 30 ——— R P4/P40

With switch

STR2 - M - 16 - 30 - SW51 - R - R P4/P40

Model No.

Ⓐ Bearing

Code	Content
Ⓐ Bearing	
M	Metal bush bearing
B	Ball bearing

Ⓑ Bore size

Ⓑ Bore size (mm)	
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

Ⓒ Stroke length *1

■ The custom stroke length is available in 1 mm increments.

Ⓒ Stroke length (mm)		
Bore size	**Stroke length**	**Custom stroke length**
ø6	**5 to 50**	**In 1 mm increments**
ø10	**5 to 50**	
ø16	**5 to 100**	
ø20	**5 to 100**	
ø25	**5 to 100**	
ø32	**5 to 100**	

Ⓓ Switch model No. *2

Ⓓ Switch model No.
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓔ Switch quantity

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓕ Option *3

Ⓕ Option	
O	Piping port position on the 180° opposite side
R	Rear piping

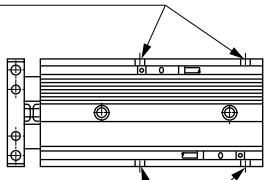
⚠ Precautions for model No. selection

*1: Max. stroke length of rear piping "R"
- ø6/10 : 50 mm
- ø16 : 70 mm
- ø20/25: 60 mm
- ø32 : 50 mm.

*2: STR2-B-6 and 10 are not compatible with a reed switch.

*3: The piping port positions for "O" are as shown in the figure below.

Piping port positions for standard (blank)



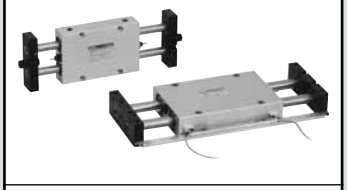
Piping port position on the 180° opposite side (code: 0)

*4: In the case of G thread, ports on the opposite side (option "O") are not available. Rather than plug sealing, they are simply not provided.
(The standard ports are not provided in the case of option "O".)

Related products

Speed controller								
Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.			Page
		M3	M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M5-*-P4			●		●	●		232
SC3W-6-*-P4				●	●	●	●	

Specify the compatible tube O.D. code for *.



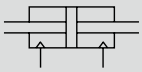
Pneumatic Cylinders II
Catalog No. CB-030SA

Unit cylinder Ball bearing/with switch

UCA2-B Series

● Bore size: ø10/ø16/ø25/ø32

JIS symbol



RoHS CAD

Specifications

Descriptions	UCA2-B UCA2-BL (with switch)			
Bore size mm	ø10	ø16	ø25	ø32
Actuation	Double acting			
Working fluid	Compressed air			
Max. working pressure MPa	1.0			
Min. working pressure MPa	0.15		0.1	
Proof pressure MPa	1.5			
Ambient temperature °C	-10 to 60 (no freezing)			
Port size	M5		Rc1/8	
Stroke tolerance mm	+1.0 0			
Working piston speed mm/s	30 to 300			
Non-rotating accuracy *1	±0.04°	±0.03°	±0.015°	±0.015°
Max. operating frequency Cycle/min.	30			
Cushion	Shock absorber integrated			
Lubrication	Not available			
Allowable absorbed energy J	0.25	0.65	2.4	4.5

*1: Value when stroke length = 0 (excluding deflection of the piston rod)

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke with switch (mm)
ø10	25/50/75/100	100	25	10: With 1 switch 20: With 2 switches 75: With 3 switches
ø16	25/50/75/100 125/150/175/200	200		
ø25				
ø35				

Note: Products with stroke length other than standard stroke length are not available.

Compatibility table by variation

Applicable bore size		Metal bush bearing	Ball bearing
			B
ø10 to 32	P4	●	●
	P40	●	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

UCA2-B — X - 10 - 25 ——— P1A P4 P40

With switch

UCA2-BL - X - 10 - 25 - SW11 - RA - P1A P4 P40

Ⓐ Fixing method

Code	Content
Ⓐ Fixing method	
X	Body fixing
Y	Plate fixing

Ⓑ Bore size

Ⓑ Bore size (mm)	
10	ø10
16	ø16
25	ø25
32	ø32

Ⓒ Stroke length

Ⓒ Stroke length (mm)					
Bore size (ø)		**10**	**16**	**25**	**32**
25	25	●	●	●	●
50	50	●	●	●	●
75	75	●	●	●	●
100	100	●	●	●	●
125	125		●	●	●
150	150		●	●	●
175	175		●	●	●
200	200		●	●	●

Ⓓ Switch model No. *1

Ⓓ Switch model No.
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓔ Switch quantity *2

Ⓔ Switch quantity		
RA	1	Plate A side
RB		Plate B side
D	2	
T	3	

Ⓕ Option *3

Ⓕ Option		
P1A	Single adjusting stopper	Plate A side
P1B		Plate B side
P2	Double adjusting stoppers	

⚠ Precautions for model No. selection

*1: Magnet is not built into the type without switch.
For specifications with switch but without switch installed, a magnet and magnet rail are mounted but a switch rail is not.
*2: Min. stroke length with three switches: 75 (mm)
*3: Difference between side A and side B is described in the dimensions.

Related products

Speed controller							
Model No.	Appearance	Port size (Rc or R)		Compatible tube O.D.			Page
		M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M5-*-P4		●		●	●		232
SC3W-6-*-P4			●	●	●	●	

Specify the compatible tube O.D. code for *.



Stopper cylinder STA2 Series
Catalog No. CC-1005A

Stopper cylinder

STA2 Series

● Bore size: ø50

RoHS

Specifications

* Made to order product.

Descriptions		STA2
Bore size	mm	ø50
Stroke length	mm	30
Actuation		Double acting / Double acting/spring integrated
Working fluid		Compressed air
Max. working pressure	MPa	1.0
Min. working pressure	MPa	0.2 (Refer to Fig. 2)
Proof pressure	MPa	1.5
Ambient temperature	°C	-5 to 60 (no freezing)
Port size		Rc1/8
Cushion		Head side rubber cushioned
Lubrication		Not available
Allowable absorbed energy		Refer to the following table
Weight	g	1800

Fig. 1 Allowable absorbed energy value

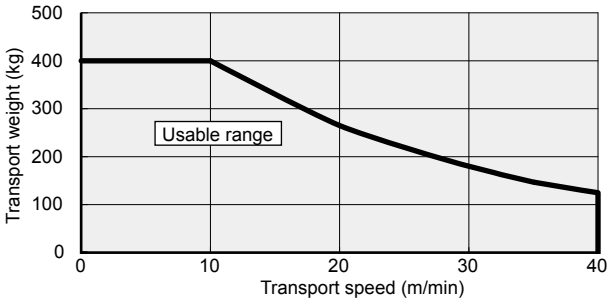
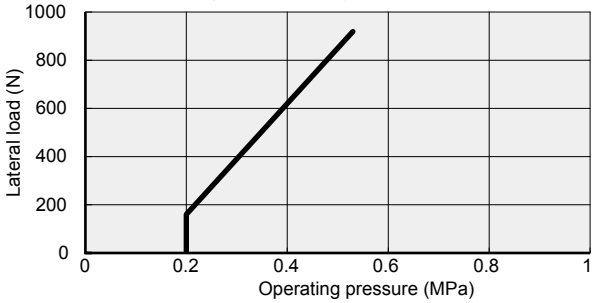


Fig. 2 Min. working pressure for lateral load



Compatibility table by variation

Applicable bore size		Double acting	Double acting/ spring integrated
			Y1
ø50	P4	▲	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Without switch

STA2 - 50 - 30 ——— F - P4

● With switch

STA2 - 50 - 30 - SW11 - R - F - P4

Ⓐ Model No.
Ⓑ Bore size
Ⓒ Stroke length
Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓕ Roller material

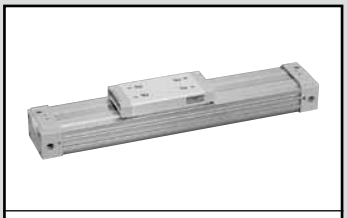
Code	Content
Ⓐ Model No.	
STA2	Double acting
STA2-Y1	Double acting/spring integrated
Ⓑ Bore size (mm)	
50	ø50
Ⓒ Stroke length (mm)	
30	30
Ⓓ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
Ⓕ Roller material	
Blank	Resin
F	Steel

*1: Made to order. Contact CKD for details.

Related products

Speed controller						
Model No.	Appearance	Port size (Rc or R)	Compatible tube O.D.			Page
		1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-6-*-P4		●	●	●	●	232

Specify the compatible tube O.D. code for *.



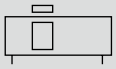
Pneumatic Cylinders I
Catalog No. CB-029SA

Rodless cylinder Double acting

SRL3 Series

● Bore size: ø12, ø16, ø20, ø25, ø32
ø40, ø50, ø63, ø80, ø100 or equiv.

JIS symbol



RoHS CAD

Specifications

Descriptions	SRL3									
Bore size mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation	Double acting									
Working fluid	Compressed air									
Max. working pressure MPa	0.7									
Min. working pressure MPa	0.2			0.1				0.05		
Proof pressure MPa	1.05									
Ambient temperature °C	5 to 60									
Port size	M5		Rc1/8		Rc1/4			Rc3/8		Rc1/2
Stroke tolerance mm	$^{+2.0}_{0}$ (to 1000), $^{+2.5}_{0}$ (to 3000), $^{+3.0}_{0}$ (to 5000)									
Working piston speed mm/s	50 to 2000 (standard piping) (*1)									
Cushion	Air cushion									
Lubrication	Not available									

*1: For common port piping, the working piston speed varies depending on the stroke length. Contact CKD.

Allowable absorbed energy

Bore size (mm)	Cushioned		Without cushion	With shock absorber (initial set point)	
	Allowable absorbed energy (J)	Cushion stroke (mm)	Allowable absorbed energy (J)	Absorbed energy (J)	Effective stroke length (mm)
ø12 or equiv.	0.03	14.5	0.003	2.4	5.5
ø16 or equiv.	0.22	19.2	0.007	2.4	5.5
ø20 or equiv.	0.59	22.2	0.010	5.7	7
ø25 or equiv.	1.40	20.9	0.015	10	9
ø32 or equiv.	2.57	23.5	0.030	18	13
ø40 or equiv.	4.27	23.9	0.050	50	16.5
ø50 or equiv.	9.13	24.9	0.072	86	21
ø63 or equiv.	17.4	29.6	0.138	86	21
ø80 or equiv.	40	45.8	0.393	143	25
ø100 or equiv.	67	45.8	0.622	143	25

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø12 or equiv.	200/300 400/500 600/700 800/900 1000	5000	1
ø16 or equiv.			
ø20 or equiv.			
ø25 or equiv.			
ø32 or equiv.			
ø40 or equiv.			
ø50 or equiv.			
ø63 or equiv.			
ø80 or equiv.			
ø100 or equiv.			

* The custom stroke length is available in 1 mm increments.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)					Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	1/2	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-M5-*-P4		●					●	●				232
SC3W-6-*-P4			●				●	●	●			
SC3W-8-*-P4				●				●	●	●		
SC3W-10-*-P4					●				●	●	●	
SC3W-15-*-P4						●				●	●	

Specify the compatible tube O.D. code for *.

Compatibility table by variation

Applicable bore size		Double acting/ standard	Double acting/ position locking	Double acting/ resin guide	Resin guide/ position locking
			Q	G	GQ
ø12 to 100	P4	●	●		
	P40	●	●		

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Port plugs of ø12 and ø16 are changed from FPL-M5 to hexagon socket head and female thread. Sealant is required when the plug position is changed.

How to order

Without switch

SRL3 - 00 - 12 B - 200 — B P4 P40

With switch

SRL3 - 00 - 12 B - 200 - SW40 - R - B P4 P40

Ⓐ Mounting *1, *2

Ⓑ Bore size

Ⓒ Cushion

Ⓓ Stroke length

Ⓔ Switch model No.

Ⓕ Switch quantity

Ⓖ Option *3, *4 *5, *6

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot
LB1	Axial foot (ø12 to ø32 only)
Ⓑ Bore size (mm)	
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100
Ⓒ Cushion	
B	Both sides cushioned
R	R side cushioned
L	L side cushioned
N	Without cushion
Ⓓ Stroke length (mm)	
Bore size	**Stroke length *3** / **Custom stroke length**
ø12 to ø100	**1 to 5000** / **In 1 mm increments**
Ⓔ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓕ Switch quantity	
R	1 on R side
L	1 on L side
D	2
T	3
4	4 (when there are more than 4 switches, indicate switch quantity.)

Ⓖ Option

Bore size (ø)			12	16	20	25	32	40	50	63	80	100
A	Both-side full stroke length adjustable, with shock absorber		●	●	●	●	●	●	●	●	●	●
A1	R side full stroke length adjustable, with shock absorber		●	●	●	●	●	●	●	●	●	●
A2	L side full stroke length adjustable, with shock absorber		●	●	●	●	●	●	●	●	●	●
A3	Full stroke length adjustable with adjusting bracket to be added later		●	●	●	●						
Y	Floating fitting		●	●	●	●	●	●	●	●	●	●
Y1	Thin floating fitting		●	●	●	●	●	●	●	●		
L*	Intermediate support bracket (for 00, LB)		●	●	●	●	●	●	●	●	●	●
N*	Intermediate support bracket (for LB1)		●	●	●	●	●					
H	Larger thread for table installation		●	●	●							
U	Height adjustment plate		●	●	●	●	●	●	●	●	●	●
Blank	Port position	Cushion needle position	●	●	●	●	●	●	●	●	●	●
R	R (Common port)	F	●	●	●	●	●	●	●	●	●	●
B	F	B	●	●	●	●	●	●	●	●	●	●
T	R (Common port)	B	●	●	●	●	●	●	●	●	●	●
D	D	F				●	●	●	●	●	●	●
S	D	D					●	●	●	●	●	●
X	F (Common port)	F									●	●

Option selection table

●: Available : Not available

Code	Option	A	A1	A2	A3	Y	Y1	L*	N*	H	U	Blank	R	B	T	D	S	X
		Both-side full stroke length adjustable, with shock absorber	R side full stroke length adjustable, with shock absorber	L side full stroke length adjustable, with shock absorber	Full stroke length adjustable with adjusting bracket to be added later	Floating fitting	Thin floating fitting	Intermediate support bracket (for 00, LB)	Intermediate support bracket (for LB1)	Larger thread for table installation	Height adjustment plate	Port position F, cushion needle position F (standard)	Port position R, cushion needle position F (common port)	Port position F, cushion needle position B	Port position R, cushion needle position B (common port)	Port position D, cushion needle position F	Port position D, cushion needle position D	Port position F, cushion needle position F (common port)
Option	A					●	●	●	●	●	●	●	●	●	●	●	●	●
	A1					●	●	●	●	●	●	●	●	●	●	●	●	●
	A2					●	●	●	●	●	●	●	●	●	●	●	●	●
	A3					●	●	●	●	●	●	●	●	●	●	●	●	
	Y							●	●			●	●	●	●	●	●	●
	Y1							●	●			●	●	●	●	●	●	
	L*									●	●	●	●	●	●	●	●	●
	N*									●	●	●	●	●	●	●	●	
	H											●	●	●	●	●	●	
	U											●	●	●	●	●	●	●
	Blank																	
	R																	
	B																	
	T																	
	D																	
	S																	
	X																	

*1: Some combinations are not available depending on the bore size. Be sure to check the Ⓖ Option in "How to order".

*2: LB1 with port position D is not possible. (ø25, ø32)

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped assembled with the product.

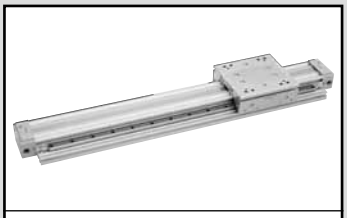
*2: For 12, 16, 20, 25 and 32 bore sizes with option code "R" or "T", the mounting type will be "00" or "LB1".
(Piping with "LB" is not possible for option codes "R" and "T".)

3: "" of L* and N* indicates the number of sets. When more than one set are necessary, specify "L2" (for LB) or "N2" (for LB1). 2 pcs./set

*4: In the case of the standard with ø12 to ø25, remove the cover, attach a flat nut and install the full stroke length adjusting bracket. A flat nut is attached to option "A3" to enable retrofitting the full stroke length adjusting bracket without removing the cover.

*5: In "H", the thread size for ø12 and ø16 will be "M4" and that for ø20 will be "M5".

*6: Check the option combinations in "Option selection table".



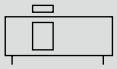
Pneumatic Cylinders I
Catalog No. CB-029SA

High precision guided rodless cylinder

Double acting **SRM3** Series

Double acting/position locking **SRM3-Q** Series

● Bore size: ø25/ø32/ø40/ø63 equiv.



RoHS CAD

Specifications

Descriptions		SRM3				SRM3-Q			
		Standard/with switch				Position locking/with switch			
Bore size mm		ø25 or equiv.	ø32 or equiv.	ø40 or equiv.	ø63 or equiv.	ø25 or equiv.	ø32 or equiv.	ø40 or equiv.	ø63 or equiv.
Actuation		Double acting				Double acting/position locking			
Working fluid		Compressed air							
Max. working pressure MPa		0.7							
Min. working pressure MPa		0.15		0.1		0.15		0.1	
Proof pressure MPa		1.05							
Ambient temperature °C		5 to 60							
Port size	Cylinder body port	Rc1/8	Rc1/4		Rc3/8	Rc1/8	Rc1/4		Rc3/8
	Position locking port	-				Rc1/8			
Stroke tolerance mm		$^{+2.0}_{0}$ (to 1000) $^{+2.5}_{0}$ (to 2000)							
Working piston speed mm/s		50 to 1500 (*1, *2)							
Cushion		Air cushion							
Lubrication		Not available							
Repeatability mm		±0.03							
Position locking mechanism		-				Attached to R side of cover			
Holding force N		-				Max. thrust x 0.7			

*1: For common port piping, working piston speed varies depending on stroke length. Contact CKD.
*2: (1) When the piston moves at 500 to 1500 mm/s, reduce the speed when entering the position locking mechanism to 500 mm/s or less.
(2) To reduce the speed, add an external shock absorber or deceleration circuit.
(3) Apply grease regularly to the sliding part of the lock lever.

Allowable absorbed energy

Bore size (mm)	Cushioned		Without cushion	With shock absorber (initial set point)	
	Allowable absorbed energy (J)	Cushion stroke (mm)	Allowable absorbed energy (J)	Absorbed energy (J)	Effective stroke length (mm)
ø25 or equiv.	1.40	20.9	0.015	10	9
ø32 or equiv.	2.57	23.5	0.030	18	13
ø40 or equiv.	4.27	23.9	0.050	50	16.5
ø63 or equiv.	17.4	29.6	0.138	86	21

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø25, ø32 or equiv.	200, 300, 400, 500, 600, 700, 800, 900, 1000	1000	50
ø40, ø63 or equiv.	200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000	2000	80

Note: The custom stroke length is available in 1 mm increments.

Compatibility table by variation

Applicable bore size		Double acting/ standard	Double acting/ position locking
			Q
ø25/32/ 40/63	P4	●	●
	P40	●	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Square nut, a standard attachment, is not attached.
*2: The grease nipple is not assembled.
*3: If the switch model No. is not selected, select "CO" (for reed switch), "C1" (for proximity switch) after [Stroke length].

How to order

Without switch

SRM3 - 25 B - 500 —— C0 — A P4/P40

With switch

SRM3 - 25 B - 500 - SW40 - R - A P4/P40

Ⓐ Model No. Ⓑ Bore size Ⓒ Cushion Ⓓ Stroke length Ⓔ Switch model No. Ⓕ Switch quantity Ⓖ Option *1 *2 *3

Code	Content
Ⓐ Model No.	
SRM3	Standard
SRM3-Q	Position locking
Ⓑ Bore size (mm)	
25	ø25
32	ø32
40	ø40
63	ø63
Ⓒ Cushion	
B	Both sides cushioned
R	R side cushioned
L	L side cushioned
N	Without cushion

Ⓓ Stroke length (mm)

Bore size	Stroke length	Custom stroke length
ø25	**50 to 1000**	**In 1 mm increments**
ø32	**50 to 1000**	
ø40	**80 to 2000**	
ø63	**80 to 2000**	

Ⓔ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

* Select only when the switch model No. is not specified *6	
C0	With integrated magnet for reed switch
C1	With integrated magnet for proximity switch

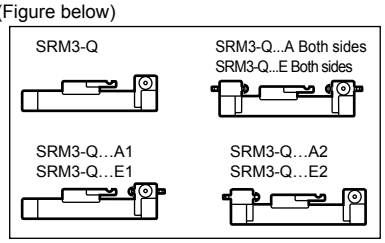
Ⓕ Switch quantity	
R	1 on R side
L	1 on L side
D	2
T	3
4	4 (when there are more than 4 switches, indicate switch quantity.)

Ⓖ Option

Bore size (ø)				25	32	40	63
A	Full stroke length adjustable	With shock absorber on both sides		●	●	●	●
A1		With shock absorber on R side		●	●	●	●
A2		With shock absorber on L side		●	●	●	●
A3		Adjusting bracket to be added later		●	●	●	●
E		With light-load shock absorber on both sides		●	●	●	●
E1		With light-load shock absorber on R side		●	●	●	●
E2		With light-load shock absorber on L side		●	●	●	●
Blank	Port position	F (Standard)	Cushion needle position F (Standard)	●	●	●	●
R		R (Common port)	F	●	●	●	
B		F	B	●	●	●	●
T		R (Common port)	B	●	●	●	
D		D	F	●	●	●	●
S		D	D		●	●	●

⚠ Precautions for model No. selection

*1: To install the full stroke length adjusting bracket later, you need to remove the cover and attach a flat nut.
A flat nut is attached to option "A3" to enable retrofitting the full stroke length adjusting bracket.
*2: The full stroke length adjusting bracket on R side is provided as standard for position locking. Therefore, if "A1" or "E1" is selected, a shock absorber only is added to R side. In the case of "A", R side is position locking and full stroke length adjustable with shock absorber, and L side is full stroke length adjustable with shock absorber. (Figure below)



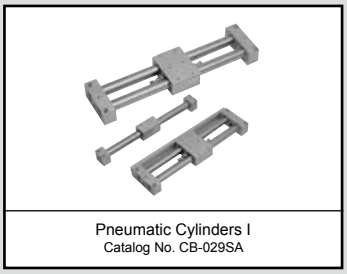
*3: Copper and PTFE free as standard. (Except for type with shock absorber)
*4: The built-in magnet cannot be changed after shipment.

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)				Compatible tube O.D.					Page
		M5	1/8	1/4	3/8	4(ø4)	6(ø6)	8(ø8)	10(ø10)	12(ø12)	
SC3W-6-*-P4			●			●	●	●			232
SC3W-8-*-P4				●			●	●	●		
SC3W-10-*-P4					●			●	●	●	

Specify the compatible tube O.D. code for *.



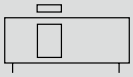
Pneumatic Cylinders I
Catalog No. CB-029SA

Magnet rodless cylinder

· Basic (guide combined) **MRL2-(F) Series**
· Simplified guide 1-piston **MRL2-G(F) Series**
· Simplified guide 2-piston **MRL2-W(F) Series**

● Bore size: ø6, ø10, ø16, ø20, ø25, ø32

JIS symbol



RoHS CAD

Specifications

Descriptions		MRL2(L,F) , MRL2-G(L,F) , MRL2-W(L,F)					
Bore size	mm	ø6	ø10	ø16	ø20	ø25	ø32
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	0.7					
Min. working pressure	MPa	0.3 (*1)		0.2			
Proof pressure	MPa	1.05					
Ambient temperature	°C	-10 to 60 (fine speed: 5 to 60) (no freezing)					
Port size		M5				Rc1/8	
Stroke tolerance	mm	$^{+1.5}_{0}$ (to 1000)			$^{+2.0}_{0}$ (to 1500)		
Working piston speed	mm/s	50 to 500 (fine speed: 1 to 200)					
Cushion		Rubber cushion					
Lubrication		Not available					
Magnet holding force (*2)	N	19	63	166	294	350	574
Adjustable stroke range (single side) (*3)	mm	3	4	6	8.5	10	10

*1: The value for MRL2-G-6-C (with shock absorber) is 0.4.
*2: The simplified guide 2-piston (W) will be a 2-fold value.
*3: The stroke length of MRL2 (basic) cannot be adjusted.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Max. stroke with switch (mm)	Max. stroke length (mm) of common piping with switch	Max. stroke length of fine speed (mm)	Min. stroke length (mm)
ø6	50,100,150,200	300	200	-	300	1
ø10	50,100,150,200,250,300	500	300	300	500	
ø16	100,150,200,250,300, 400,500	1000	500	500	800	
ø20	200,250,300,350, 400,500,600,700	1500	700	700	800	
ø25	200,250,300,350, 400,500,600,700	1500	700	700	800	
ø32	200,250,300,350, 400,500,600,700	1500	700	700	700	

■ The custom stroke length is available in 1 mm increments.

Compatibility table by variation

Applicable bore size		Double acting/ basic
ø6 to 32	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Port plugs of ø6, ø10, and ø16 are changed from FPL-M5 to hexagon socket head and female thread. Sealant is required when the plug position is changed.

*2: Electrolytic nickel plating is used in the magnet.

How to order

Without switch

MRL2-W — 6 C — 50 — C P4 P40

With switch

MRL2-WL — 6 C — 50 — SW11 — R — C P4 P40

Ⓐ Model No.

Ⓑ Bore size

Ⓒ Cushion *2

Ⓓ Stroke length *3

Ⓔ Switch model No.

Ⓕ Switch quantity

Ⓖ Option *4

Code		Content
Ⓐ Model No.		
Basic	**MRL2**	Without switch
	MRL2-L	With switch
Simplified guide 1-piston	**MRL2-G**	Without switch
	MRL2-GL	With switch
Simplified guide 2-piston	**MRL2-W**	Without switch
	MRL2-WL	With switch

Ⓑ Bore size (mm)	
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

Ⓒ Cushion	
Blank	Rubber cushion
C	Rubber-air cushion

Ⓓ Stroke length (mm)

Bore size	Stroke length *4	Custom stroke length
ø6	**1 to 300**	**In 1 mm increments**
ø10	**1 to 500**	
ø16	**1 to 1000**	
ø20 to ø32	**1 to 1500**	

Ⓔ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓕ Switch quantity	
R	1 on R side
L	1 on L side
D	2
T	3
4	4 (when there are more than 4 switches, indicate switch quantity.)

Ⓖ Option	
C	With shock absorber (basic cannot be selected.)
S	With scraper (fine speed cannot be selected)
R	With switch Common piping (basic and ø6 cannot be selected.)

⚠ Precautions for model No. selection

*1: When the cushion is a rubber cushion (blank), the port thread will be the following.
NPT thread: NN G thread: GN

*2: In the case of MRL2-G and W with the "C" rubber-air cushion, the stopper protrudes from the end plate by approximately 1 mm at shipment. Note that the rubber-air cushion may not function if the stopper is moved to adjust the stroke length.

*3: Refer to the following table for the max. stroke length with switch.

***4: When selecting common piping with "R" switch, select the model No. with switch (MRL2-*L).**

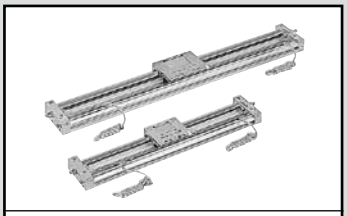
Bore size (mm)	Max. stroke length with switch (mm)
ø6	200
ø10	300
ø16	500
ø20	700
ø25	700
ø32	700

Related products

Speed controller

Model No.	Appearance	Port size (Rc or R)		Compatible tube O.D.			Page
		M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M5-*-P4		●		●	●		232
SC3W-6-*-P4			●	●	●	●	

Specify the compatible tube O.D. code for *.



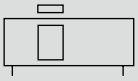
Pneumatic Cylinders I
Catalog No. CB-029SA

Magnet rodless cylinder with high precision guide

MRG2 Series

● Bore size: ø10, ø16, ø25

JIS symbol



RoHS CAD

Specifications

Descriptions		MRG2		
Bore size	mm	ø10	ø16	ø25
Actuation		Double acting		
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.3 (Note)	0.2	
Proof pressure	MPa	1.05		
Ambient temperature	°C	5 to 60		
Port size		M5		Rc1/8
Stroke tolerance	mm	+1.5 0		
Working piston speed	mm/s	50 to 1000		
Cushion		Shock absorber		
Lubrication		Not available		
Magnet holding force	N	63	166	350
Allowable absorbed energy	J	2.1	5.3	8.7

Note: Due to resistance of the shock absorber, it will take time to reach the stroke end. Take this into consideration upon use.
Note: Products other than standard stroke length are made to order products.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke with switch (mm)
ø10	50,100,150,200,300	300	50	50 (with 2 pcs.)
ø16	50,100,150,200,300,400,500	500		
ø25	50,100,150,200,300,400,500,600,700	700		

Note: Products other than standard stroke length are made to order products.

Compatibility table by variation

Applicable bore size		Double acting/ basic
ø10/16/25	P4	●
	P40	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Port plugs of ø10 and ø16 are changed from FPL-M5 to hexagon socket head and female thread. Sealant is required when the plug position is changed.

*2: Electrolytic nickel plating is used in the magnet.

How to order

MRG2 — 10 — 100 — SW11 — D — A — P4 / P40

Code	Content			
Ⓐ Bore size (mm)				
10	ø10			
16	ø16			
25	ø25			
Ⓑ Stroke length (mm)				
	Bore size ø (mm)	**10**	**16**	**25**
50	50	●	●	●
100	100	●	●	●
150	150	●	●	●
200	200	●	●	●
300	300	●	●	●
400	400		●	●
500	500		●	●
600	600			●
700	700			●
Ⓒ Switch model No.				
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.				
Ⓓ Switch quantity				
R	1 on R side			
L	1 on L side			
D	2			
T	3			
4	4 (when there are more than 4 switches, indicate switch quantity.)			
Ⓔ Option				
A	With both-sided full stroke length adjustable brackets			
A1	With R side full stroke length adjusting bracket			
A2	With L side full stroke length adjusting bracket			

Ⓐ Bore size

Ⓑ Stroke length

Ⓒ Switch model No.

Ⓓ Switch quantity

Ⓔ Option *1

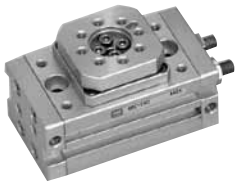
⚠ Precautions for model No. selection

*1: The full stroke length adjustable brackets cannot be retrofitted.

Related products

Speed controller							
Model No.	Appearance	Port size (Rc or R)		Compatible tube O.D.			Page
		M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M5-*-P4		●		●	●		232
SC3W-6-*-P4			●	●	●	●	

Specify the compatible tube O.D. code for *.



Pneumatic Cylinders II
Catalog No. CB-030SA

Table rotary actuator
Basic/high accuracy

GRC/GRC-K Series

● Size: 5/10/20/30/50/80

JIS symbol



RoHS CAD

Specifications

Descriptions			GRC-5	GRC-10 GRC-K-10	GRC-20 GRC-K-20	GRC-30 GRC-K-30	GRC-50 GRC-K-50	GRC-80 GRC-K-80
Size			5	10	20	30	50	80
Theoretical torque *1		N·m	0.5	1.0	2.0	3.0	5.2	8.1
Actuation			Rack and pinion mechanism					
Working fluid			Compressed air					
Max. working pressure		MPa	1.0					
Min. working pressure *2	Basic		0.10					
MPa	High accuracy		-	0.15		0.10		
	With external shock absorber		0.25	0.20	0.15			
Proof pressure		MPa	1.6					
Ambient temperature		°C	0 to 60 (no freezing)					
Port size			M5				Rc1/8	
Cushion	Basic/high accuracy		Rubber cushion					
	With external shock absorber		Shock absorber					
	Shock absorber model No.		NCK-0.3		NCK-0.7		NCK-1.2	NCK-2.6
Allowable absorbed energy	Basic/high accuracy		0.005	0.008	0.03		0.04	0.11
J	With external shock absorber *6		0.46	0.59	1.15	1.71	2.33	2.78
Shock absorber stroke		mm	3.5	3.5	5	5	5.5	6.5
Lubrication			Not available					
Volumetric capacity *3		cm^3 90°	1.3	3.5	7.0	10.5	18.1	28.3
		180°	3.4	6.6	13.4	20.0	34.4	53.7
Oscillating angle adjusting range *4	Basic/high accuracy	90°	0° to 100°					
		180°	90° to 190°					
	With external shock absorber	90°	90° ± 6°					
		180°	180° ± 6°					
Oscillating time adjusting range *5 *7		s/90°	0.2 to 1.5					
Table deflection (reference value)		Basic	±0.17°			±0.23°	±0.26°	±0.32°
		High accuracy	-	±0.026°				

*1: The theoretical torque is value at working pressure 0.5 MPa.
*2: To push through the rubber cushion integrated in basic and high accuracy type, 0.3 MPa and over working pressure is required.
*3: Volumetric capacity is value within oscillating angle adjusting range when max. oscillating angle.
*4: Oscillating angle adjusting range is value when adjusted by both side stopper bolts (shock absorber).
*5: Oscillating time adjusting range is value at working pressure 0.5 MPa.
*6: The values in the table indicate the absorbed energy at the maximum oscillation speed.
*7: For the type with shock absorber, the time until the unit hits the end of shock absorber (end of rod). (Not the oscillating time until the unit reaches the stroke end of the shock absorber.)

Compatibility table by variation

Applicable size		Standard	High accuracy	Fine speed	High accuracy/ fine speed
			K	F	KF
Torque 0.5 to 8.1 N·m	P4	●	●	▲	▲
	P40	● (*1)	● (*1)	▲	▲
	P41				
	P42	▲	▲	▲	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Even when P40 is selected for the external stopper option, electrolytic nickel plating is used for the stopper part.

*2: Zinc plating is used in part of the bearings - the sealing washer of the angle adjustment unit.

How to order

● Without switch

GRC - 10 - 90 ——— A1 P4 P40

● With switch

GRC - 30 - 180 - SW11 - R - A2 P4 P40

Ⓐ Model No.

Ⓑ Size

Ⓒ Oscillating angle

Ⓓ Switch model No.

Ⓔ Switch quantity

Ⓕ Option

Code	Content
Ⓐ Model No.	
GRC	Basic
GRC-K	High accuracy

Ⓑ Size (0.5 MPa)			
Model No.	**Theoretical torque**	**GRC**	**GRC-K**
5	0.5 [N·m]	●	-
10	1.0 [N·m]	●	●
20	2.0 [N·m]	●	●
30	3.0 [N·m]	●	●
50	5.2 [N·m]	●	●
80	8.1 [N·m]	●	●

Ⓒ Oscillating angle	
90	90°
180	180°

Ⓓ Switch model No.
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓔ Switch quantity	
R	With clockwise rotation detection 1 piece
L	With counterclockwise rotation detection 1 piece
D	2

Ⓕ Option	
Blank	Hexagon socket set screw stopper with urethane
A With external shock absorber	
A1	Installation position ①
A2	Installation position ②
A3	External shock absorber retrofitting (mounting groove machined)

⚠Precautions for model No. selection

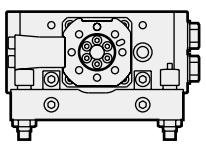
*1: Port position of basic/high accuracy type is provided on the side surface. Other ports are plugged.

*2: The external shock absorber cannot be retrofitted onto the basic/high accuracy type. Select the A3 type as an option if retrofitting.

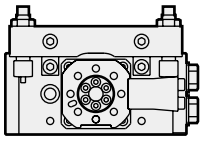
*3: If an external shock absorber is retrofit on the A3 type, the features will be the same as the A1 type. Consult CKD for A2 type.

External shock absorber mounting drawing

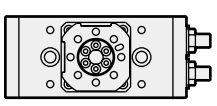
GRC-*-A1 (Installation position①)



GRC-*-A2 (Installation position②)



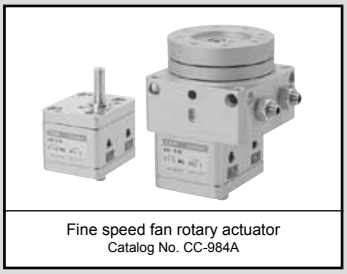
GRC-*-A3 (Installation position③)



Related products

Speed controller									
Model No.	Appearance	Port size (Rc or R)			Compatible tube O.D.			Page
		M3	M5	1/8	4(ø4)	6(ø6)	8(ø8)	
SC3W-M5-*-P4			●		●	●		232
SC3W-6-*-P4				●	●	●	●	

Specify the compatible tube O.D. code for *.



Fine speed fan rotary actuator
Catalog No. CC-984A

Fine speed fan rotary actuator Shaft
SFR Series
Fine speed fan rotary actuator Table
SFRT Series

● Size: 3/10/20

JIS symbol



RoHS

Specifications

Descriptions			SFR-3	SFR-10	SFR-20	SFRT-3	SFRT-10	SFRT-20
Size			3	10	20	3	10	20
Effective torque *1	90°		0.47	1.44	2.71	0.47	1.44	2.71
N·m	180°		0.35	1.08	2.03	0.35	1.08	2.03
Working fluid			Compressed air					
Actuation	90°		Vane					
	180°		Vane, pinion gear combined					
Max. working pressure		MPa	0.7					
Min. working pressure		MPa	0.1					
Proof pressure		MPa	1.05					
Ambient temperature		°C	0 to 60 (no freezing)					
Port size			M5					
Allowable absorbed energy		mJ	0.8	1.7	3.5	1.3	6.3	9.6
Lubrication			Not available					
Volumetric capacity		cm^3	3.7	9.1	19.4	3.7	9.1	19.4
Product weight	90°	g	70	120	250	200	350	560
	180°	g	120	220	430	230	430	690
Allowable radial load *2		N	40	50	300	40	50	60
Allowable thrust load *2		N	13	16	20	30	60	80
Allowable moment		N·m	-			0.7	0.9	2.9
Oscillating angle	90°		-			90°±5°		
adjusting range	180°		-			180°±5°		
Oscillating time adjusting range		sec/90°	0.07 to 1.5					
Table deflection		mm	-			0.03		
Backlash (SFR-180 type only)		*3	1.5° or less	2.5° or less	2.5° or less	-	-	-

*1: Effective torque is when at working pressure 0.5 MPa.
*2: Allowable radial load and allowable thrust load of SFR is not the dynamic load value.
*3: The backlash value is for reference.
* Oscillating angle of SFR-□-180 shaft is 190°.

Compatibility table by variation

Applicable bore size		Shaft	Table
		SFR	SFRT
Torque 0.35 to 2.71 N·m	P4	●	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Without switch

SFR - 10 - 90 ——— P4

● With switch

SFRT - 20 - 180 - SWAP - D - P4

Ⓐ Model No.

Ⓑ Size

Ⓒ Oscillating angle

Ⓓ Switch model No.

Ⓔ Switch quantity

Code	Content
Ⓐ Model No.	
SFR	Shaft
SFRT	Table
Ⓑ Size	
Size	**Effective torque (at 0.5 MPa)**
3	0.3 [N·m]
10	1.0 [N·m]
20	2.0 [N·m]
Ⓒ Oscillating angle	
90	90°
180	180°
Ⓓ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓔ Switch quantity	
R	With clockwise rotation detection 1 piece
L	With counterclockwise rotation detection 1 piece
D	2



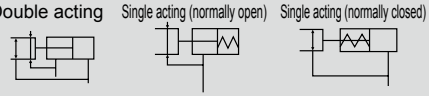
Pneumatic Cylinders II
Catalog No. CB-030SA

Parallel hand Double acting/single acting

HAP-2 to 4CS Series

● Operating stroke length: 16, 26, 41 mm

Double acting | Single acting (normally open) | Single acting (normally closed)



RoHS CAD

Specifications

Descriptions		HAP		
Size		2CS	3CS	4CS
Bore size	mm	ø20	ø25	ø40
Actuation		Double acting/single acting		
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.3		
Ambient temperature	°C	5 to 60		
Port size		M5		Rc1/8
Operating stroke length	mm	16	26	41
Rod diameter	mm	ø10	ø14	ø16
Capacity of reciprocation	cm^3	4.4	10.8	47.4
Repeatability	mm	±0.03		
Product weight	kg	0.28	0.58	1.52
Lubrication		Not available		

Compatibility table by variation

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø20/ 25/40	P4	●	●	●
	P40	●	●	●

How to order

Without switch

HAP - 2CS - O ——— P4 / P40

With switch

HAP - 2CS - O - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option *1

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
2CS	
3CS	
4CS	
Ⓑ Option	
Blank	Standard (double acting)
O	Single acting (normally open)
C	Single acting (normally closed)
Y1	With attachment Material (S50C)
Y2	With attachment Material (MC nylon)
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

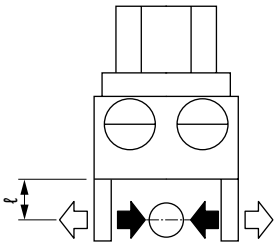
⚠ Precautions for model No. selection

*1: For option Y1 and Y2 attachments, two are attached on delivery.

Gripping power performance data

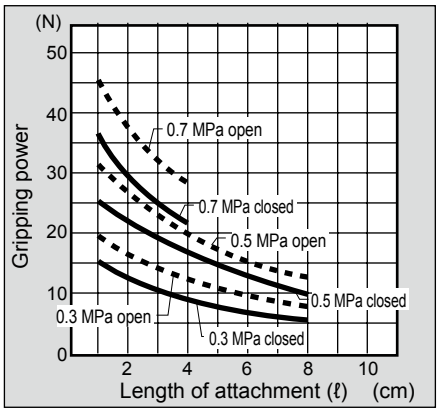
The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

- Open direction (⇦) - - - (shown with broken line)
- Closed direction (➡) — (shown with continuous line)

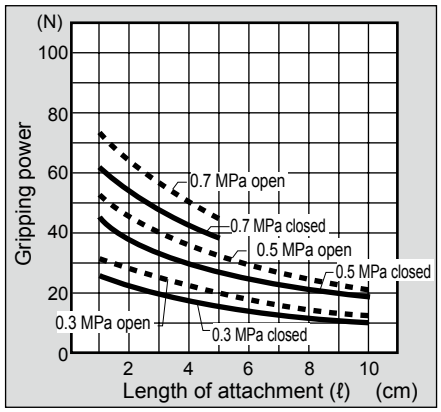


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to the double acting type.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting type.
When making a selection, read the precautions for design and selection on page 107.

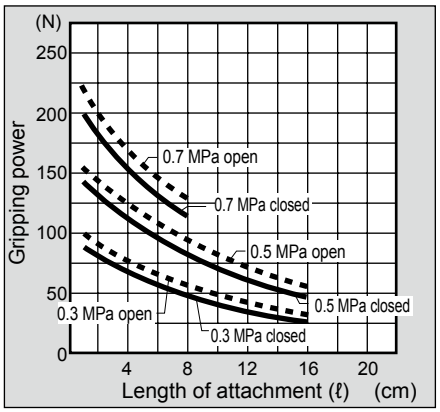
● HAP-2CS



● HAP-3CS



● HAP-4CS





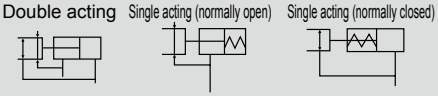
Pneumatic Cylinders II
Catalog No. CB-030SA

Compact cross roller parallel hand Double acting/single acting

BHA Series

●Operating stroke length: 5, 9, 11, 15 mm

Double acting | Single acting (normally open) | Single acting (normally closed)



RoHS CAD

Specifications

Descriptions		BHA			
Size		01CS1	03CS1	04CS1	05CS1
Bore size	mm	ø12	ø16	ø20	ø25
Actuation		Double acting/single acting			
Working fluid		Compressed air			
Max. working pressure	MPa	0.7			
Min. working pressure MPa	Double acting	0.1			
	Normally open	0.3			
	Normally closed				
Ambient temperature	°C	5 to 60			
Port size		M3	M5		
Operating stroke length	mm	5	9	11	15
Rod diameter	mm	ø6	ø8	ø10	ø12
Capacity of reciprocation	cm^3	0.32	1.58	2.89	6.32
Repeatability	mm	±0.01			
Product weight	kg	0.100	0.145	0.253	0.420
Lubrication		Not available			

How to order

Without switch

BHA - 01CS1 - O ——— P4 / P40

With switch

BHA - 01CS1 - O - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option *1

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
01CS1	
03CS1	
04CS1	
05CS1	
Ⓑ Option	
Blank	Standard (double acting)
O	Single acting (normally open)
C	Single acting (normally closed)
Y1	With attachment Material (S50C)
Y2	With attachment Material (MC nylon)
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Compatibility table by variation

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø12/16/20/25	P4	●	●	●
	P40	●	●	●

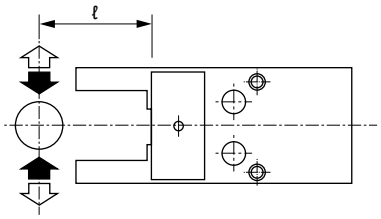
⚠ Precautions for model No. selection

*1: For option Y1 and Y2 attachments, two are included on delivery.

Gripping power performance data

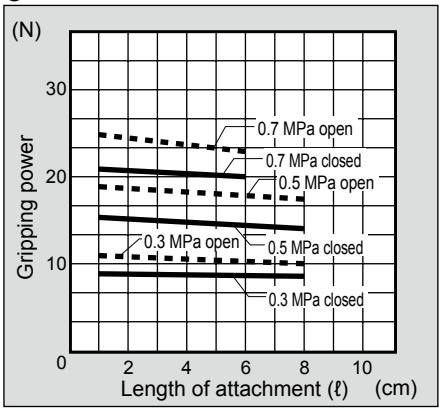
The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

- Open direction (⇦) - - - (shown with broken line)
- Closed direction (➡) — (shown with continuous line)

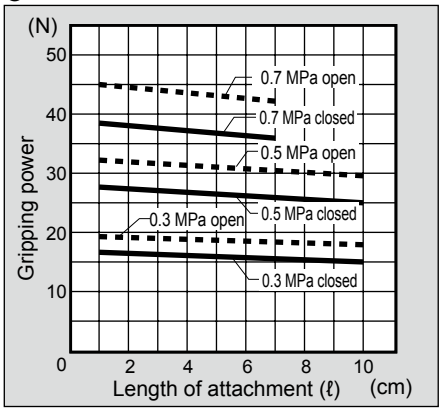


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to the double acting type.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting type.
When making a selection, read the precautions for design and selection on page 107.

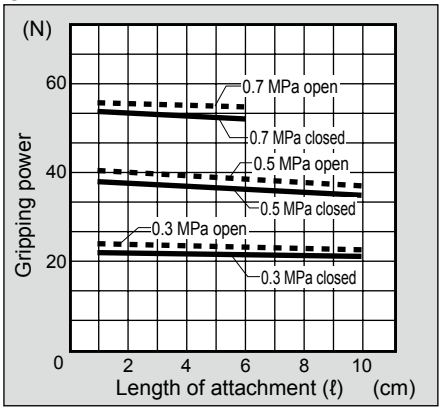
● BHA-01CS1



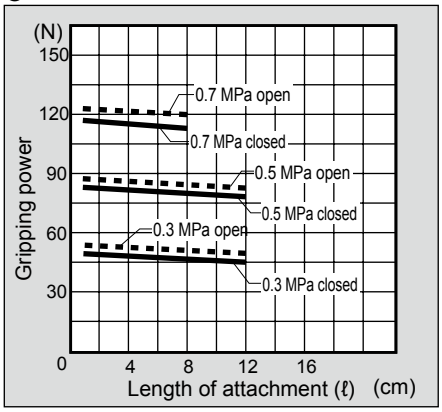
● BHA-03CS1

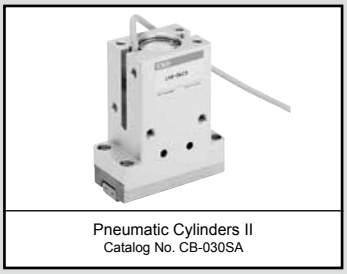


● BHA-04CS1



● BHA-05CS1





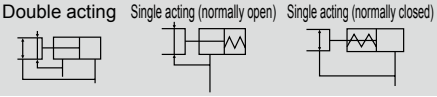
Pneumatic Cylinders II
Catalog No. CB-030SA

Linear guide hand Double acting/single acting

LHA Series

● Operating stroke length: 4, 5, 9, 11, 15, 20 mm

Double acting | Single acting (normally open) | Single acting (normally closed)



RoHS CAD

Specifications

Descriptions		LHA					
Size		006CS	01CS	03CS	04CS	05CS	06CS
Bore siz	mm	ø6	ø12	ø16	ø20	ø25	ø32
Actuation		Double acting/single acting					
Working fluid		Compressed air					
Max. working pressure	MPa	0.7					
Min. working pressure MPa	Double acting	0.15	0.1				
	Single acting	0.3					
Ambient temperature	°C	5 to 60					
Port size		M3		M5			
Operating stroke length	mm	4	5	9	11	15	20
Rod diameter	mm	ø3	ø6	ø8	ø10	ø12	ø16
Capacity of reciprocation	cm^3	0.10	0.32	1.58	2.89	6.32	14.07
Repeatability	mm	±0.01					
Product weight	kg	0.04	0.085	0.15	0.36	0.52	0.82
Lubrication		Not available					

How to order

Without switch

LHA - 03CS - O — P4 / P40

With switch

LHA - 03CS - O - SW81 - R - P4 / P40

Ⓐ Size

Ⓑ Option

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
006CS	
01CS	
03CS	
04CS	
05CS	
06CS	
Ⓑ Option	
Blank	Standard (double acting)
O	Single acting (normally open)
C	Single acting (normally closed)
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

⚠ Precautions for model No. selection

*1: Only the LHA-006CS is provided with the F switch.

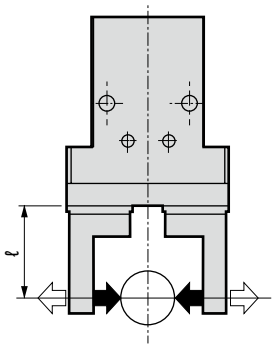
Compatibility table by variation

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø6 to 32	P4	●	●	●
	P40	●	●	●

Gripping power performance data

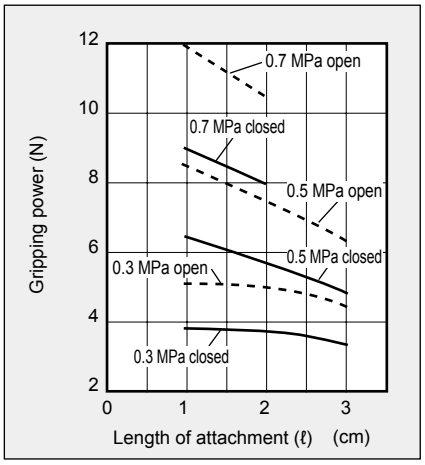
The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

·Open direction (⇦) - - - - - - - - - - - - (shown with broken line)
·Closed direction (➡) ———————— (shown with continuous line)

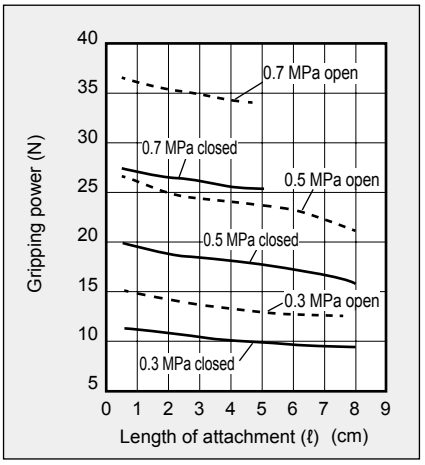


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to the double acting type.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting type.
When making a selection, read the precautions for design and selection on page 107.

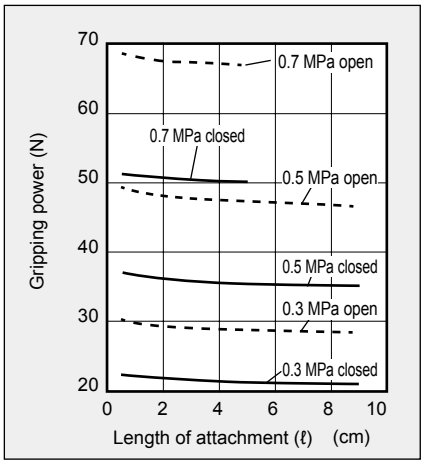
● LHA-006CS



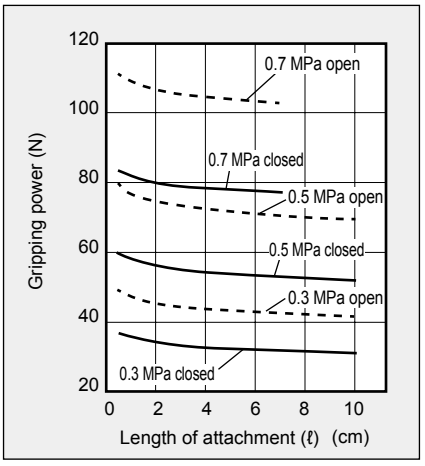
● LHA-01CS



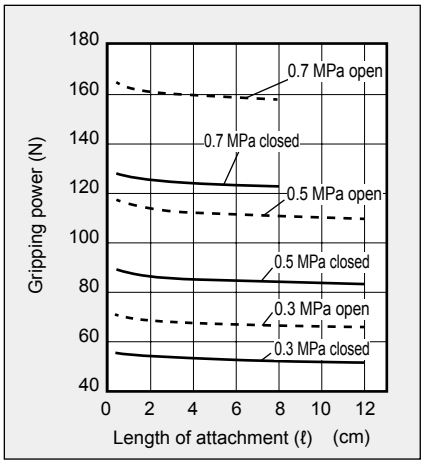
● LHA-03CS



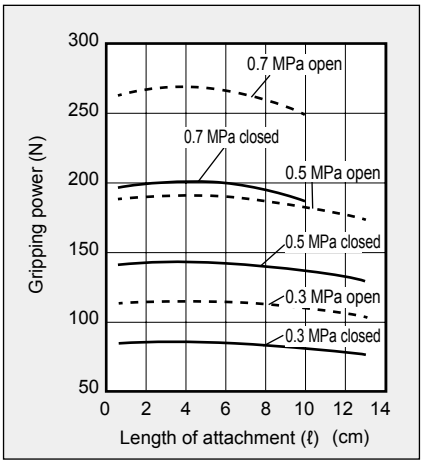
● LHA-04CS

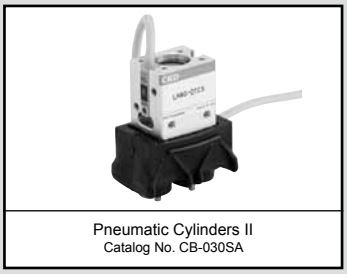


● LHA-05CS



● LHA-06CS





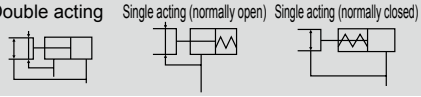
Pneumatic Cylinders II
Catalog No. CB-030SA

Linear guide hand with rubber cover Double acting/single acting

LHAG Series

● Operating stroke length: 5, 9, 11, 15, 20 mm

Double acting | Single acting (normally open) | Single acting (normally closed)



RoHS CAD

Specifications

Descriptions		LHAG				
Size		01CS	03CS	04CS	05CS	06CS
Bore size	mm	ø12	ø16	ø20	ø25	ø32
Actuation		Double acting/single acting				
Working fluid		Compressed air				
Max. working pressure	MPa	0.7				
Min. working pressure	Double acting	0.2				
	MPa Single acting	0.3				
Ambient temperature	°C	5 to 60				
Port size		M3		M5		
Operating stroke length	mm	5	9	11	15	20
Rod diameter	mm	ø6	ø8	ø10	ø12	ø16
Capacity of reciprocation	cm^3	0.32	1.58	2.89	6.32	14.07
Repeatability	mm	±0.01				
Product weight	kg	0.09	0.17	0.37	0.57	0.9
Lubrication		Not available				

How to order

Without switch

LHAG - 03CS - O — P4 / P40

With switch

LHAG - 03CS - O - SW11 - R - P4 / P40

Model No.

Ⓐ Size

Ⓑ Option

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
01CS	
03CS	
04CS	
05CS	
06CS	
Ⓑ Option	
Blank	Standard (double acting with nitrile rubber guard)
O	Single acting (normally open)
C	Single acting (normally closed)
F	Fluoro rubber guard
T	Silicone rubber guard
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Compatibility table by variation

Applicable bore size		Double acting	Single acting/ Normally open	Single acting/ Normally closed
			O	C
ø12 to 32	P4	●	●	●
	P40	●	●	●

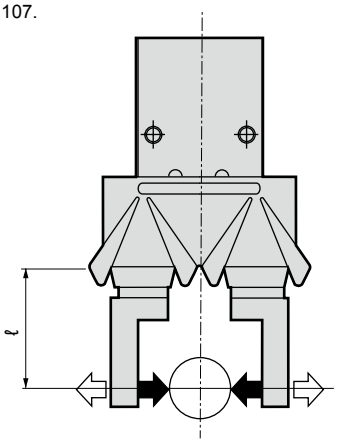
● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

Gripping power performance data

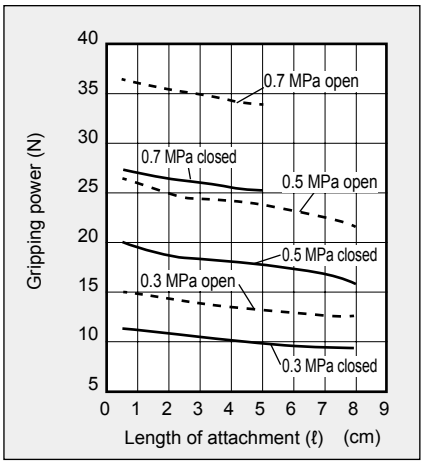
The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

·Open direction (⇦) - - - - - - - - - - - - (shown with broken line)
·Closed direction (➡) ———————— (shown with continuous line)

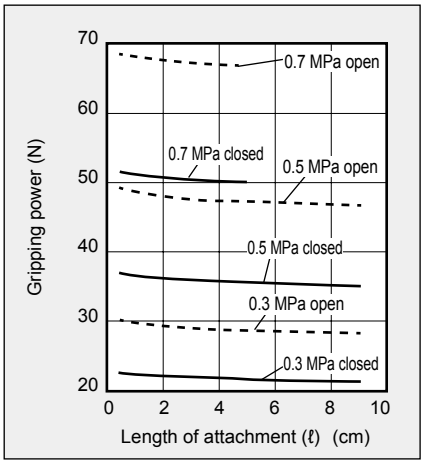
(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to the double acting type.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting type.
When making a selection, read the precautions for design and selection on page 107.



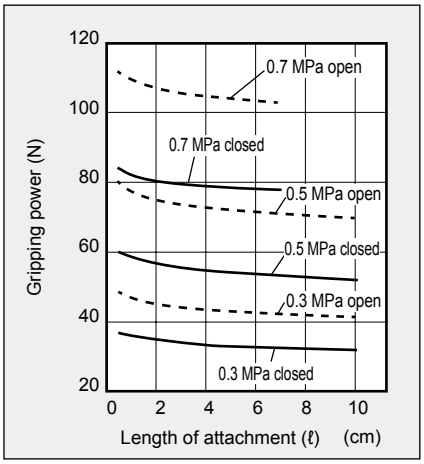
● LHAG-01CS



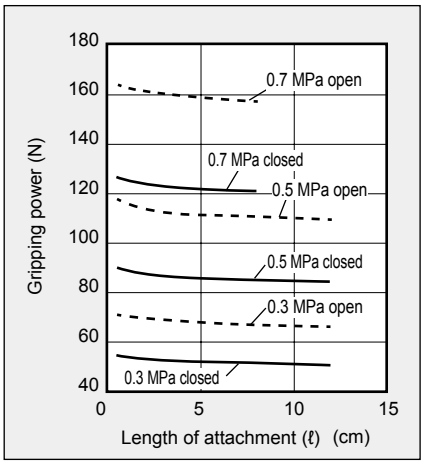
● LHAG-03CS



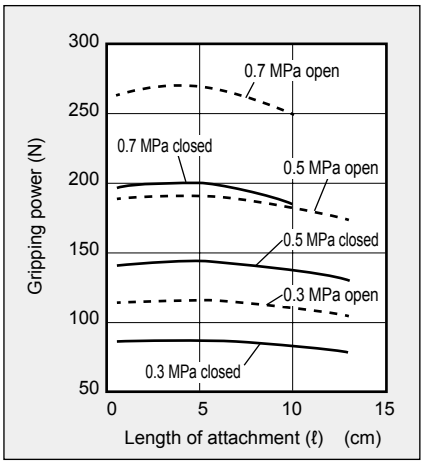
● LHAG-04CS



● LHAG-05CS



● LHAG-06CS





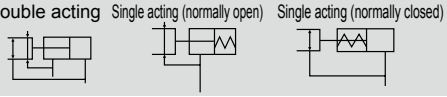
Pneumatic Cylinders II
Catalog No. CB-030SA

Compact cross roller parallel hand with rubber cover
Double acting/single acting

BHG Series

●Operating stroke length: 5, 9, 11, 15 mm

Double acting | Single acting (normally open) | Single acting (normally closed)



RoHS CAD

Specifications

Descriptions			BHG			
Size			01CS	03CS	04CS	05CS
Bore size		mm	ø12	ø16	ø20	ø25
Actuation			Double acting/single acting			
Working fluid			Compressed air			
Max. working pressure		MPa	0.7			
Min. working pressure MPa	Double acting		0.15			
	Normally open		0.3			
	Normally closed					
Ambient temperature		°C	5 to 60			
Port size			M3	M5		
Operating stroke length		mm	5	9	11	15
Rod diameter		mm	ø6	ø8	ø10	ø12
Capacity of reciprocation		cm^3	0.32	1.58	2.89	6.32
Repeatability		mm	±0.01			
Product weight		kg	0.118	0.165	0.238	0.455
Lubrication			Not available			

How to order

Without switch

BHG - 01CS - O — P4 / P40

With switch

BHG - 01CS - O - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option *1

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
01CS	
03CS	
04CS	
05CS	
Ⓑ Option	
Blank	Standard (double acting)
O	Single acting (normally open)
C	Single acting (normally closed)
Y1	With attachment Material (S50C)
Y2	With attachment Material (MC nylon)
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Compatibility table by variation

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø12/16/20/25	P4	●	●	●
	P40	●	●	●

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

⚠ Precautions for model No. selection

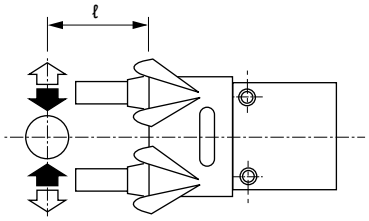
*1: For option Y1 and Y2 attachments, two are included on delivery.

Gripping power performance data

The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

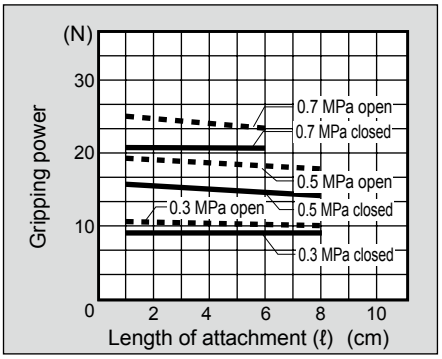
● Open direction (⇦) ----- (shown with broken line)

● Closed direction (⇨) —— (shown with continuous line)

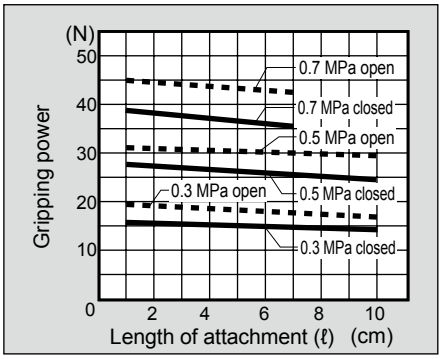


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to the double acting type.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting type.
When making a selection, read the precautions for design and selection on page 107.

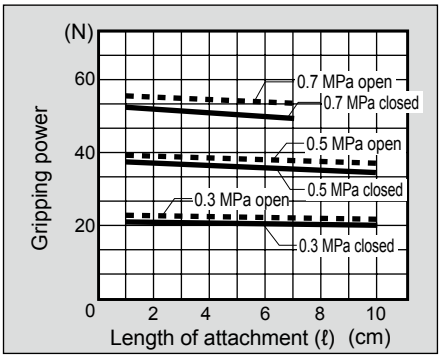
● BHG-01CS



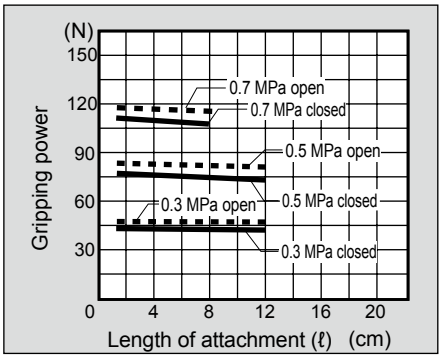
● BHG-03CS



● BHG-04CS



● BHG-05CS



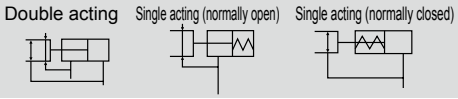


Pneumatic Cylinders II
Catalog No. CB-030SA

Cross roller parallel hand Double acting/single acting

HKP Series

●Operating stroke length: 24, 30, 36, 40, 60 mm



RoHS CAD

NEW

Specifications

Descriptions		HKP				
Size		32CS	40CS	50CS	63CS	80CS
Bore size	mm	ø32	ø40	ø50	ø63	ø80
Actuation		Double acting/single acting				Double acting
Working fluid		Compressed air				
Max. working pressure	MPa	0.7				
Min. working pressure Note	Double acting	0.1				0.3
	Normally open	0.3				-
	Normally closed					
Ambient temperature	°C	5 to 60				
Port size		M5	Rc1/8			Rc1/4
Operating stroke length	mm	24	30	36	40	60
Rod diameter	mm	ø16	ø20	ø28	ø32	ø16
Capacity of reciprocation	cm^3	25.3	49.5	89.4	162.9	354.5
Repeatability	mm	±0.01				
Product weight	kg	1.36	1.95	4.2	5.4	10.6
Lubrication		Not available				

Note: When a rubber cover (option) is attached, the min. working pressure is 0.15 MPa for double acting and 0.35 MPa for normally open/normally closed.

Compatibility table by variation

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed	Rubber cover (nitrile rubber)
			O	C	G
ø32 to 80	P4	●	●	●	●
	P40	●	●	●	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

HKP - 32CS - G — P4 / P40

With switch

HKP - 32CS - G - SW11 - R - P4 / P40

Ⓐ Size
Ⓑ Option
Ⓒ Switch model No.
Ⓓ Switch quantity

Code	Content
Ⓐ Size	
32CS	
40CS	
50CS	
63CS	
80CS	

Ⓑ Option

	Size	32CS	40CS	50CS	63CS	80CS
Blank	Standard (double acting)	●	●	●	●	●
O	Single acting (normally open)	●	●	●	●	
C	Single acting (normally closed)	●	●	●	●	
G	With rubber cover (nitrile rubber)	●	●	●	●	

Ⓒ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓓ Switch quantity

R	1 on open side
H	1 on closed side
D	2

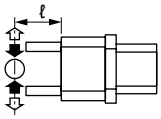
Hand/ chuck

Gripping power performance data

The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

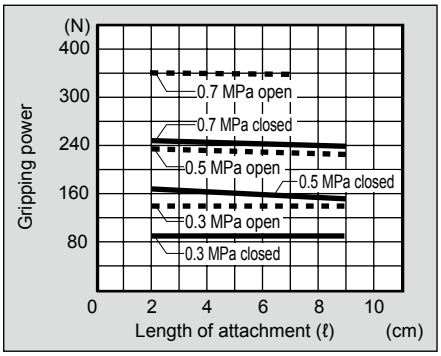
● Open direction (⇦) ····· (shown with broken line)

● Closed direction (➡) ——— (shown with continuous line)

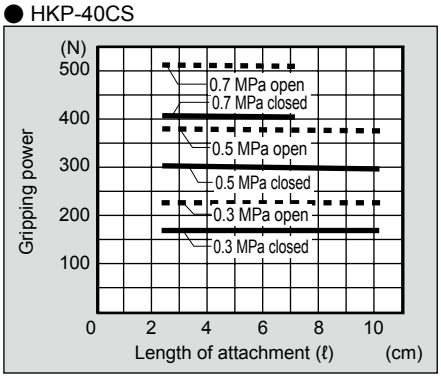


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to double acting.
C type gripping power decreases approximately 10 to 30% in the open direction compared to the double acting type.
When making a selection, read the precautions for design and selection on page 107.

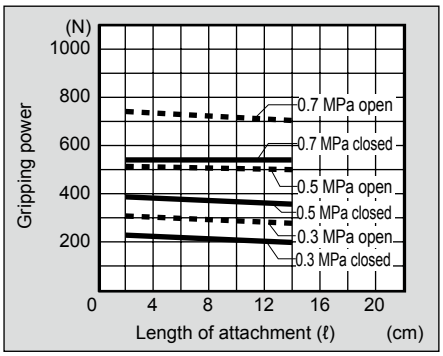
● HKP-32CS



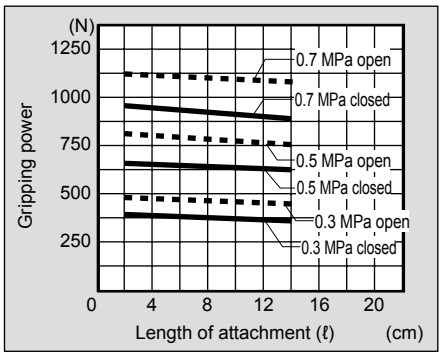
● HKP-40CS



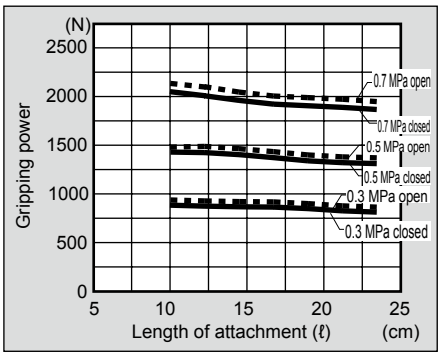
● HKP-50CS

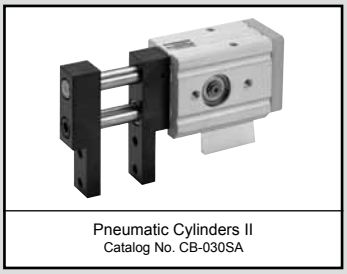


● HKP-63CS



● HKP-80CS





Pneumatic Cylinders II
Catalog No. CB-030SA

Lateral parallel hand Double acting

HCP Series

●Operating stroke length: 20, 30, 40 mm

Double acting



RoHS CAD

Specifications

Descriptions		HCP		
Size		2CS	3CS	4CS
Bore size	mm	ø12	ø20	ø32
Actuation		Double acting		
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.3		
Ambient temperature	°C	5 to 60		
Port size		M5		Rc1/8
Operating stroke length	mm	20	30	40
Rod diameter	mm	ø10	ø12	ø16
Capacity of reciprocation	cm^3	2.3	9.4	32.1
Repeatability	mm	±0.05		
Product weight	kg	0.52	0.98	1.90
Lubrication		Not available		

Compatibility table by variation

Applicable bore size		Double acting
ø12/ 20/32	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

HCP - 2CS - Y1 ——— P4 / P40

With switch

HCP - 2CS - Y1 - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option *1

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
2CS	
3CS	
4CS	
Ⓑ Option	
Blank	Standard (double acting)
Y1	With attachment Material (S50C)
Y2	With attachment Material (MC nylon)
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

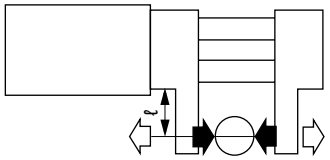
⚠ Precautions for model No. selection

*1: For option Y1 and Y2 attachments, two are included on delivery.

Gripping power performance data

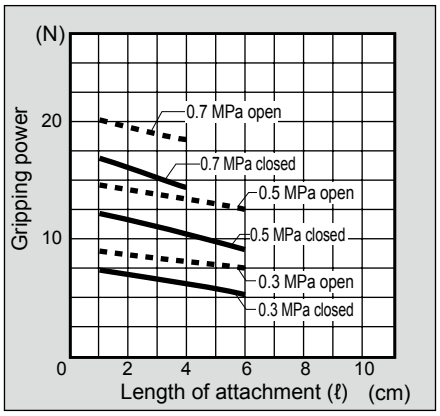
The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

- Open direction (⇦) - - - - (shown with broken line)
- Closed direction (➡) - - - - (shown with continuous line)

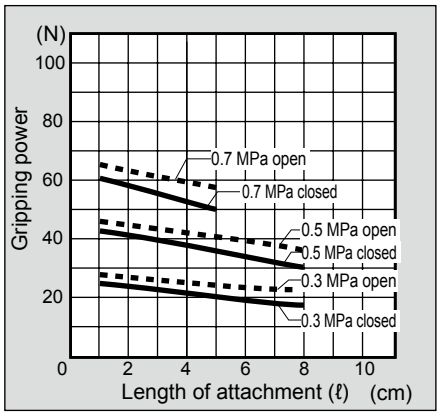


(Note) When making a selection, read the precautions for design and selection on page 107.

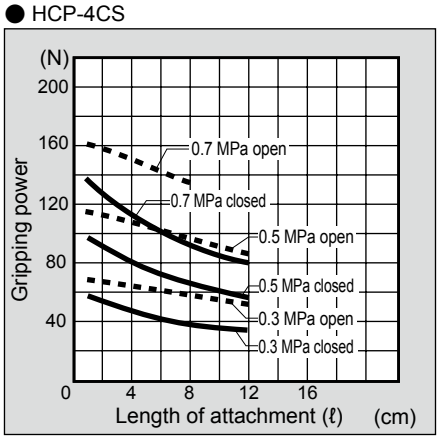
● HCP-2CS



● HCP-3CS



● HCP-4CS





Pneumatic Cylinders II
Catalog No. CB-030SA

Thin parallel hand with rubber cover (bearing guide) Double acting

HLBG Series

●Operating stroke length: 13, 18, 23 mm

Double acting



RoHS CAD

Specifications

Descriptions	HLBG-12CS	HLBG-15CS	HLBG-20CS
Bore size mm	ø12	ø15	ø20
Actuation	Double acting		
Working fluid	Compressed air		
Max. working pressure MPa	0.7		
Min. working pressure MPa	0.2		
Ambient temperature °C	5 to 60		
Port size	M5		
Operating stroke length mm	13	18	23
Capacity of reciprocation cm^3	1.47	3.18	7.22
Repeatability mm	±0.01		
Product weight kg	0.24	0.42	0.75
Lubrication	Not available		

Compatibility table by variation

Applicable bore size		Double acting
ø12/15/20	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

With switch

HLBG - 12CS - SW51 - R - P4 P40

Model No.

Ⓐ Size

Ⓑ Switch model No.

Ⓒ Switch quantity

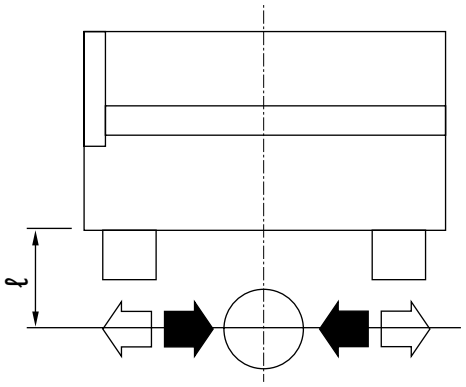
Code	Content
Ⓐ Size	
12CS	
15CS	
20CS	
Ⓑ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓒ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Gripping power performance data

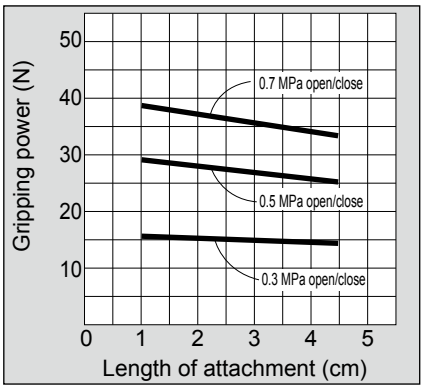
The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

● Both open direction (⇦) and closed direction (⬅)
——— (shown with continuous line)

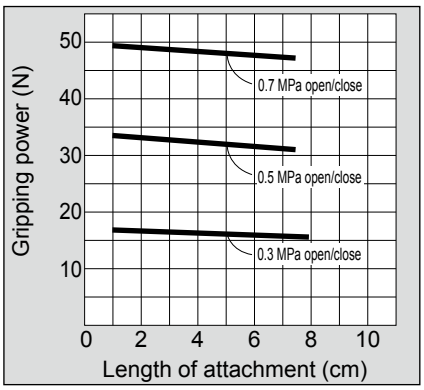
(Note) When making a selection, read the precautions for design and selection on page 107.



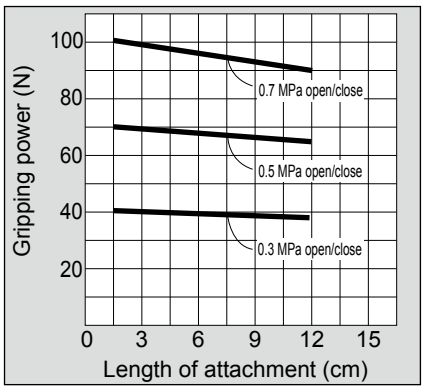
● HLBG-12CS



● HLBG-15CS



● HLBG-20CS





Pneumatic Cylinders II
Catalog No. CB-030SA

Compact wide parallel hand (standard/long stroke)

HMF Series

●Operating stroke length: Standard 30, 40, 50, 70, 100 mm
Long stroke: 60, 80, 100, 120, 160, 200 mm

Double acting



RoHS CAD

Specifications

Descriptions	HMF-12CS	HMF-16CS			HMF-20CS			HMF-25CS			HMF-32CS			HMF-40CS		
		Standard	L1	L2	Standard	L1	L2	Standard	L1	L2	Standard	L1	L2	Standard	L1	L2
Bore size mm	ø12×2	ø16×2			ø20×2			ø25×2			ø32×2			ø40×2		
Working fluid	Compressed air															
Max. working pressure MPa	0.7															
Min. working pressure MPa	0.3															
Ambient temperature °C	5 to 60															
Port size	M5										Rc1/8					
Operating stroke length mm	20	30	60	80	40	80	100	50	100	120	70	120	160	100	160	200
Rod diameter mm	ø6	ø8			ø10			ø12			ø16			ø20		
Capacity of reciprocation cm^3	3.4	9.1	18.1	24.1	18.8	37.6	47.0	37.7	75.4	90.5	84.4	145	193	226	301	377
Repeatability mm	±0.1															
Product weight kg	0.31	0.54	0.95	1.12	0.90	1.58	1.77	1.7	2.16	2.3	2.8	3.8	4.8	5.7	7.8	8.8
Lubrication	Not available															

Compatibility table by variation

Applicable bore size		Double acting		
		Standard	Long stroke 1	Long stroke 2
			L1	L2
ø12×2 to ø40×2	P4	●	●	●
	P40	●	●	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

HMF - 32CS - L1 - SW11 - R - P4 P40

Ⓐ Size
Ⓑ Option *1
Ⓒ Switch model No.
Ⓓ Switch quantity

Code	Content
Ⓐ Size	
12CS	
16CS	
20CS	
25CS	
32CS	
40CS	
Ⓑ Option	
Blank	Standard
L1	Long stroke 1
L2	Long stroke 2
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

⚠ Precautions for model No. selection

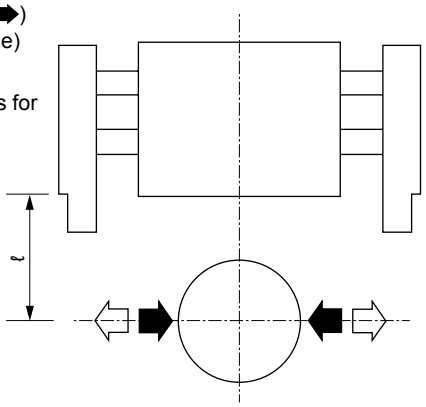
*1: 12CS is not available for long stroke "L1", "L2".

Gripping power performance data

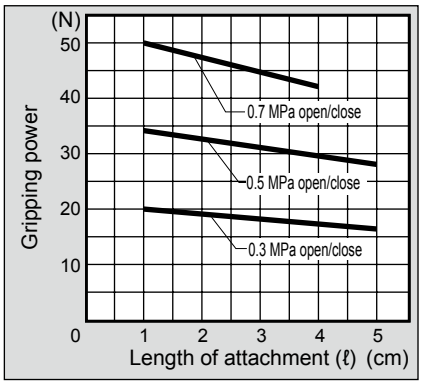
The gripping power with attachment length ℓ of hand and a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

● Both open direction (⇦▭) and closed direction (▭⇨)
——— (shown with continuous line)

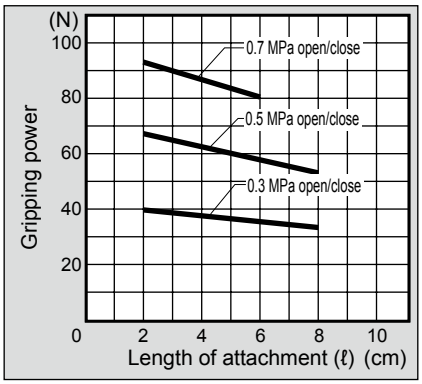
(Note) When making a selection, read the precautions for design and selection on page 107.



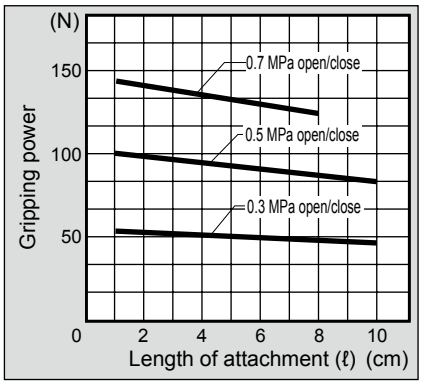
● HMF-12CS



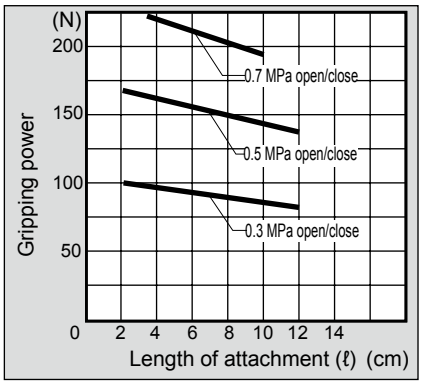
● HMF-16CS



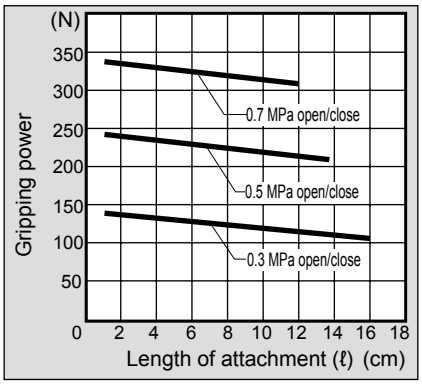
● HMF-20CS



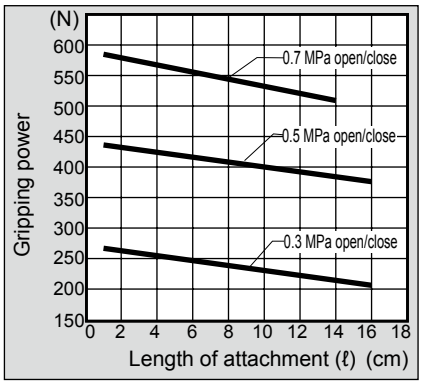
● HMF-25CS

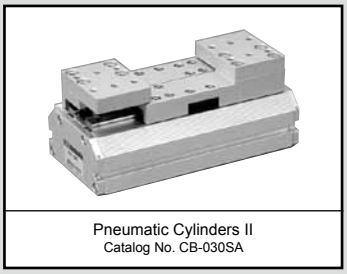


● HMF-32CS



● HMF-40CS





Pneumatic Cylinders II
Catalog No. CB-030SA

Thin long stroke parallel hand Double acting
(Standard/long stroke 1)

HLC Series

●Operating stroke length: Standard 20, 30, 40, 50, 60, 70 mm
Long stroke 1 60, 80, 100, 120, 140 mm

Double acting



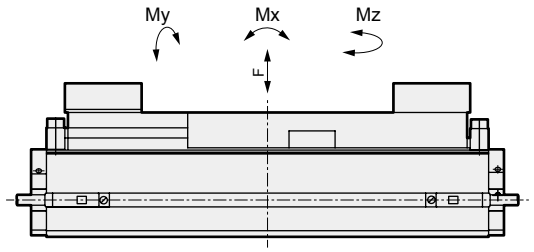
RoHS CAD

Specifications

Descriptions	HLC										
Size	08CS	12CS		16CS		20CS		25CS		30CS	
	Standard	Standard	L1	Standard	L1	Standard	L1	Standard	L1	Standard	L1
Bore size mm	ø8×2	ø12×2		ø16×2		ø20×2		ø25×2		ø30×2	
Working fluid	Compressed air										
Max. working pressure MPa	0.7										
Min. working pressure MPa	0.2										
Ambient temperature °C	5 to 60										
Port size	M3			M5							
Operating stroke length mm	20	30	60	40	80	50	100	60	120	70	140
Capacity of reciprocation cm^3	2.0	6.8	13.6	16.1	32.2	31.4	62.8	58.9	117.8	99	198
Repeatability: mm	±0.01			±0.03							
Product weight kg	0.14	0.29	0.44	0.71	0.85	1.03	1.4	1.62	2.23	2.74	3.69
Lubrication	Not available										

HLC allowable load and allowable moment (static)

Allowable load and allowable moment	F	Mx	Mz	My
Model No.	N	N·m	N·m	N·m
HLC-08CS	102	10	8.5	1.6
HLC-12CS	151	11.9	8.2	4.68
HLC-12CS-L1	151	11.9	8.2	4.68
HLC-16CS	325	27.5	25.6	7.96
HLC-16CS-L1	325	27.5	25.6	10.6
HLC-20CS	306	29.9	27	10.6
HLC-20CS-L1	306	29.9	27	11.2
HLC-25CS	423	105.1	96.4	19.7
HLC-25CS-L1	423	105.1	96.4	19.7
HLC-30CS	694	109.3	116.5	33.3
HLC-30CS-L1	694	109.3	116.5	43.1



Compatibility table by variation

Applicable bore size		Double acting
ø8×2 to ø30×2	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

HLC - 20CS - L1 - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option *1

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
08CS	
12CS	
16CS	
20CS	
25CS	
30CS	

Ⓑ Option							
	Size	**08CS**	**12CS**	**16CS**	**20CS**	**25CS**	**30CS**
Blank	Standard	●	●	●	●	●	●
L1	Long stroke 1		●	●	●	●	●

Ⓒ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

⚠ Precautions for model No. selection

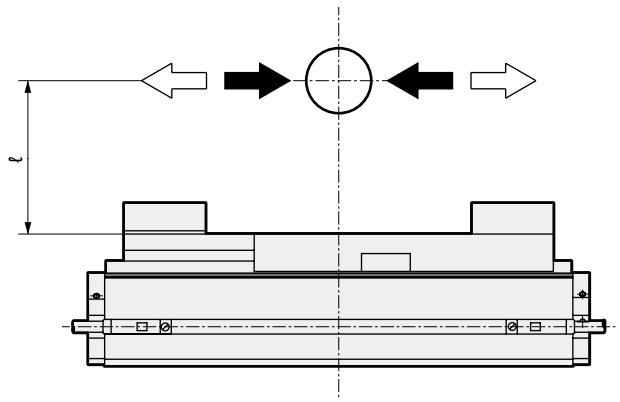
*1: 08CS is not available for long stroke "L1", "L2".

Gripping power performance data

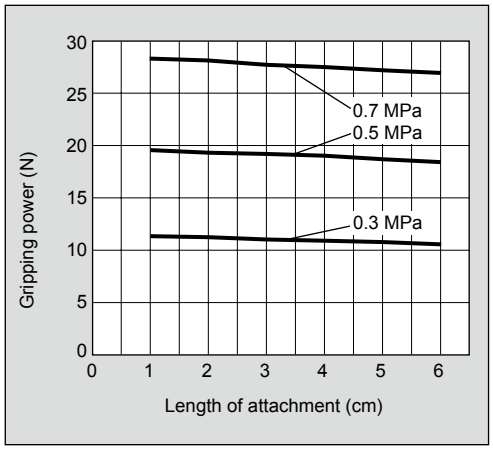
The gripping power with attachment length ℓ of hand and a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

● Both open direction (⇦▭) and closed direction (▭⇨)
——— (shown with continuous line)

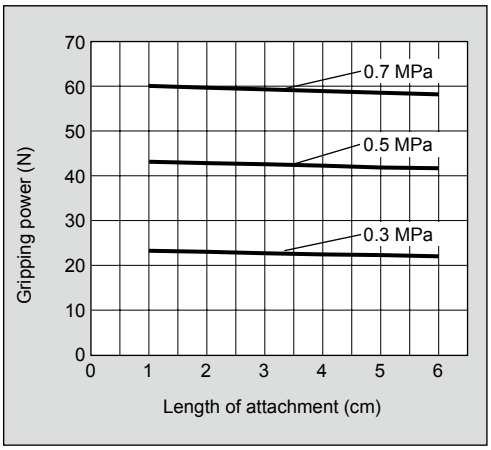
(Note) When making a selection, read the precautions for design and selection on page 107.



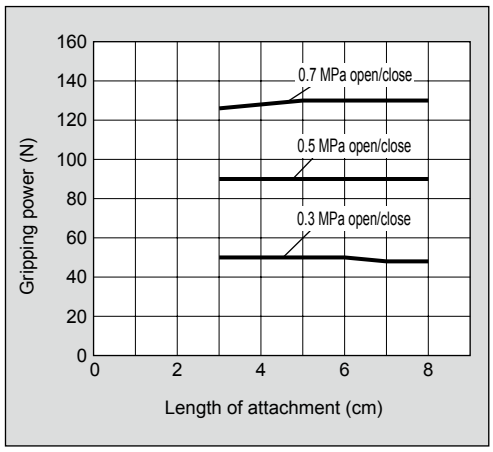
● HLC-08CS



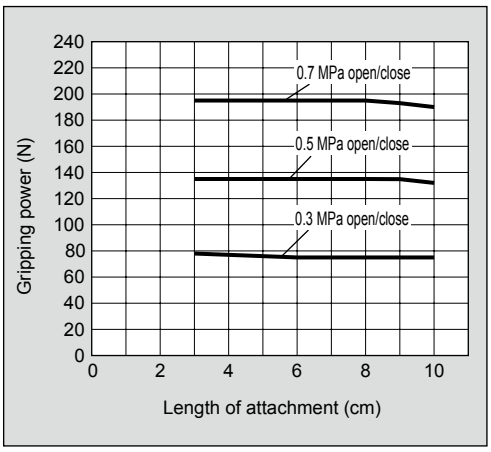
● HLC-12CS



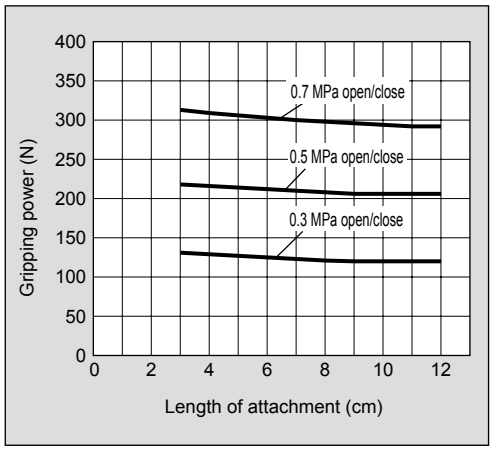
● HLC-16CS



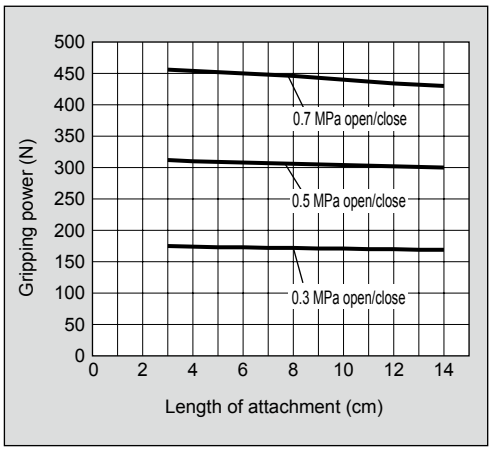
● HLC-20CS

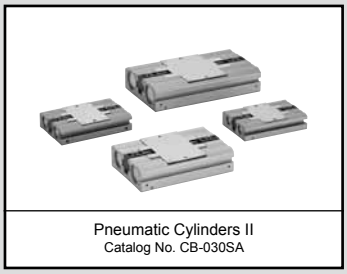


● HLC-25CS



● HLC-30CS





Pneumatic Cylinders II
Catalog No. CB-030SA

Ultra thin parallel hand

HLD Series

●Operating stroke length: ø12, 16, 20, 30 mm

RoHS CAD

Specifications

Descriptions	HLD			
Size	08CS	12CS	16CS	20CS
Bore size mm	ø8×4	ø12×4	ø16×4	ø20×4
Working fluid	Compressed air			
Max. working pressure MPa	0.7			
Min. working pressure MPa	0.2			
Ambient temperature °C	5 to 60			
Port size	M3		M5	
Operating stroke length mm	12	16	20	30
Capacity of reciprocation cm^3	3.2	7.8	19.8	43.3
Repeatability: mm	±0.01			
Product weight kg	0.23	0.29	0.62	1.05
Lubrication	Not available			

Compatibility table by variation

Applicable bore size		Double acting
ø8×4 to ø20×4	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

HLD - 08CS - SW11 - R - P4 P40

Ⓐ Size

Ⓑ Switch model No.

Ⓒ Switch quantity

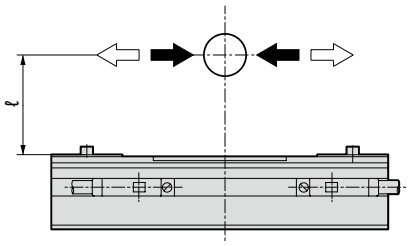
Code	Content
Ⓐ Size	
08CS	
12CS	
16CS	
20CS	
Ⓑ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓒ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Gripping power performance data

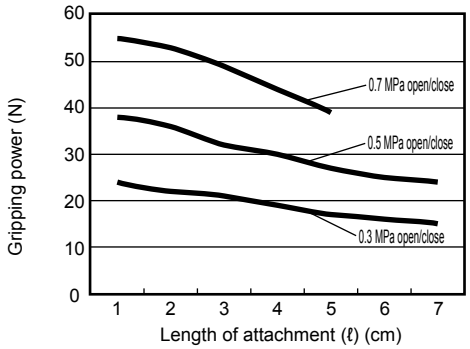
The gripping power with attachment length ℓ of hand and a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

● Both open direction (⇦⇨) and closed direction (⇨⇦)
——— (shown with continuous line)

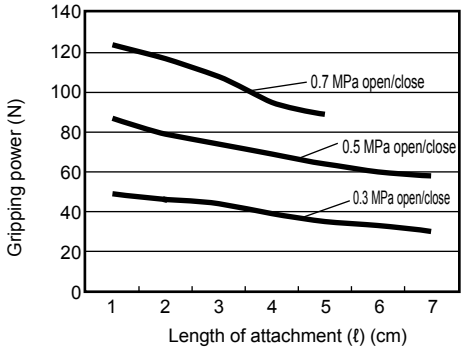
(Note) When making a selection, read the precautions for design and selection on page 107.



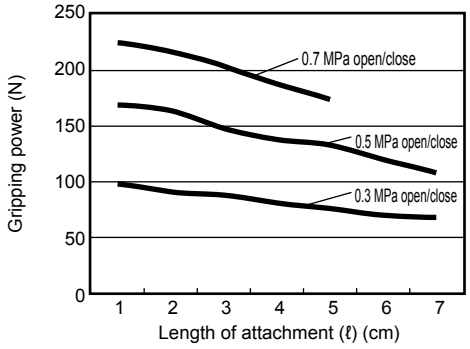
● HLD-08CS



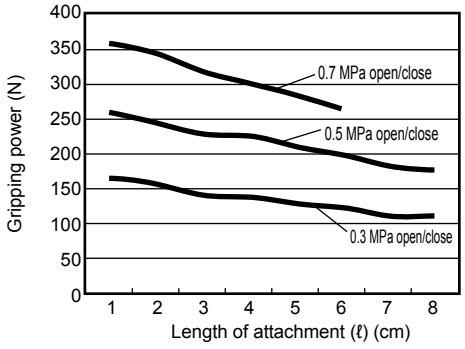
● HLD-12CS

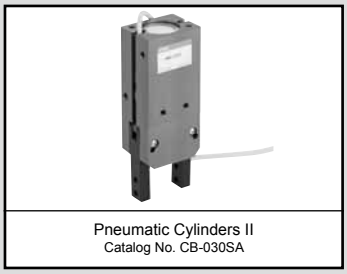


● HLD-16CS



● HLD-20CS





Pneumatic Cylinders II
Catalog No. CB-030SA

Thin wide angle hand

HMD Series

●Open/close angle: -4° to 184°

Double acting



RoHS CAD

Specifications

Descriptions	HMD	
Size	16CS	25CS
Bore size mm	ø16	ø25
Actuation	Double acting	
Working fluid	Compressed air	
Max. working pressure MPa	0.7	
Min. working pressure MPa	0.3	
Ambient temperature °C	5 to 60	
Port size	M3	M5
Open/close angle °	-4 to 184	
Rod diameter mm	ø6	ø8
Capacity of reciprocation cm^3	5.8	19.4
Repeatability mm	±0.2	
Product weight kg	0.13	0.38
Lubrication	Not available	

Compatibility table by variation

Applicable bore size		Double acting
		Standard
ø16/25	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

HMD - 16CS ——— P4 / P40

With switch

HMD - 16CS - SW11 - R - P4 / P40

Model No.

Ⓐ Size

Ⓑ Switch model No.

Ⓒ Switch quantity

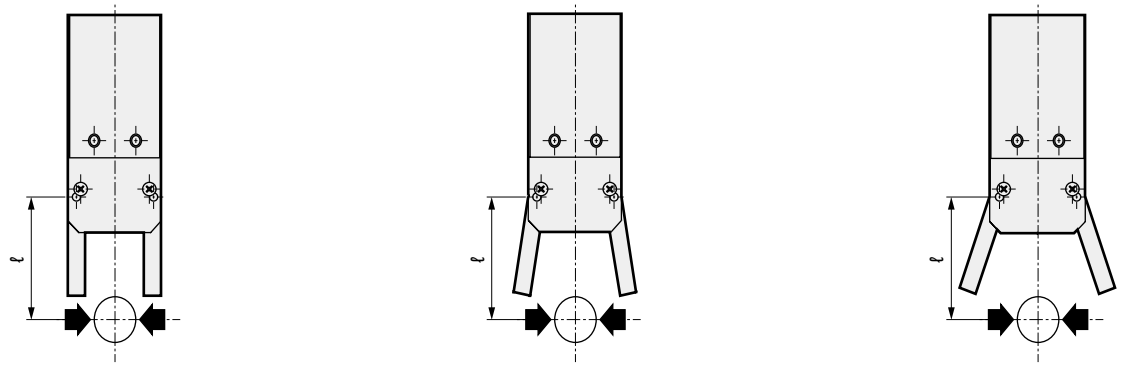
Code	Content
Ⓐ Size	
16CS	
25CS	
Ⓑ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓒ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Gripping power performance data

The gripping power with attachment length ℓ of hand and a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

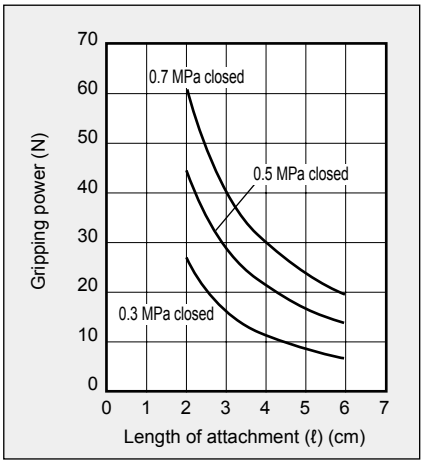
·Closed direction (➡) ——————— (shown with continuous line)

[Parallel] [10°] [20°]

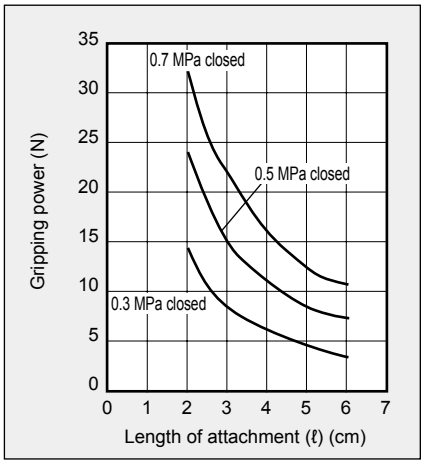


(Note) When making a selection, read the precautions for design and selection on page 107.

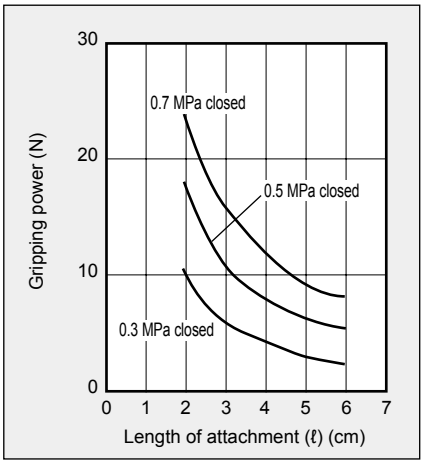
● HMD-16CS



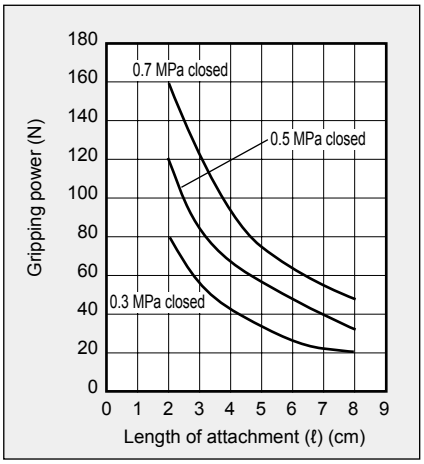
● HMD-16CS



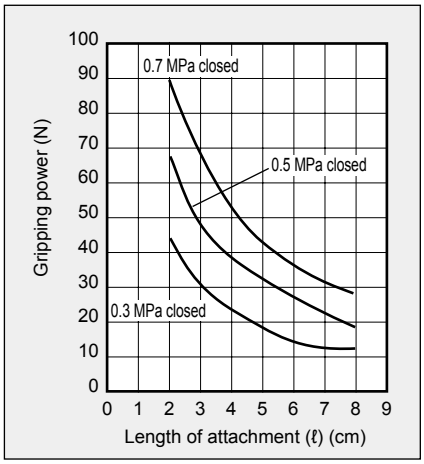
● HMD-16CS



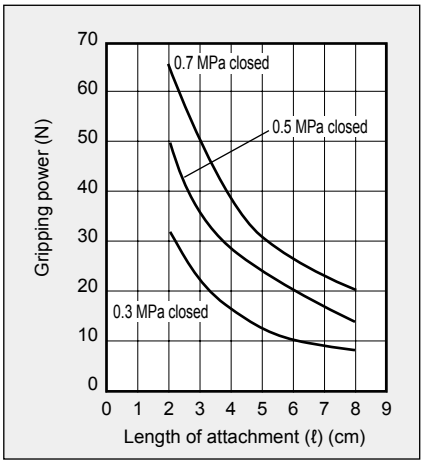
● HMD-25CS



● HMD-25CS



● HMD-25CS





Pneumatic Cylinders II
Catalog No. CB-030SA

Centering hand

BHE Series

●Operating stroke length: 7, 10, 14, 16, 22 mm

Double acting



RoHS CAD

Specifications

Descriptions	BHE-01CS	BHE-03CS	BHE-04CS	BHE-05CS	BHE-06CS
Bore size mm	ø12	ø16	ø20	ø25	ø32
Working fluid	Compressed air				
Max. working pressure MPa	0.7				
Min. working pressure MPa	0.2				
Ambient temperature °C	5 to 60				
Port size	M3		M5		
Operating stroke length mm	7	10	14	16	22
Rod diameter mm	ø6	ø8	ø10	ø12	ø16
Repeatability mm	±0.01				
Centering precision mm	±0.05				
Product weight kg	0.108	0.154	0.260	0.438	1.040
Lubrication	Not available				

Compatibility table by variation

Applicable bore size		Double acting			
		Standard	Open stroke adjustment mechanism	Close stroke adjustment mechanism	Open and close stroke adjustment mechanism
			D	E	DE
ø12 to 32	P4	●	●	●	●
	P40	●	●	●	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

BHE - 03CS - D - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option

Ⓒ Switch model No.

Ⓓ Switch quantity

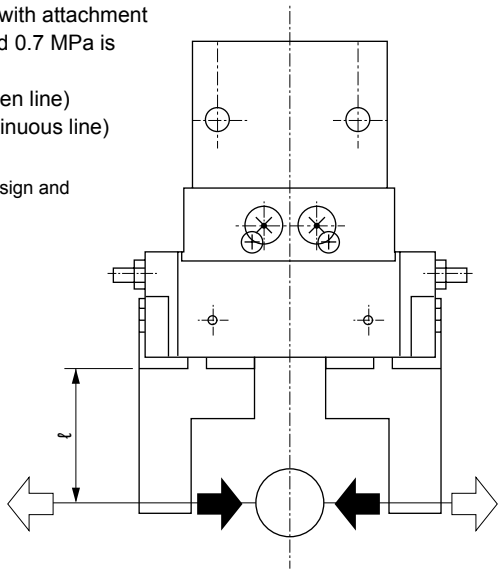
Code	Content
Ⓐ Size	
01CS	
03CS	
04CS	
05CS	
06CS	
Ⓑ Option	
Blank	Standard
D	Open stroke adjustment mechanism
E	Close stroke adjustment mechanism
DE	Open and close stroke adjustment mechanism
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Gripping power performance data

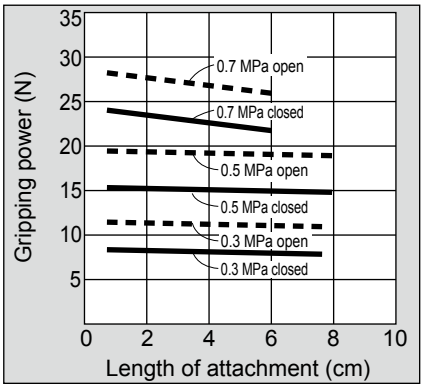
The gripping power in the opening/closing directions with attachment length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

·Open direction (⇦) - - - - - - (shown with broken line)
·Closed direction (➡) ———— (shown with continuous line)

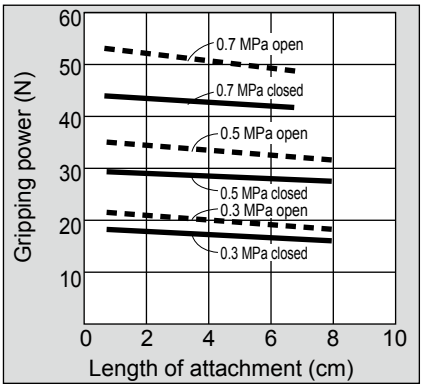
(Note) When making a selection, read the precautions for design and selection on page 107.



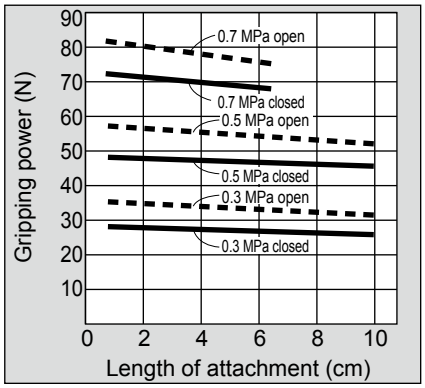
● BHE-01CS



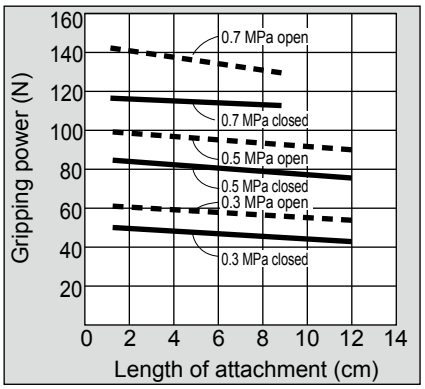
● BHE-03CS



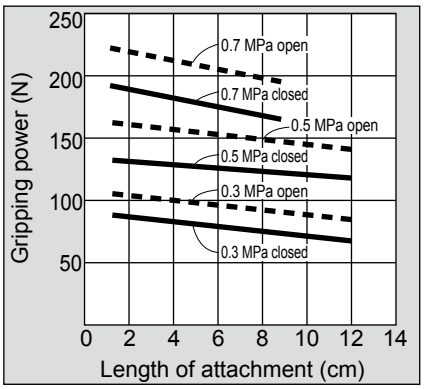
● BHE-04CS



● BHE-05CS



● BHE-06CS





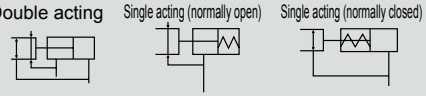
Pneumatic Cylinders II
Catalog No. CB-030SA

3-way finger bearing chuck Double acting/single acting

CKG Series

●Operating stroke length: 6, 8, 11, 16 mm

Double acting | Single acting (normally open) | Single acting (normally closed)



RoHS CAD

Specifications

Descriptions			CKG				
Size			16CS	25CS	32CS	40CS	50CS
Bore size		mm	ø16	ø25	ø32	ø40	ø50
Actuation			Double acting/single acting				
Working fluid			Compressed air				
Max. working pressure		MPa	0.7				
Min. working pressure Note		Double acting	0.1				
	MPa	Normally open	0.3				
		Normally closed					
Ambient temperature		°C	5 to 60				
Port size			M5				
Operating stroke length		mm	6		8	11	16
Rod diameter		mm	ø9	ø10	ø14	ø18	ø20
Capacity of reciprocation		cm^3	1.0	2.2	5.1	10.1	36.1
Repeatability		mm	±0.01				
Product weight		kg	0.24	0.47	0.80	1.4	2.3
Lubrication			Not available				

Note: When a rubber cover (option) is attached, the min. working pressure is 0.2 MPa for 16CS and 0.15 MPa for 25CS to 50CS.

How to order

Without switch

CKG - 16CS - O ——— P4 / P40

With switch

CKG - 16CS - O - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option *1, *2

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
16CS	
25CS	
32CS	
40CS	
50CS	
Ⓑ Option	
Blank	Standard (double acting)
O	Single acting (normally open)
C	Single acting (normally closed)
G	With rubber cover (nitrile rubber)
Y11	With attachment Material (S50C) External chuck (Attachment No.: 540 to 710)
Y12	With attachment Material (S50C) Internal chuck (Attachment No.: 610 to 630)
Y21	With attachment Material (MC nylon) External chuck (Attachment No.: 510 to 540, 710)
Y22	With attachment Material (MC nylon) Internal chuck (Attachment No.: 610 to 630)
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Compatibility table by variation

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø16/25/32/40/50	P4	●	●	●
	P40	●	●	●

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

⚠ Precautions for model No. selection

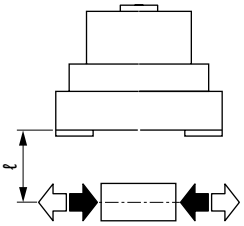
*1: Y11 and Y21 are available for CKG-16CS, while Y11, Y12, Y21 and Y22 are available for CKG-25CS to 40CS, and Y11 and Y21 are available for CKG-50CS.

*2: For option Y11, Y12, Y21 and Y22 attachments, three are attached on delivery.

Gripping power performance data

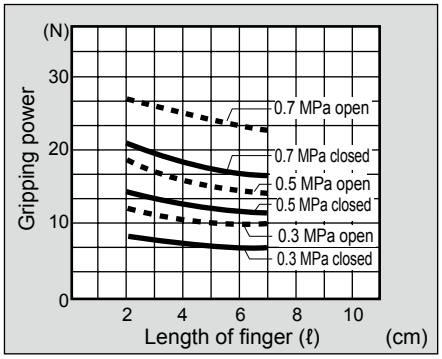
The gripping power in the opening/closing directions with finger length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

- Open direction (⇦) - - - - - (shown with broken line)
- Closed direction (➡) ——— (shown with continuous line)

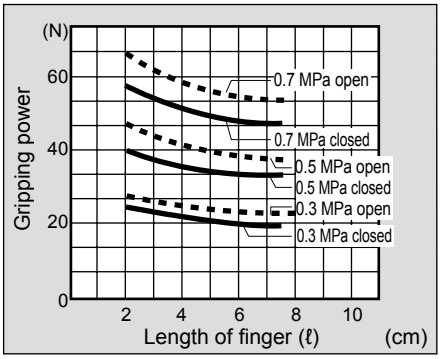


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to the double acting type. C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting type.
When making a selection, read the precautions for design and selection on page 107.

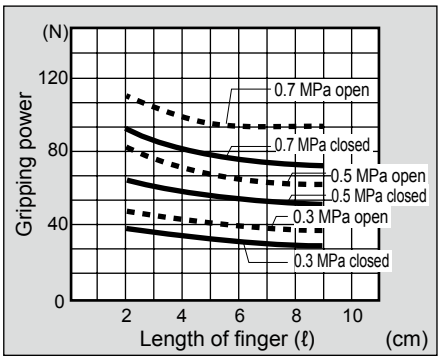
● CKG-16CS



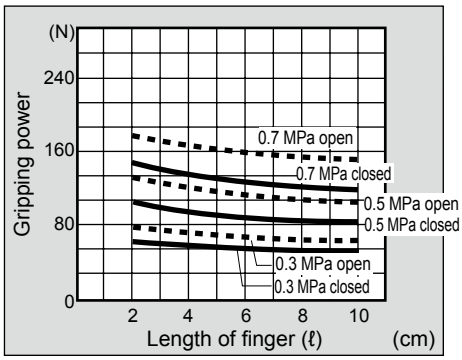
● CKG-25CS



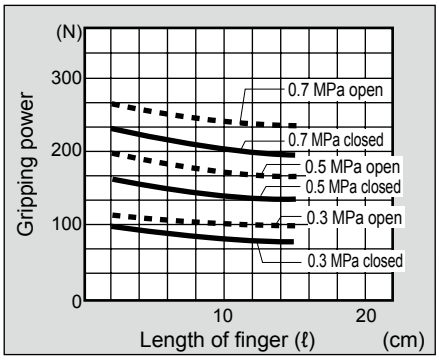
● CKG-32CS



● CKG-40CS



● CKG-50CS





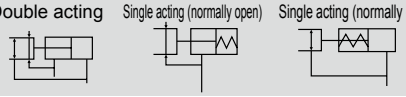
Pneumatic Cylinders II
Catalog No. CB-030SA

Powerful chuck

CKL2 Series

●Operating stroke length: 5, 6, 8, 10, 12, 16, 20, 23 mm

Double acting | Single acting (normally open) | Single acting (normally closed)



RoHS CAD

Specifications

Descriptions		CKL2							
Size		20CS	25CS	32CS	40CS	50CS	63CS	80CS	100CS
Bore size	mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Working fluid		Compressed air							
Max. working pressure	MPa	0.7							
Min. working pressure	MPa	0.3							
Ambient temperature	°C	5 to 60							
Port size		M5						Rc1/8	
Operating stroke length	mm	5	6	8	10	12	16	20	23
Rod diameter	mm	ø6	ø8	ø10	ø12	ø14	ø16		ø20
Capacity of reciprocation	cm^3	1.8	3.3	7.7	15.6	28.3	60.3	118.2	215.5
Repeatability	mm	±0.01							
Product weight	kg	0.12	0.19	0.26	0.38	0.59	1.02	2.02	3.45
Lubrication		Not available							

How to order

Without switch

CKL2 - 20CS - O ——— P4 / P40

With switch

CKL2 - 20CS - O - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option
*1, *2

Ⓒ Switch model No.
*3

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
20CS	
25CS	
32CS	
40CS	
50CS	
63CS	
80CS	
100CS	
Ⓑ Option	
Blank	Standard (double acting)
O	Single acting (normally open)
C	Single acting (normally closed)
Y1	With attachment Material (S50C)
Y2	With attachment Material (MC nylon)
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Compatibility table by variation

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø20/25/32/40/50/63/80/100	P4	●	●	●
	P40	●	●	●

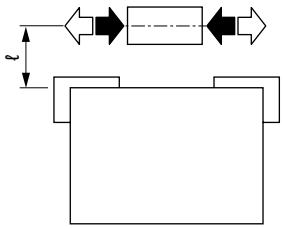
● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

⚠ Precautions for model No. selection

*1: Attachment is commonly used for internal and external diameter chuck.
*2: For option Y1 and Y2 attachments, three are attached on delivery.

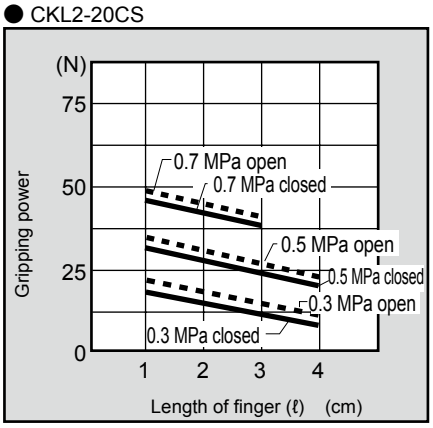
Gripping power performance data

The gripping power in the opening/closing directions with finger length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.
·Open direction (⇦) – – – – – (shown with broken line)
·Closed direction (➡) ——— (shown with continuous line)

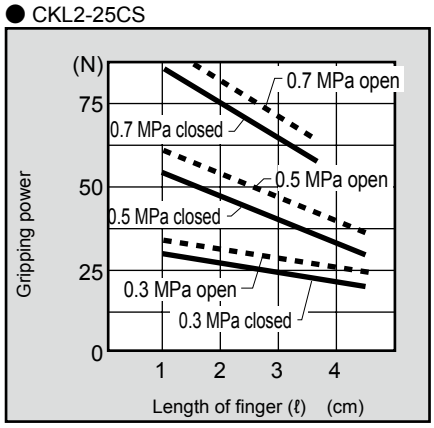


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to the double acting type.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting type.
When making a selection, read the precautions for design and selection on page 107.

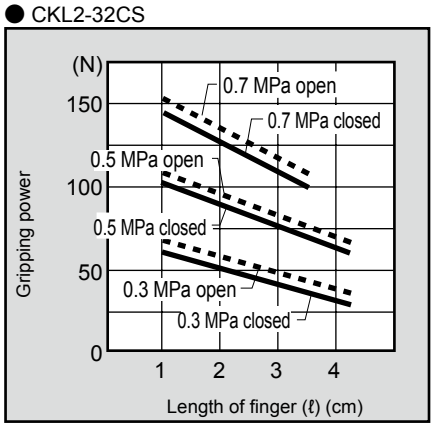
● CKL2-20CS



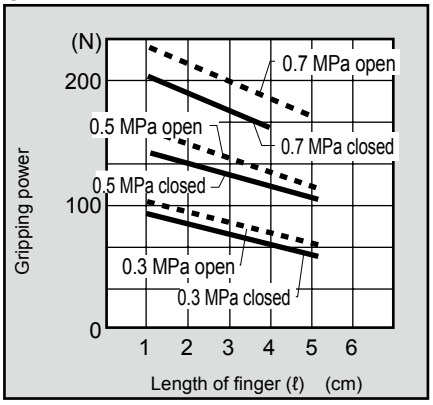
● CKL2-25CS



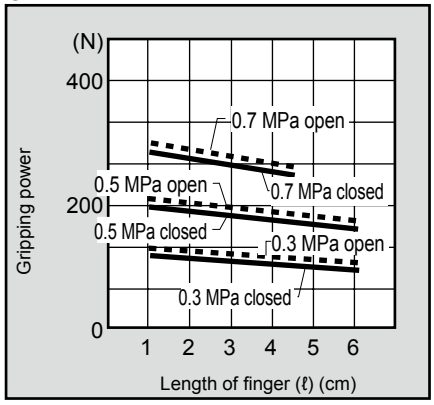
● CKL2-32CS



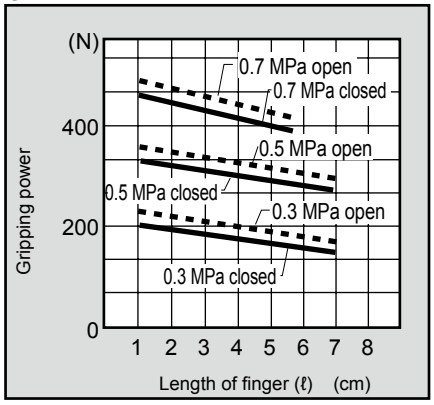
● CKL2-40CS



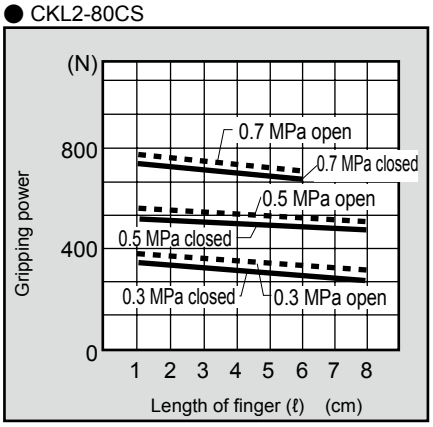
● CKL2-50CS



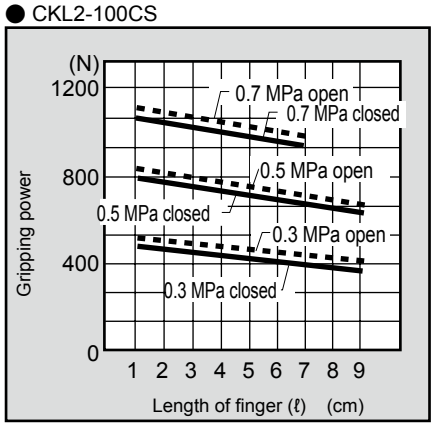
● CKL2-63CS



● CKL2-80CS



● CKL2-100CS





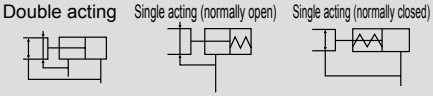
Pneumatic Cylinders II
Catalog No. CB-030SA

2-way powerful chuck

CKLB2 Series

●Operating stroke length: 5, 6, 8, 10, 12, 16, 20, 23 mm

Double acting | Single acting (normally open) | Single acting (normally closed)



RoHS CAD

Specifications

Descriptions	CKLB2-20CS	CKLB2-25CS	CKLB2-32CS	CKLB2-40CS	CKLB2-50CS	CKLB2-63CS	CKLB2-80CS	CKLB2-100CS
Bore size mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Working fluid	Compressed air							
Max. working pressure MPa	0.7							
Min. working pressure MPa	0.3							
Ambient temperature °C	5 to 60							
Port size	M5						Rc1/8	
Operating stroke length mm	5	6	8	10	12	16	20	23
Rod diameter mm	ø6	ø8	ø10	ø12	ø14	ø16	ø16	ø20
Capacity of reciprocation cm^3	1.8	3.3	7.7	15.6	28.3	60.3	118.2	215.5
Repeatability mm	±0.01							
Product weight kg	0.13	0.20	0.32	0.38	0.58	1.00	2.00	3.53
Lubrication	Not available							

How to order

CKLB2 - 20CS - O - SW11 - R - P4 / P40

Ⓐ Size

Ⓑ Option *1, *2

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Content
Ⓐ Size	
20CS	
25CS	
32CS	
40CS	
50CS	
63CS	
80CS	
100CS	
Ⓑ Option	
Blank	Standard (double acting)
O	Single acting (normally open)
C	Single acting (normally closed)
Y1	With attachment Material: S45C
Y2	With attachment Material: MC nylon
Ⓒ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

Compatibility table by variation

Applicable bore size		Double acting	Single acting Normally open	Single acting Normally closed
			O	C
ø20/25/32/40/50/63/80/100	P4	●	●	●
	P40	●	●	●

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

⚠ Precautions for model No. selection

*1: Attachment is commonly used for internal and external diameter chuck.
*2: For option Y1 and Y2 attachments, two are attached on delivery.

Gripping power performance data

The gripping power in the opening/closing directions with finger length ℓ of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

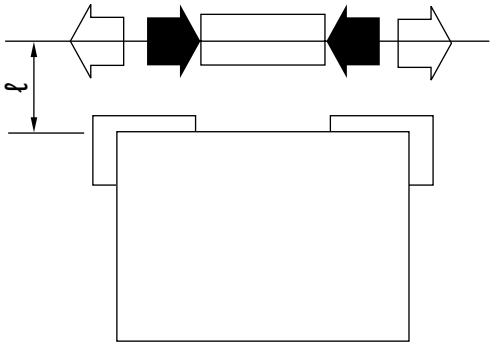
·Open direction (⇦) – – – – – – (shown with broken line)

·Closed direction (➡) ———— (shown with continuous line)

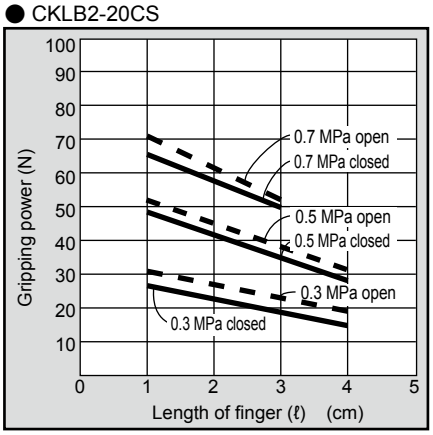
(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to the double acting type.

C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting type.

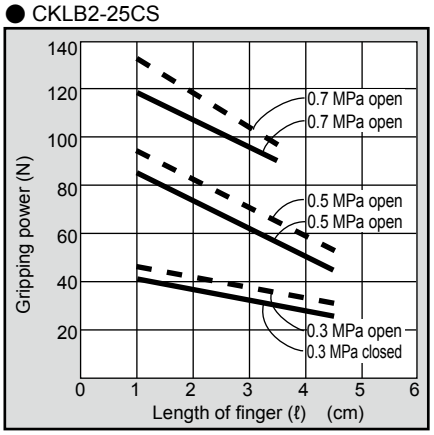
When making a selection, read the precautions for design and selection on page 107.



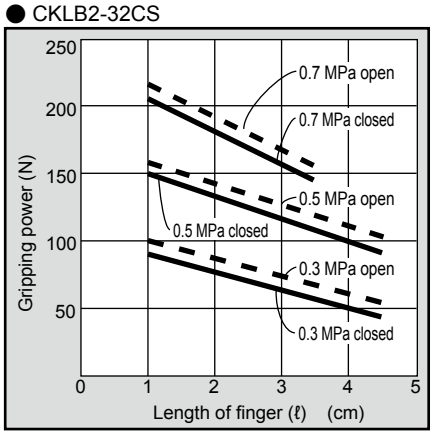
● CKLB2-20CS



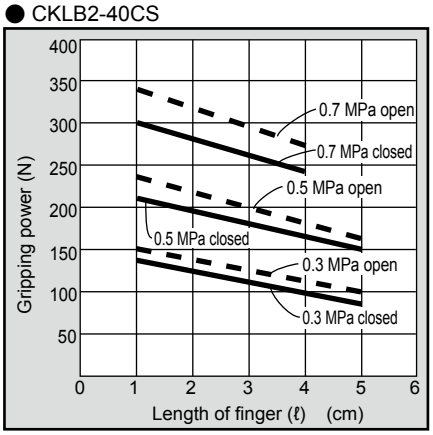
● CKLB2-25CS



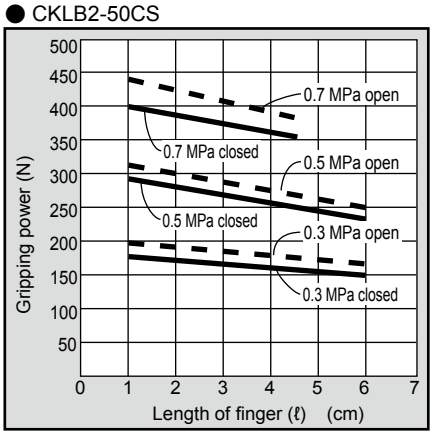
● CKLB2-32CS



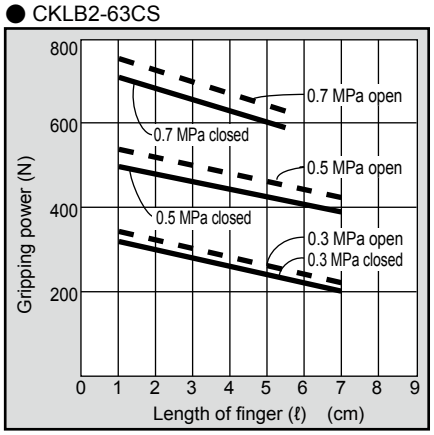
● CKLB2-40CS



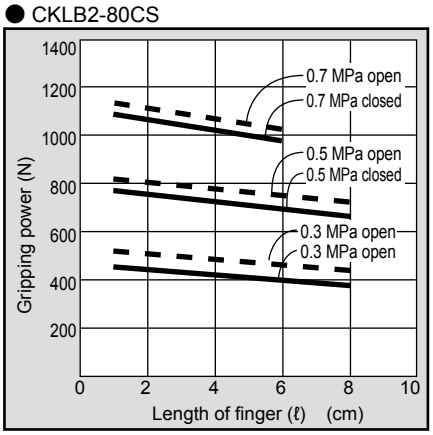
● CKLB2-50CS



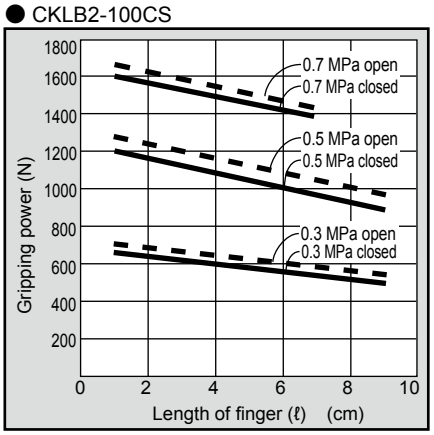
● CKLB2-63CS



● CKLB2-80CS



● CKLB2-100CS



MEMO

Pneumatic components

Safety Precautions

Be sure to read this section before use.
Refer to General Catalog for general information of the cylinder and the cylinder switch.

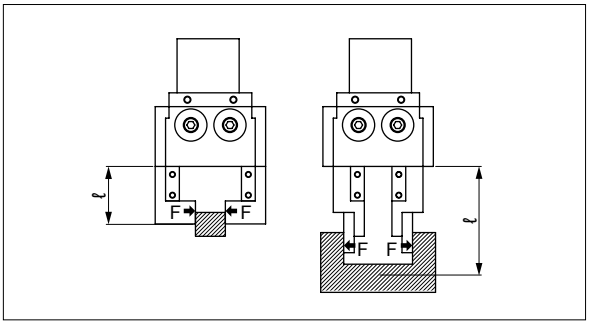
Product-specific cautions: Hand Series

Design/selection

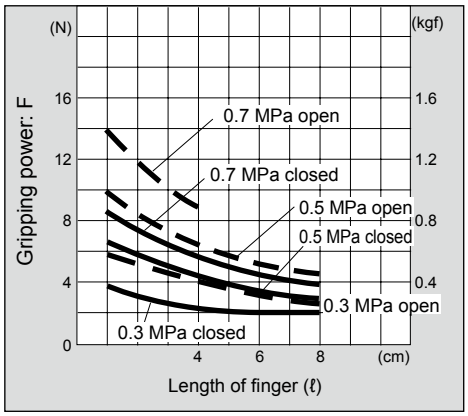
Hand/chuck

■ Precautions for gripping power

- Gripping power represents the force holding the workpiece, as shown in the figure below.



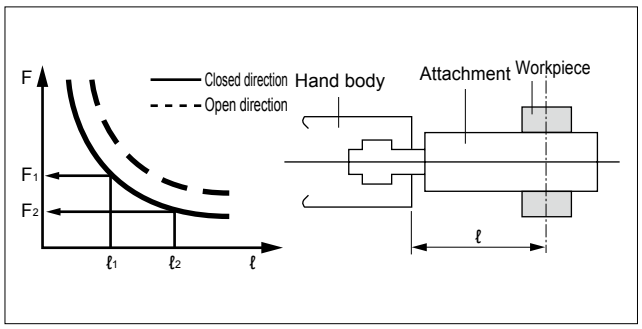
- Performance data indicates the gripping power at hand finger length ℓ at a supply pressure of 0.15 to 0.7 MPa.



- To find the gripping power from performance data, if the distance from the attachment to the workpiece center of gravity when manufactured is ℓ, gripping power F is
  When ℓ = ℓ1 F = F1
  When ℓ = ℓ2 F = F2 Refer to the upper right figure is expressed as above.

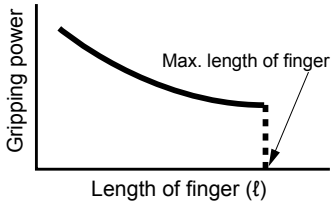
- When mounting an L-shaped finger, select length as shown below.
  Example: If the L-shape is 30 mm in the master key direction and 30 mm at a 90° angle, assume the attachment length is 60 mm.
- Length of finger should be within the numerical value given in the gripping power performance data table of each model.
- Max. working length of finger should be within the performance data.
  When transferring workpiece (weight W_L), the reference is as below.
  W_L x 9.8 x 5 < (F x N) [holding only]
  W_L x 9.8 x 10 < (F x N) [normal transport]
  W_L x 9.8 x 20 < (F x N) [sudden accelerated transport]

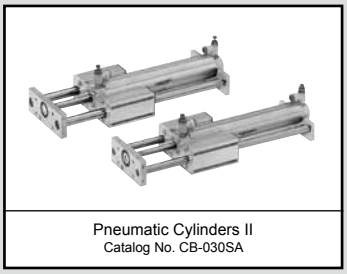
  W_L : Weight of workpiece [kg]
  F : Gripping power [N]
  N : Number of fingers [pcs.]



■ Use attachments as short and lightweight as possible. If the attachment is long and heavy, inertia increases when opening and closing. This may cause play in the master key, and adversely affect durability.

- Length of attachment should be within the numerical values of performance data.
- The weight of the attachment affects durability, so check that the weight is less than the following value:
  W < 1/4H (1 pc.) W: Weight of attachment
  H: Product weight of Hand





Pneumatic Cylinders II
Catalog No. CB-030SA

Hybrid robot
Single axis unit

HRL-1 Series

● Load capacity: 5, 10, 15, 25, 50, 65 kg

RoHS CAD

Specifications

Descriptions		HRL-1□-05	HRL-1□-10	HRL-1□-15	HRL-1□-15H	HRL-1□-25	HRL-1□-50	HRL-1□-65
Load capacity (vertical) *1 kg		5	10	15		25	50	65
Basic cylinder		SCM-00-20D	SCM-00-25D	SCM-00-32D		SCM-00-40D	SCM-00-50D	SCM-00-63B
Bore size mm		20	25	32		40	50	63
Guide rod diameter mm		13	13	16	20	20	25	30
Speed mm/s		50 to 500						
Working pressure MPa		0.3 to 0.7						
Adjustable stroke range *2 mm		0 to -10 mm (push side)						
Shock absorber *3		NCK-00-0.7-P4		NCK-00-1.2-P4		NCK-00-12-P4		
Product weight kg	Basic	2 + (0.0033 × stroke length)	2.1 + (0.0037 × stroke length)	2.8 + (0.0051 × stroke length)	2.9 + (0.0069 × stroke length)	10.8 + (0.0081 × stroke length)	11.9 + (0.0122 × stroke length)	13.3 + (0.02 × stroke length)
	Long body	2.3 + (0.0033 × stroke length)	2.4 + (0.0037 × stroke length)	3.1 + (0.0051 × stroke length)	3.2 + (0.0069 × stroke length)	12.5 + (0.0081 × stroke length)	13.6 + (0.0122 × stroke length)	15 + (0.02 × stroke length)
Movable part weight kg	Basic	0.9 + (0.0025 × stroke length)	0.9 + (0.0027 × stroke length)	1.3 + (0.0041 × stroke length)	1.6 + (0.0059 × stroke length)	4.1 + (0.0066 × stroke length)	5.2 + (0.0102 × stroke length)	6.1 + (0.0137 × stroke length)
	Long body	1.0 + (0.0025 × stroke length)	1.0 + (0.0027 × stroke length)	1.5 + (0.0041 × stroke length)	1.8 + (0.0059 × stroke length)	4.4 + (0.0066 × stroke length)	5.7 + (0.0102 × stroke length)	6.8 + (0.0137 × stroke length)
Speed controller *4		SC3W-6-6-P4				SC3W-6-8-P4	SC3W-8-8-P4	

*1: Load capacity varies with air pressure, speed and absorption energy. (Value is for reference.)
*2: Adjustable stroke is not available for pulled side.
*3: The shock absorber is built into the body. Use within the following allowable shock absorber tolerance values at the working speed and working air pressure.
· HRL-1□F-05/10/15/15H Pull side: 70% or less
· HRL-1□F-25/50/65 Pull side: 65% or less
· Other than the above: 74% or less
*4: The speed controller is an attachment.

Compatibility table by variation

Applicable bore size		Basic
ø20 to 63	P4	●
	P40	▲
	P41	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch *1

HRL-1 L - 05 - 350 - Q ——— P4

With switch

HRL-1 L - 05 - 350 - Q - SW11 - R - P4

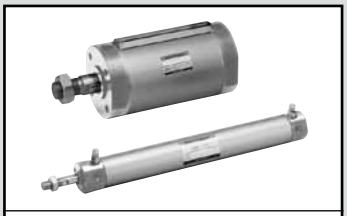
Ⓐ Basic shape
Ⓑ Load capacity
Ⓒ Stroke length
Ⓓ Position locking mechanism *2
Ⓔ Switch model No.
Ⓕ Switch quantity

Code	Content
Ⓐ Basic shape	
Blank	Basic
L	Long body
F	Basic front flange
LF	Long body front flange
Ⓑ Load capacity (vertical)	
05	5 kg
10	10 kg
15	15 kg
15H	
25	25 kg
50	50 kg
65	65 kg
Ⓒ Stroke length (mm)	
[Basic body shape]	
50, 75, 100, 125, 150, 200, 250, 300	
[Long body shape]	
350, 400, 450, 500, 550, 600	
Ⓓ Position locking mechanism	
Blank	No
Q	Yes
Ⓔ Switch model No.	
Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.	
Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

⚠ Precautions for model No. selection

*1: When without switch is selected, with/without cylinder switch rail depends on whether position locking is selected.
Without position locking mechanism: Without switch rail
With position locking mechanism: With switch rail

*2: The position locking mechanism can be installed on the head side of the cylinder only.



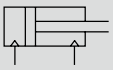
Pneumatic Cylinders I
Catalog No. CB-029SA

Round shaped cylinder Double acting/low friction

SCM-U Series

● Bore size: ø20/ø25/ø32/ø40
ø50/ø63/ø80/ø100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCM-U							
Bore size	mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation		Double acting/low friction							
Working fluid		Compressed air							
Max. working pressure	MPa	0.7							
Min. working pressure	MPa	0.03							
Proof pressure	MPa	1.0							
Ambient temperature	°C	5 to 60							
Port size		Rc1/8				Rc1/4		Rc3/8	Rc1/2
Stroke tolerance	mm	$^{+1.4}_{0}$ (to 1000)			$^{+1.4}_{0}$ (to 1500)	$^{+2.3}_{0}$ (to 1000), $^{+2.7}_{0}$ (to 1500)			
Working piston speed	mm/s	10 to 1000 (Operate within the allowable absorbed energy.)							
Cushion		Rubber cushion							
Lubrication		Not available							
Allowable absorbed energy	J	0.1	0.2	0.5	0.9	1.6	1.6	3.3	5.8
Internal leakage	ℓ/min	5						8	

Low friction cylinder

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø20	25, 50, 75, 100, 125, 150, 200, 250, 300	1000	10
ø25			
ø32			
ø40		1500	
ø50			
ø63			
ø80			
ø100			

*1: The custom stroke length is available in 1 mm increments.

How to order switch mounting bracket

	[Rail] Mounting rail	[Band] Mounting bracket set + Band
P4	SCM-T-[Bore size] -[Stroke length]	SCM-Z-[Bore size]
P40		SCM-Z-[Bore size]-P40

*1: Indicate × if the stroke length exceeds 300 mm. If exceeding 300 mm, a short rail (with 100 mm switch adjustment travel distance) will be included per switch.
*2: If indicating × when ordering mounting rails only, order the same number of rails as that of applicable switches.

How to order mounting bracket P4

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCM-LB-20	SCM-LB-25	SCM-LB-32	SCM-LB-40	SCM-LB-50	SCM-LB-63	SCM-LB-80	SCM-LB-100
Flange (FA/FB)	SCM-FA-20	SCM-FA-25	SCM-FA-32	SCM-FA-40	SCM-FA-50	SCM-FA-63	SCM-FA-80	SCM-FA-100
Eye bracket (CA)	SCM-CA-20	SCM-CA-25	SCM-CA-32	SCM-CA-40	SCM-CA-50	SCM-CA-63	-	-
Clevis bracket (CB)	-	-	-	-	-	-	SCM-CB-80	SCM-CB-100
Trunnion (TA/TB)	SCM-TA-20	SCM-TA-25	SCM-TA-32	SCM-TA-40	SCM-TA-50	SCM-TA-63	-	-

How to order mounting bracket P40

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCM-LB-20-P40	SCM-LB-25-P40	SCM-LB-32-P40	SCM-LB-40-P40	SCM-LB-50-P40	SCM-LB-63-P40	SCM-LB-80-P40	SCM-LB-100-P40
Flange (FA/FB)	SCM-FA-20-P40	SCM-FA-25-P40	SCM-FA-32-P40	SCM-FA-40-P40	SCM-FA-50-P40	SCM-FA-63-P40	SCM-FA-80-P40	SCM-FA-100-P40
Eye bracket (CA)	SCM-CA-20-P40	SCM-CA-25-P40	SCM-CA-32-P40	SCM-CA-40-P40	SCM-CA-50-P40	SCM-CA-63-P40	-	-
Clevis bracket (CB)	-	-	-	-	-	-	SCM-CB-80-P40	SCM-CB-100-P40
Trunnion (TA/TB)	SCM-TA-20-P40	SCM-TA-25-P40	SCM-TA-32-P40	SCM-TA-40-P40	SCM-TA-50-P40	SCM-TA-63-P40	-	-

*1: All mounting brackets have mounting bolts attached.
*2: The foot mounting bracket is provided as 2 pcs./set.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Single acting/ push	Single acting/ pull	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Stroke adjustable (push)	Stroke adjustable (pull)	Double acting/ low speed	Double acting/ low friction	Double acting/ heat resistance	Double acting/ rubber scraper	Double acting/ tandem	Double acting/ direct mounting foot	Double acting/ rotation-stop
			Q	X	Y	D	B	W	P	R	O	U	T	G	W4	LD	M
ø20 to 100	P4	●	●	○	○	○	○	○	○	○	○	○	○	○ ø40 and over	○	○	▲
	P40	● *2	●	○	○	○ *2	○	○	○	○ *1	○	○	○ *2	○	○	○	▲
	P41	▲ *2	▲			▲ *2	▲	▲	▲	▲ *1				▲	▲	▲	
	P42	▲ *2	▲			▲ *2	▲	▲	▲	▲ *1	▲	▲			▲	▲	

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

*1: Zinc plating is used for the sealing washer.
*2: Zinc plating is used for the cushion packing. (excluding ø50, ø63)

How to order

Without switch

SCM-U - LB - 40 D - 100 —— M P4/P40 I

With switch

SCM-U - LB - 40 D - 100 - SW11 - D - ( ) M P4/P40 I

Ⓐ Mounting
Rubber cushion
Ⓑ Bore size
Ⓒ Stroke length
Ⓓ Switch model No. *2
Ⓔ Switch quantity
Ⓕ Switch mounting
Ⓖ Option *3
Ⓗ Accessory *4

Code	Content

Ⓐ Mounting

	Bore size (ø)	20	25	32	40	50	63	80	100
00	Basic	●	●	●	●	●	●	●	●
LB	Axial foot	●	●	●	●	●	●	●	●
FA	Rod side flange	●	●	●	●	●	●	●	●
FB	Head side flange	●	●	●	●	●	●	●	●
CA	Eye bracket	●	●	●	●	●	●		
CB	Clevis bracket (pin and snap ring attached)							●	●
TA	Rod side trunnion	●	●	●	●	●	●		
TB	Head side trunnion	●	●	●	●	●	●		

Ⓑ Bore size (mm)

20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

Ⓒ Stroke length (mm)

Bore size	Stroke length	Custom stroke length
ø20 to ø32	**10 to 1000**	**In 1 mm increments**
ø40 to ø100	**10 to 1500**	

Ⓓ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓔ Switch quantity

R	1 on rod side
H	1 on head side
D	2
T	3
4	4 (when there are more than 4 switches, indicate switch quantity.)

Ⓕ Switch mounting

Blank	Rail method
Z	Band method

Ⓖ Option

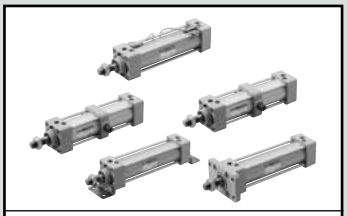
Q	Switch rail attached at shipment
M	Piston rod, rod nut material (stainless steel)

Ⓗ Accessory

	Bore size (ø)	20	25	32	40	50	63	80	100
I	Rod eye	●	●	●	●	●	●	●	●
Y	Rod clevis (pin and snap ring attached)	●	●	●	●	●	●	●	●
B1	Eye bracket							●	●
B2	Clevis bracket	●	●	●	●	●	●		

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped with the product.
*2: Switch model No. SW19 and SWDK cannot be mounted when the bore size is from ø20 to ø40 and switch mounting is the rail type.
*3: "Q" (switch rail attached at shipment) is not available for "Z" switch mounting.
*4: "I" and "Y" cannot be selected together.
*5: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.
*6: Made to order. Contact CKD for details.



Pneumatic Cylinders I
Catalog No. CB-029SA

Tie rod cylinder
Double acting/low friction (constant friction when pressurized)

SCG-U Series

●Bore size: ø32/ø40/ø50/ø63/ø80/ø100

RoHS CAD

Specifications

Descriptions		SCG-U					
Bore size	mm	ø32	ø40	ø50	ø63	ø80	ø100
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure	MPa	0.7					
Min. working pressure	MPa	0.03					
Proof pressure	MPa	1.0					
Ambient temperature	°C	5 to 60					
Port size		Rc1/8	Rc1/4		Rc3/8		Rc1/2
Stroke tolerance	mm	$^{+1.0}_{0}$ (to 360), $^{+1.4}_{0}$ (361 to 800)					
Working piston speed	mm/s	10 to 1000 (Operate within the allowable absorbed energy.)					
Cushion		No					
Lubrication		Not available					
Internal leakage	ℓ/min	5				8	
Allowable absorbed energy	J	0.018	0.032	0.057	0.057	0.112	0.153
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.					

Low friction cylinder

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø32	25/50/75/100 150/200/250 300/350/400 450/500	600	1
ø40			
ø50			
ø63			
ø80		700	
ø100		800	

*1: The custom stroke length is available in 1 mm increments.
*2: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions. Contact CKD in this case.

How to order switch mounting bracket

P4	SCG-T-[Bore size]
P40	SCG-T-[Bore size]-P40

How to order mounting bracket P4

Bore size (mm) / Mounting bracket	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCG-LB-32	SCG-LB-40	SCG-LB-50	SCG-LB-63	SCG-LB-80	SCG-LB-100
Flange (FA) (FB) *1	SCG-FA-32	SCG-FA-40	SCG-FA-50	SCG-FA-63	SCG-FA-80	SCG-FA-100
Eye bracket (CA)	SCG-CA-32	SCG-CA-40	SCG-CA-50	SCG-CA-63	SCG-CA-80	SCG-CA-100
Clevis bracket (CB)	SCG-CB-32-P4	SCG-CB-40-P4	SCG-CB-50-P4	SCG-CB-63-P4	SCG-CB-80-P4	SCG-CB-100-P4

How to order mounting bracket P40

Bore size (mm) / Mounting bracket	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	SCG-LB-32-P40	SCG-LB-40-P40	SCG-LB-50-P40	SCG-LB-63-P40	SCG-LB-80-P40	SCG-LB-100-P40
Flange (FA) (FB) *1	SCG-FA-32-P40	SCG-FA-40-P40	SCG-FA-50-P40	SCG-FA-63-P40	SCG-FA-80-P40	SCG-FA-100-P40
Eye bracket (CA)	SCG-CA-32-P40	SCG-CA-40-P40	SCG-CA-50-P40	SCG-CA-63-P40	SCG-CA-80-P40	SCG-CA-100-P40
Clevis bracket (CB)	SCG-CB-32-P40	SCG-CB-40-P40	SCG-CB-50-P40	SCG-CB-63-P40	SCG-CB-80-P40	SCG-CB-100-P40

*1: The foot mounting bracket (LB) is provided as 2 pcs./set.

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ position locking	Double acting/ double rod	Double acting/ low speed	Double acting/ low friction	Double acting/ rubber scraper	Double acting/ rotation-stop	Double acting/ coolant proof	Double acting/ anti-spatter adherence
			Q	D	O	U	G	M	G2/G3	G1/G4
ø32 to 100	P4	●	●	○	○	○	○			
	P40	●	●	○	○	○	○			
	P41	▲	▲	▲			▲			

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

Without switch

SCG-U - LB - 32 N - 100 —— M P4/P40 I

With switch

SCG-U - LB - 32 N - 100 - SW11 - R - M P4/P40 I

Model No.

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Cushion

Ⓓ Stroke length

Ⓔ Switch model No.

Ⓕ Switch quantity *2

Ⓖ Option

Ⓗ Accessory *3

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and split pin attached)
TA	Rod side trunnion
TB	Head side trunnion
TC	Intermediate trunnion
Ⓑ Bore size (mm)	
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100
Ⓒ Cushion	
N	Without cushion

Ⓓ Stroke length (mm)

Bore size	Stroke length	Custom stroke length
ø32	**1 to 600**	**In 1 mm increments**
ø40		
ø50		
ø63		
ø80	**1 to 700**	
ø100	**1 to 800**	

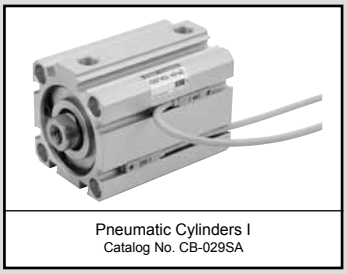
Ⓔ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
Ⓖ Option	
M	Piston rod, rod nut material (stainless steel)
Ⓗ Accessory	
I	Rod eye
Y	Rod clevis (pin and split pin attached)
B1	Eye bracket
B2	Clevis bracket (pin and split pin attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped with the product. (Trunnion types are assembled at shipment.)
*2: When selecting TA or TB mounting, the switch quantity is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*3: "I" and "Y" cannot be selected together.
*4: Made to order. Contact CKD for details.

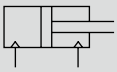


Pneumatic Cylinders I
Catalog No. CB-029SA

Compact cylinder Double acting/high load/low friction

SSD2-KU Series

●Bore size: ø20/ø25/ø32/ø40
ø50/ø63/ø80/ø100

JIS symbol 

RoHS CAD

Specifications

Descriptions	SSD2-KU SSD2-KUL (with switch)							
Bore size mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation	Double acting							
Working fluid	Compressed air							
Max. working pressure MPa	0.7							
Min. working pressure MPa	0.03							
Proof pressure MPa	1.0							
Ambient temperature °C	5 to 60							
Port size	M5		Rc1/8		Rc1/4		Rc3/8	
Stroke tolerance mm	+2.0 0							
Working piston speed mm/s	10 to 500					10 to 300		
Cushion	Rubber cushion							
Lubrication	Not available							
Allowable absorbed energy J	0.16	0.16	0.40	0.63	0.98	1.56	2.51	3.92
Internal leakage ℓ/min	5						8	

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ø20	5/10/15/20/25	50	5
ø25	30/35/40/45/50		
ø32	5/10/15/20/25/30/	100	
ø40	35/40/45/50/75/100		
ø50	10/15/20/25		
ø63	30/35/40/45/50		
ø80	75/100		
ø100			

*1: When using the type with switch, refer to the table of the min. stroke length with switch.

Low friction cylinder

Compatibility table by variation

Applicable bore size		Double acting/ single rod	Double acting/ single rod high load	Double acting/ single rod long stroke length	Single acting/ push	Single acting/ pull	Double acting/ rubber-air cushioned high load	Double acting/ position locking	Double acting/ double rod	Double acting/ back to back	Double acting/ two-stage	Double acting/ fine speed	Double acting/ low speed	Double acting/ low friction/ high load	Double acting/ heat resistance	Double acting/ packing fluoro rubber	Double acting/ rubber scraper	Double acting/ rotation-stop
			K		X	Y	KC	Q	D	B	W	F	O	KU	T1	T2	G	M
ø12 to 200	P4	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	▲	▲
	P40	●	●	○	○	○	○	○	○	○	▲	○	○	○	○	○	▲	▲
	P41	▲	▲	▲			▲	▲	▲	▲	▲						▲	
	P42	▲	▲	▲			▲	▲	▲	▲	▲	▲	▲	▲		▲		

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

How to order

Without switch

SSD2-KU - 20 ○ - 10 ——— N P4/P40 - LB - I

With switch

SSD2-KUL - 20 ○ - 10 - SW11 - R - N P4/P40 - LB - I

Ⓐ Bore size
Ⓑ Stroke length *1, *2
Ⓒ Switch model No *3 *4 *5
Ⓓ Switch quantity
Ⓔ Option *6
Ⓕ Mounting bracket *7
Ⓖ Accessory *8

Code	Content
Ⓐ Bore size (mm)	
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

Ⓑ Stroke length (mm)		Applicable bore size							
		ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Standard stroke length	5	●	●	●	●				
	10	●	●	●	●	●	●	●	●
	15	●	●	●	●	●	●	●	●
	20	●	●	●	●	●	●	●	●
	25	●	●	●	●	●	●	●	●
	30	●	●	●	●	●	●	●	●
	35	●	●	●	●	●	●	●	●
	40	●	●	●	●	●	●	●	●
	45	●	●	●	●	●	●	●	●
	50	●	●	●	●	●	●	●	●
	75			●	●	●	●	●	●
	100			●	●	●	●	●	●
Min. stroke length (mm)		1							
Max. stroke length (mm)		50		100					
Custom stroke length *2		In 1 mm increments							

Ⓒ Switch model No.

Refer to the compatibility table on Intro Pages 21 to 24 for switch model No.

Ⓓ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓔ Option	
Blank	Rod end female thread
N	Rod end male thread
M *6	Piston rod material (stainless steel)

Ⓕ Mounting bracket	
Blank	Without mounting bracket
LB	Axial foot
CB	Clevis bracket (pin and snap ring attached)
FA	Rod side flange
FB	Head side flange

Ⓖ Accessory (available when rod end male thread "N" is selected)	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)

⚠ Precautions for model No. selection

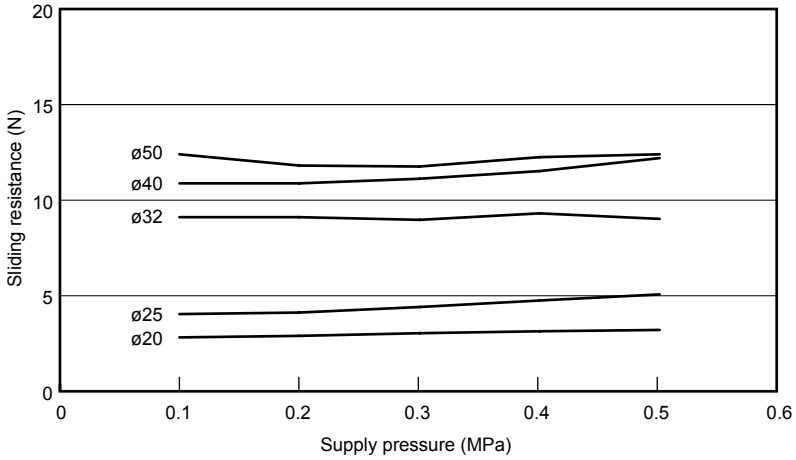
1: Less than 5 mm for 1-color display switch and less than 10 mm for the 2-color display, off-delay, strong magnetic field proof, T1 or T8* switch are not available.
*2: The total length is the same as that of the next longer standard stroke length.
*3: The F switch can only be mounted on the piping port surface of bore sizes ø20 and ø25.
*4: The F switch with L lead wire on ø20 models cannot be selected on stroke lengths 10 mm or under.
*5: Switches are shipped with the product. Contact CKD if assembling before shipment is necessary.
*6: Piston rod of ø20 and ø25 is stainless steel as standard. C snap ring is stainless steel instead of steel. The rod end male thread nut is stainless steel.
*7: The mounting bracket is attached at shipment.
*8: "I" and "Y" cannot be selected together.
*9: The projection dimension of piston rod WF when LB or FA is selected is different from that of the standard. Refer to "Pneumatic Cylinders I (Catalog No. CB-029SA)" for dimensions. The number of the specified protruding dimension will be added at the end of the model No. printed on the metal plate on the body.
*10: 5 m lead wire for the F switch is a made to order product.
*11: Made to order. Contact CKD for details.

Low friction cylinder sliding resistance value

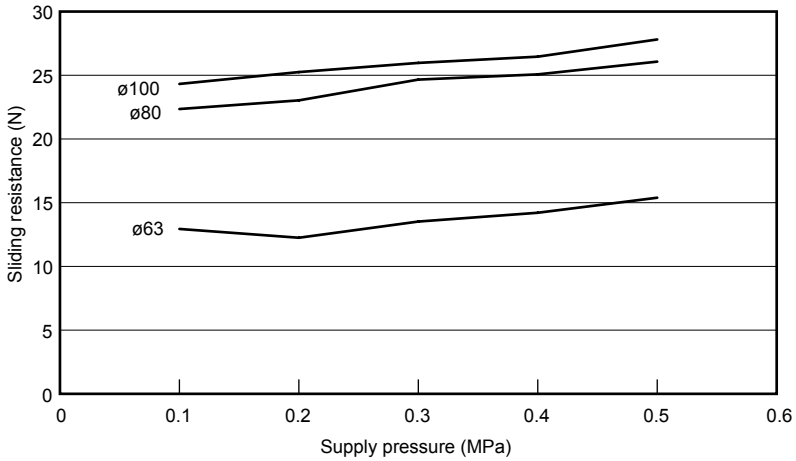
Values are measured under the following conditions. As the values vary with the installation method, pressurizing direction, etc., they are not guaranteed.

[Test conditions]	
Cylinder	SCM-U
Cylinder mounting direction	Vertical
Cylinder speed	10 mm/min (driven by external motor)
Cylinder pressurizing direction	Head side (the rod side is open to atmosphere)

Sliding resistance (ø20 to ø50)



Sliding resistance (ø63 to ø100)



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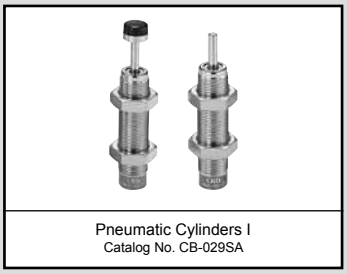


Pneumatic Cylinders I
Catalog No. CB-029SA

Shock absorber

NCK Series

●Max. absorbed energy: 1 to 200 J

RoHS CAD

Specifications

Descriptions			NCK							
Series			0.1	0.3	0.7	1.2	2.6	7	12	20
Type/Classification			Spring return without adjuster							
Max. absorbed energy		J	1	3	7	12	26	70	120	200
O.D. thread size		mm	M8×0.75		M10×1.0	M12×1.0	M14×1.5	M20×1.5	M25×1.5	M27×1.5
Stroke length		mm	4.5	6	8	10	15	20	25	30
Max. absorbed energy per hour		kJ/hr.	4.8	6.3	12.6	21.6	39.0	84.0	86.4	108.0
Max. colliding speed		m/s	1.0	1.5		2.0		2.5	3.0	
Max. operating frequency		Cycle/min.	80	35	30		25	20	12	9
Ambient temperature		°C	-10 to 80							
Max. load (resistance)		N	525	1150	2010	2750	4000	7980	10950	15380
Return time		S	0.3 or less					0.4 or less		0.5 or less
Weight		kg	0.009	0.012	0.02	0.04	0.07	0.2	0.3	0.45
Return spring force	When extended	N	2.9		2.0	2.9	5.9	9.8	16.3	
	When compressed	N	4.5		4.3	5.9	11.8	21.6	33.3	33.9

Compatibility table by variation

Applicable size		Basic
All sizes	P4	●
	P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

NCK - 00 - 0.7 - N1 - P4 / P40

Ⓐ Mounting

Ⓑ Series

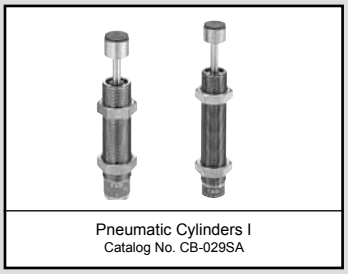
Ⓒ Option *1

Code	Content
Ⓐ Mounting	
00	Basic
FA	Flange
Ⓑ Series (max. energy value)	
0.1	1 J
0.3	3 J
0.7	7 J
1.2	12 J
2.6	26 J
7	70 J
12	120 J
20	200 J
Ⓒ Option	
Blank	Standard
N1	With stop nut
C	Capped

⚠ Precautions for model No. selection

*1: 3 hexagon nuts are provided for N1 specifications products.

Related products



Pneumatic Cylinders I
Catalog No. CB-029SA

Shock absorber

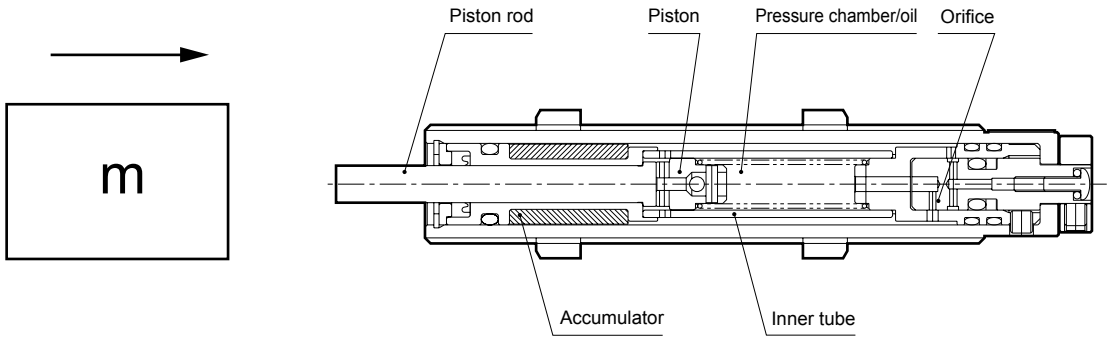
FCK Series

●Max. absorbed energy: 1.5 to 79.3 J

Specifications

Descriptions			FCK									
Series			0.15	0.18	0.3	0.5	0.4	0.6	1	3	5	6.5	8.1
Type/Classification			Spring return with adjuster										
Max. absorbed energy		J	1.5	1.8	2.9	4.9	3.9	5.9	9.8	29.4	49	63.7	79.3
O.D. thread size		mm	M10×1.0		M12×1.0		M14×1.5		M16×1.5	M20×1.5	M25×1.5		M27×1.5
Stroke length		mm	8		10				12	16	30	40	25
Max. absorbed energy per hour		kJ/hr.	3.5		5.9		8.8		14.1	20.6	29.4	38.2	32.3
Max. colliding speed	L	m/s	0.3 to 1	—	0.3 to 1	—	0.3 to 1	—	0.3 to 1				
	M	m/s	—	0.3 to 2	—	0.3 to 2	—	0.3 to 2	0.3 to 2				
	H	m/s	—	0.7 to 3	—	0.7 to 3	—	0.7 to 3	0.7 to 3				
Max. operating frequency (20°C)		Cycle/min.	60										
Ambient temperature		°C	-5 to 70										
Max. load (resistance)	L	N	637		1,470		1,813		2,646	4,900		6,370	
	M	N								3,528	3,920		
	H	N											
Return time		S	0.5 or less										
Product weight	Without cap	g	26.5		44		68		108	180	406	—	411
	With cap	g	27		47		73		117	202	436	459	460
Return spring force	When extended	N	2.9		4.9		4.5		5.4	12.0	16.6	23.8	16.2
	When compressed	N	5.9		9.8				14.7	18.0	33.1	71.4	27.2

Operational principle



If an object collides with the piston rod, that action is transmitted to the oil in the pressure chamber attached by the piston and inner tube.
Oil in pressure chamber flows out from orifice provided in inner tube.
Resistance F shown by following formula occurs at that time.
$F = av^2 + bv + cx$ (v is colliding speed, and x is travel stroke. a, b, and c are constants.)

Item No. 1 shows the speed square resistance, which is a significant part of the resistance as a whole.
Item No. 2 shows the viscosity resistance, which is a significant part of the resistance if the colliding speed is low.
Item No. 3 shows return force of piston rod. (Can usually be ignored, as the value is miniscule compared to Items 1 and 2.)
The product of resistance generated at this time and the piston rod stroke is the shock absorber absorption energy.
The shock absorber realizes ideal impact absorption by controlling Items 1 and 2.

Compatibility table by variation

Applicable size		Low speed	Medium speed	High speed
		L	M	H
FCK-*-0.15 to 8.1	P4	●	●	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Low speed

FCK-L - 0.15 - C - P4

● Medium speed

FCK-M - 0.18 - C - P4

● High speed

FCK-H - 0.18 - C - P4

Ⓐ Model No.

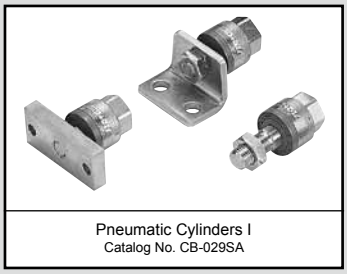
Ⓑ Series (max. energy absorption)

Ⓒ Option
*1

Code	Content	Ⓐ Model No. Low speed FCK-L	Medium speed FCK-M	High speed FCK-H
Ⓑ Series (max. energy absorption)				
0.15	1.5 J	●		
0.18	1.8 J		●	●
0.3	2.9 J	●		
0.4	3.9 J	●		
0.5	4.9 J		●	●
0.6	5.9 J		●	●
1	9.8 J	●	●	●
3	29.4 J	●	●	●
5	49 J	●	●	●
6.5	63.7 J	●	●	●
8.1	79.3 J	●	●	●
Ⓒ Option				
Blank	Without cap	●	●	●
C	Capped	●	●	●

* 1: Without cap is not available for 6.5 (63.7 J).

▭ indicates not available.



Pneumatic Cylinders I
Catalog No. CB-029SA

Floating fitting

FJ Series

●Compatible cylinder diameter: ø20 to ø200

RoHS CAD

Specifications

Descriptions / Model No.	Nominal port size of thread x pitch	Max. working tension and compression (kN) *1 Basic	Flange	Foot	Allowable eccentricity (mm)	Oscillating angle	Operating ambient temperature range
FJ-*- 3	M3×0.5	0.019	——	——	0.5	±5°	-10 to 60°C
4	M4×0.7	0.053	——	——	0.5		
5	M5×0.8	0.121	——	——	0.5		
6	M6×1.0	1.08	——	——	0.75		
8	M8×1.0	1.08	1.08	1.08	0.75		
8-1.25	M8×1.25	1.08	1.08	1.08	0.75		
10	M10×1.25	2.45	2.45	2.45	0.75		
12-1.25	M12×1.25	2.45	2.45	2.45	0.75		
12	M12×1.5	2.45	2.45	2.45	0.75		
14	M14×1.5	5.88	5.88	5.88	1.0		
16	M16×1.5	10.8	10.8	10.8	1.5		
18	M18×1.5	10.8	10.8	10.8	1.5		
22	M22×1.5	17.6	17.6	17.6	2.0		
26	M26×1.5	27.5	27.5	27.5	3.0		
30	M30×1.5	60.8	60.8	60.8	3.0		
36	M36×1.5	87.3	87.3	87.3	4.0		
40	M40×1.5	87.3	87.3	87.3	4.0		
45	M45×1.5	108	108	108	4.0		

*1: Max. working tension and compression shows static load.
*2: FJ-8-1.25 and FJ-12-1.25 are optional products. FJ-36, 40 and 45 are made to order products.
*3: FJ-6 to 45 are P4 compliant products as standard.

How to order

FJ - 0 - 3 - P4

Ⓐ Mounting

Ⓑ Nominal port size of thread x pitch

Code	Content
Ⓐ Mounting	
0	Basic
L	Foot
F	Flange

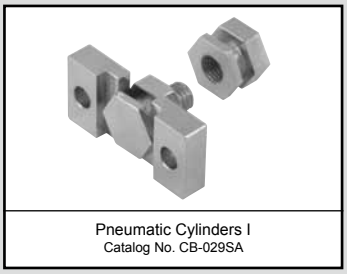
Ⓑ Nominal port size of thread x pitch

	Mounting	O	L	F
3	M3×0.5	●		
4	M4×0.7	●		
5	M5×0.8	●		
6	M6×1.0	●		
8	M8×1.0	●	●	●
8-1.25	M8×1.25	●	●	●
10	M10×1.25	●	●	●
12-1.25	M12×1.25	●	●	●
12	M12×1.5	●	●	●
14	M14×1.5	●	●	●
16	M16×1.5	●	●	●
18	M18×1.5	●	●	●
22	M22×1.5	●	●	●
26	M26×1.5	●	●	●
30	M30×1.5	●	●	●
36	M36×1.5	●	●	●
40	M40×1.5	●	●	●
45	M45×1.5	●	●	●

Compatibility table by variation

Applicable size		Basic	Foot	Flange
FJ-*-3 FJ-*-4 FJ-*-5	P4	●	●	●
	P40	▲	▲	▲
FJ-*-6 to 45	P4	Supports P4 specifications as standard		
	P40	▲		

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable



Simplified floating fitting

FK Series

●Cylinder bore size: ø6 to ø100

P4 compliant as standard

RoHS CAD

Specifications

Model No.		Allowable load *1 (N)	Allowable eccentricity (mm)	Backlash amount in thrust direction (mm)
Male thread	Female thread			
FK-M3-N	FK-M3	63	±0.3	0.1 to 0.3
FK-M4-N	FK-M4	110		
FK-M5-N	FK-M5	179		
FK-M6-N	FK-M6	253		
FK-M8-N	FK-M8×1.0	462		
——	FK-M8×1.25	462		
FK-M10-N	FK-M10	734		
——	FK-M12	1069		
——	FK-M14	1466		
FK-M16-N	FK-M16	2003	±0.7	
——	FK-M18	2448		
FK-M20-N	——	3130		
——	FK-M22	3896		
——	FK-M26	6219		

*1: Allowable load indicates static load.

Related products

How to order

● Simplified floating fitting

FK - **M3-N** - **P40**

Model No.

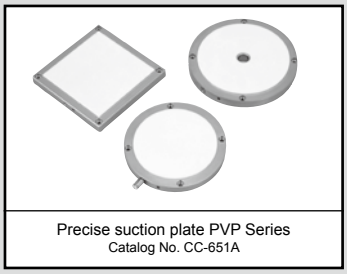
Ⓐ Thread size

Code	Content	
Ⓐ Thread size		
M3-N	M3×0.5	Male thread
M4-N	M4×0.7	
M5-N	M5×0.8	
M6-N	M6×1.0	
M8-N	M8×1.25	
M10-N	M10×1.5	
M16-N	M16×2.0	
M20-N	M20×2.5	
M3	M3×0.5	Female thread
M4	M4×0.7	
M5	M5×0.8	
M6	M6×1.0	
M8×1.0	M8×1.0	
M8×1.25	M8×1.25	
M10	M10×1.25	
M12	M12×1.5	
M14	M14×1.5	
M16	M16×1.5	
M18	M18×1.5	
M22	M22×1.5	
M26	M26×1.5	

Compatibility table by variation

Applicable size		Male thread	Female thread
		N	
All sizes	P4	Supports P4 specs as standard	
	P40	●	●

● : Standard
○ : Made to order
▲ : Contact CKD
▭ : Not applicable



Precise suction plate PVP Series
Catalog No. CC-651A

Precise suction plate

PVP Series

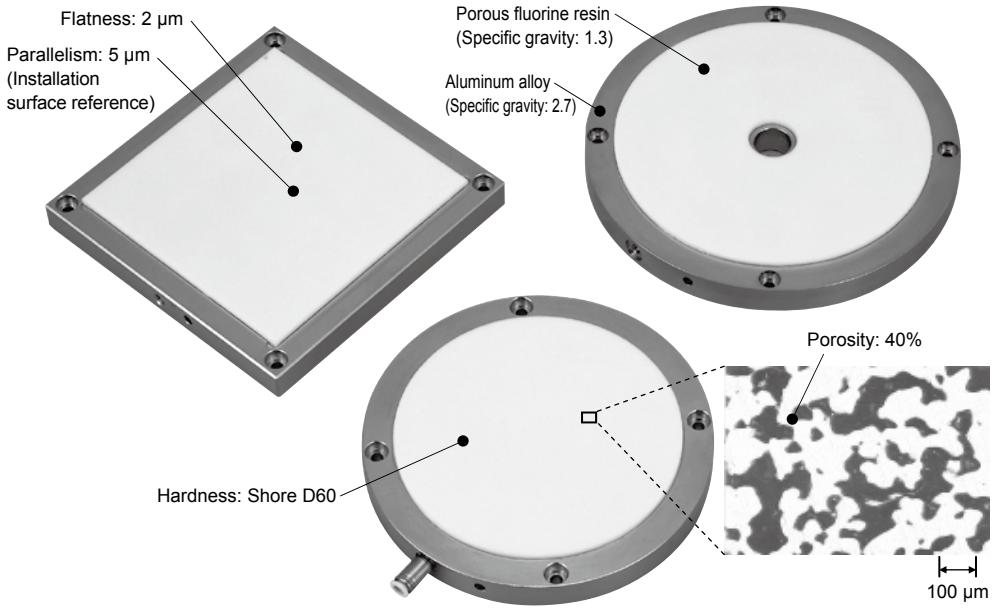
P4 compliant as standard

RoHS

Specifications

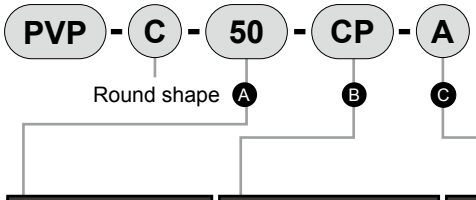
Descriptions			PVP-R-36-18 PVP-C-50 PVP-S-50-50	PVP-R-85-27 PVP-R-118-18 PVP-C-75 PVP-C-100 PVP-C-113 PVP-C-138 PVP-S-100-100	PVP-C-187 PVP-S-150-150 PVP-S-200-250
Product	Suction surface μm (*1)	Flatness	2	3	4
		Parallelism	5	10	15
	Flatness of reference surface	μm	10	10	10
	Air leakage volume	ℓ/min(ANR)	0.4	0.6	1
	Vacuum differential pressure	kPa (*2)	40 or more		
	Working pressure	MPa	0.2 or less (clean air)		
	Ambient temperature	°C	5 to 40		
	Ambient humidity	%RH (*3)	65 or less		
Porous material	Material		Polychlorotrifluoroethylene resin		
	Porosity	%	40±5		
	Shore D hardness degree	°	60±15		
Base material	Material		Corrosion-resistant aluminum alloy		
	Surface-treated	(*4)	No		

*1: This accuracy is the measurement value left as is for 24 hours in the constant temperature room at 23°C.
Accuracy may deviate from that specified at a temperature other than 23°C.
The value is measured by placing the product without load on a table, measuring straightness in two or more directions and using the maximum value.
This is not the usual flatness measurement method, but has been used because multi-porous material has indentations.
*2: Indicates vacuum source pressure drop when a workpiece is suctioned with the entire multi-porous surface.
*3: In humidity exceeding 65% RH, suction surface accuracy may deviate from the specified value.
*4: This product's body is made of corrosion-resistant aluminum alloy.
Surface treatment (alumite, electroless nickel plating, etc.) is made to order.



How to order

● How to order the round suction plate

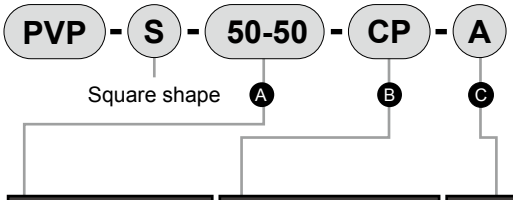


A Outer diameter of porous material
50
75
100
113
138
187

B Vacuum port position	
Blank	Side surface port
CP	Back surface port

C Option	
Blank	None
A	Antistatic treatment

● How to order the square suction plate

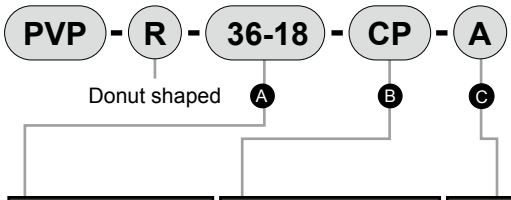


A Short side dimension of porous material - Long side dimension of porous material
50-50
100-100
150-150
200-250

B Vacuum port position	
Blank	Side surface port
CP	Back surface port

C Option	
Blank	None
A	Antistatic treatment

● How to order the donut shaped suction plate



A Outer diameter of porous material - Inner diameter of porous material
36-18
85-27
118-18

B Vacuum port position	
Blank	Side surface port
CP	Back surface port

C Option	
Blank	None
A	Antistatic treatment

Suction area/weight table

Model No.	Suction area (cm^2)	Weight (g)
PVP-R-36-18	8	80
PVP-R-85-27	51	290
PVP-R-118-18	107	520
PVP-C-50	20	140
PVP-C-75	44	250
PVP-C-100	79	390
PVP-C-113	100	490
PVP-C-138	149	680
PVP-C-187	275	1,170
PVP-S-50-50	25	160
PVP-S-100-100	100	490
PVP-S-150-150	225	980
PVP-S-200-250	500	2,030



Pneumatic Cylinders II
Catalog No. CB-030SA

Air bearing actuator
Single acting/push

LBC Series

P4 compliant as standard

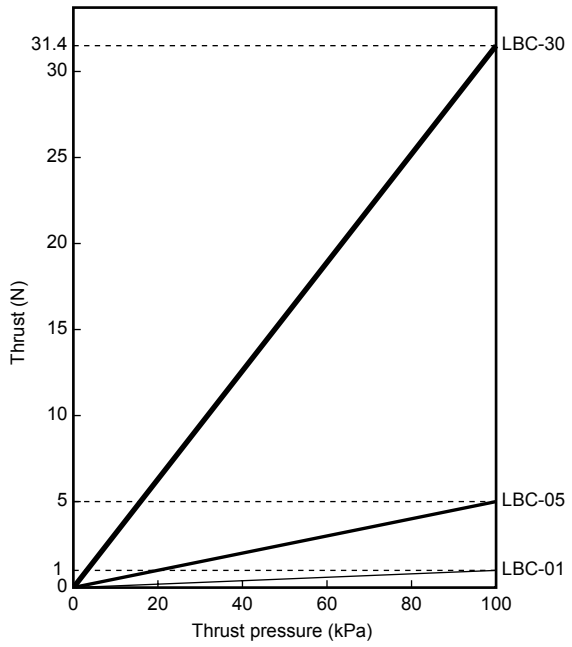
RoHS CAD

Specifications

Descriptions			LBC-01	LBC-05	LBC-30
Actuation			Single acting/push (*1)		
Working fluid			Clean compressed air (JIS B 8392-1: 2003 Grade 1.3.2 or equivalent)		
Working pressure MPa	Air bearing port		0.3 to 0.5		
	Thrust port		0.002 to 0.1		
Ambient temperature		°C	5 to 35		
Proof pressure		MPa	0.75		
Pressurized area		mm^2	10	50	314
Thrust range		N	0.02 to 1.0	0.1 to 5.0	0.6 to 31.4
Stroke length		mm	5^{+1}_{0}		30^{+1}_{0}
Allowable lateral load		N	1.2	0.8	4.0
Weight		g	50	45	345
Movable part weight (*2)		g	5	4.5	65
Bearing part air consumption (*3)		ℓ/min	2.5 or less	2.5 or less	7.5 or less

*1: Rod return mechanism is not available.
*2: Movable part weight indicates the total weight of rod, stopper and cross headed flat head screw.
*3: Value when bearing pressure is 0.5 MPa

Thrust characteristics



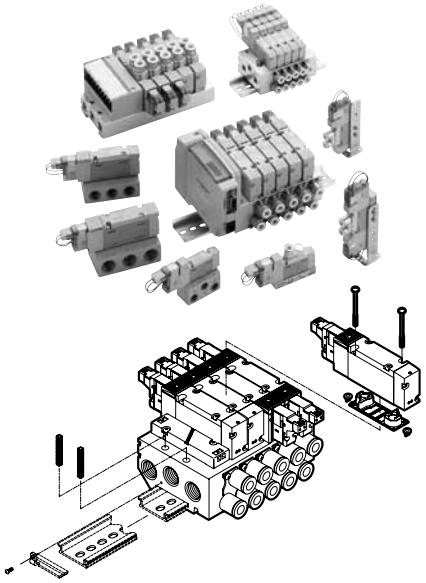
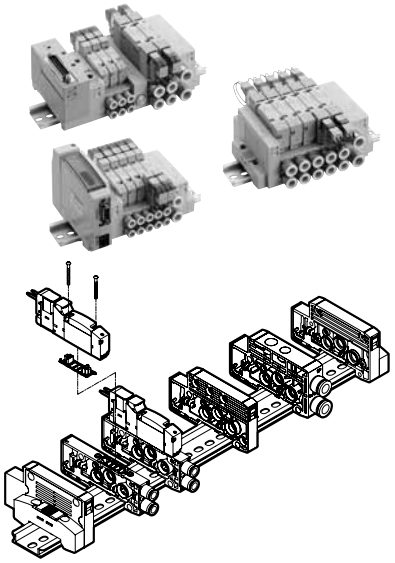
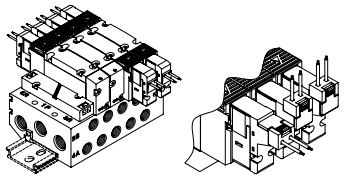
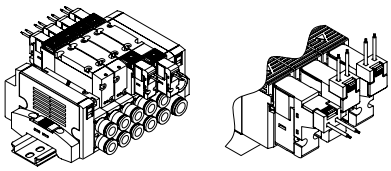
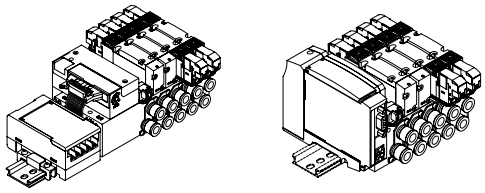
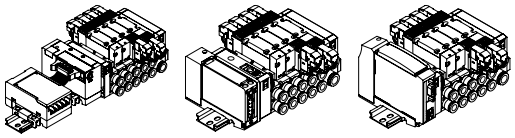
How to order

LBC - 01

Ⓐ Thrust

Code	Content
Ⓐ Thrust	
01	1N
05	5N
30	30N

MEMO

Series / Specifications		M4GB∗ Series	MN4GB∗ Series
		Metal base manifold	Block manifold (resin base)
Appearance			
Features		· Manifold base is metal · Supports female thread piping	· Manifold base is resin · Bases can be extended · Tag plate can be installed · Ideal for installing inside panels and decreasing weight · Mixture of different pressures is possible with partition blocks · Mixing of 4G1/4G2 Series is possible
Wiring method	Individual wiring method	 M4GB-(blank)/E2*	 MN4GB-(blank)/E2*
	Reduced wiring method	 M4GB-T6* M4GB-T8*	 MN4GB-T6* MN4GB-T7* MN4GB-T8*
Page		● Discrete base piping (4GB*R) How to order Page 128 ● Metal base manifold Individual wiring (M4GB1-E2*) Manifold specifications sheet Page 129 ● Metal base manifold Individual wiring (M4GB2-E2*) Manifold specifications sheet Page 130 ● Metal base manifold Individual wiring (M4GB3-E2*) Manifold specifications sheet Page 131 ● Metal base manifold Individual wiring specifications Dimensions CB-023SA ● Metal base manifold Reduced wiring serial transmission (M4GB1-T6*/T8*) Manifold specifications sheet Page 132 ● Metal base manifold Reduced wiring serial transmission (M4GB2-T6*/T8*) Manifold specifications sheet Page 133 ● Metal base manifold Reduced wiring serial transmission (M4GB3-T6*/T8*) Manifold specifications sheet Page 134 ● Metal base manifold Reduced wiring serial transmission specification Dimensions CB-023SA ● Resin block manifold Individual wiring (MN4GB1-E2*) Manifold specifications sheet Page 135 ● Resin block manifold Individual wiring (MN4GB2-E2*) Manifold specifications sheet Page 136 ● Resin block manifold Individual wiring specifications Dimensions CB-023SA ● Resin block manifold Reduced wiring serial transmission (MN4GB1-T6*/T7*/T8*) Manifold specifications sheet Page 137 ● Resin block manifold Reduced wiring serial transmission (MN4GB2-T6*/T7*/T8*) Manifold specifications sheet Page 138 ● Resin block manifold Reduced wiring serial transmission Dimensions CB-023SA * Contact CKD for manifold specifications sheet other than the above.	

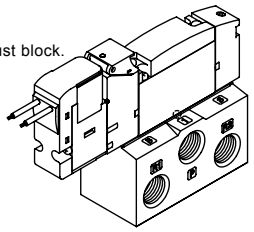
Note) 4GA Series is compatible as well.

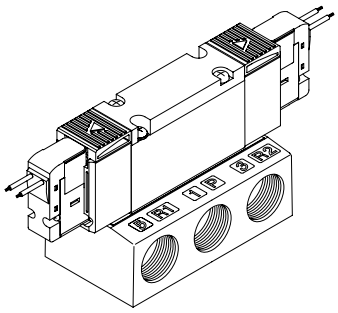
Compatibility table by variation

	4G Series		M4G Series *5) *6)			MN4G Series *7) *9)	
	Push-in fitting Straight (Model No.: C□)	Screw-in (Model No.: M5, 06, 08)	Push-in fitting Straight (Model No.: C□)	Push-in fitting elbow (Model No.: CL□, CD□)	Screw-in (Model No.: M5, 06, 08)	Push-in fitting Straight (Model No.: C□)	Push-in fitting elbow (Model No.: CL□, CD□)
P4	● *8)	●	● *8)		●	● *8)	

● : Standard
○ : Made to order
▲ : Contact CKD
▭ : Not applicable

*1: Base piping (B) single units and 4GA1-M5 are standard products and equivalent to P4 specifications.
*2: Copper-free material applies to flow rate part.
*3: Refer to Pneumatic Valves CB-023SA for serial communication specifications.
*4: Push-in fitting elbow is not supported.
*5: Due to the attached M5 plug change, external pilot is available with P4 specification with or without fitting.
*6: In-stop valve spacer and spacer pilot check valve are not supported.
*7: External pilot specification is not available as standard.
*8: The following are not supported for push-in fitting straight.
$\frac{3}{4}$ G $\frac{A}{B}$ 1,MN4G $\frac{A}{B}$ 1:CF,C18
$\frac{3}{4}$ GA3:C6,C10
$\frac{3}{4}$ GB3:C6
$\frac{3}{4}$ GA4:C10,C12
*9: Atmosphere opening type cannot be selected for MN4G end block and supply and exhaust block.
*10: Contact CKD for European Standards compliant products.





Discrete valve: Base piping

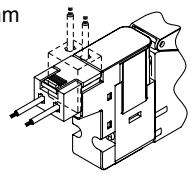
How to order

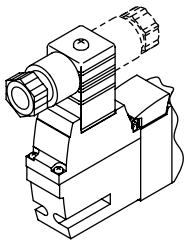
4GB1
4GB2 **1** **0** **R** - **06** - **E21** - **3**
4GB3

Ⓐ Model No.
Ⓑ Solenoid position
Ⓒ Port size
Ⓓ Electrical connections
Ⓔ Voltage

Code	Content
Ⓐ Model No.	
4GB1	Compatible with operating cylinders up to ø40 max
4GB2	Compatible with operating cylinders up to ø80 max
4GB3	Compatible with operating cylinders up to ø100 max
Ⓑ Solenoid position	
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection
Ⓒ Port size	
Port	**Port A/B** / **Compatibility**
06	Rc1/8 / 4GB1 Series
08	Rc1/4 / 4GB2, 4GB3 Series
10	Rc3/8 / 4GB3 Series
Ⓓ Electrical connections	
Blank	Grommet lead wire (300 mm)
E2	E connector, lead wire 300 mm with lamp/surge suppressor
E20	E connector, lead wire 500 mm with lamp/surge suppressor
E21	E connector, lead wire 1 m with lamp/surge suppressor
E22	E connector, lead wire 2 m with lamp/surge suppressor
E23	E connector, lead wire 3 m with lamp/surge suppressor
B	DIN terminal box (Pg7) with lamp/surge suppressor
Ⓔ Voltage	
1	100 VAC (rectifier integrated)
2	200 VAC (rectifier integrated) (*2)
3	24 VDC
4	12 VDC

● Lead wire length
300 mm
500 mm
1 m
2 m
3 m





*1: Discrete valve: Base piping is equivalent to P4 specifications as standard.
*2: DIN terminal box only is supported.

M4GB1 Series / Cylinder bore size **MAXø40**

Metal base manifold
Individual wiring with lamp/surge suppressor

Date issued / /
Company
Contact
Order No.

Manifold model No.

M4GB1 ☐ 0R- ☐ - E21D - ☐ - 3 - P4

Solenoid position | Port size | Electrical connections | Station No. | 24 VDC

[Solenoid position]	
8	Mix
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C4	ø4 push-in
C6	ø6 push-in

[Electrical connections]		
Blank	Grommet lead wire (300 mm)	
E2	E connector, lead wire 300 mm	with lamp/surge suppressor
E20	E connector, lead wire 500 mm	with lamp/surge suppressor
E21	E connector, lead wire 1 m	with lamp/surge suppressor
E22	E connector, lead wire 2 m	with lamp/surge suppressor
E23	E connector, lead wire 3 m	with lamp/surge suppressor

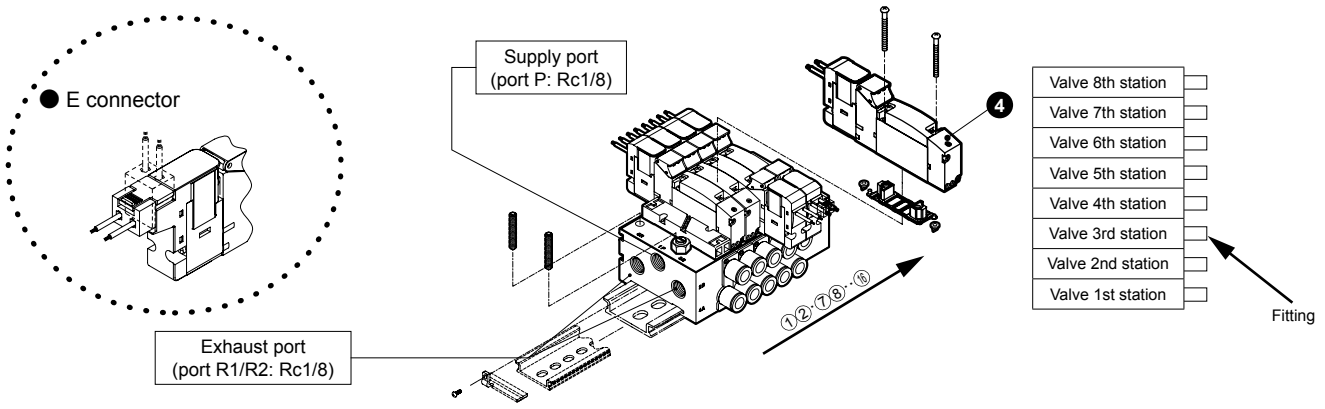
Note: Refer to "Pneumatic Valves" (Catalog No. CB-023SA) for electrical connection details.

* CAUTION
· Port size M5 type is P4 specifications as standard
· Cannot be mixed with push-in

Specifications Table

* Fill in ○ where needed

Name			Valve installation position 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Quantity
Solenoid valve	**4GB119R** 2-position single																		
	4GB129R 2-position double																		
	4GB139R 3-position all ports closed																		
	4GB149R 3-position ABR connection																		
	4GB159R 3-position PAB connection																		
Masking plate	**4G1R-MP**																		
Push-in fitting	ø4 push-in fitting	**C4**																	
	ø6 push-in fitting	**C6**																	
* ○ in layout position for mixed fittings only																			
Blanking plug	**GWP** ☐ **-B**		Port A/B push-in fitting plug (select from ø4, ø6)																
	GWP ☐ **-B**		Port A/B push-in fitting plug (select from ø4, ø6)																
DIN rail length **L2** ☐			Fill in the left box only for non-standard lengths																
Notes	*1: When solenoid valve only is prepared separately Model No. 4GB1☐9R-00-☐-3 Solenoid position / Electrical connections 1: 2-position single 2: 2-position double 3: 3-position all ports closed 4: 3-position ABR connection 5: 3-position PAB connection																		



M4GB2 Series / Cylinder bore size **MAXø80**

Metal base manifold
Individual wiring with lamp/surge suppressor

Date issued / /
Company
Contact
Order No.

Manifold model No.

M4GB2 [ ] 0R - [ ] - E21 D - [ ] - 3 - P4

Solenoid position | Port size | Electrical connections | Station No. | 24 VDC

[Solenoid position]	
8	Mix
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C4	ø4 push-in
C6	ø6 push-in
C8	ø8 push-in

* CAUTION
· Port size 06 (Rc1/8) type is P4 specifications as standard
· Cannot be mixed with push-in

[Electrical connections]		
Blank	Grommet lead wire (300 mm)	
E2	E connector, lead wire 300 mm	with lamp/surge suppressor
E20	E connector, lead wire 500 mm	with lamp/surge suppressor
E21	E connector, lead wire 1 m	with lamp/surge suppressor
E22	E connector, lead wire 2 m	with lamp/surge suppressor
E23	E connector, lead wire 3 m	with lamp/surge suppressor
B	DIN terminal box (Pg7)	with lamp/surge suppressor

Note: Refer to "Pneumatic Valves" (Catalog No. CB-023SA) for electrical connection details.

Specifications Table

* Fill in ○ where needed

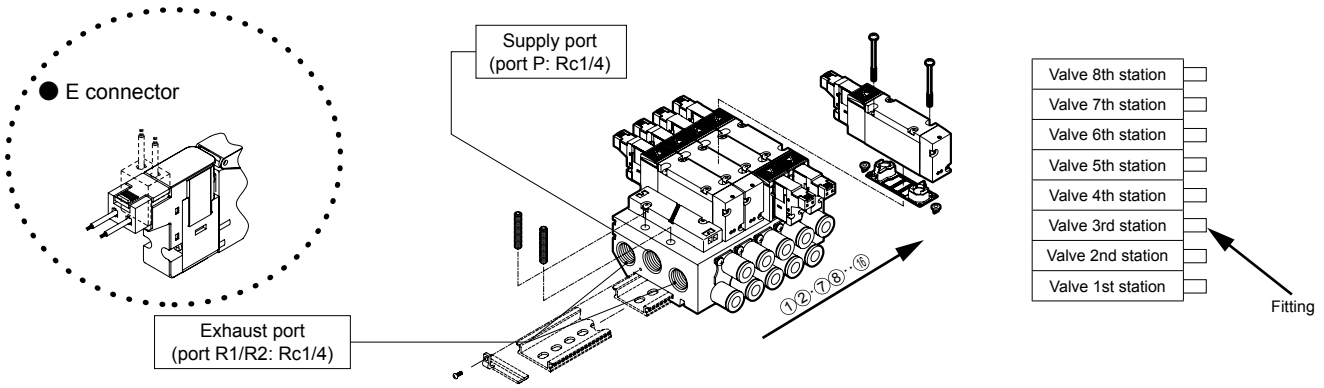
Name			Valve installation position 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Quantity
Solenoid valve	**4GB219R** 2-position single																		
	4GB229R 2-position double																		
	4GB239R 3-position all ports closed																		
	4GB249R 3-position ABR connection																		
	4GB259R 3-position PAB connection																		
Masking plate	**4G2R-MP**																		
Push-in fitting	ø4 push-in fitting	**C4**																	
	ø6 push-in fitting	**C6**																	
	ø8 push-in fitting	**C8**																	
* ○ in layout position for mixed fittings only																			
Blanking plug	**GWP** [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6, ø8)																
	GWP [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6, ø8)																
DIN rail length **L2** [ ]			Fill in the left box only for non-standard lengths																

Notes

*1: When solenoid valve only is prepared separately

Model No. 4GB2[ ]9R-00-[ ]-3
Solenoid position | Electrical connections

1: 2-position single
2: 2-position double
3: 3-position all ports closed
4: 3-position ABR connection
5: 3-position PAB connection



M4GB3 Series / Cylinder bore size **MAXø100**

Metal base manifold
Individual wiring with lamp/surge suppressor

Date issued / /
Company
Contact
Order No.

Manifold model No.

M4GB3 [ ] 0R - [ ] - [E21] D - [ ] - 3 - P4

Solenoid position | Port size | Electrical connections | Station No. | 24 VDC

[Solenoid position]	
8	Mix
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C6	ø6 push-in
C8	ø8 push-in
C10	ø10 push-in

[Electrical connections]		
Blank	Grommet lead wire (300 mm)	
E2	E connector, lead wire 300 mm	with lamp/surge suppressor
E20	E connector, lead wire 500 mm	with lamp/surge suppressor
E21	E connector, lead wire 1 m	with lamp/surge suppressor
E22	E connector, lead wire 2 m	with lamp/surge suppressor
E23	E connector, lead wire 3 m	with lamp/surge suppressor
B	DIN terminal box (Pg7)	with lamp/surge suppressor

Note: Refer to "Pneumatic Valves" (Catalog No. CB-023SA) for electrical connection details.

* CAUTION
· Port size 08 (Rc1/4) is P4 specifications as standard
· Cannot be mixed with push-in

Specifications Table

* Fill in ○ where needed

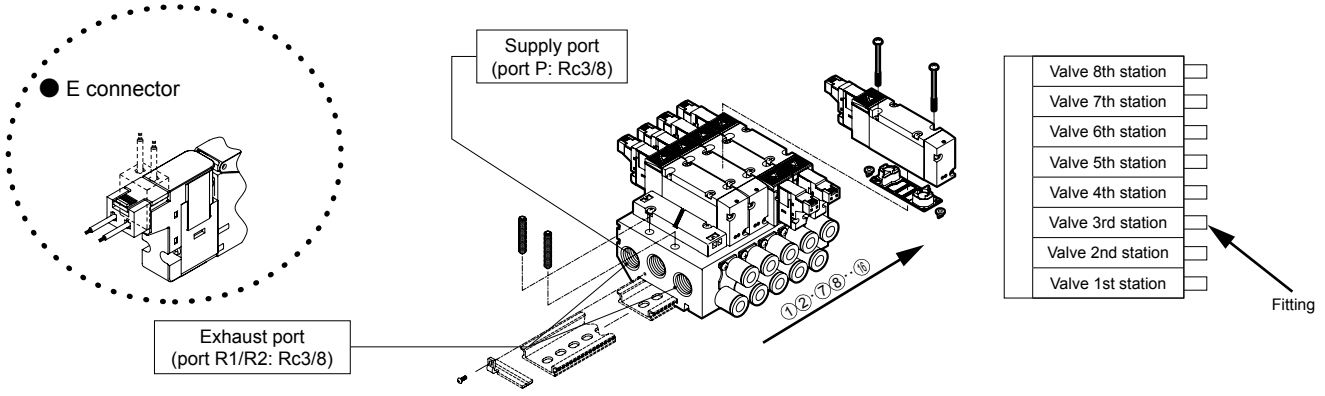
Name			Valve installation position 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Quantity
Solenoid valve	**4GB319R** 2-position single																		
	4GB329R 2-position double																		
	4GB339R 3-position all ports closed																		
	4GB349R 3-position ABR connection																		
	4GB359R 3-position PAB connection																		
Masking plate	**4G3R-MP**																		
	ø8 push-in fitting	**C8**																	
	ø10 push-in fitting	**C10**																	
* ○ in layout position for mixed fittings only																			
Blanking plug	**GWP** [ ] **-B**		Port A/B push-in fitting plug (select from ø6, ø8, ø10)																
	GWP [ ] **-B**		Port A/B push-in fitting plug (select from ø6, ø8, ø10)																
DIN rail length **L2** [ ]			Fill in the left box only for non-standard lengths																

Notes

*1: When solenoid valve only is prepared separately

Model No. 4GB3[ ]9R-00-[ ]-3
Solenoid position | Electrical connections

1: 2-position single
2: 2-position double
3: 3-position all ports closed
4: 3-position ABR connection
5: 3-position PAB connection



M4GB1 Series / Cylinder bore size **MAXø40**

Reduced wiring metal base manifold (serial transmission)

Date issued / /

Company

Contact

Order No.

Manifold model No.

M4GB1 [ ] **0R -** [ ] **-** [D] [E] **D -** [ ] **- 3 - P4**

Solenoid position / Port size / Station No. / 24 DC

[Solenoid position]	
8	Mix
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C4	ø4 push-in
C6	ø6 push-in

* CAUTION
· Port size M5 is P4 specifications as standard
· Cannot be mixed with push-in

Ⓓ Reduced wiring connection		
T6A0	UNIWIRE SYSTEM	NPN 8 points
T6A1		NPN 16 points
T6C0	CompoBus/S	NPN 8 points
T6C1		NPN 16 points
T6E0	S-LINK	NPN 8 points
T6E1		NPN 16 points
T6G1	CC-Link	NPN 16 points
T6J0	UNIWIRE H SYSTEM	NPN 8 points
T6J1		NPN 16 points
T8G1	CC-Link (thin)	NPN 16 points
T8G2		NPN 32 points
T8GP1		PNP 16 points
T8GP2		PNP 32 points
T8P1	PROFIBUS-DP (thin)	NPN 16 points
T8P2		NPN 32 points

Ⓓ Reduced wiring connection		
T8PP1	PROFIBUS-DP (thin)	PNP 16 points
T8PP2		PNP 32 points
T8EC1	EtherCAT (thin)	NPN 16 points
T8EC2		NPN 32 points
T8ECP1		PNP 16 points
T8ECP2		PNP 32 points
T8EN1	EtherNet/IP (thin)	NPN 16 points
T8EN2		NPN 32 points
T8ENP1		PNP 16 points
T8ENP2		PNP 32 points

Ⓔ Terminal/connector pin array	
Blank	Standard wiring
W	Double wiring

Specifications Table

* Fill in ○ where needed

Name			Valve installation position 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Quantity
Solenoid valve	**4GB119R** 2-position single																		
	4GB129R 2-position double																		
	4GB139R 3-position all ports closed																		
	4GB149R 3-position ABR connection																		
	4GB159R 3-position PAB connection																		
	4G1R-MP [ ] Masking plate																		
Push-in fitting	ø4 push-in fitting	**C4**																	
	ø6 push-in fitting	**C6**																	
* Print ○ in layout position for mixed fittings only																			
Blanking plug	**GWP** [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6)																
	GWP [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6)																
DIN rail length	**L2=** [ ]		Fill in the left box only for non-standard lengths																

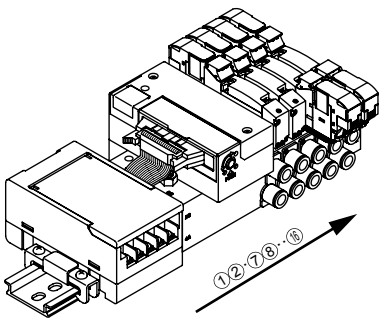
Notes

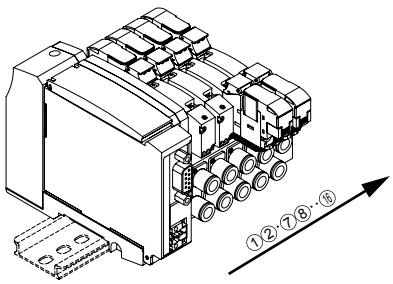
1: Wiring block is 4GR-OPP3- (serial transmission slave unit)
4GR-OPP7-*

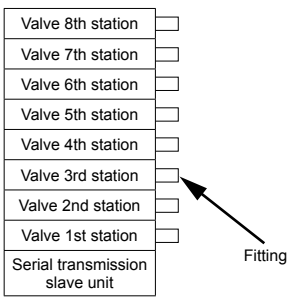
*2: When solenoid valve only is prepared separately Model No. 4GB1 [ ] 9R-00-A2N-3

Solenoid position

1: 2-position single
2: 2-position double
3: 3-position all ports closed
4: 3-position ABR connection
5: 3-position PAB connection







M4GB2 Series / Cylinder bore size **MAXø80**

Reduced wiring metal base manifold (serial transmission)

Date issued / /

Company

Contact

Order No.

Manifold model No.

M4GB2 [ ] **0R -** [ ] **-** [D] [E] **D -** [ ] **- 3 - P4**

Solenoid position / Port size / Station No. / 24 DC

[Solenoid position]	
8	Mix
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C4	ø4 push-in
C6	ø6 push-in
C8	ø8 push-in

* CAUTION
· Port size 06 (Rc1/8) is P4 specifications as standard
· Cannot be mixed with push-in

Ⓓ Reduced wiring connection		
T6A0	UNIWIRE SYSTEM	NPN 8 points
T6A1		NPN 16 points
T6C0	CompoBus/S	NPN 8 points
T6C1		NPN 16 points
T6E0	S-LINK	NPN 8 points
T6E1		NPN 16 points
T6G1	CC-Link	NPN 16 points
T6J0	UNIWIRE H SYSTEM	NPN 8 points
T6J1		NPN 16 points
T8G1	CC-Link (thin)	NPN 16 points
T8G2		NPN 32 points
T8GP1		PNP 16 points
T8GP2		PNP 32 points
T8P1	PROFIBUS-DP (thin)	NPN 16 points
T8P2		NPN 32 points

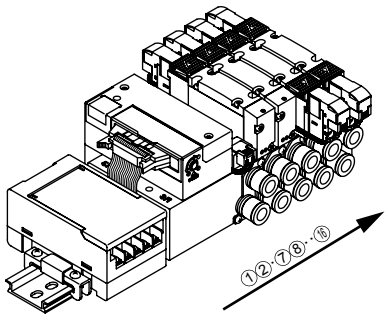
Ⓓ Reduced wiring connection		
T8PP1	PROFIBUS-DP (thin)	PNP 16 points
T8PP2		PNP 32 points
T8EC1	EtherCAT (thin)	NPN 16 points
T8EC2		NPN 32 points
T8ECP1		PNP 16 points
T8ECP2		PNP 32 points
T8EN1	EtherNet/IP (thin)	NPN 16 points
T8EN2		NPN 32 points
T8ENP1		PNP 16 points
T8ENP2		PNP 32 points

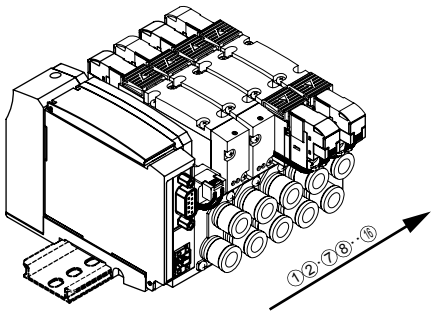
Ⓔ Terminal/connector pin array	
Blank	Standard wiring
W	Double wiring

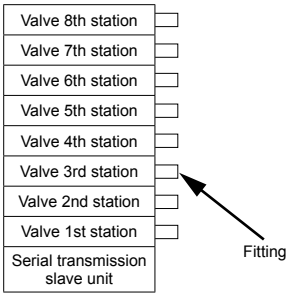
Specifications Table

* Fill in ○ where needed

Name			Valve installation position 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Quantity
Solenoid valve	**4GB219R** 2-position single																		
	4GB229R 2-position double																		
	4GB239R 3-position all ports closed																		
	4GB249R 3-position ABR connection																		
	4GB259R 3-position PAB connection																		
	4G2R-MP [ ] Masking plate																		
Push-in fitting	ø4 push-in fitting	**C4**																	
	ø6 push-in fitting	**C6**																	
	ø8 push-in fitting	**C8**																	
* Print ○ in layout position for mixed fittings only																			
Blanking plug	**GWP** [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6, ø8)																
	GWP [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6, ø8)																
DIN rail length	**L2=** [ ]		Fill in the left box only for non-standard lengths																
Notes	*1: Wiring block is 4GR-OPP3-* (serial transmission slave unit) 4GR-OPP7-* *2: When solenoid valve only is prepared separately Model No. 4GB2 [ ] 9-00-A2N-3 Solenoid position → 1: 2-position single 2: 2-position double 3: 3-position all ports closed 4: 3-position ABR connection 5: 3-position PAB connection																		







M4GB3 Series / Cylinder bore size **MAXø100**

Reduced wiring metal base manifold (serial transmission)

Date issued / /

Company

Contact

Order No.

Manifold model No.

M4GB3 [ ] **0R -** [ ] **-** [D] [E] **D -** [ ] **- 3 - P4**

Solenoid position · Port size · Station No. · 24 DC

[Solenoid position]	
8	Mix
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C6	ø6 push-in
C8	ø8 push-in
C10	ø10 push-in

Ⓓ Reduced wiring connection		
T6A0	UNIWIRE SYSTEM	NPN 8 points
T6A1		NPN 16 points
T6C0	CompoBus/S	NPN 8 points
T6C1		NPN 16 points
T6E0	S-LINK	NPN 8 points
T6E1		NPN 16 points
T6G1	CC-Link	NPN 16 points
T6J0	UNIWIRE H SYSTEM	NPN 8 points
T6J1		NPN 16 points
T8G1	CC-Link (thin)	NPN 16 points
T8G2		NPN 32 points
T8GP1		PNP 16 points
T8GP2		PNP 32 points
T8P1	PROFIBUS-DP (thin)	NPN 16 points
T8P2		NPN 32 points

Ⓓ Reduced wiring connection		
T8PP1	PROFIBUS-DP (thin)	PNP 16 points
T8PP2		PNP 32 points
T8EC1	EtherCAT (thin)	NPN 16 points
T8EC2		NPN 32 points
T8ECP1		PNP 16 points
T8ECP2		PNP 32 points
T8EN1	EtherNet/IP (thin)	NPN 16 points
T8EN2		NPN 32 points
T8ENP1		PNP 16 points
T8ENP2		PNP 32 points

Ⓔ Terminal/connector pin array	
Blank	Standard wiring
W	Double wiring

* CAUTION
· Port size 08 (Rc1/4) is P4 specifications as standard

Specifications Table

* Fill in ○ where needed

Name			Wiring block	Valve installation position 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Quantity
Solenoid valve	**4GB319R** 2-position single																			
	4GB329R 2-position double																			
	4GB339R 3-position all ports closed																			
	4GB349R 3-position ABR connection																			
	4GB359R 3-position PAB connection																			
	4G3R-MP [ ] Masking plate																			
	ø8 push-in fitting	**C8**																		
	ø10 push-in fitting	**C10**																		
* Print ○ in layout position for mixed fittings only																				
Blanking plug	**GWP** [ ] **-B**		Port A/B push-in fitting plug (select from ø6, ø8, ø10)																	
	GWP [ ] **-B**		Port A/B push-in fitting plug (select from ø6, ø8, ø10)																	
DIN rail length	**L2=** [ ]		Fill in the left box only for non-standard lengths																	

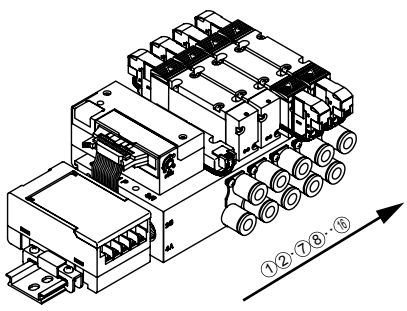
Notes

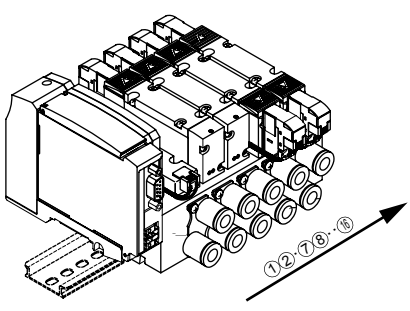
1: Wiring block is 4GR-OPP3- (serial transmission slave unit)
4GR-OPP7-*

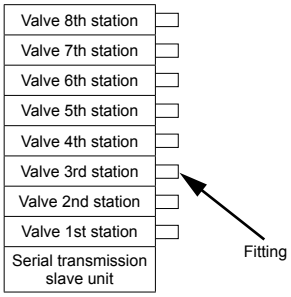
*2: When solenoid valve only is prepared separately Model No. 4GB3[ ]9-00-A2N-3

Solenoid position

1: 2-position single
2: 2-position double
3: 3-position all ports closed
4: 3-position ABR connection
5: 3-position PAB connection







MN4GB1 Series / Cylinder bore size **MAXø40**

Resin block manifold
Individual wiring with lamp/surge suppressor

Date issued / /
Company
Contact
Order No.

Manifold model No.

MN4GB1 ☐ 0R - ☐ - E21 - ☐ - 3 - P4

Solenoid position | Port size | Electrical connections | Station No. | 24 VDC

[Solenoid position]	
8	Mix
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C4	ø4 push-in
C6	ø6 push-in

[Electrical connections]		
Blank	Grommet lead wire (300 mm)	
E2	E connector, lead wire 300 mm	with lamp/surge suppressor
E20	E connector, lead wire 500 mm	with lamp/surge suppressor
E21	E connector, lead wire 1 m	with lamp/surge suppressor
E22	E connector, lead wire 2 m	with lamp/surge suppressor
E23	E connector, lead wire 3 m	with lamp/surge suppressor

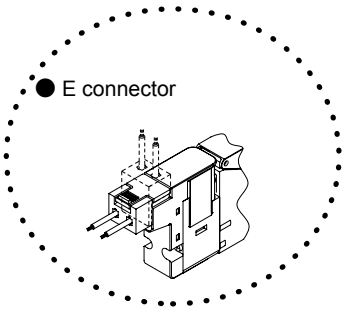
Specifications Table

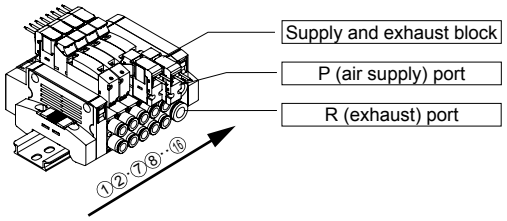
* Fill in ○ where needed

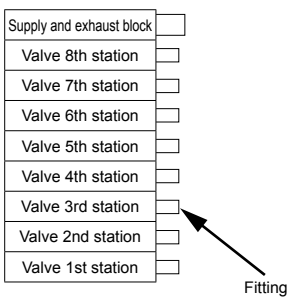
Name			Valve installation position 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Quantity
Solenoid valve	**4GB119R** 2-position single	End block		
	4GB129R 2-position double			
	4GB139R 3-position all ports closed			
	4GB149R 3-position ABR connection			
	4GB159R 3-position PAB connection			
	N4GB1R-MP			
Push-in fitting	ø4 push-in fitting **C4**			
	ø6 push-in fitting **C6**			
* Print ○ in layout position for mixed fittings only				Supply and exhaust block / End block
Blanking plug	**GWP** ☐ **-B**	Port A/B push-in fitting plug (select from ø4, ø6)		
	GWP ☐ **-B**	Port A/B push-in fitting plug (select from ø4, ø6)		
DIN rail length	**L2=** ☐	Fill in the left box only for non-standard lengths		
Tag plate	**N4G1R-TAG-PLATE-B** ☐		Yes	None
Supply and exhaust B	**N4G1R-Q-** ☐ **-P4**	Supply and exhaust port size selection (ø6, ø8)		
Supply and exhaust B 2 attached	Change the × in the box to ○ in order to use both ends of the supply and exhaust block			×
Notes	Supply and exhaust block is N4G1R-Q-*-P4 (air supply, exhaust with ø6, ø8 push-in fitting)			

*1: When solenoid valve only is prepared separately Model No. 4GB1☐9R-00-☐-3
Solenoid position | Electrical connections

1: 2-position single
2: 2-position double
3: 3-position all ports closed
4: 3-position ABR connection
5: 3-position PAB connection







MN4GB2 Series / Cylinder bore size **MAXø80**

Resin block manifold
Individual wiring with lamp/surge suppressor

Date issued / /
Company
Contact
Order No.

Manifold model No.

MN4GB2 ☐ 0R - ☐ - E21 - ☐ - 3 - P4

Solenoid position | Port size | Electrical connections | Station No. | 24 VDC

[Solenoid position]	
8	Mix
1	2-position single
2	2-position double
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C4	ø4 push-in
C6	ø6 push-in
C8	ø8 push-in

[Electrical connections]		
Blank	Grommet lead wire (300 mm)	
E2	E connector, lead wire 300 mm	with lamp/surge suppressor
E20	E connector, lead wire 500 mm	with lamp/surge suppressor
E21	E connector, lead wire 1 m	with lamp/surge suppressor
E22	E connector, lead wire 2 m	with lamp/surge suppressor
E23	E connector, lead wire 3 m	with lamp/surge suppressor
B	DIN terminal box (Pg7)	with lamp/surge suppressor

Specifications Table

* Fill in ○ where needed

Name			End block	Valve installation position 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Supply and exhaust block	End block	Quantity
Solenoid valve	**4GB219R** 2-position single		End block		Supply and exhaust block	End block	
	4GB229R 2-position double						
	4GB239R 3-position all ports closed						
	4GB249R 3-position ABR connection						
	4GB259R 3-position PAB connection						
	N4GB2R-MP						
Push-in fitting	ø4 push-in fitting	**C4**					
	ø6 push-in fitting	**C6**					
	ø8 push-in fitting	**C8**					
* Print ○ in layout position for mixed fittings only							
Blanking plug	**G ☐ -B**		Port A/B push-in fitting plug (select from ø4, ø6, ø8)				
	G ☐ -B		Port A/B push-in fitting plug (select from ø4, ø6, ø8)				
DIN rail length	**L2=** ☐		Fill in the left box only for non-standard lengths				
Tag plate	**N4G2R-TAG-PLATE-B**					Yes	None
Supply and exhaust B	**N4G2R-Q-** ☐ **-P4**		Supply and exhaust port size selection (ø8, ø10)				
Supply and exhaust B 2 attached	Change the × in the box to ○ in order to use both ends of the supply and exhaust block →						×

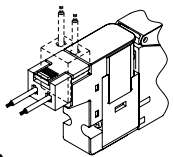
Notes

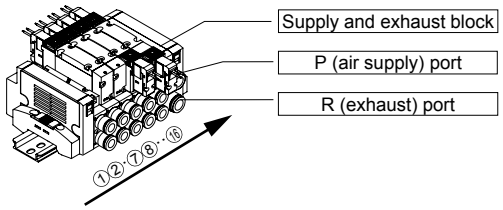
Supply and exhaust block is N4G2R-Q-*-P4 (air supply, exhaust with ø8, ø10 push-in fitting)

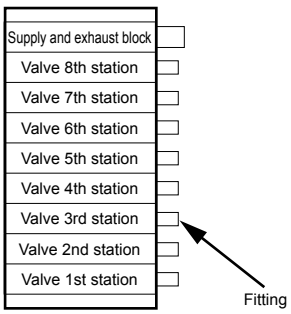
*1: When solenoid valve only is prepared separately Model No. 4GB2☐9R-00-☐-3
(Solenoid position, Electrical connections)

1: 2-position single
2: 2-position double
3: 3-position all ports closed
4: 3-position ABR connection
5: 3-position PAB connection

● E connector







MN4GB1 Series / Cylinder bore size **MAXø40**

Reduced wiring resin block manifold (serial transmission)

Date issued / /

Company

Contact

Order No.

Manifold model No.

MN4GB1 [ ] 0R - [ ] - [D] [E] - [ ] - 3 - P4

Solenoid position / Port size / Station No. / 24 VDC

[Solenoid position]	
8	Mix
1	2-position single only
2	2-position double only
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C4	ø4 push-in
C6	ø6 push-in

Ⓓ Reduced wiring connection		
T6A0	UNIWIRE SYSTEM	NPN 8 points
T6A1		NPN 16 points
T6C0	CompoBus/S	NPN 8 points
T6C1		NPN 16 points
T6E0	S-LINK	NPN 8 points
T6E1		NPN 16 points
T6G1	CC-Link	NPN 16 points
T6J0	UNIWIRE H SYSTEM	NPN 8 points
T6J1		NPN 16 points
T7C0	CompoBus/S	NPN 8 points
T7C1		NPN 16 points
T7D1	DeviceNet (thin)	NPN 16 points
T7E0	S-Link (thin)	NPN 8 points
T7E1		NPN 16 points
T7G1	CC-Link (thin)	NPN 16 points
T7L1	SAVE NET (thin)	NPN 16 points
T7S1	CompoNet (thin)	NPN 16 points
T7SP1		NPN 16 points
T8G1	CC-Link (thin)	NPN 16 points
T8G2		NPN 32 points

Ⓓ Reduced wiring connection		
T8GP1	CC-Link (thin)	PNP 16 points
T8GP2		PNP 32 points
T8P1	PROFIBUS-DP (thin)	NPN 16 points
T8P2		NPN 32 points
T8PP1		PNP 16 points
T8PP2		PNP 32 points
T8EC1	EtherCAT (thin)	NPN 16 points
T8EC2		NPN 32 points
T8ECP1		PNP 16 points
T8ECP2		PNP 32 points
T8EN1	EtherNet/IP (thin)	NPN 16 points
T8EN2		NPN 32 points
T8ENP1		PNP 16 points
T8ENP2		PNP 32 points

Ⓔ Terminal/connector pin array	
Blank	Standard wiring
W	Double wiring

Specifications Table

* Fill in ○ where needed

Name			Wiring block	Valve installation position 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Supply and exhaust block	End block	Quantity
Solenoid valve	**4GB119R** 2-position single						
	4GB129R 2-position double						
	4GB139R 3-position all ports closed						
	4GB149R 3-position ABR connection						
	4GB159R 3-position PAB connection						
	N4GB1R-MP						
Push-in fitting	ø4 push-in fitting	**C4**					
	ø6 push-in fitting	**C6**					
* Print ○ in layout position for mixed fittings only							
Blanking plug	**GWP** [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6)				
	GWP [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6)				
DIN rail length	**L2=** [ ]		Fill in the left box only for non-standard lengths				
Tag plate	**N4G1R-TAG-PLATE-B** [ ]				Yes		None
Supply and exhaust block	**N4G1R-Q-** [ ] **-P4**		Supply and exhaust port size selection (ø6, ø8)				
Supply and exhaust block 2 attached	Change the × in the box to ○ in order to use both ends of the supply and exhaust block						×

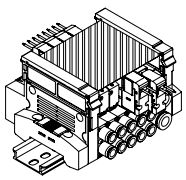
Notes

Supply and exhaust block is N4G1R-Q-6-P4 (air supply, exhaust with ø6 push-in fitting)
N4G1R-Q-8-P4 (air supply, exhaust with ø8, push-in fitting)

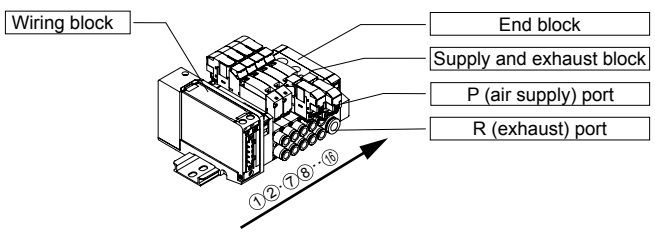
*2: When solenoid valve only is prepared separately Model No. 4GB1[ ]9R-00-A2N-3

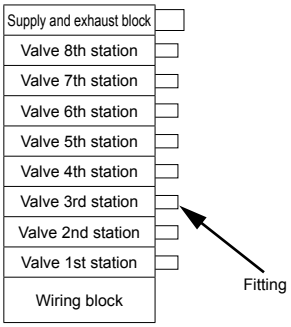
Solenoid position

1: 2-position single
2: 2-position double
3: 3-position all ports closed
4: 3-position ABR connection
5: 3-position PAB connection



With tag plate





MN4GB2 Series / Cylinder bore size **MAXø80**

Reduced wiring resin block manifold (serial transmission)

Date issued / /

Company

Contact

Order No.

Manifold model No.

MN4GB2 [ ] 0R - [ ] - D [E] - [ ] - 3 - P4

Solenoid position / Port size / Station No. / 24 VDC

[Solenoid position]	
8	Mix
1	2-position single only
2	2-position double only
3	3-position all ports closed
4	3-position ABR connection
5	3-position PAB connection

[Port size]	
CX	Mix
C4	ø4 push-in
C6	ø6 push-in
C8	ø8 push-in

Ⓓ Reduced wiring connection		
T6A0	UNIWIRE SYSTEM	NPN 8 points
T6A1		NPN 16 points
T6C0	CompoBus/S	NPN 8 points
T6C1		NPN 16 points
T6E0	S-LINK	NPN 8 points
T6E1		NPN 16 points
T6G1	CC-Link	NPN 16 points
T6J0	UNIWIRE H SYSTEM	NPN 8 points
T6J1		NPN 16 points
T7C0	CompoBus/S	NPN 8 points
T7C1		NPN 16 points
T7D1	DeviceNet (thin)	NPN 16 points
T7E0	S-Link (thin)	NPN 8 points
T7E1		NPN 16 points
T7G1	CC-Link (thin)	NPN 16 points
T7L1	SAVE NET (thin)	NPN 16 points
T7S1	CompoNet (thin)	NPN 16 points
T7SP1		NPN 16 points
T8G1	CC-Link (thin)	NPN 16 points
T8G2		NPN 32 points

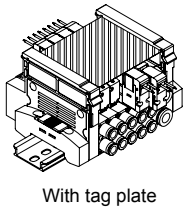
Ⓓ Reduced wiring connection		
T8GP1	CC-Link (thin)	PNP 16 points
T8GP2		PNP 32 points
T8P1	PROFIBUS-DP (thin)	NPN 16 points
T8P2		NPN 32 points
T8PP1		PNP 16 points
T8PP2		PNP 32 points
T8EC1	EtherCAT (thin)	NPN 16 points
T8EC2		NPN 32 points
T8ECP1		PNP 16 points
T8ECP2		PNP 32 points
T8EN1	EtherNet/IP (thin)	NPN 16 points
T8EN2		NPN 32 points
T8ENP1		PNP 16 points
T8ENP2		PNP 32 points

Ⓔ Terminal/connector pin array	
Blank	Standard wiring
W	Double wiring

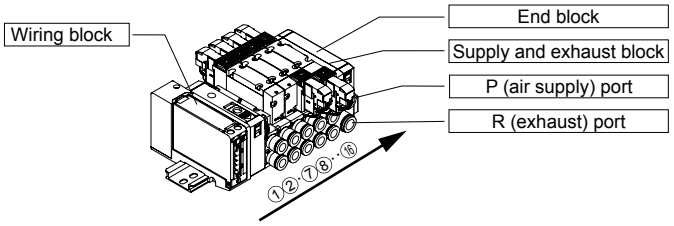
Specifications Table

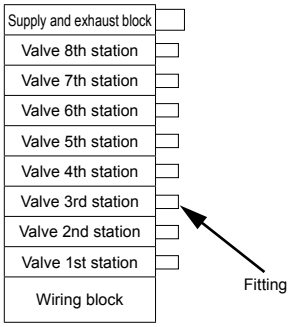
* Fill in ○ where needed

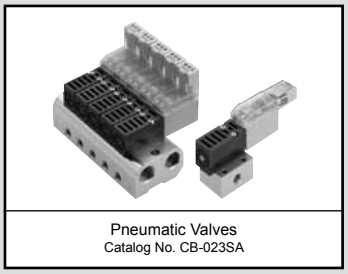
Name			Wiring block: Valve installation position 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Supply and exhaust block	End block	Quantity
Solenoid valve	**4GB219R** 2-position single					
	4GB229R 2-position double					
	4GB239R 3-position all ports closed					
	4GB249R 3-position ABR connection					
	4GB259R 3-position PAB connection					
	N4GB2R-MP [ ]					
Push-in fitting	ø4 push-in fitting	**C4**				
	ø6 push-in fitting	**C6**				
	ø8 push-in fitting	**C8**				
* Print ○ in layout position for mixed fittings only						
Blanking plug	**GWP** [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6, ø8)			
	GWP [ ] **-B**		Port A/B push-in fitting plug (select from ø4, ø6, ø8)			
DIN rail length	**L2=** [ ]		Fill in the left box only for non-standard lengths			
Tag plate	**N4G2R-TAG-PLATE-B**				Yes	None
Supply and exhaust block	**N4G2R-Q-** [ ] **-P4**		Supply and exhaust port size selection (ø8, ø10)			
Supply and exhaust block 2 attached	Change the × in the box to ○ in order to use both ends of the supply and exhaust block ⇨					×
Notes	Supply and exhaust block is N4G2R-Q-8-P4 (air supply, exhaust with ø8 push-in fitting) N4G2R-Q-10-P4 (air supply, exhaust with ø10 push-in fitting) *2: When solenoid valve only is prepared separately Model No. 4GB2[ ]9R-00-A2N-3 Solenoid position → 1: 2-position single, 2: 2-position double, 3: 3-position all ports closed, 4: 3-position ABR connection, 5: 3-position PAB connection					



With tag plate







Pneumatic Valves
Catalog No. CB-023SA

Direct acting 3-port valve

Discrete valve body piping/sub-plate piping

3QRA/3QRB Series

Individual wiring manifold Body piping/sub-plate piping

M3QRA/M3QRB Series

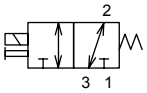
●Cylinder bore size: ø6 to ø25

P4 compliant as standard

JIS symbol

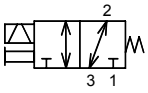
●2-position universal

(self-reset)



Port numbers 1, 2 and 3 are
Port 1: P, NC
Port 2: A, COM
Port 3: R, NO

(self-hold)



Port numbers 1, 2 and 3 are
Port 1: P, NC
Port 2: A, COM
Port 3: R, NO

Common specifications

Descriptions	Content
Valve and operation	Direct acting poppet valve
Working fluid	Compressed air, low vacuum
Max. working pressure MPa	0.70
Min. working pressure MPa	Low vacuum: -100 kPa
Proof pressure MPa	1.05 (low vacuum: -101 kPa)
Max. working pressure differential MPa	0.70
Ambient temperature °C	-5 to 50 (no freezing)
Fluid temperature °C	5 to 50
Lubrication	Not available *
Degree of protection	Dust-proof
Vibration resistance m/s^2	50 or less
Shock resistance m/s^2	300 or less
Atmosphere	Cannot be used in corrosive gas environment.

* Lubrication will deteriorate the performance.

Electrical specifications

Descriptions		Standard specifications	Large flow rate specifications H
Rated voltage V	DC	24/12	
Energizing rate		Intermittent *1	Continuous
Voltage fluctuation range		±10%	
Starting current A	24 VDC	-	0.13
	12 VDC	-	0.27
Holding current A	24 VDC	0.08	0.10
	12 VDC	0.17	0.20
Power consumption W		2.0	2.4 *2
Thermal class		B	

*1: Limit energizing within 5 minutes and energization ratio to 50% or less. Min. time of excitation for self-holding is 50 ms.
*2: 3.2 W for 20 ms after start.

Individual specifications

Descriptions		3QRA11	3QRB11	3QRA12	3QRB12	M3QRA11	M3QRB11	M3QRA12	M3QRB12
Port size	Port 1	M5				Rc1/8			
	Port 2					M5			
	Port 3					Rc1/8			
Response time *1 ON/OFF ms		4±1/1.5±1		5 or less		4±1/1.5±1		5 or less	
Weight g		24	27	28	31	19 (single solenoid valve)		23 (single solenoid valve)	

*1: Response time is the value for continuous operation under the condition of 0.5 MPa supply pressure at 20°C.

Flow characteristics

Model No.	Option	Port 1 → 2		Port 2 → 1		Port 2 → 3		Port 3 → 2	
		C[$dm^3/(s \cdot bar)$]	S (reference value) [mm^2]	C[$dm^3/(s \cdot bar)$]	S (reference value) [mm^2]	C[$dm^3/(s \cdot bar)$]	S (reference value) [mm^2]	C[$dm^3/(s \cdot bar)$]	S (reference value) [mm^2]
3QRA1	Blank	0.30	1.5	0.32	1.6	0.32	1.6	0.30	1.5
	H	0.36	1.8	0.38	1.9	0.38	1.9	0.36	1.8
3QRB1	Blank	0.30	1.5	0.34	1.7	0.36	1.8	0.34	1.7
	H	0.36	1.8	0.40	2.0	0.40	2.0	0.40	2.0
M3QRA1	Blank	0.30	1.5	0.32	1.6	0.32	1.6	0.30	1.5
	H	0.36	1.8	0.38	1.9	0.38	1.9	0.36	1.8
M3QRB1	Blank	0.30	1.5	0.34	1.7	0.36	1.8	0.34	1.7
	H	0.36	1.8	0.40	2.0	0.40	2.0	0.40	2.0

How to order

· Single solenoid valve

3QRB1 1 0 - M5 - D2 ▢ —— 3

· Single solenoid valve

3QRA1 1 9 - M5 - D2 ▢ —— 3

3QRB1 1 9 - 00 - D2 ▢ —— 3

· Manifold

M3QRA1 1 0 - M5 - C2 ▢ - 8 - 3

Ⓐ Model No.
Solenoid valve operation classification
Ⓑ Solenoid position
Ⓒ Port size
Ⓓ Connection
Ⓔ Flow rate
Ⓕ Station No.
Ⓖ Voltage

Precautions for model No. selection

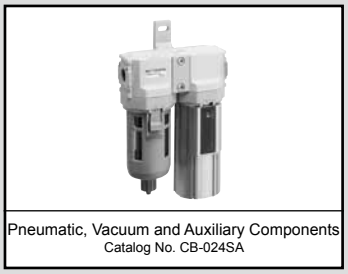
*1: For connection with the grommet lead wire (300 mm), "2", 2-position single solenoid (self-hold) for Ⓑ solenoid position, and "H", large flow rate for Ⓔ flow rate are not selectable.
*2: For "2", 2-position single solenoid (self-hold) for Ⓑ solenoid position, "H" for Ⓔ flow rate and "4" for Ⓖ voltage are not selectable.
*3: Combination with a masking plate.
Combination of A and B types is not available.
Solenoid positions "1" and "2" cannot be mixed.

How to order masking plate kit

3QR1 - MP - KIT

* Gasket/mounting screw attached

		Ⓐ Model No.			
		Single unit		Manifold	
		Body piping	Sub-plate piping	Body piping	Sub-plate piping
Code	Content	3QRA1	3QRB1	M3QRA1	M3QRB1
Ⓑ Solenoid position					
1	2-position single (self-reset)	●	●	●	●
2	2-position single (self-hold) *2	●	●	●	●
8	Mix manifold *3			●	●
Ⓒ Port size					
M5	M5	●	●	●	●
Ⓓ Connection					
Grommet lead wire					
Blank	Grommet lead wire (300 mm) *1	●	●	●	●
C connector (lead wire lateral direction)					
C2	Lead wire (300 mm) with surge suppressor/lamp	●	●	●	●
C20	Lead wire (500 mm) with surge suppressor/lamp	●	●	●	●
C21	Lead wire (1000 mm) with surge suppressor/lamp	●	●	●	●
C22	Lead wire (2000 mm) with surge suppressor/lamp	●	●	●	●
C3	Without lead wire, with surge suppressor/lamp	●	●	●	●
D connector (lead wire upward direction)					
D2	Lead wire (300 mm) with surge suppressor/lamp	●	●	●	●
D20	Lead wire (500 mm) with surge suppressor/lamp	●	●	●	●
D21	Lead wire (1000 mm) with surge suppressor/lamp	●	●	●	●
D22	Lead wire (2000 mm) with surge suppressor/lamp	●	●	●	●
D3	Without lead wire, with surge suppressor/lamp	●	●	●	●
Ⓔ Flow rate					
Blank	Standard 2 W	●	●	●	●
H	Large flow rate 3.2 W → 2.4 W	●	●	●	●
Ⓕ Station No.					
2 to 20	2 stations to 20 stations			●	●
Ⓖ Voltage					
3	24 VDC	●	●	●	●
4	12 VDC	●	●	●	●



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Super dryer combination Super dryer

SU300E/SU400E/SD300E/SD400E-W Series

E Series, with small air loss and filter-like usability

- Reduces operation costs through energy-saving moisture removal with a purge ratio of 10%.
- 3 types of units are available. Appropriate system is available according to applications.
- Processing air flow rate: 75 to 450 ℓ/min (ANR)
  (0.7 MPa, atmospheric dew point -15°C)

RoHS CAD

Specifications

Descriptions		SU301E -*-W-C1	SU302E -*-W-C1	SU401E -*-W-C1	SU402E -*-W-C1	SU301E -*-W-C2	SU302E -*-W-C2	SU401E -*-W-C2	SU402E -*-W-C2	SU301E -*-W-C3	SU302E -*-W-C3	SU401E -*-W-C3	SU402E -*-W-C3	SD301E -*-W	SD302E -*-W	SD401E -*-W	SD402E -*-W
Appearance		 Simple & space saving structure unit that removes moisture from the air from which solid impurities have already been removed. (*1)				 Unit supplying clean dry air with line not requiring pressure adjustment.				 A unit that supplies pressure-adjusted clean dry air just by supplying compressed air.				 Discrete super dryer enabling easy system configuration with peripheral devices due to modular design.			
Configuration		Oil mist filter Super dryer				Air filter Oil mist filter (with differential pressure gauge) Super dryer				Air filter Oil mist filter (with differential pressure gauge) Super dryer Regulator				Super dryer			
Range of working conditions	Working fluid	Compressed air															
	Inlet air pressure MPa	0.4 to 1.0															
	Proof pressure MPa	1.5															
	Inlet air temperature °C	5 to 50															
	Ambient temperature °C	5 to 50															
Standard rating	Outlet air atmospheric dew point °C	-15															
	Inlet air flow ℓ/min (ANR)	75	150	300	450	75	150	300	450	75	150	300	450	75	150	300	450
	Outlet air flow ℓ/min (ANR)	67	135	270	405	67	135	270	405	67	135	270	405	67	135	270	405
	Purge flow rate ℓ/min (ANR)	8	15	30	45	8	15	30	45	8	15	30	45	8	15	30	45
	Inlet air pressure dew point °C	25															
	Inlet air pressure MPa	0.7															
	Inlet air temperature °C	25															
	Ambient temperature °C	25															
Air filter	Filtration μm	—				5								—			
Oil mist filter	Oil removal mg/m³	0.1 (approximately 0.1 ppm) (when the inlet air is 30°C)												—			
Regulator	Set pressure range MPa	—								0.05 to 0.85				—			
	Relief pressure MPa	—								Setting pressure plus 0.05				—			
Standard accessories		Bracket				Differential pressure gauge/bracket				Pressure gauge/differential pressure gauge/bracket				—			

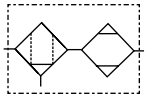
*1: An oil mist filter cannot be controlled with a differential pressure gauge for C1. Replace the oil mist filter mantle every year.
*2: Purge flow rate in standard rating section is also the same value at 0.5 MPa.
*3: Drainage is manual discharge.

JIS symbol

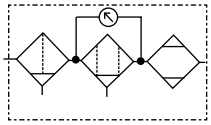
SD301E to 402E-*



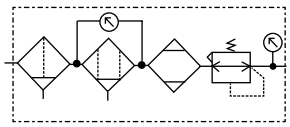
SU301E to 402E-*-C1



SU301E to 402E-*-C2



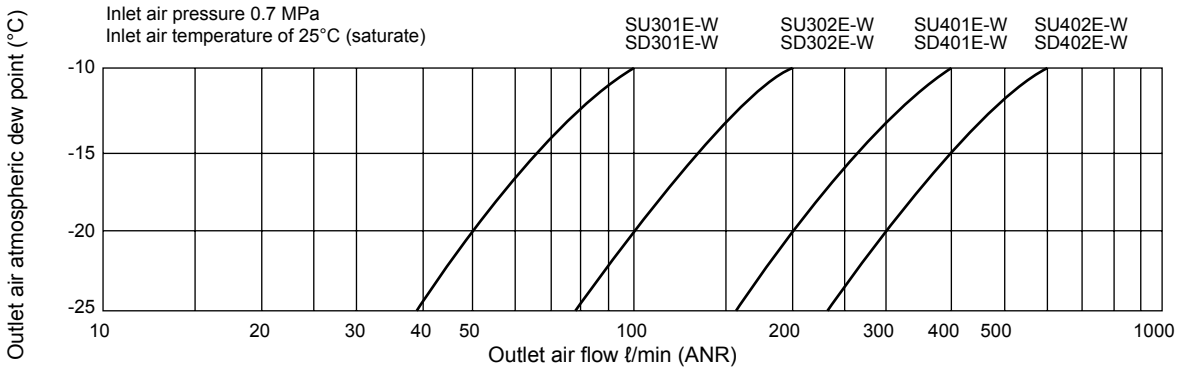
SU301E to 402E-*-C3



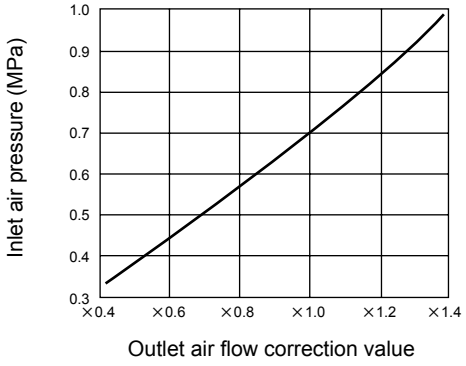
Dew point performance

Refer to page 151 for selection guide and compensation method

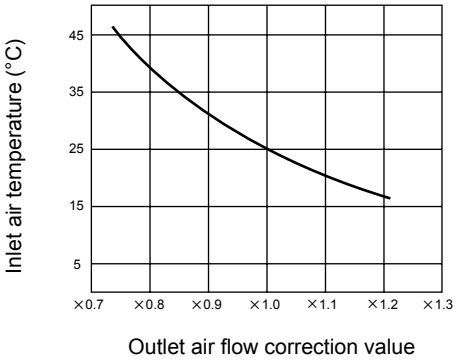
● Dew point performance curve



Inlet pressure - outlet air flow rate correction curve



Inlet temperature - outlet air flow rate correction curve



Compatibility table by variation

	SU
Port size	Rc3/8
P4	●
P40	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Applicable only for common exhaust.
*2: Auto-drain is not available.

How to order

● Super dryer combination

SU301E - 05 - W - C1 - E - P4

Ⓐ Model No.

Code	Content
Ⓐ Model No.	
SU301E	
SU302E	
SU401E	
SU402E	

Ⓑ Inlet air pressure

Code	Content
Ⓑ Inlet air pressure	
05	0.5 MPa (*1)
07	0.7 MPa (*1)

Ⓒ Unit

Code	Content
Ⓒ Unit	
C1	
C2	
C3	

Ⓓ Option *5

Code	Content
Ⓓ Option	
E	Common exhaust (*4)
X1	Reversed inlet and outlet (*3)

● Super dryer

SD402E - 05 - W - E - P4

Ⓐ Model No.

Code	Content
Ⓐ Model No.	
SD301E	
SD302E	
SD401E	
SD402E	

Ⓑ Inlet air pressure

Code	Content
Ⓑ Inlet air pressure	
05	0.5 MPa (*1)
07	0.7 MPa (*1)

Ⓒ Option *5

Code	Content
Ⓒ Option	
B	With C bracket (*2)
E	Common exhaust (*4)
X1	Reversed inlet and outlet (*3)

⚠ Precautions for model No. selection

*1: If inlet air pressure is less than 0.7 MPa, indicate 05, while 0.7 MPa and over, indicate 07.
*2: If fixed by C bracket, a modular unit with peripheral devices is not possible.
*3: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. For "X1", an air inlet is provided on the right port, with an air outlet provided on the left port.
*4: In size of exhaust port, Rc1/8 is provided for 300 Series, while Rc1/4 for 400 Series.
*5: When ordering several options, indicate the required options in alphabetical order.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Super dryer combination Super dryer

SU300D/SU400D/SD300D/SD400D-W Series

Slim body and high performance D series

- Small and powerful removal performance. Appropriate for integrating in devices.
- 3 types of units are available. Appropriate system is available according to applications.
- Processing air flow rate: 125 to 750 ℓ/min (ANR)
  (0.7 MPa, atmospheric dew point -20°C)

CAD

Specifications

Descriptions		SU301D -*-W-C1	SU302D -*-W-C1	SU401D -*-W-C1	SU402D -*-W-C1	SU301D -*-W-C2	SU302D -*-W-C2	SU401D -*-W-C2	SU402D -*-W-C2	SU301D -*-W-C3	SU302D -*-W-C3	SU401D -*-W-C3	SU402D -*-W-C3	SD301D -*-W	SD302D -*-W	SD401D -*-W	SD402D -*-W
Appearance		 Simple & space saving structure unit that removes moisture from the air from which solid impurities have already been removed. (*1)				 Unit supplying clean dry air with line not requiring pressure adjustment.				 A unit that supplies pressure-adjusted clean dry air just by supplying compressed air.				 Discrete super dryer enabling easy system configuration with peripheral devices due to modular design.			
Configuration		Oil mist filter Super dryer				Air filter Oil mist filter (with differential pressure gauge) Super dryer				Air filter Oil mist filter (with differential pressure gauge) Super dryer Regulator				Super dryer			
Range of working conditions	Working fluid	Compressed air															
	Inlet air pressure MPa	0.4 to 1.0															
	Proof pressure MPa	1.5															
	Inlet air temperature °C	5 to 50															
	Ambient temperature °C	5 to 50															
Standard rating	Outlet air atmospheric dew point °C	-20															
	Inlet air flow ℓ/min (ANR)	125	250	500	750	125	250	500	750	125	250	500	750	125	250	500	750
	Outlet air flow ℓ/min (ANR)	100	200	400	600	100	200	400	600	100	200	400	600	100	200	400	600
	Purge flow rate ℓ/min (ANR)	25	50	100	150	25	50	100	150	25	50	100	150	25	50	100	150
	Inlet air pressure dew point °C	25															
	Inlet air pressure MPa	0.7															
	Inlet air temperature °C	25															
	Ambient temperature °C	25															
Air filter	Filtration μm	—				5								—			
Oil mist filter	Oil removal mg/m^3	0.1 (approximately 0.1 ppm) (when the inlet air is 30°C)												—			
Regulator	Set pressure range MPa	—								0.05 to 0.85				—			
	Relief pressure MPa	—								Setting pressure plus 0.05				—			
Standard accessories		Bracket				Differential pressure gauge/bracket				Pressure gauge/differential pressure gauge/bracket				—			

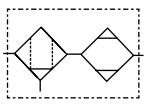
*1: An oil mist filter cannot be controlled with a differential pressure gauge for C1. Replace the oil mist filter mantle every year.
*2: Purge flow rate in standard rating section is also the same value at 0.5 MPa.
*3: Drainage is manual discharge.

JIS symbol

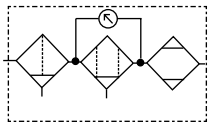
SD301D to 402D-*



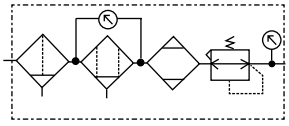
SU301D to 402D-*-C1



SU301D to 402D-*-C2



SU302D to 402D-*-C3

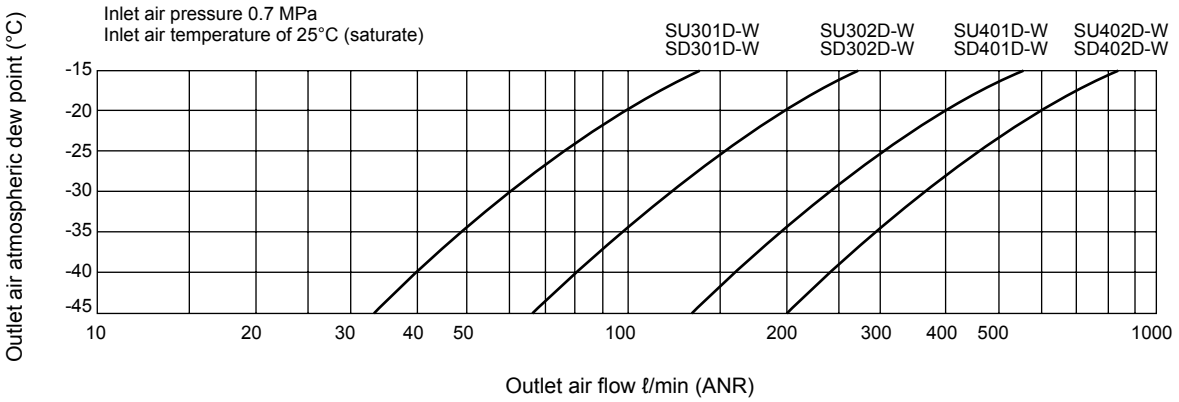


Dew point performance machine

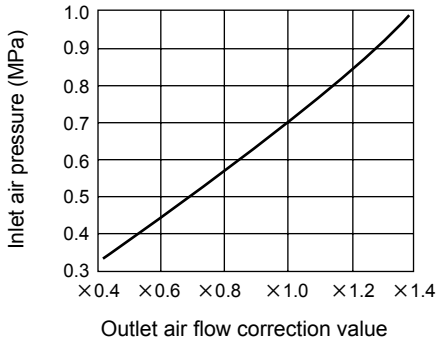
Refer to page 151 for selection guide and compensation method

● Dew point performance curve

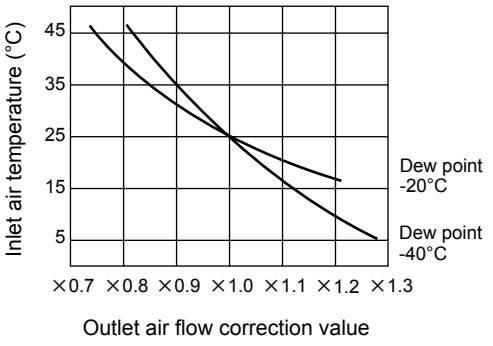
Dew point performance curve



Inlet pressure - outlet air flow rate correction curve



Inlet temperature - outlet air flow rate correction curve



Compatibility table by variation

	SU
Port size	Rc3/8
P4	●
P40	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Applicable only for common exhaust.
*2: Auto-drain is not available.

How to order

● Super dryer combination

SU301D - 05 - W - C1 - E - P4

- Ⓐ Model No.
- Ⓑ Inlet air pressure
- Ⓒ Unit
- Ⓓ Option *5

Code	Content
Ⓐ Model No.	
SU301D	
SU302D	
SU401D	
SU402D	
Ⓑ Inlet air pressure	
05	0.5 MPa (*1)
07	0.7 MPa (*1)
Ⓒ Unit	
C1	
C2	
C3	
Ⓓ Option	
E	Common exhaust (*4)
X1	Reversed inlet and outlet (*3)

● Super dryer

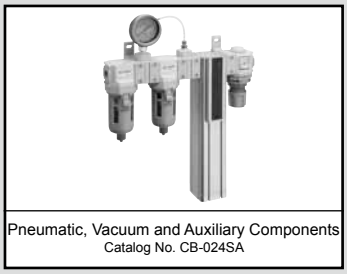
SD402D - 05 - W - E - P4

- Ⓐ Model No.
- Ⓑ Inlet air pressure
- Ⓒ Option *5

Code	Content
Ⓐ Model No.	
SD301D	
SD302D	
SD401D	
SD402D	
Ⓑ Inlet air pressure	
05	0.5 MPa (*1)
07	0.7 MPa (*1)
Ⓒ Option	
B	With C bracket (*2)
E	Common exhaust (*4)
X1	Reversed inlet and outlet (*3)

⚠ Precautions for model No. selection

*1: If inlet air pressure is less than 0.7 MPa, indicate 05, while 0.7 MPa and over, indicate 07.
*2: If fixed by C bracket, modular connection with peripheral devices is not possible.
*3: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. For "X1", an air inlet is provided on the right port, with an air outlet provided on the left port.
*4: In size of exhaust port, Rc1/8 is provided for 300 Series, while Rc1/4 for 400 Series.
*5: When ordering several options, indicate the required options in alphabetical order.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Super dryer combination

SU3000/SU4000-W Series

Easily and stably supplying ultra dry air.

- Ultra dry air with atmospheric dew point -60°C is obtained just by piping to a pneumatic source.
- All in one unit with superior installability.
- Processing air flow rate: 35 to 1500 ℓ/min (ANR) (at 0.7 MPa and -40°C atmospheric dew point)

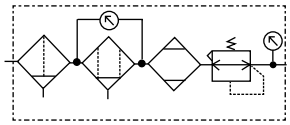
CAD

Specifications

Descriptions			SU 3015-A-W	SU 3025-A-W	SU 3035-A-W	SU 3050-A-W	SU 3075-A-W	SU 4100-A-W	SU 3015-B-W	SU 3025-B-W	SU 3050-B-W	SU 4050-B-W	SU 4100-B-W
Range of working conditions	Working fluid		Compressed air										
	Inlet air pressure	MPa	0.4 to 1.0										
	Proof pressure	MPa	1.5										
	Inlet air temperature	°C	5 to 50										
	Ambient temperature	°C	5 to 50										
Standard rating	Outlet air atmospheric dew point	°C	-20						-40				
	Inlet air flow	ℓ/min (ANR)	125	300	490	760	1200	1500	35	90	230	410	890
	Outlet air flow	ℓ/min (ANR)	100	240	390	610	960	1260	25	65	170	300	650
	Purge flow rate	ℓ/min (ANR)	25	60	100	150	240	240	10	25	60	110	240
	Inlet air pressure dew point	°C	25										
	Inlet air pressure	MPa	0.7										
	Inlet air temperature	°C	25										
	Ambient temperature	°C	25										
Air filter	Filtration	μm	5										
Oil mist filter	Oil removal	mg/m³	0.1 (approximately 0.1 ppm) (when the inlet air is 30°C)										
Regulator	Set pressure range	MPa	0.05 to 0.85										
	Relief pressure	MPa	Setting pressure plus 0.05										
Standard accessories			Pressure gauge/differential pressure gauge/bracket										

*1: Drainage is manual discharge.

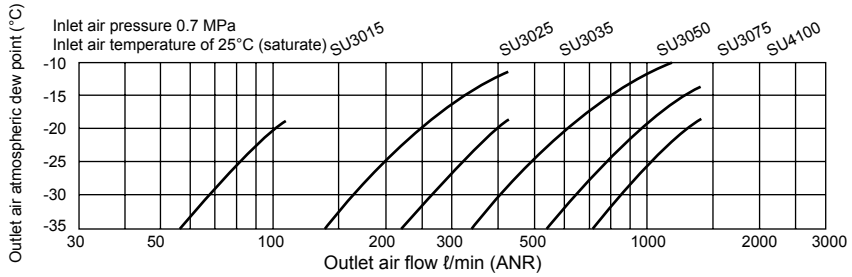
JIS symbol



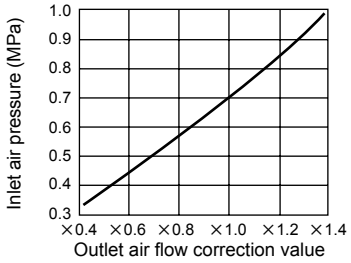
Dew point performance

Refer to page 151 for selection guide and compensation method.

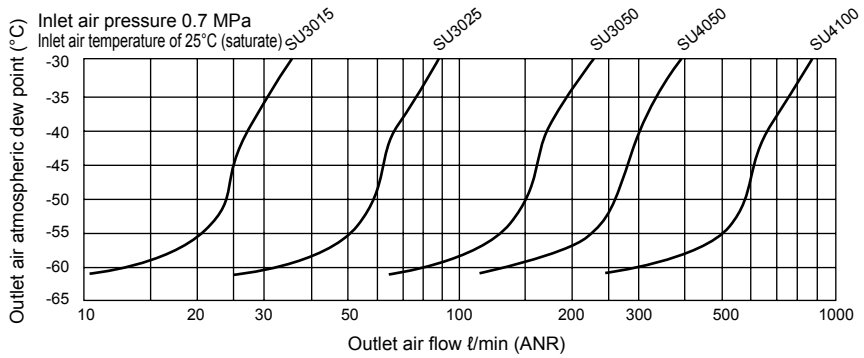
● Dew point performance curve (-20°C specifications)



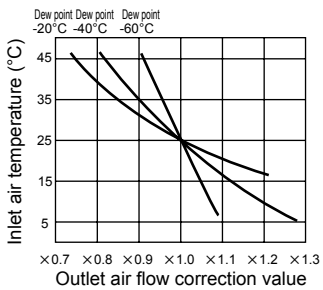
● Inlet pressure - outlet air flow rate correction curve



● Dew point performance curve (-40, -60°C specifications)



● Inlet temperature - outlet air flow rate correction curve



Compatibility table by variation

	SU
Port size	Rc3/8, 1/2
P4	●
P40	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable
*1: Applicable only for common exhaust.

How to order

● Super dryer combination

SU3015 - A 05 - W - E - P4

Ⓐ Model No.

Code	Content
Ⓐ Model No.	
SU3015	
SU3025	
SU3035	
SU3050	
SU3075	
SU4050	
SU4100	

Ⓑ Outlet air atmospheric dew point

Code	Content
Ⓑ Outlet air atmospheric dew point	
A	-20°C
B	-40°C, -60°C (*5)

Ⓒ Inlet air pressure

Code	Content
Ⓒ Inlet air pressure	
05	0.5 MPa (*1)
07	0.7 MPa (*1)

Ⓓ Option *6

Code	Content
Ⓓ Option	
E	Common exhaust (*3)
X1	Reversed inlet and outlet (*2)

⚠ Precautions for model No. selection

*1: If inlet air pressure is less than 0.7 MPa, indicate 05, while 0.7 MPa and over, indicate 07.
*2: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. For "X1", an air inlet is provided on the right port, with an air outlet provided on the left port.
*3: Size of exhaust port is Rc1/2.
*4: Purge flow rate in standard rating section is also the same value at 0.5 MPa.
*5: If outlet atmospheric dew point is -60°C, model No. is "B" as at -40°C.
*6: When ordering several options, indicate the required options in alphabetical order.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Super dryer (High polymer membrane air dryer)

SD3000/SD4000 Series

Modular design for easy system expansion with peripheral devices

- Quickly supplies ultra dry air of -60°C atmospheric dew point.
- Suitable for a wide range of applications with 1.5 MPa max. working pressure.
- Processing air flow rate: 35 to 890 ℓ/min (ANR) (at 0.7 MPa and -40°C atmospheric dew point)

CAD

Specifications

Descriptions				SD3015	SD3025	SD3035	SD3050	SD3075	SD4050	SD4075	SD4100
Range of working conditions	Working fluid			Compressed air							
	Inlet air pressure		MPa	0.4 to 1.5							
	Proof pressure		MPa	2.25							
	Inlet air temperature		°C	5 to 50							
	Ambient temperature		°C	5 to 50							
Standard rating	Inlet air pressure dew point		°C	25							
	Inlet air pressure		MPa	0.7							
	Inlet air temperature		°C	25							
	Ambient temperature		°C	25							
Outlet air atmospheric dew point	-20°C	Inlet air flow	ℓ/min (ANR)	125	300	490	760	1200	680	1100	1500
		Outlet air flow	ℓ/min (ANR)	100	240	390	610	960	570	930	1260
		Purge flow rate	ℓ/min (ANR)	25	60	100	150	240	110	170	240
	-40°C	Inlet air flow	ℓ/min (ANR)	35	90	150	230	370	410	650	890
		Outlet air flow	ℓ/min (ANR)	25	65	110	170	270	300	480	650
		Purge flow rate	ℓ/min (ANR)	10	25	40	60	100	110	170	240
	-60°C	Inlet air flow	ℓ/min (ANR)	20	55	90	140	220	240	380	520
		Outlet air flow	ℓ/min (ANR)	10	30	50	80	120	130	210	280
		Purge flow rate	ℓ/min (ANR)	10	25	40	60	100	110	170	240

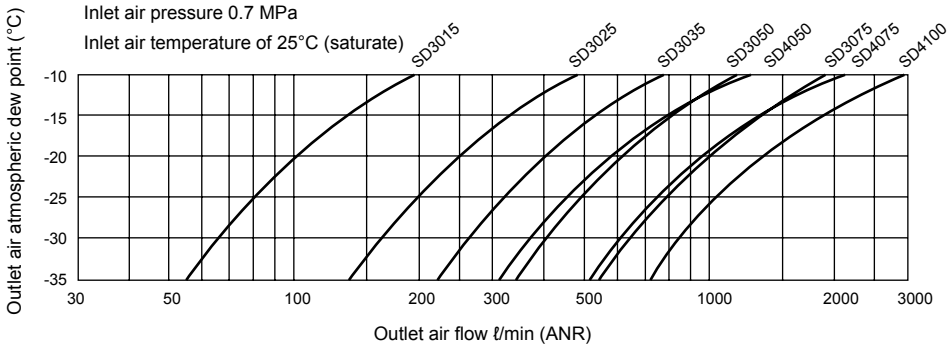
JIS symbol



Dew point performance

Refer to page 151 for selection guide and compensation method.

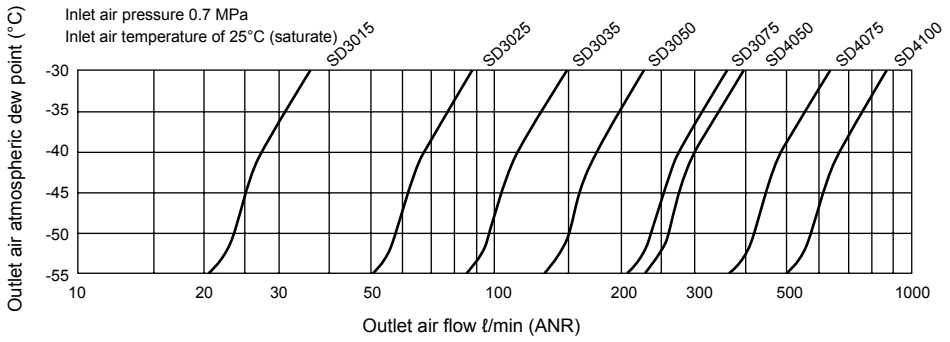
- Dew point performance curve (-20°C specifications)



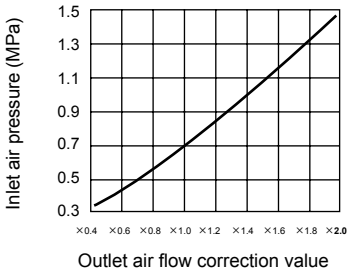
Dew point performance

Refer to page 151 for selection guide and compensation method.

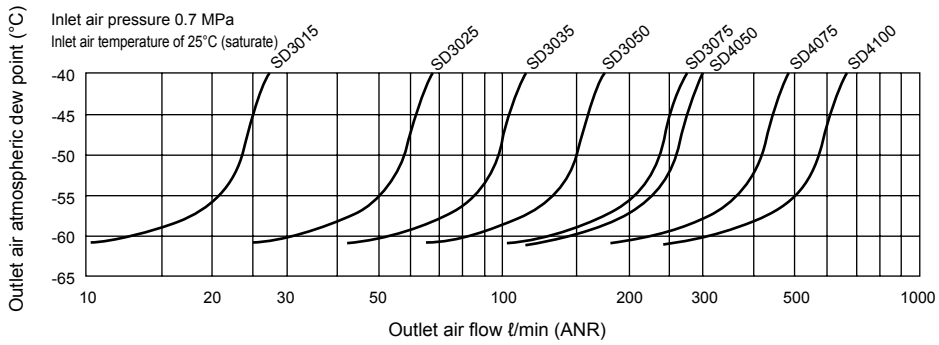
● Dew point performance curve (-40°C specifications)



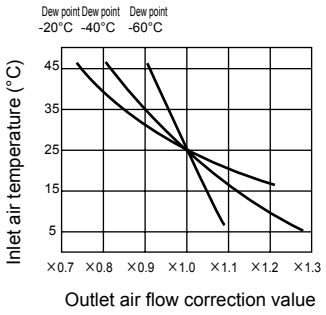
● Inlet pressure - outlet air flow rate correction curve



● Dew point performance curve (-60°C specifications)



● Inlet temperature - outlet air flow rate correction curve



How to order

● Super dryer

SD3015 - A 05 - E - P4

Ⓐ Model No.

Ⓑ Outlet air atmospheric dew point

Ⓒ Inlet air pressure *1 *2

Ⓓ Option *3 *4 *5

Code	Content
Ⓐ Model No.	
SD3015	
SD3025	
SD3035	
SD3050	
SD3075	
SD4050	
SD4075	
SD4100	
Ⓑ Outlet air atmospheric dew point	
A	-20°C
B	-40°C
C	-60°C
Ⓒ Inlet air pressure	
05	0.5 MPa
07	0.7 MPa
14	1.4 MPa (not available for the outlet air atmospheric dew point "A" (-20°C))
Ⓓ Option	
B	With bracket
E	Common exhaust (*4)
X1	Reversed inlet and outlet (*3)

Compatibility table by variation

	SD
Port size	Rc3/8, 1/2
P4	●
P40	▲

*1: Applicable only for common exhaust.

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

⚠ Precautions for model No. selection

*1: Select 05 if the inlet air pressure is less than 0.7 MPa, and 07 if it is 0.7 MPa and over and less than 1.4 MPa.
*2: 1.4 MPa inlet air pressure and -20°C outlet air atmospheric dew point cannot be selected together. As the atmospheric dew point will be -14°C when the inlet air temperature is 25°C and the pressure is 1.4 MPa, there is no point in using the dryer. Select -40°C or -60°C.
*3: Viewed from the front, a standard product has an air inlet on the left port, while an air outlet on the right port. For "X1", air inlet is provided on the right port, while air outlet is provided on the left port.
*4: Size of exhaust port is Rc1/2.
*5: When ordering several options, indicate the required options in alphabetical order.

Selection guide

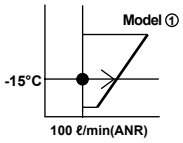
[Selection guide]
Each performance curve shows the relation of the outlet air flow and the outlet air atmospheric dew point of each model at an inlet pressure of 0.7 MPa and inlet air temperature of 25°C (saturate). Select the model according to the intersection of the required dew point and required flow rate shown on the right.

[Flow rate compensation method]
If the inlet pressure and inlet temperature differ from the rated values, the outlet air flow rate that can be supplied will change. Use each compensation curve and compensate in this case.

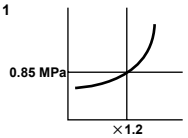
(Rated outlet air flow rate) x (correction value) = (conditional outlet air flow rate)

In addition, when the inlet air is the air which comes through the refrigeration air dryer, regardless of actual temperature, select the model with inlet air temperature of 10°C.

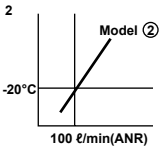
(Example) Required dew point of -15°C
When the required flow rate is 100 ℓ/min (ANR), the model (1) located on the right side of an intersection point can be selected.



(Example) Inlet pressure of 0.85 MPa
Required dew point of -20°C
When the required flow rate is 120 ℓ/min (ANR)



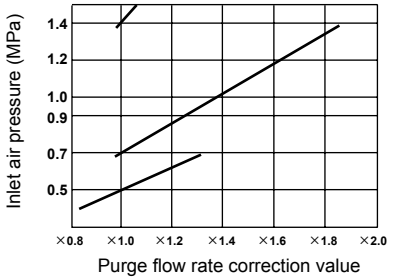
1. Obtain compensation (in this case 1.2) from the pressure flow rate compensation curve.
2. Model (2) has an outlet atmospheric dew point of -20°C and outlet air flow rate of 100 ℓ/min, allowing up to a 1.2-fold rate of 120 ℓ/min (ANR); therefore model (2) is selectable.



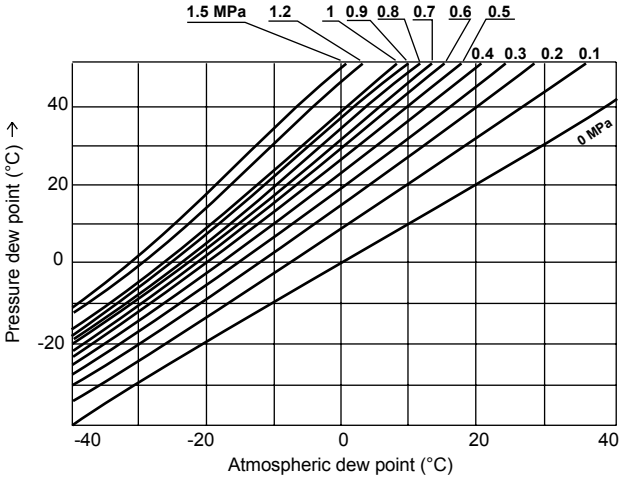
Purge flow rate

The purge flow rate is shown in the specifications.
Make sure that the flow rate including the purge flow rate as well as the outlet side operating air flow rate can be supplied from the inlet.
If the inlet air pressure differs from the rated valve, the purge flow rate will be obtained by multiplying the rated purge flow rate with the compensation value shown on the right.

Inlet pressure - purge flow rate correction curve

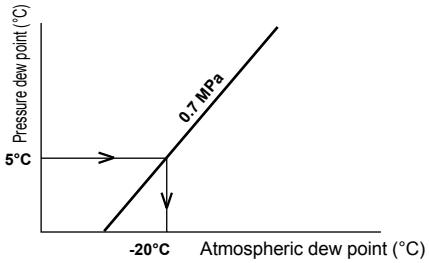


Pressure dew point - atmospheric dew point conversion table



Reading pressure dew point - atmospheric dew point conversion table

This table is used to convert the pressure dew point at each pressure into an atmospheric dew point, or vice versa.
Example: Obtain the atmospheric dew point when the pressure is 0.7 MPa and the pressure dew point is 5°C.



According to the above table, when the pressure is 0.7 MPa, the 5°C pressure dew point is converted into a -20°C atmospheric dew point.

Measuring the working air flow rate

If the working flow rate is not clear when selecting the super dryer model, measure the flow rate.
The pneumatic flow rate sensor "FLUEREX Flow Sensor Tester Kit" with functions such as cumulative display, peak display, peak value hold, and analog output is handy for measuring the flow rate.

● FLUEREX Flow Sensor Tester Kit
FLUEREX PFK SERIES





Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Desiccant air dryer (heatless dryer)

SHD Series

JIS symbol 

CAD

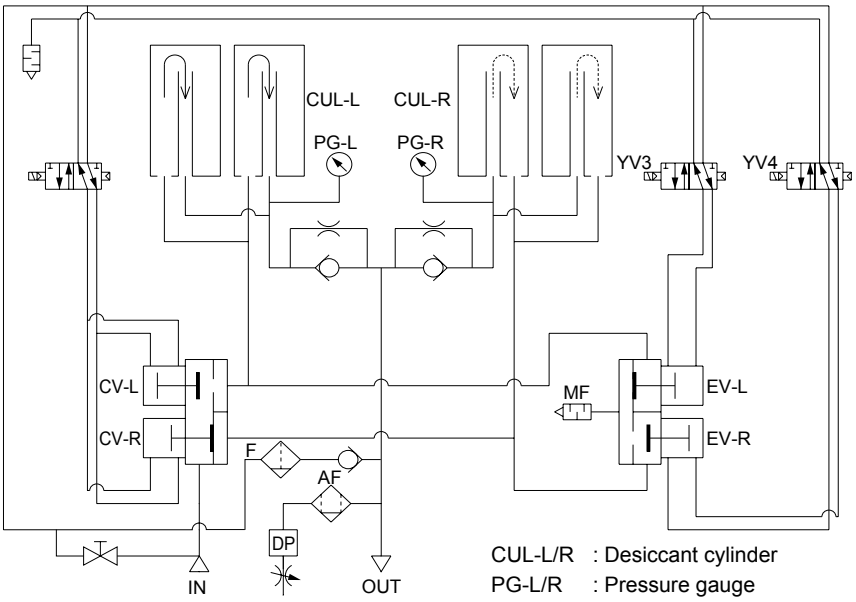
Specifications

Descriptions		SHD3025	SHD3045	SHD3075	SHD3100	SHD3125	SHD3150	SHD3200	SHD3240
Working fluid		Compressed air							
Inlet air pressure range MPa		0.4 to 1.0							
Inlet air temperature range °C		5 to 50							
Ambient temperature °C		0 to 40							
Rated conditions	Inlet air temperature °C	35 (no water drops)							
	Ambient temperature °C	25							
	Inlet air pressure MPa	0.7							
	Inlet air flow rate m^3/min (ANR)	2.5	4.5	7.5	10	12.5	15	20	24
	Outlet pressure dew point °C	-20, -40, -60							
	Average purge rate %	-20°C:14 / -40°C:16.5 / -60°C:23							
Desiccant cylinder module quantity		1	2	3	4	5	6	8	10
Regenerating method		Self-regeneration non-heating system							
Desiccant		Activated alumina, synthetic zeolite							
Dew point sensor		G type: Electrostatic capacitance temperature and humidity sensor / M type: Dew point meter (Electrostatic capacitance polymer sensor)							
Power supply		Single-phase 100/200 VAC 50/60 Hz							
Power consumption		15W							
Port size Rc		1	1	1 1/2	1 1/2	2	2	2 1/2	2 1/2
Weight kg		120	180	240	300	370	430	550	670

*1: The standard paint color is quality cool white (Munsell No. 5 GY 7.5/0.5).
*2: Attach the included accessory filters on the inlet side and the outlet side. Filters may be required for the sake of the system. In such cases, please prepare them separately.
*3: ANR shows conditions where 20°C atmospheric pressure and relative humidity 65%.
*4: Contact CKD for the model No. of accessory filters.

Clean air components

Functions



Moist compressed air coming in from IN goes through the valve CV and enters desiccant cylinder CUL-L. The moist compressed air evenly flows within the desiccant cylinder, the water vapor within the compressed air is suctioned by the desiccant, and once transformed into ultra dry air, comes out of the OUTlet via the check valve.
Part of the ultra dry air that has been reduced in pressure via the orifice enters the desiccant cylinder CUL-R, is used for the regeneration drying of the desiccant of CUL-R, and is then released into the air.
Part of the air exiting the OUTlet is guided to the dew point sensor DP for its dew point to be measured. Depending on the dew point, it will be in energy-saving mode in which the switching time is extended.
(After the removal process ends, both cylinders are kept in an increased state of pressure and the switching time is extended.)

CUL-L/R : Desiccant cylinder
PG-L/R : Pressure gauge
CV-L/R : Inlet switching valve
EV-L/R : Exhaust switching valve
(L/R indicates the left and right sides.)
MF : Silencer
AF : Dew point sensor protection filter
DP : Dew point sensor
YV1 : Valve for inlet switching valve
YV3/4 : Valve for exhaust switching

How to order

SHD3 045 - G 07 - 40 - E - AC100V - S * *

Model No.

* Contact CKD for model No.

Ⓐ Flow rate classification

Code	Content
Ⓐ Flow rate classification	
025	2.5 m^3/min(ANR)
045	4.5 m^3/min(ANR)
075	7.5 m^3/min(ANR)
100	10 m^3/min(ANR)
125	12.5 m^3/min(ANR)
150	15 m^3/min(ANR)
200	20 m^3/min(ANR)
240	24 m^3/min(ANR)

Ⓑ Sensor *1

Ⓑ Sensor	
G	Temperature and humidity sensor
M	Dew point meter

Ⓒ Inlet air pressure

Ⓒ Inlet air pressure	
04	0.4 MPa
05	0.5 MPa
06	0.6 MPa
07	0.7 MPa
08	0.8 MPa
09	0.9 MPa
10	1 MPa

Ⓓ Outlet pressure dew point

Ⓓ Outlet pressure dew point	
20	-20°C
40	-40°C
60	-60°C

Ⓔ Option *3

Ⓔ Option	
E	Standard (AF2000 attached)
E1	Without accessory filter
E2	AF4000 Series attached
F	Color specification
G	Voltage specification
H	English language specifications
L	Foundation bolt nut (SS400)
L1	Foundation bolt nut (SUS304)

Ⓕ Voltage

Ⓕ Voltage
100 VAC
200 VAC

Compatibility table by variation

	SHD
P4	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

⚠ Precautions for model No. selection

*1: With "G" sensor, it is not possible to select the "-60°C" specification for the outlet pressure dew point.
In addition, the dew point display value of the "G" type is of an accuracy to serve as a guide, as accuracy will be lowered in particular in the low dew point range. When prioritizing dew point management, use of the "M" type is recommended.
*2: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.
*3: When ordering several options, indicate the required options in alphabetical order.
*4: Made to order. Contact CKD for details.

	Dew point sensor	Rated dew point °C (*1)	Energy-saving/setting dew point °C (*2)	
SHD3000 Series	-G	-20	-10	3-step switching
		-40	-20	
			-40	
	-M	-20	-20	3-step switching
		-40	-40	
		-60	-60	

*1: Default setting (purge amount setting)

*2: Configured by the user
Arbitrary configuration at 3 steps is possible depending on the applications or conditions of use
(When the load is smaller than the rating, the unit will enter the energy conservation operating mode at this configured temperature.)

Selection guide

Max. flow rate table

Values are with an inlet temperature of 35°C.

Model No.	SHD3025	SHD3045	SHD3075	SHD3100	SHD3125	SHD3150	SHD3200	SHD3240
Inlet air flow rate	2.5	4.5	7.5	10	12.5	15	20	24

*1: The -20, -40, and -60°C specifications will be of the same air flow rate.

Unit: m^3/min (ANR)

● Selection method

The above flow rate table lists values for when the inlet pressure is 0.7 MPa and the inlet air temperature is 35°C.
When conditions differ, determine the specifications by using the coefficient table and curve listed below.

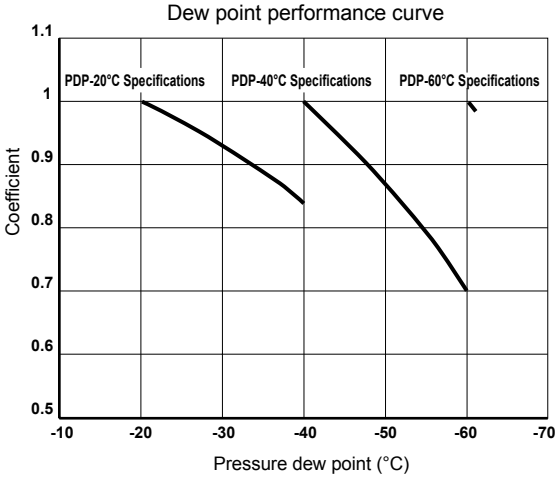
Inlet air flow rate = (Inlet flow rate of max. flow rate table (*2)) x (Pressure coefficient) x (Temperature coefficient)
Purge flow rate (*3) = (Inlet flow rate of max. flow rate table (*2)) x (Purge rate for each dew point (*4))
Outlet air flow rate = (Inlet air flow rate) - (Purge flow rate)

*2: These are values from the above table and are values decided based on the model No.
*3: The average value is listed.
*4: 14% for -20°C specifications, 16.5% for -40°C specifications, 23% for -60°C specifications.
*5: Abbreviation for PDP (pressure dew point).

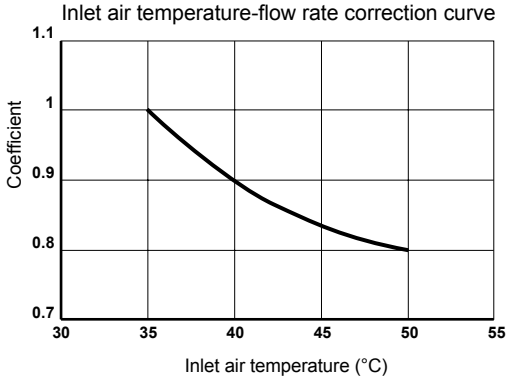
Pressure coefficient table (be sure to make a selection with the pressure that will be used)

Inlet air pressure (MPa)	0.4	0.5	0.6	0.7	0.8	0.9	1
Coefficient	0.63	0.75	0.88	1.00	1.13	1.25	1.38

Dew point performance curve



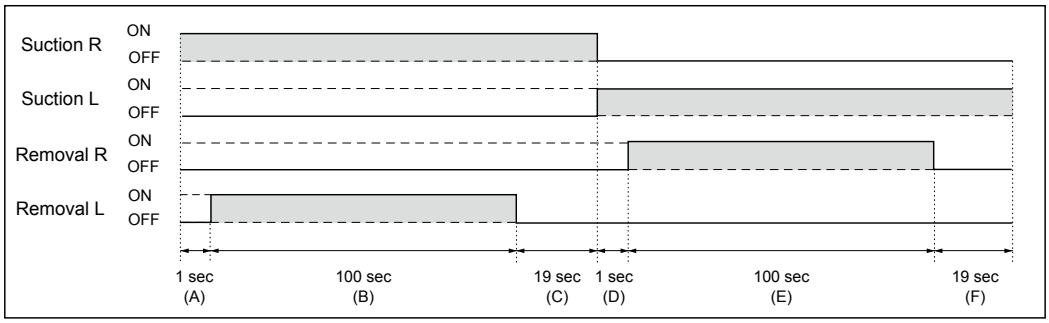
Inlet air temperature-flow rate correction curve



(Example)
Air flow rate of SHD3045 when pressure is 0.6 MPa, pressure dew point is -40°C, and inlet air temperature is 50°C

Inlet air flow rate = 4.5 × 0.88 × 0.8 = 3.168 m^3/min
Purge flow rate = 4.5 × 0.165 = 0.743 m^3/min
Outlet air flow rate = 3.168 − 0.743 = 2.425 m^3/min

Time chart



The normal processes are listed on the left.
During energy conservation, the state (C, F) after the removal has been completed will be retained. After this, as soon as the dew point degrades, switching will resume to return to the normal processes.

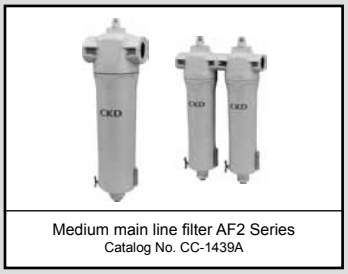
B and E indicate removal (regeneration) time;
C and F indicate rising pressure time.

When a heatless dryer is installed

● Model numbers SHD3075 through SHD3240 come provided with a class-2 pressure vessel certificate.
Keep this while using the components. (Applications to the Labor Standards Supervision Office are no longer required in Japan.)
● When starting a test after the installation of this unit, operate the unit for the period of time designated below with a flow rate that is approximately 10 to 20% of the flow rate that will be used.

Pressure dew point (°C) (*6)	-20	-30	-40	-60
(Reference) Atmospheric dew point (°C)	-40	-48	-57	-74
Time (h)	6	12	24	72

*6: The pressure dew point is for when the pressure is 0.7 MPa.



Medium main line filter AF2 Series
Catalog No. CC-1439A

Medium main line filter

AF2 Series

Ideal for solid particle removing, oil removing and deodorizing applications.

● Processing air flow rate: 4.95 to 24.1 m^3/min (ANR) (when at 0.7 MPa)

JIS symbol P M X

CAD

Specifications

Descriptions		AF2-05□25A	AF2-08□32A	AF2-11□40A	AF2-13□50A	AF2-20□50A	AF2-24□65A
Processing air flow rate	m^3/min (ANR)	4.95	7.93	11.3	12.8	19.8	24.1
Working fluid		Compressed air					
Working pressure	MPa	0.1 to 1.0					
Proof pressure	MPa	1.5					
Port size	Rc	1	1 1/4	1 1/2	2		2 1/2
Weight	kg	2.2	6	5.9	5.7	6.9	13
Pop-up indicator		Standard (Excluding X type)					
Drain discharger		Integrated (NO: with exhaust when not pressurized. Excluding X type)					
Drain outlet bore size	Rc	1/8 (Excluding X type)					

□ indicates series name.

Descriptions		P type	M type	X type
Working ambient temperature	°C	5 to 60		5 to 50
Filtration	μm	1	0.01	Suction by activated carbon
Secondary side oil concentration	mg/m^3	0.3	0.01	0.003
Initial pressure drop	MPa	0.0055	0.0085	0.0115
Regular pressure drop	MPa	0.0125	0.0125	–

*1: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa.
*2: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.
*3: The secondary side oil concentration is the value when the inlet air temperature is 21°C.
*4: The drain discharger is NO. Air is purged with initial drainage until pressure reaches 0.1 MPa.
*5: The P/M elements must be replaced after one year or when the pop-up indicator turns red, whichever is faster.
*6: Replace the X element after 1000 hours (at 21°C) or when the deodorizing effect is lost.
*7: The X type has a ball valve (G1/4) at the discharge outlet.
*8: The initial pressure drop is 0.008 MPa for AF2-20P50A and 0.011 MPa for AF2-20M50A.

How to order

AF2 - 05 P 25A - P4

Ⓐ Flow rate classification
Ⓑ Element
Ⓒ Bore size

Code	Content
Ⓐ Flow rate classification	
05	4.95 m^3/min (ANR)
08	7.93 m^3/min (ANR)
11	11.3 m^3/min (ANR)
13	12.8 m^3/min (ANR)
20	19.8 m^3/min (ANR)
24	24.1 m^3/min (ANR)
Ⓑ Element	
P	P type (solid/oil removing filter)
M	M type (high-performance solid/oil removing filter)
X	X type (odor removing filter)
Ⓒ Bore size	
25A	Rc1
32A	Rc1 1/4
40A	Rc1 1/2
50A	Rc2
65A	Rc2 1/2

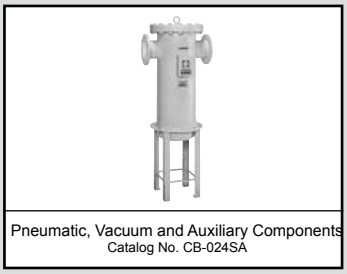
Note on model No. selection

*1: The unit's performance may not be attained if used at less than the selected pressure. Always select the model No. with the working pressure.

Flow rate compensation coefficient

Pressure (MPa)	Compensation coefficient
0.1	0.38
0.2	0.53
0.3	0.65
0.4	0.76
0.5	0.84
0.6	0.92
0.7	1.0
0.8	1.07
0.9	1.13
1.0	1.19

If working pressure is other than 0.7 MPa, multiply processing air flow rate by the above coefficient.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Main line filter

AF3000P Series

Appropriate for large pre-filter.

● Processing air flow rate: 16 to 256 m^3/min (ANR)

JIS symbol



CAD

Specifications

Descriptions	AF3016 P-50	AF3032 P-80	AF3048 P-100	AF3064 P-100	AF3080 P-150	AF3096 P-150	AF3128 P-150	AF3160 P-200	AF3192 P-200	AF3256 P-200
Processing air flow rate m^3/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.07 to 1.0									
Proof pressure MPa	1.5									
Ambient temperature °C	5 to 60									
Filtration μm	3									
Pressure drop Initial MPa	Within 0.005									
Pressure drop Normal MPa	0.005 to 0.02									
Pressure drop Element replacement MPa	0.07									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350
Differential pressure gauge	Contact CKD for details.									
Drain discharger	No									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.005 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

How to order

AF3 016 P - 50 - F - P4

Ⓐ Flow rate classification

Code	Content
Ⓐ Flow rate classification	
016	16 m^3/min(ANR)
032	32 m^3/min(ANR)
048	48 m^3/min(ANR)
064	64 m^3/min(ANR)
080	80 m^3/min(ANR)
096	96 m^3/min(ANR)
128	128 m^3/min(ANR)
160	160 m^3/min(ANR)
192	192 m^3/min(ANR)
256	256 m^3/min(ANR)

Compatibility table by variation

	AF3000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

Bore size/flow rate classification table

Ⓑ Bore size

Flow rate classification	016	032	048	064	080	096	128	160	192	256
50 Flange 2B	●									
80 Flange 3B		●								
100 Flange 4B			●	●						
150 Flange 6B					●	●	●			
200 Flange 8B								●	●	●

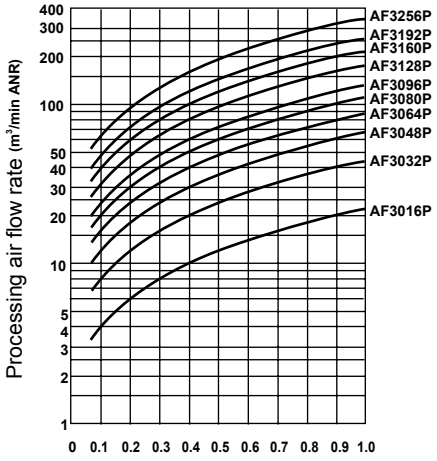
Ⓑ Bore size

Ⓑ Bore size	
Refer to the bore size/flow rate classification table on the left.	

Ⓒ Option *3

Ⓒ Option	
Blank	No
F	Specified color paint
H	English language specifications
K	Companion flange attached
L	Foundation bolt/nut attached (*2)
L1	Stainless steel foundation bolt/nut attached (*2)
O	Outdoors
X1	IN/OUT reverse direction (*1)
Y2	Product photo

Flow characteristics

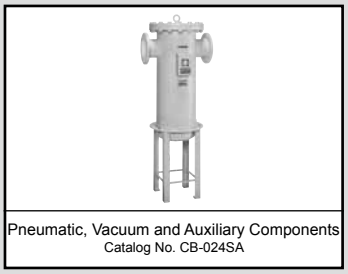


Precautions for model No. selection

*1: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. For "X1", air inlet is provided on the right port, while air outlet is provided on the left port.
*2: Available for AF3032P to AF3256P.
*3: When ordering several options, indicate the required options in alphabetical order.
*4: Made to order. Contact CKD for details.

Note on selection

1. Never use model numbers found to be below the point of intersection of the selection conditions.
2. When the point of intersection found according to selecting conditions and flow characteristics curves are on the same line, the service life may be shortened, so select a model that is one size larger.
3. Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.



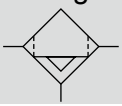
Micro alescer

AF3000S Series

Protects expensive pneumatic components

● Flow rate range: 16 to 256 m³/min (ANR)

JIS symbol



CAD

Specifications

Descriptions	AF3016 S-50	AF3032 S-80	AF3048 S-100	AF3064 S-100	AF3080 S-150	AF3096 S-150	AF3128 S-150	AF3160 S-200	AF3192 S-200	AF3256 S-200
Processing air flow rate m³/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.07 to 1.0									
Proof pressure MPa	1.5									
Ambient temperature °C	5 to 60									
Filtration μm	0.3									
Secondary side oil concentration mg/m³	1.0 (inlet air 30°C)									
Pressure drop Initial MPa	Within 0.01									
Pressure drop Normal MPa	0.01 to 0.03									
Pressure drop Element replacement MPa	0.07									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350
Differential pressure gauge	Contact CKD for details.									
Drain discharger	No									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.01 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

How to order

AF3 | 016 | S | - | 50 | - | ○ | - P4

Ⓐ Flow rate classification

Code	Content
Ⓐ Flow rate classification	
016	16 m³/min(ANR)
032	32 m³/min(ANR)
048	48 m³/min(ANR)
064	64 m³/min(ANR)
080	80 m³/min(ANR)
096	96 m³/min(ANR)
128	128 m³/min(ANR)
160	160 m³/min(ANR)
192	192 m³/min(ANR)
256	256 m³/min(ANR)

Compatibility table by variation

	AF3000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

Ⓑ Bore size

Ⓑ Bore size
Refer to the bore size/flow rate classification table on the left.

Bore size/flow rate classification table

Ⓑ Bore size										
Flow rate classification		016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

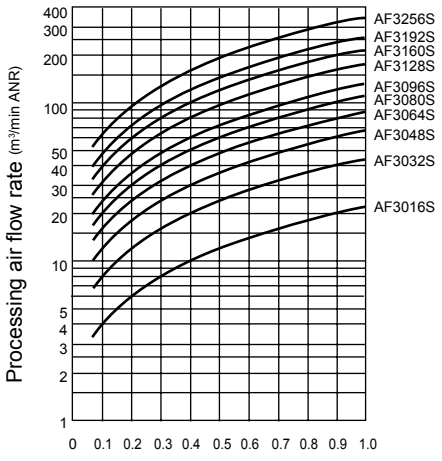
Ⓒ Option

Ⓒ Option	
Blank	No
F	Specified color paint
H	English language specifications
K	Companion flange attached
L	Foundation bolt/nut attached (*2)
L1	Stainless steel foundation bolt/nut attached (*2)
O	Outdoors
X1	IN/OUT reverse direction (*1)
Y2	Product photo

⚠ Precautions for model No. selection

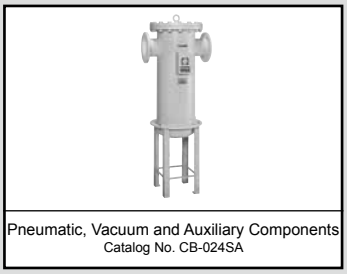
*1: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port.
For "X1", air inlet is provided on the right port, while air outlet is provided on the left port.
*2: Available for AF3032S to AF3256S.
*3: Made to order. Contact CKD for details.

Flow characteristics



⚠ Note on selection

1. Never use model numbers found to be below the point of intersection of the selection conditions.
2. When the point of intersection found according to selecting conditions and flow characteristics curves are on the same line, the service life may be shortened, so select a model that is one size larger.
3. The oil removing ratio drops if the inlet air temperature is 30°C or more. Maintain the inlet air temperature at 30°C or less.
4. Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

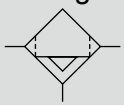
Micro alescer

AF3000M Series

For pneumatic pressure circuits which are susceptible to oil

● Flow rate range: 16 to 256 m^3/min (ANR)

JIS symbol



CAD

Specifications

Descriptions	AF3016 M-50	AF3032 M-80	AF3048 M-100	AF3064 M-100	AF3080 M-150	AF3096 M-150	AF3128 M-150	AF3160 M-200	AF3192 M-200	AF3256 M-200
Processing air flow rate m^3/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.07 to 1.0									
Proof pressure MPa	1.5									
Ambient temperature °C	5 to 60									
Filtration μm	0.01									
Secondary side oil concentration mg/m^3	0.1 (inlet air 30°C)									
Pressure drop Initial MPa	Within 0.01									
Pressure drop Normal MPa	0.02 to 0.04									
Pressure drop Element replacement MPa	0.07									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350
Differential pressure gauge	Contact CKD for details.									
Drain discharger	No									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.01 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

How to order

AF3 016 M - 50 - ○ - P4

Ⓐ Flow rate classification

Code	Content
Ⓐ Flow rate classification	
016	16 m^3/min(ANR)
032	32 m^3/min(ANR)
048	48 m^3/min(ANR)
064	64 m^3/min(ANR)
080	80 m^3/min(ANR)
096	96 m^3/min(ANR)
128	128 m^3/min(ANR)
160	160 m^3/min(ANR)
192	192 m^3/min(ANR)
256	256 m^3/min(ANR)

Ⓑ Bore size

Ⓑ Bore size
Refer to the bore size/flow rate classification table on the left.

Ⓒ Option *3

Ⓒ Option	
Blank	No
F	Specified color paint
H	English language specifications
K	Companion flange attached
L	Foundation bolt/nut attached (*2)
L1	Stainless steel foundation bolt/nut attached (*2)
O	Outdoors
X1	IN/OUT reverse direction (*1)
Y2	Product photo

Compatibility table by variation

	AF3000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

Bore size/flow rate classification table

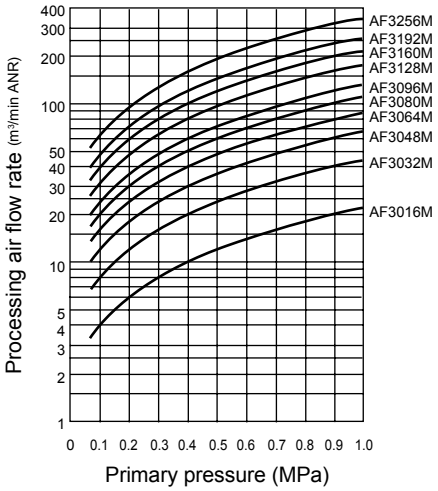
Ⓑ Bore size

Flow rate classification		016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

Precautions for model No. selection

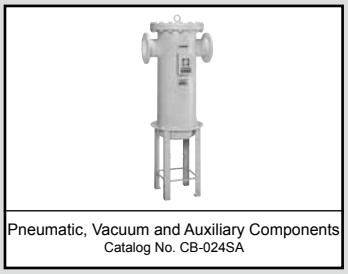
*1: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. For "X1", air inlet is provided on the right port, while air outlet is provided on the left port.
*2: Available for AF3032M to AF3256M.
*3: When ordering several options, indicate the required options in alphabetical order.
*4: Made to order. Contact CKD for details.

Flow characteristics



Note on selection

1. Never use model numbers found to be below the point of intersection of the selection conditions.
2. When the point of intersection found according to selecting conditions and flow characteristics curves are on the same line, the service life may be shortened, so select a model that is one size larger.
3. The oil removing ratio drops if the inlet air temperature is 30°C or more. Maintain the inlet air temperature at 30°C or less.
4. Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.



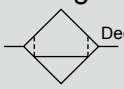
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Micro alescer

AF3000X Series

For pneumatic pressure circuits which are susceptible to odors

● Flow rate range: 16 to 256 m^3/min (ANR)

JIS symbol  Deodorization

CAD

Specifications

Descriptions	AF3016 X-50	AF3032 X-80	AF3048 X-100	AF3064 X-100	AF3080 X-150	AF3096 X-150	AF3128 X-150	AF3160 X-200	AF3192 X-200	AF3256 X-200
Processing air flow rate m^3/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.07 to 1.0									
Proof pressure MPa	1.5									
Ambient temperature °C	5 to 30									
Filtration method	Suction by activated carbon									
Secondary side oil concentration mg/m^3	0.03 (inlet air 30°C)									
Pressure drop MPa	Within 0.01									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350
Differential pressure gauge	Contact CKD for details.									
Drain discharger	No									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.01 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

How to order

AF3 | 016 | X | - | 50 | - | ○ | - P4

Ⓐ Flow rate classification

Code	Content
Ⓐ Flow rate classification	
016	16 m^3/min(ANR)
032	32 m^3/min(ANR)
048	48 m^3/min(ANR)
064	64 m^3/min(ANR)
080	80 m^3/min(ANR)
096	96 m^3/min(ANR)
128	128 m^3/min(ANR)
160	160 m^3/min(ANR)
192	192 m^3/min(ANR)
256	256 m^3/min(ANR)

Ⓑ Bore size

Ⓑ Bore size
Refer to the bore size/flow rate classification table on the left.

Ⓒ Option

Ⓒ Option	
Blank	No
F	Specified color paint
H	English language specifications
K	Companion flange attached
L	Foundation bolt/nut attached (*2)
L1	Stainless steel foundation bolt/nut attached (*2)
O	Outdoors
X1	IN/OUT reverse direction (*1)
Y2	Product photo

Bore size/flow rate classification table

Ⓑ Bore size		016	032	048	064	080	096	128	160	192	256
Flow rate classification											
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

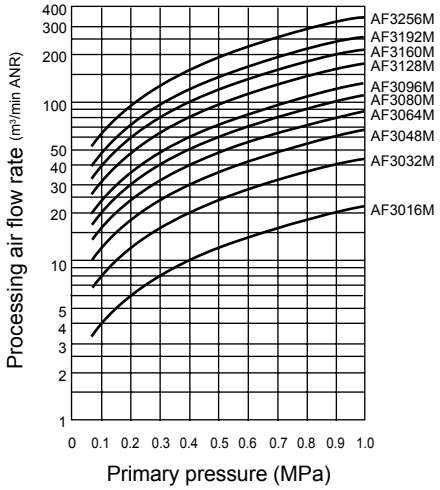
Compatibility table by variation

	AF3000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

Flow characteristics

Flow characteristics are the same as the AF3000M type.
Be sure to use the AF3000M type as a pre-filter.



Precautions for model No. selection

*1: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port.
For "X1", air inlet is provided on the right port, while air outlet is provided on the left port.
*2: Available for AF3032X to AF3256X.
*3: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.
*4: Made to order. Contact CKD for details.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Main line filter

AF5000P Series

For air dryer pre-filter

● Flow rate range: 16 to 256 m^3/min (ANR)

JIS symbol



CAD

Specifications

Model No. / Descriptions			AF5016P-50	AF5032P-80	AF5048P-100	AF5064P-100	AF5080P-150	AF5096P-150	AF5128P-150	AF5160P-200	AF5192P-200	AF5256P-200
Processing air flow rate	(*2. *3.) m^3/min(ANR)		16	32	48	64	80	96	128	160	192	256
Working fluid			Compressed air									
Working pressure		MPa	0.08 to 1.0									
Proof pressure		MPa	1.5									
Ambient temperature		°C	5 to 60									
Filtration		μm	3									
Pressure drop	Initial	MPa	Within 0.005									
	Normal	MPa	0.01									
	Element replacement	MPa	0.035									
Element quantity			1	2	3	4	5	6	8	10	12	16
Port size		(*1) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight		kg	38	76	78	107	140	167	223	232	269	330
Differential pressure switch												
Operating pressure differential		MPa	0.04±0.01									
Contact			1 pole a contact									
Max. contact current		A	0.5									
Max. contact voltage		VDC	200									
Max. contact capacitance		W	10									
Max. contact resistance (including reed switch)		mΩ	300									
Drain discharger			No									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.005 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

Flow rate compensation coefficient

If the working pressure is other than 0.7 MPa, multiply the processing air flow rate by the above coefficient.

Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Compensation coefficient	0.38	0.53	0.65	0.76	0.85	0.93	1.0	1.07	1.13	1.2

Compatibility table by variation

	AF5000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

AF5 016 P - 50 - X1 - P4

Ⓐ Flow rate classification

Ⓑ Bore size

Ⓒ Option *1 *2 *4

Code	Content
Ⓐ Flow rate classification m³/min (ANR)	
016	16
032	32
048	48
064	64
080	80
096	96
128	128
160	160
192	192
256	256

Ⓑ Bore size

Flow rate classification		016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●	-	-	-	-	-	-	-	-	-
80	Flange 3B	-	●	-	-	-	-	-	-	-	-
100	Flange 4B	-	-	●	●	-	-	-	-	-	-
150	Flange 6B	-	-	-	-	●	●	●	-	-	-
200	Flange 8B	-	-	-	-	-	-	-	●	●	●

Ⓒ Option

Blank	Standard products
E	Without drain discharger
K	Companion flange attached
H	English language specifications
H2	Stainless steel nameplate
L	Foundation bolt/nut attached (SS400) (*1)
L1	Foundation bolt/nut attached (SUS304) (*1)
X1	IN/OUT reverse direction (*2)
Y2	Product photo

⚠ Precautions for model No. selection

*1: "L" and "L1" are applicable to AF5032P to AF5256P.
*2: Viewed from the front, a standard product has an air inlet on the left port, while an air outlet on the right port.
For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.
*3: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.
*4: When ordering several options, indicate the required options in alphabetical order.
*5: Made to order. Contact CKD for details.



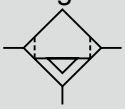
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Micro alescer

AF5000S Series

Protects expensive pneumatic components
● Flow rate range: 16 to 256 m^3/min (ANR)

JIS symbol



CAD

Specifications

Model No. / Descriptions			AF5016S-50	AF5032S-80	AF5048S-100	AF5064S-100	AF5080S-150	AF5096S-150	AF5128S-150	AF5160S-200	AF5192S-200	AF5256S-200
Processing air flow rate	(*2. *3.)	m^3/min(ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid			Compressed air									
Working pressure		MPa	0.08 to 1.0									
Proof pressure		MPa	1.5									
Ambient temperature		°C	5 to 60									
Filtration		μm	0.3									
Secondary side oil concentration		mg/m^3	0.5 (at inlet air 21°C or less)									
Pressure drop	Initial	MPa	0.007									
	Normal	MPa	0.014									
	Element replacement	MPa	0.035									
Element quantity			1	2	3	4	5	6	8	10	12	16
Port size		(*1) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight		kg	38	76	78	107	140	167	223	232	269	330
Differential pressure switch												
Operating pressure differential		MPa	0.04±0.01									
Contact			1 pole a contact									
Max. contact current		A	0.5									
Max. contact voltage		VDC	200									
Max. contact capacitance		W	10									
Max. contact resistance (including reed switch)		mΩ	300									
Drain discharger			No									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.007 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

Flow rate compensation coefficient

If the working pressure is other than 0.7 MPa, multiply the processing air flow rate by the above coefficient.

Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Compensation coefficient	0.38	0.53	0.65	0.76	0.85	0.93	1.0	1.07	1.13	1.2

Compatibility table by variation

	AF5000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

AF5 016 S - 50 - X1 - P4

Ⓐ Flow rate classification

Ⓑ Bore size

Ⓒ Option *1 *2 *4

Code	Content
Ⓐ Flow rate classification m³/min (ANR)	
016	16
032	32
048	48
064	64
080	80
096	96
128	128
160	160
192	192
256	256

Ⓑ Bore size

Flow rate classification		016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●	-	-	-	-	-	-	-	-	-
80	Flange 3B	-	●	-	-	-	-	-	-	-	-
100	Flange 4B	-	-	●	●	-	-	-	-	-	-
150	Flange 6B	-	-	-	-	●	●	●	-	-	-
200	Flange 8B	-	-	-	-	-	-	-	●	●	●

Ⓒ Option

Blank	Standard products
E	Without drain discharger
K	Companion flange attached
H	English language specifications
H2	Stainless steel nameplate
L	Foundation bolt/nut attached (SS400) (*1)
L1	Foundation bolt/nut attached (SUS304) (*1)
X1	IN/OUT reverse direction (*2)
Y2	Product photo

⚠ Precautions for model No. selection

*1: "L" and "L1" are applicable to AF5032S to AF5256S.
*2: Viewed from the front, a standard product has an air inlet on the left port, while an air outlet on the right port.
For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.
*3: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.
*4: When ordering several options, indicate the required options in alphabetical order.
*5: Made to order. Contact CKD for details.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

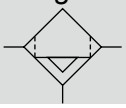
Micro alescer

AF5000M Series

For pneumatic pressure circuits which are susceptible to oil

● Flow rate range: 16 to 256 m^3/min (ANR)

JIS symbol



CAD

Specifications

Model No. / Descriptions			AF5016M-50	AF5032M-80	AF5048M-100	AF5064M-100	AF5080M-150	AF5096M-150	AF5128M-150	AF5160M-200	AF5192M-200	AF5256M-200
Processing air flow rate	(*2. *3.)	m^3/min(ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid			Compressed air									
Working pressure		MPa	0.08 to 1.0									
Proof pressure		MPa	1.5									
Ambient temperature		°C	5 to 60									
Filtration		μm	0.01									
Secondary side oil concentration		mg/m^3	0.01 (at inlet air 21°C or less)									
Pressure drop	Initial	MPa	0.01									
	Normal	MPa	0.02									
	Element replacement	MPa	0.035									
Element quantity			1	2	3	4	5	6	8	10	12	16
Port size		(*1) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight		kg	38	76	78	107	140	167	223	232	269	330
Differential pressure switch												
Operating pressure differential		MPa	0.04±0.01									
Contact			1 pole a contact									
Max. contact current		A	0.5									
Max. contact voltage		VDC	200									
Max. contact capacitance		W	10									
Max. contact resistance (including reed switch)		mΩ	300									
Drain discharger			No									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.01 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

Flow rate compensation coefficient

If the working pressure is other than 0.7 MPa, multiply the processing air flow rate by the above coefficient.

Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Compensation coefficient	0.38	0.53	0.65	0.76	0.85	0.93	1.0	1.07	1.13	1.2

Compatibility table by variation

	AF5000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

AF5 016 M - 50 - X1 - P4

Ⓐ Flow rate classification

Ⓑ Bore size

Ⓒ Option *1 *2 *4

Code	Content
Ⓐ Flow rate classification m³/min (ANR)	
016	16
032	32
048	48
064	64
080	80
096	96
128	128
160	160
192	192
256	256

Ⓑ Bore size

Flow rate classification		016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●	-	-	-	-	-	-	-	-	-
80	Flange 3B	-	●	-	-	-	-	-	-	-	-
100	Flange 4B	-	-	●	●	-	-	-	-	-	-
150	Flange 6B	-	-	-	-	●	●	●	-	-	-
200	Flange 8B	-	-	-	-	-	-	-	●	●	●

Ⓒ Option

Blank	Standard products
E	Without drain discharger
K	Companion flange attached
H	English language specifications
H2	Stainless steel nameplate
L	Foundation bolt/nut attached (SS400) (*1)
L1	Foundation bolt/nut attached (SUS304) (*1)
X1	IN/OUT reverse direction (*2)
Y2	Product photo

⚠ Precautions for model No. selection

*1: "L" and "L1" are applicable to AF5032M to AF5256M.
*2: Viewed from the front, a standard product has an air inlet on the left port, while an air outlet on the right port. For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.
*3: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.
*4: When ordering several options, indicate the required options in alphabetical order.
*5: Made to order. Contact CKD for details.



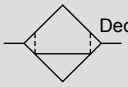
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Micro alescer

AF5000X Series

For pneumatic pressure circuits which are susceptible to odors

●Flow rate range: 16 to 256 m^3/min (ANR)

JIS symbol  Deodorization

CAD

Specifications

Model No. / Descriptions		AF5016X-50	AF5032X-80	AF5048X-100	AF5064X-100	AF5080X-150	AF5096X-150	AF5128X-150	AF5160X-200	AF5192X-200	AF5256X-200
Processing air flow rate	(*2. *3.) m^3/min(ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid		Compressed air									
Working pressure	MPa	0.08 to 1.0									
Proof pressure	MPa	1.5									
Ambient temperature	°C	5 to 30									
Filtration method		Suction by activated carbon									
Secondary side oil concentration	mg/m^3	0.003 (at inlet air 21°C or less)									
Initial pressure drop	MPa	Within 0.007									
Element quantity		1	2	3	4	5	6	8	10	12	16
Port size	(*1) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight	kg	38	76	78	107	140	167	223	232	269	330

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.007 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

Flow rate compensation coefficient

If the working pressure is other than 0.7 MPa, multiply the processing air flow rate by the above coefficient.

Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Compensation coefficient	0.38	0.53	0.65	0.76	0.85	0.93	1.0	1.07	1.13	1.2

Compatibility table by variation

	AF5000
Port size	Flange 2B, 3B, 4B, 6B, 8B
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

AF5 016 X - 50 - X1 - P4

Ⓐ Flow rate classification

Ⓑ Bore size

Ⓒ Option *1 *2 *4

Code	Content
Ⓐ Flow rate classification m³/min (ANR)	
016	16
032	32
048	48
064	64
080	80
096	96
128	128
160	160
192	192
256	256

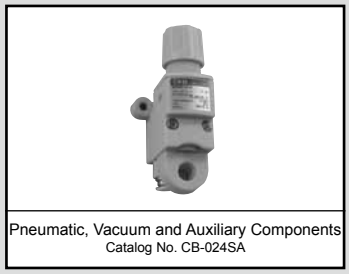
Ⓑ Bore size

Flow rate classification		016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●	-	-	-	-	-	-	-	-	-
80	Flange 3B	-	●	-	-	-	-	-	-	-	-
100	Flange 4B	-	-	●	●	-	-	-	-	-	-
150	Flange 6B	-	-	-	-	●	●	●	-	-	-
200	Flange 8B	-	-	-	-	-	-	-	●	●	●

Ⓒ Option	
Blank	Standard products
K	Companion flange attached
H	English language specifications
H2	Stainless steel nameplate
L	Foundation bolt/nut attached (SS400) (*1)
L1	Foundation bolt/nut attached (SUS304) (*1)
X1	IN/OUT reverse direction (*2)
Y2	Product photo

⚠ Precautions for model No. selection

*1: "L" and "L1" are applicable to AF5032X to AF5256X.
*2: Viewed from the front, a standard product has an air inlet on the left port, while an air outlet on the right port. For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.
*3: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.
*4: When ordering several options, indicate the required options in alphabetical order.
*5: Made to order. Contact CKD for details.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

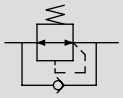
Compact regulator

RB500 Series

Compact, space saving structure and reverse flow function integrated.

●Port size: Push-in fitting ø4, ø6

JIS symbol



RoHS CAD

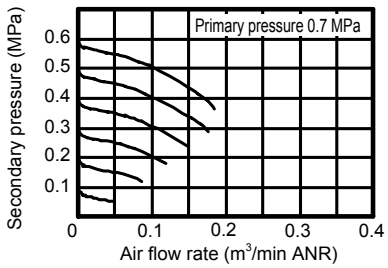
Specifications

Descriptions		RB500
Working fluid		Compressed air
Max. working pressure MPa		1.0
Proof pressure MPa		1.5
Ambient/fluid temperatures °C		5 to 60
Set pressure MPa		0.05 to 0.7 (*1)
Pressure relief		Non-relief
Port size	IN-OUT	Push-in fitting: ø4/ø6
	GAUGE	Rc1/8
Weight g		68

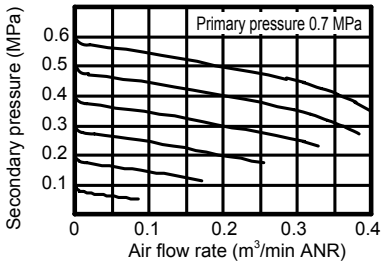
*1: Low pressure specifications are 0.05 to 0.35.

Flow characteristics

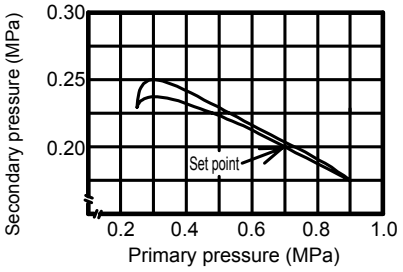
● RB500-SSC4



● RB500-SSC6



Pressure characteristics



Clean air components

Compatibility table by variation

	RB500 -N
Port size	Push-in fitting ø4/ø6
P4	●
P40	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Pressure gauge/pressure sensor must be ordered separately.
(Pressure gauge option is "T" only)
*2: Non-relief only is available.
*3: Only straight direction is available for fittings.
*4: For pressure adjustment springs without gas contact and pressure adjustment screw units in P40, zinc plating is used.

How to order

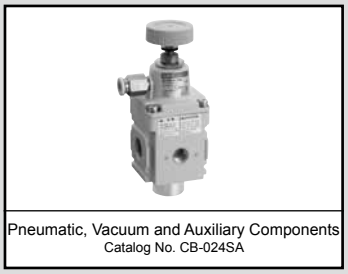
RB500 - **SSC4** - **NT** **P4 P40**

Model No. Ⓐ Connection Ⓑ Option

Code		Content
Ⓐ Connection		
Direction **IN**	**S**	Straight
Direction **OUT**	**S**	Straight
Bore size	**C4**	ø4
	C6	ø6
Ⓑ Option		
Panel mount *1	**Blank**	Without nut
	P	With nut
Pressure range	**Blank**	0.05 to 0.7 MPa
	L	0.05 to 0.35 MPa
Pressure relief	**N**	Non-relief
Pressure gauge	**T**	No pressure gauge (gauge port Rc1/8)

⚠ Precautions for model No. selection

*1: Indicate option code "P" for panel mounting.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Precision regulator

RP1000 Series

●Port size: Rc1/4

JIS symbol 

RoHS

Specifications

Descriptions		RP1000-8-02	RP1000-8-04	RP1000-8-07
Working fluid		Compressed clean air (according to the recommended air circuit described in "Pneumatic, Vacuum and Auxiliary Components" (catalog No. CB-024SA))		
Max. working pressure	MPa	1.0		
Min. working pressure	MPa	Set pressure +0.1 *1		
Proof pressure	MPa	1.5		
Ambient/fluid temperatures	°C	-5 to 60 (no freezing) *3		
Set pressure	MPa	0.003 to 0.2	0.005 to 0.4	0.005 to 0.7
Sensitivity		Within 0.1% of full scale		
Repeatability		Within ±0.5% of full scale		
Air consumption *2	l/min(ANR)	1.3 or less		3.4 or less
Port size		Rc1/4		
Pressure gauge port size		Rc1/8		
Weight	g	250		

*1: Flow rate of the secondary side is to be zero. For RP1000-8-04, if the set pressure is 0.3 MPa and over, increase +0.2 MPa in the set pressure.
*2: Conditions where the primary pressure is 0.7 MPa. Air is normally released from the bleed port.

How to order

RP1000 - 8 (A) - 02 (B) P4 P40 - B3 (C)

Model
RP1000: Precision regulator

Ⓐ Port size		Ⓑ Set pressure range		Ⓒ Other attachments	
8	Rc1/4	02	MAX.0.2 MPa	Blank	Without attachment
		04	MAX.0.4 MPa	B3	L bracket
		07	MAX.0.7 MPa		

*1: Bracket is attached.
*2: One R1/8 plug and a dedicated fitting for the bleed port are attached with the product.

Compatibility table by variation

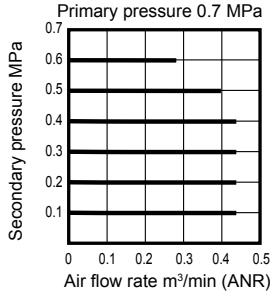
	RP1000
Port size	Rc1/4
P4	●
P40	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

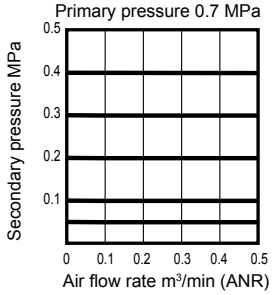
*1: Pressure gauge/pressure sensor must be ordered separately. (Attachment options not available.)
*2: RP1000 dimensions are different from the standard dimensions.
*3: Zinc plating is used for pressure adjustment springs without gas contact in P40.
*4: Dimensions are different from the standard products. There are mounting restrictions because of bleed port connection. Check the dimensions for each case.

Flow characteristics

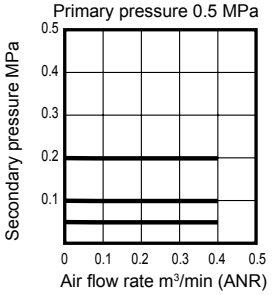
● RP1000-8-07



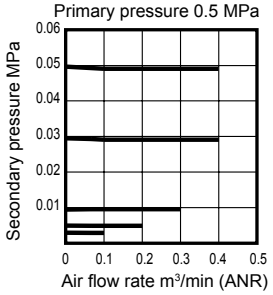
● RP1000-8-04



● RP1000-8-02

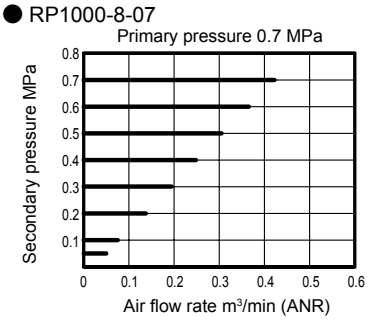


● RP1000-8-02
(Flow characteristics at low pressure)

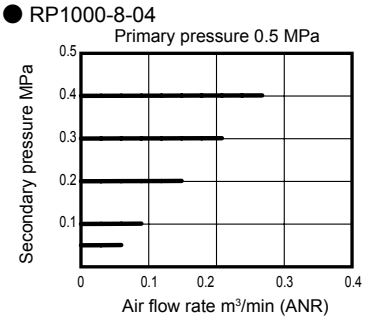


Relief flow characteristics

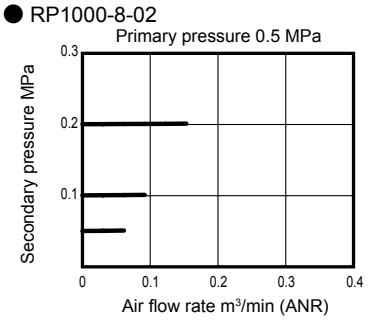
● RP1000-8-07



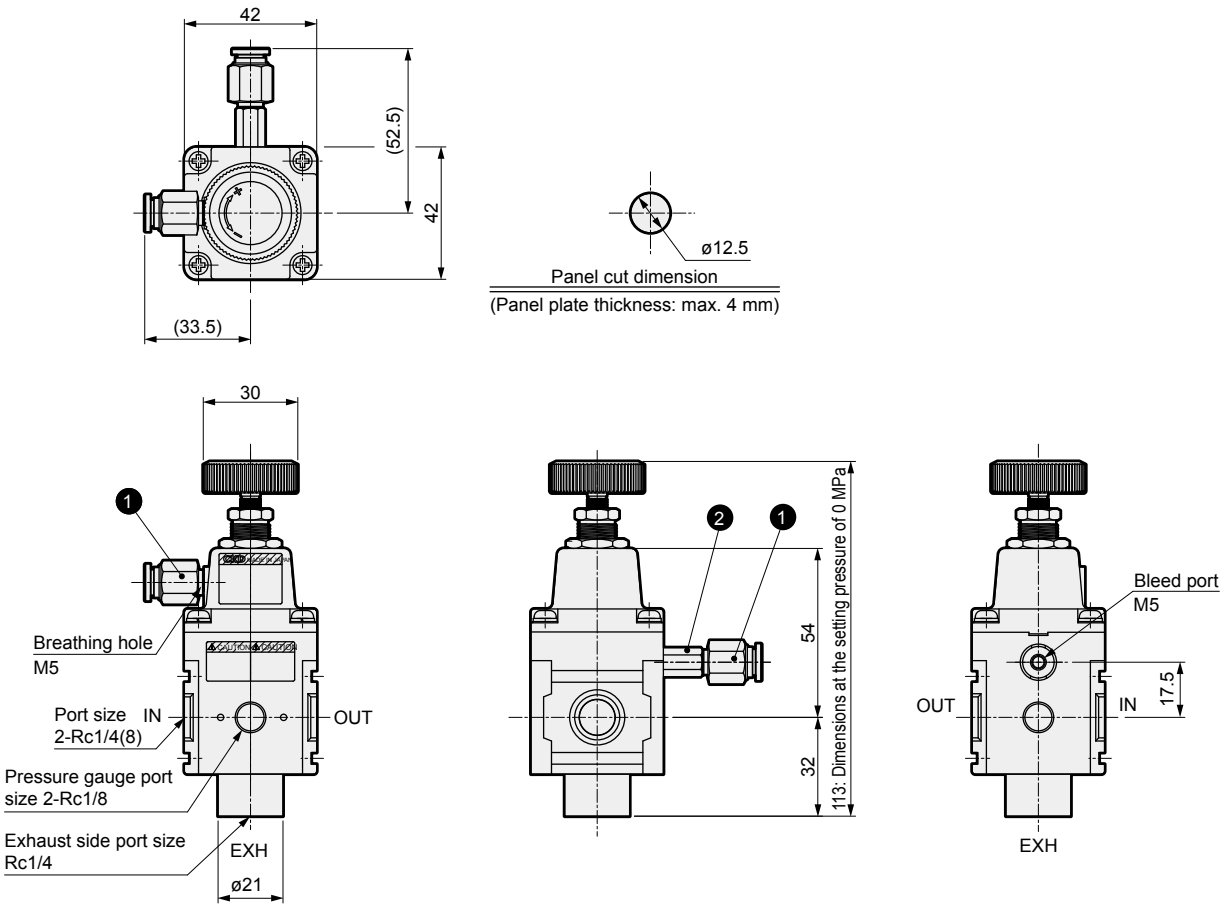
● RP1000-8-04



● RP1000-8-02

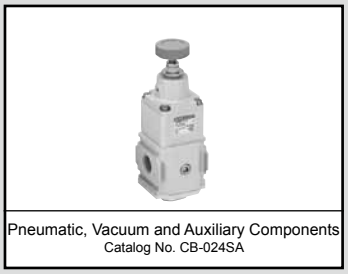


Dimensions



Parts list

Part number	Part name
(1)	Two fittings (ZSP-C6-M5)
(2)	Bleed port extension fitting



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Precision regulator

RP2000 Series

●Port size: Rc1/4 Rc3/8

JIS symbol



RoHS

Specifications

Descriptions		RP2000-8-08	RP2000-10-08
Working fluid		Compressed clean air (according to the recommended air circuit described in "Pneumatic, Vacuum and Auxiliary Components" (catalog No. CB-024SA))	
Max. working pressure	MPa	1.0	
Min. working pressure	MPa	Set pressure +0.1 *1	
Proof pressure	MPa	1.5	
Ambient/fluid temperatures	°C	-5 to 60 (no freezing)	
Set pressure	MPa	0.03 to 0.85	
Sensitivity		Within 0.2% of full scale	
Repeatability		Within ±0.5% of full scale	
Air consumption	ℓ/min (ANR)	5 or less *2	
Port size		Rc1/4	Rc3/8
Exhaust side port size		Rc3/8	
Pressure gauge port size		Rc1/8	
Weight	g	470	

*1: Flow rate of the secondary side is to be zero.
*2: Conditions where the primary pressure is 0.7 MPa and set pressure is 0.3 MPa. Consumed air is released from the bleed port and EXH port, while air is normally released from the bleed port.
So, air consumption is the total of consumption volume released from the bleed port and EXH port. Air is released at 1 ℓ/min (ANR) or less from EXH port.

How to order

RP2000 - 8 (A) - 08 (B) P4 / P40 - (C)

Model
RP2000: Precision regulator

Compatibility table by variation

	RP2000
Port size	Rc3/8
P4	●
P40	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

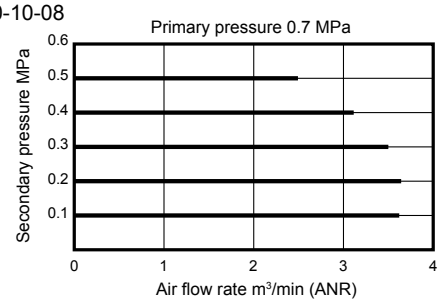
*1: Pressure gauge/pressure sensor must be ordered separately. (Attachment options not available.)
*2: RP1000 dimensions are different from the standard dimensions.
*3: Zinc plating is used for pressure adjustment springs without gas contact in P40.
*4: Dimensions are different from the standard products. There are mounting restrictions because of bleed port connection. Check the dimensions for each case.

Ⓐ Port size		Ⓑ Set pressure range		Ⓒ Other attachments	
8	Rc1/4	**08**	MAX.0.85MPa	**Blank**	Without attachment
10	Rc3/8			**B**	C bracket

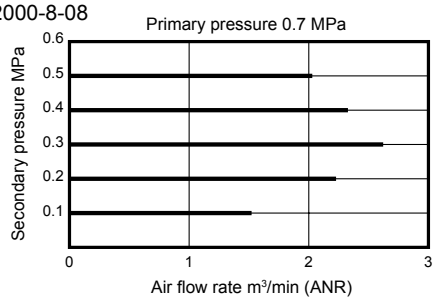
*1: If an Rc1/2 port size is required, use a pipe adaptor set (model No.: A400-15-W).
*2: Attachment is attached.
*3: The pipe adaptor set and C bracket cannot be used together.
*4: One R1/8 plug and a dedicated fitting for the bleed port are attached with the product.

Flow characteristics

● RP2000-10-08

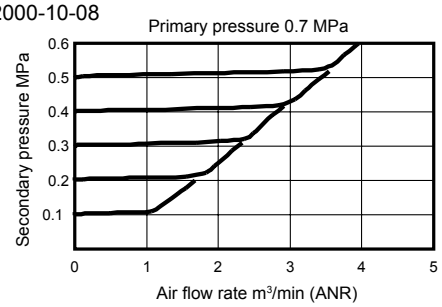


● RP2000-8-08

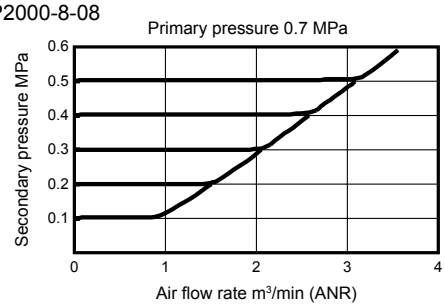


Relief flow characteristics

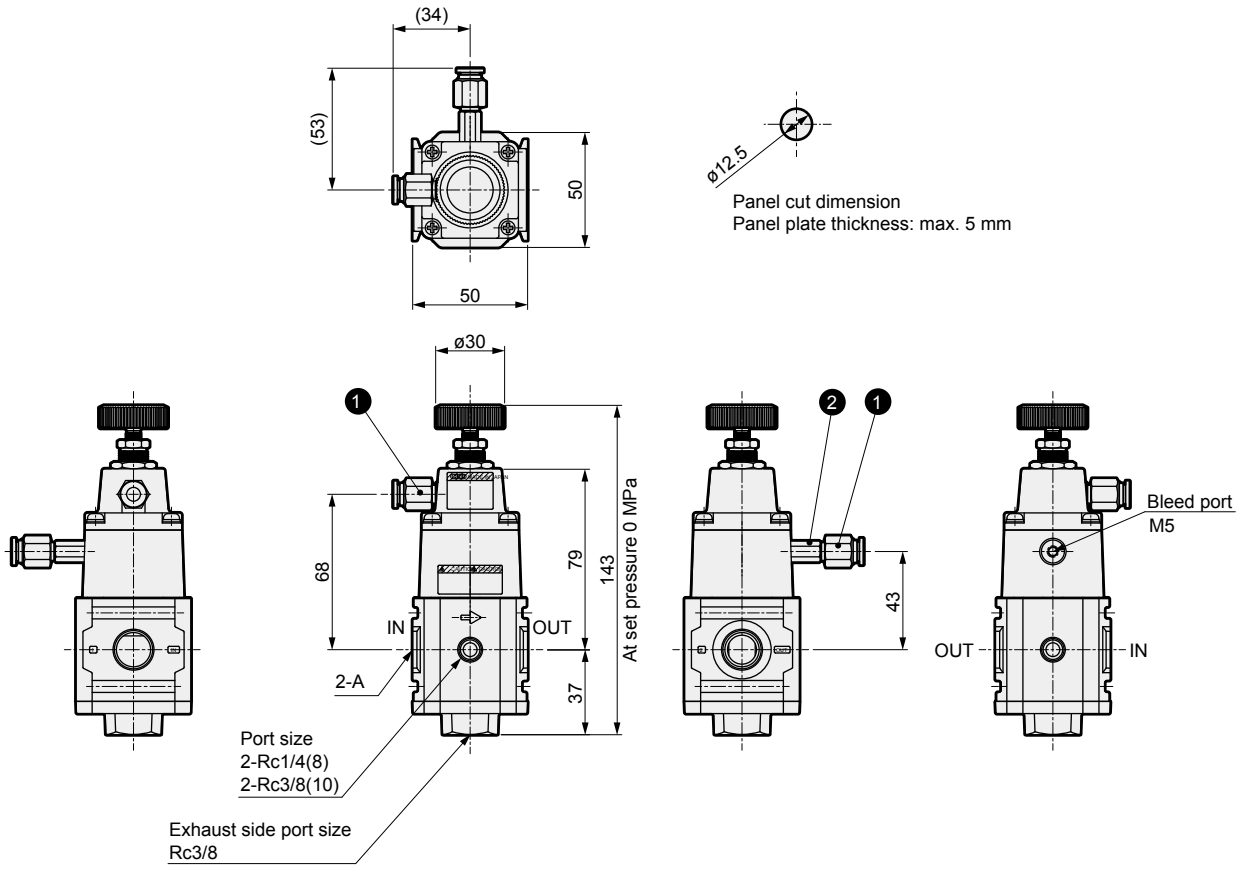
● RP2000-10-08



● RP2000-8-08

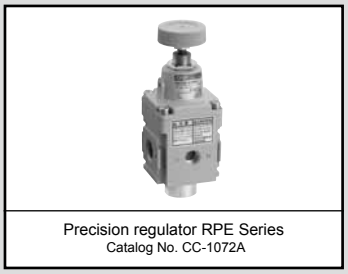


Dimensions



Parts list

Part number	Part name
(1)	Two fittings (ZSP-C6-M5)
(2)	Bleed port extension fitting



Precision regulator RPE Series
Catalog No. CC-1072A

Precision regulator

RPE1000 Series

●Port size: Rc1/4

JIS symbol 

RoHS

Specifications

Descriptions		RPE1000-8-07
Working fluid		Compressed clean air (according to the recommended air circuit described in the single unit catalog (catalog No. CC-1072A))
Max. working pressure	MPa	1.0
Min. working pressure	MPa	Set pressure +0.1 *1
Proof pressure	MPa	1.5
Ambient/fluid temperatures	°C	-5 to 60 (no freezing)
Set pressure	MPa	0.01 to 0.7
Sensitivity		Within 0.2% of full scale
Repeatability		Within ±0.5% of full scale
Air consumption *2	ℓ/min (ANR)	0.2 or less
Port size		Rc1/4
Pressure gauge port size		Rc1/8
Weight	g	250 *3

*1: Flow rate of the secondary side is to be zero.
*2: Conditions where the primary pressure is 0.7 MPa and air is consumed in the secondary side. When there is no air consumption, 1 ℓ/min or less air from the EXH port is released from the bleed port.
*3: For weight when Ⓒ attachment is included, add the following weight. Bracket: 30 g

Compatibility table by variation

	RPE1000
P4	●

*1: Pressure gauge/pressure sensor must be ordered separately.
(Attachment options not available.)
*2: RPE1000 dimensions are different from the standard dimensions.

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

How to order

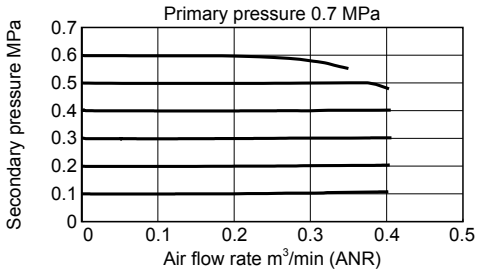
RPE1000 - 8 - 07 P4 - B3

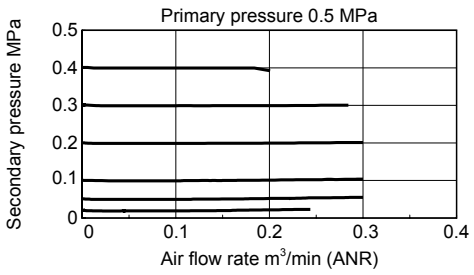
Model
RPE1000:
Precision regulator

Ⓐ Port size		Ⓑ Set pressure range		Ⓒ Other attachments	
8	Rc1/4	07	MAX.0.7 MPa	Blank	Without attachment
				B3	L bracket (B131)

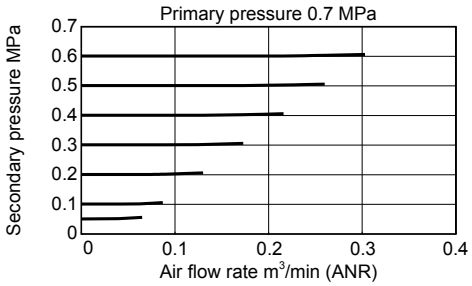
*1: Bracket is attached.
*2: One R1/8 plug is attached with the product.

Flow characteristics

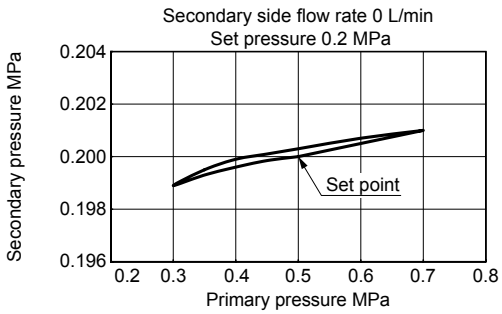




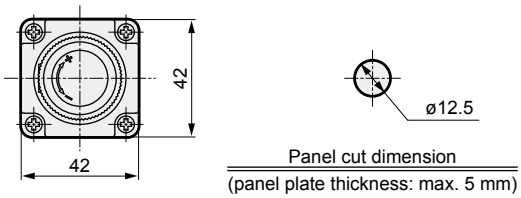
Relief flow characteristics

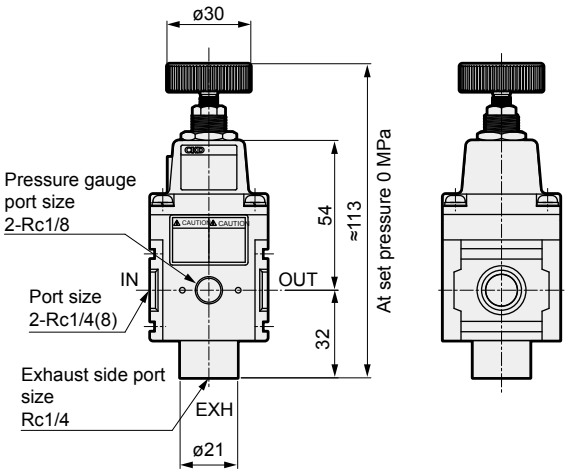


Pressure characteristics



Dimensions


42
42
ø12.5
Panel cut dimension
(panel plate thickness: max. 5 mm)


ø30
Pressure gauge port size 2-Rc1/8
IN
OUT
Port size 2-Rc1/4(8)
54
≈113
At set pressure 0 MPa
32
Exhaust side port size Rc1/4
EXH
ø21

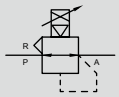


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Digital electro pneumatic regulator

EVD-1000 Series

JIS symbol



Specifications

Descriptions		EVD-1100-*08 □ Analog (*...0/1/2)	EVD-1100-P08 □ Parallel	EVD-1500-*08 □ Analog (*...0/1/2)	EVD-1500-P08 □ Parallel	EVD-1900-*08 □ Analog (*...0/1/2)	EVD-1900-P08 □ Parallel
Working fluid		Clean compressed air (JIS B 8392-1: 2012 Grade 1.3.2 or equivalent)					
Max. working pressure		160 kPa		700 kPa		1000 kPa	
Min. working pressure		Set pressure +50 kPa		Set pressure +100 kPa			
Proof pressure	Inlet	240 kPa		1050 kPa		1500 kPa	
	Output side	150 kPa		750 kPa		1350 kPa	
Pressure control range	*1	0 to 100 kPa		0 to 500 kPa		0 to 900 kPa	
Power supply voltage		24 VDC ± 10% (stabilized power supply with ripple rate 1% or less)					
Current consumption		0.15 A or less (0.6 A or less rush current when the power is turned ON)					
Input signal (input impedance)		0 to 10 VDC(6.7 kΩ) 0 to 5 VDC(10 kΩ) 4 to 20 mADC(250 Ω)	10 bit	0 to 10 VDC(6.7 kΩ) 0 to 5 VDC(10 kΩ) 4 to 20 mADC(250 Ω)	10 bit	0 to 10 VDC(6.7 kΩ) 0 to 5 VDC(10 kΩ) 4 to 20 mADC(250 Ω)	10 bit
Preset input		8 points	No	8 points	No	8 points	No
Output signal	*2	Output accuracy: ±6% F.S. or less, analog output: 1 to 5 VDC (connecting load impedance 500 kΩ and over)					
		Switch output: NPN or PNP open collector output, 30 V or less and 50 mA or less, voltage drop 2.4 V or less, PLC/relay compatible					
Error output signal		NPN or PNP open collector output, 30 V or less and 50 mA or less, voltage drop 2.4 V or less, PLC/relay compatible					
Direct memory setting		1 to 100 kPa (Min. setting width 1 kPa/setting resolution 1 kPa)		5 to 500 kPa (Min. setting width 1 kPa/setting resolution 1 kPa)		9 to 900 kPa (Min. setting width 1 kPa/setting resolution 2 kPa)	
Pressure display	Display method	7-segment LED 3 digits, indicator accuracy: ±2% F.S. or less					
	Display range	0 to 100 kPa		0 to 500 kPa		0 to 900 kPa	
	Display resolution	1 kPa		1 kPa		1 kPa	
Hysteresis	*3	0.5% F.S. or less					
Linearity	*3	±0.3% F.S. or less					
Resolution	*3	0.2% F.S. or less					
Repeatability	*3	0.3% F.S. or less					
Temperature characteristics	Zero point fluctuation	0.15% F.S./°C or less					
	Span fluctuation	0.07% F.S./°C or less					
Max. flow rate (ANR)	*4	60 ℓ/min		400 ℓ/min			
Step response *5	No load	0.2 sec. or less					
Vibration resistance		98 m/s^2 or less					
Ambient temperature		5 to 50°C					
Fluid temperature		5 to 50°C					
Port size		Rc1/4					
Mounting orientation		Free					
Weight		250 g					
Protection circuit		Power reverse connection protection, switch output reverse connection protection, switch output load short-circuit protection					

*1: There is 1% F.S. or less residual pressure when the input signal is 0%. (EVD-1100: 1 kPa, EVD-1500: 5 kPa, EVD-1900: 9 kPa)
*2: Select the analog output or switch output.
*3: The condition of the values above is: 24 ± 0.1 VDC power supply voltage, 25 ± 3°C ambient temperature, no load, working pressure of +50 kPa max. control pressure (EVD-1100)/+100 kPa (EVD-1500, 1900), and 10 to 90% control pressure.
In addition, when the secondary side is a closed circuit, pressure fluctuations will occur if the product is used for blowing or for similar applications.
*4: The characteristics where working pressure is maximum and control pressure is maximum are shown.
*5: The value above is obtained at the max. working pressure and when the step amount changes from { 50% F.S. → 100% F.S.
50% F.S. → 60% F.S.
50% F.S. → 40% F.S.

How to order

EVD-1 [500] - [0] [08] [AN] - [C1L11] - [3] - [P4 / P40]

Ⓐ Pressure control range
Ⓑ Input signal
Ⓒ Port size
Ⓓ Output signal
Ⓔ Option
Ⓕ Power supply voltage

● Discrete option (cable) model No.
EVD- [C1]
Ⓔ Option

● Discrete option (bracket) model No.
EVL- [L11]
Ⓔ Option

Code	Content
Ⓐ Pressure control range *1	
100	0 to 100 kPa
500	0 to 500 kPa
900	0 to 900 kPa
Ⓑ Input signal	
0	0 to 10 VDC
1	0 to 5 VDC
2	4 to 20 mADC
P	Parallel 10 bit
Ⓒ Port size	
08	Rc1/4
Ⓓ Output signal	
AN	1 to 5 VDC analog, error (NPN)
AP	1 to 5 VDC analog, error (PNP)
SN	Switch (NPN), error (NPN)
SP	Switch (PNP), error (PNP)
Ⓔ Option	
Cable option	
Blank	No
C1	Analog 9-conductor, 1 m cable
C3	Analog 9-conductor, 3 m cable
P1	Parallel 15-conductor, 1 m cable
P3	Parallel 15-conductor, 3 m cable
Bracket option attached	
Blank	No
L11	L bracket, wall mounted for exhaust fitting
Ⓕ Power supply voltage	
3	24 VDC

*1: There is 1% F.S. or less residual pressure when the input signal is 0%.
2: Bracket option of EVD-1500/1900--P4 is blank or L11 (L type, wall mounting for exhaust fittings). Standard B1 and L1 types cannot be selected.

Compatibility table by variation

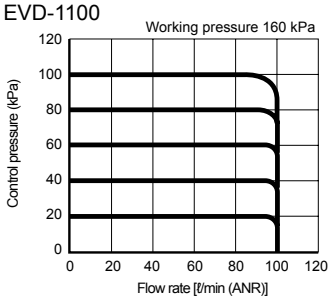
	EVD-1100/1500/1900
Port size	Rc1/4
P4	●
P40	▲

Note: Bracket option for EVD-1500/1900-*-P4 is blank or L11 (L type, wall mounting for exhaust fittings). Standard B1 and L1 types cannot be selected.

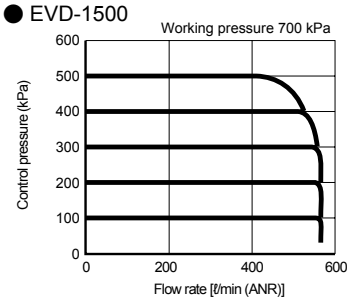
● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

Flow characteristics

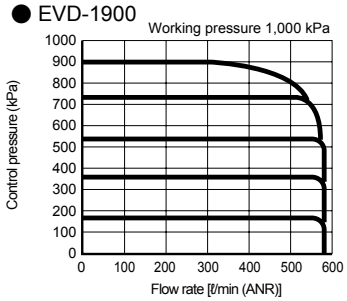
● EVD-1100



● EVD-1500

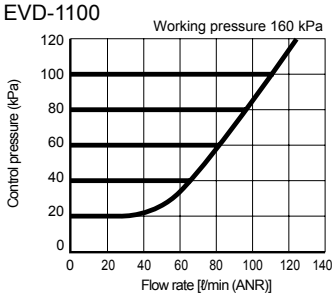


● EVD-1900

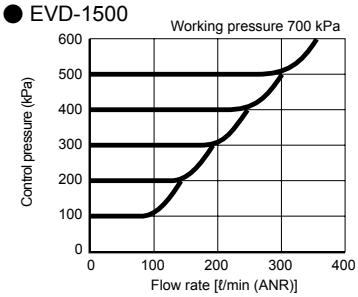


Relief characteristics

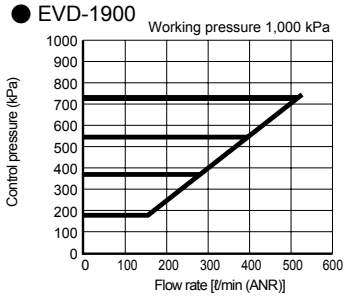
● EVD-1100



● EVD-1500



● EVD-1900



Clean air components

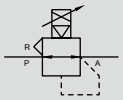


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Digital electro pneumatic regulator

EVD-3000 Series

JIS symbol



Specifications

Descriptions		EVD-3100-*08 □ EVD-3100-*10 □ Analog (*...0/1/2)	EVD-3100-P08 □ EVD-3100-P10 □ Parallel	EVD-3500-*08 □ EVD-3500-*10 □ Analog (*...0/1/2)	EVD-3500-P08 □ EVD-3500-P10 □ Parallel	EVD-3900-*08 □ EVD-3900-*10 □ Analog (*...0/1/2)	EVD-3900-P08 □ EVD-3900-P10 □ Parallel
Working fluid		Clean compressed air (JIS B 8392-1:2012 Grade 1.3.2 or equivalent)					
Max. working pressure		160 kPa		700 kPa		1000 kPa	
Min. working pressure		Set pressure +50 kPa		Set pressure +100 kPa			
Proof pressure	Inlet	240 kPa		1050 kPa		1500 kPa	
	Output side	150 kPa		750 kPa		1350 kPa	
Pressure control range *1		0 to 100 kPa		0 to 500 kPa		0 to 900 kPa	
Power supply voltage		24 VDC ± 10% (stabilized power supply with ripple rate 1% or less)					
Current consumption		0.15 A or less (0.6 A or less rush current when the power is turned ON)					
Input signal (input impedance)		0 to 10 VDC(6.7 kΩ) 0 to 5 VDC(10 kΩ) 4 to 20 mADC(250 Ω)	10 bit	0 to 10 VDC(6.7 kΩ) 0 to 5 VDC(10 kΩ) 4 to 20 mADC(250 Ω)	10 bit	0 to 10 VDC(6.7 kΩ) 0 to 5 VDC(10 kΩ) 4 to 20 mADC(250 Ω)	10 bit
Preset input		8 points	No	8 points	No	8 points	No
Output signal *2		Output accuracy: ±6% F.S. or less, analog output: 1 to 5 VDC (connecting load impedance 500 kΩ and over)					
		Switch output: NPN or PNP open collector output, 30 V or less and 50 mA or less, voltage drop 2.4 V or less, PLC/relay compatible					
Error output signal		NPN or PNP open collector output, 30 V or less and 50 mA or less, voltage drop 2.4 V or less, PLC/relay compatible					
Direct memory setting		1 to 100 kPa (Min. setting width 1 kPa/setting resolution 1 kPa)		5 to 500 kPa (Min. setting width 1 kPa/setting resolution 1 kPa)		9 to 900 kPa (Min. setting width 1 kPa/setting resolution 2 kPa)	
Pressure display	Display method	7-segment LED 3 digits, indicator accuracy: ±2% F.S. or less					
	Display range	0 to 100 kPa		0 to 500 kPa		0 to 900 kPa	
	Display resolution	1 kPa		1 kPa		1 kPa	
Hysteresis *3		0.5% F.S. or less					
Linearity *3		±0.3% F.S. or less					
Resolution *3		0.2% F.S. or less					
Repeatability *3		0.3% F.S. or less					
Temperature characteristics	Zero point fluctuation	0.15% F.S./°C or less					
	Span fluctuation	0.07% F.S./°C or less					
Max. flow rate (ANR) *4		700 ℓ/min		1500 ℓ/min			
Step response *5	No load	0.2 sec. or less					
Vibration resistance		98 m/s^2 or less					
Ambient temperature		5 to 50°C					
Fluid temperature		5 to 50°C					
Port size	IN, OUT port	Port size option 08: Rc1/4, 10: Rc3/8					
	EXH port	Rc3/8					
Mounting orientation		Free					
Weight		450 g					
Protection circuit		Power reverse connection protection, switch output reverse connection protection, switch output load short-circuit protection					

*1: There is 1% F.S. or less residual pressure when the input signal is 0%. (EVD-3100: 1 kPa, EVD-3500: 5 kPa, EVD-3900: 9 kPa)
*2: Select the analog output or switch output.
*3: The condition of the values above is: 24 ± 0.1 VDC power supply voltage, 25 ± 3°C ambient temperature, no load, working pressure of +50 kPa max. control pressure (EVD-3100)/+100 kPa (EVD-3500, 3900), and 10 to 90% control pressure. In addition, when the secondary side is a closed circuit, pressure fluctuations will occur if the product is used for blowing or for similar applications.
*4: The characteristics where working pressure is maximum and control pressure is maximum are shown.
*5: The value above is obtained at the max. working pressure and when the step amount changes from { 50% F.S. → 100% F.S. / 50% F.S. → 60% F.S. / 50% F.S. → 40% F.S.

Compatibility table by variation

	EVD-3100/3500/3900
Port size	Rc1/4, Rc3/8
P4	●
P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

EVD-3 **500** - **0** **08** **AN** - **C1B3** - **3** - **P4 P40**

Code	Content
Ⓐ Pressure control range *1	
100	0 to 100 kPa
500	0 to 500 kPa
900	0 to 900 kPa
Ⓑ Input signal	
0	0 to 10 VDC
1	0 to 5 VDC
2	4 to 20 mADC
P	Parallel 10 bit
Ⓒ Port size (IN, OUT)	
08	Rc1/4
10	Rc3/8
Ⓓ Output signal	
AN	1 to 5 VDC analog, error (NPN)
AP	1 to 5 VDC analog, error (PNP)
SN	Switch (NPN), error (NPN)
SP	Switch (PNP), error (PNP)
Ⓔ Option	
Cable option	
Blank	No
C1	Analog 9-conductor, 1 m cable
C3	Analog 9-conductor, 3 m cable
P1	Parallel 15-conductor, 1 m cable
P3	Parallel 15-conductor, 3 m cable
Bracket option attached	
Blank	No
B3	B bracket, floor mounted
L3	L bracket, wall mounted
Ⓕ Power supply voltage	
3	24 VDC

Ⓐ Pressure control range
Ⓑ Input signal
Ⓒ Port size (IN, OUT)
Ⓓ Output signal
Ⓔ Option
Ⓕ Power supply voltage

*1: There is 1% F.S. or less residual pressure when the input signal is 0%.
*2: Made to order. Contact CKD for details.

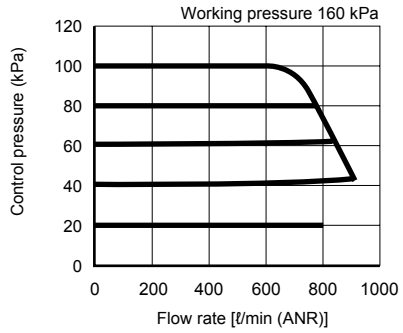
● Discrete option (cable, bracket) model No.

EVD- **C1**

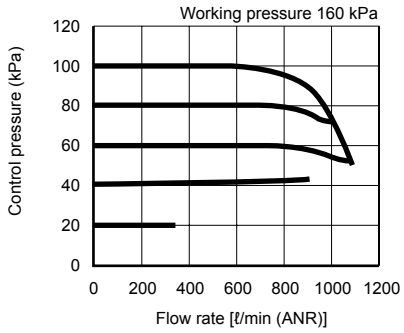
Ⓔ Option

Flow characteristics

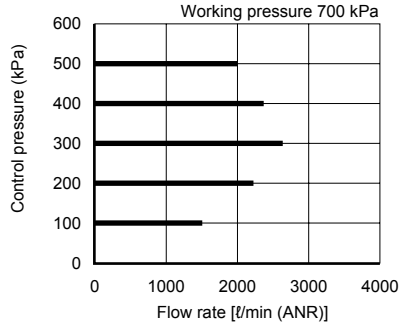
● EVD-3100-□08



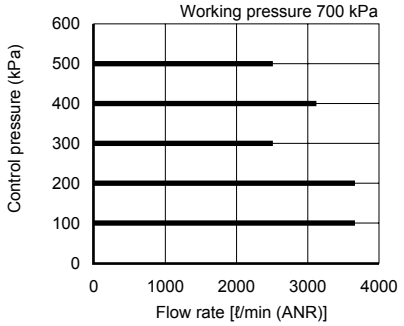
● EVD-3100-□10



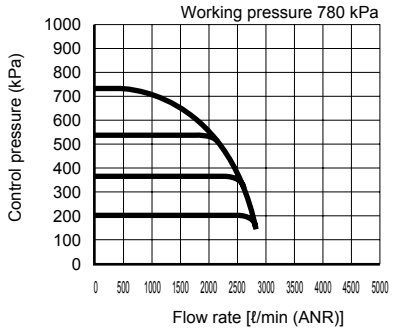
● EVD-3500-□08



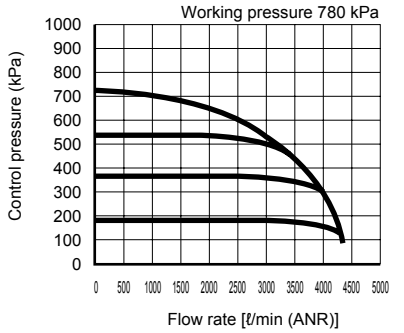
● EVD-3500-□10



● EVD-3900-□08

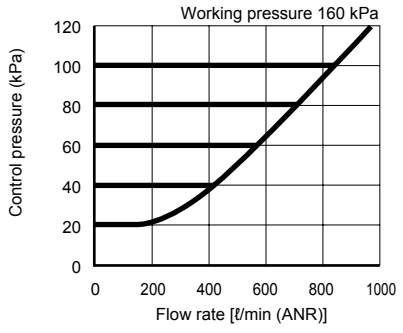


● EVD-3900-□10

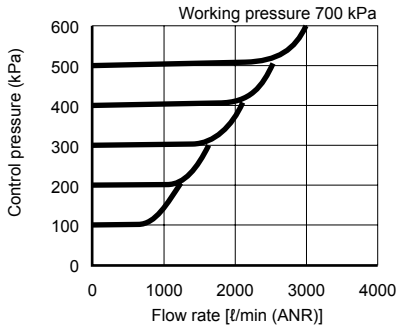


Relief characteristics

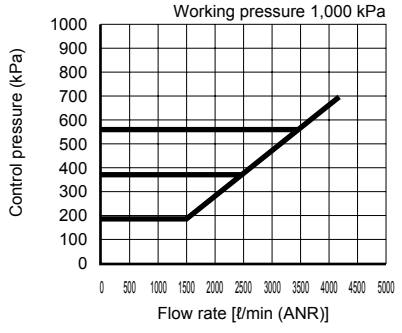
● EVD-3100

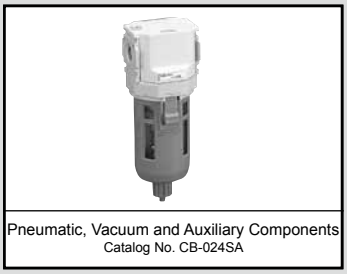


● EVD-3500



● EVD-3900





Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Air filter

F1000/F2000/F3000
F4000/F6000/F8000-W Series

New Series using 5 μm elements for dust removal and tar removal.
0.3 μm tar removing element (excluding F1000 Series) ● Port size: 1/8 to 1

JIS symbol 

RoHS CAD

Specifications

Descriptions	F1000-W	F2000-W	F3000-W	F4000-W	F6000-W	F8000-W
Appearance						
Working fluid	Compressed air					
Max. working pressure MPa	1.0					
Proof pressure MPa	1.5					
Ambient/fluid temperatures °C	5 to 60					
Filtration μm	5		5 or 0.3			
Drain capacity cm^3	12	25	45	80	80	80 (Note)
Port size Rc	1/8, 1/4 (3/8 uses an adaptor)	1/4, 3/8 (1/2 uses an adaptor)		1/4, 3/8, 1/2 (3/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)
Weight kg	0.087	0.24	0.25	0.45	0.9	1.16
Standard accessories	Bowl guard					

Note: Up to 170 cm^3 is stored with the manual drain cock only.

Compatibility table by variation

	F1000-W	F2000-W	F3000-W	F4000-W	F6000-W	F8000-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1	Rc3/4,1
P4	●	●	●	●	●	●
P40		●	●	●	●	

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

*1: Auto-drain is not available.
*2: Metal bowl is not available.

How to order

F1000 - 6 - W - Z P4/P40 - ○ - A6W ○

* Refer to "Pneumatic, Vacuum and Auxiliary Components" (catalog No.CB-024SA) for options.

Code		Content	Ⓐ Model No. F1000	F2000	F3000	F4000	F6000	F8000
Ⓑ Port size								
6		Rc1/8	●					
8		Rc1/4	●	●	●	●		
10		Rc3/8		●	●	●		
15		Rc1/2				●		
20		Rc3/4					●	●
25		Rc1					●	●
Ⓒ Option								
Drainage *3	**Blank**	With manual drain cock	●	●	●	●	●	●
Bowl material *4	**Blank**	Polycarbonate bowl	●	●	●	●	●	●
	Z	Nylon bowl	●	●	●	●	●	●
Element	**Blank**	5 µm	●	●	●	●	●	●
	Y	0.3 µm (submicron)			●	●	●	●
Flow direction	**Blank**	Standard flow (left → right)	●	●	●	●	●	●
	X1	Reverse flow (right → left)	●	●	●	●	●	●
Ⓓ Pipe adaptor set (attached)								***1, *2**
Blank		Not attached	●	●	●	●	●	●
A6*W		1/8 pipe adaptor set	●					
A8*W		1/4 pipe adaptor set	●	●	●	●		
A10*W		3/8 pipe adaptor set	●	●	●	●		
A15*W		1/2 pipe adaptor set		●	●	●		
A20*W		3/4 pipe adaptor set				●	●	●
A25*W		1 pipe adaptor set					●	●
A32*W		1 1/4 pipe adaptor set					●	●
Ⓔ Bracket (attached)								**Page 208**
Blank		Not attached	●	●	●	●	●	●
BW		C bracket	●	●	●	●	●	●

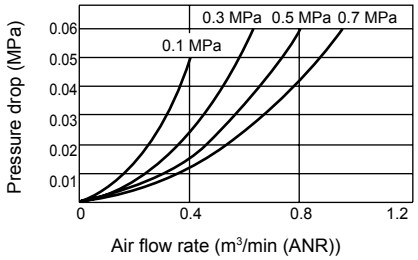
Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Pipe adaptor set (attachments)
Ⓔ Bracket (attached)

⚠ Precautions for model No. selection

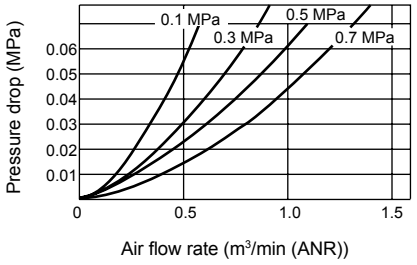
*1: The pipe adaptor set and C bracket cannot be used together.
*2: The joiner set is attached with the pipe adaptor set.
*3: Auto-drain is not available.
*4: Metal bowl is not available.

Flow characteristics

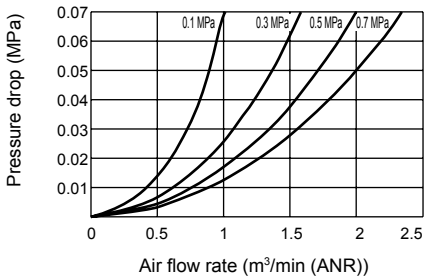
● F1000-6-W



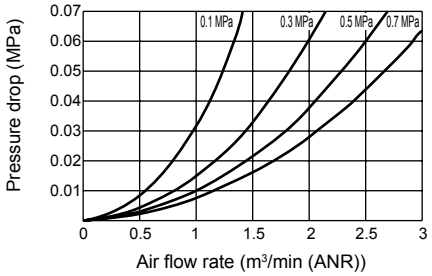
● F1000-8-W



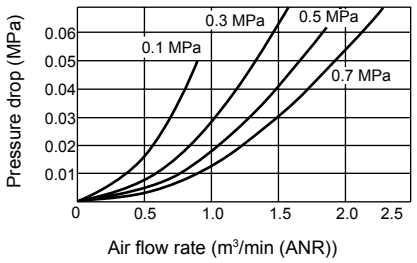
● F2000-8-W



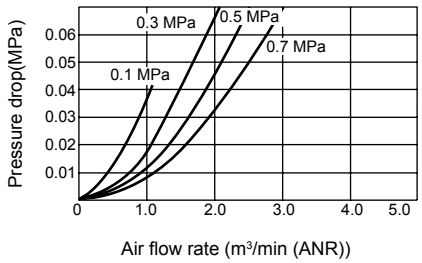
● F2000-10-W



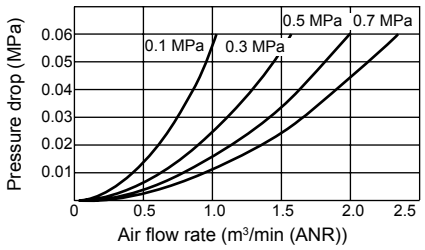
● F3000-8-W



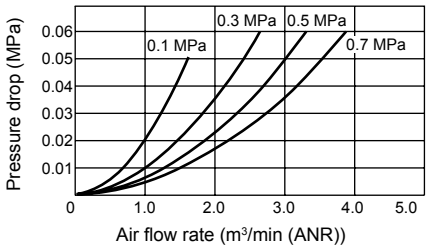
● F3000-10-W



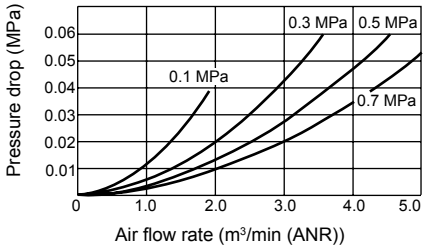
● F4000-8-W



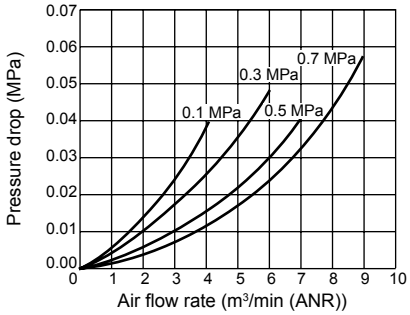
● F4000-10-W



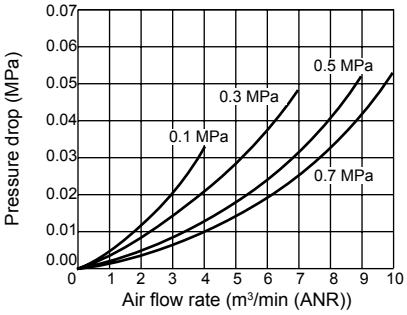
● F4000-15-W



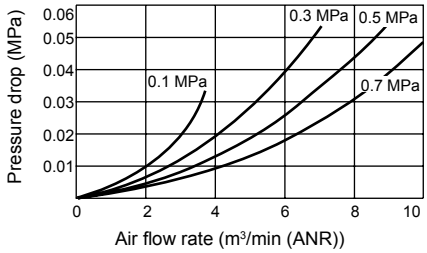
● F6000-20-W



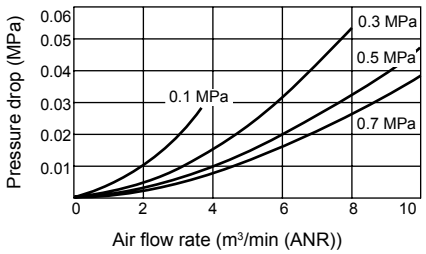
● F6000-25-W



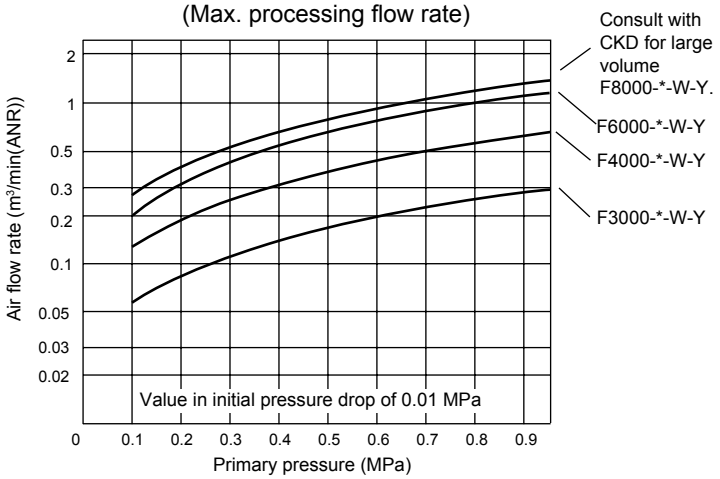
● F8000-20-W

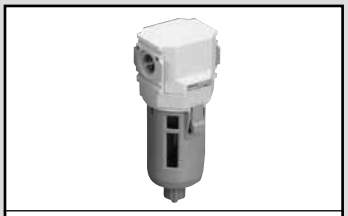


● F8000-25-W



● F3000
F4000
F6000
F8000 -*-W-Y (0.3 μm element)





Oil mist filter

M1000/M2000/M3000 M4000/M6000/M8000-W Series

Ideal for circuits susceptible to oil, including measuring, and instrumentation circuits.

● Port size: 1/8 to 1

JIS symbol 

RoHS CAD

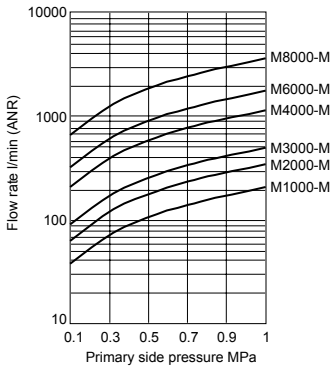
Specifications

Descriptions	M1000-W	M2000-W	M3000-W	M4000-W	M6000-W	M8000-W
Appearance						
Working fluid	Compressed air					
Working pressure MPa	0.1 to 1.0					
Proof pressure MPa	1.5					
Drain capacity cm^3	3	25	45	80	80	80
Port size Rc	1/8, 1/4 (3/8 uses an adaptor)	1/4, 3/8 (1/2 uses an adaptor)		1/4, 3/8, 1/2 (3/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)
Weight kg	0.096	0.25	0.28	0.52	0.95	1.35
Standard accessories	Bowl guard					

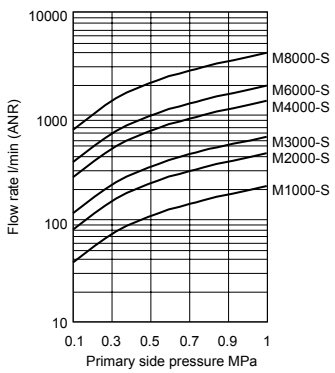
Mantle option name		Blank (M type)	S (S type)	X (X type)
Max. processing flow rate *1 ℓ/min(ANR) Primary pressure 0.7 MPa	M1000-□-W	150	150	150
	M2000-□-W	250	310	310
	M3000-□-W	360	450	450
	M4000-□-W	825	1000	1000
	M6000-□-W	1270	1400	1400
	M8000-□-W	2600	2900	2900
Ambient/fluid temperatures °C		5 to 60		5 to 30
Filtration μm		0.01 (nominal)	0.3	Suction by activated carbon
Secondary side oil concentration mg/m^3		0.01 or less (0.1 or less after oil saturation) *2, *3	0.5 or less *2	0.003 or less *4
Mantle (element) change		1 year (6000 hours) or pressure drop 0.1 MPa		- *5

*1: Use within the max. processing flow rate.
If the max. processing flow rate is exceeded temporarily, or if the filter is installed at a location with high levels of pulsation, the mantle could be damaged or oil or drainage, etc., could splatter to the secondary side and result in a terminal malfunction.
*2: The secondary oil concentration is the value when the primary oil concentration is 30 mg/m^3 and inlet air temperature is 21°C.
*3: Install an oil mist filter (S type) as a pre-filter on the primary side to prevent early clogging.
*4: When an oil mist filter (M Series M type) is installed on the primary side.
*5: The mantle (element) replacement period differs depending on the odor density in compressed air, and thus cannot be clearly indicated.
Consider the total period from initial installation to when the smell of oil is confirmed as the effective deodorizing period, and replace at the same time as the M type or control with usage time. (When the inlet temperature is 21°C, replace at the control time or 1,000 hours, whichever comes first)
Keep the primary air temperature at 30°C or less. The deodorizing effect will drop if temperature is high, so provide heat dissipation measures.

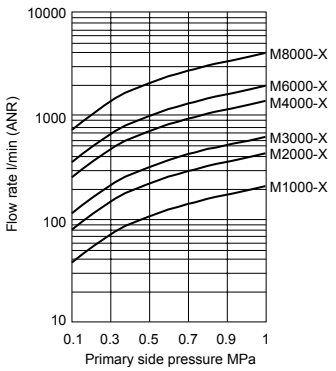
● M*000-W-M



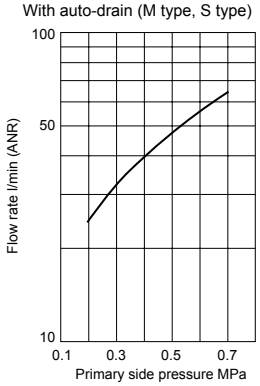
● M*000-W-S



● M*000-W-X



● M1000-W-F1
With auto-drain (M type, S type)



Compatibility table by variation

	M1000-W	M2000-W	M3000-W	M4000-W	M6000-W	M8000-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1	Rc3/4,1
P4	●	●	●	●	●	●
P40		●	●	●	●	

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

*1: Auto-drain is not available.
*2: Metal bowl is not available.
*3: With M4000 differential pressure indicator option is not available.

How to order

M1000 - 6 - W - S P4 P40 - A6W

Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Pipe adaptor set (attachments)
Ⓔ Bracket (attached)

* Refer to "Pneumatic, Vacuum and Auxiliary Components" (catalog No.CB-024SA) for options.

Code		Content	Ⓐ Model No. M1000	M2000	M3000	M4000	M6000	M8000
Ⓑ Port size								
6		Rc1/8	●					
8		Rc1/4	●	●	●	●		
10		Rc3/8		●	●	●		
15		Rc1/2				●		
20		Rc3/4					●	●
25		Rc1					●	●
Ⓒ Option								
Drain discharge	**Blank**	With manual drain cock *3	●	●	●	●	●	●
Bowl material *4	**Blank**	Polycarbonate bowl	●	●	●	●	●	●
	Z	Nylon bowl	●	●	●	●	●	●
Mantle (Element)	**Blank**	M type (nominal 0.01 µm; remaining oil 0.01 mg/m^3)	●	●	●	●	●	●
	S	S type (nominal 0.3 µm; remaining oil 0.5 mg/m^3)	●	●	●	●	●	●
	X	X type (deodorization; remaining oil 0.003 mg/m^3)	●	●	●	●	●	●
Flow direction	**Blank**	Standard flow (left → right)	●	●	●	●	●	●
	X1	Reverse flow (right → left)	●	●	●	●	●	●
Ⓓ Pipe adaptor set (attached)								*1, *2
Blank		Not attached	●	●	●	●	●	●
A6*W		1/8 pipe adaptor set	●					
A8*W		1/4 pipe adaptor set	●	●	●	●		
A10*W		3/8 pipe adaptor set	●	●	●	●		
A15*W		1/2 pipe adaptor set		●	●	●		
A20*W		3/4 pipe adaptor set				●	●	●
A25*W		1 pipe adaptor set					●	●
A32*W		1 1/4 pipe adaptor set					●	●
Ⓔ Bracket (attached)								Page 208
Blank		Not attached	●	●	●	●	●	●
BW		C bracket	●	●	●	●	●	●

⚠ Precautions for model No. selection

*1: The pipe adaptor set and C bracket cannot be used together.
*2: The joiner set is attached with the pipe adaptor set.
*3: Auto-drain is not available.
*4: Metal bowl is not available.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Regulator

R1000/R2000/R3000 R4000/R6000/R8000-W Series

Compact, pressure gauge embedded.

● Port size: 1/8 to 1

JIS symbol 

Specifications

Descriptions	R1000-W	R2000-W	R3000-W	R4000-W	R6000-W	R8000-W
Working fluid	Compressed air					
Max. working pressure MPa	1.0					
Proof pressure MPa	1.5					
Ambient/fluid temperatures °C	5 to 60					
Set pressure MPa	0.05 to 0.85					
Pressure relief	With relief mechanism (R1000, R8000 are non-relief only)					
Port size Rc	1/8, 1/4 (3/8 uses an adaptor)	1/4, 3/8 (1/2 uses an adaptor)	1/4, 3/8 (1/2 uses an adaptor)	1/4, 3/8, 1/2 (3/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)
Weight kg	0.16	0.29	0.51	0.75	1.1	1.6
Standard accessories	Panel mounting nut					

Compatibility table by variation

	R1000-W	R2000-W	R3000-W	R4000-W	R6000-W	R8000-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1	Rc3/4,1
P4	●	●	●	●	●	●
P40		▲	▲	▲	▲	

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

*1: Pressure gauge/pressure sensor must be ordered separately. (Pressure gauge option is "T", "T8", "T6" only)
*2: R1 option is not available.
*3: R6000 dimensions are different from the standard dimensions.
*4: For pressure adjustment springs without gas contact and pressure adjustment screw units in P40, zinc plating is used.
*5: R2 option is not available.
*6: For R1000 and R8000, only non-relief (option code: N) is available.

How to order

* Refer to "Pneumatic, Vacuum and Auxiliary Components" (catalog No.CB-024SA) for options.

R1000 - **6** - **W** - **NT** **P4 / P40** - **A6W** [ ]

Ⓐ Model No. Ⓑ Port size Ⓒ Option Ⓓ Pipe adaptor set (attachments) Ⓔ Other attachments

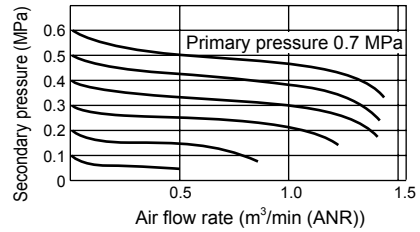
Code		Content	Ⓐ Model No. R1000	R2000	R3000	R4000	R6000	R8000
Ⓑ Port size								
6		Rc1/8	●					
8		Rc1/4	●	●	●	●		
10		Rc3/8		●	●	●		
15		Rc1/2				●		
20		Rc3/4					●	●
25		Rc1					●	●
Ⓒ Option								*1
Pressure range	**Blank**	0.05 to 0.85 MPa	●	●	●	●	●	●
	L	0.05 to 0.35 MPa	●	●	●	●	●	●
Pressure relief	**Blank**	With relief mechanism		●	●	●	●	
	N	Non-relief	●	●	●	●	●	●
Pressure gauge	**T**	Pressure gauge port (1/4) is assembled sealed	●	●	●	●	●	●
	T8	Pressure gauge port (1/4) is left open	●	●	●	●	●	●
	T6	Pressure gauge port (1/8) is left open	●	●	●	●	●	●
Flow direction	**Blank**	Standard flow (left → right)	●	●	●	●	●	●
	X1	Reverse flow (right → left)	●	●	●	●	●	●
Ⓓ Pipe adaptor set (attached)								*2, *3
Blank		Not attached	●	●	●	●	●	●
A6*W		1/8 pipe adaptor set	●					
A8*W		1/4 pipe adaptor set	●	●	●	●		
A10*W		3/8 pipe adaptor set	●	●	●	●		
A15*W		1/2 pipe adaptor set		●	●	●		
A20*W		3/4 pipe adaptor set				●	●	●
A25*W		1 pipe adaptor set					●	●
A32*W		1 1/4 pipe adaptor set					●	●
Ⓔ Other attachments								Page 208
Blank		Not attached	●	●	●	●	●	●
BW		C bracket	●	●	●	●	●	●
B3W		L bracket *4	●	●	●	●	●	
B4W		B bracket *5		●				

⚠ Precautions for model No. selection

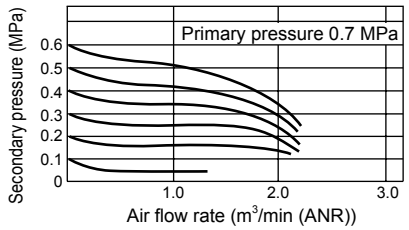
*1: When selecting options for several items, list options in order from the top.
*2: The pipe adaptor set and C bracket cannot be used together.
*3: The joiner set is attached with the pipe adaptor set.
*4: For details on mounting the L bracket, refer to 2. Regulator of "⚠ Cautions and Installation & Adjustment" described in the "Pneumatic, Vacuum and Auxiliary Components" (Catalog No. CB-024SA).
*5: Refer to "Pneumatic, Vacuum and Auxiliary Components (Catalog No. CB-024SA)" for B type brackets.

Flow characteristics

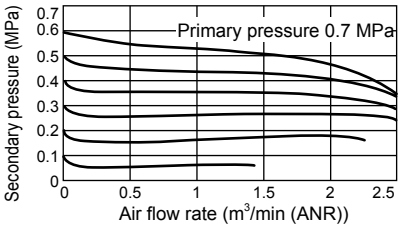
● R1000-6-W



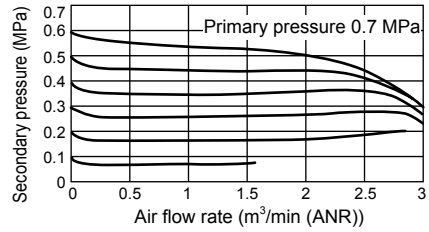
● R1000-8-W



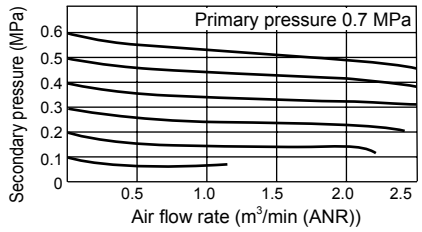
● R2000-8-W



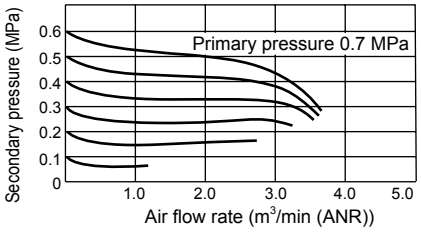
● R2000-10-W



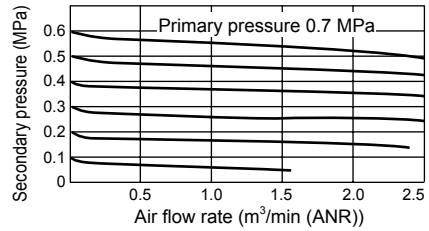
● R3000-8-W



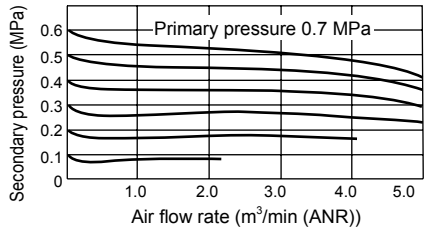
● R3000-10-W



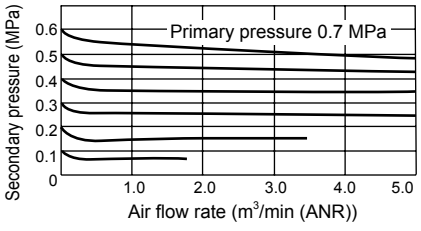
● R4000-8-W



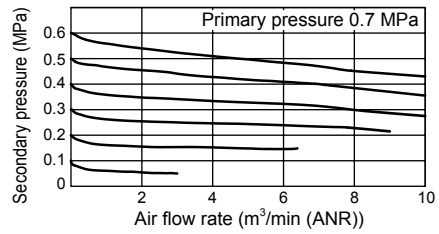
● R4000-10-W



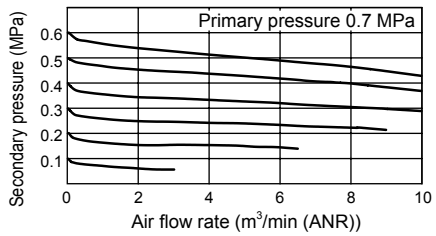
● R4000-15-W



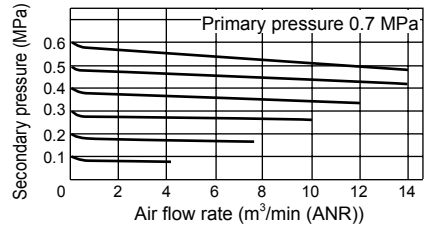
● R6000-20-W



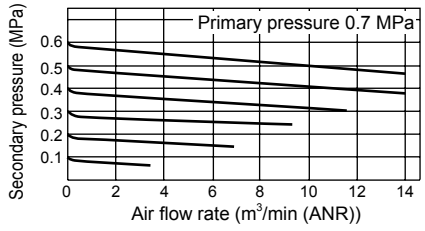
● R6000-25-W



● R8000-20-W

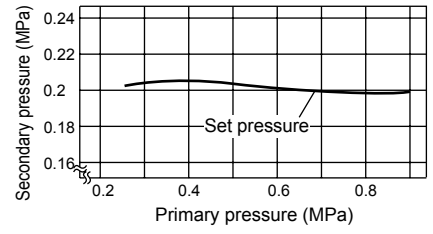


● R8000-25-W

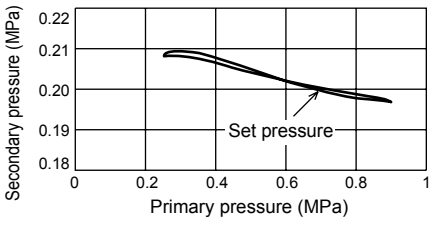


Pressure characteristics

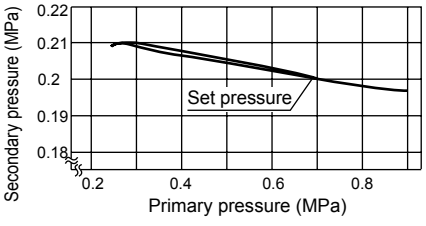
● R1000-W



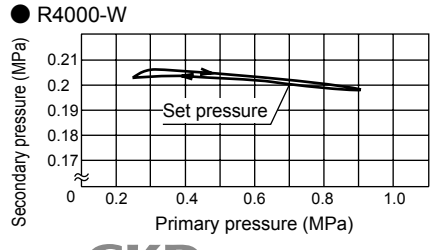
● R2000-W



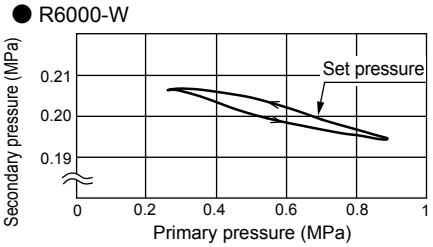
● R3000-W



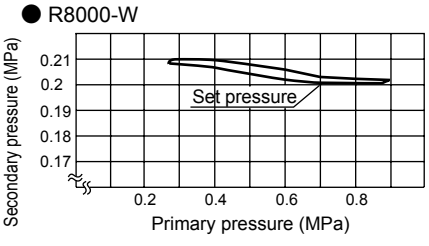
● R4000-W



● R6000-W

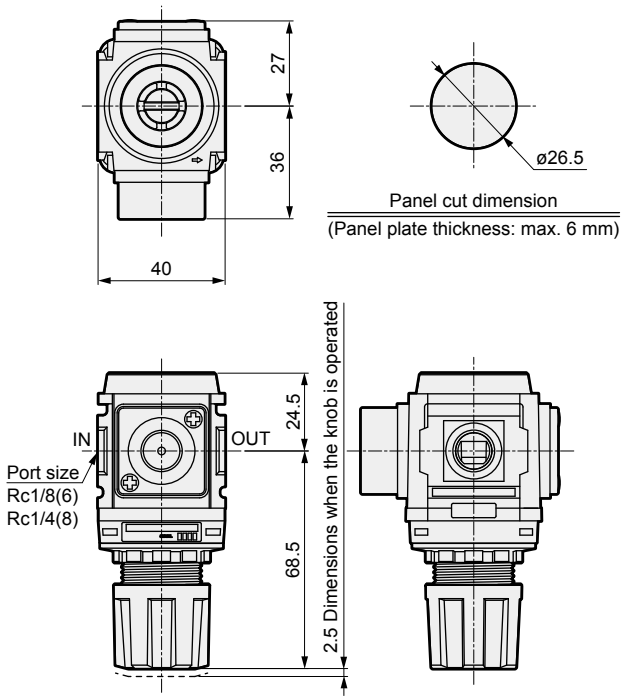


● R8000-W

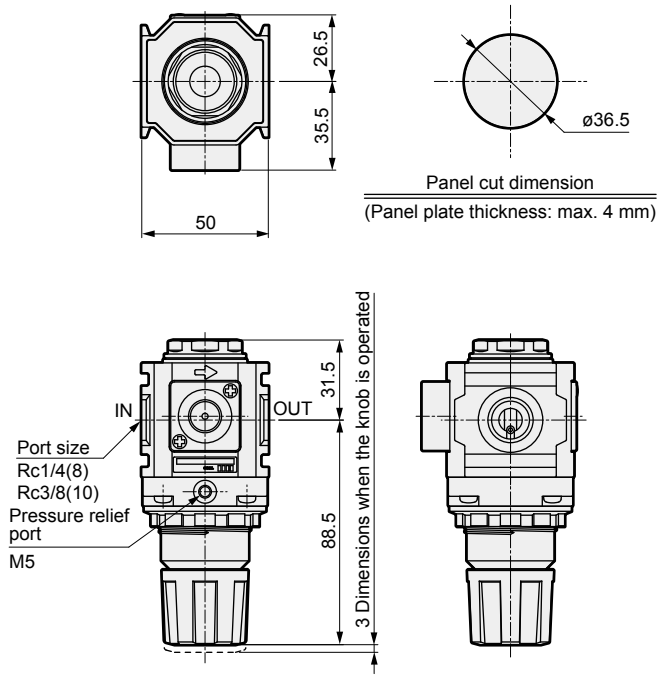


Dimensions

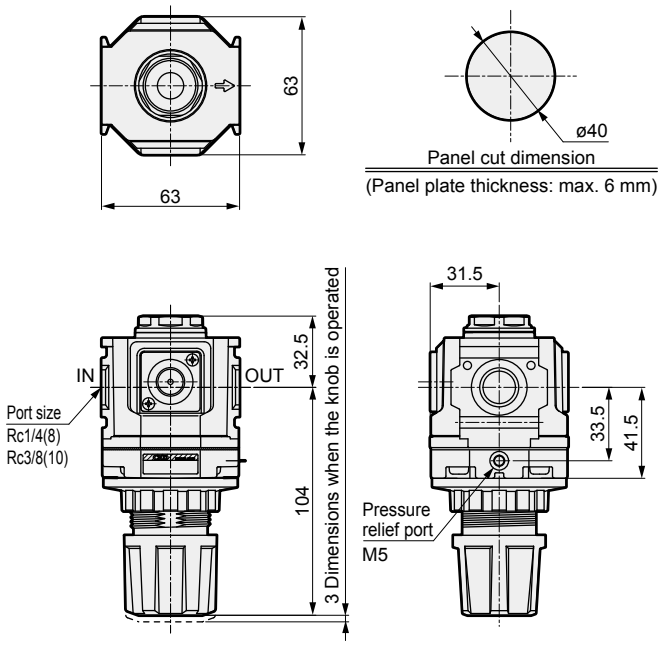
● R1000-*-W-*P4-*



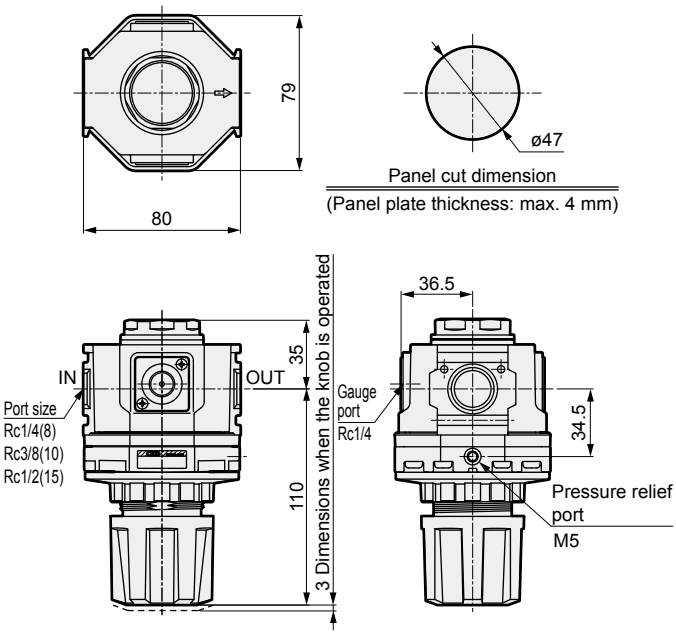
● R2000-*-W-*P4-*



● R3000-*-W-*P4-*

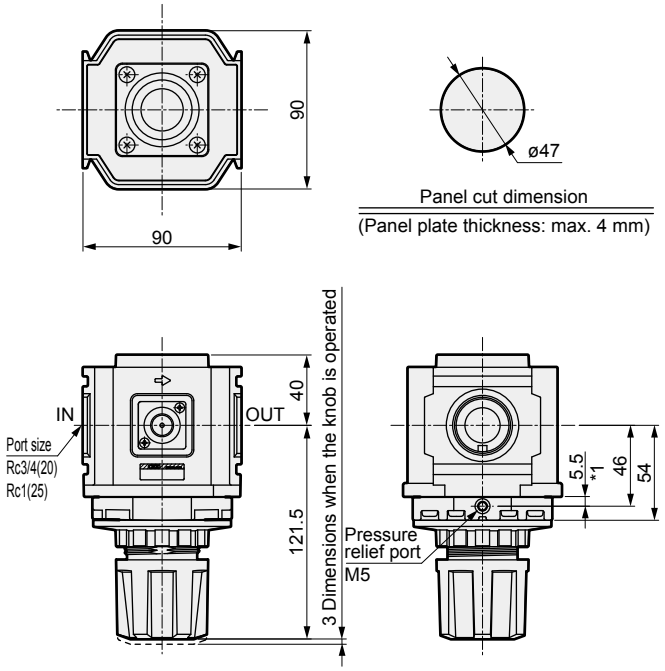


● R4000-*-W-*P4-*

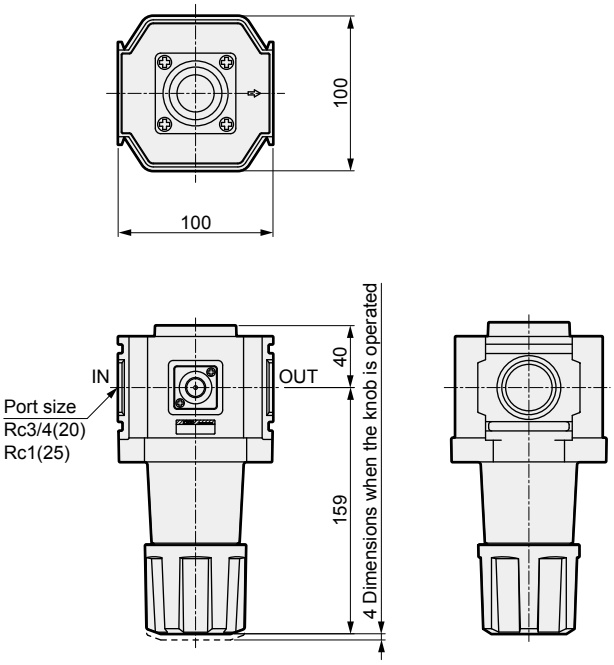


Dimensions CAD

● R6000-*-W-*P4-*



● R8000-*-W-*P4-*





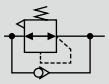
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Reverse regulator

R1100/R2100/R3100 R4100/R6100/R8100-W Series

From secondary pressure to primary side with reverse flow function built in.

● Port size: 1/8 to 1

JIS symbol 

RoHS

Specifications

Descriptions	R1100-W	R2100-W	R3100-W	R4100-W	R6100-W	R8100-W
Working fluid	Compressed air					
Max. working pressure MPa	1.0					
Proof pressure MPa	1.5					
Ambient/fluid temperatures °C	5 to 60					
Set pressure (*1) MPa	0.05 to 0.85					
Pressure relief	With relief mechanism (R1100, R8100 are non-relief only)					
Port size Rc	1/8, 1/4 (3/8 uses an adaptor)	1/4, 3/8 (1/2 uses an adaptor)	1/4, 3/8 (1/2 uses an adaptor)	1/4, 3/8, 1/2 (3/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)
Weight kg	0.16	0.29	0.51	0.75	1.1	1.6
Standard accessories	Panel mounting nut					

*1: Refer to the set pressure range for the back pressure on the following page when selecting the model.
*2: Check that the primary pressure is at least 0.05 MPa more than the secondary pressure.

Compatibility table by variation

	R1100-W	R2100-W	R3100-W	R4100-W	R6100-W	R8100-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1	Rc3/4,1
P4	●	●	●	●	●	●
P40		▲	▲	▲	▲	

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

*1: Pressure gauge/pressure sensor must be ordered separately. (Pressure gauge option is "T", "T8", "T6" only)
*2: R1 option is not available.
*3: For pressure adjustment springs without gas contact and pressure adjustment screw units in P40, zinc plating is used.
*4: R2 option is not available.
*5: For R1100 and R8100, only non-relief (option code: N) is available.

How to order

* Refer to "Pneumatic, Vacuum and Auxiliary Components" (catalog No.CB-024SA) for options.

R1100 - 6 - W - NT - P4 / P40 - A6W [ ]

Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Pipe adaptor set (attachments)
Ⓔ Other attachments

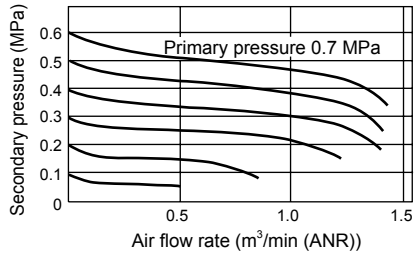
Code		Content	Ⓐ Model No. R1100	R2100	R3100	R4100	R6100	R8100
Ⓑ Port size								
6		Rc1/8	●					
8		Rc1/4	●	●	●	●		
10		Rc3/8		●	●	●		
15		Rc1/2				●		
20		Rc3/4					●	●
25		Rc1					●	●
Ⓒ Options								*1, *2
Pressure range	**Blank**	0.05 to 0.85 MPa	●	●	●	●	●	●
	L	0.05 to 0.35 MPa *3	●	●	●	●	●	●
Pressure relief	**Blank**	With relief mechanism		●	●	●	●	
	N	Non-relief	●	●	●	●	●	●
Pressure gauge	**T**	Pressure gauge port (1/4) is assembled sealed	●	●	●	●	●	●
	T8	Pressure gauge port (1/4) is left open	●	●	●	●	●	●
	T6	Pressure gauge port (1/8) is left open	●	●	●	●	●	●
Flow direction	**Blank**	Standard flow (left → right)	●	●	●	●	●	●
	X1	Reverse flow (right → left)	●	●	●	●	●	●
Ⓓ Pipe adaptor set (attached)								*3, *4
Blank		Not attached	●	●	●	●	●	●
A6*W		1/8 pipe adaptor set	●					
A8*W		1/4 pipe adaptor set	●	●	●	●		
A10*W		3/8 pipe adaptor set	●	●	●	●		
A15*W		1/2 pipe adaptor set		●	●	●		
A20*W		3/4 pipe adaptor set				●	●	●
A25*W		1 pipe adaptor set					●	●
A32*W		1 1/4 pipe adaptor set					●	●
Ⓔ Other attachments								Page 208
Blank		Not attached	●	●	●	●	●	●
BW		C bracket	●	●	●	●	●	●
B3W		L bracket *5	●	●	●	●	●	
B4W		B bracket *6		●				

⚠ Precautions for model No. selection

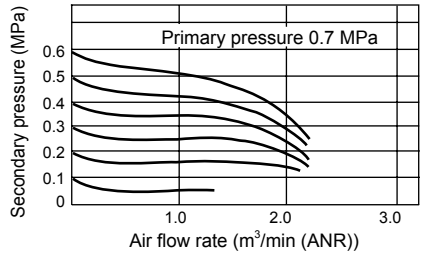
*1: When selecting options for several items, list options in order from the top.
***2: Positions of check valve and pressure gauge mounting port cannot be changed. If the IN and OUT directions must be reversed, indicate "X1" at the end of the option field.**
*3: The pipe adaptor set and C bracket cannot be used together.
*4: The joiner set is attached with the pipe adaptor set.
*5: For details on mounting the L bracket, refer to 2. Regulator of "⚠ Cautions and Installation & Adjustment" described in the "Pneumatic, Vacuum and Auxiliary Components" (Catalog No. CB-024SA).
*6: Refer to "Pneumatic, Vacuum and Auxiliary Components (Catalog No. CB-024SA)" for B brackets.

Flow characteristics

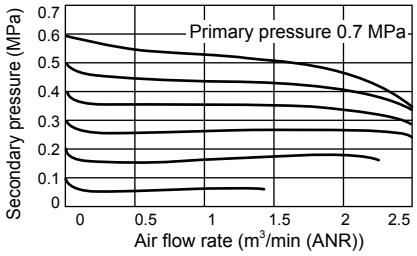
● R1100-6-W



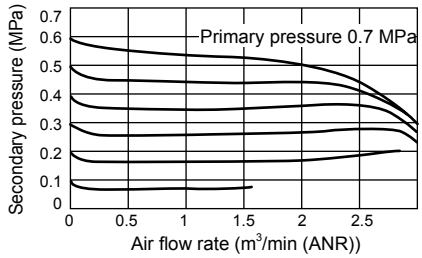
● R1100-8-W



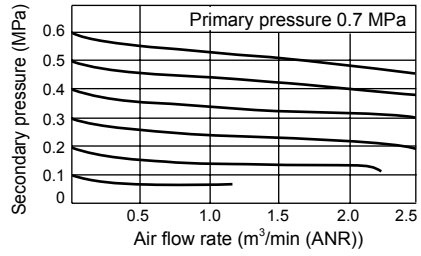
● R2100-8-W



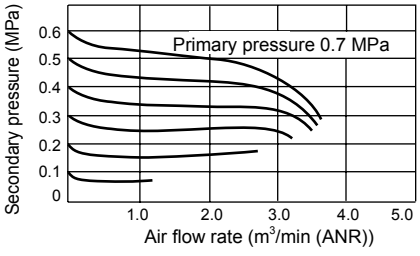
● R2100-10-W



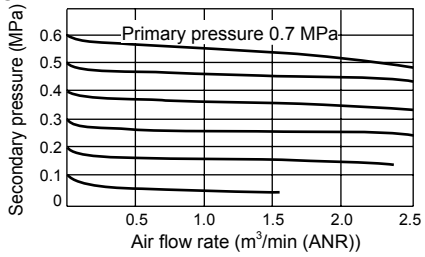
● R3100-8-W



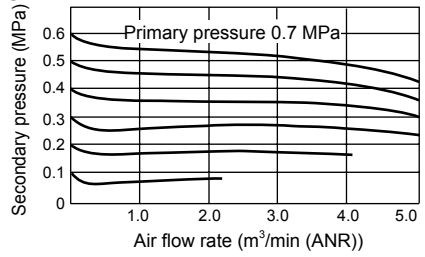
● R3100-10-W



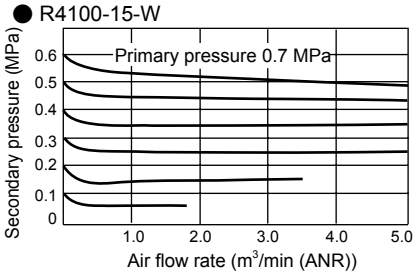
● R4100-8-W



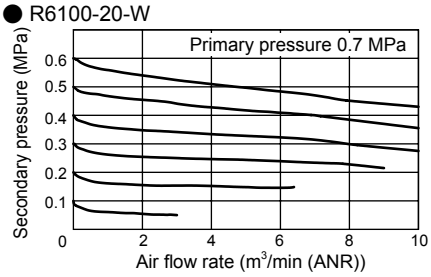
● R4100-10-W



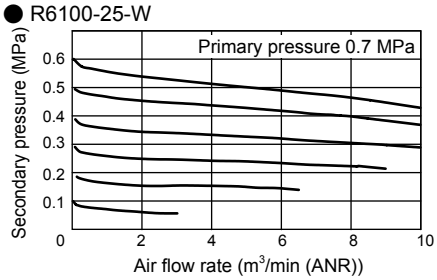
● R4100-15-W



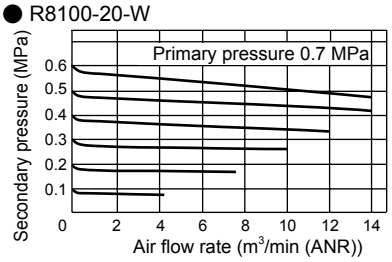
● R6100-20-W



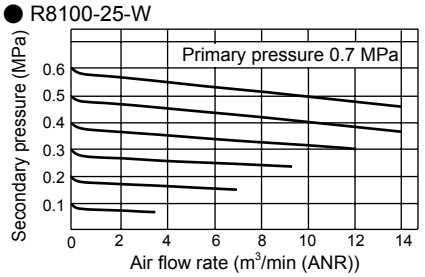
● R6100-25-W



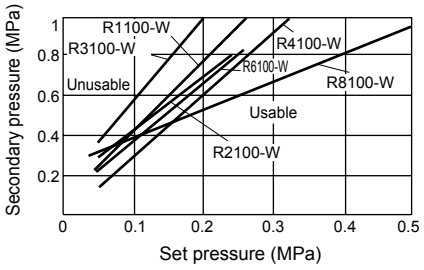
● R8100-20-W



● R8100-25-W



● Set pressure range to back pressure

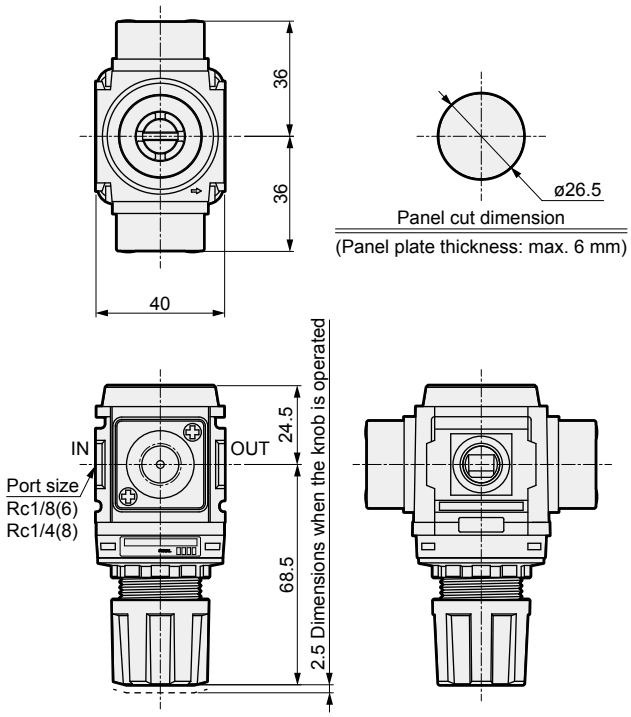


Note: The area above the graph line shows the unusable range and that below the graph line shows the usable range.

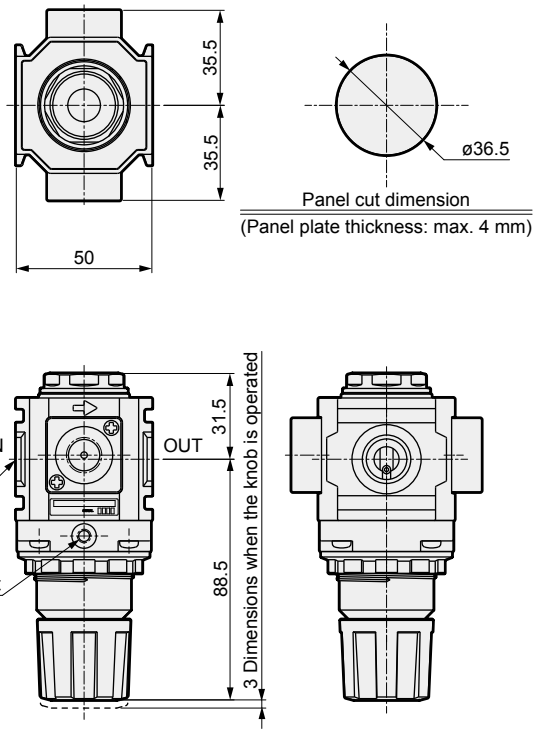
Example: If R4100-W is set to the set pressure 0.2 MPa and the secondary back pressure is 0.6 MPa and over, the secondary pressure will not be released to the primary side.

Dimensions CAD

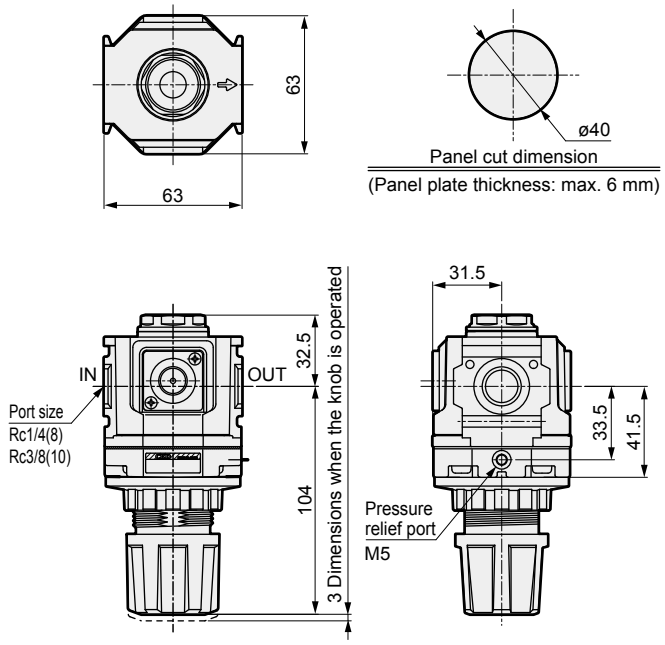
●R1100-*-W-*P4-*



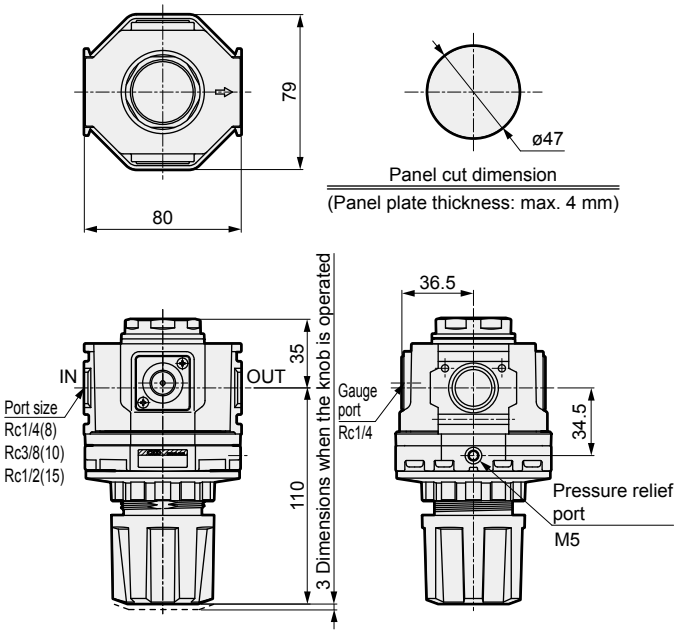
●R2100-*-W-*P4-*



● R3100-*-W-*P4-*

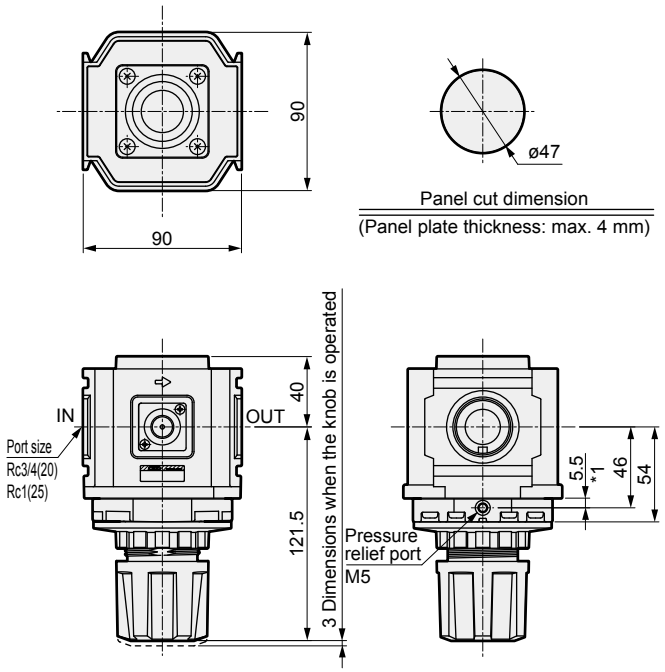


● R4100-*-W-*P4-*

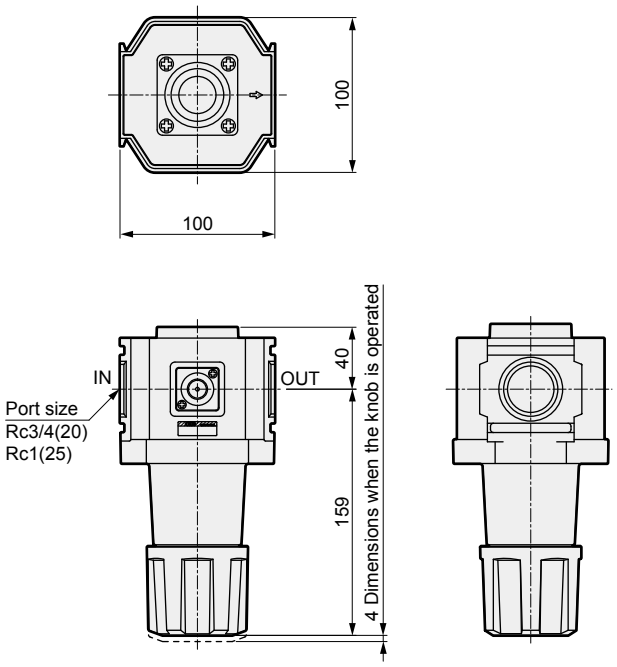


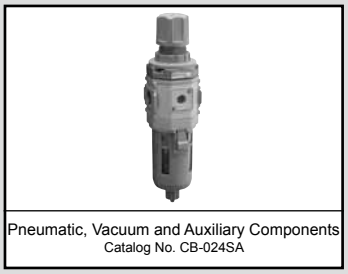
Dimensions CAD

●R6100-*-W-*P4-*



●R8100-*-W-*P4-*





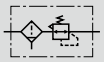
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Filter/regulator

W1000/W2000/W3000/W4000/W8000-W Series

New Series using 5 µm elements for dust removal, and 0.3 µm elements for tar removal.

● Port size: 1/8 to 1

JIS symbol 

RoHS CAD

Specifications

Descriptions	W1000-W	W2000-W	W3000-W	W4000-W	W8000-W
Working fluid	Compressed air				
Max. working pressure MPa	1.0				
Proof pressure MPa	1.5				
Ambient/fluid temperatures °C	5 to 60				
Filtration µm	5		5 or 0.3		
Set pressure MPa	0.05 to 0.85	0.05 to 0.85			
Pressure relief	With relief mechanism (W1000, W8000 are non-relief only)				
Drain capacity cm^3	12	25	45	80	80 (Note)
Port size Rc	1/8, 1/4 (3/8 uses an adaptor)	1/4, 3/8 (1/2 uses an adaptor)	1/4, 3/8	1/4, 3/8, 1/2 (3/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)
Weight kg	0.175	0.40	0.65	1.0	2.0
Standard accessories	Bowl guard				

Note: Up to 170 cm^3 is stored with the manual drain cock only.

Compatibility table by variation

	W1000-W	W2000-W	W3000-W	W4000-W	W8000-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1
P4	●	●	●	●	●
P40		▲	▲	▲	

● : Standard
○ : Made to order
▲ : Contact CKD
□ : Not applicable

*1: Pressure gauge/pressure sensor must be ordered separately. (Pressure gauge option is "T", "T8", "T6" only)
*2: Auto-drain is not available.
*3: Metal bowl is not available.
*4: R1 option is not available.
*5: For pressure adjustment springs without gas contact and pressure adjustment screw units in P40, zinc plating is used.
*6: R2 option is not available.
*7: For W1000 and W8000, only non-relief (option code: N) is available.

How to order

W1000 - 6 - W - NT P4/P40 - A6W

Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Pipe adaptor set (attachments)
Ⓔ Other attachments

* Refer to "Pneumatic, Vacuum and Auxiliary Components" (catalog No. CB-024S) for options.

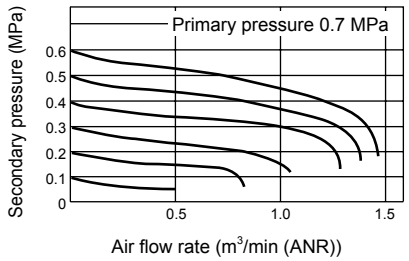
Code		Content	Ⓐ Model No. W1000	W2000	W3000	W4000	W8000
Ⓑ Port size							
6		Rc1/8	●				
8		Rc1/4	●	●	●	●	
10		Rc3/8		●	●	●	
15		Rc1/2				●	
20		Rc3/4					●
25		Rc1					●
Ⓒ Option							*1
Drain discharge	**Blank**	Manual drain cock	●	●	●	●	●
Bowl material	**Blank**	Polycarbonate bowl	●	●	●	●	●
	Z	Nylon bowl	●	●	●	●	●
Element	**Blank**	5 µm	●	●	●	●	●
	Y	0.3 µm (submicron)			●	●	●
Pressure range	**Blank**	0.05 to 0.85 MPa	●	●	●	●	●
	L	0.05 to 0.35 MPa	●	●	●	●	●
Pressure relief	**Blank**	With relief mechanism		●	●	●	
	N	Non-relief	●	●	●	●	●
Pressure gauge	**T**	Pressure gauge port (1/4) is assembled sealed	●	●	●	●	●
	T8	Pressure gauge port (1/4) is left open	●	●	●	●	●
	T6	Pressure gauge port (1/8) is left open	●	●	●	●	●
Flow direction	**Blank**	Standard flow (left → right)	●	●	●	●	●
	X1	Reverse flow (right → left)	●	●	●	●	●
Ⓓ Pipe adaptor set (attached)							*2, *3
Blank		Not attached	●	●	●	●	●
A6*W		1/8 pipe adaptor set	●				
A8*W		1/4 pipe adaptor set	●	●	●	●	
A10*W		3/8 pipe adaptor set	●	●	●	●	
A15*W		1/2 pipe adaptor set		●	●	●	
A20*W		3/4 pipe adaptor set				●	●
A25*W		1 pipe adaptor set					●
A32*W		1 1/4 pipe adaptor set					●
Ⓔ Other attachments							Page 208
Blank		Not attached	●	●	●	●	●
BW		C bracket	●	●	●	●	●
B3W		L bracket *4	●	●	●	●	

⚠ Precautions for model No. selection

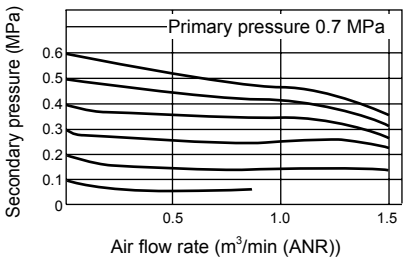
*1: Select options for the drainage, bowl material, element, and regulator. When selecting options for several items, list options in order from the top.
*2: The pipe adaptor set and C bracket cannot be used together.
*3: The joiner set is attached with the pipe adaptor set.
*4: For details on mounting the L bracket, refer to 2. Regulator of "⚠ Cautions and Installation & Adjustment" in the "Pneumatic, Vacuum and Auxiliary Components" (Catalog No. CB-024SA).

Flow characteristics

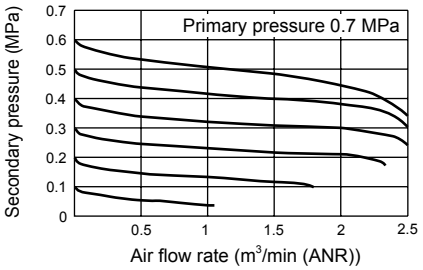
● W1000-6-W



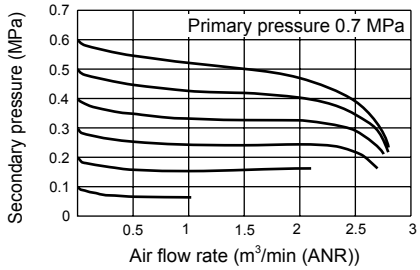
● W1000-8-W



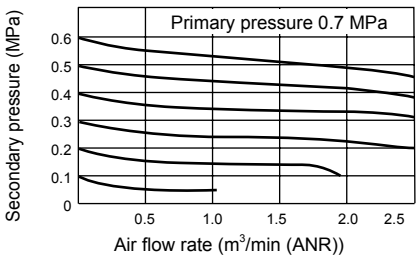
● W2000-8-W



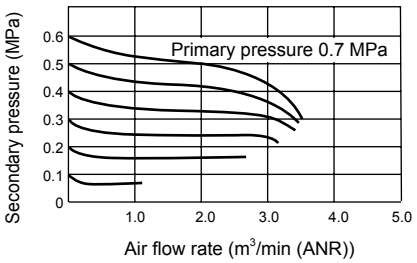
● W2000-10-W



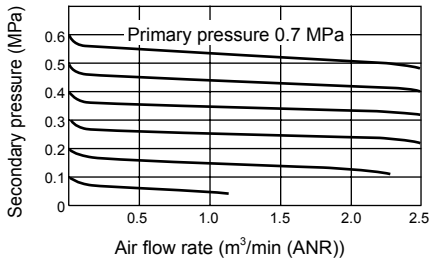
● W3000-8-W



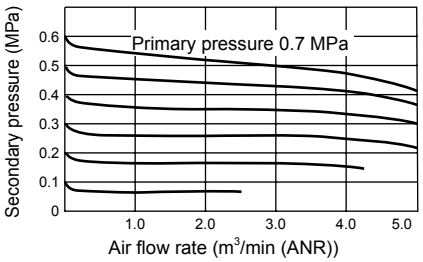
● W3000-10-W



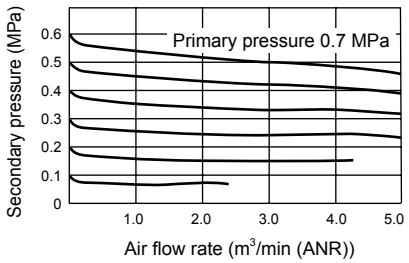
● W4000-8-W



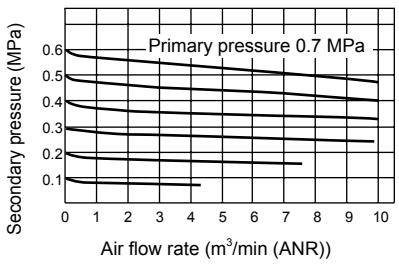
● W4000-10-W



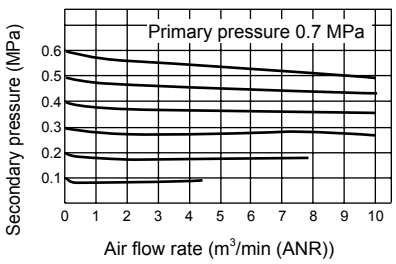
● W4000-15-W



● W8000-20-W

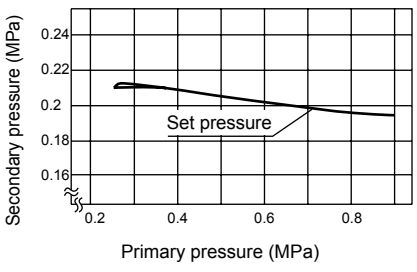


● W8000-25-W

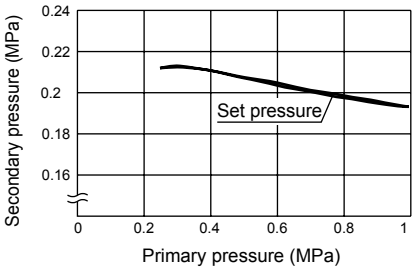


Pressure characteristics

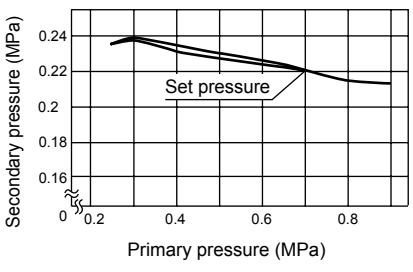
● W1000-W



● W2000-W



● W3000-W



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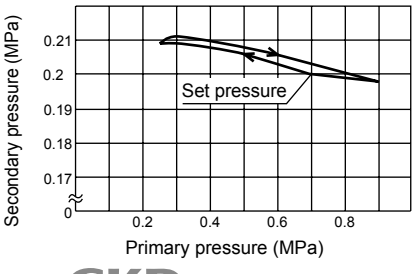

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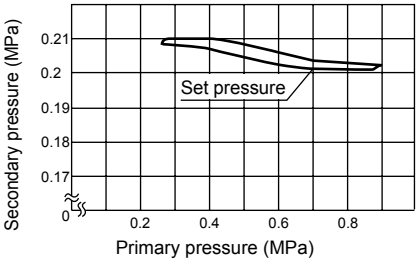
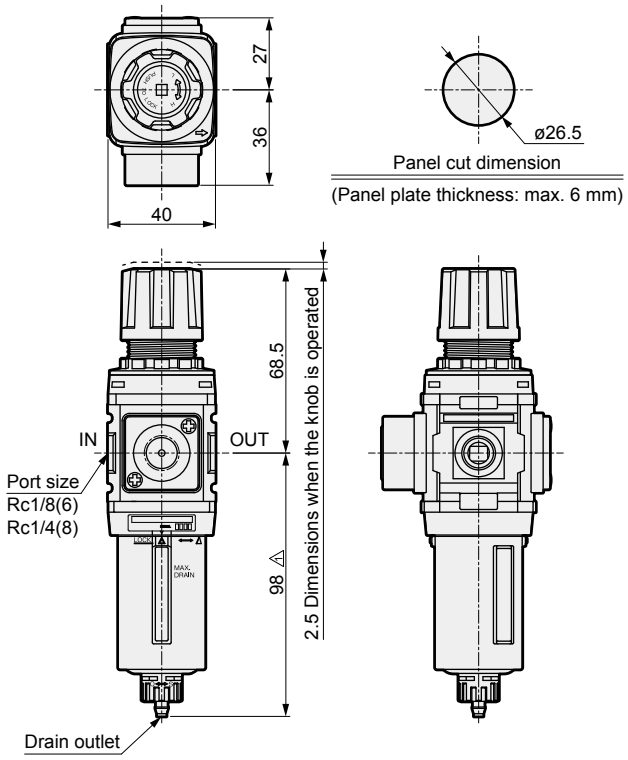


Dimensions CAD

●W1000-*-W-*P4-*



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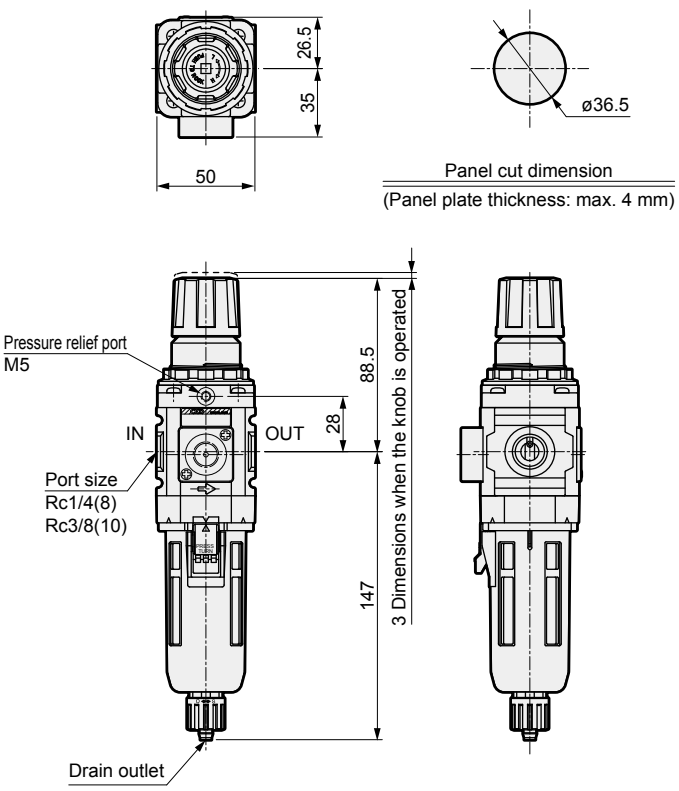
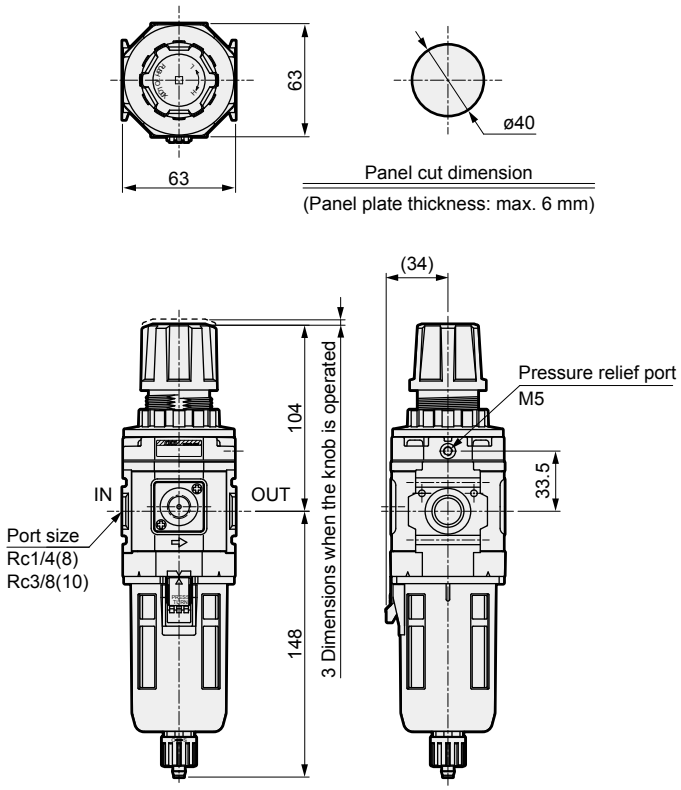
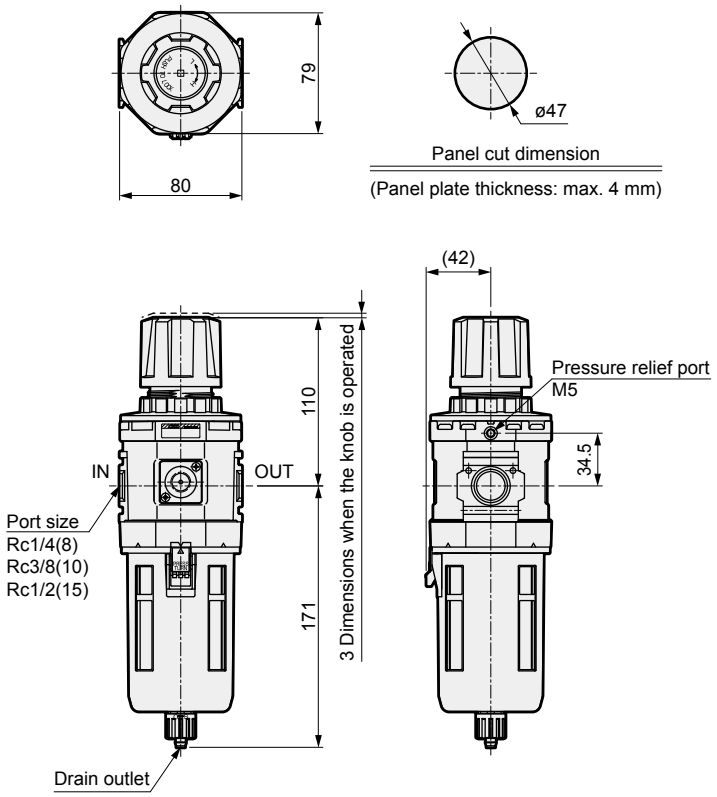


●W3000-*-W-*P4-*



Dimensions CAD

●W4000-*-W-*P4-*



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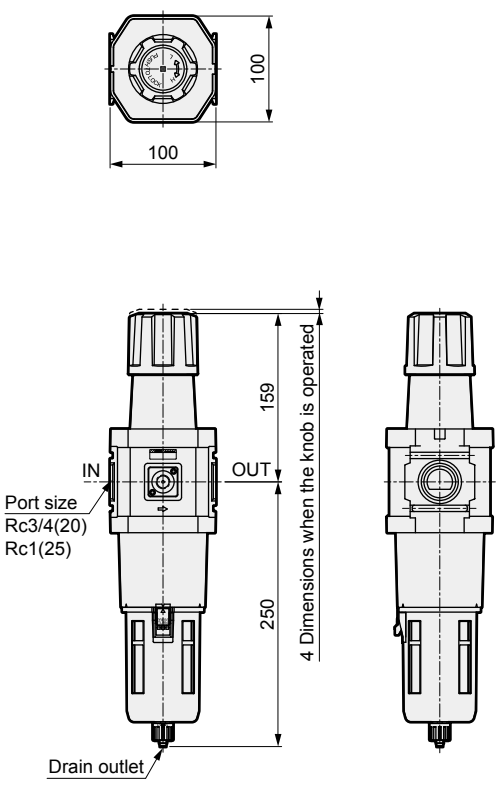
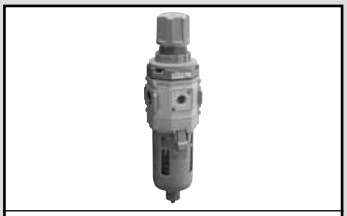




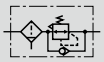
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Reverse filter/regulator

W1100/W2100/W3100/W4100/W8100-W Series

Introducing the 5 µm dust removing element and 0.3 µm tar removing element with reverse flow function to the lineup.

● Port size: 1/8 to 1

JIS symbol 

RoHS

Specifications

Descriptions	W1100-W	W2100-W	W3100-W	W4100-W	W8100-W
Working fluid	Compressed air				
Max. working pressure MPa	1.0				
Proof pressure MPa	1.5				
Ambient/fluid temperatures °C	5 to 60				
Filtration µm	5		5 or 0.3		
Set pressure MPa	0.05 to 0.85	0.05 to 0.85			
Pressure relief	With relief mechanism (W1100, W8100 are non-relief only)				
Drain capacity cm^3	12	25	45	80	80 (*1)
Port size Rc	1/8, 1/4 (3/8 uses an adaptor)	1/4, 3/8 (1/2 uses an adaptor)	1/4, 3/8	1/4, 3/8, 1/2 (3/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)
Weight kg	0.175	0.40	0.65	1.0	2.0
Standard accessories	Pressure gauge and bowl guard				

*1: Up to 170 cm^3 is stored with the manual drain cock only.
*2: Check that the primary pressure is at least 0.05 MPa more than the secondary pressure.
*3: Refer to the set pressure range for the back pressure given on the following page when selecting the model.

Compatibility table by variation

	W1100-W	W2100-W	W3100-W	W4100-W	W8100-W
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc1/4, 3/8	Rc1/4, 3/8,1/2	Rc3/4,1
P4	●	●	●	●	●
P40		▲	▲	▲	

● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

*1: Pressure gauge/pressure sensor must be ordered separately. (Pressure gauge option is "T", "T8", "T6" only)
*2: Auto-drain is not available.
*3: Metal bowl is not available.
*4: R1 option is not available.
*5: For pressure adjustment springs without gas contact and pressure adjustment screw units in P40, zinc plating is used.
*6: R2 option is not available.
*7: For W1100 and W8100, only non-relief (option code: N) is available.

How to order

* Refer to "Pneumatic, Vacuum and Auxiliary Components" (catalog No.CB-024SA) for options.

W1100 – 6 – W – NT P4/P40 – A6W

Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Pipe adaptor set (attachments)
Ⓔ Other attachments

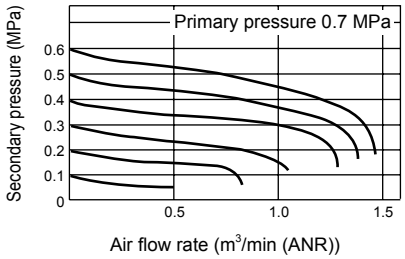
Code		Content	Ⓐ Model No. W1100	W2100	W3100	W4100	W8100
Ⓑ Port size							
6		Rc1/8	●				
8		Rc1/4	●	●	●	●	
10		Rc3/8		●	●	●	
15		Rc1/2				●	
20		Rc3/4					●
25		Rc1					●
Ⓒ Options							*1, *2
Drain discharge	**Blank**	Manual drain cock	●	●	●	●	●
Bowl material	**Blank**	Polycarbonate bowl	●	●	●	●	●
	Z	Nylon bowl	●	●	●	●	●
Element	**Blank**	5 µm	●	●	●	●	●
Pressure range	**Blank**	0.05 to 0.85 MPa	●	●	●	●	●
	L	0.05 to 0.35 MPa	●	●	●	●	●
Pressure relief	**Blank**	With relief mechanism		●	●	●	
	N	Non-relief	●	●	●	●	●
Pressure gauge	**T**	Pressure gauge port (1/4) is assembled sealed	●	●	●	●	●
	T8	Pressure gauge port (1/4) is left open	●	●	●	●	●
	T6	Pressure gauge port (1/8) is left open	●	●	●	●	●
Flow direction	**Blank**	Standard flow (left → right)	●	●	●	●	●
	X1	Reverse flow (right → left)	●	●	●	●	●
Ⓓ Pipe adaptor set (attached)							*3, *4
Blank		Not attached	●	●	●	●	●
A6*W		1/8 pipe adaptor set	●				
A8*W		1/4 pipe adaptor set	●	●	●	●	
A10*W		3/8 pipe adaptor set	●	●	●	●	
A15*W		1/2 pipe adaptor set		●	●	●	
A20*W		3/4 pipe adaptor set				●	●
A25*W		1 pipe adaptor set					●
A32*W		1 1/4 pipe adaptor set					●
Ⓔ Other attachments							Page 208
Blank		Not attached	●	●	●	●	●
BW		C bracket	●	●	●	●	●
B3W		L bracket *5	●	●	●	●	

⚠ Precautions for model No. selection

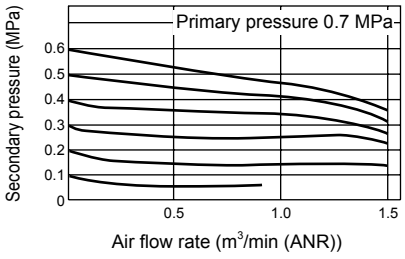
*1: Select options for the drainage, bowl material, element, and regulator. When selecting options for several items, list options in order from the top.
*2: **Positions of check valve and pressure gauge cannot be changed. If the IN and OUT directions must be reversed, indicate "X1" at the end of the option field.**
*3: The pipe adaptor set and C bracket cannot be used together.
*4: The joiner set is attached with the pipe adaptor set.
*5: For details on mounting the L bracket, refer to 2. Regulator of "⚠ Cautions and Installation & Adjustment" in the "Pneumatic, Vacuum and Auxiliary Components" (Catalog No. CB-024SA).

Flow characteristics CAD

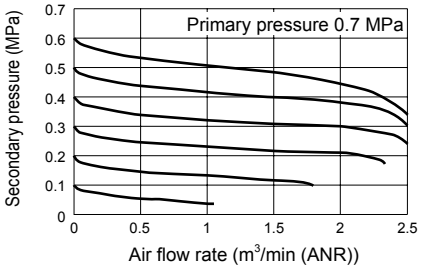
● W1100-6-W



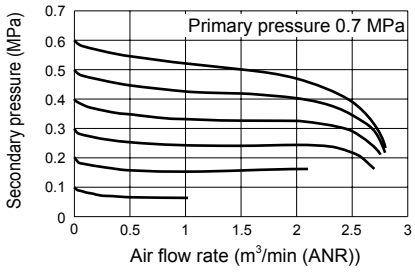
● W1100-8-W



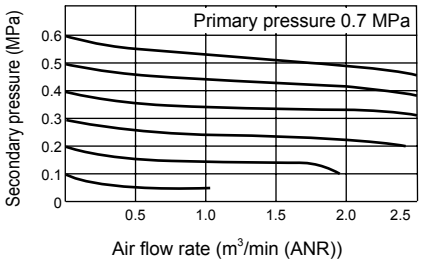
● W2100-8-W



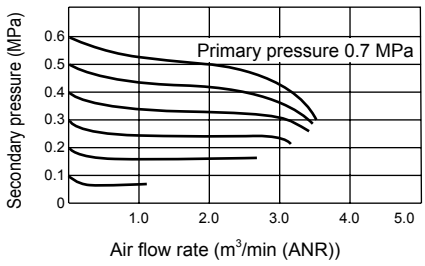
● W2100-10-W



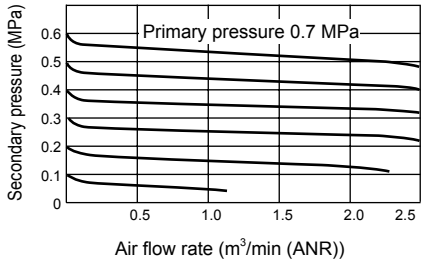
● W3100-8-W



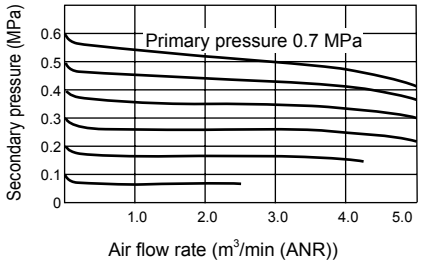
● W3100-10-W



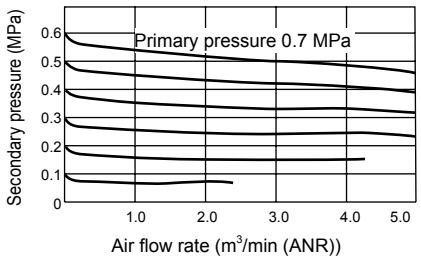
● W4100-8-W



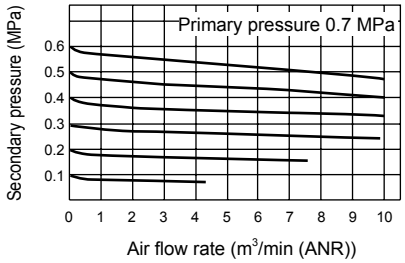
● W4100-10-W



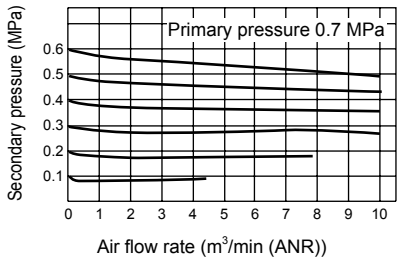
● W4100-15-W



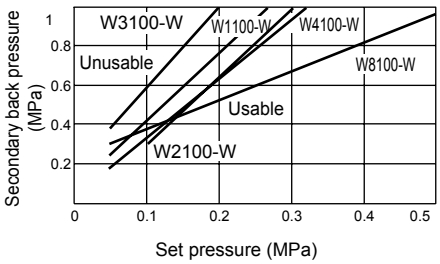
● W8100-20-W



● W8100-25-W



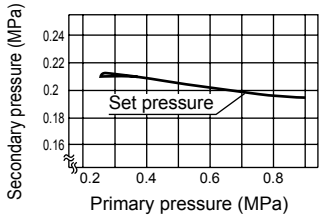
● Set pressure range to back pressure



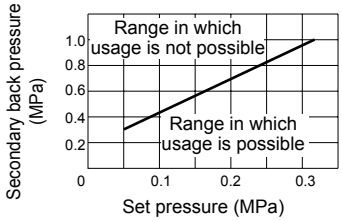
Note: The area above the graph line shows the unusable range and that below the graph line shows the usable range.
Example: If the set pressure of W4100-W is set to 0.2 MPa and the secondary back pressure is set to 0.6 MPa or more, the secondary side pressure will not be released to the primary side.

Pressure characteristics

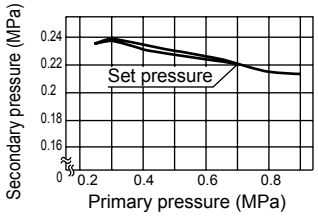
● W1100-W



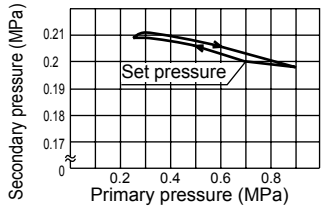
● W2100-W



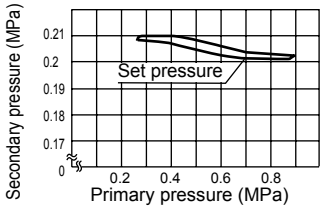
● W3100-W



● W4100-W

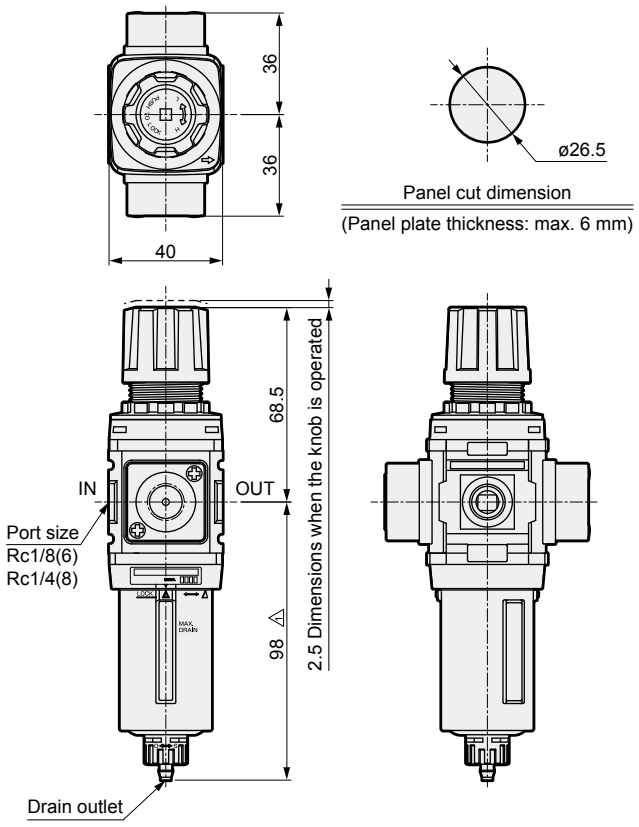


● W8100-W

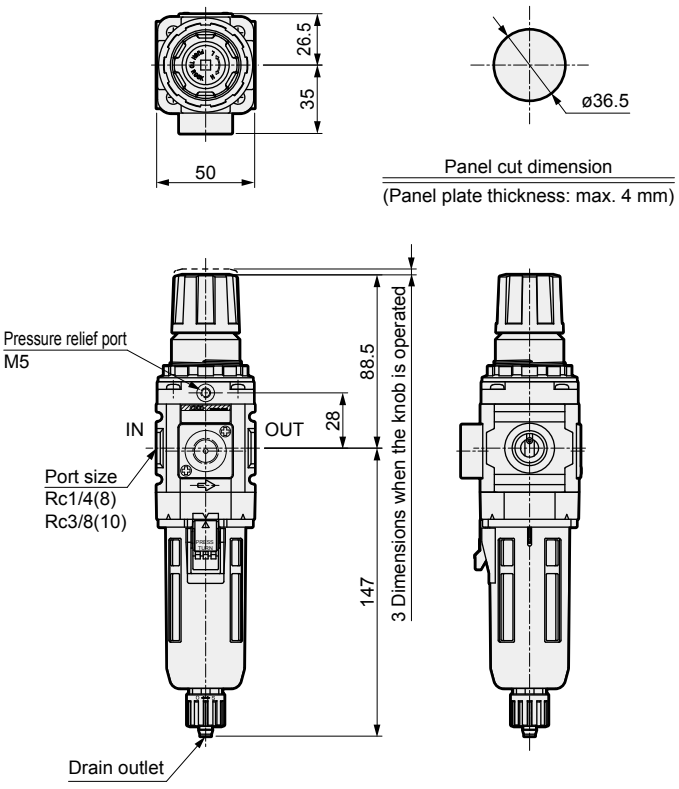


Dimensions CAD

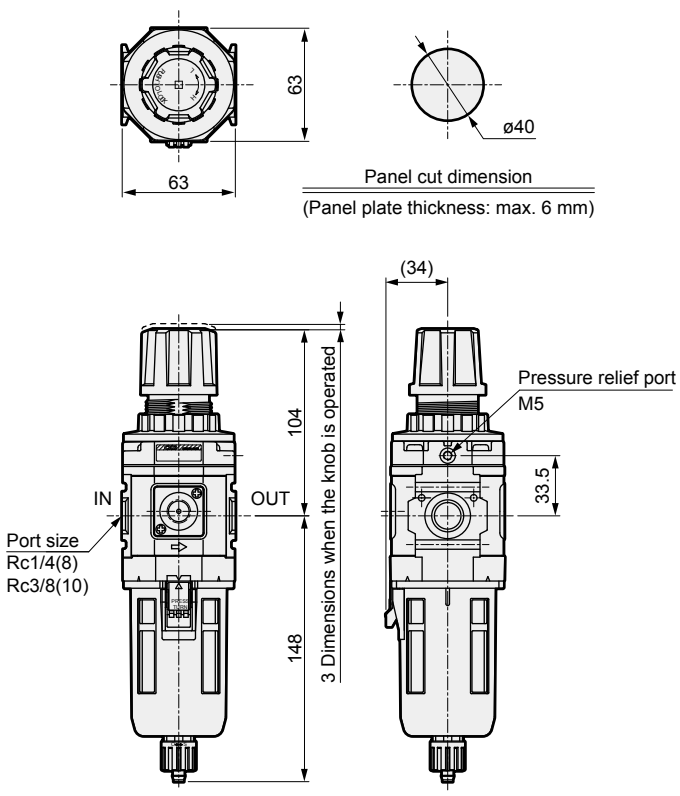
●W1100-*-W-*P4-*



●W2100-*-W-*P4-*

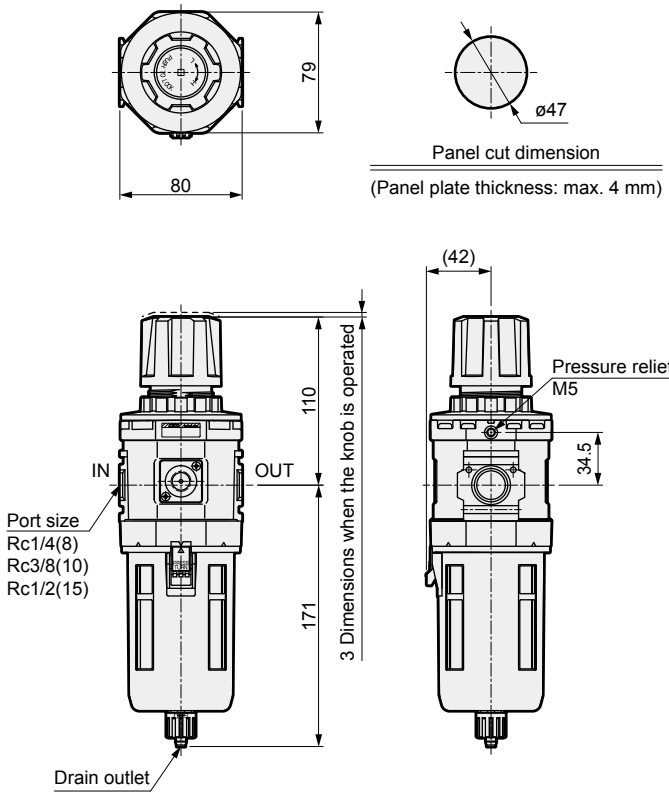


●W3100-*-W-*P4-*

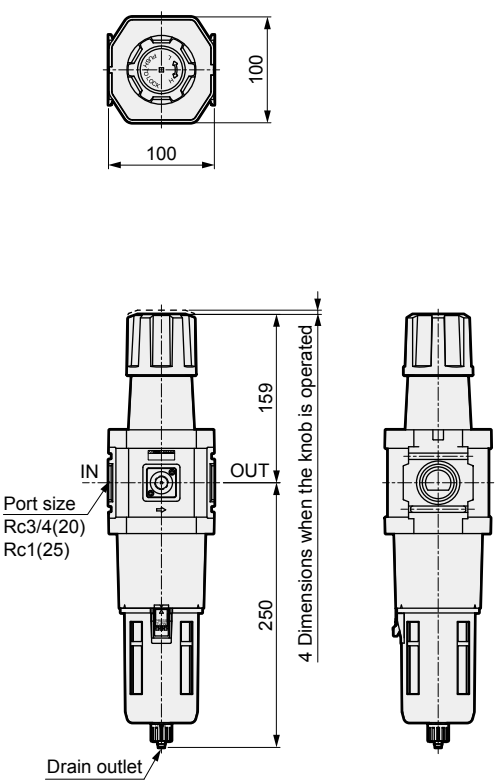


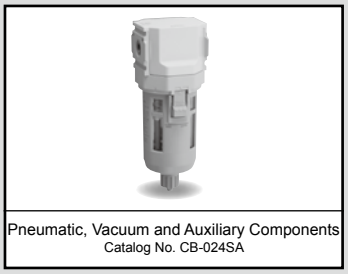
Dimensions

●W4100-*-W-*P4-*



●W8100-*-W-*P4-*

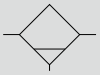




Drain separator FX Series

FX Series

With no need for element, 99% water separation efficiency is achieved

JIS symbol 

RoHS

Overview

The cyclone effect causes water droplets in the compressed air to strike the inner wall of the bowl; this gathers and enlarges them, removing 99% or more of the moisture.
Ideal for easy drainage from air piping.

Features

- Lightweight compact drain separator
- Water separation efficiency 99%
- Compatible compressor 0.75 kW to 37 kW
- Modular connection of FX1004 and FX1011 to F.R.L. 3000 and 4000 Series and FX1037 to 6000 and 8000 Series is possible.

Specifications

Descriptions		FX1004	FX1011	FX1037
Working fluid		Compressed air		
Working pressure	MPa	0.1 to 1.0		
Proof pressure	MPa	1.5		
Ambient/fluid temperatures	°C	5 to 60		
Water separation efficiency	%	99 *2		
Max. processing flow rate *1	L/min (ANR)	550	1800	6100
Port size	Rc	1/4, 3/8	1/4, 3/8, 1/2	3/4, 1
Product weight	kg	0.3	0.5	1.2

*1: At inlet pressure 0.7 MPa.
*2: Water separation efficiency during max. processing flow rate. (Evaporated water droplets (water vapor) cannot be separated)

Compatibility table by variation

	FX1004	FX1011	FX1037
Port size	Rc1/4, 3/8	Rc1/4, 3/8, 1/2	Rc3/4, 1
P4	●	●	●
P40	▲	▲	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Auto-drain is not available.
*2: Metal bowl is not available.

How to order

FX1004 - 8 - W - Z - P4 / P40 - BW

Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Attachment

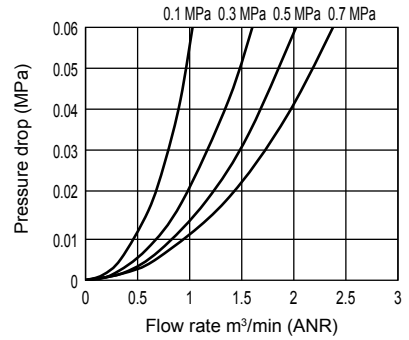
Code		Content	Ⓐ Model No. FX1004	FX1011	FX1037
Ⓑ Port size					
8		Rc1/4	●	●	
10		Rc3/8	●	●	
15		Rc1/2		●	
20		Rc3/4			●
25		Rc1			●
Ⓒ Option *1					
Drain discharge	**Blank**	Manual drain cock	●	●	●
Bowl material	**Blank**	Polycarbonate bowl	●	●	●
	Z	Nylon bowl	●	●	●
Flow Direction	**Blank**	Standard flow (left → right)	●	●	●
	X1	Reverse flow (right → left)	●	●	●
Ⓓ Other attachments *2, *3					
Blank		Not attached	●	●	●
A8*W		1/4 pipe adaptor set	●	●	
A10*W		3/8 pipe adaptor set	●	●	
A15*W		1/2 pipe adaptor set	●	●	
A20*W		3/4 pipe adaptor set		●	●
A25*W		1 pipe adaptor set			●
A32*W		1 1/4 pipe adaptor set			●
BW		C bracket	●	●	●

⚠ Precautions for model No. selection

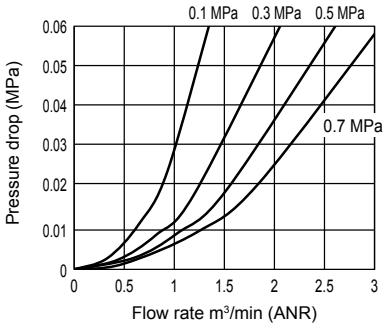
*1: Select options for the bowl material and flow direction. When selecting options for several items, list options in order from the top.
*2: The pipe adaptor set and C bracket cannot be used together.
*3: The joiner set is attached with the pipe adaptor set.

Flow characteristics

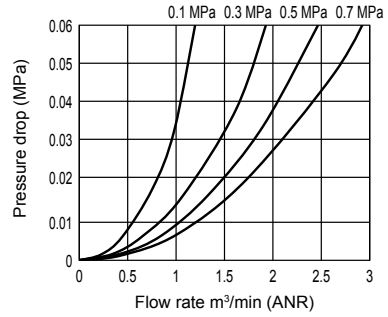
● FX1004-8-W



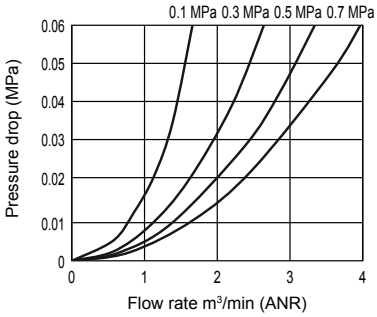
● FX1004-10-W



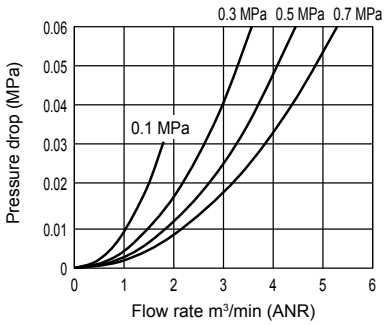
● FX1011-8-W



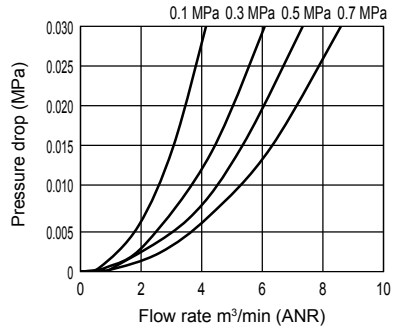
● FX1011-10-W



● FX1011-15-W



● FX1037-20-W



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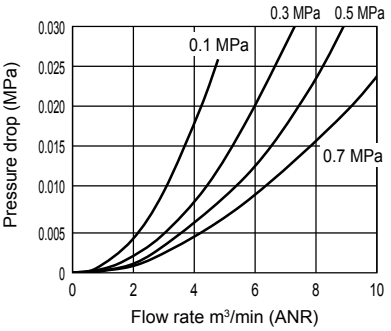
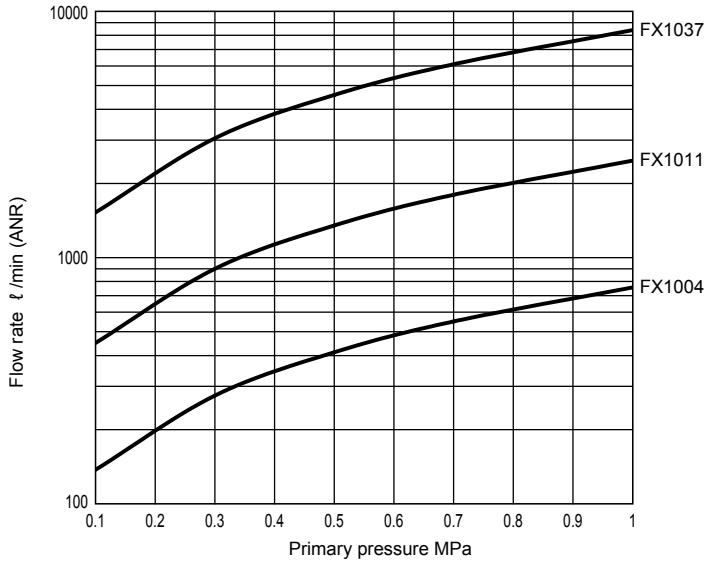
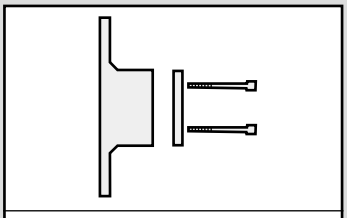


Max. processing flow rate





Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

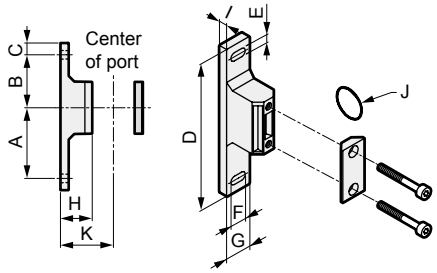
Bracket
B-W/B Series
Joiner
J-W Series

P4 compliant as standard

CAD RoHS

Dimensions and applications

T bracket set



·Material: Polyamide resin (B110-W)
Aluminum alloy die-casting (B310 to B810-W)
Painting (B310 to B810-W)

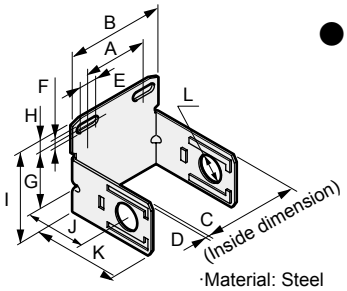
● Model No.: B110-W / B310-W / B410-W / B810-W
● Applications



Note: Select B410-W when using the 3000-W Series and 4000-W Series combined.

Model No.	Compatibility	A	B	C	D	E	F	G	H	I	J	K	Weight (kg)
B110-W	1000 Series	45	35	10	100	5.5	7.5	16	25	7.5	JASO-2013	40	0.024
B310-W	2000 Series 3000 Series	60	45	10	125	7	14	22	27	7	JISB2401-P21	45	0.086
B410-W	4000 Series	60	45	10	125	7	14	22	37	7	JISB2401-P21	55	0.094
B810-W	6000 Series 8000 Series	70	50	15	150	9	14	27	37	8	AS568-127	65	0.169

C bracket



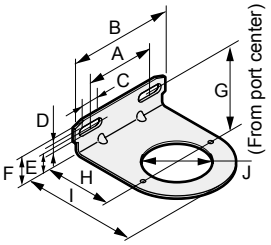
·Material: Steel
Zinc plated

● Model No.: B120/B220/B320/B420/B620/B820
● Attachment: BW
● Applications



Model No.	Compatibility	A	B	C	D	E	F	G	H	I	J	K	L	Weight (kg)
B120	1000 Series	44	68	40	t2.0	10	6.5	35	8.5	61.5	40	60	ø19.5	0.1
B220	2000 Series	28	54	50	t2.3	10	7	33	8	63	45	69	17.3	0.15
B320	3000 Series	34.5	67	63	t2.3	16.5	7	45	8.5	75.5	45	69	ø21.7	0.17
B420	4000 Series	55	84	80	t2.3	14.0	7	45	8.5	75.5	55	79	ø21.7	0.21
B620	6000 Series	68	104	90	t2.3	16	9	54	11	97.5	60	97	ø35	0.34
B820	8000 Series	68	104	100	t2.3	16	9	50	11	93.5	65	102	ø35	0.36

L bracket



·Material: Steel
Zinc plated

● Model No.: B130 / B230 / B330 / B430
● Attachment: B3W

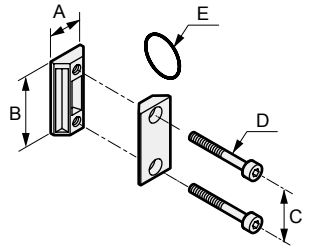
Loosen the mounting nut to remove the knob. After inserting the L bracket, fix it by the mounting nut. Press the knob in manually after fixing.

● Applications



Model No.	Compatibility	A	B	C	D	E	F	G	H	I	J	Others	Weight (kg)
B130	1000 Series	44	68	10	6.5	16	24.5	45	40	59	ø26.5		0.04
B230	2000 Series	28	54	10	7	18	26	52	45	69	38		0.06
B330	3000 Series	34.5	67	16.5	7	17.5	26	58 (63.5)	45	76	ø40	Numbers in ( ) are W3000/3100	0.07
B430	4000 Series 6000 Series	55	84	14	7	17.5	26	58	55	94	ø47		0.11

Joiner set



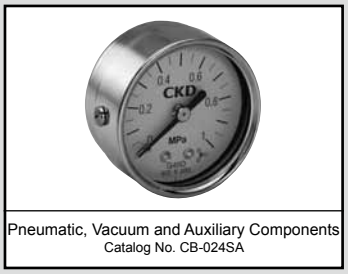
·Material: Polyamide resin (J100-W)
Aluminum alloy die-casting (J400 to J800-W)
Painting (J400, J800-W)

● Model No.: C1000-J100-W
C4000-J400-W
C8000-J800-W

● Applications



Model No.	Compatibility	A	B	C	D	E	Weight (kg)	
C1000-J100-W	1000 Series	10	36	26	M3.5	JAS0-2013	0.011	
C4000-J400-W	2000 Series 3000 Series 4000 Series	21	44	32	M5	JIS B2401-P21	0.036	
C8000-J800-W	6000 Series 8000 Series	26	65	50	M6	AS568-127	0.094	



General-use pressure gauge

G41D/G49D/G59D Series

● Port size: R1/8, R1/4

JIS symbol 

Specifications

Descriptions		G49D	G59D	G41D
Working fluid		Liquid or gas (non-corrosive)		Compressed air
Fluid temperature °C		5 to 60		
Ambient temperature °C		5 to 60		
Accuracy		JIS Grade 3 or equivalent (±3% F.S) *1		
Shape		DT type (rear side screw, stock section square)		
Display size		ø42	ø52	ø42
Material	Stock/Bourdon tube	Stainless steel		
	Housing	Steel plate + chrome plating		Stainless steel
	Lens	Glass		Polycarbonate resin
Pressure range MPa		0 to 0.2 0 to 0.4 0 to 1.0 0 to 2.0		0 to 0.2 0 to 0.4 0 to 1.0
Port size R		1/8	1/4	1/8, 1/4
Weight g		90	140	82

*1: The guaranteed indicator accuracy temperature is 20±15°C.

How to order

G49D - 6 - P02 - P4

Ⓐ Model No.
Ⓑ Port size
Ⓒ Pressure display

Code	Content	Ⓐ Model No. G41D	G49D	G59D
Ⓑ Port size				
6	R 1/8	●	●	
8	R 1/4	●		●
Ⓒ Pressure display				
P02	0 to 0.2 MPa	●	●	●
P04	0 to 0.4 MPa	●	●	●
P10	0 to 1.0 MPa	●	●	●
P20	0 to 2.0 MPa		●	●

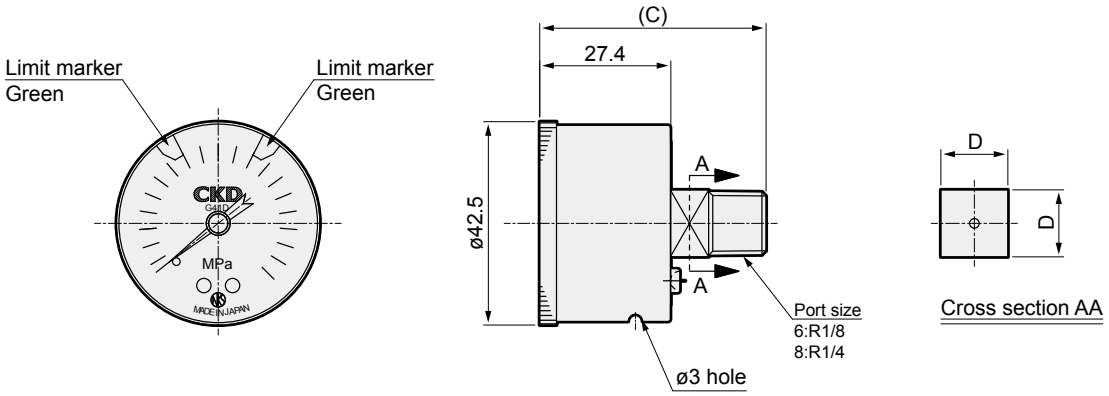
Compatibility table by variation

	G41D	G49D	G59D
	Display ø42 with limit marker	Display ø42	Display ø52
Port size	R1/8, 1/4	R1/8	1/4
P4	●	●	●

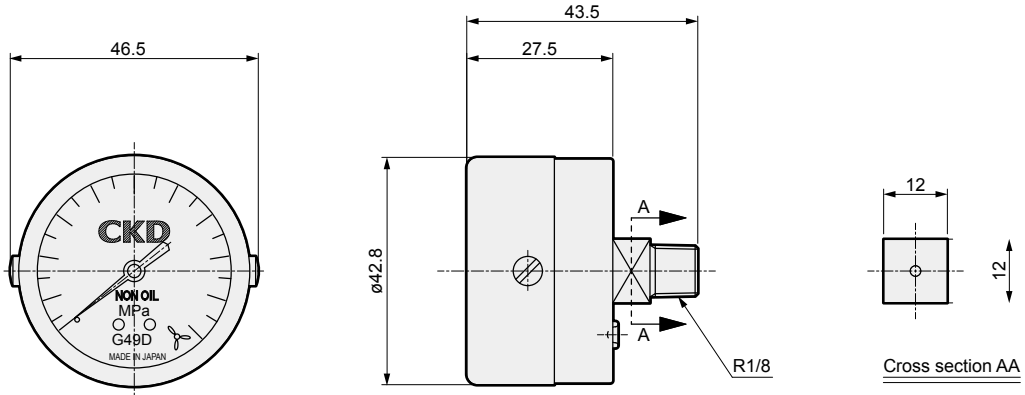
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Dimensions CAD

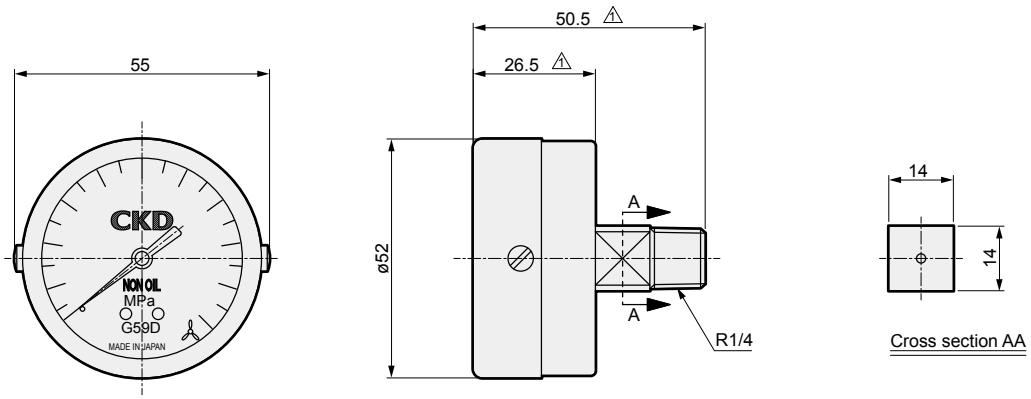
●G41D-*-*-P4

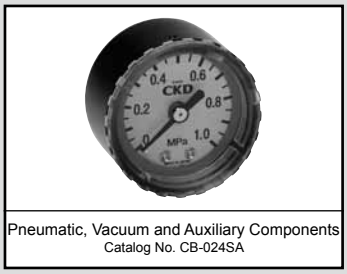


●G49D-6-*-P4



●G59D-8-*-P4





Pressure gauge with safety marker

G40D Series

Easy visual inspection control due to green and red zone display.

● Port size: R1/8

JIS symbol 

RoHS CAD

Specifications

Descriptions		G40D	
		P10	P04
Working fluid		Compressed air	
Full scale	MPa	1.0	0.4
Safety marker setting range	MPa	0.15 to 1.0	0.06 to 0.4
Max. setting width	MPa	0.45	0.18
Ambient temperature	°C	5 to 60	
Fluid temperature	°C	5 to 60	
Port size	R	1/8	
Accuracy	*1	Full scale ±3%	
Weight	g	85	

*1: The guaranteed indicator accuracy temperature is 20±15°C.

Compatibility table by variation

	G40D
	Display ø42.5 with safety marker
Port size	R1/8
P4	●

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

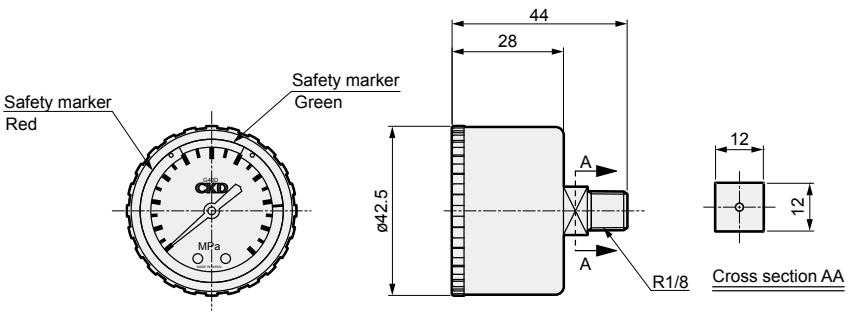
How to order

G40D - 6 - P10 - P4

Ⓐ Model No.
Ⓑ Port size
Ⓒ Pressure display

Code	Content
Ⓐ Model No.	
G40D	Pressure gauge with safety marker
Ⓑ Port size	
6	R1/8
Ⓒ Pressure display	
P10	For 0 to 1.0 MPa
P04	For 0 to 0.4 MPa

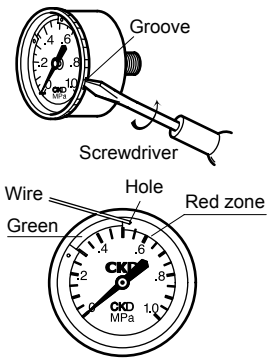
Dimensions and materials CAD



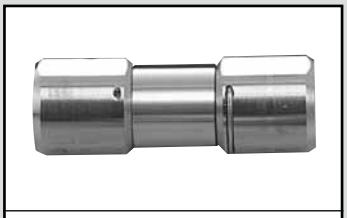
Part name	Material
Bourdon tube/stock	Stainless steel
Housing	Steel plate + paint
Lens	Polyamide resin
Mark	PBT resin

How to adjust pressure range

When removing the transparent face



Remove the transparent face and insert a needle into the hole in the red zone to move the red zone marker.
After adjustment, always reattach the transparent face before supplying pneumatic pressure.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Inline clean filter

FCS500/FCS1000 Series

●Port size: Rc1/8 to Rc1/4

JIS symbol 

P4 compliant as standard

RoHS CAD

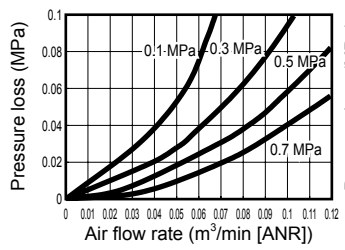
Specifications

Descriptions		Stainless steel		Stainless steel (made to order)
		FCS500-66-P90 FCS500-66-P94	FCS500-88-P90 FCS500-88-P94	FCS1000-(*1)(*2)-P90 FCS1000-(*1)(*2)-P94
Working fluid		Compressed air, N_2		
IN side bore size (*1)		Rc1/8	Rc1/4	Select from Rc1/4 and Rc3/8
OUT side bore size (*2)		Rc1/8	Rc1/4	
Proof pressure	MPa	2.25 (compressed air), 1.5 (N_2)		
Differential resistant pressure	MPa	0.5		
Working pressure	MPa	-0.095 to 1.5 (compressed air), -0.095 to 0.99 (N_2)		
Ambient/fluid temperatures	°C	5 to 45		
Filtration	μm	0.01 (removal efficiency 99.99%)		
Processing flow rate	ℓ/min (ANR) *1	50	80	300 to 400 *1
Weight	g	100	100	0.5
Material	Body	Stainless steel		
	Case	Stainless steel		
	Element	Polypropylene + urethane		
Assembling/inspection/packaging		Integrated production in cleanroom		
Cleaning		Degreasing		

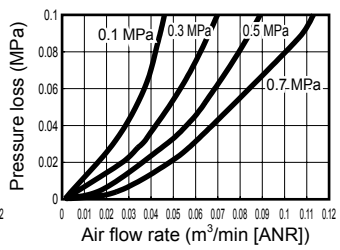
*1: Initial flow rate at primary pressure 0.7 MPa and pressure drop 0.03 MPa.
*2: Maximum working pressure varies with working temperature. Check graphs showing the relationship of working temperature and maximum working pressure.

Flow characteristics

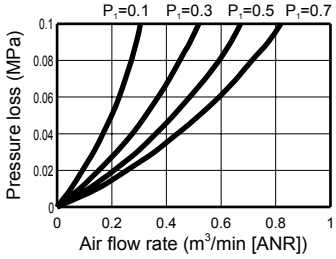
● FCS500-88-P90/P94



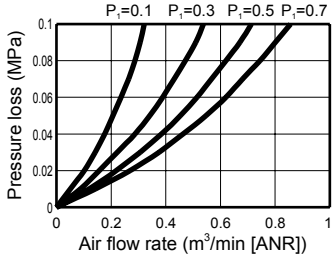
● FCS500-66-P90/P94



● FCS1000-88-P90/P94



● FCS1000-1010-P90/P94



● Stainless steel

FCS500 - 88 - B - P90

- FCS500: Model No. (Clean-room specifications) (oil-prohibited specifications)
- 88: Ⓐ Port size
- B: Ⓑ Attached
- P90: Ⓒ Clean-room specifications

Ⓐ Port size	
66	IN side/OUT side port size Rc1/8
88	IN side/OUT side port size Rc1/4

Ⓑ Attached	
Blank	No
B	Bracket, mounting screw

Ⓒ Clean-room specifications		
	Structure/treatment	Material restrictions
P90	Stainless steel material used Oil-free treatment	-
P94	Stainless steel material used Oil-free treatment	Use of copper-, silicon-, or halogen-based materials (e.g. fluorine, chlorine, or bromine) is not possible.

Note: " P94 " is made to order.

FCS1000 - 8 8 - P90

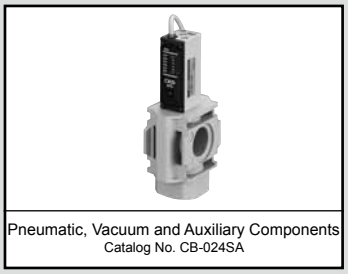
- FCS1000: Model No. (Clean-room specifications) (oil-prohibited specifications)
- 8: Ⓐ IN side port size
- 8: Ⓑ OUT side port size
- P90: Ⓒ Clean-room specifications

Ⓐ IN side port size	
8	Rc1/4
10	Rc3/8

Ⓑ OUT side port size	
8	Rc1/4
10	Rc3/8

Ⓒ Clean-room specifications		
	Structure/treatment	Material restrictions
P90	Stainless steel material used Oil-free treatment	-
P94	Stainless steel material used Oil-free treatment	Use of copper-, silicon-, or halogen-based materials (e.g. fluorine, chlorine, or bromine) is not possible.

Note: " P94 " is made to order.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Reed switch compact mechanical pressure switch

P1100-W/P4100-W/P8100-W Series

· Compatible with module connection to rotary actuator F.R.L.

JIS symbol 

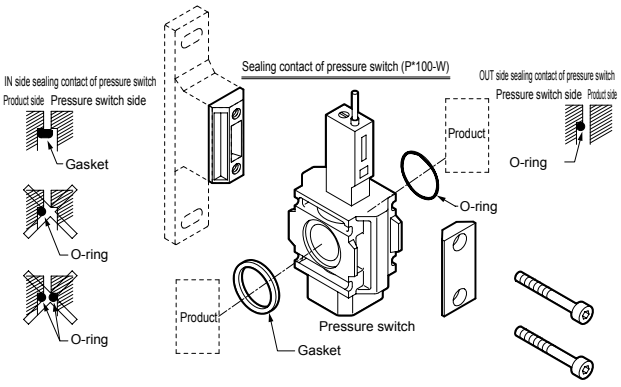
RoHS CAD

Specifications

Descriptions	P1100-W	P4100-W	P8100-W
Working fluid	Compressed air		
Max. working pressure MPa	1.0		
Set pressure MPa	0.1 to 0.6		
Hysteresis MPa	0.08 or less		
Repeatability MPa	±0.02 or less		
Contact array	1a *1		
Wiring	Lead wire (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm^2)		
Ambient/fluid temperatures	5 to 60°C		
Degree of protection *2	IP20 or equivalent		
Product weight (excluding joiner) kg	0.13	0.19	0.41

*1: The contact turns ON if air pressure exceeding the scale set pressure is applied.
*2: Note that when connecting a fitting into the atmospheric pressure inlet port and extending the tube until water does not enter, IP65 or equivalent is applied. Not for outdoor use.

How to assemble (P1100-W, P4100-W, P8100-W)



How to order (modular design)

P 1100 - 6 L - W - P4 - B11W - 3
(White)

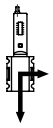
Ⓐ Series model No.
Ⓑ Port size
Ⓒ Branch direction
Ⓓ Attachment
Ⓔ Length of lead wire

Code	Content
Ⓐ Series model No.	
1100	1000-W Series modular design
4100	2000-W, 3000-W, 4000-W Series modular design
8100	6000-W, 8000-W Series modular design

Ⓑ Port size

		1100	4100	8100
6	Rc1/8	●		
8	Rc1/4	●	●	
10	Rc3/8		●	
15	Rc1/2		●	
20	Rc3/4			●
25	Rc1			●

Ⓒ Branch direction *1

Blank *2	L	R
		

Ⓓ Attachment

		1100	4100	8100
Blank	Joiner set, gasket	●	●	●
B11W	T bracket, gasket	●		
B31W	T bracket, gasket		●	
B41W	T bracket, gasket		●	
B81W	T bracket, gasket			●

Ⓔ Length of lead wire

Blank	1 m
3	3 m
5	5 m

Compatibility table by variation

	P1100	P4100	P8100
Port size	Rc1/8, 1/4	Rc1/4, 3/8, 1/2	Rc3/4, 1
P4		●	

*1: The atmospheric pressure inlet port is M5.
*2: Fitting attachment option for atmospheric introduction port is not available.

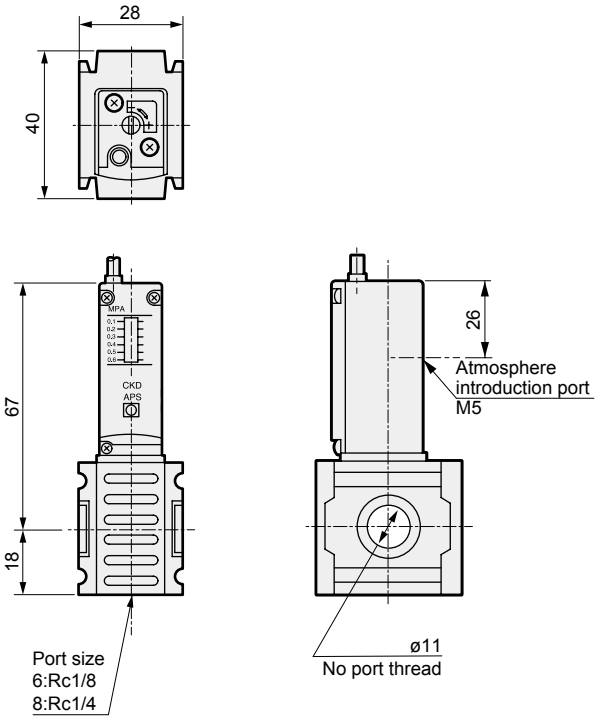
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

⚠ Precautions for model No. selection

*1: This is used for intermediate connection of the module series so the module connection section is not threaded.
*2: A masking plug matching the port size is attached.
*3: When piping the P□100-W single unit, use piping adapter A□00-W.
(The horizontal direction port does not have threads.)

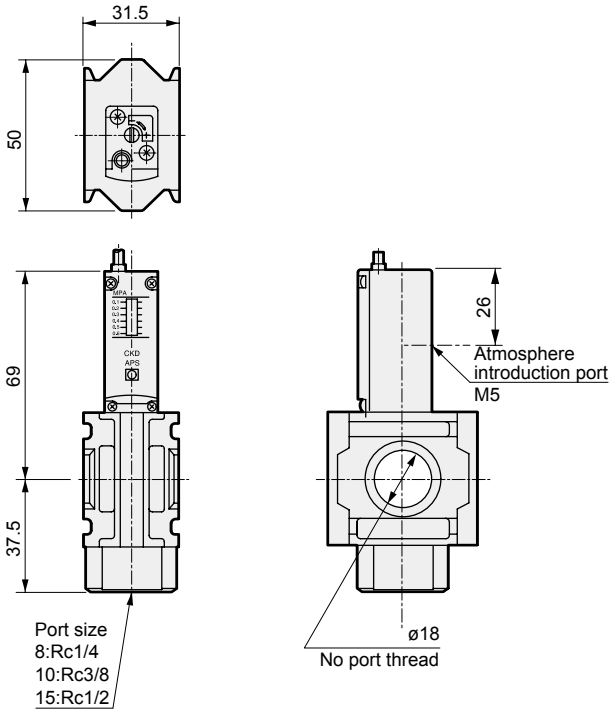
Dimensions

● P1100-W



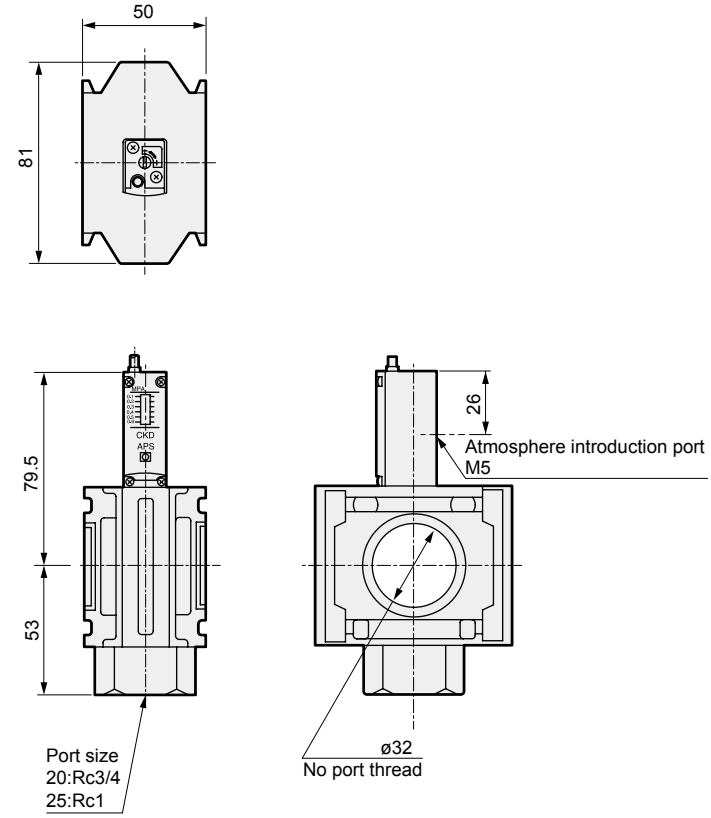
Weight 126 g

● P4100-W

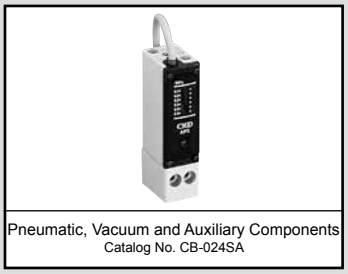


Weight 190 g

● P8100-W



Weight 467 g

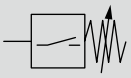


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Compact mechanical pressure switch

APS-W Series

●General purpose discrete specifications (APS)

JIS symbol 

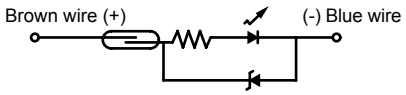
Specifications

Descriptions	APS-W
Working fluid	Compressed air
Max. working pressure MPa	1.0
Set pressure MPa	0.1 to 0.6
Hysteresis MPa	0.08 or less
Repeatability MPa	±0.02 or less
Contact array	1a *1
Wiring	Lead wire (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm^2)
Ambient/fluid temperatures	5 to 60°C
Degree of protection *2	IP20 or equivalent
Weight g	69

*1: The contact turns ON if air pressure exceeding the scale set pressure is applied.
*2: However, mounting direction is to be vertical. Note that when connecting a fitting into the atmospheric pressure inlet port and extending the tube until water does not enter, IP65 or equivalent is applied. Not for outdoor use.

Wiring section specifications		
Load voltage	12/24 VDC	100 VAC
Load current	5 to 50 mA	7 to 20 mA
Internal voltage drop	3 V or less	
Lamp	LED (Lit when ON)	
Max. shock	294 m/s^2	
Insulation resistance	20 MΩ and over at 500 VDC megger	
Withstand voltage	No failure after 1 minute of 1,000 VAC application.	

Internal circuit diagram



Compatibility table by variation

	APS
Port size	Rc1/8
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable
*1: The atmospheric pressure inlet port is M5.
*2: Fitting attachment option for atmospheric introduction port is not available.

How to order

APS - **6D** **3** - **W** - **2** - **P4**
(White)

Model

Ⓐ Position of piping port/bore size/scale plate direction

Ⓑ Lead wire length

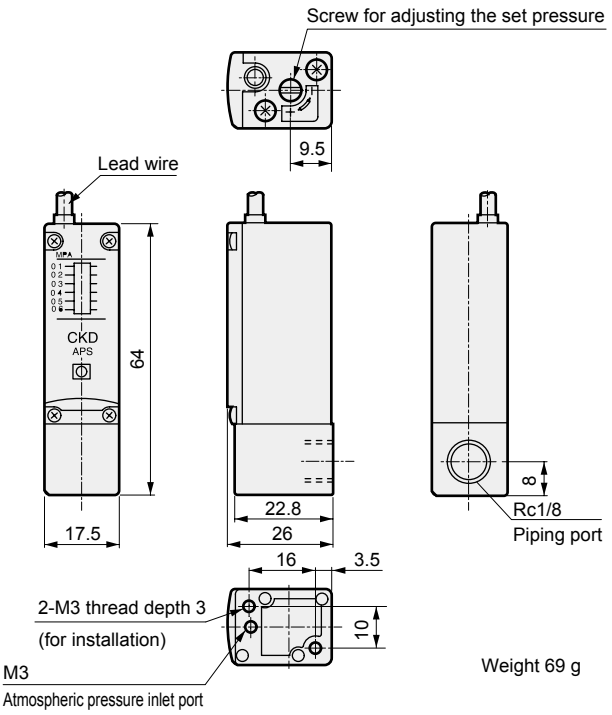
Ⓒ Option

Code	Content
Ⓐ Position of piping port/bore size/scale plate direction	
6B	Back surface Rc1/8, vertical *1
6D	Bottom surface Rc1/8, vertical
6F	Back surface flange, vertical
6L	Both side surfaces Rc1/8, vertical *1
6Y	Back surface flange, horizontal
Ⓑ Lead wire length	
Blank	1 m
3	3 m
5	5 m
Ⓒ Option	
Blank	No
1	DIN rail bracket attached (6D) only
2	Nipple attached (6D) only

*1: When installing, be careful not to block the atmospheric release port.

Dimensions

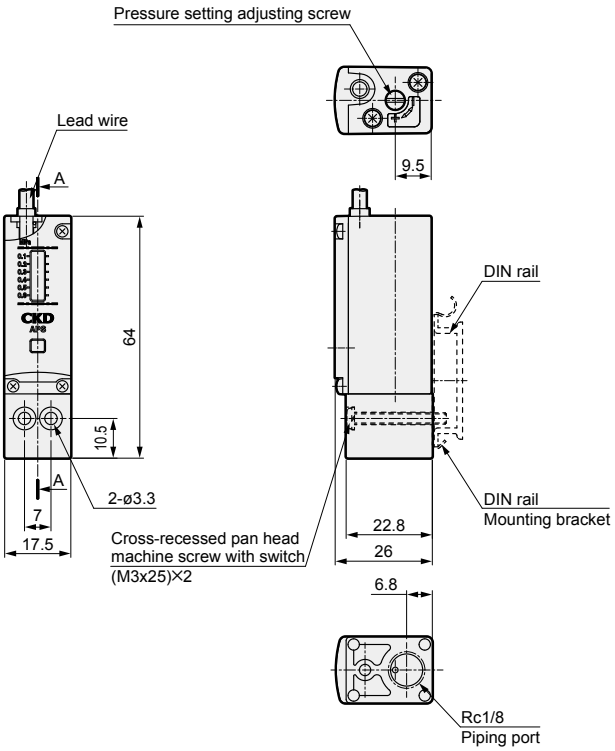
● APS-6B-W-*-P4



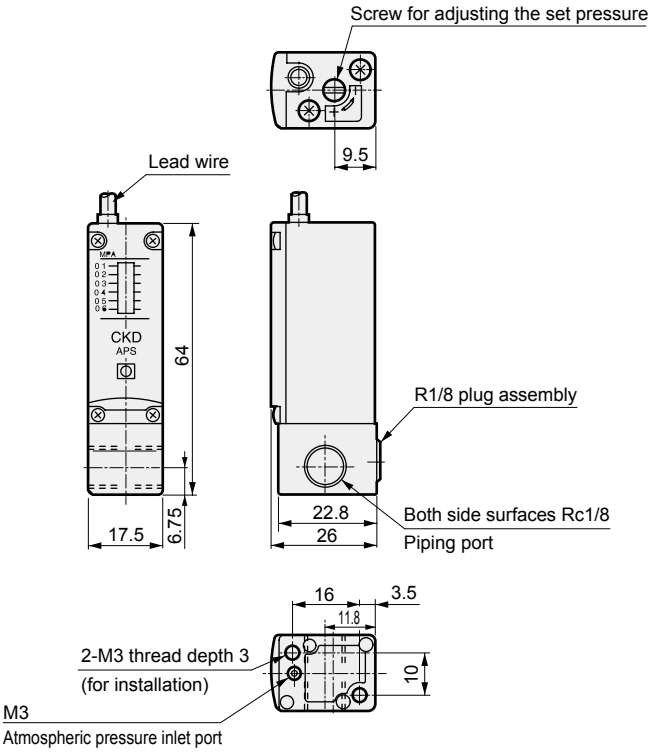
Weight 69 g

Note: When installing on the bottom, be careful not to block the atmospheric release port.

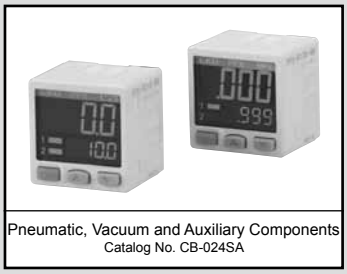
● APS-6D-W-*-P4



● APS-6L-W-*-P4

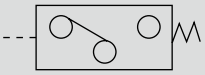


Note: When installing on the bottom, be careful not to block the atmospheric release port.



Digital pressure sensor

PPX Series

JIS symbol 

P4 compliant as standard

Specifications

Descriptions		Standard		High-function	
		For low pressure PPX-R01□	For high pressure PPX-R10□	For low pressure PPX-R01□H	For high pressure PPX-R10□H
Kind of pressure		Gauge pressure			
Rated pressure		-100.0 to +100.0 kPa	-0.100 to +1.000 MPa	-100.0 to +100.0 kPa	-0.100 to +1.000 MPa
Set pressure		-101.0 to +101.0 kPa	-0.101 to +1.010 MPa	-101.0 to +101.0 kPa	-0.101 to +1.010 MPa
Proof pressure		500 kPa	1.5 MPa	500 kPa	1.5 MPa
Applicable fluid		Air/non-corrosive gas			
Power supply voltage		12 to 24 VDC ±10% Ripple P−P 10% or less			
Power consumption		Normal: 720 mW or less (current consumption 30 mA or less at 24 V power supply voltage) ECO mode: 480 mW of less at STD (current consumption 20 mA or less at power supply voltage 24 V), 360 mW or less at FULL (current consumption 15 mA or less at power supply voltage 24 V)			
Comparison outputs (comparison output 1, comparison output 2)		[NPN output] NPN transistor/open collector · Max. inrush current: 100 mA · Applied voltage: 30 VDC or less (comparison output - 0 V interval) · Residual voltage: 2 V or less (at inrush current 100 mA)		[PNP output] PNP transistor/open collector · Max. output current: 100 mA · Applied voltage: 30 VDC or less (comparison output - +V interval) · Residual voltage: 2 V or less (at outflow current 100 mA)	
	Output operation	Select NO/NC with key operation			
	Output mode	EASY mode/hysteresis mode/window comparator mode			
	Hysteresis	Min. 1 digit (variable)			
	Repeatability	±0.1% F.S. (within ±2 digits)	±0.2% F.S. (within ±2 digits)	±0.1% F.S. (within ±2 digits)	±0.2% F.S. (within ±2 digits)
	Response time	2.5 ms, 5 ms, 10 ms, 25 ms, 50 ms, 100 ms, 250 ms, 500 ms, 1000 ms, 5000 ms Select by key operation			
	Short-circuit protection	Equipped			
External input (auto reference function /remote zero adjustment function)		—		[NPN output] ON voltage: 0.4 VDC or less OFF voltage: 5 to 30 VDC or release Input impedance: 10 kΩ Input time: 1 ms and over	[PNP output] ON voltage: 5V to +VDC OFF voltage: 0.6 VDC or less or release Input impedance: 10 kΩ Input time: 1 ms and over
Analog voltage output		—		Output voltage: 1 to 5 V Zero point: Within 3 V ± 5% F.S. Span: Within 4 V ± 5% F.S. Linearity: Within ±1% F.S. Output impedance: 1 kΩ	Output voltage: 0.6 to 5 V Zero point: Within 1 V ± 5% F.S. Span: Within 4.4 V ± 5% F.S. Linearity: Within ±1% F.S. Output impedance: 1 kΩ
Analog current output		—		Output current: 4 to 20 mA Zero point: Within 12 mA ±5% F.S. Span: Within 16 mA ±5% F.S. Linearity: Within ±1% F.S. Load resistance: 250 Ω (max.)	Output voltage: 2.4 to 20 mA Zero point: Within 4 mA ±5% F.S. Span: Within 17.6 mA ±5% F.S. Linearity: Within ±1% F.S. Load resistance: 250 Ω (max.)
Display		4-digit + 4-digit 3-color LCD display (display updating cycle: 250 ms, 500 ms, 1000 ms select by key operation)			
	Display pressure range	-101.0 to +101.0 kPa	-0.101 to +1.010 MPa	-101.0 to +101.0 kPa	-0.101 to +1.010 MPa
Indicator lamp		Orange LED (comparison output 1 operation indicator lamp, comparison output 2 operation indicator lamp: Lit when comparison output is ON)		Orange LED (comparison output 1 operation indicator lamp: Lit when comparison output is ON, analog voltage output operation indicator lamp: Lit at setup)	
Environment conditions	Degree of protection	IP40(IEC)			
	Ambient temperature	-10 to +50°C, at the time of storage: -10 to +60°C			
	Ambient humidity	35 to 85% RH (no condensation, freezing), store: 35 to 85% RH			
	Withstand voltage	1000 VAC for 1 minute applied to all charged sections/between cases			
	Insulation resistance	50 MΩ and over with 500 VDC megger all charged sections/between cases			
	Vibration resistance	Durability 10 to 500 Hz compound amplitude 3 mm 2 hours each in XYZ directions (when mounted on panel: durability 10 to 150 Hz compound amplitude 0.75 mm 2 hours each in XYZ directions)			
	Shock resistance	Durability 100 m/S² (approx. 10 G) 3 times each in XYZ directions			
Temperature characteristics (+20°C as reference)		±0.5% F.S. or less	Within ±1% F.S.	±0.5% F.S. or less	Within ±1% F.S.
Port size *1		M5 female thread + R (PT) 1/8 male thread			
Material		Case: PBT (glass fiber included), LCD display part: acrylic resin, pressure port: SUS 303, mounting screw part: copper alloy (nickeling), switch part: silicone rubber			
Connection		Connector			
Wire length		When the wire is extended, up to 100 m permissible with 0.3 mm² and over cable (less than 30 m when CE Marking-compliant)			
Unit change function		Only supported for overseas (-KA) (MPa, kPa, kgf/cm², bar, psi, mmHg, inchHg)			
Weight		Body weight: approx. 40 g, weight including package: 130 g			
Accessory *2		PPX-C2 (2 m cable with connector): 1 pc. Unit seal label (KA with unit change): MPa, kPa, kgf/cm², bar, psi, mmHg, inchHg			

*1: Refer to Table 1 on the next page for export use.
*2: For (- J), connector cable is not attached.

How to order

[How to order for domestic market]

PPX - R01 N - 6M - ( )

Ⓐ Pressure range
Ⓑ Output
Ⓒ Piping shape
Ⓓ Connector cable

Code	Content
Ⓐ Pressure range	
R01	-100.0 to 100.0 kPa
R10	-0.100 to 1.000 MPa
Ⓑ Output	
N	NPN transistor output 2 point (Standard)
P	PNP transistor output 2 point (Standard)
NH	NPN transistor output 1 point + analog voltage output or external input (high-function)
PH	PNP transistor output 1 point + analog voltage output or external input (high-function)
Ⓒ Piping shape	
6M	R1/8, M5 female thread
Ⓓ Connector cable	
Blank	2 m connector cable attached
J *1	Without connector cable

*1: Selectable only when "N" or "P" is selected for Ⓑ output.

[How to order for foreign market]

PPX - R01 N - 6M - ( ) - KA

Ⓐ Pressure range
Ⓑ Output
Ⓒ Piping shape
Ⓓ Connector cable
Ⓔ Unit change

In compliance with the new Measurement Law, export models with unit select function cannot be used in Japan.

Code	Content
Ⓐ Pressure range	
R01	-100.0 to 100.0 kPa
R10	-0.100 to 1.000 MPa
Ⓑ Output	
N	NPN transistor output 2 point (Standard)
P	PNP transistor output 2 point (Standard)
NH	NPN transistor output 1 point + analog voltage output or external input (high-function)
PH	PNP transistor output 1 point + analog voltage output or external input (high-function)
Ⓒ Piping shape	
6M *1	R1/8, M5 female thread
6N	NPT1/8, M5 female thread
6G *2	G1/8, M5 female thread
Ⓓ Connector cable	
Blank	2 m connector cable attached
J *3	Without connector cable
Ⓔ Unit change	
KA	With unit change function

*1: Only "N" or "NH" can be selected for Ⓑ output.
*2: Selectable only when "P" or "PH" is selected for Ⓑ output.
*3: Selectable only when "N" or "P" is selected for Ⓑ output.

Compatibility table by variation

	PPX
Port size	Rc1/8, M5 female thread
P4	Supports P4 specifications as standard
P40	● Product is limited to the model number indicated in *2

*1: Bracket mounting is not possible for P40.
*2: P40 is compatible only with PPX-R10P-6M-J-P40/PPX-R10N-6M-J-P40.
*3: P40 Connector must be ordered separately. PPX-C2-FL401967-P40

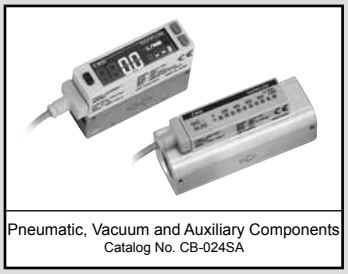
● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Destination	Switch output		Unit	Unit change function	Unit seal label Attached *1	Piping port
	NPN	PNP				
Domestic	○	○	kPa/MPa	-	-	R1/8(M5)
Asia	○	-	kPa/MPa	○	○	R1/8(M5)
Europe	-	○	kPa/MPa	○	○	G1/8(M5)
North America	○	○	kPa/MPa	○	○	NPT1/8(M5)

*1: Refer to "Pneumatic, Vacuum and Auxiliary Components" (Catalog No. CB-024SA) for the attached unit seal.

[Table 1]

Type	Model No.	Port size	Output	Remarks
Standard	PPX-R01N-6M-(J)-KA	M5 female thread + R (PT) 1/8 male thread	NPN transistor/open collector	For Asia
	PPX-R10N-6M-(J)-KA			
High-function	PPX-R01NH-6M-KA			
	PPX-R10NH-6M-KA			
Standard	PPX-R01P-6G-(J)-KA	M5 female thread + G1/8 male thread	PNP transistor/open collector	For Europe
	PPX-R10P-6G-(J)-KA			
High-function	PPX-R01PH-6G-KA			
	PPX-R10PH-6G-KA			
Standard	PPX-R01N-6N-(J)-KA	M5 female thread + NPT1/8 male thread	NPN transistor/open collector	For North America
	PPX-R01P-6N-(J)-KA		PNP transistor/open collector	
	PPX-R10N-6N-(J)-KA		NPN transistor/open collector	
	PPX-R10P-6N-(J)-KA		PNP transistor/open collector	
High-function	PPX-R01NH-6N-KA		NPN transistor/open collector	
	PPX-R01PH-6N-KA		PNP transistor/open collector	
	PPX-R10NH-6N-KA		NPN transistor/open collector	
	PPX-R10PH-6N-KA		PNP transistor/open collector	



Small flow rate sensor (RAPIFLOW)
Integrated display/separated display

FSM2 Series

- Aluminum body (flow rate range: 500 ℓ/min, 1000 ℓ/min)
- Stainless steel body (flow rate range: 500 mℓ/min to 200 ℓ/min)

P4 compliant as standard

RoHS CAD

Integrated display (stainless steel body) specifications



* With needle valve

Descriptions				Integrated display (stainless steel body) FSM2-[*1][*2][*3][*4]-[*5][*6][*7]-[*8]								
			Full scale flow rate	005	010	020	050	100	200	500	101	201
Flow rate *1	* 4	005	500 mℓ/min	●								
		010	1 ℓ/min		●							
		020	2 ℓ/min			●						
		050	5 ℓ/min				●					
		100	10 ℓ/min					●				
		200	20 ℓ/min						●			
		500	50 ℓ/min							●		
		101	100 ℓ/min								●	
		201	200 ℓ/min									●
Port size/ body material	* 5	S06	Rc1/8 Stainless steel	●	●	●	●	●	●	● (Not for carbon dioxide)		
		S08	Rc1/4 Stainless steel							●	●	● Only air and nitrogen gas
		SM5	M5 Stainless steel (made to order)	●	●	●	●	●	● (Not for carbon dioxide)			
Flow rate display *1, *2			Display	4 digit + 4 digit 2 color LCD								
			Display range *3 F	0 to 500 mℓ/min	0 to 1000 mℓ/min	0 to 2.00 ℓ/min	0 to 5.00 ℓ/min	0 to 10.00 ℓ/min	0 to 20.0 ℓ/min	0 to 50.0 ℓ/min	0 to 100.0 ℓ/min	0 to 200 ℓ/min
			Display range *3 R	-500 to 500 mℓ/min	-1000 to 1000 mℓ/min	-2.00 to 2.00 ℓ/min	-5.00 to 5.00 ℓ/min	-10.00 to 10.00 ℓ/min	-20.0 to 20.0 ℓ/min	-50.0 to 50.0 ℓ/min	-100.0 to 100.0 ℓ/min	-200 to 200 ℓ/min
			Display resolution	1 mℓ/min		0.01 ℓ/min			0.1 ℓ/min			1 ℓ/min
Integrating functions *3			Display range	9999999 mℓ		99999.99 ℓ			999999.9 ℓ			9999999 ℓ
			Display resolution	1 mℓ		0.01 ℓ			0.1 ℓ			1 ℓ
			Integrated pulse output rate	5 mℓ	10 mℓ	0.02 ℓ	0.05 ℓ	0.1 ℓ	0.2 ℓ	0.5 ℓ	1 ℓ	2 ℓ
Working conditions	Applicable fluid *4	*6	Blank	Clean air (JIS B 8392-1:2012 1.1.1 to 5.6.2), compressed air (JIS B 8392-1:2012 1.1.1 to 1.6.2), nitrogen gas								
			AR	Argon								
			C2	Carbon dioxide								
	Max. working pressure			1.0 MPa								
	Min. working pressure			-0.09 MPa								
	Proof pressure			1.5 MPa								
	Operating ambient temperature/humidity			0 to 50°C, 90% RH or less								
	Fluid temperature			0 to 50°C (no condensation)								
Accuracy*5	Working range			Uni-direction: 3 to 100% F.S., bi-direction: -100 to -3% F.S., 3 to 100% F.S.								
	Linearity (display/analog output)			Within ±3% F.S. (Secondary side released to atmosphere)								
	Pressure characteristics			Within ±5% F.S. (-0.09 to 0.7 MPa, where secondary side is released to atmosphere)								
	Temperature characteristics			Within ±0.2% F.S./°C (15 to 35°C, base temperature 25°C)								
	Reproducibility (repeatability)			Within ±1% F.S.								
Response time		*6		50 ms or less								
Output	Switch output	*1	N	Output 2 points (NPN open collector output, 50 mA or less, voltage drop 2.4 V or less)								
			P	Output 2 points (PNP open collector output, 50 mA or less, voltage drop 2.4 V or less)								
	Analog output	*2	V	1 to 5 V voltage output 1 point (connecting load impedance 50 kΩ and over) *7								
			A	4 to 20 mA current output 1 point (connecting load impedance 0 to 300 Ω)								
Power supply voltage *8		*2	V	12 to 24 VDC(10.8 to 26.4 V)								
			A	24 VDC(21.6 to 26.4 V)								
Current consumption		*9		50 mA or less								
Lead wire				ø3.7, AWG26 or equivalent x 5-conductor (connector), insulator outer diameter ø1.0								
Functions				Flow rate display, flow rate display peak hold, switch output, analog output, etc.								
Mounting	Mounting orientation			Unrestricted in vertical/horizontal direction								
	Straight piping section			Not required								
Degree of protection				IEC standards IP40 or equivalent								
Protection circuit		*10		Power reverse connection protection, switch output reverse connection protection, switch output load short-circuit protection								
EMC Directive				EN55011, EN61000-6-2, EN61000-4-2/3/4/6/8								
Weight (main body only)		*5	S06	Approx. 95 g								
			S08	Approx. 115 g								
			SM5	Approx. 140 g								
Clean-room specifications		*8	P70	Anti-dust generation *11								
			P80	Oil free *12								

Integrated display (aluminum body) specification

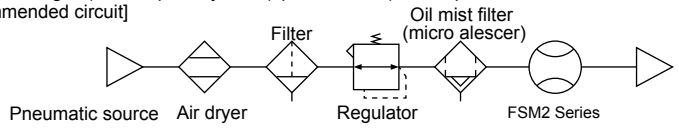
* Products with needle valves are not P4 compliant.



P4 compliant as standard

Descriptions					Integrated display (aluminum body) FSM2-[*1][*2][*3][*4]-[*5][*6]-[*7]	
			Full scale flow rate		501	102
Flow rate *1	*4	501	500 ℓ/min		●	
		102	1000 ℓ/min			●
Port size/ body material	*5	A15	Rc1/2 / aluminum		●	●
Flow rate display *1, *2			Display		4 digit + 4 digit 2 color LCD	
			Display range	*3 F	0 to 500 ℓ/min	0 to 1000 ℓ/min
				*3 R	-500 to 500 ℓ/min	-1000 to 1000 ℓ/min
			Display resolution		1 ℓ/min	
Integrating functions *3			Display range		9999999 ℓ	
			Display resolution		1 ℓ	
			Integrated pulse output rate		5 ℓ	10 ℓ
Working conditions	Applicable fluids			*4	Clean air (JIS B 8392-1:2012 1.1.1 to 5.6.2), compressed air (JIS B 8392-1:2012 1.1.1 to 1.6.2), nitrogen gas	
	Max. working pressure				0.7 MPa	
	Min. working pressure				-0.09 MPa	
	Proof pressure				1 MPa	
	Operating ambient temperature/humidity				0 to 50°C, 90% RH or less	
	Fluid temperature				0 to 50°C (no condensation)	
Accuracy*5	Working range				Uni-direction: 3 to 100% F.S., bi-direction: -100 to -3% F.S., 3 to 100% F.S.	
	Linearity (display/analog output)				Within ±3% F.S. (Secondary side released to atmosphere)	
	Pressure characteristics				Within ±5% F.S. (-0.09 to 0.7 MPa, where secondary side is released to atmosphere)	
	Temperature characteristics				Within ±0.2% F.S./°C (15 to 35°C, base temperature 25°C)	
	Reproducibility (repeatability)				Within ±1% F.S.	
Response time				*6	50 ms or less	
Output	Switch output			*1 N	Output 2 points (NPN open collector output, 50 mA or less, voltage drop 2.4 V or less)	
				*1 P	Output 2 points (PNP open collector output, 50 mA or less, voltage drop 2.4 V or less)	
	Analog output			*2 V	1 to 5 V voltage output 1 point (connecting load impedance 50 kΩ and over) *7	
				*2 A	4 to 20 mA current output 1 point (connecting load impedance 0 to 300 Ω)	
Power supply voltage *8				*2 V	12 to 24 VDC(10.8 to 26.4 V)	
				*2 A	24 VDC(21.6 to 26.4 V)	
Current consumption				*9	50 mA or less	
Lead wire					ø3.7, AWG26 or equivalent x 5-conductor (connector), insulator outer diameter ø1.0	
Functions					Flow rate display, flow rate display peak hold, switch output, analog output, etc.	
Mounting	Mounting orientation				Unrestricted in vertical/horizontal direction	
	Straight piping section				Not required	
Degree of protection					IEC standards IP40 or equivalent	
Protection circuit				*10	Power reverse connection protection, switch output reverse connection protection, switch output load short-circuit protection	
EMC Directive					EN55011, EN61000-6-2, EN61000-4-2/3/4/6/8	
Weight (main body only)			*5	A15	Approx. 155 g	
Clean-room specifications			*7	P70	Anti-dust generation *11	
				P80	Oil free *12	

*1: The value converted to volumetric flow rate at standard condition (20°C 1 barometric pressure (101 kPa) relative humidity 65%).
*2: The flow rate display is rounded off at approx. ±1% F.S. or less (forced zero).
*3: The accumulated flow is a calculated (reference) value. It is reset when the power is turned OFF.
*4: Use dry gas which does not contain corrosive elements such as chlorine, sulfur or acids, and which is clean and does not contain dust or oil mist. When using compressed air, use clean air that complies with JIS B 8392-1:2012 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oil oxides, foreign matter, etc.). To maintain the function of this product, install a filter, air dryer (min. pressure dew point 10°C or less), and oil mist filter (max. oil content 0.1 mg/m^3) on the primary side (upstream side) of this product.
[Recommended circuit]



[Recommended device]
Air filter: F Series
Oil mist filter: M Series

*5: Calibration of this product is performed within specified range. Accuracy conditions: Temperature 25 ±3°C, power supply voltage 24±0.01 VDC. F.S. stands for full scale flow rate.
*6: Response time can be set in seven steps from 50 ms. or less to approx. 1.5 s.
*7: The output impedance of the analog output section is approx. 1 kΩ. If the impedance of the connecting load is small, output and error increase. Check error with the impedance of the connecting load before using.
*8: The power supply voltage specifications differ for the voltage output and current output.
*9: Current for when 24 VDC is connected, and no load is applied. The current consumption will vary depending on how the load is connected.
*10: This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
*11: [P70] Anti-dust generation (product surface is degreased and cleaned before packing. Heat sealed into antistatic bag in clean bench (Class 1000 and over).)
*12: [P80] Oil-free (In addition to P70 specifications, gas-contact sections are degreased and cleaned. Refer to "Pneumatic, Vacuum and Auxiliary Components" (Catalog No. CB-024SA) for gas-contact section materials.)

Separated display (stainless steel body) specifications



P4 compliant as standard

Descriptions				Separated display (stainless steel body) FSM2-A[*1][*2][*3]-[*4][*5]-[*6]								
			Full scale flow rate	005	010	020	050	100	200	500	101	201
Flow rate *1	* 3	005	500 mℓ/min	●								
		010	1 ℓ/min		●							
		020	2 ℓ/min			●						
		050	5 ℓ/min				●					
		100	10 ℓ/min					●				
		200	20 ℓ/min						●			
		500	50 ℓ/min							●		
		101	100 ℓ/min								●	
		201	200 ℓ/min									●
Port size/ body material	* 4	S06	Rc1/8 Stainless steel	●	●	●	●	●	●	● (Not for carbon dioxide)		
		S08	Rc1/4 Stainless steel							●	●	● Only air and nitrogen gas
		SM5	M5 Stainless steel (made to order)	●	●	●	●	●	● (Not for carbon dioxide)			

Flow direction		*2	F	Uni-direction
			R	Bi-direction
Working conditions	Applicable fluid *2	*5	Blank	Clean air (JIS B 8392-1:2012 1.1.1 to 5.6.2), compressed air (JIS B 8392-1:2012 1.1.1 to 1.6.2), nitrogen gas
			AR	Argon
			C2	Carbon dioxide
	Max. working pressure			1.0 MPa
	Min. working pressure			-0.09 MPa
	Proof pressure			1.5 MPa
	Operating ambient temperature/humidity			0 to 50°C, 90% RH or less
	Fluid temperature			0 to 50°C (no condensation)
Accuracy*3	Working range			Uni-direction: 3 to 100% F.S., bi-direction: -100 to -3% F.S., 3 to 100% F.S.
	Linearity (analog output)			Within ±3% F.S. (Secondary side released to atmosphere)
	Pressure characteristics			Within ±5% F.S. (-0.09 to 0.7 MPa, where secondary side is released to atmosphere)
	Temperature characteristics			Within ±0.2% F.S./°C (15 to 35°C, base temperature 25°C)
	Reproducibility (repeatability)			Within ±1% F.S.
Response time				50 ms or less
Display				Flow bar display
Output	Analog output	*1	V	1 to 5 V voltage output 1 point (connecting load impedance 50 kΩ and over) *4
			A	4 to 20 mA current output 1 point (connecting load impedance 0 to 300 Ω)
Power supply voltage *5		*1	V	12 to 24 VDC(10.8 to 26.4 V)
			A	24 VDC(21.6 to 26.4 V)
Current consumption		*6		50 mA or less
Lead wire				ø3.7, AWG26 or equivalent x 4-conductor (connector), insulator outer diameter ø1.0
Functions				Analog output, flow bar display, error display
Mounting	Mounting orientation			Unrestricted in vertical/horizontal direction
	Straight piping section			Not required
Degree of protection				IEC standards IP40 or equivalent
Protection circuit		*7		Power reverse connection protection
EMC Directive				EN55011, EN61000-6-2, EN61000-4-2/3/4/6/8
Weight (main body only)		*4	S06	Approx. 85 g
			S08	Approx. 105 g
			SM5	Approx. 130 g
Clean-room specifications		*6	P70	Anti-dust generation *8
			P80	Oil free *9

Separated display (aluminum body) specifications

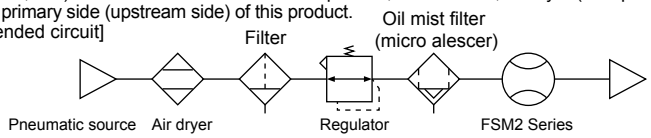
* Products with needle valves are not P4 compliant.



P4 compliant as standard

Descriptions				Separated display (aluminum body) FSM2-A[*1][*2][*3]-[*4]-[*5]		
			Full scale flow rate	501	102	
Flow rate *1	*3	501	500 ℓ/min	●		
		102	1000 ℓ/min		●	
Port size/ body material	*4	A15	Rc1/2 / aluminum	●	●	
Flow direction	*2	F	Uni-direction			
		R	Bi-direction			
Working conditions	Applicable fluid		*2	Clean air (JIS B 8392-1:2012 1.1.1 to 5.6.2), compressed air (JIS B 8392-1:2012 1.1.1 to 1.6.2), nitrogen gas		
	Max. working pressure			0.7 MPa		
	Min. working pressure			-0.09 MPa		
	Proof pressure			1 MPa		
	Operating ambient temperature/humidity			0 to 50°C, 90% RH or less		
	Fluid temperature			0 to 50°C (no condensation)		
Accuracy*3	Working range			Uni-direction: 3 to 100% F.S., bi-direction: -100 to -3% F.S., 3 to 100% F.S.		
	Linearity (analog output)			Within ±3% F.S. (Secondary side released to atmosphere)		
	Pressure characteristics			Within ±5% F.S. (-0.09 to 0.7 MPa, where secondary side is released to atmosphere)		
	Temperature characteristics			Within ±0.2% F.S./°C (15 to 35°C, base temperature 25°C)		
	Reproducibility (repeatability)			Within ±1% F.S.		
Response time				50 ms or less		
Display				Flow bar display		
Output	Analog output		*1	V	1 to 5 V voltage output 1 point (connecting load impedance 50 kΩ and over) *4	
				A	4 to 20 mA current output 1 point (connecting load impedance 0 to 300 Ω)	
Power supply voltage *5			*1	V	12 to 24 VDC(10.8 to 26.4 V)	
				A	24 VDC(21.6 to 26.4 V)	
Current consumption			*6	50 mA or less		
Lead wire				ø3.7, AWG26 or equivalent x 4-conductor (connector), insulator outer diameter ø1.0		
Functions				Analog output, flow bar display, error display		
Mounting	Mounting orientation			Unrestricted in vertical/horizontal direction		
	Straight piping section			Not required		
Degree of protection				IEC standards IP40 or equivalent		
Protection circuit			*7	Power reverse connection protection		
EMC Directive				EN55011, EN61000-6-2, EN61000-4-2/3/4/6/8		
Weight (main body only)		*4	A15	Approx. 145 g		
Clean-room specifications		*5	P70	Anti-dust generation *8		
			P80	Oil free *9		

*1: The value converted to volumetric flow rate at standard condition (20°C 1 barometric pressure (101 kPa) relative humidity 65%).
*2: Use dry gas which does not contain corrosive elements such as chlorine, sulfur or acids, and which is clean and does not contain dust or oil mist. When using compressed air, use clean air that complies with JIS B 8392-1:2012 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oil oxides, foreign matter, etc.). To maintain the function of this product, install a filter, air dryer (min. pressure dew point 10°C or less), and oil mist filter (max. oil content 0.1 mg/m^3) on the primary side (upstream side) of this product.
[Recommended circuit]



[Recommended device]
Air filter: F Series
Oil mist filter: M Series

*3: Calibration of this product is performed within specified range. Accuracy conditions: Temperature 25 ±3°C, power supply voltage 24±0.01 VDC. F.S. stands for full scale flow rate.
*4: The output impedance of the analog output section is approx. 1 kΩ. If the impedance of the connecting load is small, output and error increase. Check error with the impedance of the connecting load before using.
*5: The power supply voltage specifications differ for the voltage output and current output.
*6: Current for when 24 VDC is connected, and no load is applied. The current consumption will vary depending on how the load is connected.
*7: This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
*8: [P70] Anti-dust generation (product surface is degreased and cleaned before packing. Heat sealed into antistatic bag in clean bench (Class 1000 and over).)
*9: [P80] Oil-free (In addition to P70 specifications, gas-contact sections are degreased and cleaned. Refer to "Pneumatic, Vacuum and Auxiliary Components" (Catalog No. CB-024SA) for gas-contact section materials.)

P4 compliant as standard

Separated display specifications

Descriptions				Separated display FSM2-D-[*1][*2]-□-[*3]	
Settable flow rate range			*1	mℓ	5, 10, 50, 100, 500
				ℓ	1, 2, 4, 5, 10, 12, 20, 25, 32, 50, 100, 200, 500, 1000, 1500
Operating ambient temperature/humidity				0 to 50°C	
Display				4 digit + 4 digit 2 color LCD	
Input voltage				1 to 5 V	
Output	Switch output	*1	N	Output 2 points (NPN open collector output, 50 mA or less, voltage drop 2.4 V or less)	
			P	Output 2 points (PNP open collector output, 50 mA or less, voltage drop 2.4 V or less)	
	Analog output	*2	V	1 to 5 V voltage output 1 point (connecting load impedance 50 kΩ and over) *6	
			A	4 to 20 mA current output 1 point (connecting load impedance 0 to 300 Ω)	
Power supply voltage		*2	V	12 to 24 VDC(10.8 to 26.4 V)	
			A	24 VDC(21.6 to 26.4 V)	
Current consumption			*2	40 mA or less (when 24 VDC is connected, and no load is connected)	
Lead wire				ø3.7, AWG26 or equivalent x 5-conductor (connector), insulator outer diameter ø1.0	
Functions				Flow rate display, flow rate display peak hold, switch output, analog output	
Degree of protection				IEC standards IP40 or equivalent	
Protection circuit			*3	Power reverse connection protection	
EMC Directive				EN55011, EN61000-6-2, EN61000-4-2/3/4/6/8	
Accessory				1 sensor connection connector (e-con), conforming cable AWG24 to 26, insulator outer diameter ø1.0 to 1.2	
Weight (main body only)				Approx. 40 g	
Clean-room specifications		*4	*3 P70	Anti-dust generation	

*1: The flow rate range, flow direction and gas type are automatically recognized only when the FSM2 separated display. (Default state)
The FSM-H Series, FSM-V Series and WFK3000 Series flow rate ranges are supported in addition to the FSM2 Series, but automatic recognition is supported only with the FSM2 Series. Always set the product's flow rate range, flow direction and gas type before use.
The connectable flow rate ranges are shown in "Display by flow rate range" below.
When the sensor section is changed, the previous flow rate range settings, etc., will still be recorded. Always reset the settings before using.
*2: Current for when 24 VDC is connected, and no load is connected. The current consumption will vary depending on how the load is connected.
*3: This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
*4: [P70] Anti-dust generation (product surface is degreased and cleaned before packing. Heat sealed into antistatic bag in clean bench (Class 1000 and over).)
*5: When connecting to the FSM-V Series or WFK3000 Series, the cable size is different so a separate compatible sensor connection connector (e-con) will be required. Contact your nearest CKD sales office or dealer.
The attached sensor connection connector (e-con) can be used with the FSM Series and FSM-H Series.
*6: The output impedance of the analog output section is approx. 1 kΩ. If the impedance of the connecting load is small, output and error increase. Check error with the impedance of the connecting load before using.

Display for each flow rate range

Flow rate display	Display range	Uni-direction	0 to 500 mℓ/min	0 to 1000 mℓ/min	0 to 2.00 ℓ/min	0 to 4.00 ℓ/min	0 to 5.00 ℓ/min	0 to 10.00 ℓ/min	0 to 12.0 ℓ/min	0 to 20.0 ℓ/min	0 to 25.0 ℓ/min	0 to 32.0 ℓ/min	0 to 50.0 ℓ/min	0 to 100.0 ℓ/min	0 to 200 ℓ/min	0 to 500 ℓ/min	0 to 1000 ℓ/min	0 to 1.50 m^3/min	0 to 5.00 mℓ/min	0 to 10.00 mℓ/min	0 to 50.0 mℓ/min	0 to 100.0 mℓ/min
		Bi-direction	-500 to 500 mℓ/min	-1000 to 1000 mℓ/min	-2.00 to 2.00 ℓ/min	—	-5.00 to 5.00 ℓ/min	-10.00 to 10.00 ℓ/min	—	-20.0 to 20.0 ℓ/min	—	—	-50.0 to 50.0 ℓ/min	-100.0 to 100.0 ℓ/min	-200 to 200 ℓ/min	-500 to 500 ℓ/min	-1000 to 1000 ℓ/min	-1.50 to 1.50 m^3/min	-5.00 to 5.00 mℓ/min	-10.00 to 10.00 mℓ/min	-50.0 to 50.0 mℓ/min	-100.0 to 100.0 mℓ/min
	Display resolution		1 mℓ/min		0.01 ℓ/min				0.1 ℓ/min						1 ℓ/min			0.01 m^3/min	0.01 mℓ/min		0.1 mℓ/min	
Integrating functions	Display range		9999999 mℓ		99999.99 ℓ				999999.9 ℓ						9999999 ℓ			99999.99 m^3	99999.99 mℓ		999999.9 mℓ	
	Display resolution		1 mℓ		0.01 ℓ				0.1 ℓ						1 ℓ			0.01 m^3	0.01 mℓ		0.1 mℓ	
	Integrated pulse output rate		5 mℓ	10 mℓ	0.02 ℓ	0.04 ℓ	0.05 ℓ	0.1 ℓ	0.12 ℓ	0.2 ℓ	0.25 ℓ	0.32 ℓ	0.5 ℓ	1 ℓ	2 ℓ	5 ℓ	10 ℓ	15 ℓ	0.05 mℓ	0.1 mℓ	0.5 mℓ	1 mℓ

*1: The flow rate display is rounded off at approx. ±1% F.S. or less (forced zero).
*2: The accumulated flow is a calculated (reference) value. It is reset when the power is turned OFF.
* The corresponding sensor is the voltage output (1 to 5 V). If the current output or other voltage output is connected, it will not operate properly.

How to order

● Integrated display, separated display

FSM2 - A V R 005 - S06 AR 1 B K - P70

Ⓐ Output

Code	Content
Ⓐ Output	
A *1	Separated display (analog output 1 point only)
N	Integrated display (switch output (NPN) 2 points, analog output 1 point)
P	Integrated display (switch output (PNP) 2 points, analog output 1 point)

Ⓑ Analog output *2

Ⓑ Analog output	
V	Voltage output (1 to 5 V)
A	Current output (4 to 20 mA)

Ⓒ Flow direction

Ⓒ Flow direction	
F	Uni-direction
R	Bi-direction

Ⓓ Flow rate

Ⓓ Flow rate range (full scale flow rate)	
005	500 mℓ/min
010	1 ℓ/min
020	2 ℓ/min
050	5 ℓ/min
100	10 ℓ/min
200	20 ℓ/min
500	50 ℓ/min
101	100 ℓ/min
201	200 ℓ/min
501	500 ℓ/min
102	1000 ℓ/min

* Refer to the table on the following page for the flow rate range, port size (body material), and gas combinations.

Ⓔ Port size (body material) *3

Ⓔ Port size (body material)	
S06	Rc1/8 (stainless steel)
S08	Rc1/4 (stainless steel)
A15	Rc1/2 (aluminum)
SM5	M5 (stainless steel) (made to order)

Ⓕ Gas

Ⓕ Gas	
Blank	Air, nitrogen gas
AR	Argon
C2	Carbon dioxide

Ⓖ Cable

Ⓖ Cable	
Blank	No
1	1 m
3	3 m

Ⓗ Bracket

Ⓗ Bracket	
Blank	No
B	With bracket
P *1	Panel mounting kit

Ⓘ Traceability

Ⓘ Traceability	
Blank	No
T	Traceability certification with series variation diagram and company certification
K	With company certification

Ⓙ Clean-room specifications

Ⓙ Clean-room specifications	
Blank	No
P70	Anti-dust generation
P80	Oil free

⚠ Precautions for model No. selection

*1: For the Ⓐ Output "A", the Ⓗ Panel mounting option "P" cannot be selected.
The separated display is not attached with the Ⓐ Output "A".
*2: When using the FSM2-D for the separated display with separated display, select "V".
*3: For the Ⓔ Port size "A15", the Ⓗ Panel mounting option "P" cannot be selected.
*4: Products with needle valves are not P4 compliant.

For flow rate range, port size (body material)

Ⓓ Flow rate range	Ⓔ Port size (body material) S06	S08	A15	SM5
005	●○△			●○△
010	●○△			●○△
020	●○△			●○△
050	●○△			●○△
100	●○△			●○△
200	●○△			●○
500	●○	●○△		
101		●○△		
201		●		
501			●	
102			●	

Ⓕ Gas
● : Air, nitrogen gas
○ : Argon
△ : Carbon dioxide
: Not available

Combination of port size and clean-room specifications

Ⓚ Clean-room specifications	Ⓔ Port size (body material) S06	S08	A15	SM5
P70	●	●	●	●
P80	●	●	●	●

● : Available

Discrete option model No.

FSM2 - LB1 - P70
Ⓐ Option
Ⓑ Clean-room specifications

Code	Content
Ⓐ Option	
LB1	Bracket (for Rc1/8, Rc1/4, M5)
LB2	Bracket (for Rc1/2)
KHS	Panel mounting kit (for integrated display, for separated display) *
C51	5-conductor cable 1 m (for integrated display and separated)
C53	5-conductor cable 3 m (for integrated display and separated)
C41	4-conductor cable 1 m (for separated display)
C43	4-conductor cable 3 m (for separated display)

Code	Content
Ⓑ Clean-room specifications	
Blank	No
P70	Anti-dust generation

* The panel mounting kit cannot be mounted on the FSM2-□-A15□.

● Separated display

FSM2 - D - N V - 3 P - P70
Ⓐ Output
Ⓑ Analog output
Ⓒ Cable
Ⓓ Bracket
Ⓔ Clean-room specifications

Code	Content
Ⓐ Output	
N	Switch output (NPN) 2 points, analog output 1 point
P	Switch output (PNP) 2 points, analog output 1 point

Ⓑ Analog output	
V	Voltage output (1 to 5 V)
A	Current output (4 to 20 mA)

Ⓒ Cable	
Blank	No
1	1 m
3	3 m

Ⓓ Bracket	
Blank	No
P	Panel mounting kit

Ⓔ Clean-room specifications	
Blank	No
P70	Anti-dust generation

Discrete option model No.

FSM2 - KHS - P70
Ⓐ Option
Ⓑ Clean-room specifications

Code	Content
Ⓐ Option	
KHS	Panel mounting kit set
C51	5-conductor cable 1 m (for integrated display and separated)
C53	5-conductor cable 3 m (for integrated display and separated)
EC	Sensor connection connector (e-con) 5-pc set

Ⓑ Clean-room specifications	
Blank	No
P70	Anti-dust generation

CAUTION The corresponding sensor is the voltage output (1 to 5 V). If the current output or other voltage output is connected, it doesn't operate properly. Use the FSM2-AV □ when using the FSM2.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

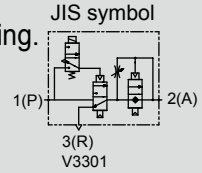
Slow start valve

V3301-W Series

Ensuring safety when starting and stopping.

● Port size: Rc1/4 to Rc1/2

JIS symbol



RoHS CAD

Specifications

Descriptions		V3301-W/V3321-W		
Actuation		Pilot operated soft spool valve		
Working fluid		Compressed air (excluding ultra-dry compressed air) *1		
Working pressure MPa		0.2 to 1.0		
Proof pressure MPa		1.5		
Ambient/fluid temperatures °C		5 to 60		
Port size	1(P)/2(A) port	Rc1/4	Rc3/8	Rc1/2
	3(R) port	Rc3/8		
	Gauge port	Rc1/4		
Effective cross-sectional area mm²	Low speed air supply	6		
	High speed air supply	40	64	76
	High speed exhaust	50	74	78
Response time		0.2 sec or less		
Lubrication		No lubrication *2		
Weight g		V3301-W:635 V3321-W:515		
Solenoid valve specifications		**V3301-W**		
Rated voltage V		AC100(50/60 Hz)	AC200(50/60 Hz)	DC24
Starting current A		0.076/0.058	0.038/0.030	0.092
Holding current A		0.038/0.029	0.019/0.015	
Power consumption W		2.2/1.7	2.2/1.7	2.2
Temperature rise K		40 or less		
Voltage fluctuation range		±10%		
Insulation class		Class B		
Electrical connections		Grommet lead wire/terminal box		

*1: Consult with CKD when using ultra dry compressed air.
*2: Use turbine oil Class 1 ISO VG32 for lubrication.

Compatibility table by variation

	V3301	
Port size	Rc1/4 to Rc1/2	
P4	▲	(*1) (*2)
P40	▲	(*1) (*2)

*1: Only LS is available for electrical connection.
*2: Valve is vertical mounting.
*3: Product dimensions are standard.

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

How to order

● Solenoid valve **V3301** - **08** - **W** - **FL** [ ]
(White)

Ⓐ Port size

Code	Content
Ⓐ Port size	
1(P)/2(A) port	
08	Rc1/4
10	Rc3/8
15	Rc1/2

⚠ *1: Select the reverse regulator (R*100-W) or reverse filter regulator (W*100-W) when installing the V3301-W onto the primary side of the regulator or filter regulator.
*2: Made to order. Contact CKD for details.



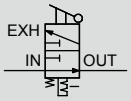
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Shut-off valve

V3000-W Series

One action exhaust operation. Ideal for preventing accidents due to residual pressure in pneumatic lines.

● Port size: 1/8 to 1/2

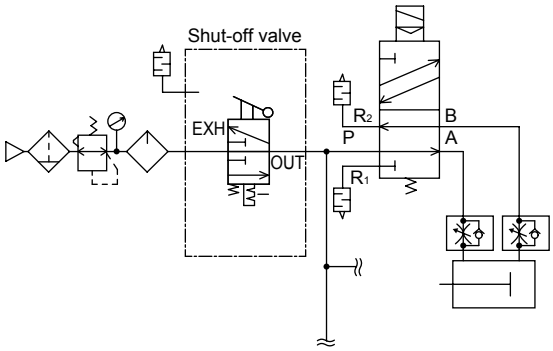
JIS symbol 

Specifications

Descriptions		V3000-8-W	V3000-10-W	V3000-15-W
Working fluid		Compressed air		
Max. working pressure MPa		1.0		
Proof pressure MPa		1.5		
Ambient/fluid temperatures °C		5 to 60		
Operation lever switching angle		90°		
Operating force	Pushing force N	80		
	Torque N·m	2		
Valve section leakage	cm^3/min (ANR)	10		
External leakage	cm^3/min (ANR)	10		
Port size (Rc)	IN-OUT	1/4	3/8	1/2
	EXH	3/8		
Weight kg		0.25		
Effective cross-sectional area {mm^2}	IN/OUT	40	70	85
	OUT / EXH	40	50	50

Applications

Explanation: For safety, release compressed air in the pneumatic circuit from the shut-off valve before repairing or adjusting the solenoid valve or air cylinder, etc.



Compatibility table by variation

	V3000
Port size	Rc1/4 to Rc1/2
P4	●
P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: In P40, parts without gas contact use zinc plating.

How to order

● Rotary actuator F.R.L.3000, 4000 Series

V3000 - 8 - W - ( ) P4 / P40 - BW

Ⓐ Port size

Ⓑ Option

Ⓒ Attachment

Code	Content
Ⓐ Port size	
8	Rc1/4
10	Rc3/8
15	Rc1/2
Ⓑ Option	
Blank	Standard flow (left → right)
X1	IN/OUT reverse flow (right → left)
Ⓒ Other attachments	***1, *2**
Blank	Without attachment
A8*W	1/4 pipe adaptor set
A10*W	3/8 pipe adaptor set
A15*W	1/2 pipe adaptor set
A20*W	3/4 pipe adaptor set
BW	C bracket

⚠ Precautions for model No. selection

*1: The pipe adaptor set and C bracket cannot be used together.
*2: The joiner set is attached with the pipe adaptor set.

⚠ Select the reverse regulator (R*100-W) or reverse filter regulator (W*100-W) when installing the V3000-W onto the primary side of the regulator or filter regulator.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

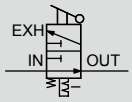
Shut-off valve with locking hole (OSHA compliant)

V3010-W/V6010-W Series

Ideal for preventing accidents due to residual pressure in pneumatic lines.

● Port size: 1/4 to 1

JIS symbol



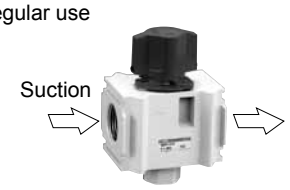
CAD RoHS

Specifications

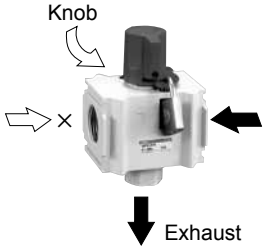
Descriptions		V3010-8-W	V3010-10-W	V3010-15-W	V6010-20-W	V6010-25-W
Working fluid		Compressed air				
Max. working pressure MPa		1.0				
Proof pressure MPa		1.5				
Ambient/fluid temperatures °C		5 to 60				
Operation lever switching angle		90°				
Operating force	Pushing force N	80 or less				
	Torque N·m	2.5 or less				
Valve seat leakage cm^3/min (ANR)		10 or less				
External leakage cm^3/min (ANR)		10 or less				
Port size (Rc)	IN-OUT	1/4	3/8	1/2	Rc3/4	Rc1
	EXH	3/8			Rc1/2	
Weight kg		0.3			0.8	
Effective cross-sectional area (mm^2)	IN→OUT	40	70	85	145	150
	OUT→EXH	40	50	50	105	110

Usage methods

● Regular use



● For maintenance
A lock is set where residual pressure is released.



OSHA (Occupational Safety and Health Administration)

OSHA establishes the US safety standards for employees.

[Lockout/Tagout Regulation]
When serving or maintaining machinery, the air source shall be closed with a shut-off valve (shut-off valve), and residual pressure shall be discharged. If a third party inadvertently operates the valve during such operation and compressed air is applied, the cylinder, etc., could move suddenly and injure personnel. This standard states that, "All valves used for such purposes shall have a key or a structure which can be locked with a key."

How to order

● Rotary actuator F.R.L.2000, 3000, 4000 Series

V3010 - 8 - W - ○ P4/P40 - A8W

● Rotary actuator F.R.L.6000, 8000 Series

V6010 - 20 - W - ○ P4/P40 - A8W
(White)

Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Attachment

Code	Content	Ⓐ Model No. V3010	Ⓐ Model No. V6010
Ⓑ Port size			
8	Rc1/4	●	
10	Rc3/8	●	
15	Rc1/2	●	
20	Rc3/4		●
25	Rc1		●
Ⓒ Option			
Blank	No	●	●
X1	IN/OUT reverse flow (right → left)	●	●
Ⓓ Other attachments			*1, *2
Blank	Without attachment	●	●
A8W	1/4 pipe adaptor set	●	
A10W	3/8 pipe adaptor set	●	
A15W	1/2 pipe adaptor set	●	
A20W	3/4 pipe adaptor set	●	●
A25W	1 pipe adaptor set	●	●
A32W	1 1/4 pipe adaptor set		●
BW	C bracket	●	●

⚠ Precautions for model No. selection

*1: The pipe adaptor set and C bracket cannot be used together.
*2: The joiner set is attached with the pipe adaptor set.

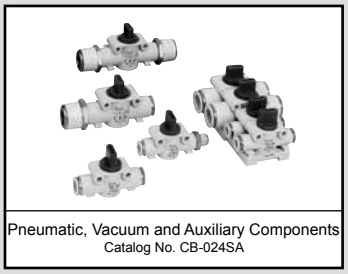
⚠ Select the reverse regulator (R*100-W) or reverse filter regulator (W*100-W) when installing the V*010-W onto the primary side of the regulator or filter regulator.

Compatibility table by variation

	V3010	V6010
Port size	Rc1/4 to Rc1/2	Rc3/4, Rc1
P4	●	●
P40	●	●

*1: For P40, parts without gas contact use zinc plating.

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

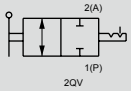


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Quick valve

2QV Series

●Port size: Push-in fitting ø4, ø6, ø8, ø10, ø12, R1/8 to R1/2

JIS symbol 

Specifications

Descriptions	2QV
Working fluid	Air
Max. working pressure MPa	1.0
Min. working pressure kPa	-100 (*1)
Proof pressure MPa	1.5
Fluid temperature °C	0 to 60
Ambient temperature °C	0 to 60
Switching angle °	90
Tube used	Soft nylon tube (tube F-15**) Urethane tube (tube U-95**, NU-**)
Mounting orientation	Arbitrary

*1: When using urethane tube (U-95**, NU-**) at vacuum, use an insert ring.
*2: Lubricant is used, so oil-prohibited specification is not available.

How to order

● Quick valve

2 QV - 04-04 - P4

Ⓐ Port size (port P) - (port A)

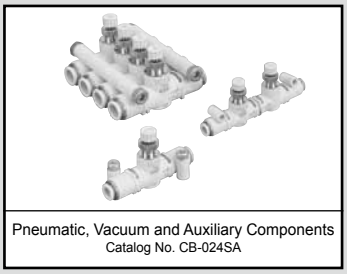
Code	Content			Bracket *
2	2-way valve			
Ⓐ Port size (port P) - (port A)	IN side - OUT side			
Standard 04-04	Push-in fitting ø4	-	Push-in fitting ø4	2QV-P1
Standard 06-06	Push-in fitting ø6	-	Push-in fitting ø6	2QV-P1
Standard 08S-08S	Push-in fitting ø8	-	Push-in fitting ø8	2QV-P1
Standard 08-08	Push-in fitting ø8	-	Push-in fitting ø8	2QV-P2
Standard 10-10	Push-in fitting ø10	-	Push-in fitting ø10	2QV-P2
Standard 12-12	Push-in fitting ø12	-	Push-in fitting ø12	2QV-P2
Option 6A-04	R1/8	-	Push-in fitting ø4	2QV-P1
Option 6A-06	R1/8	-	Push-in fitting ø6	2QV-P1
Option 8A-06	R1/4	-	Push-in fitting ø6	2QV-P1
Option 8A-08S	R1/4	-	Push-in fitting ø8	2QV-P1
Option 10A-08	R3/8	-	Push-in fitting ø8	2QV-P2
Option 10A-10	R3/8	-	Push-in fitting ø10	2QV-P2
Option 15A-10	R1/2	-	Push-in fitting ø10	2QV-P2
Option 15A-12	R1/2	-	Push-in fitting ø12	2QV-P2
Option 04-6A	Push-in fitting ø4	-	R1/8	2QV-P1
Option 06-6A	Push-in fitting ø6	-	R1/8	2QV-P1
Option 06-8A	Push-in fitting ø6	-	R1/4	2QV-P1
Option 08S-8A	Push-in fitting ø8	-	R1/4	2QV-P1
Option 08-10A	Push-in fitting ø8	-	R3/8	2QV-P2
Option 10-10A	Push-in fitting ø10	-	R3/8	2QV-P2
Option 10-15A	Push-in fitting ø10	-	R1/2	2QV-P2
Option 12-15A	Push-in fitting ø12	-	R1/2	2QV-P2
Option 6A-6A	R1/8	-	R1/8	2QV-P1
Option 8A-8A	R1/4	-	R1/4	2QV-P1
Option 10A-10A	R3/8	-	R3/8	2QV-P2
Option 15A-15A	R1/2	-	R1/2	2QV-P2

* Note that this may differ according to the body size.

Compatibility table by variation

	2QV
Port size	ø4, ø6, ø8, ø10, ø12
P4	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Speed controller Inline with push-in fitting

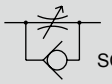
SCL2 Series

In/out speed controller Inline with push-in fitting

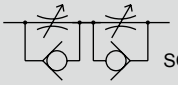
SCD2 Series

Port size: ø4/ø6/ø8/ø10 (SCL2 only)

JIS symbol



SCL2 Series



SCD2 Series

Specifications

● Speed controller Inline SCL2

Model No.			SCL2-04	SCL2-06	SCL2-08	SCL2-10
Compatible tube O.D.		mm	ø4	ø6	ø8	ø10
Working fluid			Compressed air			
Max. working pressure		MPa	1.0			
Min. working pressure		MPa	0.1			
Proof pressure		MPa	1.5			
Fluid temperature		°C	5 to 60 (no freezing. *3)			
Ambient temperature		°C	0 to 60 (no freezing)			
Weight		g	11.5	16	33	57
Dial value (needle position)			12 [15]			
Free flow	Flow rate	ℓ/min (ANR)	130	300	550	1100
	Effective cross-sectional area	mm^2	1.9	4.5	8	16.5
Controlled flow	Flow rate	ℓ/min (ANR)	130 [13]	300 [13]	550	1100
	Effective cross-sectional area	mm^2	1.9 [0.2]	4.5 [0.2]	8	16.5

● In/out speed controller Inline SCD2

Model No.		SCD2-04	SCD2-06	SCD2-08
Compatible tube O.D.	mm	ø4	ø6	ø8
Working fluid		Compressed air		
Max. working pressure	MPa	1.0		
Min. working pressure	MPa	0.1		
Proof pressure	MPa	1.5		
Fluid temperature	°C	5 to 60 (no freezing. *3)		
Ambient temperature	°C	0 to 60 (no freezing)		
Weight	g	21.5	29	64
Dial value (needle position)		12 [15]		
Flow rate	ℓ/min (ANR)	100 [13]	250 [13]	400
Effective cross-sectional area	mm^2	1.5 [0.2]	3.7 [0.2]	6

*1: Flow rate is the atmospheric pressure conversion at 0.5 MPa.
*2: Values in [ ] are for fine speed.
*3: Freezing may occur due to adiabatic expansion depending on the air quality (dew point).

Compatibility table by variation

	SCL2/SCD2
Port size	ø4, ø6, ø8, ø10
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Speed controller Inline

SCL2 - 04 - H44 - ( ) - P4

● In/out speed controller Inline

SCD2 - 04 - H44 - ( ) - P4

Model No.

Ⓐ Body size

Ⓑ Compatible tube O.D.

Refer to the table at right for body size, compatible tube O.D., and flow characteristic combinations.

Code	Content
Ⓐ Body size	
04	M5 thread equivalent
06	1/8 thread equivalent
08	1/4 thread equivalent
10	3/8 thread equivalent * SCL2 only
Ⓑ Compatible tube O.D.	
H44	ø4
H66	ø6
H88	ø8
H1010	ø10 * SCL2 only

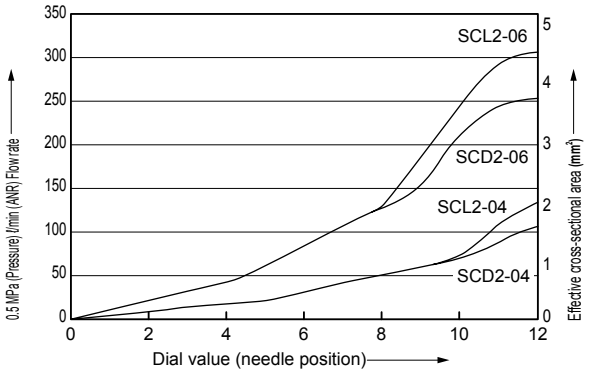
Combination of body size, compatible tube O.D., and flow characteristics

			Ⓐ Body size			
			04	06	08	10
Ⓑ Compatible tube O.D.	H44	ø4	●			
	H66	ø6		●		
	H88	ø8			●	
	H1010	ø10				● * SCL2 only

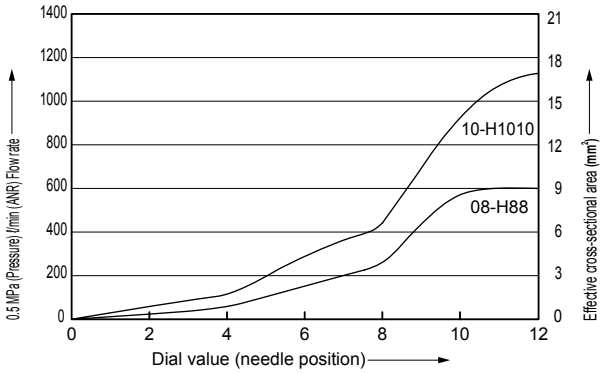
▭ Not available

Flow characteristics

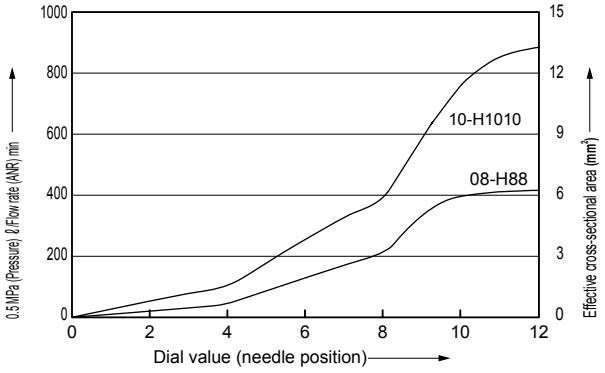
● Standard
SCL2-04, SCL2-06, SCD2-04, SCD2-06



● Standard
SCL2-08, SCL2-10



● Standard
SCD2-08, SCD2-10





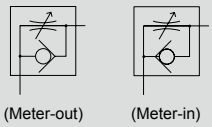
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Speed controller Elbow with push-in fitting

SC3W Series

● Port size: M3, M5, R1/8 to R1/2

JIS symbol



(Meter-out) (Meter-in)

RoHS CAD

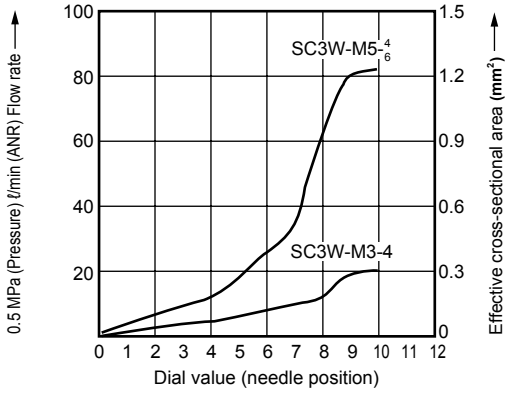
Specifications

Descriptions		SC3W														
		SC3W-M3	SC3W-M5		SC3W-6			SC3W-8			SC3W-10				SC3W-15	
Compatible tube O.D. mm		ø4	ø4	ø6	ø4	ø6	ø8	ø6	ø8	ø10	ø6	ø8	ø10	ø12	ø10	ø12
Working fluid		Compressed air														
Max. working pressure MPa		1.0														
Min. working pressure MPa		0.05														
Proof pressure MPa		1.5														
Fluid temperature °C		5 to 60 (no freezing. *3)														
Ambient temperature °C		0 to 60 (no freezing)														
Port size		M3	M5		R1/8			R1/4			R3/8				R1/2	
Weight g		5.7	8.8	9.6	25	26	27	50	51	54	63.7	75	78	81	134	138
Dial value (needle position)		10 (14) or more	10 (16) or more		10 (15) or more			13 or more			13 or more				14 or more	
Free flow	Flow rate ℓ/min (ANR)	27(20)	87(80)		210(210)	270(270)	270	470	500	530	650	1000	1100		1500	1600
	Effective cross-sectional area mm²	0.4(0.3)	1.3(1.2)		3.2(3.2)	4.0(4.0)	4.0	7	7.5	8	10	15	16		22	24
Controlled flow	Flow rate ℓ/min (ANR)	20(5.9)	80(6.7)		190(13)	240(13)	240	430	470	470	650	930	1000		1500	1600
	Effective cross-sectional area mm²	0.3(0.08)	1.2(0.1)		2.8(0.2)	3.6(0.2)	3.6	6.5	7	7.0	10	14	15		22	24

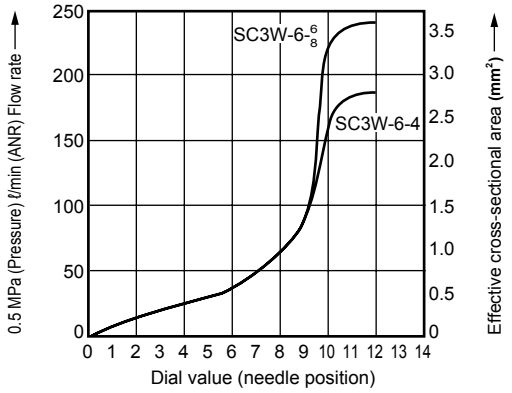
*1: Flow rate is the atmospheric pressure conversion value at pressure 0.5 MPa.
*2: Values in ( ) indicate low speed.
*3: Freezing may occur due to adiabatic expansion depending on the air quality (dew point).

Flow characteristics

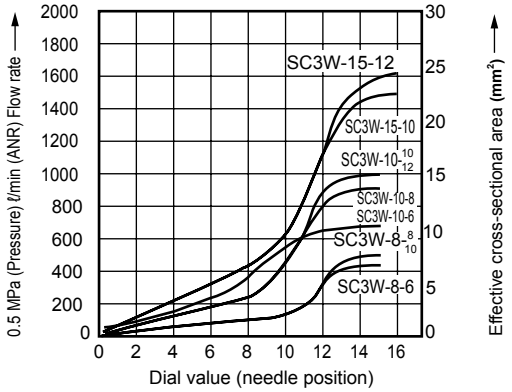
● Standard (port size M3, M5)



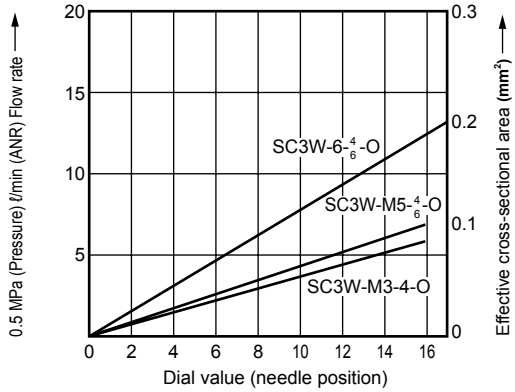
● Standard (port size 6)



● Standard (port size 8, 10, 15)



● Low speed



Compatibility table by variation

	SC3W
Port size	M3, M5, R1/8, 1/4, 3/8, 1/2
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: The product dimensions of pipe size M5 are different from the standard SC3W.
*2: Compatible tube O.D. 3 (ø3, 2) is not available.
*3: Option is meter-in only.

How to order

SC3W - M5 - 4 - I - P4

Model No.

Ⓐ Port size

Ⓑ Compatible tube O.D.

Ⓒ Option

Code	Content
Ⓐ Port size	
M3	M3×0.5
M5	M5×0.8
6	R1/8
8	R1/4
10	R3/8
15	R1/2

Ⓑ Compatible tube O.D.

		Piping size					
		M3	M5	6	8	10	15
4	ø4	●	●	●			
6	ø6		●	●	●	●	
8	ø8			●	●	●	
10	ø10				●	●	●
12	ø12					●	●

Ⓒ Option

Blank	Meter-out
I	Meter-in (Push ring color: black)

▭ indicates not available.

⚠ Precautions for model No. selection

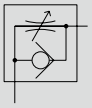
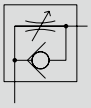
Note: The options are listed in alphabetical order.



Speed controller with adjusting dial

DSC Series

● Port size: M5, R1/8 to R1/2

JIS symbol  (Meter-out)  (Meter-in)

Specifications

● Compact

Descriptions			DSC-C-M5		DSC-C-6		
Compatible tube O.D.		mm	ø4	ø6	ø4	ø6	ø8
Port size			M5		R1/8		
Working fluid			Compressed air				
Max. working pressure		MPa	1.0				
Min. working pressure		MPa	0.05				
Proof pressure		MPa	1.5				
Fluid temperature		°C	5 to 60 (no freezing. *2)				
Ambient temperature		°C	0 to 60 (no freezing)				
Needle control range			1 to 7 rotations				
Weight		g	11.5	12	22	23	24
Free flow	Flow rate	L/min(ANR)	100		210	270	
	Effective cross-sectional area	mm^2	1.5		3.2	4	
Controlled flow (Standard flow rate)	Flow rate	L/min(ANR)	60		160	200	
	Effective cross-sectional area	mm^2	0.9		2.4	3	
Controlled flow (Low flow rate)	Flow rate	L/min(ANR)	20		60		
	Effective cross-sectional area	mm^2	0.3		0.9		
Controlled flow (Fine flow rate)	Flow rate	L/min(ANR)	6.7		13		-
	Effective cross-sectional area	mm^2	0.1		0.2		-

● Standard

Descriptions			DSC-6			DSC-8			DSC-10				DSC-15	
Compatible tube O.D.		mm	ø4	ø6	ø8	ø6	ø8	ø10	ø6	ø8	ø10	ø12	ø10	ø12
Port size			R1/8			R1/4			R3/8				R1/2	
Working fluid			Compressed air											
Max. working pressure		MPa	1.0											
Min. working pressure		MPa	0.05											
Proof pressure		MPa	1.5											
Fluid temperature		°C	5 to 60 (no freezing. *2)											
Ambient temperature		°C	0 to 60 (no freezing)											
Needle control range			1 to 10 rotations											
Weight		g	33	34	35	45	46	48	60	61	64	65	95	97
Free flow	Flow rate	L/min(ANR)	210	270		470	530		670	1000	1070		1470	1600
	Effective cross-sectional area	mm^2	3.2	4		7	8		10	15	16		22	24
Controlled flow (Standard flow rate)	Flow rate	L/min(ANR)	160	200		320	400		400	700	800		1120	1200
	Effective cross-sectional area	mm^2	2.4	3		5	6		6	10.5	12		17	17.5
Controlled flow (Low flow rate)	Flow rate	L/min(ANR)	60			130			270				400	
	Effective cross-sectional area	mm^2	0.9			2			4				6	

*1: Flow rate is the atmospheric pressure conversion value at pressure 0.5 MPa.
*2: Freezing may occur due to adiabatic expansion depending on the air quality (dew point).

How to order

DSC -C - 6 - 6 - I L - P4

Ⓐ Product size
Ⓑ Port size
Ⓒ Compatible tube O.D.
Ⓓ Control method
Ⓔ Flow rate

Code	Content
Ⓐ Product size	
Blank	Standard
-C	Compact
Ⓑ Port size	
M5	M5
6	R1/8
8	R1/4
10	R3/8
15	R1/2
Ⓒ Compatible tube O.D.	
4	ø4
6	ø6
8	ø8
10	ø10
12	ø12
Ⓓ Control method	
Blank	Meter-out
I	Meter-in (Push ring color: black)
Ⓔ Flow rate	
Blank	Standard flow rate
L	Low flow rate
F	Fine flow rate (compact only)

Port size - compatible tube O.D. - flow rate combination

Product size	Compact		Standard			
Port size	M5	R1/8	R1/8	R1/4	R3/8	R1/2
ø4	◎	◎	○			
ø6	◎	◎	○	○	○	
ø8		○	○	○	○	
ø10				○	○	○
ø12					○	○

○: Flow rate "F" (fine flow rate) cannot be selected
◎: Flow rate "F" (fine flow rate) can be selected

Compatibility table by variation

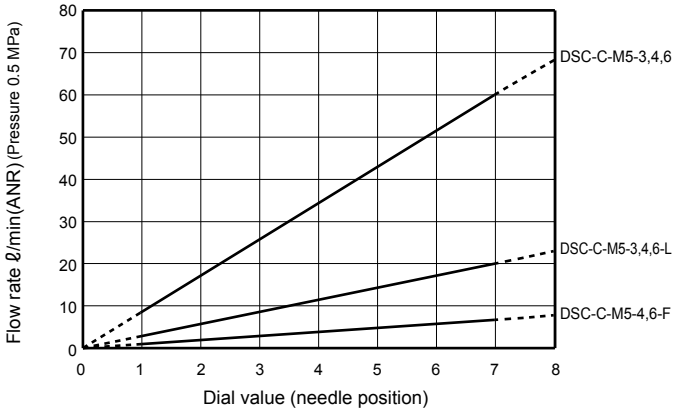
	DSC
Port size	M5, R1/8, 1/4, 3/8, 1/2
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

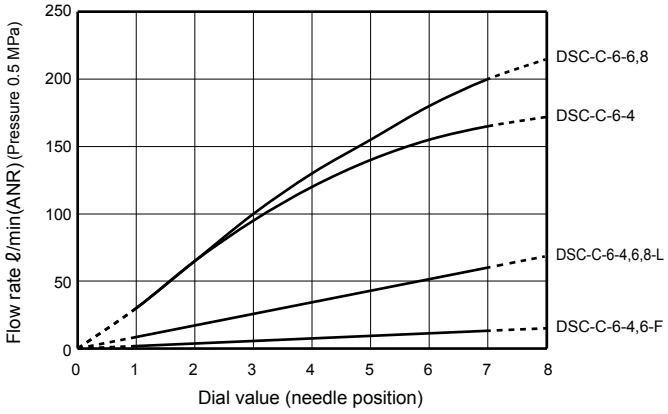
Flow characteristics

● Compact

●DSC-C-M5-*

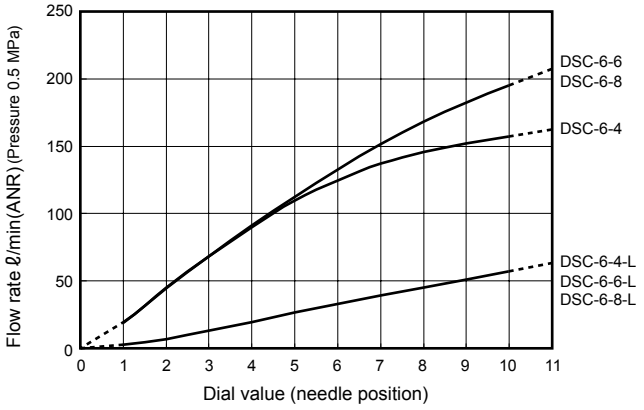


●DSC-C-6-*

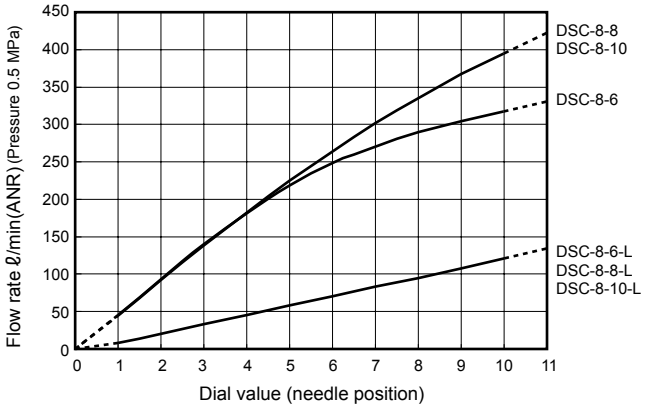


● Standard

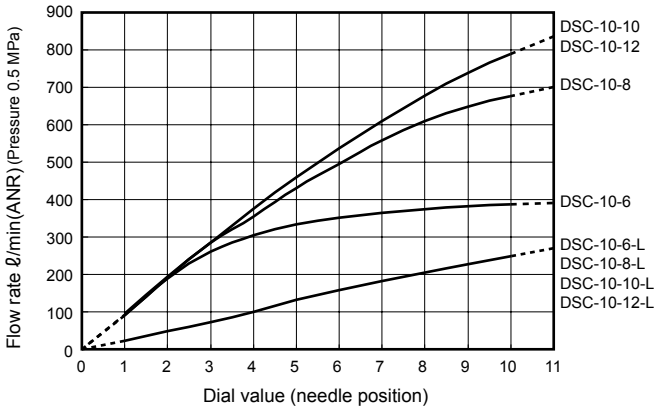
●DSC-6-*



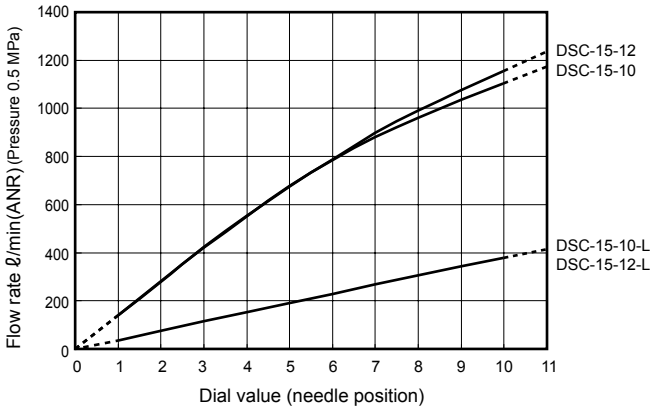
●DSC-8-*



●DSC-10-*



●DSC-15-*



Note: The flow characteristics may differ depending on the piping conditions around the unit and the temperature change.



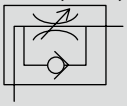
Pneumatic piping components
Catalog No. CC-1101A

PP (polypropylene resin) Speed controller, elbow

SC3F-P4 Series

- For air drive components
- Port size: M3, M5, R1/8 to R1/2

JIS symbol



P4 compliant as standard

RoHS

Specifications

Model No.		SC3F-P4														
Descriptions		SC3F-M3	SC3F-M5		SC3F-6			SC3F-8			SC3F-10				SC3F-15	
Compatible tube O.D.	mm	ø4	ø4	ø6	ø4	ø6	ø8	ø6	ø8	ø10	ø6	ø8	ø10	ø12	ø10	ø12
Working fluid		Air														
Max. working pressure	MPa	1.0 (*1)													0.9 (*1)	
Min. working pressure	MPa	0.1														
Guaranteed proof pressure	MPa	1.5 (*2)													1.35 (*2)	
Operating ambient temperature range	°C	0 to 60 (no freezing) (*3)														
Port size	Rc	M3	M5		R1/8			R1/4			R3/8				R1/2	
Product weight	g	7.8	7	8	18	19	22	38	41	44	67	69	71	74	106	109
Dial value (needle position)		7 or more			12 or more			13 or more								

*1: The max. working pressure is the value at 20°C. When using in other temperature ranges, refer to the "Relation of operating ambient temperature and max. working pressure" in the single unit catalog.
*2: The proof pressure is the value at 20°C. The proof pressure is 1.5 times the maximum working pressure.
*3: Freezing may occur by adiabatic expansion depending on the air quality (dew point).

Flow rate and effective cross-sectional area

Model No.			SC3F-P4														
Descriptions			SC3F-M3	SC3F-M5		SC3F-6			SC3F-8			SC3F-10				SC3F-15	
Compatible tube O.D.		mm	ø4	ø4	ø6	ø4	ø6	ø8	ø6	ø8	ø10	ø6	ø8	ø10	ø12	ø10	ø12
Free flow	Flow rate	ℓ/min(ANR)	40	55		200		230	390	400		600	800		840	1380	
	Effective cross-sectional area	mm²	0.6	0.8		3		3.4	5.8	5.9		8.8	12		12.4	20.5	
Controlled flow	Flow rate	ℓ/min(ANR)	65	70		150			270			550	850	920		1450	1600
	Effective cross-sectional area	mm²	0.95	1		2.2			4			8	12.5	13.5		21.5	23.5

*1: Flow rate is the atmospheric pressure conversion value at pressure 0.5 MPa.
*2: The effective cross-sectional area lists the value converted from the flow rate.

How to order

SC3F - 8 - 8 - I - P4

- SC3F: Model No.
- 8: Ⓐ Piping size
- 8: Ⓑ Compatible tube O.D.
- I: Ⓒ Option

Code	Content
Ⓐ Piping size	
M3	M3×0.5
M5	M5×0.8
6	R1/8
8	R1/4
10	R3/8
15	R1/2

Ⓑ Compatible tube O.D.

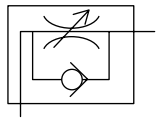
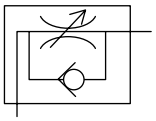
		Piping size					
		M3	M5	6	8	10	15
4	**ø4**	●	●	●			
6	**ø6**		●	●	●	●	
8	**ø8**			●	●	●	
10	**ø10**				●	●	●
12	**ø12**					●	●

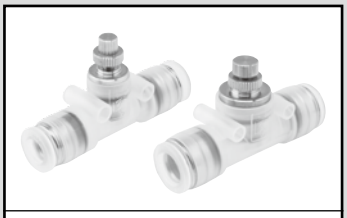
Ⓒ Option

Blank	Meter-out control
I	Meter-in control (made to order)

indicates not available.

■ Control method

	Meter-out control	Meter-in control
JIS symbol		
	Male thread side	Male thread side

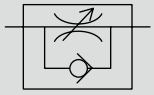


Pneumatic piping components
Catalog No. CC-1101A

PP (polypropylene resin) Speed controller Line type

SCLF-P4 Series

- For air drive components
- Port size ø4, ø6, ø8, ø10, ø12

JIS symbol 

P4 compliant as standard

RoHS

Specifications

Model No. / Descriptions		SCLF-H44S-P4	SCLF-H66S-P4	SCLF-H88S-P4	SCLF-H1010S-P4	SCLF-H1212S-P4
Applicable tube diameter	mm	ø4	ø6	ø8	ø10	ø12
Working fluid		Air				
Max. working pressure	MPa	0.9 (*1)				
Min. working pressure	MPa	0.05				
Guaranteed proof pressure	MPa	1.35 (*2)				
Operating ambient temperature range	°C	0 to 60 (no freezing) (*3)				
Product weight	g	10	15	26	44	62
Dial value (needle position)		10 or more	11 or more	8 or more		

*1: The max. working pressure is the value at 20°C. When using in other temperature ranges, refer to the "Relation of operating ambient temperature and max. working pressure" given below.
*2: The proof pressure is the value at 20°C. The proof pressure is 1.5 times the maximum working pressure.
*3: Freezing may occur by adiabatic expansion depending on the air quality (dew point).

Flow rate and effective cross-sectional area

Model No. / Descriptions			SCLF-P4				
			SCLF-H44S-P4	SCLF-H66S-P4	SCLF-H88S-P4	SCLF-H1010S-P4	SCLF-H1212S-P4
Compatible tube O.D.		mm	ø4	ø6	ø8	ø10	ø12
Free flow	Flow rate	ℓ/min(ANR)	145	310	50	950	1380
	Effective cross-sectional area	mm^2	2.1	4.6	8.2	14	20.5
Controlled flow	Flow rate	ℓ/min(ANR)	95	250	410	880	1300
	Effective cross-sectional area	mm^2	1.4	3.7	6.0	13	19

*1: Flow rate is the atmospheric pressure conversion value at pressure 0.5 MPa.
*2: The effective cross-sectional area lists the value converted from the flow rate.

How to order

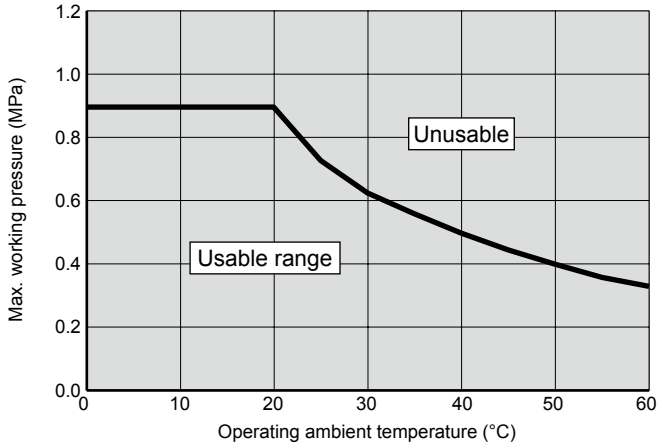
SCLF - H66S -P4

Union made of PP
Straight
Speed controller

Ⓐ Compatible tube O.D.

Code	Content
Ⓐ Compatible tube O.D.	
H44	ø4
H66	ø6
H88	ø8
H1010	ø10
H1212	ø12

Relation of operating ambient temperature and max. working pressure



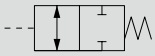


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Block valve

FPV Series

● Port size: (Rc or R) 1/4 to 1/2

JIS symbol 

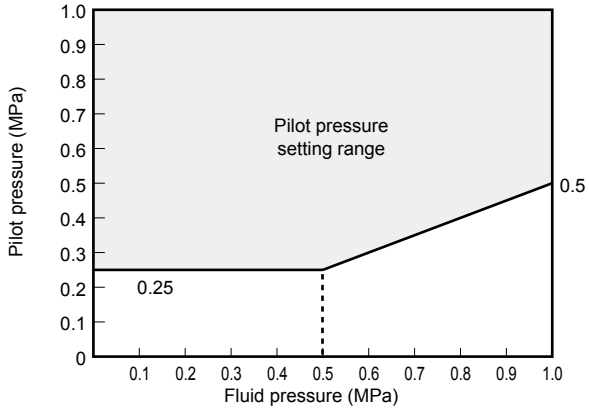
RoHS CAD

Features

- Compact valve ideal for position locking dropping and for cylinder braking.
- Compact and lightweight
  75% smaller and 50% lighter on average compared with our conventional models.
- Variety of bore sizes available
  Series variations from M5 to R1/2 bore sizes enable direct cylinder installation.

Pilot pressure

Set pilot air pressure within the specified range.



Specifications

Descriptions	FPV-M5	FPV-6A			FPV-8A			FPV-10A			FPV-15A		
Port size	M5	R1/8			R1/4			R3/8			R1/2		
Main side compatible tube O.D.	ø6	ø6	ø8	Rc1/8	ø6	ø8	Rc1/4	ø8	ø10	Rc3/8	ø10	ø12	Rc1/2
Pilot side compatible tube O.D.	ø4			M5	ø4		M5	ø4		Rc1/8	ø4		Rc1/8
Working fluid	Compressed air												
Max. working pressure MPa	1.0												
Min. working pressure MPa	0												
Proof pressure MPa	1.5												
Pilot pressure MPa	Refer to the above table.												
Fluid temperature °C	5 to 60												
Ambient temperature °C	0 to 60 (no freezing)												
Weight g	28	26		36	50	51	68	90	93	120	143	145	192
Effective cross-sectional area mm^2	1.3	5			10			17			27		

How to order

FPV - 6A - 06 - FL No.

Ⓐ Port size

Ⓐ Port size	
M5	M5
6A	R1/8
8A	R1/4
10A	R3/8
15A	R1/2

Ⓑ Compatible tube O.D.

Ⓑ Compatible tube O.D.		Ⓐ Piping port size				
		M5	**6A**	**8A**	**10A**	**15A**
06	ø6	●	●	●		
08	ø8		●	●	●	
10	ø10				●	●
12	ø12					●
6A	Rc1/8		●			
8A	Rc1/4			●		
10A	Rc3/8				●	
15A	Rc1/2					●

Not available

Note: Made to order. Contact CKD for details.

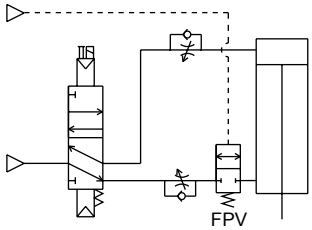
Compatibility table by variation

	FPV
Port size	M5, R1/8, 1/4, 3/8, 1/2
P4	▲

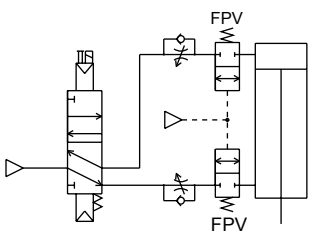
● : Standard
○ : Made to order
▲ : Contact CKD
: Not applicable

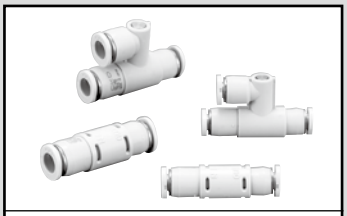
Applications

● Used for cylinder position locking circuit



● Used for cylinder braking circuit



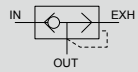


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Quick exhaust valve Line type

QEL Series

● Piping bore size: ø4/ø6

JIS symbol 

RoHS

Features

- Compact and space saving inline Atmosphere release with built-in ø4/ø6 push-in fitting and type with exhaust port fitting are available
- Standard ozone-resistant materials
  Ozone-proof materials for degradation prevention are used as standard for the valving element
- Ecological products
  All substances which adversely affect the global environment have been eliminated from the materials in RoHS Directive compliant products

Specifications

Model No. / Descriptions			QEL-H44	QEL-H66
Working fluid			Compressed air	
Max. working pressure		MPa	0.7	
Min. working pressure		MPa	0.1	
Min. working pressure		MPa	0.05	
Proof pressure (at room temperature)		MPa	1.35	
Working ambient temperature		°C	5 to 60 (no freezing)	
Port size	IN, OUT		ø4	ø6
	EXH		ø4	ø6
Product weight		g	5.2	7.6
Mounting orientation			Unrestricted	
Effective cross-sectional area	IN→OUT	mm^2	1.8	4
	OUT→EXH	mm^2	1.8	4

Compatibility table by variation

	QEL
Port size	ø4, ø6
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Applicable only for type with exhaust port fitting.

How to order

QEL - H44 - ○ - P4

Model No.

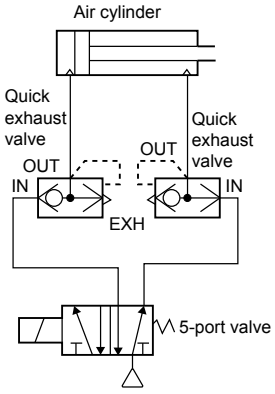
Ⓐ Compatible tube O.D.

Ⓑ Option

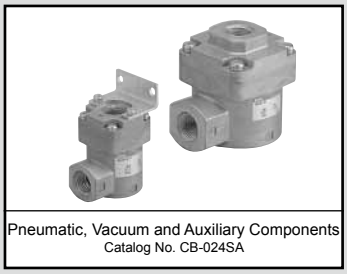
Code	Content
Ⓐ Compatible tube O.D	
H44	ø4
H66	ø6
Ⓑ Option	
Blank	Type with exhaust port fitting

Note: Made to order. Contact CKD for details.

Applications



Other auxiliary valves

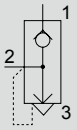


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Quick exhaust valve

QEV2 Series

● Port size: Rc1/8 to Rc1

JIS symbol 

P4 compliant as standard

RoHS

CAD

Features

● Large flow rate design realizing outstanding exhaust

● Variety of bore sizes available
Series includes piping bore sizes Rc1/8 to Rc1

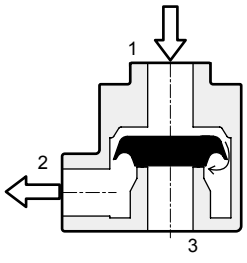
● Wide range of options
· Fluoro rubber specifications available as options
· Mounting bracket available (small bore)

● Eco-friendly product
· Eco-friendly design is free of lead and hexavalent chrome
· Paint-free
· Waste sorting is simplified

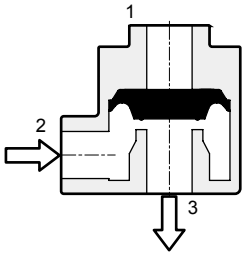
Specifications

Model No. / Descriptions		QEV2-6	QEV2-8	QEV2-10	QEV2-15	QEV2-20	QEV2-25
Working fluid		Compressed air					
Max. working pressure MPa		1.0					
Min. working pressure MPa		0.05					
Proof pressure MPa		1.5					
Fluid temperature °C		5 to 60					
Ambient temperature °C		0 to 60 (no freezing)					
Port size	1, 2	1/8	1/4	3/8	1/2	3/4	1
Rc	3	1/4	1/4	1/2	1/2	1	1
Weight g		80	78	250	250	710	660
Mounting bracket weight g		15		-			
Mounting orientation		Unrestricted					
Effective cross-sectional area mm^2	1→2	25	35	90	105	205	275
	2→3	30	40	100	115	280	330

Operational explanation



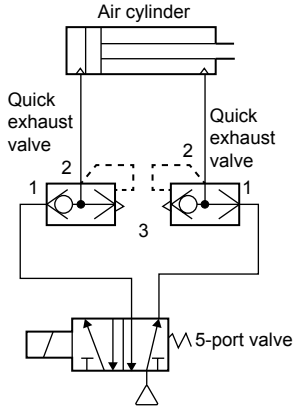
● 1→2
The valve closes port 3 with pressure from port 1. Air passes around the valve and flows to port 2.



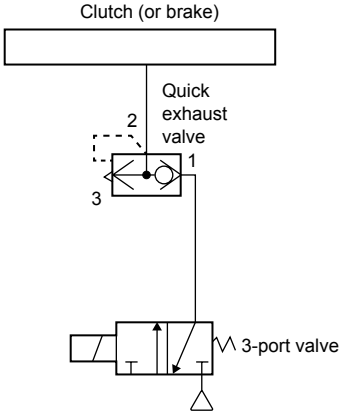
● 2→3
When port 1 pressure drops, the valve closes port 1, opens port 3, and exhausts port 2 air.

Applications

① Use to increase exhaust speed of air cylinder



② Use to increase exhaust speed of clutch (or brake)



Compatibility table by variation

	QEV2
Port size	Rc1/8 to 1
P4	Standard compliance

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Quick exhaust valve

QEV2 - 6 - A P

Model No.

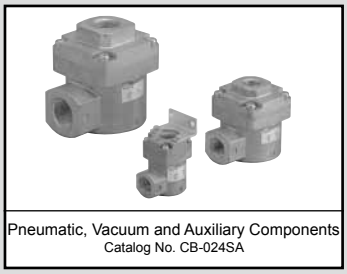
Ⓐ Port size

Ⓑ Option

Ⓒ Accessory

Code	Content
Ⓐ Port size	
6	Rc1/8
8	Rc1/4
10	Rc3/8
15	Rc1/2
20	Rc3/4
25	Rc1
Ⓑ Option	
Blank	No option
A	Fluoro rubber specifications
Ⓒ Accessory	
Blank	No
P	Mounting bracket attached

*1: Mounting bracket is attached for QEV2-6 and QEV2-8 only.
*2: P4 compliant as standard.



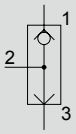
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Shuttle valve

SHV2 Series

● Port size: Rc1/8 to Rc1

JIS symbol



P4 compliant as standard

RoHS

CAD

Features

● Variety of bore sizes available

Series includes piping bore sizes Rc1/8 to Rc1

● Wide range of options

· Fluoro rubber specifications available as options
· Mounting bracket available (small bore)

● Eco-friendly product

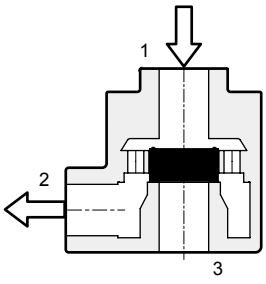
· Eco-friendly design is free of lead and hexavalent chrome
· Paint-free
· Waste sorting is simplified

Specifications

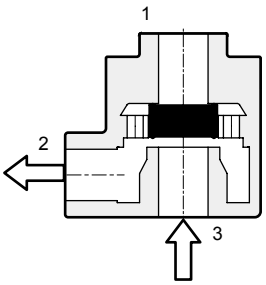
Model No. / Descriptions		SHV2-6	SHV2-8	SHV2-10	SHV2-15	SHV2-20	SHV2-25
Working fluid	MPa	Compressed air					
Max. working pressure	MPa	1.0					
Min. working pressure	MPa	0.05					
Min. working differential pressure	MPa	0.05					
Proof pressure	°C	1.5					
Fluid temperature	°C	5 to 60					
Ambient temperature		0 to 60 (no freezing)					
Port size	Rc	1/8	1/4	3/8	1/2	3/4	1
Weight	g	86	82	270	270	760	700
Mounting bracket weight	g	15		-			
Mounting orientation		Unrestricted					
Effective cross-sectional area mm^2	1→2	20	28	90	105	205	245
	3→2	22	32	95	115	210	250
Min. required flow rate *1	ℓ/min	20	30	100		150	

*1: The valve may not change completely if the flow rate is less than this value.

Operational explanation



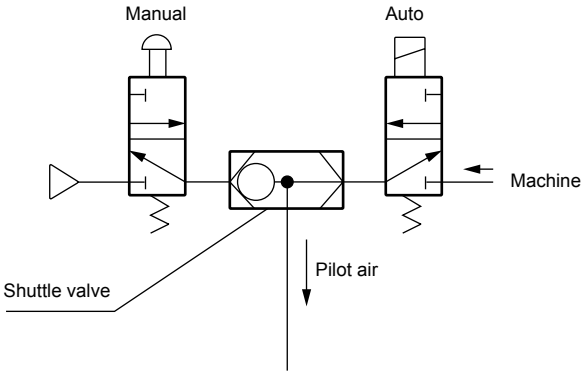
● 1→2
The valve closes port 3 with pressure from port 1. Air flows to port 2.



● 3→2
The valve closes port 1 with pressure from port 3. Air flows to port 2.

Applications

① Switching manual/auto



Compatibility table by variation

	SHV2
Port size	Rc1/8 to 1
P4	Standard compliance

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Note: Select a fluoro rubber specification

How to order

● Shuttle valve

SHV2 - 6 - A P

Model No.

Ⓐ Port size

Ⓑ Option

Ⓒ Accessory

Code	Content
Ⓐ Port size	
6	Rc1/8
8	Rc1/4
10	Rc3/8
15	Rc1/2
20	Rc3/4
25	Rc1
Ⓑ Option	
A	Fluoro rubber specifications
Ⓒ Accessory	
Blank	No
P	Mounting bracket attached

*1: Mounting bracket is attached for SHV2-6 and SHV2-8 only.
*2: P4 compliant as standard.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Check valve

CHV2 Series

Completely prevents reverse flow of fluid such as compressed air. Ten types of wide variations.

● Port size: Rc1/8 to Rc1 1/2

JIS symbol



P4 compliant as standard

RoHS CAD

Features

● Ample variations
Series are available for piping port sizes Rc1/8 to Rc1 1/2.
● Compact and lightweight
● Wide range of options
Fluoro rubber specifications and oil-prohibited specifications available as options. An installation bracket is available for small bore sizes.
● Neat shape
● Eco-friendly product
Products can be sorted and processed for recycling.

Specifications

Model No.	CHV2-6	CHV2-8-J	CHV2-8	CHV2-10-J	CHV2-10	CHV2-15	CHV2-20	CHV2-25	CHV2-32	CHV2-40
Working fluid	Compressed air									
Max. working pressure MPa	1									
Min. working pressure MPa	0.03									
Proof pressure MPa	1.5									
Cracking pressure MPa	0.02									
Fluid temperature °C	5 to 60									
Ambient temperature °C	0 to 60 (no freezing)									
Port size Rc	1/8	1/4		3/8		1/2	3/4	1	1¼	1½
Weight g	47		81		140		265		875	
Mounting plate weight g	10		15		-					
Effective cross-sectional area mm²	28		55	60	94	110	220	250	700	730

How to order

CHV2 - 8 - J - A P

Model No.

Ⓐ Port size

Compact small flow rate *1

Ⓑ Option *2

Ⓒ Accessory *3

Code	Content
Ⓐ Port size	
6	Rc1/8
8	Rc1/4
10	Rc3/8
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1 1/4
40	Rc1 1/2
Ⓑ Option	
A	Fluoro rubber specifications
Ⓒ Accessory	
Blank	No
P	With mounting plate

*1: Small flow compact (J) is only for port size Rc1/4 (8) and Rc3/8 (10).
*2: The options are listed in alphabetical order. (AP8)
*3: Mounting plate is attached for CHV2-6, CHV2-8-J, CHV2-8 and CHV2-10-J only.
*4: P4 compliant as standard.

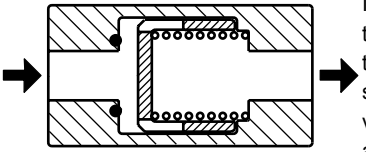
Compatibility table by variation

	CHV2
Port size	Rc1/8 to 1 1/2
P4	Standard compliance

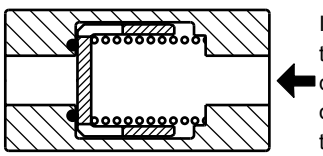
Note: Select a fluoro rubber specification

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

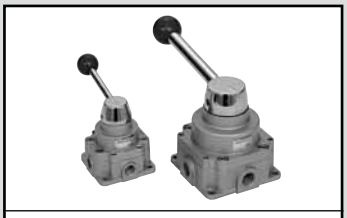
Operational principle



If pressurized in the direction of the arrow on the side body, the valve fully opens and the flow turns to free flow.



If pressurized in the reverse direction of arrow on the side body, the valve closes and flow is interrupted.



Pneumatic Valves
Catalog No. CB-023SA

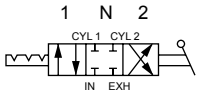
Manual selector valve

HMV/HSV Series

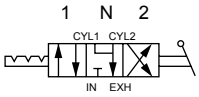
RoHS CAD

JIS symbol

● HMVC2, HSVC2
(All ports closed)
Switching position



● HMVO2, HSVO2
(ABR connection)
Switching position



Common specifications

Descriptions		HMV$^{C}_{O}$2	HSV$^{C}_{O}$2			
Valve and operation		Rotary sliding valve				
Working fluid		Compressed air				
Max. working pressure	MPa	0.97				
Min. working pressure	MPa	0				
Proof pressure	MPa	1.5				
Ambient temperature	°C	5 to 50				
Fluid temperature	°C	5 to 50				
Lubrication		Not required				
Degree of protection		Dust-proof				
Operating angle	°	90				
Port size	Rc	1/4	1/4	3/8	1/2	3/4
Weight	kg	0.7	2.0	1.9	1.9	1.8

Flow characteristics

Model No.	Port size Rc	IN→CYL1/CYL2		CYL1/CYL2→EXH	
		C[dm^3/(s·bar)]	b	C[dm^3/(s·bar)]	b
HMV$^{C}_{O}$2	1/4	1.5	0.31	1.6	0.28
HSV$^{C}_{O}$2	1/4	7.2	0.74	7.2	0.73
	3/8	10.2	0.32	10.1	0.34
	1/2	10.0	0.32	10.2	0.33
	3/4	10.3	0.36	10.2	0.36

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

How to order

● Miniature

HMV C 2 – 8 – 4 H – P4

● Standard

HSV C 2 – 10 – 4 H – P4

Ⓐ Model No.
Ⓑ Solenoid position
Ⓒ Port size
Ⓓ Piping

Compatibility table by variation

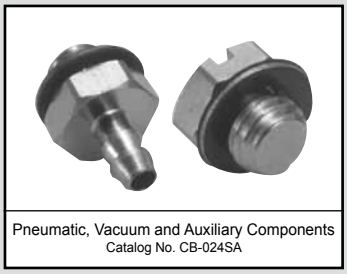
	HMV	HSV
Port size	Rc1/4	Rc1/4, 3/8, 1/2, 3/4
P4	▲	

*1: The handle and handle head have non-standard surface treatment.
*2: Made to order. Contact CKD for details.

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Code	Content	Ⓐ Model No. HMV	Ⓐ Model No. HSV
Ⓑ Solenoid position			
C	3-position all ports closed	●	●
O	3-position ABR connection	●	●
Ⓒ Port size			
8	Rc1/4	●	●
10	Rc3/8		●
15	Rc1/2		●
20	Rc3/4 (vertical piping not available.)		●
Ⓓ Piping			
H	Side piping	●	●
V	Vertical piping (not compatible with a port size of Rc3/4.)	●	●

*: Zinc alloy die-casting (surface treatment: trivalent chromate) is used in the body.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Miniature fitting

FTS4/FPL Series

● Port size: M3～1/8

Specifications

Descriptions	F
Working fluid	Compressed air
Max. working pressure MPa	0.7 or less
Ambient/fluid temperatures °C	-5 to 60 (no freezing)
Tube used	Soft nylon tube (model No. FH-3224, F-1504, F-1506) Urethane tube (model No. U-9504, U-9506) Note

Note: Use urethane tube within 0 to 60°C.
(Refer to page 247 for tube dimensions and working pressure.)

Compatibility table by variation

	FTS4	FPL
Port size	M3	M5
P4	▲	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

Note: M3 gasket dimensions are different from the standard dimensions.

How to order

• Straight, compatible tube O.D. ø3.2, ø4 port size M3

FTS4 – M3 – P4

• Plug, port size M5

FPL – M5 – P4

*1: Refer to "Pneumatic, Vacuum and Auxiliary Components" (catalog No. CB-024SA) for details on model combinations.
*2: Sales unit is 10 pcs./bag.
Sales unit of each model is 10 pcs./1 bag.
*3: Made to order. Contact CKD for details.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Fitting, stainless steel series

ZW Series

- Port size: M5 to R1/2
- Compatible tube: ø4 to ø12

RoHS

Specifications

Descriptions	ZW
Working fluid	Compressed air
Max. working pressure MPa	1.0
Negative pressure kPa	-100 *2
Ambient temperature °C	-10 to 60 (no freezing)
Tube used	Soft nylon tube (F-15**)
	Urethane tube (U-92**, U-95**, NU-**) *1

*1: Refer to "Pneumatic, Vacuum and Auxiliary Components" (catalog No. CB-024SA) for tube dimensions, ambient temperature and working pressure.
*2: Use an insert ring when using urethane tube (U-92**, U-95**, NU-**) under vacuum pressure.
(Made to order. Contact CKD for details.)

Compatibility table by variation

	ZW
Port size	ø4, ø6, ø8, ø10, ø12
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

* Refer to Pneumatic, Vacuum and Auxiliary Components (CB-024SA) for model combinations.

ZW - S (A) 4 (B) - 0 (C) - X (D) - P4

Ⓐ Shape	
S	Straight
L	Elbow
T	Tee
TR	Tetrapod
Y	Y tee
FY	FY
WY	Double Y
C	Cap
MF	Manifold

Ⓑ Compatible tube O.D.	
4	ø4
6	ø6
8	ø8
10	ø10
12	ø12
44	ø4/ø4
46	ø4/ø6
48	ø4/ø8
64	ø6/ø4
66	ø6/ø6
68	ø6/ø8
610	ø6/ø10
86	ø8/ø6
88	ø8/ø8
810	ø8/ø10
108	ø10/ø8
1010	ø10/ø10
1012	ø10/ø12
1210	ø12/ø10
1212	ø12/ø12

Ⓒ Port size	
M5	M5×0.8
6	R1/8
8	R1/4
10	R3/8
15	R1/2
0	No thread
4P	Plug for ø4
6P	Plug for ø6
8P	Plug for ø8
10P	Plug for ø10
12P	Plug for ø12

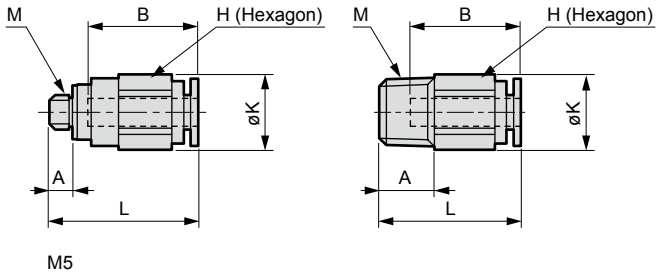
Ⓓ Other combinations	
D	D type
X	Bulkhead

Note: Sales unit is one piece.

Dimensions: Single straight/bulkhead/straight/different diameter straight

Single straight

● ZW-S□-□-P4

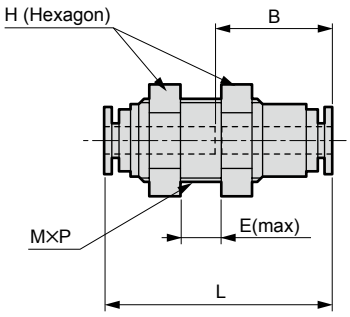


M5

Model No.	Compatible tube O.D. ø	M	H	K	L	A	B	Min. bore size	Eff x-sectional area mm²
ZW-S 4-M5-P4	4	M5×0.8	10	11	21.5	3.4	16	2.5	4
ZW-S 4- 6-P4		R1/8	10	11	20.5	8	16	2.5	4
ZW-S 4- 8-P4		R1/4	14	15.8	19.5	11	16	2.5	4
ZW-S 6-M5-P4	6	M5×0.8	12	13.5	23	3.4	17.5	2.5	4.4
ZW-S 6- 6-P4		R1/8	12	13.5	23	8	17.5	4	10.3
ZW-S 6- 8-P4		R1/4	14	15.8	23.5	11	17.5	4	10.3
ZW-S 6-10-P4		R3/8	17	19.1	21.5	12	17.5	4	10.3
ZW-S 8- 6-P4	8	R1/8	14	15.8	28	8	19	5	17.5
ZW-S 8- 8-P4		R1/4	14	15.8	27	11	19	6	22.4
ZW-S 8-10-P4		R3/8	17	19.1	22.5	12	19	6	22.4
ZW-S10- 6-P4	10	R1/8	17	19.1	31	8	21.5	5	17.5
ZW-S10- 8-P4		R1/4	17	19.1	32.5	11	21.5	8	30.5
ZW-S10-10-P4		R3/8	17	19.1	28.5	12	21.5	8	30.5
ZW-S10-15-P4		R1/2	22	24	26.5	15	21.5	8	30.5
ZW-S12- 8-P4	12	R1/4	19	21.4	35.5	11	23	8	35.5
ZW-S12-10-P4		R3/8	19	21.4	30.5	12	23	10	40
ZW-S12-15-P4		R1/2	22	24	29.5	15	23	10	40

Bulkhead

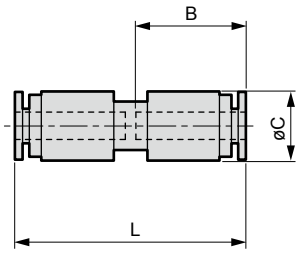
● ZW-S□-□-X-P4



Model No.	Compatible tube O.D. ø	H	L	B	E	MXP	Mounting hole diameter	Min. bore size	Eff x-sectional area mm²
ZW-S 4-0-X-P4	4	14	33	16	7.5	M12×1	13	2.5	4
ZW-S 6-0-X-P4	6	17	36	17.5	9.5	M14×1	15	4	10
ZW-S 8-0-X-P4	8	19	39	19	12.5	M16×1	17	6	22
ZW-S10-0-X-P4	10	23	44.5	21.5	18	M20×1	21	8	30
ZW-S12-0-X-P4	12	26	47	23	20.5	M22×1	23	9	35

Straight

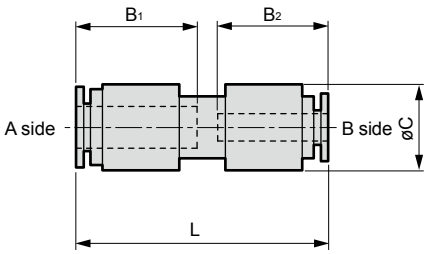
● ZW-S□-0-P4



Model No.	Compatible tube O.D. ø	L	B	C	Min. bore size	Eff x-sectional area mm²
ZW-S 4-0-P4	4	33.5	16	10	2.5	4
ZW-S 6-0-P4	6	36.5	17.5	12.5	4	10
ZW-S 8-0-P4	8	39.5	19	14.5	6	22
ZW-S10-0-P4	10	45	21.5	17.5	8	30
ZW-S12-0-P4	12	47.5	23	20	10	35

Different diameter straight

● ZW-S□-0-P4

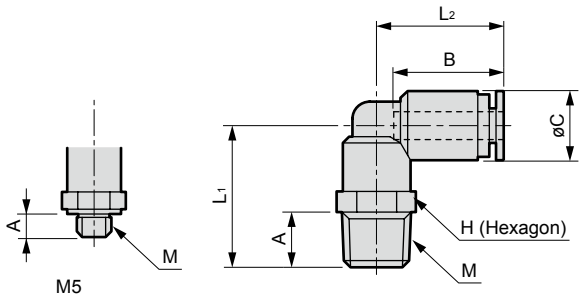


Model No.	Compatible tube O.D. ø		L	B_1	B_2	C	Min. bore size	Eff x-sectional area mm²
	A side	B side						
ZW-S 46-0-P4	6	4	36.5	17.5	16	12.5	2.5	4
ZW-S 68-0-P4	8	6	39.5	19	17.5	14.5	4	10
ZW-S 810-0-P4	10	8	45	21.5	19	17.5	6	22
ZW-S1012-0-P4	12	10	47.5	23	21.5	20	8	30

Dimensions: Single elbow/elbow/double tee/D tee

Single elbow

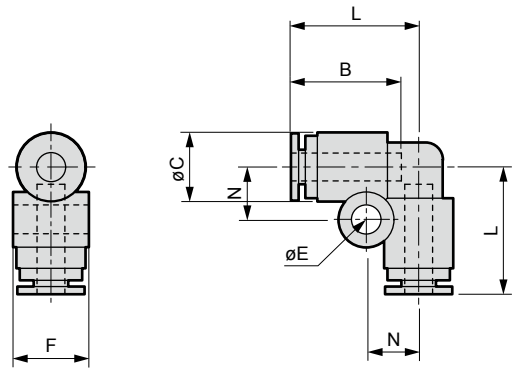
● ZW-L□-□-P4



Model No.	Compatible tube O.D. ø	M	H	L_1	L_2	A	B	C	Min. bore size	Eff x-sectional area mm²
ZW-L 4-M5-P4	4	M5×0.8	8	15	18	3.4	16	10	2.5	3.2
ZW-L 4- 6-P4		R1/8	10	20.5	18.5	8	16	10	2.5	3.2
ZW-L 4- 8-P4		R1/4	14	24	18.5	11	16	10	2.5	3.2
ZW-L 6-M5-P4	6	M5×0.8	10	15	20	3.4	17.5	12.5	2.5	4.2
ZW-L 6- 6-P4		R1/8	12	24	21	8	17.5	12.5	4	8
ZW-L 6- 8-P4		R1/4	14	27.5	21	11	17.5	12.5	4	8
ZW-L 6-10-P4		R3/8	17	29	21	12	17.5	12.5	4	8
ZW-L 8- 6-P4	8	R1/8	14	25.5	23.5	8	19	14.5	6	18
ZW-L 8- 8-P4		R1/4	14	28.5	23.5	11	19	14.5	6	18
ZW-L 8-10-P4		R3/8	17	30	23.5	12	19	14.5	6	18
ZW-L10- 6-P4	10	R1/8	17	28	27	8	21.5	17.5	6.5	24.3
ZW-L10- 8-P4		R1/4	17	31	27	11	21.5	17.5	8	27
ZW-L10-10-P4		R3/8	17	32.5	27	12	21.5	17.5	8	27
ZW-L10-15-P4		R1/2	22	35.5	27	15	21.5	17.5	8	27
ZW-L12- 8-P4	12	R1/4	19	33	29.5	11	23	20	8.5	33
ZW-L12-10-P4		R3/8	19	34.5	29.5	12	23	20	9	35
ZW-L12-15-P4		R1/2	22	37.5	29.5	15	23	20	9	35.5

Elbow

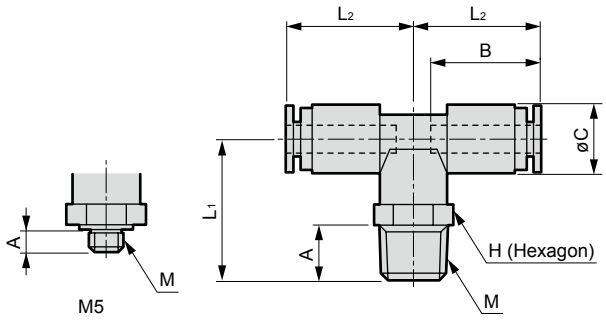
● ZW-L□-0-P4



Model No.	Compatible tube O.D. ø	L	B	C	N	E	F	Min. bore size	Eff x-sectional area mm²
ZW-L 4-0-P4	4	18.5	16	10	7.5	4.2	11	2.5	3
ZW-L 6-0-P4	6	21	17.5	12.5	8.5	4.2	13.5	4	7.5
ZW-L 8-0-P4	8	23.5	19	14.5	9.5	4.2	15.5	6	17
ZW-L10-0-P4	10	27	21.5	17.5	11	4.2	18.5	8	25.5
ZW-L12-0-P4	12	29.5	23	20	12	4.2	21	10	34

Double tee

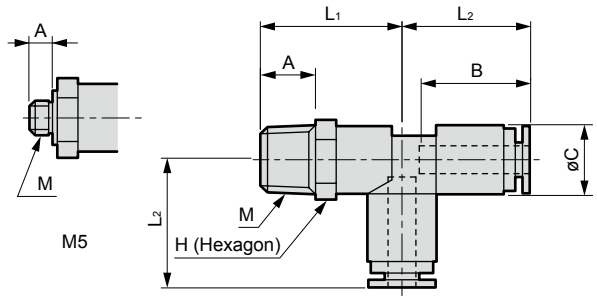
● ZW-T□-□-P4



Model No.	Compatible tube O.D. ø	M	H	L_1	L_2	A	B	C	Min. bore size	Eff x-sectional area mm²
ZW-T 4-M5-P4	4	M5×0.8	10	16.5	18.5	3.4	16	10	2.5	4.3
ZW-T 4- 6-P4		R1/8	10	20.5	18.5	8	16	10	2.5	4.3
ZW-T 4- 8-P4		R1/4	14	24	18.5	11	16	10	2.5	4.3
ZW-T 6-M5-P4	6	M5×0.8	12	20	21	3.4	17.5	12.5	2.5	4.3
ZW-T 6- 6-P4		R1/8	12	24	21	8	17.5	12.5	4	10.5
ZW-T 6- 8-P4		R1/4	14	27.5	21	11	17.5	12.5	4	10.5
ZW-T 6-10-P4		R3/8	17	29	21	12	17.5	12.5	4	10.5
ZW-T 8- 6-P4	8	R1/8	14	25.5	23.5	8	19	14.5	6	23.5
ZW-T 8- 8-P4		R1/4	14	28.5	23.5	11	19	14.5	6	23.5
ZW-T 8-10-P4		R3/8	17	30	23.5	12	19	14.5	6	23.5
ZW-T10- 8-P4	10	R1/4	17	31	27	11	21.5	17.5	8	33.5
ZW-T10-10-P4		R3/8	17	32.5	27	12	21.5	17.5	8	33.5
ZW-T10-15-P4		R1/2	22	35.5	27	15	21.5	17.5	8	33.5
ZW-T12- 8-P4	12	R1/4	19	33	29.5	11	23	20	8.5	37
ZW-T12-10-P4		R3/8	19	34.5	29.5	12	23	20	9	41
ZW-T12-15-P4		R1/2	22	37.5	29.5	15	23	20	9	41

D tee

● ZW-T□-□-D-P4

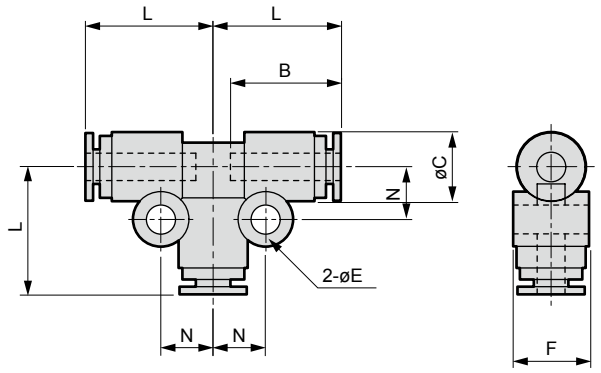


Model No.	Compatible tube O.D. ø	M	H	L_1	L_2	A	B	C	Min. bore size	Eff x-sectional area mm²
ZW-T 4-M5-D-P4	4	M5×0.8	10	16.5	18.5	3.4	16	10	2.5	4.3
ZW-T 4- 6-D-P4		R1/8	10	20.5	18.5	8	16	10	2.5	4.3
ZW-T 4- 8-D-P4		R1/4	14	24	18.5	11	16	10	2.5	4.3
ZW-T 6-M5-D-P4	6	M5×0.8	12	19.5	21	3.4	17.5	12.5	2.5	4.3
ZW-T 6- 6-D-P4		R1/8	12	24	21	8	17.5	12.5	4	10.5
ZW-T 6- 8-D-P4		R1/4	14	27.5	21	11	17.5	12.5	4	10.5
ZW-T 6-10-D-P4		R3/8	17	29	21	12	17.5	12.5	4	10.5
ZW-T 8- 6-D-P4	8	R1/8	14	25.5	23.5	8	19	14.5	6	23.5
ZW-T 8- 8-D-P4		R1/4	14	28.5	23.5	11	19	14.5	6	23.5
ZW-T 8-10-D-P4		R3/8	17	30	23.5	12	19	14.5	6	23.5
ZW-T10- 8-D-P4	10	R1/4	17	31	27	11	21.5	17.5	8	33.5
ZW-T10-10-D-P4		R3/8	17	32.5	27	12	21.5	17.5	8	33.5
ZW-T10-15-D-P4		R1/2	22	35.5	27	15	21.5	17.5	8	33.5
ZW-T12- 8-D-P4	12	R1/4	19	33	29.5	11	23	20	8.5	37
ZW-T12-10-D-P4		R3/8	19	34.5	29.5	12	23	20	9	41
ZW-T12-15-D-P4		R1/2	22	37.5	29.5	15	23	20	9	41

Dimensions: Tee/different diameter tee/Y tee/double Y tee

Tee

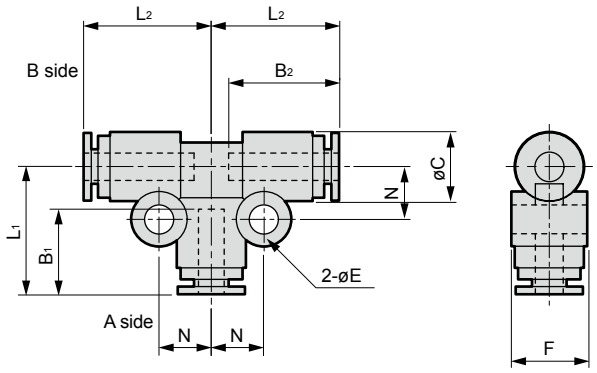
● ZW-T□-0-P4



Model No.	Compatible tube O.D. ø	L	B	C	E	F	N	Min. bore size	Eff x-sectional area mm²
ZW-T 4-0-P4	4	18.5	16	10	4.2	11	7.5	2.5	3.6
ZW-T 6-0-P4	6	21	17.5	12.5	4.2	13.5	8.5	4	9.7
ZW-T 8-0-P4	8	23.5	19	14.5	4.2	15.5	9.5	6	22
ZW-T10-0-P4	10	27	21.5	17.5	4.2	18.5	11	8	30
ZW-T12-0-P4	12	29.5	23	20	4.2	21	12	10	35.5

Different diameter tee

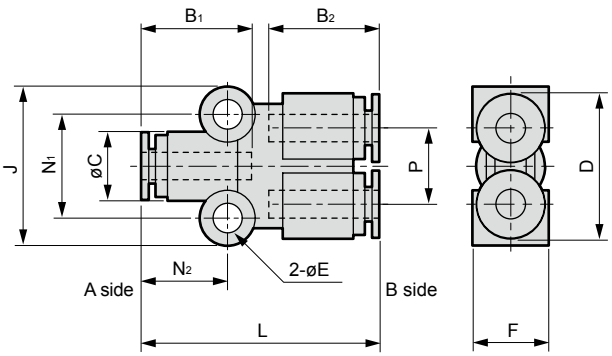
● ZW-T□-0-P4



Model No.	Compatible tube O.D. ø		L_1	L_2	B_1	B_2	C	E	F	N	Min. bore size	Eff x-sectional area mm²
	A side	B side										
ZW-T 46-0-P4	4	6	21	21	16	17.5	12.5	4.2	13.5	8.5	2.5	3.6
ZW-T 68-0-P4	6	8	23.5	23.5	17.5	19	14.5	4.2	15.5	9.5	4	9.7
ZW-T 810-0-P4	8	10	27.5	27	19	21.5	17.5	4.2	18.5	11	6	22
ZW-T1012-0-P4	10	12	29.5	29.5	21.5	23	20	4.2	21	12	8	30

Y tee

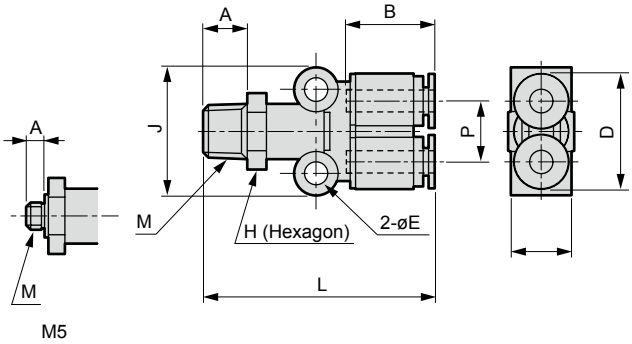
● ZW-Y□-0-P4



Model No.	Compatible tube O.D. ø		L	B_1	B_2	C	D	E	F	J	N_1	N_2	P	Eff x-sectional area mm²
	A side	B side												
ZW-Y 44-0-P4	4	4	34.5	16	16	10	21	4.2	11	23	15	12.5	11	3.6
ZW-Y 66-0-P4	6	6	37.5	17.5	17.5	12.5	26	4.2	13.5	25.5	17.5	14	13.5	10.5
ZW-Y 88-0-P4	8	8	40.5	19	19	14.5	30	4.2	15.5	27	19	15	15.5	23
ZW-Y1010-0-P4	10	10	48	21.5	21.5	17.5	36	4.2	18.5	30	22	18	18.5	38
ZW-Y1212-0-P4	12	12	53	23	23	20	41	4.2	21	32	24	19.5	21	50
ZW-Y 64-0-P4	6	4	37.5	17.5	16	12.5	26	4.2	13.5	25.5	17.5	14	13.5	5.4
ZW-Y 86-0-P4	8	6	40.5	19	17.5	14.5	30	4.2	15.5	27	19	15	15.5	14.3
ZW-Y 108-0-P4	10	8	48	21.5	19	17.5	36	4.2	18.5	30	22	18	18.5	21.1
ZW-Y1210-0-P4	12	10	53	23	21.5	20	41	4.2	21	32	24	19.5	21	35.5

Double Y tee

● ZW-Y□-□-P4

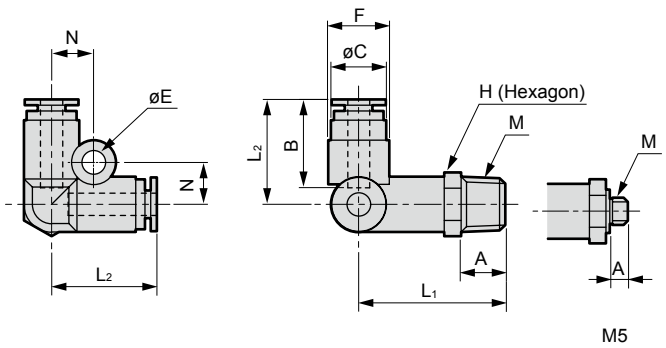


Model No.	Compatible tube O.D. ø	M	H	L	A	B	D	E	F	J	P	Eff x-sectional area mm²
ZW-Y 4-M5-P4	4	M5X0.8	12	38	3.4	16	21	4.2	11	23	11	4.5
ZW-Y 4- 6-P4		R1/8	12	42	8	16	21	4.2	11	23	11	5.5
ZW-Y 4- 8-P4		R1/4	14	45.5	11	16	21	4.2	11	23	11	5.5
ZW-Y 6-M5-P4	6	M5X0.8	14	41	3.4	17.5	26	4.2	13.5	25.5	13.5	4.5
ZW-Y 6- 6-P4		R1/8	14	46	8	17.5	26	4.2	13.5	25.5	13.5	17.5
ZW-Y 6- 8-P4		R1/4	14	49	11	17.5	26	4.2	13.5	25.5	13.5	17.5
ZW-Y 6-10-P4		R3/8	17	50.5	12	17.5	26	4.2	13.5	25.5	13.5	17.5
ZW-Y 8- 6-P4	8	R1/8	17	49	8	19	30	4.2	15.5	27	15.5	25.5
ZW-Y 8- 8-P4		R1/4	17	52	11	19	30	4.2	15.5	27	15.5	25.5
ZW-Y 8-10-P4		R3/8	17	53.5	12	19	30	4.2	15.5	27	15.5	25.5
ZW-Y10- 8-P4	10	R1/4	19	59.5	11	21.5	36	4.2	18.5	30	18.5	35
ZW-Y10-10-P4		R3/8	19	61	12	21.5	36	4.2	18.5	30	18.5	38.5
ZW-Y10-15-P4		R1/2	22	64	15	21.5	36	4.2	18.5	30	18.5	38
ZW-Y12- 8-P4	12	R1/4	22	64.5	11	23	41	4.2	21	32	21	37
ZW-Y12-10-P4		R3/8	22	66	12	23	41	4.2	21	32	21	37
ZW-Y12-15-P4		R1/2	22	69	15	23	41	4.2	21	32	21	40.5

Dimensions: Tetrapod (with R)/FY (with R)/double Y (with R)/tetrapod

Tetrapod (with R)

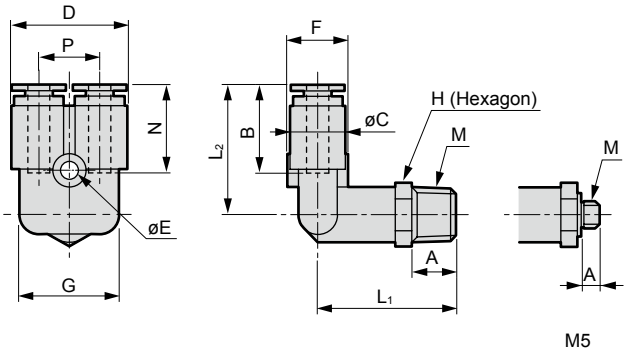
● ZW-TR□-□-P4



Model No.	Compatible tube O.D. ø	M	H	L_1	L_2	A	B	C	E	F	N	Min. bore size	Eff x-sectional area mm²
ZW-TR 4-M5-P4	4	M5×0.8	10	22.5	19	3.4	16	10	4.2	11	7.5	2.5	4.3
ZW-TR 4- 6-P4		R1/8	10	26.5	19	8	16	10	4.2	11	7.5	2.5	4.5
ZW-TR 4- 8-P4		R1/4	14	30	19	11	16	10	4.2	11	7.5	2.5	4.5
ZW-TR 6-M5-P4	6	M5×0.8	14	25	21.5	3.4	17.5	12.5	4.2	13.5	8.5	2.5	4.3
ZW-TR 6- 6-P4		R1/8	14	30	21.5	8	17.5	12.5	4.2	13.5	8.5	4	10.5
ZW-TR 6- 8-P4		R1/4	14	33	21.5	11	17.5	12.5	4.2	13.5	8.5	4	10.5
ZW-TR 6-10-P4		R3/8	17	34.5	21.5	12	17.5	12.5	4.2	13.5	8.5	4	10.5
ZW-TR 8- 6-P4	8	R1/8	17	32.5	24	8	19	14.5	4.2	15.5	9.5	6	23.5
ZW-TR 8- 8-P4		R1/4	17	35.5	24	11	19	14.5	4.2	15.5	9.5	6	23.5
ZW-TR 8-10-P4		R3/8	17	37	24	12	19	14.5	4.2	15.5	9.5	6	23.5
ZW-TR10- 8-P4	10	R1/4	19	39.5	27.5	11	21.5	17.5	4.2	18.5	13	8	35.5
ZW-TR10-10-P4		R3/8	19	41	27.5	12	21.5	17.5	4.2	18.5	13	8	35.5
ZW-TR10-15-P4		R1/2	22	44	27.5	15	21.5	17.5	4.2	18.5	13	8	35.5
ZW-TR12- 8-P4	12	R1/4	22	41.5	30	11	23	20	4.2	21	14	8.5	37.5
ZW-TR12-10-P4		R3/8	22	43	30	12	23	20	4.2	21	14	8.5	37.5
ZW-TR12-15-P4		R1/2	22	46	30	15	23	20	4.2	21	14	8.5	37.5

FY (with R)

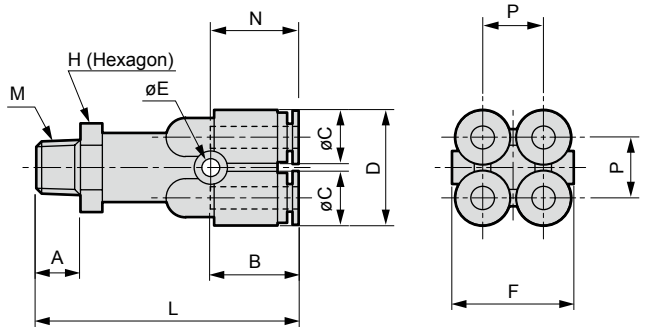
● ZW-FY□-□-P4



Model No.	Compatible tube O.D. ø	M	H	L_1	L_2	A	B	C	D	E	F	G	N	P	Min. bore size	Eff x-sectional area mm²
ZW-FY 4-M5-P4	4	M5×0.8	10	21	23.5	3.4	16	10	21	3.2	11	18	15.5	11	2.5	4.5
ZW-FY 4- 6-P4		R1/8	10	25	23.5	8	16	10	21	3.2	11	18	15.5	11	2.5	4.6
ZW-FY 4- 8-P4		R1/4	14	28.5	23.5	11	16	10	21	3.2	11	18	15.5	11	2.5	4.6
ZW-FY 6-M5-P4	6	M5×0.8	14	23	27	3.4	17.5	12.5	26	4.2	13.5	22.5	17	13.5	2.5	4.5
ZW-FY 6- 6-P4		R1/8	14	28	27	8	17.5	12.5	26	4.2	13.5	22.5	17	13.5	4	10.5
ZW-FY 6- 8-P4		R1/4	14	31	27	11	17.5	12.5	26	4.2	13.5	22.5	17	13.5	4	10.5
ZW-FY 6-10-P4		R3/8	17	32.5	27	12	17.5	12.5	26	4.2	13.5	22.5	17	13.5	4	10.5
ZW-FY 8- 6-P4	8	R1/8	17	30.5	29	8	19	14.5	30	4.2	15.5	26.5	18	15.5	6	23
ZW-FY 8- 8-P4		R1/4	17	33.5	29	11	19	14.5	30	4.2	15.5	26.5	18	15.5	6	23
ZW-FY 8-10-P4		R3/8	17	35	29	12	19	14.5	30	4.2	15.5	26.5	18	15.5	6	23
ZW-FY10- 8-P4	10	R1/4	19	37.5	33	11	21.5	17.5	36	4.2	18.5	31.5	20	18.5	8	34.4
ZW-FY10-10-P4		R3/8	19	39	33	12	21.5	17.5	36	4.2	18.5	31.5	20	18.5	8	34.4
ZW-FY10-15-P4		R1/2	22	42	33	15	21.5	17.5	36	4.2	18.5	32.5	20	18.5	8	34.4
ZW-FY12- 8-P4	12	R1/4	22	39.5	35.5	11	23	20	41	4.2	21	37	21.5	21	8.5	37.5
ZW-FY12-10-P4		R3/8	22	41	35.5	12	23	20	41	4.2	21	37	21.5	21	8.5	37.5
ZW-FY12-15-P4		R1/2	22	44	35.5	15	23	20	41	4.2	21	37	21.5	21	8.5	37.5

Double Y (with R)

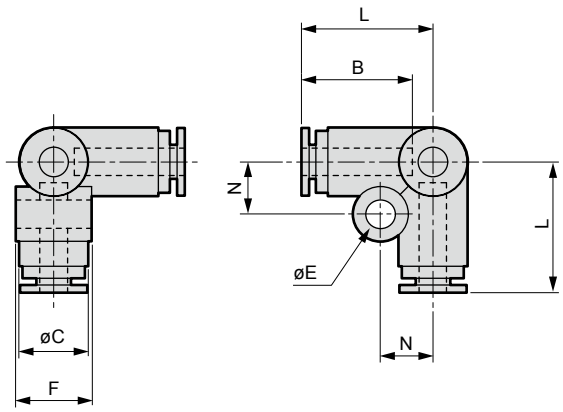
● ZW-WY□-□-P4



Model No.	Compatible tube O.D. ø	M	H	L	A	B	C	D	E	F	N	P	Eff x-sectional area mm²
ZW-WY4- 6-P4	4	R1/8	14	47.5	8	16	10	21	3.2	22	15.5	11	9.7
ZW-WY4- 8-P4		R1/4	14	50.5	11	16	10	21	3.2	22	15.5	11	9.7
ZW-WY6- 6-P4	6	R1/8	17	51.5	8	17.5	12.5	26	3.2	27	17	13.5	23

Tetrapod

● ZW-TR□-0-P4

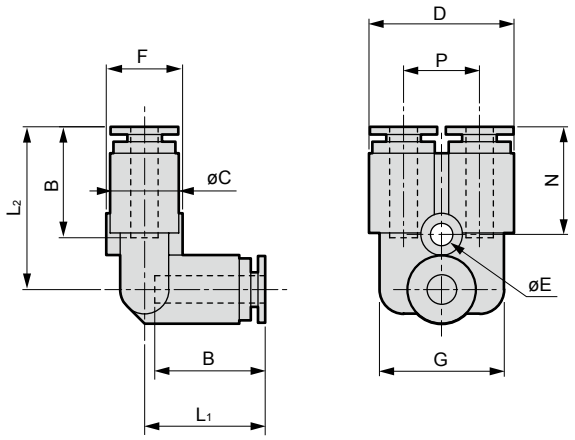


Model No.	Compatible tube O.D. ø	L	B	C	E	F	N	Min. bore size	Eff x-sectional area mm²
ZW-TR 4-0-P4	4	19	16	10	4.2	11	7.5	2.5	4
ZW-TR 6-0-P4	6	21.5	17.5	12.5	4.2	13.5	8.5	4	9.5
ZW-TR 8-0-P4	8	24	19	14.5	4.2	15.5	9.5	6	12.5
ZW-TR10-0-P4	10	27.5	21.5	17.5	4.2	18.5	13	8	29.5
ZW-TR12-0-P4	12	30	23	20	4.2	21	14	10	35.5

Dimensions: FY double Y cap/manifold (single/with R)

FY

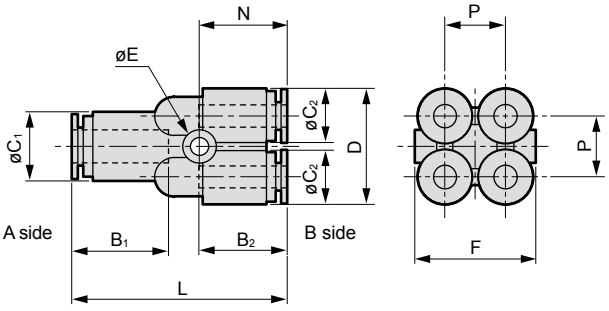
● ZW-FY□-0-P4



Model No.	Compatible tube O.D. ø	L_1	L_2	B	C	D	E	F	G	N	P	Min. bore size	Eff x-sectional area mm²
ZW-FY 4-0-P4	4	17.5	23.5	16	10	21	3.2	11	18	15.5	11	2.5	4
ZW-FY 6-0-P4	6	19.5	27	17.5	12.5	26	4.2	13.5	22.5	17	13.5	4	10
ZW-FY 8-0-P4	8	22	29	19	14.5	30	4.2	15.5	26.5	18	15.5	6	21
ZW-FY10-0-P4	10	25.5	33	21.5	17.5	36	4.2	18.5	31.5	20	18.5	8	29
ZW-FY12-0-P4	12	28	35.5	23	20	41	4.2	21	37	21.5	21	10	35.5

Double Y

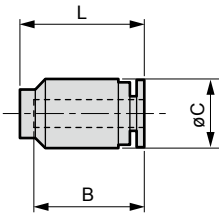
● ZW-WY□-0-P4



Model No.	Compatible tube O.D. ø		L	B_1	B_2	C_1	C_2	D	E	F	N	P	Eff x-sectional area mm²
	A side	B side											
ZW-WY64-0-P4	6	4	39	17.5	16	12.5	10	21	3.2	22	15.5	11	9
ZW-WY86-0-P4	8	6	43	19	17.5	14.5	12.5	26	3.2	27	17	13.5	22

Cap

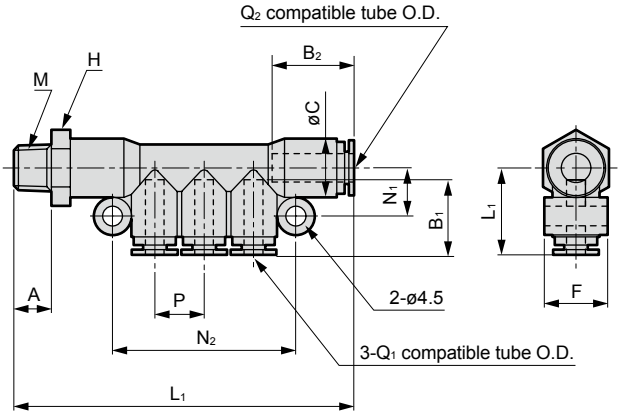
● ZW-C□-P4



Model No.	Compatible tube O.D. ø	B	øC	L
ZW-C 4-P4	4	16	10	18
ZW-C 6-P4	6	17.5	12.5	19.5
ZW-C 8-P4	8	19	14.5	21
ZW-C10-P4	10	21.5	17.5	24
ZW-C12-P4	12	23	20	26

Manifold (single/with R)

● ZW-MF□-□-P4

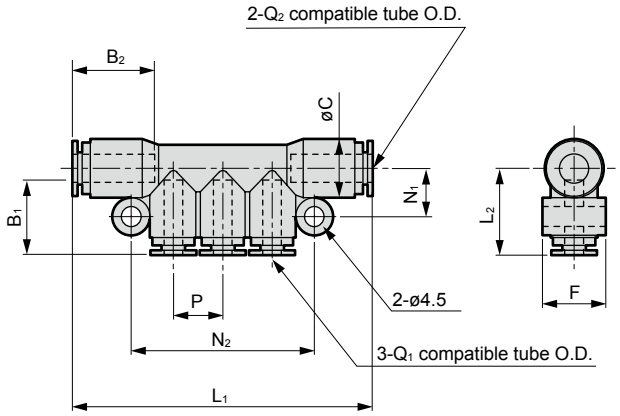


Model No.	Compatible tube O.D. ø		M	H	L_1	L_2	A	B_1	B_2	C	F	N_1	N_1	P	Eff x-sectional area mm²
	Q1	Q2													
ZW-MF 46- 6-P4	4	6	R1/8	14	72.5	18.5	8	16	17.5	12.5	13.5	10.5	39	10.5	8.3
ZW-MF 48- 8-P4	4	8	R1/4	17	77.5	19.5	11	16	19	14.5	15.5	11.5	39	10.5	24.2
ZW-MF 68- 8-P4	6	8	R1/4	17	84.5	21	11	17.5	19	14.5	15.5	11.5	46.5	13	24.2
ZW-MF810-10-P4	8	10	R3/8	19	97.5	23.5	12	19	21.5	17.5	18.5	13	52.5	15	35.5

Dimensions: Manifold (single)/plug reducer

Manifold (single)

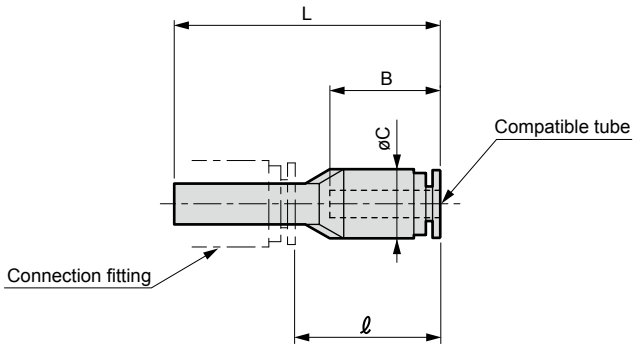
● ZW-MF□-0-P4



Model No.	Compatible tube O.D. ø		L_1	L_2	B_1	B_2	C	F	N_1	N_2	P	Eff x-sectional area mm²
	Q1	Q2										
ZW-MF 46-0-P4	4	6	64	18.5	16	17.5	12.5	13.5	10.5	39	10.5	7.9
ZW-MF 48-0-P4	4	8	66	19.5	16	19	14.5	15.5	11.5	39	10.5	22
ZW-MF 68-0-P4	6	8	73	21	17.5	19	14.5	15.5	11.5	46.5	13	22
ZW-MF610-0-P4	6	10	78.5	22	17.5	21.5	17.5	18.5	13	46.5	13	30
ZW-MF810-0-P4	8	10	84.5	23.5	19	21.5	17.5	18.5	13	52.5	15	30

Plug reducer

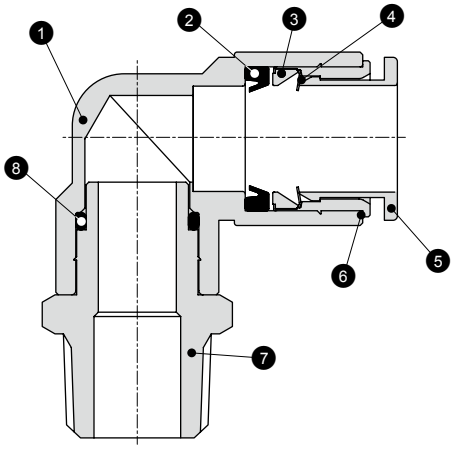
● ZW-S□-□P-P4



Model No.	Compatible tube O.D. ø	Fitting port size ø	L	ℓ*	B	C	Min. bore size	Eff x-sectional area mm²
ZW-S 4- 6P-P4	4	6	38.5	21	16	10	2.3	3.5
ZW-S 4- 8P-P4		8	40.4	21.5	16	10	3	5.6
ZW-S 4-10P-P4		10	42	20.5	16	12.5	3	5.6
ZW-S 6- 4P-P4	6	4	42	26	17.5	12.5	2.3	3.5
ZW-S 6- 8P-P4		8	41	22	17.5	12.5	4	10
ZW-S 6-10P-P4		10	42	20	17.5	12.5	4	10
ZW-S 6-12P-P4		12	44	21	17.5	14.5	4	10
ZW-S 8-10P-P4	8	10	44.5	22.5	19	14.5	6	22
ZW-S 8-12P-P4		12	44	21	19	14.5	6	22
ZW-S10-12P-P4	10	12	48	25	21.5	17.5	8	30

* Dimensions for CKD connection fittings (ZW-P4 Series).

Internal structure and parts list



No.	Part name	Material
1	Body *1	Stainless steel
		Polybutylene terephthalate (flame-resistant resin *2)
2	Packing	Hydrogenated nitrile rubber
3	Chuck holder	Polyetherimide
4	Chuck	Stainless steel
5	Push ring	Polybutylene terephthalate (flame-resistant resin *2)
6	Outer ring	Stainless steel
7	Drive-in nipple	Stainless steel
8	O-ring	Nitrile rubber

*1: The body of the single straight and bulkhead is stainless steel.
*2: Equivalent to UL94 standards V-0



Pneumatic piping components
Catalog No. CC-1101A

PP (polypropylene resin) fitting

ZSF-P4 Series

- For blow circuit
- Grease-free specifications
- Port size: M3, M5, R1/8 to R1/2
- Compatible tube O.D. ø4 to ø12

P4 compliant as standard

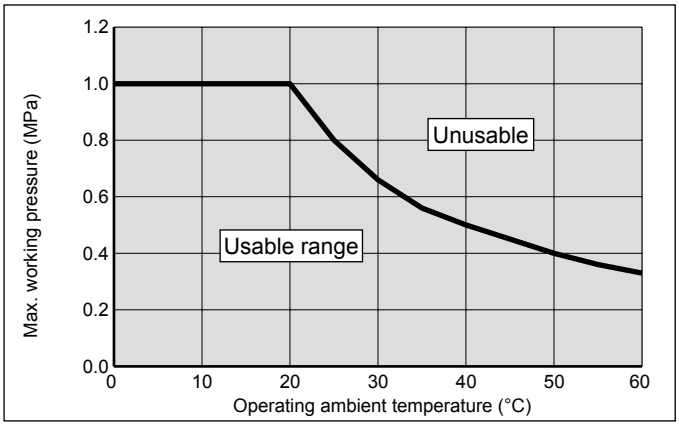
RoHS

Specifications

Descriptions	ZSF-P4
Working fluid	Air (*1)
Max. working pressure MPa	1.0 (*2)
Working vacuum pressure kPa	-100
Guaranteed proof pressure MPa	1.5 (*3)
Working ambient temperature °C	0 to 60 (no freezing) (*4)

*1: Rubber EPDM material is used, so this product cannot be used with fluids that contain mineral oil.
*2: The max. working pressure is the value at 20°C. When using in other temperature ranges, refer to the "Relation of operating ambient temperature and max. working pressure" shown in the figure at right.
*3: The proof pressure is the value at 20°C. The proof pressure is 1.5 times the maximum working pressure.
*4: Freezing may occur due to adiabatic expansion depending on the air quality (dew point).

Relation of operating ambient temperature and max. working pressure



How to order

* Refer to "Pneumatic, Vacuum and Auxiliary Components" (Catalog No. CB-024SA) for model combinations.

ZSF - C (A) 4 (B) - 6 (C) -P4

Ⓐ Shape	
C	Straight
U	Union straight
L	Elbow
V	Union elbow
B	Tee
E	Union tee
G	Different diameter union straight
D	Branch tee
Y	Union Y
EG	Different diameter union tee
X	Branch Y
W	Different diameter union Y
BP	Plug
MP	Bulkhead union
J	Reducer

Ⓑ Compatible tube O.D.	
4	ø4
6	ø6
8	ø8
10	ø10
12	ø12

Ⓒ Piping size *1	
M3	M3×0.5
M5	M5×0.8
6	R1/8
8	R1/4
10	R3/8
15	R1/2

*1: If the compatible tube size is Ⓒ, select from the Ⓑ table.

* Sales unit is 10 pcs.

UP.F.U.NU.KX.SR Tube
O.D. 1.8/3.2/4/6/8/10/12/15 mm

● Tubes can be selected according to applications

A great variety of tubes are available according to the purpose and applications.
Furthermore, they are highly reliable, meeting needs of space saving and complex piping, etc.

■ Antistatic tube



O.D. x I.D. (mm)
3.2×1.8
4×2.5
6×4
8×5
10×6.5
12×8

■ Soft nylon tube

Manufacturer of colors other than white: Aoi Co., Ltd.



O.D. x I.D. (mm)
3.2×2.0
3.2×2.4
4×2.5
6×4
8×6
10×7.5
12×9
15×11.5
16×12

■ New urethane tube



O.D. x I.D. (mm)
4×2.5
6×4.5
8×6
10×7.5
12×9

■ Urethane tube

Aoi Co., Ltd.



O.D. x I.D. (mm)
3.2×1.8
4×2
6×4
8×5
10×6.5
12×8

■ Coiling tube

Aoi Co., Ltd.



O.D. x I.D. (mm)
6×4
8×6
10×7.5
12×9.2

■ Flame-resistant tube

Aoi Co., Ltd.



O.D. x I.D. (mm)
4×2.3
6×3.8
8×5.5
10×7
12×8.5

■ Tube cutter

Aoi Co., Ltd.



Fittings/ tubes

Tube cutter

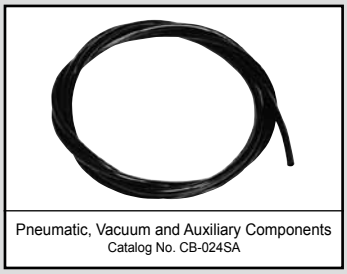
Aoi Co., Ltd.
AZ-1200

Features
(1) Sharp cutting edge for right-angle cut prevents air trouble.
(2) Extremely lightweight and compact.
(3) Easy blade replacement.

Applicable material
- Nylon tube
- Urethane tube
- PTFE tube
- Other plastic tubes

Sharp edge





Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Tube

F.U.NU.KX.SR Series

Wide bore size available according to purposes and applications.
Highly reliable piping tubes.

● Outer diameter: 3.2/4/6/8/10/12/15/16 mm

P4 compliant as standard

Soft nylon tube

Manufacturer of colors other than white: Aoi Co., Ltd.

The soft nylon tube is very flexible compared to the conventional nylon tubes, and optimal for piping in small or complicated spaces. The tube also has sufficient characteristics such as cold resistance, weather resistance, oil resistance and chemical resistance, etc.

How to order

FH-3224 - W

- FH-3224: Size of soft nylon tube ø3.2 x ø2.4
- W: Ⓐ Tube color

For miniature fitting.

Ⓐ Tube color	
Blank	Black
W	White

F-15 04 - 20 - W

- F-15: Soft nylon tube
- 04: Ⓐ
- 20: Ⓑ
- W: Ⓒ

Ⓐ Tube size (O.D.)				Ⓑ Length per roll		Ⓒ Tube color	
32	ø3.2	10	ø10	20	20 m	Blank	Black (standard)
04	ø4	12	ø12	100	100 m	W	White (standard)
06	ø6	15	ø15			R	Red
08	ø8	16	ø16			BU	Blue
						Y	Yellow
						G	Green
						O	Orange

Note: If tube color is white "W", length per roll 100 m is not available.
Note: Use the FH-3224 for miniature fitting. F-1532 cannot be used.

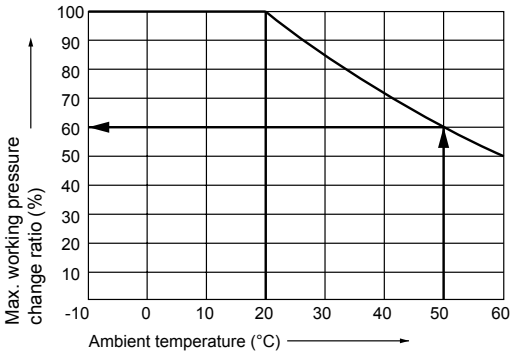
Specifications

This table indicates the value at 20°C.

Descriptions	FH-3224	F-1532	F-1504	F-1506	F-1508	F-1510	F-1512	F-1515	F-1516
Working fluid	Compressed air								
O.D. x I.D. mm x mm	3.2×2.4	3.2×2.0	4×2.5	6×4	8×6	10×7.5	12×9	15×11.5	16×12
Ambient temperature °C	-10 to 60 (no freezing)								
Burst pressure MPa	5.39			4.9	3.9	3.43		2.94	3.3
Max. working pressure MPa	1.76			1.67	1.27	1.18		1	1.1
Durometer hardness	HDD 63	HDD 52							
Min. bending radius (JIS B 8381) mm	13	4.5	5	8	15	20	26	43	46
Min. mounting radius mm	21	7	10	20	30	40	55	80	90
Tube color	White/black		White (20 m only)/black/red/blue/yellow/green/orange			White/black			Black
Standard length per roll m	20		20/100			20/100 (only black)			20/100

* Outer diameter dimension tolerance may vary within ±0.1 mm.

Relation of ambient temperature and max. working pressure



(Example) Tube F-1504 (ø4 x ø2.5)
If ambient temperature is 50˚C, max. working pressure is 60% of max. working pressure of 20˚C.

$1.76 \times \frac{60}{100} \approx 1.06$(MPa)

New urethane tube

RoHS

Due to the adoption of a new manufacturing process, larger inner diameter and increased strength are realized simultaneously with the same outer diameter. This piping tube is also used for larger flow rates. Also economical.

Common specifications

Descriptions	Content
Working fluid	Air
Ambient temperature °C	0 to 60
Burst pressure MPa	4 (at 20°C)
Max. working pressure MPa	1.0 (at 20°C)
Working vacuum pressure kPa	-100

Specifications

Descriptions	NU-04	NU-06	NU-08	NU-10	NU-12
O.D. x I.D. mm x mm	4×2.5	6×4.5	8×6	10×7.5	12×9
Burst pressure MPa	4 to 2.4				
Ambient temperature °C	0 to 60 (no freezing)				
Durometer hardness (JIS K7215)	HDD 64				
Min. bending radius (JIS B 8381) mm	8	16	24	30	36
Min. mounting radius mm	12	26	36	42	52
Outer diameter accuracy mm	+0.1 -0.1			+0.1 -0.15	
Weight g/m	10	15	28	42	62
Tube color	Black/white				
Length per roll m	20/100 (only black)				

Note: Refer to "Pneumatic, Vacuum and Auxiliary Components" (Catalog No.CB-024SA) for relation of the tube length to the effective cross-sectional area.

How to order

NU - 04 - 20 - W
(A) (B) (C)

(A) Tube size (O.D.)		(B) Length per roll		(C) Tube color	
04	ø4	20	20 m	Blank	Black (standard)
06	ø6	100	100 m	w	White (standard)
08	ø8				
10	ø10				
12	ø12				

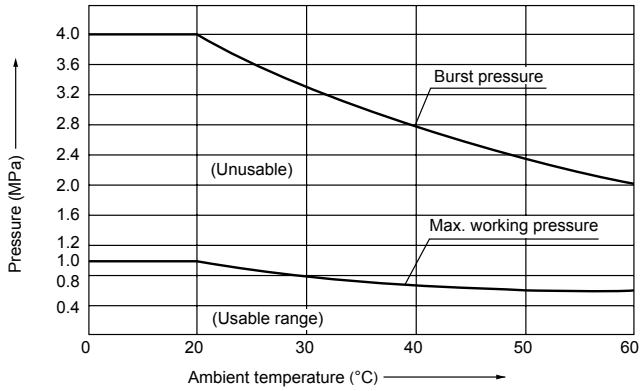
Note: If color is white "W", length per roll 100 m is not available.

Clean-room specifications (Catalog No. CB-033SA)

● Anti-dust generation structure for use in cleanrooms

NU.....- P80

Relation of ambient temperature and pressure (use/burst)



Soft urethane tube

Aoi Co., Ltd.

How to order

U - 92 06 - 20 - N
(A) (B) (C)

Soft urethane tube

(A) Compatible tube O.D. size		(B) Length per roll		(C) Tube color	
04	ø4	20	20 m	Blank	Black
06	ø6	100	100 m	N	Transparent
08	ø8			PW	Pure white
10	ø10			R	Red
12	ø12			BU	Blue
				Y	Yellow
				G	Green
				O	Orange

Clean-room specifications
(Catalog No. CB-033SA)

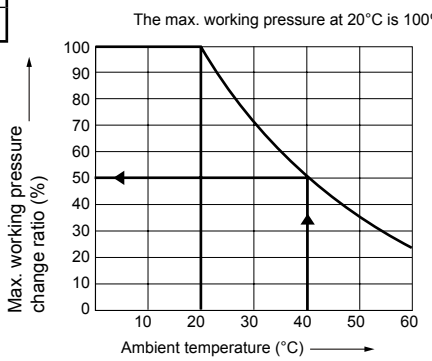
U-92 .....- P80

Specifications

This table indicates the value at 20°C.

Descriptions	U-9204	U-9206	U-9208	U-9210	U-9212
Working fluid	Compressed air				
O.D. x I.D. mm x mm	4×2	6×3.7	8×5	10×6.5	12×8
Burst pressure MPa	4.1	2.9	2.8	2.6	2.6
Max. working pressure MPa	1.3	0.9	0.9	0.8	0.8
Durometer hardness JIS K7215	HDA 92				
Min. bending radius mm	4	10	11	13	16.5
Min. mounting radius mm	8	17	25	30	36
Tube color	Black/transparent/red/blue/yellow/green/orange/pure white				
Standard length per roll m	20/100				

■ Relation of ambient temperature and max. working pressure



When the temperature rises, the constant pressure gradually drops. Special consideration must be given for the ambient temperature.
(Example) In U-9208, the max. working pressure at an ambient temperature of 40°C is 50% of that at 20°C.

$0.9 \times \frac{50}{100} \approx 0.45$(MPa)

Fittings/ tubes

Urethane tube

Aoi Co., Ltd.

Since urethane tube has high mechanical strength, the tube strongly endures external force, and also has flexibility. This is widely used in general pneumatic lines, etc.

How to order

U-95 04 - 20 N

- U-95: Urethane tube
- 04 (A): Compatible tube O.D. size
- 20 (B): Length per roll
- N (C): Tube color

A Compatible tube O.D. size		B Length per roll		C Tube color	
32	ø3.2	20	20 m	Blank	Black
04	ø4	100	100 m	N	Transparent
06	ø6				
08	ø8				
10	ø10				
12	ø12				

Note: Indicate tube color in the remarks on the order slip.

Clean-room specifications (Catalog No. CB-033SA)

U-95 .....- P80

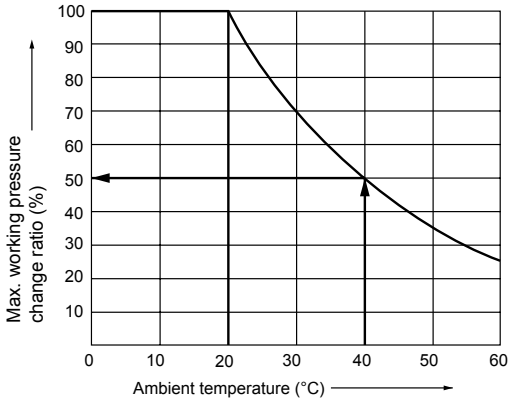
Specifications

This table indicates the value at 20°C.

Descriptions	U-9532	U-9504	U-9506	U-9508	U-9510	U-9512
Working fluid	Compressed air					
O.D. x I.D. mm x mm	3.2×1.8	4×2	6×4	8×5	10×6.5	12×8
Ambient temperature °C	0 to 60 (no freezing)					
Burst pressure MPa	6.1	5.2	3.2	3.6	3.4	3.2
Max. working pressure MPa	1.5	1.7	1.0	1.2	1.1	1.0
Durometer hardness JIS K 7215	HDA 97					
Min. bending radius (JIS B 8381) mm	4	5	13	14	16	20
Min. mounting radius mm	7	10	20	30	40	50
Tube color	Transparent/black					
Standard length per roll m	20	20/100			20	

* The O.D. tolerance of U-9506 and smaller model No. is $^{+0.1}_{-0.15}$ mm, and that of U-9508 and larger model No. is $^{+0.1}_{-0.2}$ mm.

Relation of ambient temperature and max. working pressure



When the temperature rises, the constant pressure gradually drops. Special consideration must be given for the ambient temperature.
(Example) In U-9506, the max. working pressure at an ambient temperature of 40°C is 50% of that at 20°C.

$1.0 \times \frac{50}{100} \approx 0.5$(MPa)

Coiling tube

Aoi Co., Ltd.

A coiling tube is a coil-like manufactured extensible tube. Unlike conventional products, fittings are easily installed and the coil contracts and expands very smoothly due to the straight section provided with the specified length in the direction of expansion and contraction. Durability of coil end is also excellent.

How to order

KX-12 06

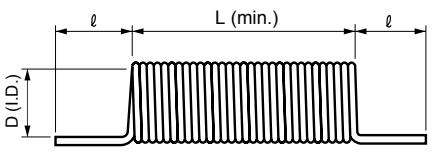
- KX-12: Coiling tube
- 06 (A): O.D. size

A O.D. size	
06	ø6
08	ø8
10	ø10
12	ø12

Specifications

Descriptions	KX-1206	KX-1208	KX-1210	KX-1212
O.D. x I.D. mm x mm	6×4	8×6	10×7.5	12×9.2
Ambient temperature °C	-10 to 60 (no freezing)			
Working extension m	2.5			
D mm	50	70		90
L mm	250	240	290	275
ℓ	100			
Tube color	Orange			

* The O.D. tolerance is $^{+0.07}_{-0.1}$ mm.
* Tube is made of hard nylon.



Flame-resistant tube

Aoi Co., Ltd.

Revolutionary tube made using flame-resistant materials. Even if welding sparks, etc., come into contact, the tube will not continue to burn. (UL standard 94V-0 or equivalent: self-extinguishing property)

How to order

SR - 04 - 100 - ○

Flame-resistant tube

A B

A Compatible tube O.D. size		B Tube color	
04	ø4	Blank	Black
06	ø6	R	Red
08	ø8	BU	Blue
10	ø10	G	Green
12	ø12		

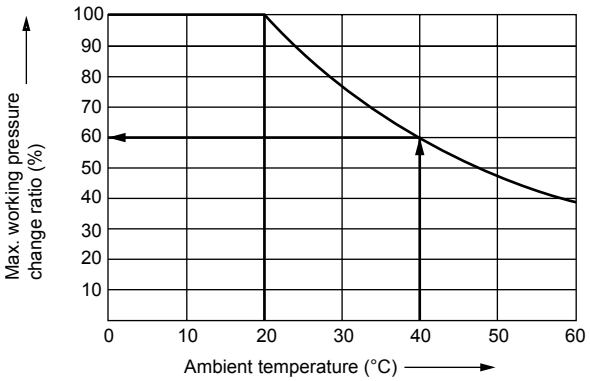
Note: Indicate tube color in the remarks on the order slip.

Specifications

Descriptions	SR-04	SR-06	SR-08	SR-10	SR-12
O.D. x I.D. mm x mm	4×2	6×3.8	8×5.5	10×7	12×8.5
Ambient temperature °C	0 to 60 (no freezing)				
Burst pressure MPa	4.8	4.3	3.4	3.3	3.3
Max. working pressure MPa	1.6	1.4	1.1	1.1	1.1
Min. bending radius mm	15	22	30	40	50
Tube color	Black/red/blue/green				
Standard length per roll m	100				

This table indicates the value at 20°C.

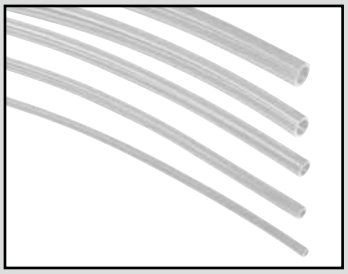
Relation of ambient temperature and max. working pressure



When the temperature rises, the constant pressure gradually drops. Special consideration must be given for the ambient temperature.
(Example) In SR-06, the max. working pressure at an ambient temperature of 40°C is 60% of that at 20°C.

$1.4 \times \frac{60}{100} \approx 0.84$(MPa)

Fittings/ tubes



Fluoro resin tube

ET Series

● O.D.: 4 mm, 6 mm, 8 mm, 10 mm, 12 mm

P4 compliant as standard

RoHS

Features

· Fluorine resin (FEP) tube with excellent cost performance
· 8 size variations are set (O.D.: ø4 to ø12)

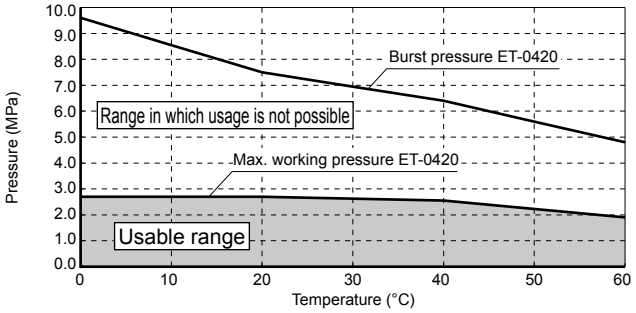
Specifications

Descriptions		ET-0420	ET-0425	ET-0640	ET-0860	ET-1075	ET-1080	ET-1290	ET-1210
O.D. x I.D.	mm×mm	4×2	4×2.5	6×4	8×6	10×7.5	10×8	12×9	12×10
Working fluid		Air							
Max. working pressure (*1)	MPa	2.7	1.6	1.6	1	1	0.7	1	0.7
Burst pressure (*1)	MPa	7.5	4.6	4.6	3.3	3.3	2.1	3.3	2.1
Operating vacuum pressure	kPa	-100							
Operating ambient temperature range	°C	-20 to 80 (no freezing)							
Min. bending radius (JIS B 8381)	mm	7	14	14	27	40	50	47	67
Min. installation radius	mm	10	20	30	55	60	100	80	150
Material		Fluorine resin (FEP)							
Compatible tube fitting		Fitting ZSP, ZSF Series							

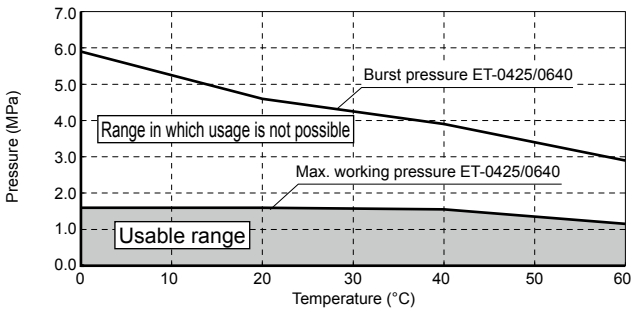
*1: The max. working pressure and burst pressure are the values at 20°C. When using in other temperature ranges, refer to the graph of "Relation of operating ambient temperature and pressure (use/burst)".

Relation of operating ambient temperature and pressure (use burst)

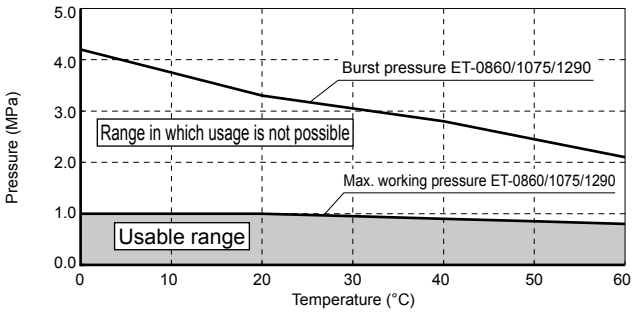
●ET-0420-*



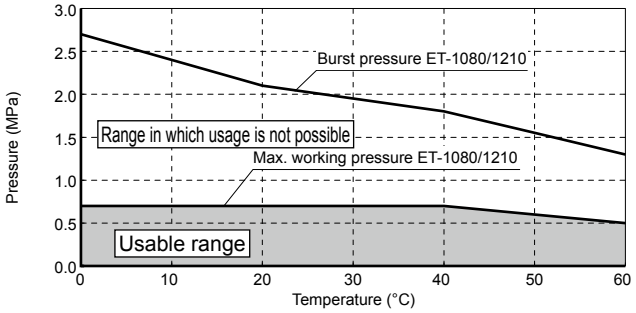
●ET-0425/0640-*



●ET-0860/1075/1290-*



●ET-1080/1210-*

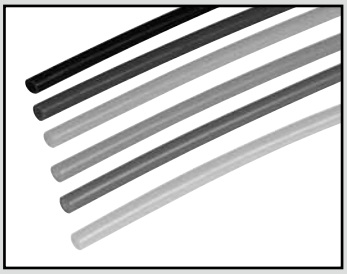


How to order

ET - 0425 - 20 - C

- C: Color: transparent
- 20: Length per roll; 20 m
- 0425: Ⓐ Tube size (O.D. x I.D.)

Code	Content
Ⓐ Tube size (O.D. x I.D.)	
0420	ø4×ø2
0425	ø4×ø2.5
0640	ø6×ø4
0860	ø8×ø6
1075	ø10×ø7.5
1080	ø10×ø8
1290	ø12×ø9
1210	ø12×ø10



Polyolefin tube

PFH/S Series

● O.D.: 4 mm, 6 mm, 8 mm, 10 mm, 12 mm

P4 compliant as standard

RoHS

Features

· Uses polyolefin-based resin suitable for clean environments
· 2 types of hardness, standard and soft, can be selected
· O.D.: ø4, ø6, ø8, ø10, ø12
· 6 tube colors as standard.

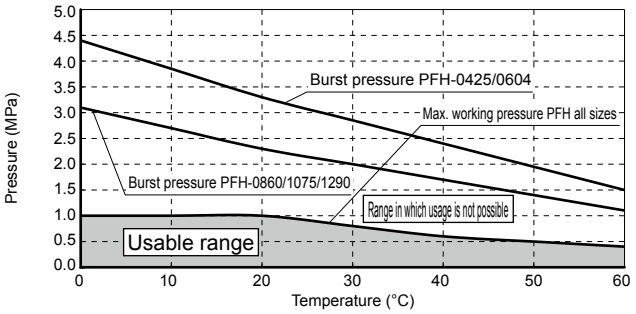
Specifications

Descriptions		PFH-0425	PFH-0640	PFH-0860	PFH-1075	PFH-1290	PFS-0425	PFS-0640	PFS-0850	PFS-1065	PFS-1280
O.D. x I.D.	mm×mm	4×2.5	6×4	8×6	10×7.5	12×9	4×2.5	6×4	8×5	10×6.5	12×8
Working fluid		Air (*1)									
Max. working pressure (*2)	MPa	1.0					0.8				
Burst pressure (*2)	MPa	3.3		2.3			2.1				
Operating vacuum pressure	kPa	-100									
Operating ambient temperature range	°C	0 to 60 (no freezing)									
Min. bending radius (JIS B 8381)	mm	7	12	23	27	33	7	12	12	18	20
Min. installation radius	mm	15	25	37	46	54	15	25	25	29	41
Material		Polyolefin-based resin									
Compatible tube fitting		Fitting ZSP, ZSF Series									

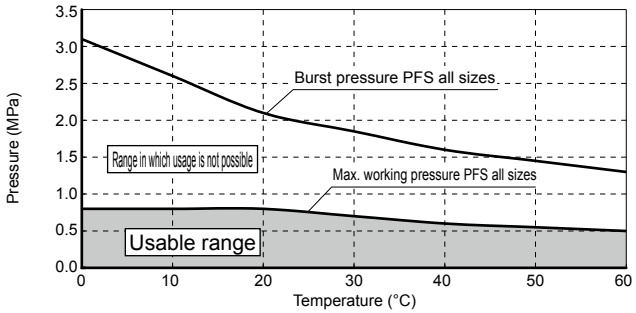
*1: Polyolefin-based resin is not suitable for piping in general pneumatic circuits, since it is susceptible to mineral oil.
*2: The max. working pressure and burst pressure are the values at 20°C. When using in other temperature ranges, refer to the graph of "Relation of operating ambient temperature and pressure (use/burst)".

Relation of operating ambient temperature and pressure (use burst)

● PFH: Polyolefin tube standard



● PFS: Polyolefin tube soft



How to order

PF H - 0425 - 100 - CW - P4

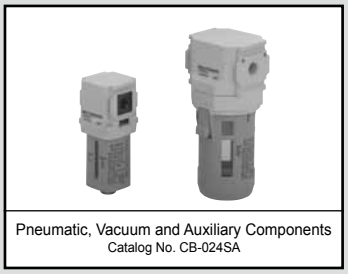
Length per roll; 100 m

Ⓐ Type

Ⓑ Tube size (O.D. x I.D.)

Ⓒ Color

Code	Content	Model No. PFH	Model No. PFS
Ⓐ Type			
H	Standard	●	
S	Soft		●
Ⓑ Tube size (O.D. x I.D.)			
0425	ø4×ø2.5	●	●
0640	ø6×ø4	●	●
0850	ø8×ø5		●
0860	ø8×ø6	●	
1065	ø10×ø6.5		●
1075	ø10×ø7.5	●	
1280	ø12×ø8		●
1290	ø12×ø9	●	
Ⓒ Color			
B	Black	●	●
CW	Transparent white	●	●
CR	Transparent red	●	●
CB	Transparent blue	●	●
CG	Transparent green	●	●
CY	Transparent yellow	●	●



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

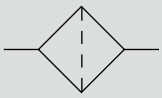
Vacuum filter

VFA1000/3000/4000 Series

Removing dust & moisture from air when absorbing air by vacuum pump or ejector

● Port size: Rc1/8 to Rc1/2

JIS symbol



RoHS CAD

Specifications

Model No.		VFA1000		VFA3000		VFA4000	
Working pressure	kPa	-100 to 0					
Proof pressure	MPa	0.5					
Ambient/fluid temperatures	°C	5 to 50					
Bowl capacity	cm^3	10		45		80	
Port size	Rc	1/8	1/4	1/4	3/8	3/8	1/2
Weight	kg	0.1		0.3		0.5	
Recommended flow rate *1	ℓ/min (ANR)	60	80	100	200	250	400

*1: Flow rate applies where initial pressure loss is 3 kPa or less (at standard element used).
*2: or standard element, 40 µm of mesh (average) is used in filtration section (material: polyamide), while options include filtration rating 5 µm fiber (material: polypropylene).

Compatibility table by variation

	VFA1000	VFA3000	VFA4000
Port size	Rc1/8, 1/4	Rc1/4, 3/8	Rc3/8, 1/2
P4	●	●	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Note: Metal bowl is not available.

How to order

VFA3000 – 8 – Y5 P4 – B

Ⓐ Model No.
Ⓑ Port size
Ⓒ Option
Ⓓ Attachment

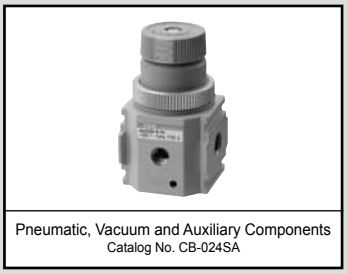
Code		Content	Ⓐ Model No. VFA1000	VFA3000	VFA4000
Ⓑ Port size					
6		Rc1/8	●		
8		Rc1/4	●	●	
10		Rc3/8		●	●
15		Rc1/2			●
Ⓒ Option					
Bowl material	**Blank**	Polyamide (nylon)	●	●	●
Element	**Blank**	40 µm Polyamide	●	●	●
	Y5	5 µm Polypropylene	●	●	●
Ⓓ Attachment					
Blank		No	●	●	●
B		C bracket	●	●	●

Model No. of single bracket

Model No.	Bracket model No.
VFA1000	B120
VFA3000	B320
VFA4000	B420

⚠ Precautions for model No. selection

*1: Indicate options for bowl material and element in order.



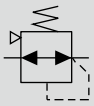
Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Vacuum regulator

VRA2000 Series

● Port size: Rc1/4, Rc3/8, G1/4, G3/8, 1/4NPT, 3/8NPT

JIS symbol



RoHS CAD

Specifications

Model No.		VRA2000-8	VRA2000-10
Set pressure	kPa	-100 to -1	
Ambient/fluid temperatures	°C	5 to 50	
Balance leak flow rate	ℓ/min (ANR)	1 *3	
Max. flow rate	ℓ/min (ANR)	200 *1	
Port size	IN/OUT	1/4	3/8
	Gauge	1/8	
Weight	kg	0.29	

*1: The max. flow rate is the flow rate when the secondary side is completely closed and the primary pressure is at -101.3 kPa, and then, after adjusting the secondary pressure to -100 kPa, the secondary side is fully opened.
*2: Available only for port size Rc.
*3: Flow rate when primary pressure is set to -95 kPa or less and secondary pressure to -45 kPa while closed.

How to order

VRA2000 — 8 — P4 — B

Ⓐ Port size

Ⓑ Option (attachment)

Code	Content
Ⓐ Port size	
8	Rc1/4
10	Rc3/8
Ⓑ Option	
Blank	No
B	C bracket
B3	L bracket
B4	B bracket

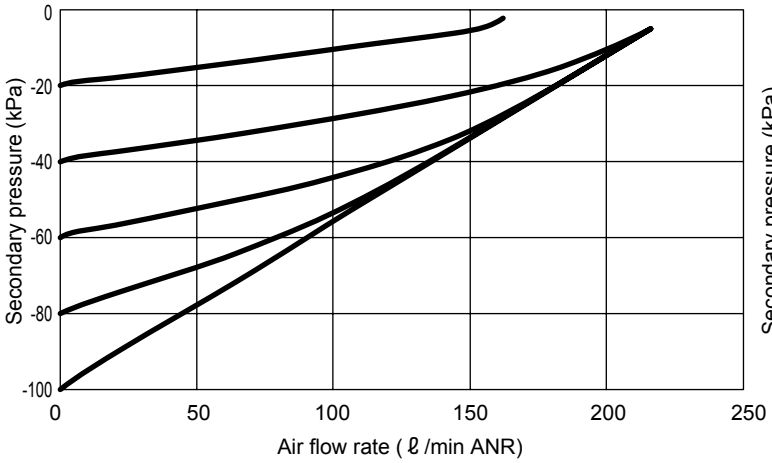
Compatibility table by variation

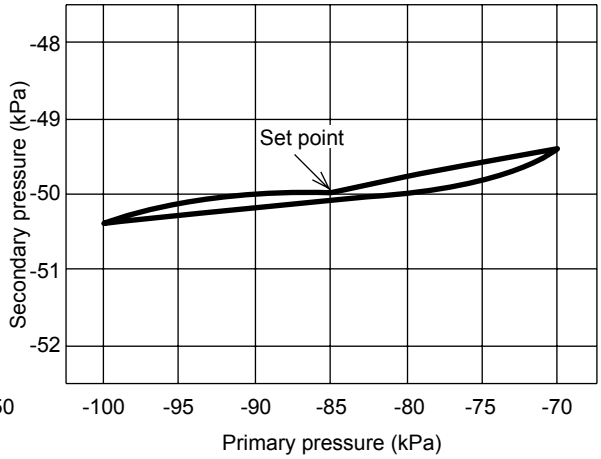
	VRA2000
Port size	Rc1/4, 3/8
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Available pressure gauge is PPX only.
*2: Pressure gauge/pressure sensor must be ordered separately. (Attachment options not available.)

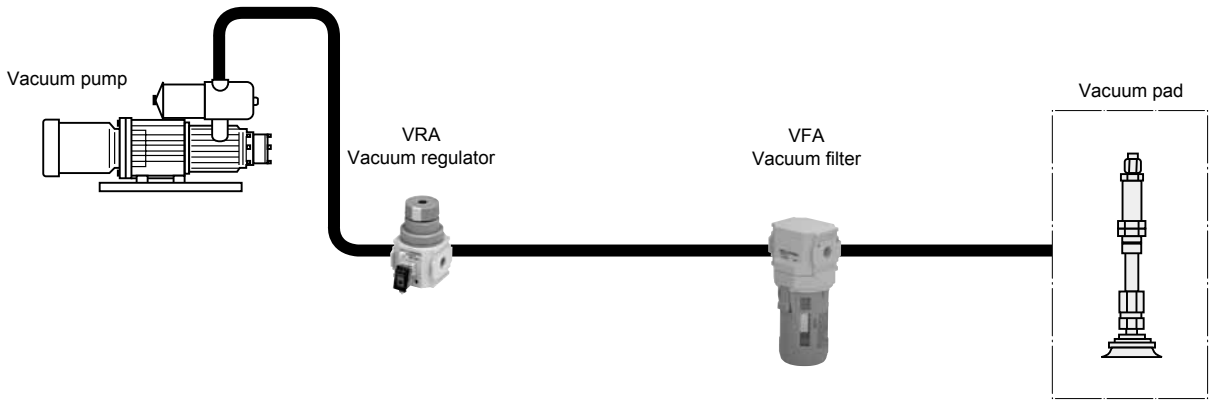
Characteristic curve

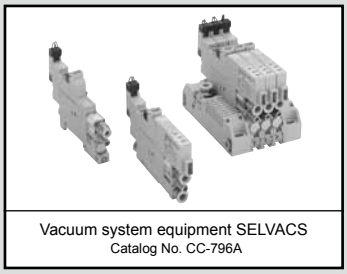




*1: The primary side vacuum pump is measured with using discharge rate 500 ℓ /min.

Applications





Vacuum system equipment SELVACS
Catalog No. CC-796A

Vacuum ejector unit which is lightweight and compact in appearance and has a high-cycle vacuum system

VSX Series

● Nozzle diameter: ø0.5, ø0.7, ø1.0

RoHS

Specifications

Descriptions	VSX
Working fluid	Air
Working pressure range MPa	0.3 to 0.7
Working ambient temperature °C	5 to 50

Ejector characteristics

Model No.		Nozzle diameter (mm)	Rated supply pressure (MPa)	Achieved vacuum pressure (-kPa)	Intake flow rate (ℓ/min (ANR))	Air consumption rate (ℓ/min (ANR))
VSX-H05…	Atmospheric release Common exhaust	0.5	0.5	90.4	7	11.5
VSX-L05…	Atmospheric release Common exhaust			66.5	12	
VSX-E05…	Atmospheric release Common exhaust		0.35	90.4	3	8
VSX-H07…	Atmospheric release Common exhaust	0.7	0.5	93.1	13	23
VSX-L07…S	Atmospheric release			66.5	24	
VSX-L07…J	Common exhaust				22	
VSX-E07…	Atmospheric release Common exhaust		0.35	90.4	10.5	17
VSX-H10…S	Atmospheric release	1.0	0.5	93.1	24	46
VSX-H10…J	Common exhaust				20	
VSX-L10…S	Atmospheric release			66.5	26	
VSX-E10…S	Atmospheric release		0.35	90.4	20	34
VSX-E10…J	Common exhaust				19	

Note: Values in table are representative values. Suction flow rate differs with the vacuum piping conditions (vacuum port size, pipe length).

Solenoid valve specifications

● Pilot valve

Descriptions	Vacuum generating valve		Vacuum break valve	
Actuation	Direct operation			
Valve structure	Elastic sealing, poppet valve			
Rated voltage	24 VDC	100 VAC	24 VDC	100 VAC
Allowable voltage fluctuation range	24 VDC ±10%	100 VAC ±10%	24 VDC ±10%	100 VAC ±10%
Surge protective circuit	Varistor	Bridge diode	Varistor	Bridge diode
Power consumption	1.2 W (with LED)	1.5 VA (with LED)	1.2 W (with LED)	1.5 VA (with LED)
Manual operation	Push non-locking			
Operation display	At coil excitation operation: Red LED lights			
Connection	Connector (cable length: 500 mm)			
	Red: 24 VDC Black: COM	Blue	Red: 24 VDC Black: COM	Blue

● Main valve

Descriptions	Vacuum generating valve
Actuation	Pneumatically actuated by pilot valve
Valve structure	Elastic sealing, poppet valve
Proof pressure	1.05 MPa
Valve	Normally closed
Lubrication	Not required
Effective cross-sectional area	Air supply port size ø4: 3.5 mm^2 Air supply port size ø6: 4.5 mm^2

Vacuum pressure switch specifications

Descriptions		With digital display		Without display
		With 2-point switch output (-DW)	With analog output (-DA)	Analog output only (-A0)
Shipment default		-50 kPa (SW1), -10 kPa (SW2)	-50 kPa	-
Current consumption		40 mA or less		15 mA or less
Pressure detection method		Diffused semiconductor pressure switch		
Working pressure range		-100 to 0 kPa		
Set pressure range		-99 to 0 kPa		-
Proof pressure		0.2 MPa		
Storage temperature range		-20 to 80°C (atmospheric pressure, humidity 60% RH or less)		
Operating temperature range		0 to 50°C (no freezing)		
Operating humidity range		35 to 85% RH (no condensation)		
Power supply voltage		12 to 24 VDC ±10% ripple (P-P) 10% or less		
Degree of protection		IEC standards IP40 or equivalent		
Pressure setting points		2	1	-
Operation precision		±3% F.S. max.(at Ta=25°C)		-
Hysteresis		Fixed (2% F.S. or less)	Variable (Approx. 0 to 15% F.S.)	-
Switch output		NPN open collector output 30 V 80mA or less Residual voltage 0.8 V or less		-
Analog output	Output voltage	-	1 to 5 V	
	Zero point voltage	-	1±0.1 V	
	Span voltage	-	4±0.1 V	
	Output current	-	1 mA or less (load resistance 5 kΩ and over)	
	LIN/HYS	-	±0.5% F.S.max.	±0.5% F.S.max.
Display		0 to -99 kPa (2-digit red LED display)		-
Display frequency		Approx. 4 times/second		-
Display accuracy		±3% F.S. ±2digit		-
Resolution		1digit		-
Operation display		SW1: Red LED lights at set pressure and over	Red LED lights at set pressure and over	-
		SW2: Green LED lights at set pressure and over		
Function		1. MODE change-over switch (ME or S1 or S2)	1. MODE change-over switch (ME or SW)	-
		2. S1 set trimmer (2/3 rotation trimmer)	2. SW set trimmer (2/3 rotation trimmer)	-
		3. S2 set trimmer (2/3 rotation trimmer)	3. HYS set trimmer (Approx. 0 to 15% F.S.)	-

Vacuum break function specifications

Valve	Break air flow rate
Normally closed	0 to 7.5 ℓ/min(ANR)
Self-hold	0.2 to 2 ℓ/min(ANR)

*1: Value at supply pressure of 0.5 MPa.
*2: Note that for self-hold, the valve response specifications cannot be met outside the above flow rate setting range.
*3: The burst air flow rate will vary with the diameter and length (piping resistance, etc.) of the vacuum side piping.

Vacuum filter specifications

Descriptions	Vacuum filter
Element material	PVF (Polyvinyl formal)
Filtration degree	10 μm
Filter surface area	502 mm^2
Replacement filter element model No.	VSX-E

Compatibility table by variation

	VSX	VSXM
Port size	ø4, ø6	ø4, ø6, ø8, ø10
P4	▲	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

*1: Applicable only for common exhaust.

How to order (single unit)

● 10.5 mm width integrated vacuum ejector unit, single unit

VSX - H 07 D - 6 6 J - 3 - DW - D - P4

- Ⓐ Vacuum characteristics
- Ⓑ Nozzle diameter
- Ⓒ Valve
- Ⓓ Vacuum port (V)
- Ⓔ Air supply port (PS)
- Ⓕ Exhaust port (EX)
- Ⓖ Solenoid valve voltage
- Ⓗ Vacuum pressure switch specifications
- Ⓘ Mounting method

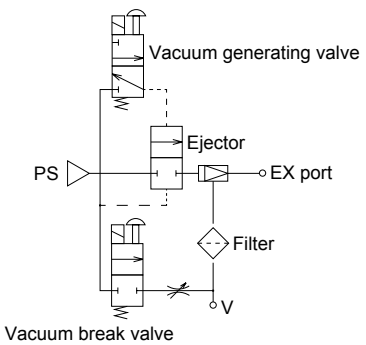
Code	Content
Ⓐ Vacuum characteristics *1	
H	High vacuum/medium flow rate
L	Medium vacuum/large flow rate
E	High vacuum/low flow rate
Ⓑ Nozzle diameter *1	
05	ø0.5
07	ø0.7
10	ø1.0
Ⓒ Valve	
B	Normally closed
D	Self-hold
Ⓓ Vacuum port (V)	
4	ø4 push-in fitting
6	ø6 push-in fitting
Ⓔ Air supply port (PS)	
4	ø4 push-in fitting
6	ø6 push-in fitting
Ⓕ Exhaust port (EX) *1	
J	ø6 push-in fitting common exhaust
Ⓖ Solenoid valve voltage	
3	24 VDC
Ⓗ Vacuum pressure switch specifications	
Blank	Without vacuum pressure switch
DW	With digital display, NPN output 2 points
DA	With digital display, NPN output 1 point + analog output
AO	Analog output
Ⓘ Mounting method	
D	DIN rail mount
Blank	Direct mount

⚠ Precautions for model No. selection

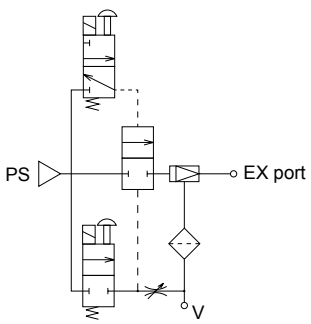
*1: With the combination of Ⓐ and Ⓑ for "L10", Ⓕ "J" cannot be selected.

Circuit diagram

● Normally closed



● Self-hold





Vacuum system equipment SELVACS
Catalog No. CC-796A

Suction pad

VSP Series

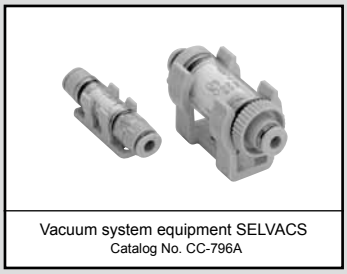
Pad shape		Pad size	Pad material
Standard compact / general: VSP-*RM/*R Ideal for thick and flat workpieces		ø0.7, ø1, ø2, ø3, ø4, ø6, ø8, ø10, ø15, ø20, ø25, ø30, ø40, ø50, ø60, ø80, ø100, ø150, ø200	Silicone, urethane, fluorine, antistatic silicone rubber
Standard deep: VSP-*A Ideal for adsorption of round ball, etc.		ø15, ø20, ø25, ø30, ø40, ø50, ø60, ø80, ø100	
Sponge: VSP-*S Ideal for workpieces with concave-convex surface such as external wall material		ø10, ø15, ø20, ø25, ø30, ø35, ø50, ø70, ø100	Chloroprene
Bellows: VSP-*B Ideal for soft workpieces such as paper or plastic		ø10, ø20, ø30, ø40, ø50, ø80	Silicone, antistatic silicone rubber
Multi-stage bellows: VSP-*W Ideal for transporting tilted workpieces or plastic packaging products		ø10, ø20, ø30, ø40, ø50	Silicone
Oval: VSP-*E Ideal for workpieces such as IC base whose adsorption space is limited		4×10, 4×20, 4×30, 5×10, 5×20, 5×30, 6×10, 6×20, 6×30, 8×20, 8×30	Silicone
Soft: VSP-*L Ideal for retrieving molded products or for transporting fragile workpieces		ø4, ø6, ø8, ø10, ø15, ø20, ø30, ø40	Silicone, fluorosilicone rubber, antistatic silicone rubber
Soft bellows: VSP-*LB Ideal for retrieving molded products or for adsorption of paper, etc.		ø6, ø8, ø10, ø15, ø20	Silicone
Type for thin objects: VSP-*P Ideal for transport of thin workpieces such as copy paper and plastic, etc.		ø8, ø10, ø15, ø20	Fluorosilicone rubber

Compatibility table by variation

	VSP
P4	▲

*1: Holder shape is only available for fixed type.
*2: Free holder and position locking valve are not supported.
*3: For pad material, only S, V, F, SE, FS, and Blank are supported.
*4: Pad shapes O, K, F, Q cannot be selected.

● : Standard
○ : Made to order
▲ : Contact CKD
▭ : Not applicable



Vacuum system equipment SELVACS
Catalog No. CC-796A

Vacuum filter compatible with various vacuum pipes
Vacuum filter

VSFU Series

● Port size: M5, ø4, ø6, ø8, ø10, ø12

RoHS

Specifications

Descriptions	VSFU
Working fluid	Air
Working pressure range kPa	-100 to 0
Filtration accuracy μm	10
Working ambient temperature °C	0 to 60 (no freezing)

Compatibility table by variation

	VSFU
Port size	ø4, ø6, ø8, ø10
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● Compact union

VSFU - 3 - 1010 - P4

Ⓐ Filter size

Ⓑ Vacuum side port size - Pad side port size

Code	Content
Ⓐ Filter size	
1S	Filtration area 2.8 cm^2 (element length: 15 mm)
1L	Filtration area 4.7 cm^2 (element length: 25 mm)
2	Filtration area 7.5 cm^2
3	Filtration area 12.5 cm^2
Ⓑ Vacuum side port size - Pad side port size	
44	Push-in fitting ø4 - Push-in fitting ø4
66	Push-in fitting ø6 - Push-in fitting ø6
88	Push-in fitting ø8 - Push-in fitting ø8
1010	Push-in fitting ø10 - Push-in fitting ø10
M55	M5×0.8-M5×0.8

● Filter size - port size combination table

Port size / Model No.	44	66	88	1010	M55
VSFU-1S	●	●			●
VSFU-1L	●	●			●
VSFU-2	●	●			
VSFU-3		●	●	●	

● Maintenance part model No.

· Bracket

VSFU - 3 - B

Ⓐ Size

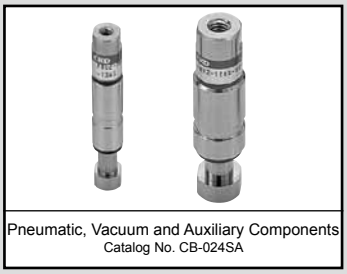
Code	Content
Ⓐ Size	
1	Filter size 1S, 1L common
2	For filter size 2
3	For filter size 3

· Filter element

VSFU - 3 - E

Ⓐ Filter size

Code	Content
Ⓐ Filter size	
1S	Filtration area 2.8 cm^2 (element length: 15 mm)
1L	Filtration area 4.7 cm^2 (element length: 25 mm)
2	Filtration area 7.5 cm^2
3	Filtration area 12.5 cm^2



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Fine buffer

FBU2 Series

O.D.: M8, M12, ø7, ø12
Load capacity: 30, 80 g

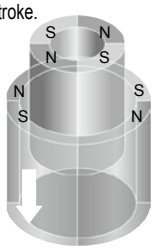
P4 compliant as standard

RoHS

Uniform pressure

If the magnets in the movable shaft and fixed shaft are misaligned, a diagonal line of magnetic force appears and power is generated as the axial force tries to return.
Pressure due to magnetic force is selected from the 3 ranges of 0.2 N, 0.5 N and 1.0 N depending on the model. All are nearly constant regardless of the stroke.

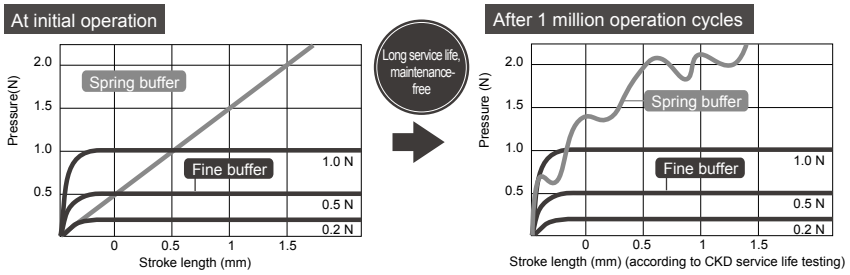
Magnetic return force constant in the axial direction



Clean & long life

No metal contact compared with spring buffers, for an ultra-low dust generation rate.
No spring fatigue for long service life and stable performance.

Pressure characteristics



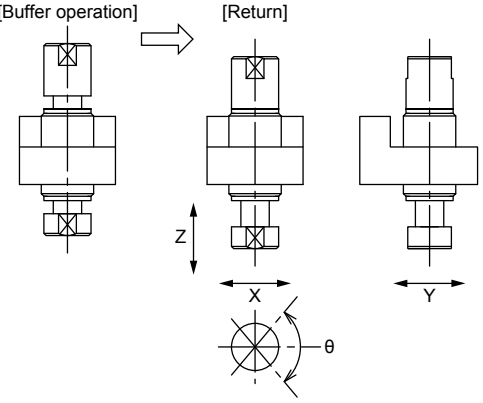
Specifications

Values at room temperature of 23°C.

Descriptions			FBU2-7D				FBU2-8M		FBU2-12D					FBU2-12M		
			S		H/HV		S		S			H/HV		S		
O.D.			ø7h7				M8×0.75		ø12h7					M12×1		
Appearance			S/H		HV				S/H			HV				
Buffer pressure		N	0.1 to 0.2				0.1 to 0.2		0.4 to 0.6, 0.9 to 1.1					0.4 to 0.6, 0.9 to 1.1		
Pressure variation *1			±15% or less													
Buffer stroke length			2	6	2	6	2	6	2	6	16	2	6	2	6	16
Operating ambient temperature		°C	5 to 50		5 to 40		5 to 50		5 to 50			5 to 40		5 to 50		
Bearing clearance		mm	0.2 or less		0.05 or less		0.2 or less		0.2 or less			0.05 or less		0.2 or less		
Max. holding torque *2		N·cm	0.25 and over (reference value)						*3					*3		
Return positioning accuracy *4	X-Y	mm	±0.1 or less		±0.05 or less		±0.1 or less		±0.1 or less			±0.05 or less		±0.1 or less		
	Z	mm	±0.1 or less													
	θ	°	3 or less													
Load capacity		g	30 or less						80 or less							

*1: Indicates pressure fluctuations within the stroke. Pressure is not proportional to the stroke.
*2: If a rotary torque exceeding the max. holding torque is applied on the moving axis, the moving axis will step out and rotate 180°.
* Holding torque: Force which can return to the original position even if force is applied in θ direction (Fig. 1) and moving axis position deviates.
*3: Refer to the table at right for FBU2-12M/12D holding torque.
*4: Refer to the figure below (Fig. 1) for return positioning accuracy. The figure shows buffer return accuracy.
*5: Consult with CKD for requirements not complying with specifications.
*6: Load capacity indicates the max. load (jig and adsorbend) mounted on the head piece.

[Buffer operation] [Return]



(Fig. 1) Return detailed drawing

[FBU2-12M/12D max. holding torque (reference value)]

Pressure (N)	Stroke length (mm)	Holding torque (N·cm)
0.5	2	0.5 or more
	6	0.5 or more
	16	1.2 or more
1	2	1.2 or more
	6	1.2 or more
	16	2.5 or more

Indicates the holding torque at the outer end.

Vacuum components

How to order

FBU2 - 12D - S - 10 - 6 - T3 - H3

- FBU2 — Model No.
- 12D — Ⓐ O.D.
- S — Ⓑ Bearing precision
- 10 — Ⓒ Pressure
- 6 — Ⓓ Buffer stroke length
- T3 — Ⓔ Tailpiece shape
- H3 — Ⓕ Head piece shape

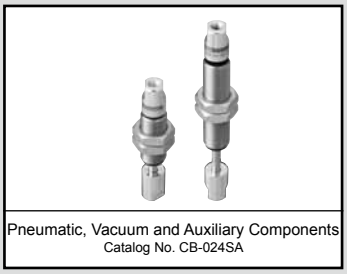
Code	Content	Model No. FBU2-7D	FBU2-8M	FBU2-12D	FBU2-12M
Ⓐ O.D.					
7D	ø7h7 spigot	●			
8M	M8 x 0.75 full thread		●		
12D	ø12h7 spigot			●	
12M	M12 x 1 full thread				●
Ⓑ Bearing precision					
S	Standard (bearing clearance 0.2 mm or less)	●	●	●	●
H	High precision (bearing clearance 0.05 mm or less)	●		●	
HV	Internal flow path high precision (bearing clearance 0.05 mm or less)	●		●	
Ⓒ Pressure (N)					
02	0.2	●	●		
05	0.5			●	●
10	1.0			●	●
Ⓓ Buffer stroke length (mm)					
2	2	●	●	●	●
6	6	●	●	●	●
16	16			●	●
Ⓔ Tailpiece shape					
TB	Without hole	●	●	●	●
T3	M3 female thread depth 3	●	●	●	●
T5	M5 female thread depth 4			●	●
Ⓕ Head piece shape					
HB	Without hole	●	●	●	●
H3	M3 female thread depth 3	●	●	●	●
H5	M5 female thread depth 4			●	●

Combination of bearing precision, buffer stroke, tailpiece shape, and head piece shape

		Ⓑ Bearing precision S	H	HV
Ⓓ Buffer stroke length	**2**	●	●	●
	6	●	●	●
	16	●		
Ⓔ Tailpiece shape	**TB**	●	●	●
	T3	●	●	
	T5	●	●	
Ⓕ Head piece shape	**HB**	●	●	
	H3	●	●	●
	H5	●	●	●

Model No. of single mounting bracket for spigot

Ⓐ O.D.	Model No. of single bracket	
	L installation	Straight installation
7D	FBU2- 7D -B1	FBU2- 7D -B2
12D	FBU2- 12D -B1	FBU2- 12D -B2



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Fine buffer

FBU2-SU Series

Outer diameter: M12, full thread
Load capacity: 200 g

P4 compliant as standard

RoHS

Specifications

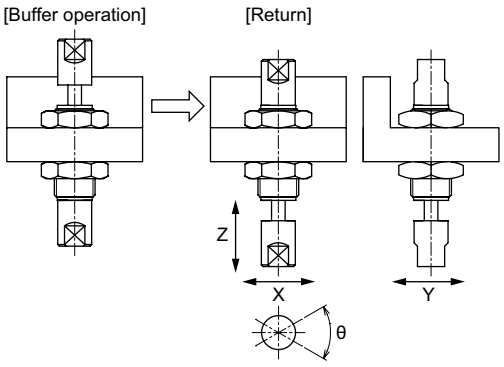
Descriptions			FBU2-SU
O.D.			M12×1
Buffer pressure		N	0.4 to 0.6, 0.9 to 1.1
Pressure variation *1)			±15% or less
Buffer stroke length		mm	2, 6, 16
Operating ambient temperature		°C	5 to 50
Bearing clearance		mm	0.2 or less
Max. holding torque		N·cm	*2)
Return positioning accuracy *3)	X-Y	mm	±0.1 or less
	Z	mm	±0.1 or less
	θ	°	3 or less
Load capacity		g	200 or less

*1: Indicates pressure fluctuations within the stroke. Pressure is not proportional to the stroke.
*2: If a rotary torque exceeding the max. holding torque is applied on the moving axis, the moving axis will step out and rotate 180°.
* Holding torque: Force which can return to the original position even if force is applied in θ direction (Fig. 1) and moving axis position deviates.
*3: Refer to the figure below for return positioning accuracy. The figure shows buffer return accuracy.
*4: Consult with CKD for requirements not complying with specifications.

[FBU2-SU max. holding torque (reference value)]

Pressure (N)	Stroke length (mm)	Holding torque (N·cm)
0.5	2	0.5 or more
	6	0.5 or more
	16	1.2 or more
1	2	1.2 or more
	6	1.2 or more
	16	2.5 or more

Indicates the holding torque at the outer end.

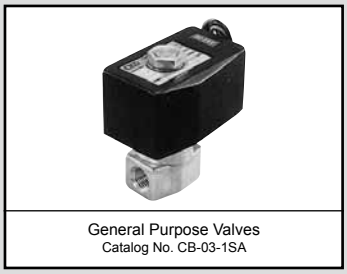


How to order

FBU2 - SU - 05 - 6 - T3 - H3

- Model No.
- Ⓐ Pressure
- Ⓑ Buffer stroke length
- Ⓒ Tail shape
- Ⓓ Head shape

Code	Content
Ⓐ Pressure (N)	
05	0.5
10	1.0
Ⓑ Buffer stroke length (mm)	
2	2
6	6
16	16
Ⓒ Tail shape	
TB	Without hole
T3	M3 female thread depth 3
T4	M4 female thread depth 4
T5	M5 female thread depth 5
T6	M6 female thread depth 5
Ⓓ Head shape	
HB	Without hole
H3	M3 female thread depth 3
H4	M4 female thread depth 4
H5	M5 female thread depth 4
H6	M6 female thread depth 5



General Purpose Valves
Catalog No. CB-03-1SA

2-port direct acting solenoid valve for dry air
(General purpose valve)

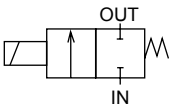
AB31/AB41-Z Series

●NC
●Port size: Rc1/8 to Rc1/2

RoHS CAD

JIS symbol

● NC



Common specifications

Descriptions	Standard specifications
Working fluid	For dry air (atmospheric dew point -60°C and over)/inert gas/low vacuum [1.33 x 10^2 Pa (abs)]
Working pressure differential MPa	0 to 4 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	5
Proof pressure (water pressure) MPa	25
Fluid temperature °C	-10 to 45 (no freezing)
Ambient temperature °C	-10 to 45
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min (ANR)	0.2 or less
Mounting orientation	Unrestricted

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm)	Max. working pressure differential (MPa)	Rated voltage	Power consumption (W) AC	Power consumption (W) DC	Weight (kg)
AB31-$^{01}_{02}$-1-******Z	Rc1/8 Rc1/4	1.5	2.5	100 VAC 50/60 Hz 200 VAC 50/60 Hz 12 VDC 24 VDC 48 VDC 100 VDC	17	14	0.45
-2-******Z		2.0	1.5				
-3-******Z		3.0	0.5				
-4-******Z		3.5	0.35				
-5-******Z		4.0	0.2				
-6-******Z		5.0	0.12				
AB41-$^{02}_{03}$-1-******Z	Rc1/4 Rc3/8	1.5	4.0				0.57 (Rc1/4)
-2-******Z		2.0	2.5				
-3-******Z		3.0	0.9				
-4-******Z		3.5	0.6				
-5-******Z		4.0	0.4				0.59 (Rc3/8)
-6-******Z		5.0	0.2				
-7-******Z		7.0	0.1				
AB41-$^{03}_{04}$-8-******Z	Rc3/8 / Rc1/2	10.0	0.03				0.68

*1: The model numbers above show the basic port size (Rc). Refer to How to order for other combinations.
*2: The port size model No. is 01 for Rc1/8 (6A), 02 for Rc1/4 (8A), 03 for Rc3/8 (10A) and 04 for Rc1/2 (15A).
*3: The voltage fluctuation range must be within ±10% of the rated voltage.
*4: The leakage current must be less than or equal to the values shown below.
*5: When using at low vacuum, vacuum the OUT port side.

Leakage current: Voltage / Model No.	100 VAC	200 VAC	12 VDC	24 VDC	48 VDC	100 VDC
AB31-*-*-******Z	10 mA or less	5 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less
AB41-*-*-******Z	10 mA or less	5 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less

Compatibility table by variation

	AB3/AB4-Z
Classification	Direct acting 2-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

How to order

AB31 - 02 - 3 - M 3A A B G S Z P4/P40 - DC24V

AB41

Model No.

D Coil housing
E Manual override (locking)
F Mounting plate
G Other options
H With surge suppressor
I Voltage

A Port size

Code	Content	Code	Content	Code	Content	Model No. AB31	AB41	AB41 Large flow rate
A Port size								
01	Rc 1/8	**1G**	G 1/8	**1N**	1/8NPT	●		
02	Rc 1/4	**2G**	G 1/4	**2N**	1/4NPT	●	●	
03	Rc 3/8	**3G**	G 3/8	**3N**	3/8NPT		●	●
04	Rc 1/2	**4G**	G 1/2	**4N**	1/2NPT			●

B Orifice size

B Orifice size				
1	ø1.5	●	●	
2	ø2	●	●	
3	ø3	●	●	
4	ø3.5	●	●	
5	ø4	●	●	
6	ø5	●	●	
7	ø7		●	
8	ø10			●

C Body/sealant combination

	Body	Seal	Treatment	Remarks			
C Body/sealant combination							
M	Stainless steel	Fluoro rubber	Oil-prohibited	—	●	●	●

The combinations indicated with ● in the above table are available.

For Items Ⓓ to Ⓘ, the combinations indicated with codes are available. Note that if options for Items Ⓔ to Ⓗ are not required, they should be left blank.

D Coil housing			E	F	G Other options		H	I Rated voltage
Content			Manual override (locking)	Mounting plate	Conduit (conduit piping) CTC-19	Conduit (conduit piping) G1/2	With surge suppressor	Content
3A	Open frame	Lead wire	**A**	**B**	**G**	**H**	**S**	12 VDC, 24 VDC, 48 VDC, 100 VDC
3I	Open frame	HP terminal box (IP65 or equivalent) (G1/2)	**A**	**B**			**S**	12 VDC, 24 VDC, 48 VDC, 100 VDC
3J	Open frame	HP terminal box with lamp (IP65 or equivalent) (G1/2)	**A**	**B**			**S**	12 VDC, 24 VDC, 100 VDC
5A	Open frame (diode integrated)	Lead wire	**A**	**B**	**G**	**H**		100 VAC, 200 VAC
5I	Open frame (diode integrated)	HP terminal box (IP65 or equivalent) (G1/2)	**A**	**B**				100 VAC, 200 VAC
5J	Open frame (diode integrated)	HP terminal box with lamp (IP65 or equivalent) (G1/2)	**A**	**B**				100 VAC, 200 VAC

3A 5A



● Open frame
grommet lead wire 300 mm
● 5A (diode integrated)

3I 3J 5I 5J



● Open frame HP terminal box
(IP65 or equivalent)
● 5I, 5J (diode integrated)

⚠ Refer to the following cautions for Items Ⓓ to Ⓘ.

G H



● Conduit
● G(CTC19)
● H(G1/2)

Refer to "General Purpose Valves" (Catalog No. CB-03-1SA) for details on coil selection.

⚠ Precautions for model No. selection

Notes for Item D

*1: Coils for 5A, 5I, 5J have a diode to convert AC to DC voltage. Voltage of less than 100 VAC is not available.

Notes for Items E to H

*2: Manual override (Item ⒺA) cannot be mounted on the low pressure large flow rate AB41-03/04-8.
*3: For Ⓖ, select an option from G and H.
*4: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*5: Surge suppressor is incorporated as standard in the coil with diode.

Notes for Item I

*6: 100 VAC coil is compatible with 100 VAC 50/60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz.
*7: For voltages other than above, contact CKD.
*8: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.



General Purpose Valves
Catalog No. CB-03-1SA

Direct acting 2-port solenoid valve for dry air, manifold/actuator (general purpose valve)

GAB312/GAB352/GAB412/GAB452-Z Series

●NC

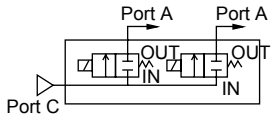
●Common supply (port C pressurization), individual supply (port A pressurization)

RoHS CAD

JIS symbol

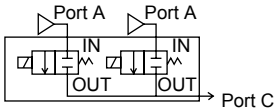
● GAB312/412-Z

(common supply/port C pressurization)



● GAB352/452-Z

(individual supply/port A pressurization)



Common specifications

Descriptions	Standard specifications
Working fluid	For dry air (atmospheric dew point -60°C and over)/inert gas/low vacuum [1.33 x 10^2 Pa (abs)]
Working pressure differential MPa	0 to 4 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	5
Proof pressure (water pressure) MPa	10
Fluid temperature °C	-10 to 45 (no freezing)
Ambient temperature °C	-10 to 45
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min (ANR)	0.2 or less
Mounting orientation	Unrestricted

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm)	Max. working pressure differential (MPa)	Rated voltage	Power consumption (W)	
					AC50/60 Hz	DC
GAB312/352-1-Z		1.5	2.5			
-2-Z		2.0	1.5	100 VAC 50/60 Hz		
-3-Z		3.0	0.5			
-4-Z	—	3.5	0.35			
-5-Z		4.0	0.2			
-6-Z		5.0	0.12	200 VAC 50/60 Hz		
GAB412/452-1-Z		1.5	4.0		17	14
-2-Z		2.0	2.5			
-3-Z		3.0	0.9	12 VDC 24 VDC 48 VDC 100 VDC		
-4-Z	—	3.5	0.6			
-5-Z		4.0	0.4			
-6-Z		5.0	0.2			
-7-Z		7.0	0.1			

*1: The model numbers above are for basic orifice sizes. Refer to How to order for other combinations.
*2: For port size, refer to "How to order and Dimensions" ("General Purpose Valves" (catalog No. CB-03-1SA)).
*3: The voltage fluctuation range must be within ±10% of the rated voltage.
*4: The leakage current must be less than or equal to the values shown below.
*5: When using at low vacuum, vacuum the OUT port side.

Leakage current: Voltage / Model No.	100 VAC	200 VAC	12 VDC	24 VDC	48 VDC	100 VDC
GAB312/352*-*-******Z	10 mA or less	5 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less
GAB412/452*-*-******Z	10 mA or less	5 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less

Compatibility table by variation

	GAB3/GAB4-Z
Classification	Direct acting 2-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

How to order

● Common supply (port C pressurization)

GAB312 ○ - **1** - **5** - **M** **5A** **A** **G** **S** **Z** **P4 P40** - **AC100V**

● Individual supply (port A pressurization) **GAB352**
● Common supply (port C pressurization) **GAB412**
● Individual supply (port A pressurization) **GAB452**
Model No.

Ⓐ Orifice size
Ⓑ Manifold station No. *2
Ⓒ Body/sealant combination
Ⓓ Coil housing
Ⓔ Manual override (locking)
Ⓕ Other options
Ⓖ With surge suppressor
Ⓗ Rated voltage

Code	Content	Model No. GAB312 GAB352	Model No. GAB412 GAB452
Ⓐ Orifice size			
1	ø1.5	●	●
2	ø2	●	●
3	ø3	●	●
4	ø3.5	●	●
5	ø4	●	●
6	ø5	●	●
7	ø7		●
Ⓑ Manifold station No.			
2 to 10	2 to 10 stations	●	●
0	Actuator only	●	●

Ⓒ Body/sealant combination

	Body	Seal	Treatment	Remarks		
M	Stainless steel	Fluoro rubber	Oil free	—	●	●

The combinations indicated with ● in the above table are available.

For Items Ⓓ to Ⓗ, the combinations indicated with codes can be manufactured. Note that if options for Items Ⓔ to Ⓖ are not required, it should be blank.

Ⓓ Coil housing			Ⓔ	Ⓕ Other options		Ⓖ	Ⓗ Rated voltage
Content			Manual override (locking)	Conduit (conduit piping) CTC-19	Conduit (conduit piping) G1/2	With surge suppressor	Content
3A	Open frame	Lead wire	**A**	**G**	**H**	**S**	12 VDC, 24 VDC, 48 VDC, 100 VDC
3I	Open frame	HP terminal box (IP65 or equivalent) (G1/2)	**A**			**S**	12 VDC, 24 VDC, 100 VDC
3J	Open frame	HP terminal box with lamp (IP65 or equivalent) (G1/2)	**A**			**S**	12 VDC, 24 VDC, 100 VDC
5A	Open frame (diode integrated)	Lead wire	**A**	**G**	**H**		100 VAC, 200 VAC
5I	Open frame (diode integrated)	HP terminal box (IP65 or equivalent) (G1/2)	**A**				100 VAC, 200 VAC
5J	Open frame (diode integrated)	HP terminal box with lamp (IP65 or equivalent) (G1/2)	**A**				100 VAC, 200 VAC

3A 5A



● Open frame grommet lead wire 300 mm
● 5A (diode integrated)

3I 3J 5I 5J



● Open frame HP terminal box (IP65 or equivalent)
● 5I, 5J (diode integrated)

⚠ Refer to the following cautions for Items Ⓓ to Ⓗ.

G H



● Conduit
● G(CTC19)
● H(G1/2)

Refer to "General Purpose Valves" (Catalog No. CB-03-1SA) for details on coil selection.

⚠ Precautions for model No. selection

*1: Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Notes for Item Ⓑ

*2: For 11 or more manifold station No., contact CKD.

Notes for Item Ⓓ

*3: Coils for 5A, 5I, 5J have a diode to convert AC to DC voltage.

Notes for Items Ⓕ to Ⓖ

*4: For Item Ⓕ, select an option from G and H.

*5: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*6: Surge suppressor is incorporated as standard in the coil with diode.

Notes for Item Ⓗ

*7: 100 VAC coil is compatible with 100 VAC 50/60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz.
*8: For voltages other than above, contact CKD.
*9: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.



General Purpose Valves
Catalog No. CB-03-1SA

3-port direct acting solenoid valve for dry air
(General purpose valve)

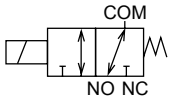
AG3*/AG4*-Z Series

- Universal, NC pressurization, NO pressurization
- Port size: Rc1/8, Rc1/4, Rc3/8

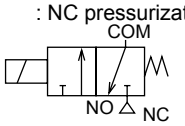
RoHS CAD

JIS symbol

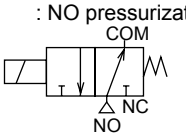
● AG31/41-Z
: Universal



● AG33/43-Z
: NC pressurization



● AG34/44-Z
: NO pressurization



Common specifications

Descriptions	Standard specifications
Working fluid	For dry air (atmospheric dew point -60°C and over)/inert gas/low vacuum [1.33 x 10^2 Pa (abs)]
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)
Proof pressure (water pressure) MPa	25
Fluid temperature °C	-10 to 45 (no freezing)
Ambient temperature °C	-10 to 45
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min (ANR)	0.2 or less
Mounting orientation	Unrestricted

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm) TOP	Orifice size (mm) BODY	Max. working pressure differential (MPa)	Max. working pressure MPa	Rated voltage	Power consumption (W) AC	Power consumption (W) DC	Weight (kg)
Universal									
AG31-$^{01}_{02}$-1-******Z	Rc1/8	1.5	1.5	0.7	1				0.45
-2-******Z	Rc1/4	2.0	2.0	0.4					
AG41-$^{02}_{03}$-1-******Z	Rc1/4	2.0	2.0	0.65					0.57 (Rc1/4)
-2-******Z	Rc3/8	2.3	2.3	0.4		100 VAC 50/60 Hz			0.59 (Rc3/8)
NC pressurization									
AG33-$^{01}_{02}$-1-******Z	Rc1/8	1.5	1.5	1.0	1				0.45
-2-******Z	Rc1/4	2.0	2.0	0.7		200 VAC 50/60 Hz	17	14	
AG43-$^{02}_{03}$-4-******Z	Rc1/4	3.0	3.0	0.7					0.57 (Rc1/4)
-5-******Z	Rc3/8	3.5	3.0	0.4					0.59 (Rc3/8)
NO pressurization						12 VDC 24 VDC 48 VDC 100 VDC			
AG34-$^{01}_{02}$-1-******Z	Rc1/8	1.5	1.5	1.0	1.5				0.45
-2-******Z	Rc1/4	2.0	2.0	0.45					
AG44-$^{02}_{03}$-1-******Z	Rc1/4	2.0	2.0	0.75					0.57 (Rc1/4)
-3-******Z	Rc3/8	2.0	3.0	0.7					0.59 (Rc3/8)
-4-******Z		3.0	3.0	0.25					

*1: The model numbers above show the basic port size (Rc). Refer to How to order for other combinations.
*2: The port size model No. is 01 for Rc1/8 (6A), 02 for Rc1/4 (8A) and 03 for Rc3/8 (10A).
*3: The voltage fluctuation range must be within ±10% of the rated voltage.
*4: The leakage current must be less than or equal to the values shown below.
*5: When using at low vacuum, vacuum the NO port side of NC pressurization type or the NC port side of NO pressurization type.

Leakage current: Voltage / Model No.	100 VAC	200 VAC	12 VDC	24 VDC	48 VDC	100 VDC
AG31/33/34-*-******Z	6 mA or less	3 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less
AG41/43/44-*-******Z	8 mA or less	4 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less

Compatibility table by variation

	AG3/AG4-Z
Classification	Direct acting 3-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

How to order

● Universal

AG31 - 02 - 2 - M 3A A B G S Z P4/P40 - DC24V

AG41
● NC pressurization
AG33
AG43
● NO pressurization
AG34
AG44
Model No.

Ⓐ Port size
Ⓑ Orifice size
Ⓒ Body/sealant combination
Ⓓ Coil housing
Ⓔ Manual override (locking)
Ⓕ Mounting plate
Ⓖ Other options
Ⓗ With surge suppressor
Ⓘ Voltage

Code	Content	Code	Content	Code	Content	Model No. AG31	AG41	AG33	AG43	AG34	AG44
Ⓐ Port size											
01	Rc1 / 8	1G	G 1 / 8	1N	1 / 8NPT	●		●		●	
02	Rc1 / 4	2G	G 1 / 4	2N	1 / 4NPT	●	●	●	●	●	●
03	Rc3 / 8	3G	G 3 / 8	3N	3 / 8NPT		●		●		●

Ⓑ Orifice size

	AG31		AG41		AG33		AG43		AG34		AG44							
	TOP	BODY	TOP	BODY	TOP	BODY	TOP	BODY	TOP	BODY	TOP	BODY						
1	ø1.5	ø1.5	ø2.0	ø2.0	ø1.5	ø1.5	-	-	ø1.5	ø1.5	ø2.0	ø2.0	●	●	●		●	●
2	ø2.0	ø2.0	ø2.3	ø2.3	ø2.0	ø2.0	-	-	ø2.0	ø2.0	-	-	●	●	●		●	
3	-	-	-	-	-	-	-	-	-	-	ø2.0	ø3.0						●
4	-	-	-	-	-	-	ø3.0	ø3.0	-	-	ø3.0	ø3.0				●		●
5	-	-	-	-	-	-	ø3.5	ø3.0	-	-	-	-				●		

Ⓒ Body/sealant combination

	Body	Seal	Treatment	Remarks						
M	Stainless steel	Fluoro rubber	Oil free	—	●	●	●	●	●	●

The combinations indicated with ● in the above table are available.

For Items Ⓓ to Ⓘ, the combinations indicated with codes are available. Note that if options for Items Ⓔ to Ⓗ are not required, they should be left blank.

Ⓓ Coil housing			Ⓔ	Ⓕ	Ⓖ Other options		Ⓗ	Ⓘ Rated voltage
Content			Manual override (locking)	Mounting plate	Conduit (conduit piping) CTC-19	Conduit (conduit piping) G 1 / 2	With surge suppressor	Content
3A	Open frame	Lead wire	**A**	**B**	**G**	**H**	**S**	12 VDC, 24 VDC, 48 VDC, 100 VDC
3I	Open frame	HP terminal box (IP65 or equivalent) (G1/2)	**A**	**B**			**S**	12 VDC, 24 VDC, 100 VDC
3J	Open frame	HP terminal box with lamp (IP65 or equivalent) (G1/2)	**A**	**B**			**S**	
5A	Open frame (diode integrated)	Lead wire	**A**	**B**	**G**	**H**		100 VAC, 200 VAC
5I	Open frame (diode integrated)	HP terminal box (IP65 or equivalent) (G1/2)	**A**	**B**				
5J	Open frame (diode integrated)	HP terminal box with lamp (IP65 or equivalent) (G1/2)	**A**	**B**				

⚠ Refer to the following cautions for Items Ⓓ to Ⓘ.

3A 5A



● Open frame grommet lead wire 300 mm
● 5A (diode integrated)

3I 3J 5I 5J



● Open frame HP terminal box (IP65 or equivalent)
● 5I, 5J (diode integrated)

G H



● Conduit
● G(CTC19)
● H(G1/2)

Refer to "General Purpose Valves" (Catalog No. CB-03-1SA) for details on coil selection.

⚠ Precautions for model No. selection

Notes for Item Ⓓ

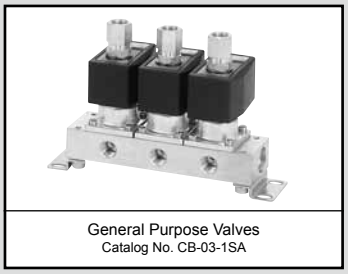
*1: Coils for 5A, 5I, 5J have a diode to convert AC to DC voltage. Voltage of less than 100 VAC is not available.

Notes for Items Ⓖ to Ⓗ

*2: For Ⓖ, select an option from G and H.
*3: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*4: Surge suppressor is incorporated as standard in the coil with diode.

Notes for Item Ⓘ

*5: 100 VAC coil is compatible with 100 VAC 50/60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz.
*6: For voltages other than above, contact CKD.
*7: he lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.



General Purpose Valves
Catalog No. CB-03-1SA

Direct acting 3-port solenoid valve for dry air, manifold/actuator (general purpose valve)

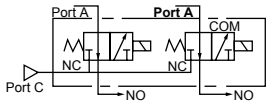
GAG31*/GAG35*/GAG41*/GAG45* -Z Series

- Universal
- Common supply/individual exhaust, common supply/separate flow

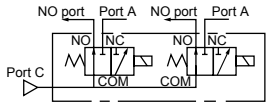
RoHS CAD

Manifold circuit configuration

- GAG31*/41*-Z
  (common supply/individual exhaust)



- GAG35*/45*-Z
  (common supply/separate flow)



Common specifications

Descriptions	Standard specifications
Working fluid	For dry air (atmospheric dew point -60°C and over)/inert gas/low vacuum [1.33 x 10^2 Pa (abs)]
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	1
Proof pressure (water pressure) MPa	10
Fluid temperature °C	-10 to 45 (no freezing)
Ambient temperature °C	-10 to 45
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min (ANR)	0.2 or less
Mounting orientation	Unrestricted

Individual specifications

Descriptions / Model No.	NO port size	Orifice size (mm) TOP	Orifice size (mm) BODY	Max. working pressure differential (MPa)	Rated voltage	Power consumption (W) AC50/60 Hz	Power consumption (W) DC
GAG 311-1-Z	Rc1/8	1.5	1.5	0.7	100 VAC 50/60 Hz	17	14
351-2-Z	Rc1/8	2.0	2.0	0.4	100 VAC 50/60 Hz	17	14
GAG 312-1-Z	Rc1/4	1.5	1.5	0.7	200 VAC 50/60 Hz	17	14
352-2-Z	Rc1/4	2.0	2.0	0.4	200 VAC 50/60 Hz	17	14
GAG 412-1-Z	Rc1/4	2.0	2.0	0.65	12 VDC 24 VDC 48 VDC 100 VDC	17	14
452-2-Z	Rc1/4	2.3	2.3	0.4	12 VDC 24 VDC 48 VDC 100 VDC	17	14
GAG 413-1-Z	Rc3/8	2.0	2.0	0.65	12 VDC 24 VDC 48 VDC 100 VDC	17	14
453-2-Z	Rc3/8	2.3	2.3	0.4	12 VDC 24 VDC 48 VDC 100 VDC	17	14

*1: The model numbers above are for the basic NO port size and orifice size. Refer to How to order for other combinations.
*2: For the sizes of ports A and C, refer to "How to order and Dimensions" ("General Purpose Valves" (Catalog No. CB-03-1SA)).
*3: The voltage fluctuation range must be within ±10% of the rated voltage.
*4: When using in a continuously energized state, use fluoro rubber seal.
*5: The leakage current must be less than or equal to the values shown below.

Leakage current: Voltage / Model No.	100 VAC	200 VAC	12 VDC	24 VDC	48 VDC	100 VDC
GAG31*-******Z	6 mA or less	3 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less
GAG41*-******Z	8 mA or less	4 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less

Compatibility table by variation

	GAG3/GAG4-Z
Classification	Direct acting 3-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

How to order

● Common supply/individual exhaust (port C pressurization)

GAG31 [1] [ ] - [1] - [7] - [M] [5A] [A] [G] [S] Z [P4 / P40] - [AC100V]

● Common supply/separate flow (port C pressurization)
GAG35 [1]

● Common supply/individual exhaust (port C pressurization)
GAG41 [2]

● Common supply/separate flow (port C pressurization)
GAG45 [2]

Model No.

Ⓐ NO port size

Ⓑ Orifice size

Ⓒ Manifold station No. *2

Ⓓ Body/sealant combination

Ⓔ Coil housing

Ⓕ Manual override (locking)

Ⓖ Other options

Ⓗ With surge suppressor

Ⓘ Rated voltage

Code	Content	Model No. GAG3**	Model No. GAG4**
Ⓐ NO port size			
1	1/8	●	
2	1/4	●	●
3	3/8		●

Ⓑ Orifice size

	GAG3** TOP	GAG3** BODY	GAG4** TOP	GAG4** BODY	GAG3**	GAG4**
1	ø1.5	ø1.5	ø2.0	ø2.0	●	●
2	ø2.0	ø2.0	ø2.3	ø2.3	●	●

Ⓒ Manifold station No.

2 to 10	2 to 10 stations	●	●
0	Actuator only	●	●

Ⓓ Body/sealant combination

	Body	Seal	Treatment	Remarks		
M	Stainless steel	Fluoro rubber	Oil free	—	●	●

The combinations indicated with ● in the above table are available.

For Items Ⓔ to Ⓘ, the combinations indicated with codes are available. Note that if options for Items Ⓕ to Ⓗ are not required, they should be left blank.

Ⓔ Coil housing			Ⓕ	Ⓖ Other options		Ⓗ	Ⓘ Rated voltage
Content			Manual override (locking)	Conduit (conduit piping) CTC-19	Conduit (conduit piping) G 1 / 2	With surge suppressor	Content
3A	Open frame	Lead wire	**A**	**G**	**H**	**S**	12 VDC, 24 VDC, 48 VDC, 100 VDC
3I		HP terminal box (IP65 or equivalent) (G1/2)					
3J		HP terminal box with lamp (IP65 or equivalent) (G1/2)					12 VDC, 24 VDC, 100 VDC
5A	Open frame (diode integrated)	Lead wire	**A**	**G**	**H**		100 VAC, 200 VAC
5I		HP terminal box (IP65 or equivalent) (G1/2)					
5J		HP terminal box with lamp (IP65 or equivalent) (G1/2)					

3A 5A		● Open frame grommet lead wire 300 mm ● 5A (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

⚠ Refer to the following cautions for Items Ⓔ to Ⓘ.

G H		● Conduit ● G(CTC19) ● H(G1/2)

Refer to "General Purpose Valves" (Catalog No. CB-03-1SA) for details on coil selection.

⚠ Precautions for model No. selection

*1: Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Notes for Item Ⓒ

*2: For 11 or more manifold station No., contact CKD.

Notes for Item Ⓔ

*3: Coils for 5A, 5I, 5J have a diode to convert AC to DC voltage.

Notes for Items Ⓖ to Ⓗ

*4: For Item Ⓖ, select an option from G and H.

*5: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.

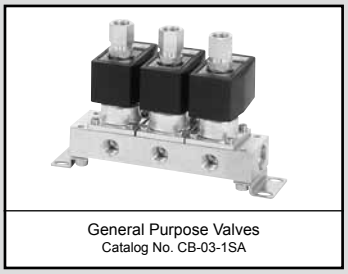
*6: Surge suppressor is incorporated as standard in the coil with diode.

Notes for Item Ⓘ

*7: 100 VAC coil is compatible with 100 VAC 50/60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz.

*8: For voltages other than above, contact CKD.

*9: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.



General Purpose Valves
Catalog No. CB-03-1SA

Direct acting 3-port solenoid valve for dry air, manifold/actuator (general purpose valve)

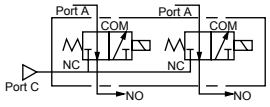
GAG33*/GAG43*-Z Series

- NC pressurization
- Common supply/individual exhaust

RoHS CAD

JIS symbol

● GAG33*/GAG43*-Z
(common supply/individual exhaust)



Common specifications

Descriptions	Standard specifications
Working fluid	For dry air (atmospheric dew point -60°C and over)/inert gas/low vacuum [1.33 x 10^2 Pa (abs)]
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	1
Proof pressure (water pressure) MPa	10
Fluid temperature °C	-10 to 45 (no freezing)
Ambient temperature °C	-10 to 45
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min (ANR)	0.2 or less
Mounting orientation	Unrestricted

Individual specifications

Descriptions / Model No.	NO port size	Orifice size (mm) TOP	Orifice size (mm) BODY	Max. working pressure differential (MPa)	Rated voltage	Power consumption (W) AC50/60 Hz	Power consumption (W) DC
GAG331-1-Z	Rc1/8	1.5	1.5	1.0	100 VAC 50/60 Hz	17	14
-2-Z		2.0	2.0	0.7			
GAG332-1-Z	Rc1/4	1.5	1.5	1.0	200 VAC 50/60 Hz		
-2-Z		2.0	2.0	0.7			
GAG432-4-Z	Rc1/4	3.0	3.0	0.7			
-5-Z		3.5	3.0	0.4	12 VDC 24 VDC 48 VDC 100 VDC		
GAG433-4-Z	Rc3/8	3.0	3.0	0.7			
-5-Z		3.5	3.0	0.4			

*1: The model numbers above are for the basic NO port size (Rc) and orifice size. Refer to How to order for other combinations.
*2: For the sizes of ports A and C, refer to "How to order and Dimensions" ("General Purpose Valves" (Catalog No. CB-03-1SA)).
*3: The voltage fluctuation range must be ±10% of the rated voltage.
*4: The leakage current must be less than or equal to the values shown below.
*5: When using at low vacuum, vacuum the NO port side.

Leakage current: Voltage / Model No.	100 VAC	200 VAC	12 VDC	24 VDC	48 VDC	100 VDC
GAG33*-******Z	6 mA or less	3 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less
GAG43*-******Z	8 mA or less	4 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less

Compatibility table by variation

	GAG3/GAG4-Z
Classification	Direct acting 3-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

How to order

● Common supply/individual exhaust (port C pressurization)

GAG33 1 ▭ - 2 - 6 - M 5A A G S Z P4 P40 - AC100V

GAG43

Model No.

Ⓐ NO port size

Ⓑ Orifice size

Ⓒ Manifold station No. *2

Ⓓ Body/sealant combination

Ⓔ Coil housing

Ⓕ Manual override (locking)

Ⓖ Other options

Ⓗ With surge suppressor

Ⓘ Rated voltage

Code	Content	Model No. GAG33*	Model No. GAG43*
Ⓐ NO port size			
1	1/8	●	
2	1/4	●	●
3	3/8		●

Code	GAG33* TOP	GAG33* BODY	GAG43* TOP	GAG43* BODY	GAG33*	GAG43*
Ⓑ Orifice size						
1	ø1.5	ø1.5	-	-	●	
2	ø2.0	ø2.0	-	-	●	
4	-	-	ø3.0	ø3.0		●
5	-	-	ø3.5	ø3.0		●

Code	Content	GAG33*	GAG43*
Ⓒ Manifold station No.			
2 to 10	2 to 10 stations	●	●
0	Actuator only	●	●

Code	Body	Seal	Treatment	Remarks	GAG33*	GAG43*
Ⓓ Body/sealant combination						
M	Stainless steel	Fluoro rubber	Oil free	—	●	●

The combinations indicated with ● in the above table are available.

For Items Ⓔ to Ⓘ, the combinations indicated with codes are available. Note that if options Ⓕ to Ⓗ are not required, they should be blank.

Ⓔ Coil housing Content			Ⓕ Manual override (locking)	Ⓖ Other options Conduit (conduit piping) CTC-19	Ⓖ Other options Conduit (conduit piping) G1/2	Ⓗ With surge suppressor	Ⓘ Rated voltage Content
3A	Open frame	Lead wire	A	G	H	S	12 VDC, 24 VDC, 48 VDC, 100 VDC
3I	Open frame	HP terminal box (IP65 or equivalent) (G1/2)	A			S	12 VDC, 24 VDC, 48 VDC, 100 VDC
3J	Open frame	HP terminal box with lamp (IP65 or equivalent) (G1/2)	A			S	12 VDC, 24 VDC, 100 VDC
5A	Open frame (diode integrated)	Lead wire	A	G	H		100 VAC, 200 VAC
5I	Open frame (diode integrated)	HP terminal box (IP65 or equivalent) (G1/2)	A				100 VAC, 200 VAC
5J	Open frame (diode integrated)	HP terminal box with lamp (IP65 or equivalent) (G1/2)	A				100 VAC, 200 VAC

⚠ Refer to the following cautions for Items Ⓔ to Ⓘ.

3A 5A		● Open frame grommet lead wire 300 mm ● 5A (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

G H		● Conduit ● G(CTC19) ● H(G1/2)

Refer to "General Purpose Valves" (Catalog No. CB-03-1SA) for details on coil selection.

⚠ Precautions for model No. selection

*1: Orders for only the masking plate and sub-plate are also available. Contact CKD for details.

Notes for Item Ⓒ

*2: For 11 or more manifold station No., contact CKD.

Notes for Item Ⓔ

*3: Coils for 5A, 5I, 5J have a diode to convert AC to DC voltage.

Notes for Items Ⓖ to Ⓗ

*4: For Item Ⓖ, select an option from G and H.

*5: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*6: Surge suppressor is incorporated as standard in the coil with diode.

Notes for Item Ⓘ

*7: 100 VAC coil is compatible with 100 VAC 50/60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz.
*8: For voltages other than above, contact CKD.
*9: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.



General Purpose Valves
Catalog No. CB-03-1SA

Pilot kick 2-port solenoid valve for dry air
(general purpose valve)

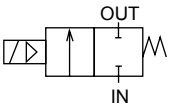
ADK11-Z Series

- NC
- Port size: Rc1/4 to Rc1
- Diaphragm drive

RoHS CAD

JIS symbol

● NC



Common specifications

Descriptions	Standard specifications
Working fluid	For dry air (atmospheric dew point -60°C and over)/inert gas/low vacuum [1.33 x 10^3 Pa (abs)]
Working pressure differential MPa	0 to 0.7 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	2
Proof pressure (water pressure) MPa	4
Fluid temperature °C	5 to 40 (no freezing)
Ambient temperature °C	-10 to 40
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve structure	Pilot kick poppet/diaphragm drive
Valve seat leakage cm^3/min (ANR)	1 or less (8A/10A: at 0.02 to 0.7 MPa, 15A to 25A: at 0.02 to 0.6 MPa)*
Mounting orientation	Unrestricted

* When used at a pressure less than 0.02 MPa, the sealant may be unstable. Contact CKD in this case.

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm)	Min. working pressure differential (MPa)	Max. working pressure differential (MPa)	Rated voltage	Power consumption (W) AC	Power consumption (W) DC	Weight (kg)
ADK11-8A-*****Z	Rc 1/4	12	0	0.7	100 VAC 50/60 Hz 200 VAC 50/60 Hz 12 VDC 24 VDC 48 VDC 100 VDC	17	14	0.8
-10A-*****Z	Rc 3/8	12		0.7				0.8
-15A-*****Z	Rc 1/2	16		0.6				1.0
-20A-*****Z	Rc 3/4	23		0.6				1.1
-25A-*****Z	Rc 1	28		0.6				1.5

*1: The model numbers above show the basic port size (Rc). Refer to How to order for other combinations.
*2: The voltage fluctuation range must be within ±10% of the rated voltage.
*3: The leakage current must be less than or equal to the values shown below.

Leakage current: Voltage / Model No.	100 VAC	200 VAC	12 VDC	24 VDC	48 VDC	100 VDC
ADK11-8A to 25A-*****Z	10 mA or less	5 mA or less	40 mA or less	20 mA or less	10 mA or less	5 mA or less

Compatibility table by variation

	ADK11-Z
Classification	Pilot kick 2-port valve for dry air
Body material	Stainless steel
P4	●
P40	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Body material Select from stainless steel products.
*2: Body material/Seal combination code M only.
*3: Pipe material is SUS316.

How to order

ADK11 - 15 A - M 3A B G S Z P4/P40 - DC24V

- ADK11: Model No.
- 15: Ⓐ Port size
- A: Ⓑ Thread
- M: Ⓒ Body/sealant combination
- 3A: Ⓓ Coil housing
- B: Ⓔ Mounting plate
- G: Ⓕ Other options
- S: Ⓖ With surge suppressor
- Z
- P4/P40
- DC24V: Ⓗ Rated voltage

Code	Content
Ⓐ Port size	
8	1/4
10	3/8
15	1/2
20	3/4
25	1
Ⓑ Thread	
A	Rc
G	G
N	NPT

Ⓒ Body/sealant combination

	Body	Seal	Treatment	Remarks
M	Stainless steel	Fluoro rubber	Oil free	—

For Items Ⓓ to Ⓗ, the combinations indicated with codes are available. Note that if options for Items Ⓔ to Ⓖ are not required, they should be left blank.

Ⓓ Coil housing			Ⓔ	Ⓕ Other options		Ⓖ	Ⓗ Rated voltage
Content			Mounting plate	Conduit (conduit piping) CTC-19	Conduit (conduit piping) G 1 / 2	With surge suppressor	Content
3A	Open frame	Lead wire	**B**	**G**	**H**	**S**	12 VDC, 24 VDC, 48 VDC, 100 VDC
3I		HP terminal box (IP65 or equivalent) (G1/2)					
3J		HP terminal box with lamp (IP65 or equivalent) (G1/2)					12 VDC, 24 VDC, 100 VDC
5A	Open frame (diode integrated)	Lead wire	**B**	**G**	**H**		100 VAC, 200 VAC
5I		HP terminal box (IP65 or equivalent) (G1/2)					
5J		HP terminal box with lamp (IP65 or equivalent) (G1/2)					

3A 5A



- Open frame grommet lead wire 300 mm
- 5A (diode integrated)

3I 3J 5I 5J



- Open frame HP terminal box (IP65 or equivalent)
- 5I, 5J (diode integrated)

⚠ Refer to the following cautions for Ⓓ to Ⓗ.

G H



- Conduit
- G(CTC19)
- H(G1/2)

Refer to "General Purpose Valves" (Catalog No. CB-03-1SA) for details on coil selection.

⚠ Precautions for model No. selection

Notes for Item Ⓓ

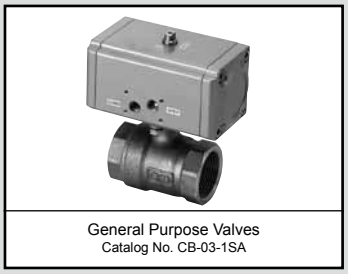
*1: Coils for 5A, 5I, 5J have a diode to convert AC to DC voltage. Voltage of less than 100 VAC is not available.

Notes for Items Ⓔ to Ⓖ

*2: For Ⓕ, select an option from G and H.
*3: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*4: Surge suppressor is incorporated as standard in the coil with diode.

Notes for Item Ⓗ

*5: 100 VAC coil is compatible with 100 VAC 50/60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz.
*6: For voltages other than above, contact CKD.
*7: The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.



General Purpose Valves
Catalog No. CB-03-1SA

Air operated 2-port ball valve
(compact rotary valve)

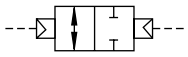
CHB Series

● Port size: Rc3/8 to Rc2

RoHS CAD

JIS symbol

● CHB
(double acting)



Common specifications

Descriptions		Double acting
		CHB (Standard bore)
Actuation		Air operated: Double acting
Working fluid		Water/air/oil (500 mm^2/s or less)
Working pressure MPa		0 to 1.0
Proof pressure (water pressure) MPa		2.0
Fluid temperature °C		0 to 80 (no freezing)
Ambient temperature °C		-10 to 60 (no freezing)
Working environment		Indoors
Valve seat leakage cm^3/min		0 (water pressure initial value 1 MPa)
Mounting orientation		Unrestricted
Frequency times/min		1 or less
Rotary actuator	Pilot fluid	Compressed air
	Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)
	Proof pressure (water pressure) MPa	1.5
	Working pressure MPa	0.35 to 0.7
	Fluid temperature °C	5 to 60
	Port size	Rc1/8

Individual specifications

Descriptions / Model No.		Port size	Orifice size (mm)	Cv	Weight (kg)
					Double acting
Standard bore	CHB-10	Rc3/8	10	10	1.0
	CHB-15	Rc1/2	10	6	1.0
	CHB-20	Rc3/4	15	16	1.2
	CHB-25	Rc1	20	29	1.3
	CHB-32	Rc1 1/4	25	50	2.1
	CHB-40	Rc1 1/2	32	98	2.6
	CHB-50	Rc2	40	125	3.3

Compatibility table by variation

	CHB-N
Port size	Rc3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2, 2
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Note: Body material code N only.

How to order

CHB - 15 - N - P4

Model No.

Ⓐ Port size

Ⓑ Body material

Code	Content
Ⓐ Port size	
10	Rc3/8
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1 1/4
40	Rc1 1/2
50	Rc2
Ⓑ Body material	
N	Stainless steel Oil-prohibited specifications



General Purpose Valves
Catalog No. CB-03-1SA

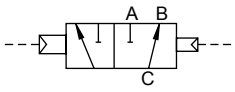
Air operated 3-port ball valve
(compact rotary valve)

CHG Series

● Port size: Rc1/2 to Rc2

JIS symbol

● CHG (double acting)



Common specifications

Descriptions		CHG (double acting)
Actuation		Air operated: Double acting
Working fluid		Water/air/oil (500 mm^2/s or less)
Working pressure MPa		0 to 1.0
Proof pressure (water pressure) MPa		2.0
Fluid temperature °C		0 to 80 (no freezing)
Ambient temperature °C		-10 to 60 (no freezing)
Working environment		Indoors
Valve seat leakage cm^3/min		0 (water pressure initial value 1 MPa)
Mounting orientation		Unrestricted
Frequency times/min		1 or less
Pressurization direction		Port C pressurization only
Flow path shape		Multi-fluid type (90° rotation switching)
Rotary actuator	Pilot fluid	Compressed air
	Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)
	Proof pressure (water pressure) MPa	1.5
	Working pressure MPa	0.35 to 0.7
	Fluid temperature °C	5 to 60
	Port size	Rc1/8

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm)	Cv	Weight (kg) Double acting
CHG-15	Rc1/2	10	3	1.0
CHG-20	Rc3/4	14	6	1.2
CHG-25	Rc1	19	11	1.4
CHG-32	Rc1 1/4	23	16	2.2
CHG-40	Rc1 1/2	30	28	2.7
CHG-50	Rc2	38	47	3.5

Compatibility table by variation

	CHG-N
Port size	Rc1/2, 3/4, 1, 1 1/4, 1 1/2, 2
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Note: Body material code N only.

How to order

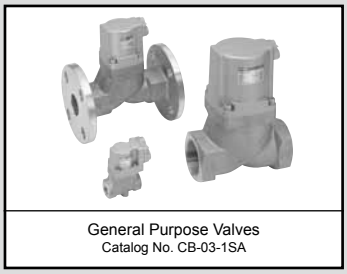
CHG - 20 - N - P4

Model No.

Ⓐ Port size

Ⓑ Body material

Code	Content
Ⓐ Port size	
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1 1/4
40	Rc1 1/2
50	Rc2
Ⓑ Body material	
N	Stainless steel/oil-prohibited specifications



General Purpose Valves
Catalog No. CB-03-1SA

Air operated 2-port valve
(cylinder valve)

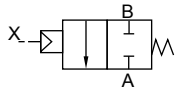
SAB*A Series

- NC (normally closed) NO (normally open), double acting
- Port size: Rc1/4 to Rc2, 32 to 50 flange
- Working fluid: Air, gas

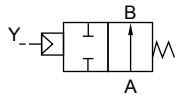
RoHS CAD

JIS symbol

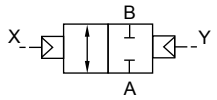
- NC (normally closed)



- NO (normally open)



- Double acting



Common specifications

Descriptions	SAB1A	SAB2A	SAB3A
Actuation	NC (normally closed)	NO (normally open)	Double acting
Working fluid	Air/gas (*1)		
Working pressure MPa	0 to 0.9	0 to 1	
Proof pressure (water pressure) MPa	2.0		
Fluid temperature °C	-10 to 90 (no freezing)		
Ambient temperature °C	-10 to 60		
Valve seat leakage cm^3/min	0.12 or less (pneumatic pressure)		
Mounting orientation	Unrestricted		
Pilot fluid	Air		
Pilot pressure MPa	0.35 to 0.7	Refer to the following page.	

*1: Refer to the working fluid check list described in "General Purpose Valves" (catalog No. CB-03-1SA).

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm)	C [$dm^3/(s \cdot bar)$]	b	S (mm^2)	Allowable back pressure (MPa)	Pilot port size	Weight (kg)
NC (normally closed)								
SAB1A-8A	Rc 1/4	10	8.3	0.4	-	0.5	Rc 1/8	0.3
SAB1A-10A	Rc 3/8	10	11	0.4	-			0.3
SAB1A-15A	Rc 1/2	15	-	-	120	0.1		0.6
SAB1A-20A	Rc 3/4	16	-	-	150			0.8
SAB1A-25A	Rc 1	20	-	-	240			1.1
SAB1A-32A	Rc 1 1/4	26	-	-	390			2.2
SAB1A-32F	32 flange	26	-	-	390			5.2
SAB1A-40A	Rc 1 1/2	32	-	-	610			3.2
SAB1A-40F	40 flange	32	-	-	610			6.3
SAB1A-50A	Rc 2	42	-	-	920			5.2
SAB1A-50F	50 flange	42	-	-	920			9.1
NO (normally open)								
SAB2A-8A	Rc 1/4	10	8.9	0.4	-	0.1	Rc 1/8	0.3
SAB2A-10A	Rc 3/8	10	12	0.3	-			0.3
SAB2A-15A	Rc 1/2	15	-	-	140			0.6
SAB2A-20A	Rc 3/4	16	-	-	180			0.8
SAB2A-25A	Rc 1	20	-	-	280			1.1
SAB2A-32A	Rc 1 1/4	26	-	-	450	0.05		2.2
SAB2A-32F	32 flange	26	-	-	450			5.2
SAB2A-40A	Rc 1 1/2	32	-	-	680			3.2
SAB2A-40F	40 flange	32	-	-	680			6.3
SAB2A-50A	Rc 2	42	-	-	1020			5.2
SAB2A-50F	50 flange	42	-	-	1020			9.1
Double acting (*1)								
SAB3A-8A	Rc 1/4	10	8.3(8.9)	0.4	-	1	Rc 1/8	0.3
SAB3A-10A	Rc 3/8	10	11(12)	0.4(0.3)	-			0.3
SAB3A-15A	Rc 1/2	15	-	-	120(140)			0.6
SAB3A-20A	Rc 3/4	16	-	-	150(180)			0.8
SAB3A-25A	Rc 1	20	-	-	240(280)			1.1
SAB3A-32A	Rc 1 1/4	26	-	-	390(450)			2.2
SAB3A-32F	32 flange	26	-	-	390(450)			5.2
SAB3A-40A	Rc 1 1/2	32	-	-	610(680)			3.2
SAB3A-40F	40 flange	32	-	-	610(680)			6.3
SAB3A-50A	Rc 2	42	-	-	920(1020)			5.2
SAB3A-50F	50 flange	42	-	-	920(1020)			9.1

*1: ( ) for C, b and S columns of double acting show the flow rates when port A is pressurized.
*2: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

Compatibility table by variation

	SAB
Port size	Rc1/4 to Rc2, 32 flange, 40 flange, 50 flange
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

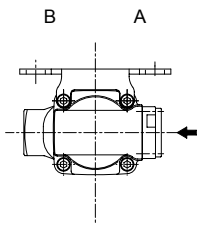
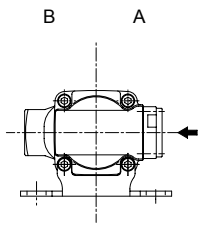
SAB 2 A - 15 A - E B - ( ) - P4

- SAB: Model No.
- 2: Ⓐ Actuation
- A: Working fluid (for air/gas)
- 15: Ⓑ Port size
- A: Ⓒ Type of thread/flange
- E: Ⓓ Body/sealant combination
- B: Ⓔ Other options *1
- ( ): Ⓕ Assembly direction *1 *2 *3

Code	Content
Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)
3	Double acting
Ⓑ Port size	
8	1/4
10	3/8
15	1/2
20	3/4
25	1
32	1 1/4, 32 (Flange)
40	1 1/2, 40 (Flange)
50	2, 50 (Flange)
Ⓒ Type of thread/flange	
A	Rc(8A to 50A)
F	Flange (32F to 50F)

Ⓓ Body/sealant combination			
		Body	**Seal**
E	Option	Stainless steel	Fluoro rubber

Ⓔ Other options	
Blank	No option
B	Mounting plate *1

Ⓕ Assembly direction		
Blank	No option	
R	Mounting plate assembly position reversed	
Code	B (with mounting plate)	B-R *2
Direction	No rotation	Mounting plate reversed
Layout		

← shows pilot port IN.

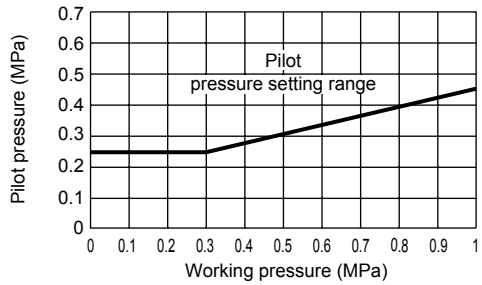
⚠ Precautions for model No. selection

*1: The mounting plate (Item Ⓔ B) can be mounted only on the female thread of port sizes 8 to 32.
*2: Reversed mounting plate (Item Ⓕ B-R) is available for port sizes 15 to 32.
*3: Clockwise when viewed from above with port A on the right.
*4: Made to order. Contact CKD for details.

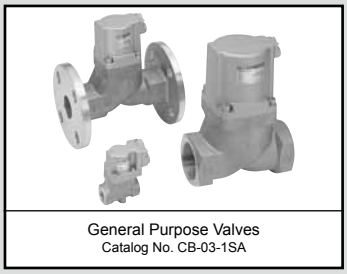
■ Pilot pressure

Set pilot air pressure within the specified range.
Set the pilot pressure for the SAB/SVB Series NO and double acting as shown in the graph below. If the product is used with a pressure below the range shown in the graph, sealant failure may occur; if the product is used with a pressure above the range shown in the graph, durability may be compromised.
The NC is recommended when the pilot pressure cannot be controlled.

● SAB$^{2}_{3}$ $^{W}_{A}$ ^{V} Series/SVB2 $^{W}_{A}$ ^{V} Series



Fluid control components



General Purpose Valves
Catalog No. CB-03-1SA

Air operated 2-port valve
(cylinder valve)

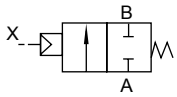
SAB*V Series

- NC (normally closed) NO (normally open) double acting
- Port size: Rc1/4 to Rc2, 32 to 50 flange
- Working fluid: Low vacuum

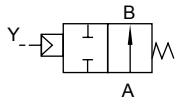
RoHS CAD

JIS symbol

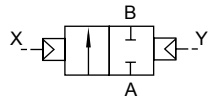
- NC (normally closed)



- NO (normally open)



- Double acting



Common specifications

Descriptions	SAB1V	SAB2V	SAB3V
Actuation	NC (normally closed)	NO (normally open)	Double acting
Working fluid	Low vacuum (air, water) (*1)		
Working pressure Pa (abs)	1.3 x 10^2 to 7 x 10^5 (refer to working pressure in individual specifications.)		
Proof pressure (water pressure) MPa	2.0		
Fluid temperature °C	-10 to 60 (no freezing) (*2)		
Ambient temperature °C	-10 to 60		
Valve seat leakage Pa·m^3/s He	1.33 x 10^{-3} or less		
Pilot fluid	Air		
Mounting orientation	Unrestricted		

*1: Refer to the working fluid check list in General Purpose Valves (CB-03-1SA).

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm)	C [dm^3/(s·bar)]	b	S (mm^2)	Working pressure Pa (abs) NC	Working pressure Pa (abs) NO	Working pressure Pa (abs) Double acting	Pilot pressure (MPa) NC	Pilot pressure (MPa) NO	Pilot pressure (MPa) Double acting	Pilot port size	Weight (kg) NC	Weight (kg) NO	Weight (kg) Double acting
SAB*V-8A	Rc1/4	10	8.9	0.4	-								0.3		
SAB*V-10A	Rc3/8	10	12	0.3	-								0.3		
SAB*V-15A	Rc1/2	15	-	-	140	1.3×10^2 to 7×10^5	1.3×10^2 to 1×10^6		0.35 to 0.7				0.6		
SAB*V-20A	Rc3/4	16	-	-	180								0.8		
SAB*V-25A	Rc1	20	-	-	280								1.1		
SAB*V-32A	Rc1 1/4	26	-	-	450								2.3	2.2	2.2
SAB*V-32F	32 flange	26	-	-	450								5.3	5.2	5.2
SAB*V-40A	Rc1 1/2	32	-	-	680	1.3×10^2 to 5×10^5	1.3×10^2 to 1×10^6		0.25 to 0.7				3.4	3.2	3.2
SAB*V-40F	40 flange	32	-	-	680								6.5	6.3	6.3
SAB*V-50A	Rc2	42	-	-	1020								5.5	5.2	5
SAB*V-50F	50 flange	42	-	-	1020								9.4	9.1	8.9

(*1) Rc1/8

*1: Refer to page 290 for pilot air pressure for the NO and double acting types.
*2: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

Compatibility table by variation

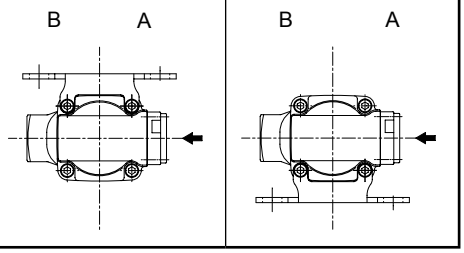
	SAB
Port size	Rc1/4 to Rc2, 32 flange, 40 flange, 50 flange
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

SAB 3 V - 15 A - E B - - P4

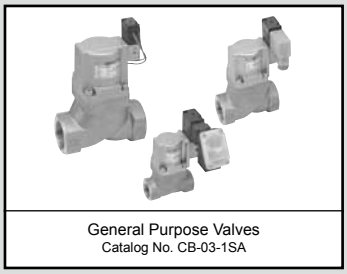
- SAB: Model No.
- 3: Working fluid (for low vacuum)
- V: Actuation
- 15: Port size
- A: Type of thread/flange
- E: Body/sealant combination
- B: Other options *1
- Blank: Assembly direction *1 *2 *3

Code	Content
Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)
3	Double acting
Ⓑ Port size	
8	1/4
10	3/8
15	1/2
20	3/4
25	1
32	1 1/4, 32 (Flange)
40	1 1/2, 40 (Flange)
50	2, 50 (Flange)
Ⓒ Type of thread/flange	
A	Rc(8A to 50A)
F	Flange (32F to 50F)
Ⓓ Body/sealant combination	
	Body / Seal
E	Option: Stainless steel / Fluoro rubber
Ⓔ Other options	
Blank	No option
B	Mounting plate *2
Ⓕ Assembly direction	
Blank	No option
R	Mounting plate assembly position reversed
Code	B (with mounting plate) / B-R *2
Direction	No rotation / Mounting plate reversed
Layout	

⬅ shows pilot port IN.

⚠ Precautions for model No. selection

*1: The mounting plate (Item Ⓔ B) can be mounted only on the female thread of port sizes 8 to 32.
*2: Reversed mounting plate (Item Ⓕ B-R) is available for port size 15 to 32.
*3: Clockwise when viewed from above with port A on the right.



General Purpose Valves
Catalog No. CB-03-1SA

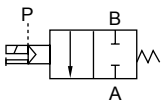
Air operated 2-port valve with solenoid valve (cylinder valve)

SVB*A Series

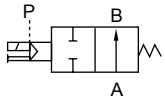
- NC, NO
- Port size: Rc1/4 to Rc2, 32 to 50 flange
- Working fluid: Air, inert gas

JIS symbol

● NC



● NO



Common specifications

Descriptions	SVB1A	SVB2A
Actuation	NC	NO
Working fluid	Air/inert gas (*1)	
Working pressure MPa	0 to 0.9	0 to 1
Proof pressure (water pressure) MPa	2.0	
Fluid temperature °C	-10 to 60 (no freezing)	
Ambient temperature °C	-10 to 60	
Valve seat leakage cm^3/min	0.12 or less (pneumatic pressure)	
Pilot fluid	Air	
Pilot pressure MPa	0.35 to 0.7	Refer to the following page
Mounting orientation	Unrestricted	

*1: Refer to the working fluid check list described in "General Purpose Valves" (catalog No. CB-03-1SA).

Electrical specifications		
Rated voltage	24 VDC	
Power consumption (W) DC	2.0	
Thermal class	Class 130 (B)	
Degree of protection (IEC standards 529)	Grommet lead wire	IPX2
	With DIN terminal box (Pg9)	IPX5
	With T terminal box (G1/2)	IPX5

*1: Use the product within ±10% of the rated voltage.

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm)	C [$dm^3/(s \cdot bar)$]	b	S (mm^2)	Allowable back pressure (MPa)	Pilot port size	Weight (kg)
NC (normally closed)								
SVB1A-8A	Rc1/4	10	8.3	0.4	-	0.5	Rc1/8	0.5
SVB1A-10A	Rc3/8	10	11	0.4	-			0.5
SVB1A-15A	Rc1/2	15	-	-	120	0.1		0.8
SVB1A-20A	Rc3/4	16	-	-	150			1
SVB1A-25A	Rc1	20	-	-	240			1.3
SVB1A-32A	Rc1 1/4	26	-	-	390			2.4
SVB1A-32F	32 flange	26	-	-	390			5.4
SVB1A-40A	Rc1 1/2	32	-	-	610			3.4
SVB1A-40F	40 flange	32	-	-	610			6.5
SVB1A-50A	Rc2	42	-	-	920			5.4
SVB1A-50F	50 flange	42	-	-	920			9.3
NO (normally open)								
SVB2A-8A	Rc1/4	10	8.9	0.4	-	0.1	Rc1/8	0.5
SVB2A-10A	Rc3/8	10	12	0.3	-			0.5
SVB2A-15A	Rc1/2	15	-	-	140			0.8
SVB2A-20A	Rc3/4	16	-	-	180			1
SVB2A-25A	Rc1	20	-	-	280			1.3
SVB2A-32A	Rc1 1/4	26	-	-	450	0.05		2.4
SVB2A-32F	32 flange	26	-	-	450			5.4
SVB2A-40A	Rc1 1/2	32	-	-	680			3.4
SVB2A-40F	40 flange	32	-	-	680			6.5
SVB2A-50A	Rc2	42	-	-	1020			5.4
SVB2A-50F	50 flange	42	-	-	1020			9.3

*1: Refer to the following page for pilot air pressure for NO.
*2: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

Compatibility table by variation

	SVB
Port size	Rc1/4 to Rc2, 32 flange, 40 flange, 50 flange
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

● With solenoid valve

SVB 1 A - 15 A - E 2G S - ○ - DC24V - P4

Model No. / Working fluid (for air/gas) / Ⓐ Actuation / Ⓑ Port size / Ⓒ Type of thread/flange / Ⓓ Body/sealant combination / Ⓔ Coil / Ⓕ Other options *1 *2 *3 *4 / Ⓖ Assembly direction / Ⓗ Voltage

Code	Content
Ⓐ Actuation	
1	NC
2	NO
Ⓑ Port size	
8	1/4
10	3/8
15	1/2
20	3/4
25	1
32	1 1/4, 32 (Flange)
40	1 1/2, 40 (Flange)
50	2, 50 (Flange)
Ⓒ Type of thread/flange	
A	Rc (8A to 50A)
F	Flange (32F to 50F)
Ⓓ Body/sealant combination	
E	Option / Body: Stainless steel / Seal: Fluoro rubber
Ⓔ Coil	
2C	Standard: Grommet lead wire
2G	Option: With DIN terminal box (Pg9)
2H	Option: DIN terminal box with lamp (Pg9)
3T	Option: With T terminal box (G1/2)
3R	Option: T terminal box with lamp (G1/2)
Ⓕ Other options	
Blank	No option
S	With surge suppressor
B	Mounting plate *1
Ⓖ Assembly direction	
Blank	No option
X	Cylinder cover rotated 90°
Y	Cylinder cover rotated 180°
Z	Cylinder cover rotated 270°
R	Coil reversed 180° [With solenoid valve] Mounting plate/coil reversed 180° [With solenoid valve]

Refer to page 297 for the layout drawing.

Ⓗ Voltage	
DC24V	24 VDC

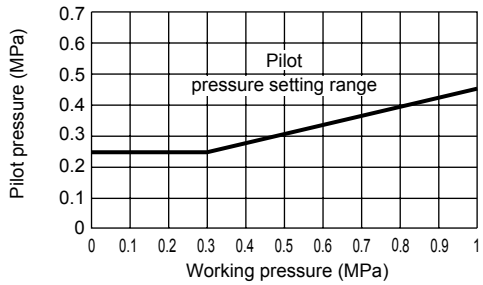
⚠ Precautions for model No. selection

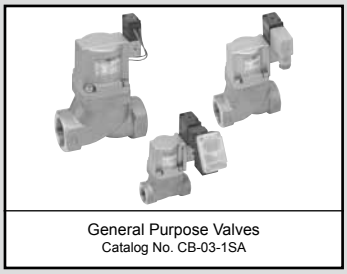
*1: The mounting plate (Item Ⓕ B) can be mounted only on the female thread of port sizes 8 to 32.
*2: To add both the surge suppressor and mounting plate options, specify Item Ⓕ as SB.
*3: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*4: Manual override (non-locking) is provided as standard.
*5: Made to order. Contact CKD for details.

■ Pilot pressure

Set pilot air pressure within the specified range.
Set the pilot pressure for the SAB/SVB Series NO and double acting as shown in the graph below. If the product is used with a pressure below the range shown in the graph, sealant failure may occur; if the product is used with a pressure above the range shown in the graph, durability may be compromised.
The NC is recommended when the pilot pressure cannot be controlled.

● SAB 2/3 WAV Series/SVB2 WAV Series





General Purpose Valves
Catalog No. CB-03-1SA

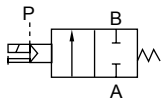
Air operated 2-port valve with solenoid valve (cylinder valve)

SVB*V Series

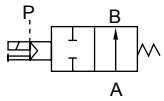
- NC, NO
- Port size: Rc1/4 to Rc2, 32 to 50 flange
- Working fluid: Low vacuum

JIS symbol

● NC



● NO



Common specifications

Descriptions	SVB1V	SVB2V
Actuation	NC	NO
Working fluid	Low vacuum (air, water) (*1)	
Working pressure Pa (abs)	1.3 x 10^2 to 7 x 10^5 (refer to working pressure range in individual specifications.)	
Proof pressure (water pressure) MPa	2.0	
Fluid temperature °C	-10 to 60 (no freezing)	
Ambient temperature °C	-10 to 60	
Valve seat leakage Pa·m^3/s He	1.33 x 10^{-3} or less	
Pilot fluid	Air	
Mounting orientation	Unrestricted	

*1: Refer to the working fluid check list described in "General Purpose Valves" (catalog No. CB-03-1SA).

Electrical specifications		
Rated voltage	24 VDC	
Power consumption (W) DC	2.0	
Thermal class	Class 130 (B)	
Degree of protection (IEC standards 529)	Grommet lead wire	IPX2
	With DIN terminal box (Pg9)	IPX5
	With T terminal box (G1/2)	IPX5

*1: Use the product within ±10% of the rated voltage.

Individual specifications

Descriptions / Model No.	Port size	Orifice size (mm)	C [dm^3/(s·bar)]	b	S (mm^2)	Working pressure Pa (abs) NC	Working pressure Pa (abs) NO	Pilot pressure (MPa) NC	Pilot pressure (MPa) NO	Pilot port size	Weight (kg) NC	Weight (kg) NO
SVB*V-8A	Rc 1/4	10	8.3	0.4	-	1.3×10^2 to 7×10^5	1.3×10^2 to 1×10^6	0.35 to 0.7	(*1)	Rc 1/8	0.5	
SVB*V-10A	Rc 3/8	10	12	0.3	-						0.5	
SVB*V-15A	Rc 1/2	15	-	-	140						0.8	
SVB*V-20A	Rc 3/4	16	-	-	180						1	
SVB*V-25A	Rc 1	20	-	-	280						1.3	
SVB*V-32A	Rc 1 1/4	26	-	-	450	1.3×10^2 to 5×10^5	1.3×10^2 to 1×10^6	0.25 to 0.7	(*1)		2.5	2.4
SVB*V-32F	32 flange	26	-	-	450						5.5	5.4
SVB*V-40A	Rc 1 1/2	32	-	-	680						3.6	3.4
SVB*V-40F	40 flange	32	-	-	680						6.7	6.5
SVB*V-50A	Rc 2	42	-	-	1020						5.7	5.4
SVB*V-50F	50 flange	42	-	-	1020						9.6	9.3

*1: Refer to the following page for pilot air pressure for NO.

How to order

● With solenoid valve

SVB 1 V - 15 A - E 2G S - ○ - DC24V - P4

- SVB: Model No.
- 1: Working fluid (for low vacuum)
- V: Working fluid (for low vacuum)
- 15: B Port size
- A: A Actuation
- E: D Body/sealant combination
- 2G: E Coil
- S: F Other options *1 *2 *3 *4
- ○: G Assembly direction
- DC24V: H Voltage
- P4: Refer to page 297 for the layout drawing.

Code	Content
A Actuation	
1	NC
2	NO
B Port size	
8	1/4
10	3/8
15	1/2
20	3/4
25	1
32	1 1/4, 32 (Flange)
40	1 1/2, 40 (Flange)
50	2, 50 (Flange)
C Type of thread/flange	
A	Rc (8A to 50A)
F	Flange (32F to 50F)
D Body/sealant combination	
		Body	**Seal**
E	Option	Stainless steel	Fluoro rubber
E Coil		
2C	Standard	Grommet lead wire
2G	Option	With DIN terminal box (Pg9)
2H		DIN terminal box with lamp (Pg9)
3T		With T terminal box (G1/2)
3R		T terminal box with lamp (G1/2)
F Other options		
Blank	No option
S	With surge suppressor
B	Mounting plate *1
G Assembly direction	
Blank	No option
X	Cylinder cover rotated 90°
Y	Cylinder cover rotated 180°
Z	Cylinder cover rotated 270°
R	Coil reversed 180° [With solenoid valve] Mounting plate/coil reversed 180° [With solenoid valve]
Refer to page 297 for the layout drawing.	
H Voltage	
DC24V	24 VDC

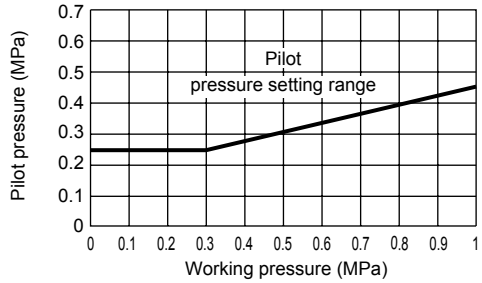
⚠ Precautions for model No. selection

*1: The mounting plate (Item F B) can be mounted only on the female thread of port sizes 8 to 32.
*2: To add both the surge suppressor and mounting plate options, specify Item F as SB.
*3: The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
*4: Manual override (non-locking) is provided as standard.
*5: Made to order. Contact CKD for details.

■ Pilot pressure

Set pilot air pressure within the specified range. Set the pilot pressure for the SAB/SVB Series NO and double acting as shown in the graph below. If the product is used with a pressure below the range shown in the graph, sealant failure may occur; if the product is used with a pressure above the range shown in the graph, durability may be compromised.
The NC is recommended when the pilot pressure cannot be controlled.

● SAB 2/3 W/A/V Series/SVB2 W/A/V Series



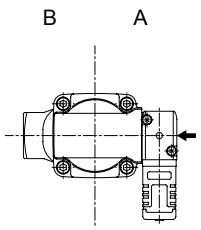
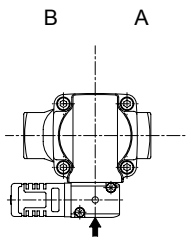
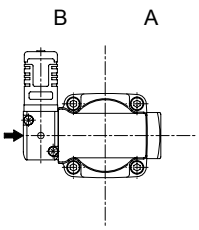
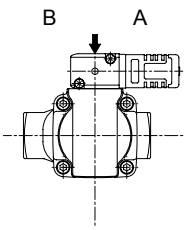
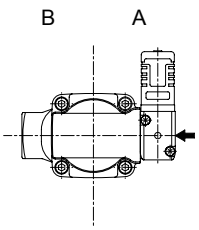
Compatibility table by variation

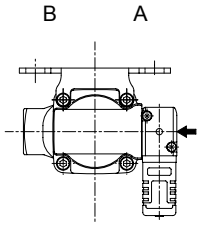
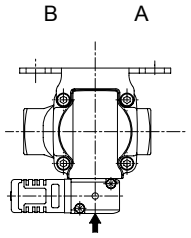
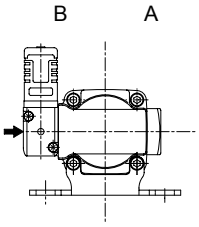
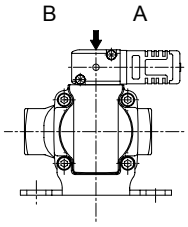
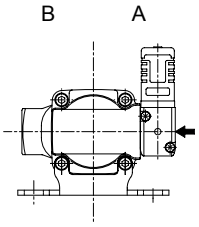
	SVB
Port size	Rc1/4 to Rc2, 32 flange, 40 flange, 50 flange
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Fluid control components

Item G Assembly direction

SVB [With solenoid valve] *6					
Code	Blank (standard)	X	Y	Z	R
Direction	No rotation	Cylinder cover rotated 90°	Cylinder cover rotated 180°	Cylinder cover rotated 270°	Coil reversed
Layout					

SVB [With solenoid valve] *1/6					
Code	B (with mounting plate)	B-X	B-Y *7	B-Z *7	B-R *8
Direction	No rotation	Cylinder cover rotated 90°	Cylinder cover rotated 180° Mounting plate reversed	Cylinder cover rotated 270° Mounting plate reversed	Coil reversed Mounting plate reversed
Layout					

*6: Clockwise rotating angle when viewed from above with port A on the right.

*7: The mounting plate will be reversed 180° and attached.

*8: The mounting plate for port size 10A is installed at the bottom, so only the coil position is reversed.

⬅ shows pilot port IN.



General Purpose Valves
Catalog No. CB-03-1SA

Diaphragm cylinder valve, single unit

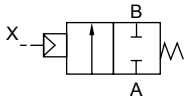
NAD*V Series

- NC (normally closed) NO (normally open) double acting
- Port size: Rc3/8
- Working fluid: Low vacuum

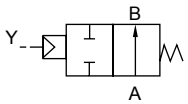
RoHS

JIS symbol

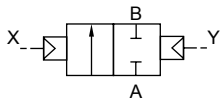
● NC (normally closed)



● NO (normally open)



● Double acting



Specifications

Descriptions	NAD1V-10	NAD2V-10	NAD3V-10
Actuation	NC (normally closed)	NO (normally open)	Double acting
Working fluid	Low vacuum (air/water)		
Fluid viscosity mm²/s	500 or less		
Working pressure	1.3 x 10^2 to 5 x 10^5 Pa (abs) (secondary pressure 4 x 10^5 Pa (abs) or less)		
Proof pressure (water pressure) MPa	1.0		
Fluid temperature °C	-10 to 50 (no freezing)		
Ambient temperature °C	-10 to 50		
Valve seat leakage	1.33 x 10^{-3} Pa·m³/sHe or less		
Port size	Rc3/8		
Orifice size mm	7		
Cv	1.1		
C [dm³/(s·bar)]	4.4		
b	0.1		
Weight kg	0.32		
Mounting orientation	Unrestricted		
Pilot fluid	Air		
Pilot pressure MPa	0.4 to 0.5		
Pilot port size	Rc1/8		

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

How to order

NAD 1 V - 10 - R B - P4

- NAD: Model No.
- 1: Working fluid (for low vacuum)
- V: Actuation
- 10: Port size
- R: Body/sealant combination
- B: Other options
- P4

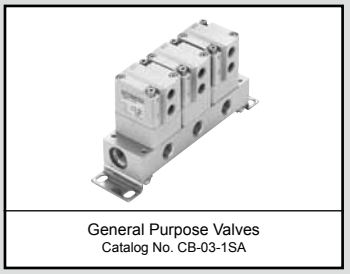
Code	Content
Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)
3	Double acting
Ⓑ Port size	
10	Rc3/8
Ⓒ Body/sealant combination	
	Body / Seal
R	Stainless steel / Ethylene propylene rubber
Ⓓ Other options	
Blank	No option
B	Mounting plate

Compatibility table by variation

	NAD
Port size	Rc3/8
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Fluid control components



General Purpose Valves
Catalog No. CB-03-1SA

Diaphragm cylinder valve, manifold

GNAD*V Series

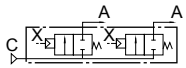
- NC (normally closed) NO (normally open) double acting
- Port size: Rc1/4, Rc3/8
- Working fluid: Low vacuum

RoHS

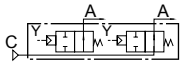
JIS symbol

● Common supply (port C pressurization)

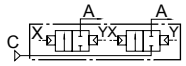
NC (normally closed)



NO (normally open)

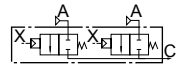


Double acting

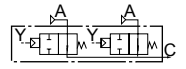


● Individual supply (port A pressurization)

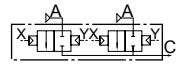
NC (normally closed)



NO (normally open)



Double acting



Specifications

Descriptions	GNAD1V-1/5	GNAD2V-1/5	GNAD3V-1/5
Actuation	NC (normally closed)	NO (normally open)	Double acting
Working fluid	Low vacuum (air/water)		
Fluid viscosity mm^2/s	500 or less		
Working pressure	1.3 x 10^2 to 5 x 10^5 Pa (abs) (secondary pressure 4 x 10^5 Pa (abs) or less)		
Proof pressure (water pressure) MPa	1.0		
Fluid temperature °C	-10 to 50 (no freezing)		
Ambient temperature °C	-10 to 50		
Valve seat leakage	1.33 x 10^{-3} Pa·m^3/sHe or less		
Orifice size mm	7		
Cv	0.7		
C [dm^3/(s·bar)]	3.4		
b	-		
Mounting orientation	Unrestricted		
Pilot fluid	Air		
Pilot pressure MPa	0.4 to 0.5		
Pilot port size	Rc1/8		

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

How to order

GNAD 1 V - 1 - 3 - R - P4

- GNAD: Model No.
- 1 V: Working fluid (for low vacuum)
- Ⓐ 1: Actuation
- Ⓑ 3: Air supply category
- Ⓒ R: Manifold station No.
- Ⓓ P4: Sub-plate/body/sealant combination

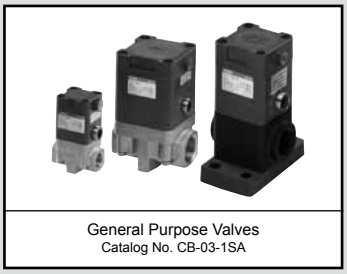
Code	Content
Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)
3	Double acting
Ⓑ Air supply category	
1	Common supply
5	Individual supply
Ⓒ Manifold station No.	
2 to 10	2 stations to 10 stations
0	Actuator only

Ⓓ Sub-plate/body/sealant combination			
	Sub-plate	Body	Seal
R	Stainless steel	Stainless steel	Ethylene propylene rubber
3	Aluminum	Polypropylene	Ethylene propylene rubber

Compatibility table by variation

	NAD
Port size	Rc1/4, Rc3/8
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable



General Purpose Valves
Catalog No. CB-03-1SA

Diaphragm cylinder valve

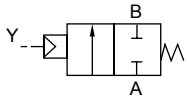
LAD Series

- NC (normally closed) NO (normally open) double acting
- Port size: Rc3/8, Rc1/2, Rc3/4, Rc1
- Working fluid: Pure water, water, air, N_2 gas

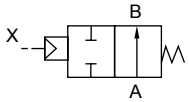
RoHS CAD

JIS symbol

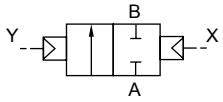
● NC (normally closed)



● NO (normally open)



● Double acting



Common specifications (PTFE diaphragm)

Descriptions			LAD1	LAD2	LAD3
Actuation			NC (normally closed)	NO (normally open)	Double acting
Working fluid			Water, pure water, air, N_2 gas, non-corrosive/non-absorbable fluid (*1)		
Fluid temperature		°C	5 to 90 (*2)		
Proof pressure (water pressure)		MPa	0.9		
Working pressure (A→B)		MPa	0 to 0.3		
Valve seat leakage		cm^3/min	0 (water pressure), 1 or less (pneumatic pressure)		
Back pressure		MPa	0 to 0.1		
Ambient temperature		°C	0 to 60		
Mounting orientation			Unrestricted		
Operating section	Pilot fluid		Air		
	Pilot pressure	MPa	0.3 to 0.5		0.3 to 0.4
	Pilot port size		Rc1/8 (*3)		

*1: Check the compatibility of product structural materials, working fluids and atmosphere.
Strong acids and highly absorbable fluids cannot be used.
*2: 5 to 100°C for stainless steel body (SCS13).
*3: With stainless steel stiffening ring.

Individual specifications (PTFE diaphragm)

Descriptions / Model No.	Port size	Orifice size mm	Cv	Frequency cycle/min.	Weight kg	
					PPS body	SCS13 body
LAD*-10A	Rc3/8	8	1.7	30 or less	0.15	0.3
LAD*-15A	Rc1/2	12	3.3	20 or less	0.28	0.6
LAD*-20A	Rc3/4	20	8.5	20 or less	0.55	1.1
LAD*-25A	Rc1	20	8.5	20 or less	0.60	1.2

Common specifications (EPDM diaphragm)

Descriptions			LAD1	LAD2	LAD3
Actuation			NC (normally closed)	NO (normally open)	Double acting
Working fluid			Water, air, N_2 gas, non-corrosive/non-absorbable fluid (*1)		
Fluid temperature		°C	0 to 60 (no freezing)		
Proof pressure (water pressure)		MPa	1.5 (refer to proof pressure in individual specifications.)		
Working pressure (A→B)		MPa	0 to 0.5 (refer to working pressure range in individual specifications.)		
Valve seat leakage		cm^3/min	0 (water pressure), 0.12 or less (pneumatic pressure)		
Back pressure		MPa	0 to 0.1		
Ambient temperature		°C	0 to 60		
Mounting orientation			Unrestricted		
Operating section	Pilot fluid		Air		
	Pilot pressure	MPa	0.3 to 0.5		0.3 to 0.4
	Pilot port size		Rc1/8 (*2)		

*1: Check the compatibility of product structural materials, working fluids and atmosphere.
Strong acids and highly absorbable fluids cannot be used.
*2: With stainless steel stiffening ring.

Individual specifications (EPDM diaphragm)

Descriptions / Model No.	Port size	Proof pressure (water pressure) MPa	Working pressure (A→B) MPa	Orifice size mm	Cv	Frequency cycle/min.	Weight kg	
							PPS body	SCS13 body
LAD*-10A	Rc3/8	1.5	0.5	8	1.7	30 or less	0.15	0.3
LAD*-15A	Rc1/2	1.5	0.5	12	3.3	20 or less	0.28	0.6
LAD*-20A	Rc3/4	1.2	0.4	20	8.5	20 or less	0.55	1.1
LAD*-25A	Rc1	1.2	0.4	20	8.5	20 or less	0.60	1.2

Compatibility table by variation

	LAD
Port size	Rc3/8, 1/2, 3/4, 1
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

LAD 1 - 15A - C B - P4

Model No.

Ⓐ Actuation

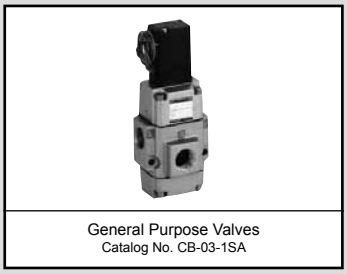
Ⓑ Port size

Ⓒ Material combination

Ⓓ Other options

Code	Content
Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)
3	Double acting
Ⓑ Port size	
10A	Rc3/8
15A	Rc1/2
20A	Rc3/4
25A	Rc1
Ⓒ Material combination	
	Body / Diaphragm
P	PPS / EPDM
C	PPS / PTFE
R	SCS13 / EPDM
F	SCS13 / PTFE
Ⓓ Other options	
Blank	No option
B	Mounting plate

Note: For the "indicator" option, contact CKD.



General Purpose Valves
Catalog No. CB-03-1SA

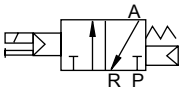
Internal pilot 3-port valve with solenoid valve

NP13/NP14 Series

- NC, NO
- Port size: Rc3/8 to Rc2

JIS symbol

● NC



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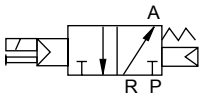


Common specifications

Descriptions	NP13	NP14
Actuation	NC	NO
Fluid pressure supply port	Port P	Port R
Working fluid	Compressed air	
Proof pressure MPa	1.2	
Working pressure MPa	0.2 to 0.8	
Fluid temperature °C	5 to 60	
Ambient temperature °C	10 A to 25 A: -5 to 60 and 32 A to 50 A: -5 to 40 for both NP13/NP14	
Thermal class	Class 130 (B)	
Lubrication	No lubrication (use turbine oil Class 1 ISO VG32 for lubrication)	
Valve seat leakage cm^3/min	1 or less (at pneumatic pressure 0.2 to 0.8 MPa)	
Valve structure	Internal pilot balance poppet structure	
Mounting orientation	Unrestricted	

Individual specifications

Descriptions / Model No.	Port size: P, A ports	Port size: Port R	Orifice size (mm)	Response time (ms)	Rated voltage	Power consumption (W): DC	Weight (kg)
NC (port P pressurization)							
NP13-10A	Rc3/8	Rc1/2	14.8 or equiv.	30 or less (*1)	24 VDC	4	0.7
NP13-15A	Rc1/2						0.7
NP13-20A	Rc3/4	Rc1	25.4 or equiv.	60 or less (*1)			1.5
NP13-25A	Rc1						1.5
NP13-32A	Rc1 1/4	Rc2	41.4 or equiv.	120 or less (*1)		8	4.5
NP13-40A	Rc1 1/2						4.5
NP13-50A	Rc2						4.4
NO (port R pressurization)							
NP14-10A	Rc3/8	Rc1/2	14.8 or equiv.	30 or less (*1)	24 VDC	4	0.7
NP14-15A	Rc1/2						0.7
NP14-20A	Rc3/4	Rc1	25.4 or equiv.	60 or less (*1)			1.5
NP14-25A	Rc1						1.5
NP14-32A	Rc1 1/4	Rc2	41.4 or equiv.	120 or less (*1)		8	4.5
NP14-40A	Rc1 1/2						4.5
NP14-50A	Rc2						4.4

*1: The response times are values with supply pressure of 0.5 MPa, without lubrication, and with the power ON. They depend on the pressure and the lubricant quality.
*2: Use the product within ±10% of the rated voltage.

Flow characteristics

Model No.	P→A				A→R			
	C[dm³/(s·bar)]	b	Cv	S(mm²)	C[dm³/(s·bar)]	b	Cv	S(mm²)
NC (port P pressurization)								
NP13-10A	15	0.31	3.4	-	16	0.28	3.4	-
NP13-15A	18	0.29	3.6	-	17	0.26	3.6	-
NP13-20A	35	0.27	8.4	-	41	0.21	8.6	-
NP13-25A	-	-	8.6	200	-	-	9.0	210
NP13-32A	-	-	25.8	600	-	-	26.2	610
NP13-40A	-	-	27.0	630	-	-	26.6	620
NP13-50A	-	-	28.2	660	-	-	27.0	630
Model No.	**R→A**				**A→P**			
	C[dm³/(s·bar)]	b	Cv	S(mm²)	C[dm³/(s·bar)]	b	Cv	S(mm²)
NO (port R pressurization)								
NP14-10A	15	0.31	3.4	-	15	0.33	3.4	-
NP14-15A	17	0.30	3.6	-	18	0.31	3.6	-
NP14-20A	41	0.21	8.6	-	35	0.27	8.4	-
NP14-25A	-	-	9.0	210	-	-	8.6	200
NP14-32A	-	-	26.2	610	-	-	25.8	600
NP14-40A	-	-	26.6	620	-	-	27.0	630
NP14-50A	-	-	27.0	630	-	-	28.2	660

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

Compatibility table by variation

	NP13/NP14
Bore size	Rc3/8 to Rc1
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

*1: Coil option is 2G, 2H, 2GS, 2HS only.
*2: Voltage: 24 VDC only.
*3: Rc1 1/4 to Rc2 are made to order.

How to order

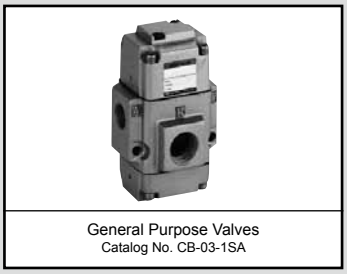
NP1 3 - 15A - 1 2G S - 3 - P4

Model No.
Ⓐ Actuation
Ⓑ Port size
Ⓒ Body/sealant combination
Ⓓ Coil housing *1
Ⓔ Other options *2
Ⓕ Rated voltage

Code	Content	
Ⓐ Actuation		
3	NC	
4	NO	
Ⓑ Port size		
10A	Rc3/8	
15A	Rc1/2	
20A	Rc3/4	
25A	Rc1	
32A	Rc1 1/4	(made to order)
40A	Rc1 1/2	(made to order)
50A	Rc2	(made to order)
Ⓒ Body/sealant combination		
	Body	Seal
1	Aluminum	Nitrile rubber
Ⓓ Coil housing		
2G	Option	DIN terminal box (Pg thread)
2H	Option	DIN terminal box with lamp (Pg thread)
Ⓔ Other options		
Blank	No option	
S	With surge suppressor	
Ⓕ Rated voltage		
3	24 VDC	

⚠ Precautions for model No. selection

*1: Pg thread of the DIN terminal box is Pg9 for port size 10 A to 25 A, and Pg11 for 32 A to 50 A.
*2: The surge suppressor is mounted in the terminal box when the coil is with terminal box.
*3: Manual override (non-locking) is provided as standard.



General Purpose Valves
Catalog No. CB-03-1SA

Air operated 3-port valve

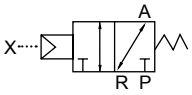
NAP11 Series

- Universal
- Port size: Rc3/8 to Rc2

RoHS CAD

JIS symbol

● Universal



Common specifications

Descriptions	NAP11
Actuation	Universal
Working fluid	Compressed air, low vacuum
Proof pressure MPa	1.2
Working pressure MPa	0 to 0.8 (1.3×10^2 to 8×10^5 Pa (abs) when used in vacuum)
Fluid temperature °C	5 to 60
Ambient temperature °C	-5 to 60
Lubrication	No lubrication (use turbine oil Class 1 ISO VG32 for lubrication)
Valve seat leakage cm^3/min	1 or less (at pneumatic pressure 0.02 to 0.8 MPa)
Valve structure	External pilot balance poppet structure
Mounting orientation	Unrestricted
Pilot fluid	Air
Pilot pressure MPa	0.35 to 0.7
Pilot port size (port X)	Rc1/8

Individual specifications

Descriptions / Model No.	Port size: P, A ports	Port size: Port R	Orifice size (mm)	Response time (ms)	Weight (kg)
NAP11-10A	Rc3/8	Rc1/2	14.8 or equiv.	30 or less (*1)	0.6
NAP11-15A	Rc1/2				0.6
NAP11-20A	Rc3/4	Rc1	25.4 or equiv.	60 or less (*1)	1.4
NAP11-25A	Rc1				1.4
NAP11-32A	Rc1 1/4	Rc2	41.4 or equiv.	120 or less (*1)	4.2
NAP11-40A	Rc1 1/2				4.2
NAP11-50A	Rc2				4.1

*1: The response times are values with supply pressure of 0.5 MPa, without lubrication, and with the power ON. They depend on the pressure and the lubricant quality.

How to order

NAP1 1 - 15A - 1 - P4

- NAP1: Model No.
- 1: Ⓐ Actuation
- 15A: Ⓑ Port size
- 1: Ⓒ Body/sealant combination
- P4

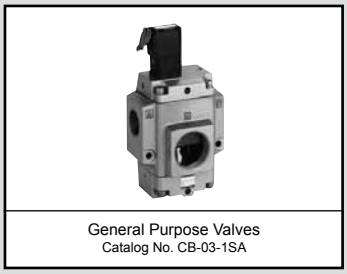
Compatibility table by variation

	NAP11
Port size	Rc3/8 to 2
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Code	Content
Ⓐ Actuation	
1	Universal
Ⓑ Port size	
10A	Rc3/8
15A	Rc1/2
20A	Rc3/4
25A	Rc1
32A	Rc1 1/4
40A	Rc1 1/2
50A	Rc2

Ⓒ Body/sealant combination		
	Body	Seal
1	Aluminum	Nitrile rubber



General Purpose Valves
Catalog No. CB-03-1SA

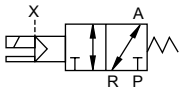
Air operated 3-port valve with solenoid valve

NVP11 Series

- Universal
- Port size: Rc3/8 to Rc2

JIS symbol

● Universal



Common specifications

Descriptions	NVP11
Actuation	Universal
Working fluid	Compressed air, low vacuum
Proof pressure MPa	1.2
Working pressure MPa	0 to 0.8 (1.3×10^2 to 8×10^5 Pa (abs) when used in vacuum)
Fluid temperature °C	5 to 60
Ambient temperature °C	10 A to 25 A: -5 to 60 and 32 A to 50 A: -5 to 40
Thermal class	Class 130 (B)
Lubrication	No lubrication (use turbine oil Class 1 ISO VG32 for lubrication)
Valve seat leakage cm^3/min	1 or less (at pneumatic pressure 0.02 to 0.8 MPa)
Valve structure	External pilot balance poppet structure
Mounting orientation	Unrestricted
Pilot fluid	Air
Pilot pressure MPa	0.35 to 0.7
Pilot port size (port X)	Rc1/8

Individual specifications

Descriptions / Model No.	Port size: P, A ports	Port size: Port R	Orifice size (mm)	Response time (ms)	Rated voltage	Power consumption (W): DC	Weight (kg)
NVP11-10A	Rc3/8	Rc1/2	14.8 or equiv.	30 or less (*1)	24 VDC	4	0.7
NVP11-15A	Rc1/2						0.7
NVP11-20A	Rc3/4	Rc 1	25.4 or equiv.	60 or less (*1)			1.5
NVP11-25A	Rc 1						1.5
NVP11-32A	Rc1 1/4	Rc 2	41.4 or equiv.	120 or less (*1)		8	4.5
NVP11-40A	Rc1 1/2						4.5
NVP11-50A	Rc 2						4.4

*1: The response times are values with supply pressure of 0.5 MPa, without lubrication, and with the power ON. They depend on the pressure and the lubricant quality.
*2: Use the product within ±10% of the rated voltage.

How to order

NVP1 1 - 15A - 1 2G S - 3 - P4

- Model No.
- Ⓐ Actuation
- Ⓑ Port size
- Ⓒ Body/sealant combination
- Ⓓ Coil housing *1
- Ⓔ Other options *2
- Ⓕ Rated voltage

Precautions for model No. selection

*1: Pg thread of the DIN terminal box is Pg9 for port size 10 A to 25 A, and Pg11 for 32 A to 50 A.
*2: The surge suppressor is mounted in the terminal box when the coil is with terminal box.
*3: Manual override (non-locking) is provided as standard.

Code	Content	
Ⓐ Actuation		
1	Universal	
Ⓑ Port size		
10A	Rc 3/8	
15A	Rc 1/2	
20A	Rc 3/4	
25A	Rc 1	
32A	Rc1 1/4	(made to order)
40A	Rc1 1/2	(made to order)
50A	Rc2	(made to order)

Ⓒ Body/sealant combination	Body	Seal
1	Aluminum	Nitrile rubber

Ⓓ Coil housing		
2G	Option	DIN terminal box (Pg thread)
2H		DIN terminal box with lamp (Pg thread)

Ⓔ Other options	
Blank	No option
S	With surge suppressor

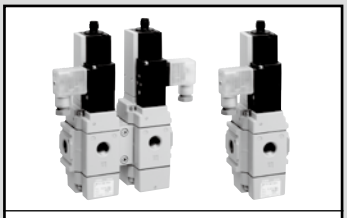
Ⓕ Rated voltage		
3	Standard	24 VDC

Compatibility table by variation

	NVP11
Port size	Rc3/8 to 2
P4	●

● : Standard
○ : Made to order
▲ : Contact CKD
□ : Not applicable

*1: Coil option is 2G, 2H, 2GS, 2HS only.
*2: Voltage: 24 VDC only.
*3: Rc1 1/4 to Rc2 are made to order.



General Purpose Valves
Catalog No. CB-03-1SA

3-port solenoid valve with spool position detection

SNP Series

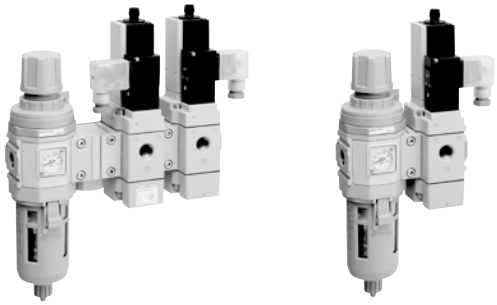
● Port size: Rc3/8 to 3/4

Spool position detection for reliable open/close detection Module connection also allows double cutoff.

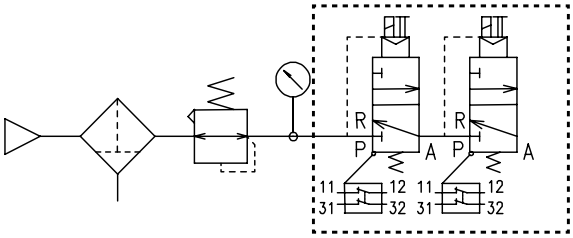
Features

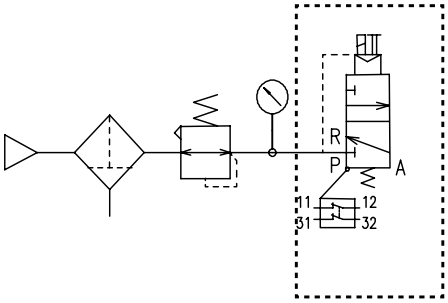
- ◆ Serves as electromagnetic shut-off valve for pneumatic system.
- ◆ Signal output of the valve's open/close state is possible by detecting the main valve spool position with the safety limit switch.
- ◆ Two modules can be connected to configure a double breaker circuit.
- ◆ Can be modular-integrated into the F.R.L. unit. Reduces piping space.

Unit configuration example



Example of system circuit





Fluid control components

Specifications

Model	SNP		
Port size	Rc3/8	Rc1/2	Rc3/4
Actuation	NC		
Fluid pressure supply port	Port P		
Working fluid	Compressed air		
Proof pressure MPa	1.05		
Working pressure range MPa	0.2 to 0.7		
Fluid temperature °C	5 to 60		
Ambient temperature °C	-5 to 60		
Weight kg	0.8(1.7) *1		1.8(3.7) *1
Orifice size mm	14.8 or equiv.		25.4 or equiv.
Valve seat leakage	1 or less (at pneumatic pressure 0.2 to 0.7 MPa)		
Valve structure	Internal pilot balance poppet structure		
Mounting orientation	Unrestricted		

*1: Values in ( ) are the weight for modules

*2: External pilot also supported. Contact CKD for details.

Electrical specifications			
Rated voltage (*2)	24 VDC		
Power consumption (W) DC	2.0		
Thermal class	B		
Degree of protection (IEC standards 529	DIN terminal box (Pg 9)		IPX5
	DIN terminal box (M12-4P connector)		

*3: The voltage range must be within ±10% of the rated voltage.

*4: Contact CKD for details on reliability data (B10).

Limit switch specifications

Limit switch specifications		
Manufacturer model	D4N-1B31	D4N-9B31
Terminal	Pg13.5	M12-4P connector
Contact resistance	25 mΩ or less	
Minimum applicable load	5 VDC 1 mA resistance load	
Rated insulation voltage V	300	
Insulation resistance MΩ	100	
Electric shock protection class	Class II	
Pollution degree (working environment)	3 (EN60947-5-1)	
Conditional short-circuit current A	100	

* Refer to the manufacturer's catalog for details.

Flow characteristics

Model No.		P→A		A→R	
		C[dm³/(s/bar)]	S(mm²)	C[dm³/(s/bar)]	S(mm²)
Single unit	SNP-10A	13	64	14	70
	SNP-15A	15	76	16	80
	SNP-20A	34	170	36	180
2 stations	SNP-10A	10	50	14	70
	SNP-15A	12	59	16	80
	SNP-20A	26	130	36	180

Compatibility table by variation

	SNP
Port size	Rc3/8, 1/2, 3/4
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

SNP - 1R - 15A - 0 2HS L B3 S2 - 3 - P4

Ⓐ Station No.
Ⓑ Port size
Ⓒ Sealant
Ⓓ Coil option
Ⓔ Limit switch
Ⓕ Bracket *1, *2
Ⓖ Silencer
Ⓗ Voltage

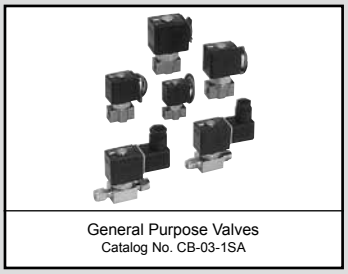
Code	Content
Ⓐ Station No.	
1R	Single unit (terminal box right-facing)
1L	Single unit (terminal box left-facing)
2	2 (2 modules)
Ⓑ Port size	
10A	Rc3/8
15A	Rc1/2
20A	Rc3/4
Ⓒ Sealant	
0	NBR
Ⓓ Coil option	
2G	DIN terminal box
2HS	DIN terminal box with lamp/surge suppressor
2J	DIN terminal box (M12-4P connector)
2KS	DIN terminal box with lamp/surge suppressor (M12-4P connector)
Ⓔ Limit switch	
L	Pg13.5 (D4N-1B31: OMRON)
M	M12-4P connector (D4N-9B31: OMRON)
Ⓕ Bracket *1	

		10A	15A	20A
Blank	No option	●	●	●
B3	With bracket (2000 Series, 3000 Series)	●	●	
B4	With bracket (4000 Series)	●	●	
B8	With bracket (8000 Series)			●

Ⓖ Silencer	
Blank	No option
S2	Resin
Ⓗ Voltage	
3	24 VDC

Precautions for model No. selection

*1: The bracket can be selected when Ⓐ station No. is "2".
*2: The bracket option "B8" can be selected only for 20A.
*3: Silencer is attached to the product.



General Purpose Valves
Catalog No. CB-03-1SA

Solenoid valve for high vacuum

HVB$^{2}_{3}_{4}_{5}$12 Series

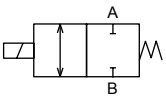
- Orifice: ø1, ø2, ø3, ø4.5, ø6
- NC

P4 compliant as standard

CE RoHS CAD

JIS symbol

● NC



Common specifications

Descriptions	HVB*12
Working fluid	Air/vacuum/inert gas (*1)
Proof pressure MPa	5.0
Fluid temperature °C	5 to 55
Ambient temperature °C	0 to 55 (no freezing)
Thermal class	Class 130 (B)
Voltage fluctuation range	Rated voltage ±10%
Atmosphere	No explosive or corrosive atmospheres
Valve structure	Direct acting poppet structure
Valve seat leakage Pa·m³/sHe	1.0×10^{-9} or less (*2)
External leakage Pa·m³/sHe	1.0×10^{-9} or less
Mounting orientation	Unrestricted
Durability	2 million times

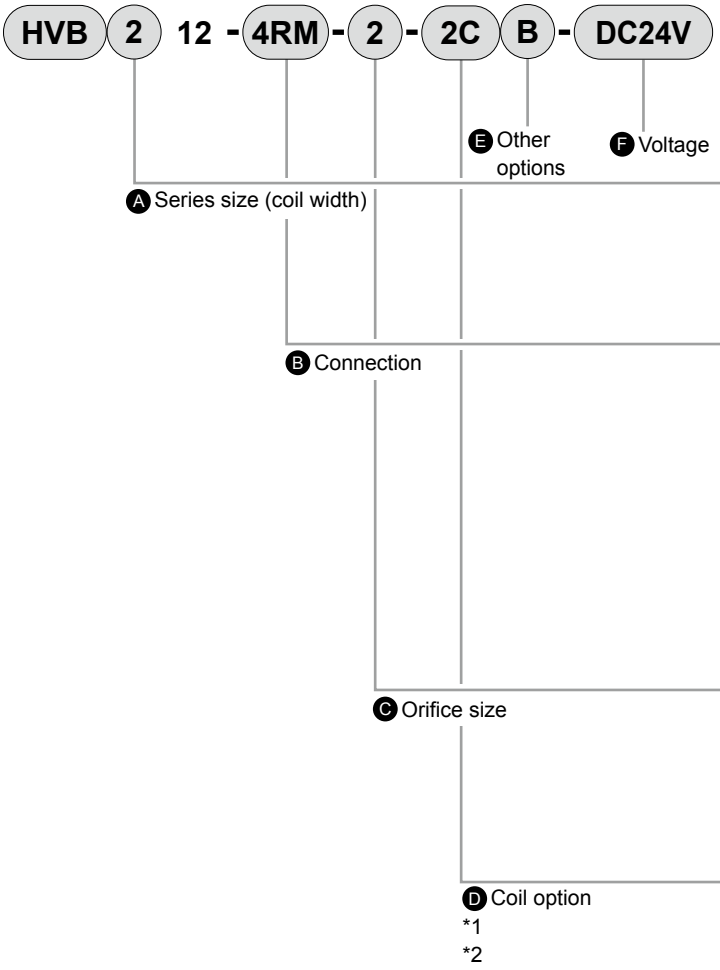
Individual specifications

Descriptions / Model No.	Port size (*3)	Orifice size (mm)	Cv (*5)	Working pressure Pa (abs) (*10)	Max. working pressure differential (*6) (MPa)	Back pressure (*7) (MPa)	Rated voltage	Power consumption (W) AC	Power consumption (W) DC	Weight (*9) (kg)
NC										
HVB212	1/4" JXR male fitting 1/4" double barbed fitting NPT 1/8, Rc1/8	1	0.04	1.0×10^{-6} to 1.0×10^{6}	1.0	0.6	100 VAC 50/60 Hz 200 VAC 50/60 Hz 24 VDC 12 VDC	4.3	4	0.16
		2	0.17	1.0×10^{-6} to 0.3×10^{6}	0.3	0.15				
HVB312	1/4" JXR male fitting 1/4" double barbed fitting NPT 1/8, 1/4, Rc1/8, 1/4	2	0.17	1.0×10^{-6} to 0.8×10^{6}	0.8	0.5		6.5	6	0.29
		3	0.33	1.0×10^{-6} to 0.3×10^{6}	0.3	0.25				
HVB412	1/4" JXR male fitting 1/4" double barbed fitting NPT 1/4, Rc1/4	3	0.33	1.0×10^{-6} to 1.0×10^{6}	1.0	0.4		8.3	8 (*8)	0.50
		4.5	0.6	1.0×10^{-6} to 0.3×10^{6}	0.3	0.2				
	3/8" JXR male fitting 3/8" double barbed fitting NPT 3/8, Rc3/8	6	1.05	1.0×10^{-6} to 0.2×10^{6}	0.1	0.05				
HVB512	1/4" JXR male fitting 1/4" double barbed fitting NPT 1/4, Rc1/4	4.5	0.6	1.0×10^{-6} to 0.8×10^{6}	0.8	0.2		11.8	11.5	0.69
	3/8" JXR male fitting 3/8" double barbed fitting NPT 3/8, Rc3/8	6	1.05	1.0×10^{-6} to 0.3×10^{6}	0.3	0.15				

*1 : The number of durability times may become much lower depending on the degree of dryness.
*2 : Value when port A is on the vacuum side.
*3 : JXR fitting can be connected to VCR fitting.
*4 : The leakage current must be less than or equal to the values shown below.
*5 : Cv shown in the table are values for NPT connection.
*6 : The max. working pressure differential is the difference between port B (high-pressure side) and port A (low-pressure side).
*7 : Atmospheric pressure at port B that can be applied from port A.
*8 : 8.6 (W) for 12 VDC.
*9 : Weights shown in the table are for grommet lead wire/NPT connection.
*10: The working pressure range vacuum does not guarantee the vacuum attainment time or that the vacuum will not change.
*11: FKM is used for sealant material, so consider the generation of discharge gas during use.
*12: Grease for high vacuum is used on the O-rings of gas contacting parts.

Leakage current	Voltage / Model No.	100 VAC	200 VAC	24 VDC	12 VDC
	HVB*12	2 mA or less	1 mA or less	1 mA or less	2 mA or less

How to order



Code	Content	HVB212	HVB312	HVB412	HVB512
A Series size					
2	22 mm	●			
3	28 mm		●		
4	34 mm			●	
5	40 mm				●
B Connection (refer to Table 1)					
4RM	1/4" JXR male fitting	●	●	●	●
6RM	3/8" JXR male fitting			●	●
4S	1/4" double barbed fitting	●	●	●	●
6S	3/8" double barbed fitting			●	●
6N	NPT 1/8	●	●		
8N	NPT 1/4		●	●	●
10N	NPT 3/8			●	●
6	Rc1/8	●	●		
8	Rc1/4		●	●	●
10	Rc3/8			●	●
C Orifice size (refer to Table 1)					
Z	ø1	●			
2	ø2	●	●		
3	ø3		●	●	
5	ø4.5			●	●
6	ø6			●	●
D Coil option					
For AC					
2CR	Standard: Grommet lead wire/with full-wave rectifier	●	●	●	●
For DC					
2C	Standard: Grommet lead wire	●	●	●	●
2CS	Option: Grommet lead wire with surge suppressor	●	●	●	●
2G	Option: With DIN terminal box (Pg11)	●	●	●	●
2HS	Option: With DIN terminal box with lamp/surge suppressor (Pg11)	●	●	●	●
E Other options					
Blank	Standard: No	●	●	●	●
B	Option: Mounting plate	●	●	●	●
F Voltage					
AC100V	100 VAC 50/60 Hz	●	●	●	●
AC200V	200 VAC 50/60 Hz	●	●	●	●
DC24V	24 VDC	●	●	●	●
DC12V	12 VDC	●	●	●	●

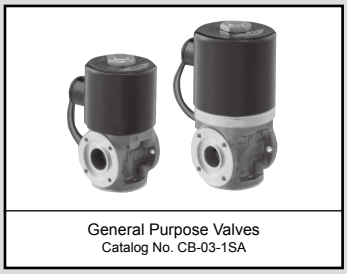
Select from the combinations indicated with ● above.

*1: Surge suppressor is included as standard in the locations with full-wave rectifier.

*2: For HVB212 Item D 2G/2HS, the compact terminal box (Pg9) is used.

Table 1: Table of fitting and orifice size combination

	Connection			C Orifice size				
	B	Fitting	Size	Z ø1	2 ø2	3 ø3	5 ø4.5	6 ø6
HVB212	4RM	JXR male	1/4"	●	●			
	4S	Double barbed	1/4"	●	●			
	6N	NPT	1/8"	●	●			
	6	Rc	1/8"	●	●			
HVB312	4RM	JXR male	1/4"		●	●		
	4S	Double barbed	1/4"		●	●		
	6N	NPT	1/8"		●	●		
	8N	NPT	1/4"		●	●		
	6	Rc	1/8"		●	●		
	8	Rc	1/4"		●	●		
HVB412	4RM	JXR male	1/4"			●	●	
	6RM	JXR male	3/8"					●
	4S	Double barbed	1/4"			●	●	
	6S	Double barbed	3/8"					●
	8N	NPT	1/4"			●	●	
	10N	NPT	3/8"					●
	8	Rc	1/4"			●	●	
	10	Rc	3/8"					●
HVB512	4RM	JXR male	1/4"				●	
	6RM	JXR male	3/8"					●
	4S	Double barbed	1/4"				●	
	6S	Double barbed	3/8"					●
	8N	NPT	1/4"				●	
	10N	NPT	3/8"					●
	8	Rc	1/4"				●	
	10	Rc	3/8"					●



General Purpose Valves
Catalog No. CB-03-1SA

Solenoid valve for high vacuum

HVB$^{6}_{7}$12 Series

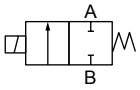
- NC
- Port size: Flange ø48, ø52

P4 compliant as standard

RoHS

JIS symbol

- NC



Specifications

Model No.		HVB612-12F			HVB712-15F			
Descriptions		-8B	-8H	-12B	-12B	-12H	-15B	-15H
Working fluid		Vacuum and inert gas (*1)						
Working pressure	Pa(abs)	1.3×10^{-6} to 2.0×10^{5}	1.3×10^{-6} to 3.0×10^{5}	1.3×10^{-6} to 1.0×10^{5}	1.3×10^{-6} to 1.5×10^{5}	1.3×10^{-6} to 3.0×10^{5}	1.3×10^{-6} to 1.0×10^{5}	1.3×10^{-6} to 1.0×10^{5}
Max. working pressure differential (*7)	MPa	0.2	0.3	0.1	0.15	0.3	0.1	0.1
Orifice size	mm	8		12	12		15	
Cv	Straight	1.8		2.7	3.2		4.3	
	L direction	2.1		3.2	3.6		4.7	
Back pressure (*2)	MPa	0.1		0.02	0.1		0.02	0.1
Valve seat leakage	Pa·m^3/s (He)	1.0×10^{-9} or less (*6)						
External leakage	Pa·m^3/s (He)	1.0×10^{-9} or less						
Proof pressure	MPa	0.5						
Fluid temperature	°C	5 to 55						
Ambient temperature	°C	0 to 55						
Frequency	times/min. or less	10						
Mounting orientation		Unrestricted						
Port size		ø48 flange			ø52 flange			
Weight	kg	1.15			2.0			
Electrical specifications								
Rated voltage		100/200 VAC (50/60Hz), 24 VDC						
Voltage fluctuation range		Rated voltage ±10%						
Power consumption	W	14.3	28	14.3	19	AC:32.5 DC:40	19	AC:32.5 DC:40
Thermal class		B	H	B	B	H	B	H
Temperature rise	K	75	125	75	75	125	75	125

*1: The number of durability times may become much lower depending on the degree of dryness.
*2: Atmospheric pressure at port B that can be applied from port A.
(Reverse vacuum is not possible with HVB612-12F-12B and HVB712-15F-15B.)
*3: Grease for high vacuum is used on the O-rings of gas contacting parts.
*4: The working pressure vacuum does not guarantee the vacuum attainment time or that the vacuum will not change.
*5: FKM is used for sealant material, so consider the generation of discharge gas during use.
*6: Value when port A is on the vacuum side.
*7: The max. working pressure differential is the difference between port B (high-pressure side) and port A (low-pressure side).

How to order

HVB 6 12 - 12F - 8 B - 3N - AC100V

Model No.

Ⓐ Series

Ⓑ Connection

Ⓒ Orifice size

Ⓓ Thermal class *1

Ⓔ Option *2

Ⓕ Voltage *3

Code	Content	Model No. HVB612	Model No. HVB712
Ⓐ Series size			
6	60 mm	●	
7	70 mm		●
Ⓑ Connection			
12F	Flange ø48	●	
15F	Flange ø52		●
Ⓒ Orifice size			
8	ø8	●	
12	ø12	●	●
15	ø15		●
Ⓓ Thermal class			
B	Class 130 (B)	●	●
H	Class 180 (H)	●	●
Ⓔ Option			
Blank	No	●	●
3M	HP terminal box G1/2	●	●
3N	HP terminal box with lamp G1/2	●	●
F	With companion flange	●	●
3MF	HP terminal box G1/2 + companion flange	●	●
3NF	HP terminal box with lamp G1/2 + Companion flange	●	●
Ⓕ Voltage			
AC100V	100 VAC (50/60 Hz) with full-wave rectifier	●	●
AC200V	200 VAC (50/60 Hz) with full-wave rectifier	●	●
DC24V	24 VDC	●	●

⚠ Precautions for model No. selection

*1: For Item Ⓓ H, HVB612 with orifice size ø12 is not available.
*2: For 3M/3N/3MF/3NF of Item Ⓔ with H selected for Item Ⓓ, AC voltage is not available.
*3: Surge suppressor is included as standard in the models with full-wave rectifier.



General Purpose Valves
Catalog No. CB-03-1SA

Air operated valve for chemical liquids

AMD3*3R Series

P4 compliant as standard

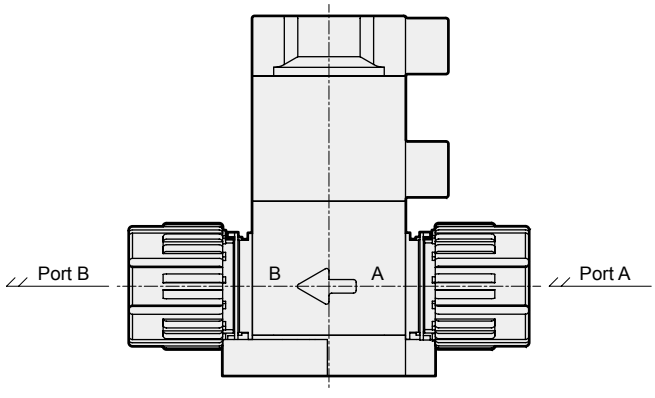
RoHS CAD

Specifications

Descriptions		AMD3*3R				
Body option		N (normal body)			B (body with bypass)	
Working fluid		Chemical liquids, pure water, air, N_2 gas (*1)				
Fluid temperature	°C	5 to 120 (*3, *4)			5 to 90	
Proof pressure	MPa	1.0				
Working pressure (A→B)	MPa	0 to 0.5			Refer to figure below for "Working pressure"	
Working pressure (B→A)	MPa	0 to 0.5			Refer to figure below for "Working pressure"	
Valve seat leakage	cm^3/min	0 (water pressure)				
Back pressure	MPa	0 to 0.5			Refer to figure below for "Working pressure"	
Ambient temperature	°C	0 to 60 (0 to 50 when sensor attached)				
Frequency		30 times/min. or less				
Mounting orientation		Unrestricted				
Connection		O.D. ø10/ø12 tube connection (fitting integrated) O.D. 3/8" / 1/2" tube connection (fitting integrated)				
Orifice size	(*5)	ø6	ø7	ø8	ø9	ø10
Cv	(*6)	0.7	1	1.25	1.6	1.8
Bypass orifice size		-			ø2.3	
Operating section	Operating pressure MPa	NC/NO: 0.35 to 0.5 Double acting: 0.3 to 0.4				
	Operating port	Rc1/8 (operation ports used NC: port Y NO: port X Double acting: ports X, Y)				
Sensor		Refer to General Purpose Valves (catalog No. CB-03-1SA).				

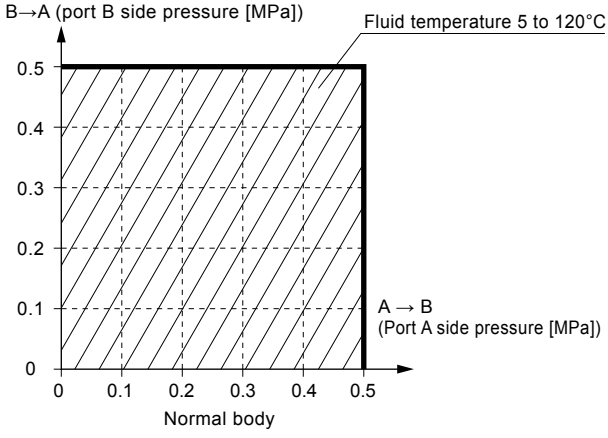
*1: Check the compatibility of product structural materials, working fluids and atmosphere. (Refer to the compatibility check list described in the General Purpose Valves (catalog No. CB-03-1SA).)
Body with bypass cannot be used for hydrofluoric acid or chemical liquids containing hydrofluoric acid.
*2: Refer to Wet Fine System/High Purity Chemical Liquid System (Catalog No. CB-031A) for flow characteristics.
*3: For hydrofluoric acid or chemical liquids containing hydrofluoric acid, use within the range of 5 to 80°C.
*4: 5 to 100°C if the connection is F-LOCK60 Series fitting.
*5: Check the orifice size of each model in How to order.
*6: Cv is the value at 23°C temperature.

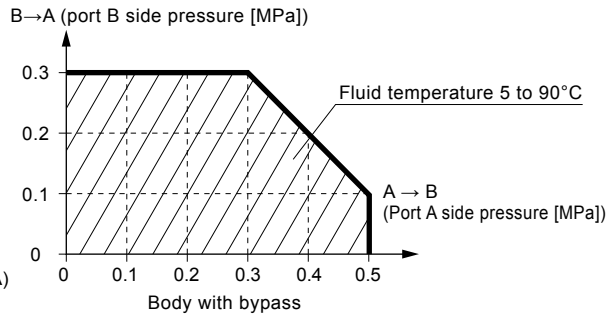
Structure and parts list



Part name	Material
Actuator	PVDF and others
Diaphragm	PTFE
Body	PFA, PTFE
Mounting plate	PVDF

Working pressure





*Refer to Wet Fine System/High Purity Chemical Liquid System (Catalog No. CB-031A) for details of the AMDZ*3R, 0*3R, 4*3R and 5*3R specifications.

How to order

AMD3 (1) 3R - (10UP) - (00) (N) (4) (F)

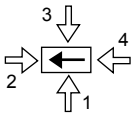
- (1) Ⓐ Actuation
- 3R
- (10UP) Ⓑ Connection
- (00) Ⓒ Actuator option
- (N) Ⓓ Body option
- (4) Ⓔ Operating port direction
- (F) Ⓕ Mounting method

Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)
3	Double acting

Code	Content / Orifice size	Ⓑ Connection (*1) 10UP	10BUP	12UP	15BUP	10UR	10BUR	12UR	15BUR
		Super 300 Pillar fitting P Series integrated				F-LOCK 60 Series fitting integrated			
		ø10 x ø8 tube connection	3/8" x 1/4" tube connection	ø12 x ø10 tube connection	1/2" x 3/8" tube connection	ø10 x ø8 tube connection	3/8" x 1/4" tube connection	ø12 x ø10 tube connection	1/2" x 3/8" tube connection
	Orifice size	ø8		ø10		ø7	ø6	ø9	
Ⓒ Actuator option									
00	ON/OFF only (with indicator)	●	●	●	●	●	●	●	●
10	With flow rate adjustment	●	●	●	●	●	●	●	●
With sensor	Transistor / Cable direction (*2) / Cable length								
A1	NPN, Operating port side, 1 m	●	●	●	●	●	●	●	●
A3	NPN, Operating port side, 3 m	●	●	●	●	●	●	●	●
B1	NPN, Opposite side to operating port, 1 m	●	●	●	●	●	●	●	●
B3	NPN, Opposite side to operating port, 3 m	●	●	●	●	●	●	●	●
C1	PNP, Operating port side, 1 m	●	●	●	●	●	●	●	●
D1	PNP, Opposite side to operating port, 1 m	●	●	●	●	●	●	●	●

Ⓓ Body option		Body material			
N	Normal body	PFA	PFA	PTFE	PTFE
B	Body with bypass	PTFE	PFA	PTFE	PTFE

Ⓔ Operating port direction (*2)



With valve viewed from above, ← indicates fluid flow direction and ⇦ operating port direction.

	Ⓑ Connection (*1) 10UP	10BUP	12UP	15BUP	10UR	10BUR	12UR	15BUR
4	●	●	●	●	●	●	●	●
1	●	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●	●
3	●	●	●	●	●	●	●	●

Ⓕ Mounting method (*2)		Ⓑ Connection (*1) 10UP	10BUP	12UP	15BUP	10UR	10BUR	12UR	15BUR
F	Flange mounting	●	●	●	●	●	●	●	●
H	4-point flange mounting	●	●	●	●	●	●	●	●
X	Bottom mounting	●	●	●	●	●	●	●	●

Precautions for model No. selection

*1: Made to order if F-LOCK60 Series fitting and body material are PTFE.
Contact CKD for other connection methods.

*2: Refer to external dimensions of Wet Fine System/High Purity Chemical Liquid System (Catalog No. CB-031A) for operating port direction, sensor cable direction, and mounting plate.



Dry Fine System/high purity gas control system components
Catalog No. CB-035A

Air operated valve for process gas

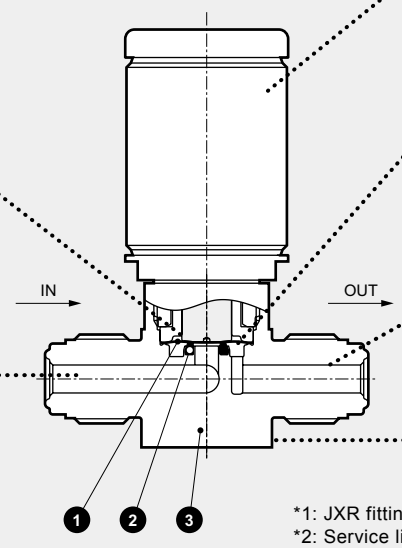
AGD0$^{1}_{2}$R Series

● Metal diaphragm ● Compact

RoHS CAD

Basic performance is maintained while saving more space.

- It can be used continuously at 80°C
- Zero particle generation is achieved with optimal seal structure and improved surface roughness
- Electrolytic polishing specification



- Slim actuator with an outer diameter of ø26
- Ni-Co alloy diaphragm with high corrosion resistance and long service life (track record of 4 million times *2)
- Connection uses JXR fitting *1 as standard
- □21 mm compact body

Gas contact part materials

No.	Part name	Material
1	Diaphragm	Ni-Co alloy
2	Valve seat	PCTFE
3	Body	SUS316L

*1: JXR fitting can be connected to VCR fitting.
*2: Service life when the working fluid is inert gas within the specified range and does not contain solids such as reaction products.

Compatibility table by variation

	AGD0*R
Port size	1/4" double barbed fitting, 1/4" JXR fitting
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Note: Use after checking the compatibility of the working fluid with the wetted part materials.

AGD0 1 R - 4R - X ○

Code	Content
Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)
Ⓑ Connection	
4RM	1/4" JXR male fitting
4R	1/4" JXR female fitting

Ⓐ Actuation
Ⓑ Connection

Specifications

Descriptions	AGD01R	AGD02R
Working fluid	Inert gas/process gas	
Working pressure Pa(abs)-MPa(G)	1.3 x 10^{-6} to 0.99	
Fluid temperature °C	5 to 80	
Operating ambient temperature °C	5 to 80	
Storage ambient temperature °C	-10 to 80	
Valve seat leakage Pa·m^3/s (He)	1.0 x 10^{-10} or less	
External leakage Pa·m^3/s (He)	2.8 x 10^{-12} or less	
Cv (23°C, under pressurization)	0.1	
Connection	1/4" JXR male fitting 1/4" JXR female fitting	
Actuation	NC (normally closed)	NO (normally open)
Operating pressure MPa	0.4 to 0.6	0.4 to 0.5
Operating port	M5	
Weight kg	0.15 *1	

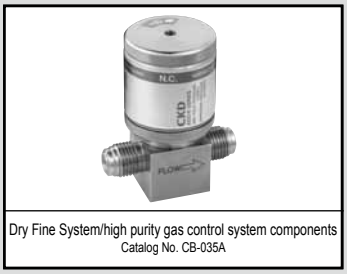
*1: Values with AGD01R-4RM (1/4" JXR male fitting).

Precautions for model No. selection

Made to order. Contact CKD for details.

Safety precautions

To ensure correct and safe use of this product, read the precautions described in Dry Fine System/high purity gas control system components (Catalog No. CB-035A).



Dry Fine System/high purity gas control system components
Catalog No. CB-035A

Air operated valve for process gas

AGD1 1/2 R Series
AGD2 1/2 R Series

● Metal diaphragm ● Standard

RoHS CAD

Specifications

Descriptions	AGD1*R	AGD2*R
Working fluid	Inert gas/process gas	
Working pressure Pa(abs)-MPa(G)	1.3×10^{-6} to 0.99	
Fluid temperature °C	5 to 80	
Operating ambient temperature °C	5 to 80	
Storage ambient temperature °C	-10 to 80	
Valve seat leakage Pa·m³/s (He)	1.0×10^{-10} or less	
External leakage Pa·m³/s (He)	2.8×10^{-12} or less	
Cv (23°C, under pressurization)	0.3	0.65
Connection	1/4" JXR male fitting 1/4" JXR female fitting 1/4" double barbed fitting	3/8" JXR male fitting 3/8" JXR female fitting 3/8" double barbed fitting
Actuation	NC (normally closed) NO (normally open)	NC (normally closed) NO (normally open)
Operating pressure MPa	NC:0.4 to 0.6 NO:0.4 to 0.5	NC:0.4 to 0.6 NO:0.4 to 0.5
Operating port	M5	
Weight kg	0.26 *1	0.59 *1

*1: Values with AGD11R-4RM (1/4" JXR male fitting), AGD21R-6RM (3/8" JXR male fitting).

Safety precautions

To ensure correct and safe use of this product, read the precautions described in Dry Fine System/high purity gas control system components (Catalog No. CB-035A).

Compatibility table by variation

	AGD1*R	AGD2*R
Port size	1/4" double barbed fitting, 1/4" JXR fitting	3/8" double barbed fitting, 3/8" JXR fitting
P4	▲	▲

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

Note: Use after checking the compatibility of the working fluid with the wetted part materials.

How to order

AGD1 (1) R- (4R) -X ( )

Model No.

Ⓐ Actuation

Code	Content
Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)

Ⓑ Connection

Code	Content
Ⓑ Connection	
4RM	1/4" JXR male fitting
4R	1/4" JXR female fitting
4S	1/4" double barbed fitting

AGD2 (1) R- (6R) -X ( )

Model No.

Ⓐ Actuation

Code	Content
Ⓐ Actuation	
1	NC (normally closed)
2	NO (normally open)

Ⓑ Connection

Code	Content
Ⓑ Connection	
6RM	3/8" JXR male fitting
6R	3/8" JXR female fitting
6S	3/8" double barbed fitting

Precautions for model No. selection

Made to order. Contact CKD for details.



Dry Fine System/high purity gas control system components
Catalog No. CB-035A

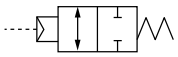
Air operated valve for high vacuum NC

AVB*13 Series

● Molded bellows method ● Stainless steel body compact

RoHS CAD

Specifications

Descriptions	AVB513	AVB613	AVB713	AVB813
Working fluid	Vacuum and inert gas			
Working pressure Pa (abs)	1.3×10^{-6} to 1×10^{5}			
Max. working differential pressure MPa	0.1			
Valve seat leakage Pa·m³/s (He)	1.3×10^{-10} or less			
External leakage Pa·m³/s (He)	1.3×10^{-11} or less			
Proof pressure MPa	0.3			
Fluid temperature °C	5 to 60			
Ambient temperature °C	0 to 60 (no freezing)			
Orifice size mm	ø24	ø40	ø50	ø80
Stroke length mm	10	20	22	32
Conductance *1 ℓ/s	13	52	80	242
Connection	NW25	NW40	NW50	NW80
Operating pressure MPa	0.4 to 0.6			
JIS symbol	 NC			

*1: The conductance value is the theoretical calculation value in the molecular region, and not the actual measured value.
*2: Grease for vacuum is applied to the O-rings of outer seal parts.

How to order

AVB 6 1 3 - X

Model No.

Ⓐ Series

Actuation
NC

Code	Content
Ⓐ Series	
5	Orifice size ø24
6	Orifice size ø40
7	Orifice size ø50
8	Orifice size ø80

Precautions for model No. selection

*1: Switch must be ordered separately
*2: Refer to Intro Pages 21 to 24 for switches.
*3: Made to order. Contact CKD for details.

Compatibility table by variation

	AVB**3
Port size	NW25, NW40, NW50, NW80
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

Note: Use after checking the compatibility of the working fluid with the gas-contacting materials.



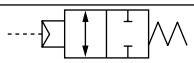
Dry Fine System/high purity gas control system components
Catalog No. CB-035A

Air operated valve for high vacuum NC

AVB*17 Series

● Molded bellows method Aluminum body

Specifications

Descriptions		AVB217	AVB317	AVB417	AVB517	AVB617
Working fluid		Vacuum and inert gas				
Working pressure	Pa (abs)	1.3×10^{-6} to 1×10^{5}				
Max. working differential pressure	MPa	0.1				
Valve seat leakage	Pa·m³/s (He)	1.3×10^{-10} or less				
External leakage	Pa·m³/s (He)	1.3×10^{-11} or less				
Proof pressure	MPa	0.3				
Fluid temperature	°C	5 to 60 (5 to 150) *1				
Ambient temperature	°C	0 to 60 (no freezing)				
Orifice size	mm	ø17	ø24	ø39	ø48	ø68
Conductance *2	ℓ/s	5	13	43	74	166
Connection		NW16	NW25	NW40	NW50	NW63
Operating pressure	MPa	0.4 to 0.6				
Weight	kg	0.4	0.5	1.2	2.0	3.5
JIS symbol		 NC				

*1: The values in ( ) are for high temperature specifications.
*2: The conductance value is the theoretical calculation value in the molecular region, and not the actual measured value.
*3: Grease for vacuum is applied to the O-rings of outer seal parts.

How to order

AVB 4 17 -X ☐

- AVB: Model No.
- 4: Ⓐ Series
- 17: Actuation NC
- -X ☐

Code	Content
Ⓐ Series	
2	Orifice size ø17
3	Orifice size ø24
4	Orifice size ø39
5	Orifice size ø48
6	Orifice size ø68

Precautions for model No. selection

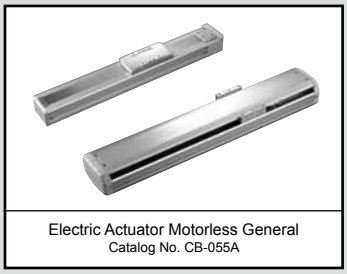
*1: Switch must be ordered separately
*2: Refer to Intro Pages 21 to 24 for switches.
*3: Contact CKD regarding operating port positions and switch mounting positions.
*4: Made to order. Contact CKD for details.

Compatibility table by variation

	AVB**7
Port size	NW16, NW25, NW40, NW50, NW63
P4	▲

● : Standard ○ : Made to order ▲ : Contact CKD ☐ : Not applicable

Note: Use after checking the compatibility of the working fluid with the gas-contacting materials.



Electric Actuator Motorless General
Catalog No. CB-055A

Electric actuator Slider

ETS Series

● Applicable motor capacity: 100 W/200 W/400 W/750 W

RoHS

Specifications

Descriptions		Applicable motor size: 100 W													
		Model													
		ETS-05			ETS-06			ETS-10				ETS-12			
Ball screw size	mm	ø12			ø12			ø16				ø16			
Ball screw accuracy grade		C7													
Screw lead	mm	2	5	10	2	5	10	5	10	16	20	5	10	16	20
Repeatability	mm	±0.02													
Max. load capacity *1	Horizontal kg	10	10	5	30	30	15	50	30	22	18	50	30	22	18
	Vertical kg	7	3	1.5	15	10	5	12	8	5	3	12	8	5	3
Max. speed *1	mm/s	100	250	500	100	250	500	250	500	800	1000	250	500	800	1000
Stroke length *2	mm	50 to 800			50 to 800			50 to 1050				50 to 1050			
Thrust	N	854	341	170	854	341	170	341	170	106	85	341	170	106	85

Descriptions		Applicable motor size: 200 W													
		Model													
		ETS-10				ETS-12				ETS-13				ETS-14			
Ball screw size	mm	ø16				ø16				ø16				ø16			
Ball screw accuracy grade		C7															
Screw lead	mm	5	10	16	20	5	10	16	20	5	10	16	20	5	10	16	20
Repeatability	mm	±0.02															
Max. load capacity *1	Horizontal kg	50	30	22	18	50	30	22	18	70	47	30	24	95	75	44	35
	Vertical kg	12	8	5	3	12	8	5	3	12	12	6	4	27	18	7	6
Max. speed *1	mm/s	250	500	800	1000	250	500	800	1000	250	500	800	1000	250	500	800	1000
Stroke length *2	mm	50 to 1050				50 to 1050				50 to 1050				50 to 1050			
Thrust	N	683	341	213	174	683	341	213	174	683	341	213	174	683	341	213	174

Descriptions		Applicable motor size: 400 W											
		Model											
		ETS-13				ETS-14				ETS-17			
Ball screw size	mm	ø16				ø16				ø20			
Ball screw accuracy grade		C7											
Screw lead	mm	5	10	16	20	5	10	16	20	5	10	20	40
Repeatability	mm	±0.02											
Max. load capacity *1	Horizontal kg	70	47	30	24	110	88	48	40	120	110	75	35
	Vertical kg	17	12	6	4	33	22	10	8	40	30	14	7
Max. speed *1	mm/s	250	500	800	1000	250	500	800	1000	250	500	1000	2000
Stroke length *2	mm	50 to 1050				50 to 1050				50 to 1250			
Thrust	N	1388	694	483	347	1388	694	483	347	1388	694	483	347

Descriptions		Applicable motor size: 750 W							
		Model							
		ETS-17				ETS-22			
Ball screw size	mm	ø20				ø25			ø20
Ball screw accuracy grade		C7							
Screw lead	mm	5	10	20	40	5	10	25	40
Repeatability	mm	±0.02							
Max. load capacity *1	Horizontal kg	120	120	83	50	150	150	120	60
	Vertical kg	50	40	25	10	55	45	20	10
Max. speed *1	mm/s	250	500	1000	2000	250	500	1250	2000
Stroke length *2	mm	50 to 1250				50 to 1500			
Thrust	N	2100	1050	525	260	2100	1050	420	260

*1: Acceleration and deceleration time is the value at 0.2 sec.
*2: Stroke length is 50 pitch.

Compatibility table by variation

	ETS
P4	●

● : Standard ○ : Made to order
▲ : Contact CKD ▭ : Not applicable

How to order

ETS - 06 - 05 040 - E M 1 B C B D P - M - U - P4

- Model No.: ETS
- Ⓐ Body size: 06
- Ⓑ Screw lead: 05
- Ⓒ Stroke length: 040
- Ⓓ Motor mounting method: E
- Ⓔ Mounted motor specification: M
- Ⓕ Motor capacity: 1
- Ⓖ Brake: B
- Ⓗ Origin sensor: C
- Ⓘ Limit sensor: B
- Ⓙ Grease nipple: D
- Ⓚ Positioning pin hole: P
- Ⓛ Special specifications: M
- Ⓜ Anti-rust treatment: U
- P4

[Example of model No.]

ETS-06-05040-EM1BCBDN-M-U-P4

- Ⓐ Body size: Width 65 × height 56 mm
- Ⓑ Screw lead: 5 mm
- Ⓒ Stroke length: 400 mm
- Ⓓ Motor mounting method: External direct mounting
- Ⓔ Mounted motor specifications: Manufactured by Mitsubishi Electric Co., Ltd.
- Ⓕ Motor capacity: 100 W
- Ⓖ Brake: Yes
- Ⓗ Origin sensor: Outside motor side
- Ⓘ Limit sensor: Outside
- Ⓙ Grease nipple: Mounting direction bottom/without
- Ⓚ Positioning pin hole: Yes
- Ⓛ Special specifications: Magnetic slider
- Ⓜ Anti-rust treatment: Yes

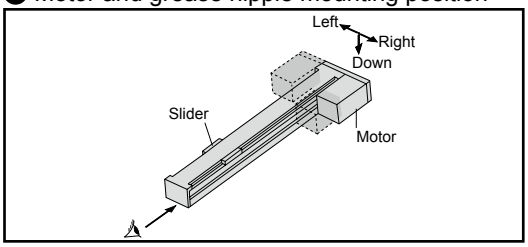
* Actuator is the same as the type with no brake except when the motor mounting method is "B (built-in)".

Ⓖ Select "N" for all types with brakes.

Ⓔ Mounted motor specification

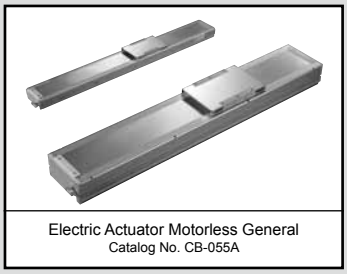
Manufacturer	100 W	200 W	400 W	750 W
Mitsubishi Electric Corporation	M	M	M	M
Delta Electronics Co., Ltd.	M	M	M	M
Sanyo Denki Co., Ltd.	M	M	M	-
YASKAWA Electric Corporation	Y	Y	Y	Y
Keyence Corporation	Y	Y	Y	Y
Panasonic Co., Ltd.	P	P	P	P
OMRON Corporation	M	P	P	P

Ⓙ Motor and grease nipple mounting position



Code	Content
Ⓐ Body size (mm)	
05	Width 51 x height 54
06	Width 65 x height 56
10	Width 102 x height 66
12	Width 102 x height 70
13	Width 135 x height 78
14	Width 135 x height 78
17	Width 170 x height 97
22	Width 220 x height 122
Ⓑ Screw lead	
02	2 mm
05	5 mm
10	10 mm
16	16 mm
20	20 mm
25	25 mm
40	40 mm
Ⓒ Stroke length	
010 to 150	100 mm to 1500 mm (50 mm pitch) Display is 1/10.
Ⓓ Motor mounting method	
E	External direct mounting
B	Built-in *
Ⓔ Mounted motor specification	
M	Select the mounted motor specification from the table below.
Y	
P	
Ⓕ Motor capacity (refer to table 2 on the next page)	
1	100 W
2	200 W
4	400 W
8	750 W
Ⓖ Brake	
N	None
B	With brake *
Ⓗ Origin sensor (1 pc)	
N	None
A	Inside motor side
B	Inside motor opposite side
C	Outside motor side (attached at shipment)
D	Outside motor opposite side (attached at shipment)
Ⓘ Limit sensor (2 pcs)	
N	None
A	Inside
B	Outside (attached at shipment)
Ⓙ Grease nipple	
N	Body mounting direction standard/without grease nipple
D	Body mounting direction bottom/without grease nipple
R	Right
L	Left
Ⓚ Positioning pin hole	
N	None
P	Yes
Ⓛ Special specifications	
M *1	Magnetic slider (magnetic iron type sliding washer)
Ⓜ Anti-rust treatment	
N	None
U	Yes (RAYDENT treatment)

*1 : Ⓐ Body size: "05," "06" only.



Electric Actuator Motorless General
Catalog No. CB-055A

Electric actuator Low dust generation

ECS Series

● Applicable motor capacity: 100 W/200 W/400 W/750 W

RoHS

Specifications

Descriptions		Applicable motor capacity: 100 W														Applicable motor capacity: 200 W			
		Model																	
		ECS-05			ECS-06			ECS-10				ECS-12				ECS-14			
Ball screw size	mm	12			12			16				16				16			
Ball screw accuracy grade		C7														C7			
Screw lead	mm	2	5	10	2	5	10	5	10	16	20	5	10	16	20	5	10	16	20
Repeatability	mm	±0.02														±0.02			
Max. load capacity	Horizontal kg	10	10	5	30	30	15	50	30	22	18	50	30	22	18	95	75	44	35
*1	Vertical kg	7	3	1.5	15	10	5	12	8	5	3	12	8	5	3	27	18	7	6
Max. speed *1	mm/s	100	250	500	100	250	500	250	500	800	1000	250	500	800	1000	250	500	800	1000
Stroke length *2	mm	50 to 800			50 to 800			50 to 1050				50 to 1050				50 to 1050			
Thrust	N	825	330	165	854	341	170	341	170	106	85	341	170	106	85	683	341	213	174

*1: Acceleration and deceleration time is the value at 0.2 sec.
*2: Stroke length is 50 pitch.

Descriptions		Applicable motor capacity: 400 W								Applicable motor capacity: 750 W							
		Model															
		ECS-14				ECS-17				ECS-17				ECS-22			
Ball screw size	mm	16				20				20				25			20
Ball screw accuracy grade		C7								C7							
Screw lead	mm	5	10	16	20	5	10	20	40	5	10	20	40	5	10	25	40
Repeatability	mm	±0.02								±0.02							
Max. load capacity	Horizontal kg	110	88	48	40	120	110	75	35	120	120	83	50	150	150	120	60
*1	Vertical kg	33	22	10	8	40	30	14	7	50	40	25	10	55	45	20	10
Max. speed *1	mm/s	250	500	800	1000	250	500	1000	2000	250	500	1000	2000	250	500	1250	2000
Stroke length *2	mm	50 to 1050				50 to 1250				50 to 1250				50 to 1500			
Thrust	N	1388	694	433	347	1388	694	347	174	2100	1050	525	260	2100	1050	420	260

*1: Acceleration and deceleration time is the value at 0.2 sec.
*2: Stroke length is 50 pitch.

Compatibility table by variation

	ECS
P4	●

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

How to order

ECS - 06 - 05 010 - E M 1 B C B N P - M - U - P4

- Model No.
- Ⓐ Body size
- Ⓑ Screw lead
- Ⓒ Stroke length
- Ⓓ Motor mounting method
- Ⓔ Mounted motor specification
- Ⓕ Motor capacity
- Ⓖ Brake
- Ⓗ Origin sensor
- Ⓘ Limit sensor
- Ⓙ Grease nipple
- Ⓚ Positioning pin hole
- Ⓛ Special specifications
- Ⓜ Anti-rust treatment

Code	Content
Ⓐ Body size (mm)	
05	Width 51 x height 54
06	Width 65 x height 56
10	Width 102 x height 78.5
12	Width 102 x height 82.5
14	Width 135 x height 91
17	Width 170 x height 107
22	Width 220 x height 138
Ⓑ Screw lead	
02	2 mm
05	5 mm
10	10 mm
16	16 mm
20	20 mm
25	25 mm
40	40 mm
Ⓒ Stroke length	
010 to 150	100 mm to 1500 mm (50 mm pitch) Display is 1/10.
Ⓓ Motor mounting method	
E	External direct mounting
B	Built-in *
Ⓔ Mounted motor specification	
M	Select the mounted motor specification from the table below.
Y	
P	
Ⓕ Motor capacity	
1	100 W
2	200 W
4	400 W
8	750 W
Ⓖ Brake	
N	None
B	With brake *
Ⓗ Origin sensor (1 pc)	
N	None
A	Inside motor side
B	Inside motor opposite side
C	Outside motor side (attached at shipment)
D	Outside motor opposite side (attached at shipment)
Ⓘ Limit sensor (2 pcs)	
N	None
A	Inside
B	Outside (attached at shipment)
Ⓙ Grease nipple	
N	Body mounting direction standard/without
R	Right
L	Left
Ⓚ Positioning pin hole	
N	None
P	Yes
Ⓛ Special specifications	
M *1	Magnetic slider (magnetic iron sliding washer)
Ⓜ Anti-rust treatment	
N	None
U	Yes (RAYDENT treatment)

*1 : Ⓐ Body size: "05," "06" only.

[Example of model No.]

ECS-06-05010-EM1BCBNN-M-U-P4

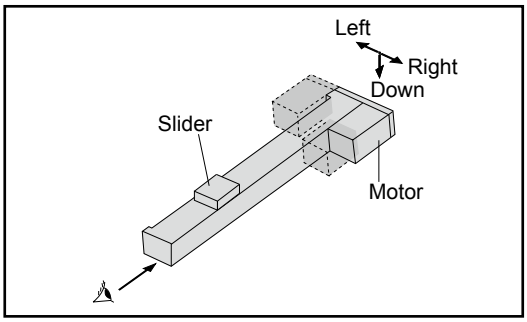
- Ⓐ Body size: Width 65 × height 54 mm
- Ⓑ Screw lead: 5 mm
- Ⓒ Stroke length: 100 mm
- Ⓓ Motor mounting method: External direct mounting
- Ⓔ Mounted motor specifications: Manufactured by Mitsubishi Electric Co., Ltd.
- Ⓕ Motor capacity: 100 W
- Ⓖ Brake: With brake
- Ⓗ Origin sensor: Outside motor side
- Ⓘ Limit sensor: Outside
- Ⓙ Grease nipple: Mounting direction standard
- Ⓚ Positioning pin hole: Yes
- Ⓛ Special specifications: Magnetic slider
- Ⓜ Anti-rust treatment: Yes

* Actuator is the same as the type with no brake except when the motor mounting method is "B (built-in)". Ⓖ Select "N" for all types with brakes.

Ⓔ Mounted motor specification

Manufacturer	100 W	200 W	400 W	750 W
Mitsubishi Electric Corporation	M	M	M	M
Delta Electronics Co., Ltd.	M	M	M	M
Sanyo Denki Co., Ltd.	M	M	M	-
YASKAWA Electric Corporation	Y	Y	Y	Y
Keyence Corporation	Y	Y	Y	Y
Panasonic Corporation	P	P	P	P
OMRON Corporation	M	P	P	P

Ⓙ Motor and grease nipple mounting position



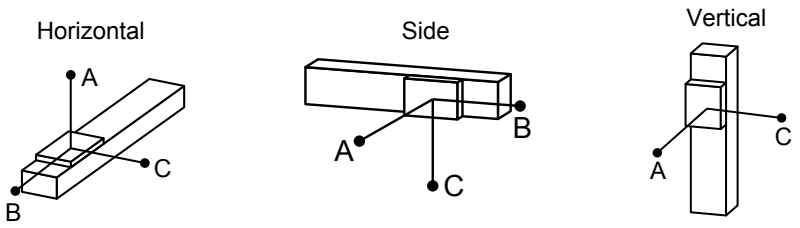
ETS/ECS Model Selection Check Sheet → **CKD** (Contact)

Fill in the form and send to the nearest CKD Sales Office. We will respond with the model selection results.

Customer:

Company		Department	
Name		E-mail	
TEL		FAX	

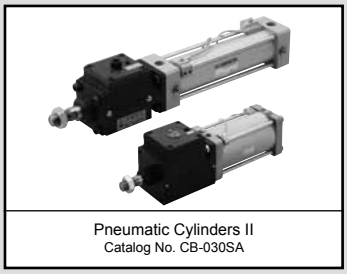
Selecting conditions:

Desired model	ETS ECS -	
Basic specifications	Max. stroke length:	mm, ball screw lead: mm
Operating conditions	Travel stroke:	mm, travel time: sec
	Set speed:	mm/s
	Set acceleration/deceleration:	mm/s^2 (set acceleration/deceleration time: sec)
	Repeatability: ±	mm
Load conditions	Mounting orientation: Horizontal (upward) / Horizontal (side) / Vertical / Other 	
	Load weight:	kg
	Overhang (distance from the slider center to the load center of gravity): A direction mm, B direction mm, C direction mm	
	Pressing load: No / Yes (N) Operating / Stopped Direction of the force applied to slider center ( )	
Working environment	Ambient temperature:	°C, ambient humidity: %
	Atmosphere:	
Motor used	Manufacturer:	, Model No.:
	Motor capacity:	W
Remarks		

Peripheral devices

Not compliant with the standards of P4 Series as defined by CKD. Contact CKD for details.

	Page
Brake cylinder JSC3/JSC4	325
Electro pneumatic regulator EVR	330
Electro pneumatic regulator EVS2	334
Clean exhaust filter FAC	335
Metering valve with silencer SMW2	339
Exhaust cleaner FA	340
ABSODEX high response AX*000T	341
ABSODEX compact AX6000M	353
ABSODEX high precision AX7000X	356
Electric actuator Belt ETV	360
Electric actuator Low dust generation belt ECV	363



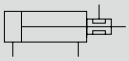
Pneumatic Cylinders II
Catalog No. CB-030SA

Brake cylinder Double acting, single rod/double acting, no-lubrication

JSC3/JSC4-N Series

● Bore size:
JSC3: ø40/ø50/ø63/ø80/ø100
JSC4: ø125/ø140/ø160/ø180

JIS symbol



RoHS CAD

Specifications

Descriptions		JSC3 (with switch)					JSC3-S (with switch)					JSC4-N			
Bore size mm		ø40	ø50	ø63	ø80	ø100	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160	ø180
Actuation		Double acting					Double acting/low pressure release					Double acting			
Working fluid		Compressed air													
Max. working pressure MPa		1.0													
Min. working pressure MPa	Brake section	0.3					0.25					0.3			
	Cylinder	0.1					0.1					0.05			
Proof pressure MPa		1.6													
Ambient temperature °C		-10 to 60 (no freezing)					-10 to 60 (no freezing)					-5 to 60 (no freezing)			
Port size	Brake section	Rc1/8		Rc1/4		Rc3/8	Rc1/8		Rc1/4		Rc3/8	Rc1/2			
	Cylinder	Rc1/4	Rc3/8		Rc1/2		Rc1/4	Rc3/8		Rc1/2		Rc1/2	Rc3/4		
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360) $^{+1.4}_{0}$ (to 1000)					$^{+1.0}_{0}$ (to 360) $^{+1.4}_{0}$ (to 1000)					$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 1000), $^{+1.8}_{0}$ (to 2000)			
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)													
Cushion		Air cushion													
Effective air cushion length mm		14.6	16.6		20.6	23.6	14.6	16.6		20.6	23.6	21.6			
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)													
Holding force N		980	1569	2451	3922	6178	784	1255	1961	3138	4941	9600	12000	15800	20000
Allowable absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8	4.29	8.37	15.8	27.9	49.8	63.6	91.5	116	152
	Without cushion	0.067	0.079	0.079	0.201	0.301	0.067	0.079	0.079	0.201	0.301	0.371	0.386	0.386	0.958
		Note: Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.													

Stroke length

Bore size (mm)		Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)
JSC3	ø40	50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	1600	1
	ø50			2000	
	ø63			2500 *2	
	ø80		700		
	ø100		800		
JSC4	ø125	50, 75, 100, 150, 200, 250, 300	800	2000	
	ø140				
	ø160				
	ø180		900		

*1: If the max. stroke length is exceeded, product specifications may not be met, depending on operating conditions.
Refer to "Pneumatic Cylinders II" (Catalog No. CB-030SA) for details.
The custom stroke length is available in 1 mm increments.
*2: The max. stroke length available for ø63 to ø100 bore size models with bellows is 2000 mm.

How to order (ø40 to ø100)

Without switch (built-in magnet for switch)

JSC3 - ( ) —— LB - 40 ( ) B - 50 —— S I

With switch (built-in magnet for switch)

JSC3 - ( ) —— LB - 40 ( ) B - 50 - T0H - R - S I

With strong magnetic field proof (for H0, H0Y switches) switch (built-in magnet for switch)

JSC3 - ( ) L2 - LB - 40 ( ) B - 50 - H0 - R - S I

Model No.

A Brake release pressure

B Mounting *1

C Bore size

D Port thread

E Cushion

F Stroke length *2 *3 *4

G Switch model No.
* indicates the lead wire length.

H Switch quantity *5

I Option *7

J Accessory *8

Code	Content
A Brake release pressure	
Blank	Standard (0.3 MPa)
S	Low pressure release (0.25 MPa)
B Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
FC	Head side special flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring attached)
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion
C Bore size (mm)	
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100
D Port thread	
Blank	Rc thread
N	NPT thread (made to order)
G	G thread (made to order)
E Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

F Stroke length (mm)

Bore size	Stroke length *4	Available stroke length	Custom stroke length
ø40	**1 to 600**	**1600**	**In 1 mm increments**
ø50	**1 to 600**	**2000**	
ø63	**1 to 600**	**2500**	
ø80	**1 to 700**	**2500**	
ø100	**1 to 800**	**2500**	

G Switch model No.	
Refer to the switch model numbers on the following page.	
*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)
H Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4 (when there are more than 4 switches, indicate switch quantity.)

I Option

		Max. ambient temperature	Instantaneous max. temperature
J	Bellows	100°C	200°C
L	Bellows	250°C	400°C
M	Piston rod, rod nut material (stainless steel)		
Blank	Cushion needle position R (standard)		
S	Cushion needle position S		
T	Cushion needle position T		
G	With indicator		

J Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

Precautions for model No. selection

*1: Mounting bracket will be shipped assembled with the product.
(Head side special flange is attached separately)
*2: Refer to "Pneumatic Cylinders II" (Catalog No. CB-030SA) when max. stroke length is exceeded.
*3: The max. stroke length available for ø63 to ø100 bore size models with bellows is 2000 mm.
*4: Refer to "Pneumatic Cylinders II" (Catalog No. CB-030SA) for the min. stroke length with switch.
*5: When selecting TA or TB mounting, the switch quantity is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*6: For S, T, and G position indications, check the respective dimensions.
*7: When selecting TA or TB mounting form, the position of the cushion needle cannot be changed. (Cushion needle position S is used with no symbol.)
*8: "I" and "Y" cannot be selected together.
*9: Refer to "Pneumatic Cylinders I (Catalog No. CB-030SA)" for custom specifications of rod end form.

[G] Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
T switch						
TOH*	TOV*	Reed	●	●	1-color display	2-wire
T5H*	T5V*		●	●	Without indicator lamp	
T8H*	T8V*		●	●	1-color display	
T1H*	T1V*	Proximity	●		1-color display	2-wire
T2H*	T2V*			●		
T3H*	T3V*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (made to order)	3-wire
T2YD*	-			●	2-color display	2-wire
T2YDT*	-			●	AC magnetic field	
T2JH*	T2JV*			●	1-color display off-delay	2-wire
H switch						
HO*	-	Reed	●	●	Strong magnetic field proof	2-wire
HOY*	-			●	Strong magnetic field 2-color display	

How to order brake unit

JSC3 - 40 - BRAKE-UNIT

Bore size (Item Ⓒ on the previous page)

● Mounting type FA

JSC3 - FA - 40 - BRAKE-UNIT

Bore size (Item Ⓒ on the previous page)

How to order mounting bracket

● ø40 to ø100

Bore size (mm) / Mounting bracket	ø40	ø50	ø63	ø80	ø100
Foot (LB) *1	JSC3-40-LB	JSC3-50-LB	JSC3-63-LB	JSC3-80-LB	JSC3-100-LB
Flange (FB)	JSC3-40-FB	JSC3-50-FB	JSC3-63-FB	JSC3-80-FB	JSC3-100-FB
Eye bracket (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Clevis bracket (CB) *2	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1: The foot mounting bracket is provided as 2 pcs./set.
*2: A pin and a snap ring are attached.
*3: All mounting brackets have mounting bolts attached.

How to order (ø125 to 180)

Without switch (without magnet for switch)

JSC4-N - **LB** - **125** ○ **B** - **50** ——— **S** **I**

With switch (built-in magnet for switch)

JSC4-LN - **LB** - **125** ○ **B** - **50** - **T0H** - **R** - **S** **I**

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length

Ⓕ Switch model No.
* indicates the lead wire length.

Ⓖ Switch quantity *3

Ⓗ Option

Ⓘ Accessory *4

Code	Content
Ⓐ Mounting	
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring attached)
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion

Ⓑ Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made to order)
G	G thread (made to order)

Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke length	Available stroke length	Custom stroke length
ø125	**1 to 800**	**2000**	**In 1 mm increments**
ø140	**1 to 800**	**2000**	
ø160	**1 to 800**	**2000**	
ø180	**1 to 900**	**2000**	

Ⓕ Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
T0H*	**T0V***	Reed	●	●	1-color display	2-wire
T5H*	**T5V***		●	●	Without indicator lamp	
T8H*	**T8V***		●	●	1-color display	
T1H*	**T1V***	Proximity	●		1-color display	2-wire
T2H*	**T2V***			●		
T3H*	**T3V***			●		3-wire
T3PH*	**T3PV***			●	1-color display (PNP output) (made to order)	3-wire
T2WH*	**T2WV***			●	2-color display	2-wire
T2YH*	**T2YV***			●		
T3WH*	**T3WV***			●		3-wire
T3YH*	**T3YV***			●		
T2JH*	**T2JV***			●	1-color display off-delay	2-wire
T2YD*	-			●	2-color display for AC magnetic field	2-wire
T2YDT*	-			●		

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4

Ⓗ Option

		Max. ambient temperature	Instantaneous max. temperature
J	Bellows	60°C	100°C
K	Bellows	100°C	200°C
L	Bellows	250°C	400°C
M	Piston rod, rod nut material (stainless steel)		
Blank	Cushion needle position (standard)	Standard	
R	Cushion needle position R	T ◎ R	
S	Cushion needle position S	S	
T	Cushion needle position T		
C2	With cushion section check valve		

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped assembled with the product.
*2: Refer to Pneumatic Cylinders II (Catalog No. CB-030SA) for the min. stroke length with switch.
*3: When selecting TA or TB mounting, the switch quantity is limited to "H" (1 on head side) for TA, and R (1 on rod side) for TB.
*4: "I" and "Y" cannot be selected together.

How to order brake unit

JSC4 - **125** - **BRAKE-UNIT**

Bore size

● ø40 to ø100

Material of mounting bracket

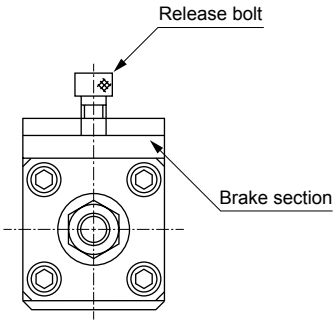
Mounting	Material	Remarks
LB	Steel	Paint
FA/FB	Steel	Paint
CA/CB	Cast iron	Paint
TC	Cast iron	Paint

Release bolt size (hexagon socket head cap screw)

Bore size	Size	
	JSC3	JSC3-V
ø40/ø50	M10×8	M10×29
ø63	M12×9	M12×30
ø80	M14×10	M14×31
ø100	M16×12	M16×40

JSC3, JSC4

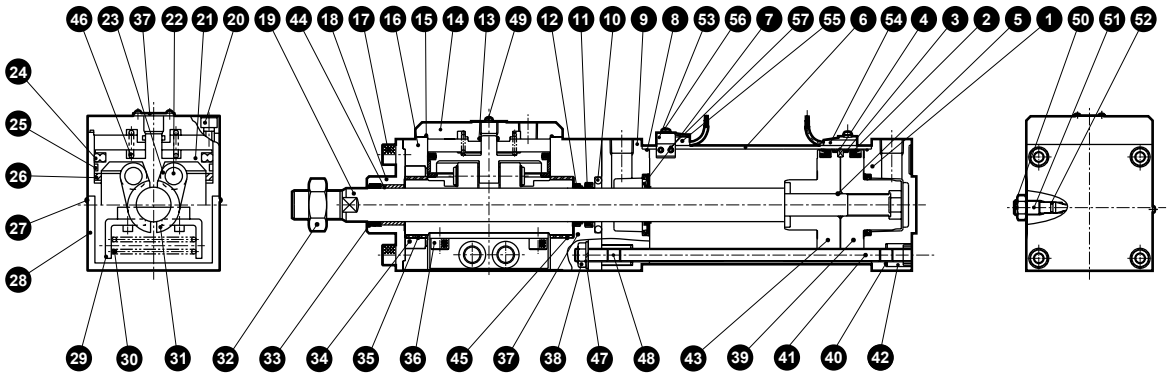
How to release the brake manually



Note: How to release the brake

- The brakes are released by turning the release bolt (attached with product) two or three times to screw it into the female thread (next to brake release port) on top of the brake.
  (Always remove the release bolt during normal use.)
- To manually release the brake, always use the release bolt attached with the product. Using any other bolt may prevent the brake from functioning properly.

Internal structure and parts list



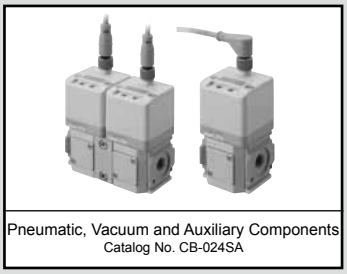
No.	Part name	Material	Remarks
1	Head cover	Aluminum alloy die-casting	Paint
2	Piston packing	Nitrile rubber	
3	Wear ring	Polyacetal resin	
4	Magnet	Plastic	
5	Piston gasket	Nitrile rubber	
6	Cylinder tube	Aluminum alloy	Hard alumite
7	Cushion packing	Nitrile rubber, steel	
8	Cylinder gasket	Nitrile rubber	
9	Rod cover	Aluminum alloy die-casting	Paint
10	Metal seal	Nitrile rubber	
11	Rod packing	Nitrile rubber	
12	Dust wiper	Nitrile rubber	
13	Cap gasket A	Nitrile rubber	
14	Body cap	Cast iron	Nitriding
15	Cap gasket B	Nitrile rubber	
16	Brake body	Aluminum alloy casting	Alumite
17	Hexagon socket head cap screw	Alloy steel	Black finish
18	Rod metal	Steel	Manganese phosphate
19	Piston rod	Steel	Industrial chrome plating
20	Hexagon socket head cap screw	Alloy steel	Black finish
21	Brake piston	Cast iron	Manganese phosphate
22	Parallel pin	Steel	
23	Bearing		
24	Piston packing B	Nitrile rubber	
25	Wear ring	Polyacetal resin	
26	Cushion rubber	Urethane rubber	
27	Cross-recessed pan head machine screw	Steel	Zinc chromate
28	Cover	Steel	Paint
29	Spring holder	Steel	Zinc chromate
30	Spring	Steel	
31	Brake shoe metal	Cast iron	Nickeling
32	Rod nut	Steel	Zinc chromate
33	Dust wiper	Nitrile rubber	
34	DU ring	Steel	Black finish
35	Bush	Oil impregnated bearing alloy	
36	Hexagon socket head cap screw	Alloy steel	Black finish
37	Dust cover	Aluminum alloy	Paint
38	Hexagon nut	Steel	Black finish
39	Piston H	Aluminum alloy die-casting	
40	Tie rod	Steel	Zinc chromate
41	Conical spring washer	Steel	Black finish
42	Round nut	Steel	Zinc chromate
43	Piston R	Aluminum alloy die-casting	
44	Bush B	Oil impregnated bearing alloy	
45	Thrust washer		
46	Spring	Steel	Paint
47	Toothed washer	Steel	Black finish
48	Hexagon socket set screw	Alloy steel	Black finish
49	Cross-recessed pan head machine screw with captive washer	Steel	Zinc chromate
50	Cushion needle	Copper alloy	Nickeling
51	Needle nut	Copper alloy	Nickeling
52	Needle gasket	Nitrile rubber	
With switch			
53	Switch mounting base	Aluminum alloy	
54	Switch holder	Aluminum alloy	
55	Cross-recessed pan head machine screw	Steel	Zinc chromate
56	Hexagon socket set screw	Alloy steel	Black finish
57	Cylinder switch		

Note: Never disassemble the brake section, as the powerful spring installed can be dangerous.

Consumable parts list

Bore size (mm)	Kit No.	Consumable parts No.
ø40	JSC3-40K	2 3 7 8 10 11 12 33 52
ø50	JSC3-50K	
ø63	JSC3-63K	
ø80	JSC3-80K	
ø100	JSC3-100K	

Note: Specify the kit No. when placing an order.

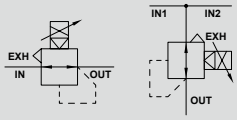


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

High precision electro pneumatic regulator

EVR Series

JIS symbol



Specifications

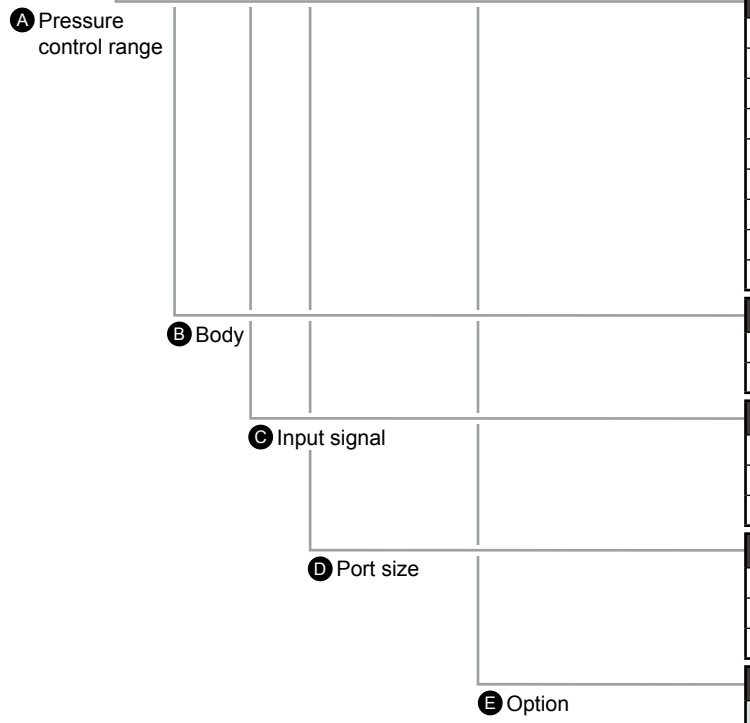
Model No. / Descriptions		EVR-2100 (2109)	EVR-2200 (2209)	EVR-2300 (2309)	EVR-2400 (2409)
Working fluid		Clean compressed air (JIS B8392-1:2012 (ISO 8573-1:2010) [1:3:2])			
Max. working pressure		200 kPa	400 kPa	450 kPa	600 kPa
Min. working pressure		Set pressure +50 kPa			
Proof pressure	Inlet	300 kPa	600 kPa	650 kPa	900 kPa
	Output side	150 kPa	300 kPa	450 kPa	600 kPa
Pressure control range *1		5 to 100 kPa	5 to 200 kPa	5 to 300 kPa	5 to 400 kPa
Power supply voltage		24 VDC ± 10% (stabilized power supply with ripple rate 1% or less)			
Current consumption		0.1 A or less			
Input signal (input impedance)		0-10 V(6 kΩ) 0-5 V(10 kΩ) 4 to 20 mA or 1 to 5 V (250 Ω)			
Analog output (load impedance)		1 to 5 VDC (10 kΩ and over)			
Performance *2 (Setting 1)	Hysteresis	0.3 kPa or less	0.6 kPa or less	1.5 kPa or less	
	Linearity	Within ±0.5 kPa	Within ±1.0 kPa	Within ±2.5 kPa	
	Resolution	0.1 kPa or less	0.2 kPa or less	0.5 kPa or less	
	Repeatability	0.2 kPa or less	0.4 kPa or less	1.0 kPa or less	
Temperature characteristics (Setting 1) Reference temperature 25°C	Zero point fluctuation	±0.06 kPa/°C	±0.12 kPa/°C	±0.30 kPa/°C	
	Span fluctuation	±0.06 kPa/°C	±0.12 kPa/°C	±0.30 kPa/°C	
Max. flow rate (ℓ/min (ANR))		250	400	480	600
Step response (Setting 1)	No load *3	0.2 sec. or less			
Ambient temperature		5 to 50°C			
Mounting orientation		Free			
Degree of protection		IP64 or equivalent (body), IP67 (cable connector) *4			
Weight		300 g(320 g)			

Model No. / Descriptions		EVR-2500 (2509)	EVR-2600 (2609)	EVR-2700 (2709)	EVR-2800 (2809)	EVR-2900 (2909)
Working fluid		Clean compressed air (JIS B8392-1:2012 (ISO 8573-1:2010) [1.3.2])				
Max. working pressure		700 kPa	750 kPa	850 kPa	950 kPa	1,000 kPa
Min. working pressure		Set pressure +50 kPa				
Proof pressure	Inlet	1,050 kPa	1,120 kPa	1,200 kPa	1,400 kPa	1,500 kPa
	Output side	750 kPa	900 kPa	1,050 kPa	1,200 kPa	1,350 kPa
Pressure control range *1		5 to 500 kPa	10 to 600 kPa	10 to 700 kPa	10 to 800 kPa	10 to 900 kPa
Power supply voltage		24 VDC ± 10% (stabilized power supply with ripple rate 1% or less)				
Current consumption		0.1 A or less				
Input signal (input impedance)		0-10 V(6 kΩ) 0-5 V(10 kΩ) 4 to 20 mA or 1 to 5 V (250 Ω)				
Analog output (load impedance)		1 to 5 VDC (10 kΩ and over)				
Performance *2 (Setting 1)	Hysteresis	1.5 kPa or less	3.0 kPa or less			
	Linearity	Within ±2.5 kPa	Within ±5.0 kPa			
	Resolution	0.5 kPa or less	0.9 kPa or less			
	Repeatability	1.0 kPa or less	1.8 kPa or less			
Temperature characteristics (Setting 1) Reference temperature 25°C	Zero point fluctuation	±0.30 kPa/°C	±0.60 kPa/°C			
	Span fluctuation	±0.30 kPa/°C	±0.60 kPa/°C			
Max. flow rate (ℓ/min (ANR))		800	850	900	950	1,000
Step response (Setting 1)	No load *3	0.2 sec. or less				
Ambient temperature		5 to 50°C				
Mounting orientation		Free				
Degree of protection		IP64 or equivalent (body), IP67 (cable connector) *4				
Weight		300 g(320 g)				

*1: 1% F.S. or less input signal stops control.
*2: The condition of the values above is: 24 ± 0.1 VDC power supply voltage, 25 ± 3°C ambient temperature, no load, working pressure from +0.05 MPa max. control pressure to the max. working pressure, and 10 to 100% control pressure.
In addition, when the secondary side is a closed circuit, pressure fluctuations will occur if the product is used for blowing or for similar applications.
*3: Working pressure: Max. working pressure, step amount: ┌ 50% F.S. → 100% F.S.
50% F.S. → 60% F.S.
└ 50% F.S. → 40% F.S.
*4: The degree of protection of body IP64 is applied only when installed with facing connector upward.

How to order

EVR-2 50 0 - 0 8 - E2 - S1 C



Code	Content	
A Pressure control range		
10	5 to 100 kPa	
20	5 to 200 kPa	
30	5 to 300 kPa	
40	5 to 400 kPa	
50	5 to 500 kPa	
60	10 to 600 kPa	
70	10 to 700 kPa	
80	10 to 800 kPa	
90	10 to 900 kPa	
B Body		
0	Single unit	
9	Manifold	
C Input signal		
0	0-10 VDC	
1	0-5 VDC	
2	4 to 20 mADC or 1 to 5 VDC	
D Port size		
8	Rc1/4	
8G	G1/4	(*1)
8N	NPT1/4	(*1)
E Option		
Exhaust option		
Blank	Rc1/4 port	
E2	With silencer	
Cable option		
Blank	No	
S1	Straight	1 m attached
S3		3 m attached
L1	L type	1 m attached
L3		3 m attached
Bracket option		
Blank	No	
C	C bracket attached	
B	B bracket attached	(*2)

⚠ Precautions for model No. selection

*1: Port size: Port size of IN port and OUT port. E2 exhaust option will be supplied with "8G" and "8N".
*2: 9 (manifold) body and B (B bracket) cannot be selected together.

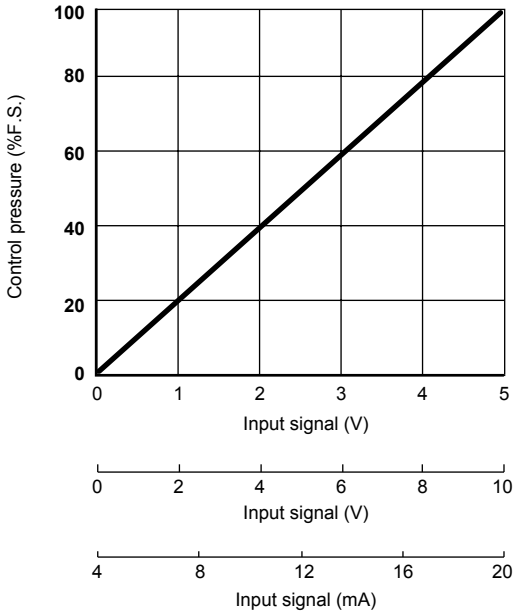
● Discrete option (cable, exhaust, bracket) model No.

EVR- S1

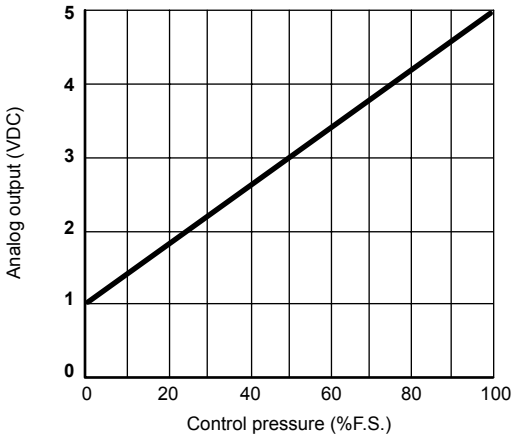
E Option

(Note) Discrete exhaust option model No. for Rc1/4 is EVR-E.

I/O characteristics

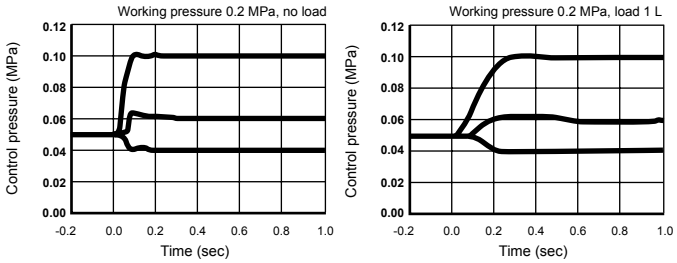


Analog output

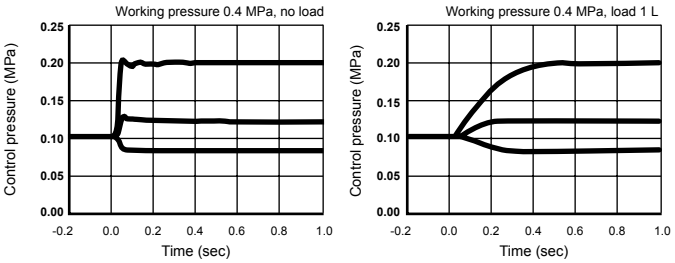


Step response characteristics (Setting 1)

● EVR-2100

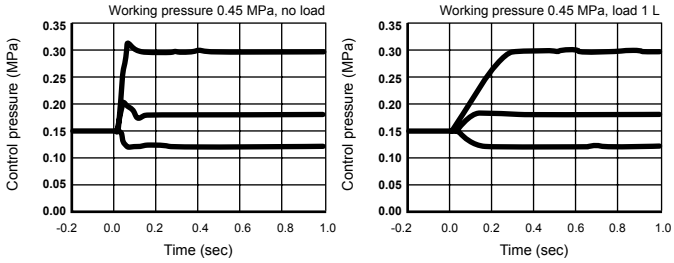


● EVR-2200

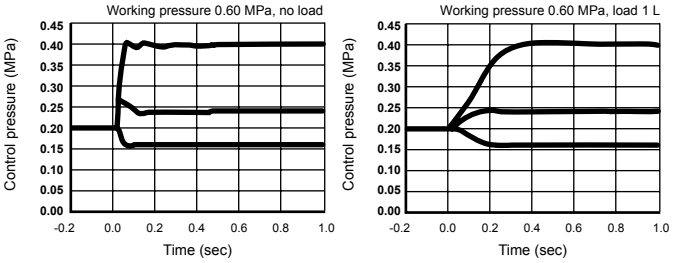


Step response characteristics (Setting 1)

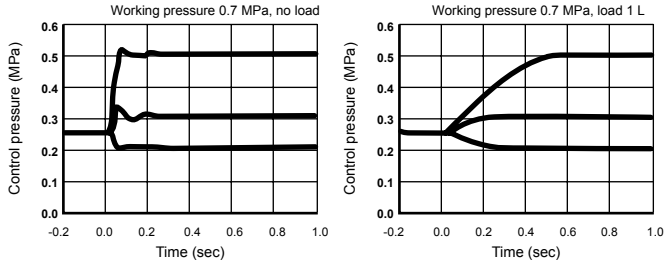
● EVR-2300



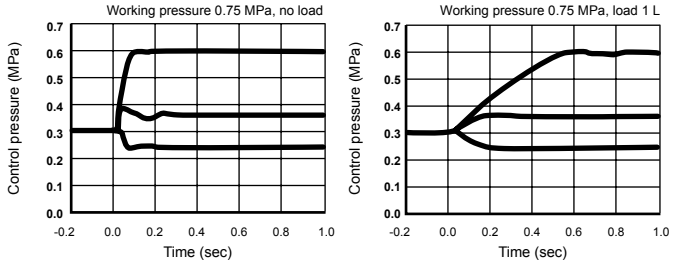
● EVR-2400



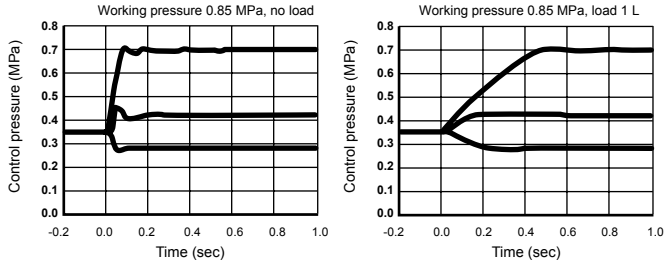
● EVR-2500



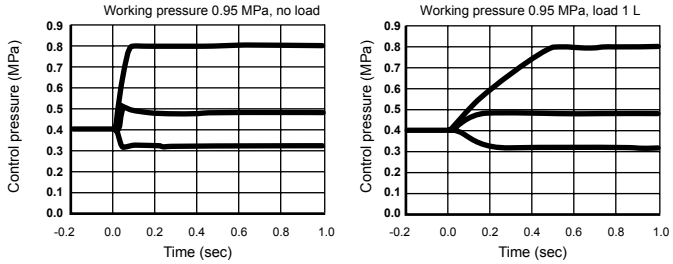
● EVR-2600



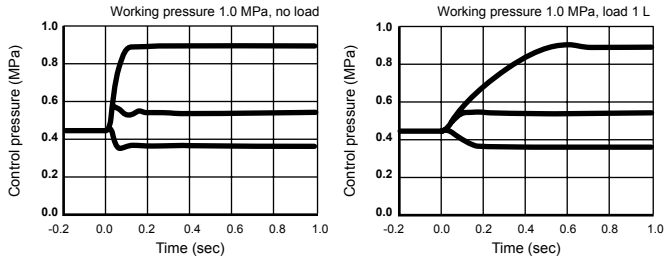
● EVR-2700



● EVR-2800



● EVR-2900

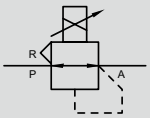




Electro pneumatic regulator EVS2 Series
Catalog No. CC-993A

Electro pneumatic regulator (solenoid valve)

EVS2 Series

JIS symbol 

RoHS

Specifications

Descriptions			EVS2-100	EVS2-500
Working fluid			Clean compressed air (JIS B83921-1:2012 (ISO 8573-1:2010) [1:3:2] equivalent)	
Max. working pressure			200 kPa	0.7 MPa
Min. working pressure			Set pressure + max. control pressure x 0.1	
Proof pressure	Inlet		300 kPa	1.05 MPa
	Output side		150 kPa	0.75 MPa
Pressure control range (*1)			1 to 100 kPa	0.005 to 0.5 MPa
Power supply voltage			24 VDC ± 10% (stabilized power supply with ripple rate of 1% or less)	
Current consumption			0.1 A or less (0.6 A rush current when power is ON)	
Input signal (input impedance)		0	0 to 10 VDC(6.7 kΩ)	
		1	0 to 5 VDC(10 kΩ)	
		2	4 to 20 mADC(250 Ω)	
		3	0 to 20 mADC(250 Ω)	
Analog output (connecting load impedance)		AV	1 to 5 VDC (50 kΩ)	
		AA	4 to 20 mADC (300 Ω or less)	
Accuracy (*2)	Hysteresis		0.4% F.S. or less	
	Linearity		±0.5% F.S. or less	
	Resolution		0.1% F.S. or less	
	Repeatability		0.3% F.S. or less	
Temperature characteristics	Zero point fluctuation		0.12% F.S./°C or less	
	Span fluctuation		0.07% F.S./°C or less	
Max. flow rate (*3)			2 L/min(ANR)	8 L/min(ANR)
Step response (*4)	No load		0.1 s or less	
	15 cm^3 Load		0.5 s or less	
Operating ambient temperature, fluid temperature			0 to 50°C	
Storage ambient temperature			-20 to 60°C	
Operating ambient humidity			45 to 90% RH (no condensation)	
Storage ambient humidity			96% RH or less	
Mounting orientation			Free	
Boundary dimension			W30×D50×H39	
Port size		H4	ø4 push-in fitting	
		H6	ø6 push-in fitting	
Weight			90 g	

*1: 1% F.S. or less input signal cannot be controlled.
*2: The condition of the values is: 24.0 ±0.1 VDC power supply voltage, 25±3°C ambient temperature, within the working pressure, and 10% to 100% of set pressure range.
*3: Working pressure: Maximum working pressure, Control pressure: Maximum control pressure.
*4: Working pressure: Max. working pressure, step amount: 50% F.S. → 100% F.S.
50% F.S. → 60% F.S.
50% F.S. → 40% F.S.
*5: The specification values above are obtained in a static state only. The control pressure may differ if air is consumed on the output side.

How to order

EVS2 - 100 - 1 H4 AV - C11 - 3

Model No.

Ⓐ Pressure control range

Ⓑ Input signal

Ⓒ Port size

Ⓓ Analog output

Ⓔ Cable option

Code	Content
Ⓐ Pressure control range	
100	1 to 100 kPa
500	0.005 to 0.5 MPa
Ⓑ Input signal	
0	0 to 10 VDC
1	0 to 5 VDC
2	4 to 20 mADC
3	0 to 20 mADC
Ⓒ Port size	
H4	Push-in fitting ø4
H6	Push-in fitting ø6
Ⓓ Analog output	
AV	1 to 5 V
AA	4 to 20 mA
Ⓔ Cable option	
Blank	No
C11	1 m (straight)
C13	3 m (straight)

Precautions for model No. selection

Note: How to order an option only:

EV2000 - Cable option code.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Clean exhaust filter

FAC10 Series

●Port size: ø4, ø6, ø8, ø10

RoHS CAD

Specifications

Model No.		FAC10-4P	FAC10-6P	FAC10-8P	FAC10-10P
Working fluid		Compressed air			
Max. working pressure	MPa	0.1			
Min. working pressure	MPa	0			
Proof pressure	MPa	0.3			
Ambient/fluid temperatures	°C	5 to 45			
Port size		ø4	ø6	ø8	ø10
Weight	g	2			3
Filtration	μm	0.01 (removal efficiency 99.99% and over)			
Secondary side cleanliness		0.1 μm or larger particles are completely (100%) eliminated *1			
Max. processing flow rate	ℓ/min (ANR)	4	10	20	35

*1: Maximum processing flow rate for measurement, or 28.3 ℓ/min (ANR) when the maximum processing flow rate is 28.3 ℓ/min. (ANR) or more

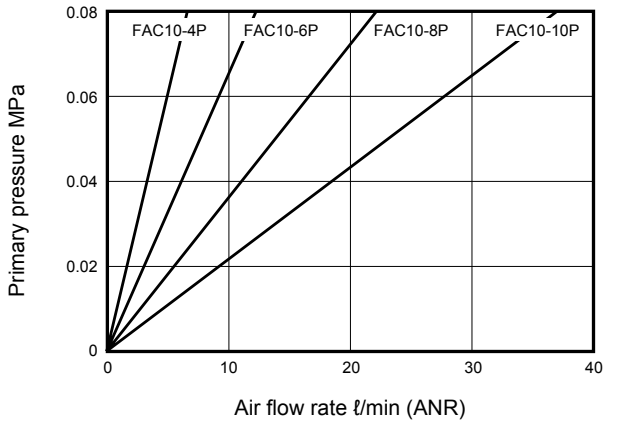
How to order

FAC10 - 4P

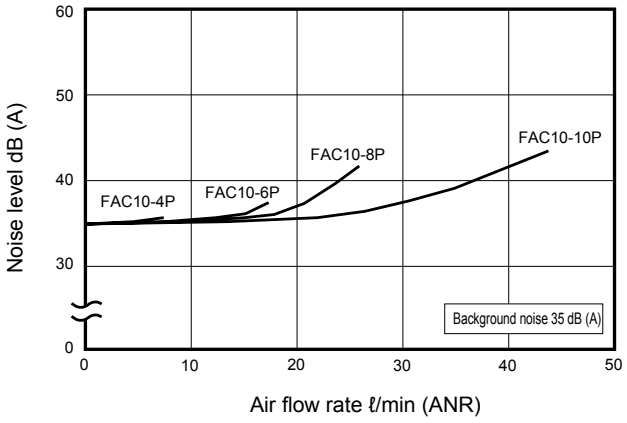
Ⓑ Port size

Code	Content
Ⓑ Port size	
4P	ø4
6P	ø6
8P	ø8
10P	ø10

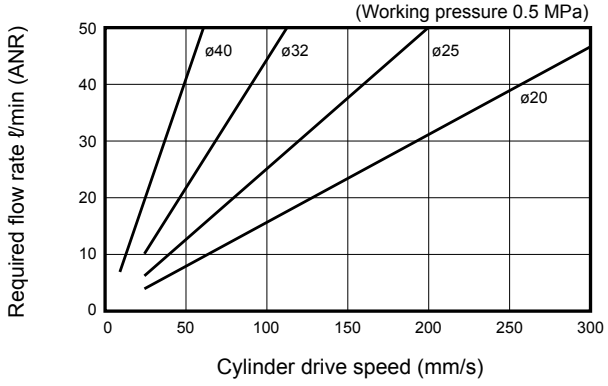
Flow characteristics



Noise level



Selection guide



The clean exhaust filter model is selected based on the working circuit's required flow rate.
(1) Calculate the required flow rate for the actuator being used.
(2) Multiply the calculated required flow rate by 1.4.
(3) Select a model having a processing flow rate exceeding the required flow rate multiplied by 1.4.

The above graphs show the required flow rate multiplied by 1.4 for each air cylinder size.
Use this graph to select a model.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Clean exhaust filter

FAC100/FAC200 Series

● Port size: R1/8, R1/4, R3/8, R1/2

RoHS CAD

Specifications

Model No.		FAC100	FAC200
Working fluid		Compressed air	
Max. working pressure	MPa	0.1	
Min. working pressure	MPa	0	
Proof pressure	MPa	0.3	
Ambient/fluid temperatures	°C	5 to 40	
Port size		R 1/8, R1/4	R 3/8, R1/2
Weight	g	65	85
Filtration	μm	0.01 (removal efficiency 99.99% and over)	
Secondary side cleanliness		0.1 μm or larger particles are completely (100%) eliminated *1	
Max. processing flow rate	ℓ/min (ANR)	100	200

*1: Flow rate at the time of measurement: 28.3 ℓ/min (ANR).

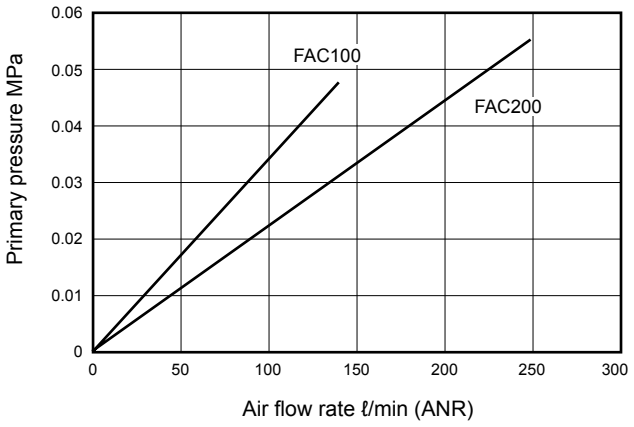
How to order

FAC100 - **8A**

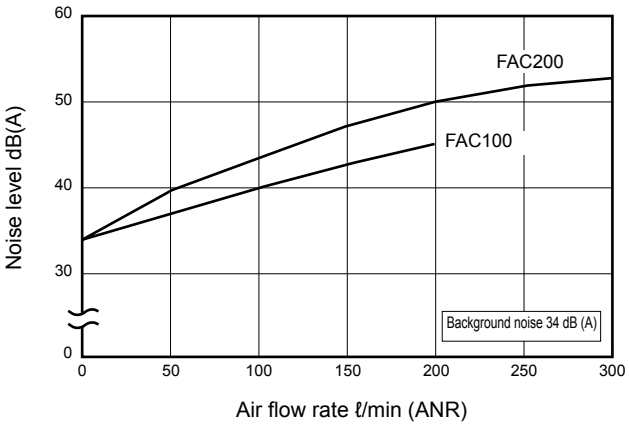
Ⓐ Model No. Ⓑ Port size

		Ⓐ Model No.	
Code	Content	FAC100	FAC200
Ⓑ Port size			
6A	R1/8	●	
8A	R1/4	●	
10A	R3/8		●
15A	R1/2		●

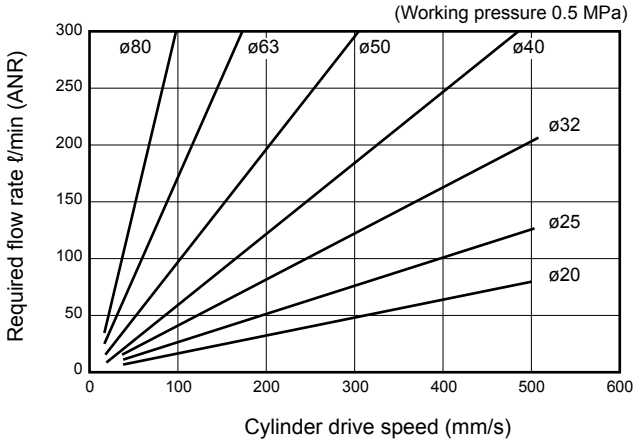
Flow characteristics



Noise level



Selection guide



The clean exhaust filter model is selected based on the working circuit's required flow rate.
(1) Calculate the required flow rate for the actuator being used.
(2) Multiply the calculated required flow rate by 1.4.
(3) Select a model having a processing flow rate exceeding the required flow rate multiplied by 1.4.

The above graphs show the required flow rate multiplied by 1.4 for each air cylinder size.
Use this graph to select a model.



Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Clean exhaust filter

FAC3000 Series

● Port size: Rc3/8, Rc1/2

Specifications

Model No.	FAC3000
Working fluid	Compressed air
Max. working pressure MPa	0.1
Min. working pressure MPa	0
Proof pressure MPa	0.3
Ambient/fluid temperatures °C	5 to 45
Port size	Rc3/8, Rc1/2
Weight kg	0.29
Filtration μm	0.01 (removal efficiency 99.99% and over)
Attachment weight kg	0.17
Secondary side cleanliness	0.1 μm or larger particles are completely (100%) eliminated *1
Max. processing flow rate ℓ/min (ANR)	600

*1: Flow rate at the time of measurement: 28.3 ℓ/min (ANR).

How to order

FAC3000 - **10** - **B**

Model No.

Ⓐ Port size

Ⓑ Attachment

Code	Content
Ⓐ Port size	
10	Rc3/8
15	Rc1/2
Ⓑ Other attachments	
Blank	Without attachment
B	C bracket: B320-P70

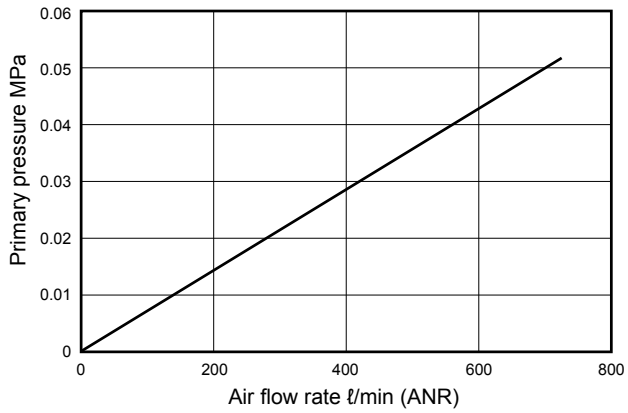
Note: Two attachments are included, one R1/8 plug and one plug corresponding to the connection port size (R3/8 or R1/2).

Model No. of single bracket

B320-P70

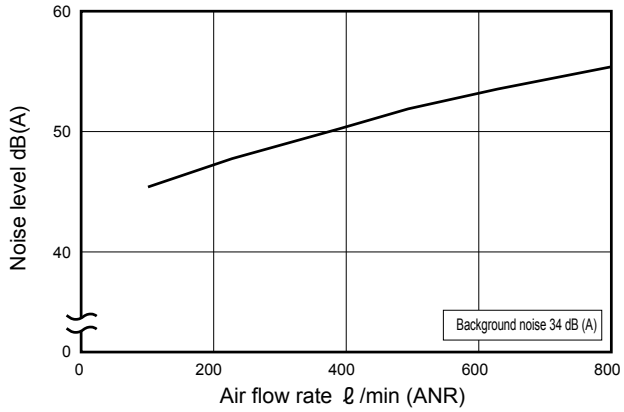
Flow characteristics

● FAC3000



Noise level

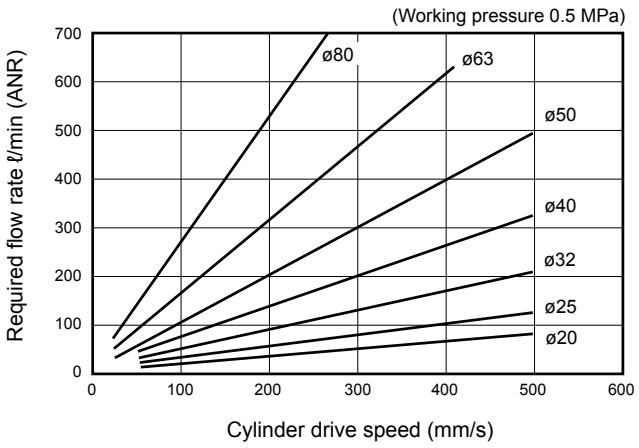
● FAC3000

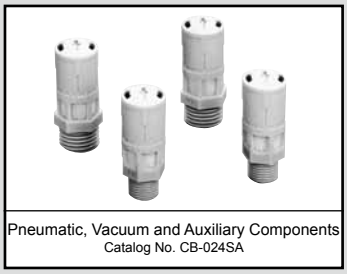


Selection guide

The clean exhaust filter model is selected based on the working circuit's required flow rate.
(1) Calculate the required flow rate for the actuator being used.
(2) Multiply the calculated required flow rate by 1.4.
(3) Select a model having a processing flow rate exceeding the required flow rate multiplied by 1.4.

The graph at right shows the required flow rate multiplied by 1.4 for each air cylinder size. Use this graph to select a model.



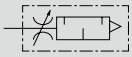


Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

Metering valve with silencer

SMW2 Series

●Port size: R1/8 to R1/4

JIS symbol 

Features

- Compact/lightweight/high flow rate
  Volume reduced by 50%, and weight reduced by 80% compared with conventional series, while max. effective cross-sectional area in the class is achieved.
- Noise reduction effect 23dB (A) and over
  P.P. sintering element with high damping effect integrated into the body to maintain low noise level.
- Uses a push lock needle
  Knob with push lock mechanism enables easy and secure locking.
- Environmental friendly design
  By using plastic material only, sorting at disposal is eliminated.

Specifications

Descriptions	SMW2-6A	SMW2-8A
Working fluid	Compressed air	
Max. working pressure MPa	0.7	
Min. working pressure MPa	0	
Proof pressure MPa	1.05	
Fluid temperature °C	5 to 60	
Ambient temperature °C	-10 to 60 (no freezing)	
Ambient humidity %RH	85 or less	
Port size R	1/8	1/4
Weight g	4.5	5
Cylinder bore size mm	ø20 to ø50	ø32 to ø75
Dial value (needle position)	9	
Noise reduction effect (*2) dB [A]	23 or more	28 or more
Flow rate (*1) ℓ/min (ANR)	370	660
Effective cross-sectional area mm^2	5.6	9.9

*1: Flow rate is the atmospheric pressure conversion at 0.5 MPa.
*2: Noise reduction effect at maximum flow rate is shown.

Compatibility table by variation

	SMW2
Port size	R1/8, 1/4
P4	Standard compliance
P40	▲

● : Standard ○ : Made to order ▲ : Contact CKD ▭ : Not applicable

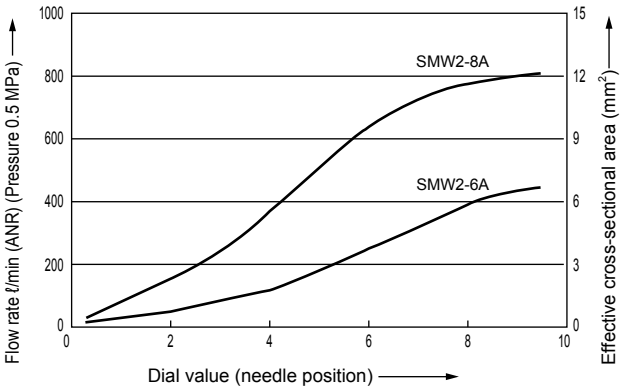
How to order

SMW2 - 6A

Code	Content
Ⓐ **Port size**	
6A	R1/8
8A	R1/4

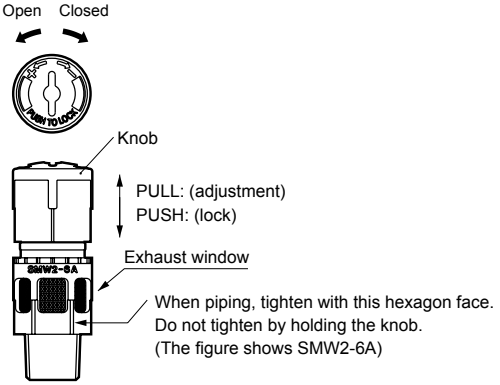
* P4 compliant as standard.

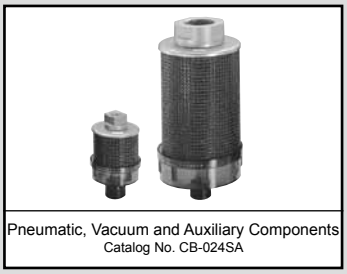
Flow characteristics



Usage methods

- The needle lock is released when the knob is pulled, and is locked when pressed.
- Pull the knob and release the lock before adjusting the flow rate.
  The knob opens when turned to the left and closes when turned to the right.
- Return the knob to the closed state, and gradually open it to adjust speed.
- After adjusting speed, press the knob and confirm that the needle is locked.





Pneumatic, Vacuum and Auxiliary Components
Catalog No. CB-024SA

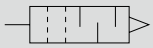
Exhaust cleaner

FA Series

Exhaust noise and oil mist have been minimized.

●Port size: Rc3/8 to Rc2

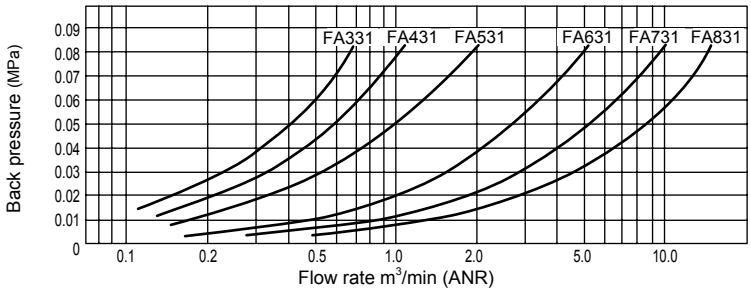
JIS symbol



Specifications

Descriptions	FA331-10A	FA431-15A	FA531-20A	FA631-25A	FA731-40A	FA831-50A
Port size Rc	3/8	1/2	3/4	1	1½	2
Effective cross-sectional area mm²	16	33	55	165	330	550
Max. processing flow rate m³/min (ANR)	0.3	0.6	1	3	6	10
Fluid temperature	5 to 65°C (no freezing)					
Ambient temperature	0 to 65°C (no freezing)					
Noise reduction effect	35 dB and over (at the max. processing flow rate in oil saturated state)					
Oil mist collection efficiency	99.9% and over					
Oil storage capacity cm³	80	130	150	250	350	550
Weight kg	0.2	0.3	0.4	0.6	1.1	1.5
Bracket No. (option)	B351-10A	B451-15A	B551-20A	B651-25A	-	-

Flow characteristics



Selection guide

Select an exhaust cleaner based on the air consumption in the circuit being used.

(1) Calculate the air consumption for the actuator being used.

(2) Multiply the calculated air consumption by 1.4.

(3) Select a model that has a flow rate exceeding the air consumption multiplied by 1.4.

The figure below shows the air consumption when multiplied by 1.4 for each air cylinder size. Use this graph to select a model.

Compatibility table by variation

	FA
Port size	Rc3/8 to 2
P4	Standard compliance

● : Standard
○ : Made to order
▲ : Contact CKD
▭ : Not applicable

How to order

FA 3 31 - 10A - B

Exhaust cleaner

Ⓐ Series code

Code	Content
Ⓐ Series code	
3	Compact
4	Standard
5	Large
6	Large
7	Large bore size
8	Large bore size

Ⓑ Port size *1

	Series	3	4	5	6	7	8
Ⓑ Port size							
10A	Rc3/8	●					
15A	Rc1/2		●				
20A	Rc3/4			●			
25A	Rc1				●		
40A	Rc1 1/2					●	
50A	Rc2						●

Ⓒ Option *2

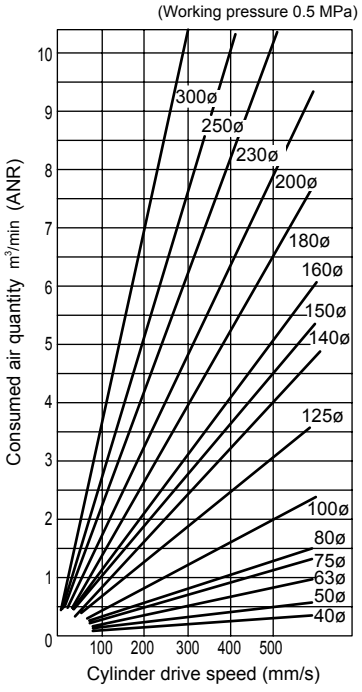
Ⓒ Option							
Blank	Not attached	●	●	●	●	●	●
B	Bracket	●	●	●	●		

Precautions for model No. selection

*1: If port size NPT thread is required, do not indicate nominal size A. (Example) FA431-15

*2: Bracket option is not available for FA731 and FA831.

*3: P4 compliant as standard.





ABSODEX General
Catalog No. CB-054A

ABSODEX

AX1000T Series

High accuracy specifications (index accuracy, output shaft runout, etc.)
Compatible function allows free combination of driver, actuator, and cable
●Max. torque: 22/45/75/150/210 N·m
●Supported driver: TS/TH driver

Actuator specifications

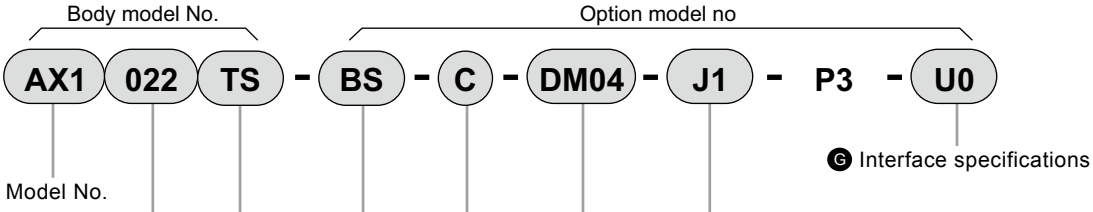
Descriptions		AX1022T	AX1045T	AX1075T	AX1150T	AX1210T
Max. output torque	N·m	22	45	75	150	210
Continuous output torque	N·m	7	15	25	50	70
Max. rotation speed	rpm	240 (*1)		140 (*1)	120 (*1)	
Allowable axial load	N	600		2200		
Allowable moment load	N·m	19	38	70	140	170
Output shaft moment of inertia	$kg·m^2$	0.00505	0.00790	0.03660	0.05820	0.09280
Allowable moment of load inertia	$kg·m^2$	0.6	0.9	4.0	6.0	10.0
Index accuracy (*3)	sec	±15				
Repeatability (*3)	sec	±5				
Output shaft friction torque	N·m	2.0		8.0		
Resolution	P/rev	540672				
Motor insulation class		Class F				
Motor withstand voltage		1500 VAC 1 min.				
Motor insulation resistance		10 MΩ and over 500 VDC				
Operating ambient temperature		0 to 45°C (0 to 40°C: *4)				
Operating ambient humidity		20 to 85% RH, no condensation				
Storage ambient temperature		-20 to 80°C				
Storage ambient humidity		20 to 90% RH, no condensation				
Atmosphere		No corrosive gas, explosive gas, or dust				
Weight	kg	8.9 (10.8) *2	12.0 (13.9) *2	23.0 (27.1) *2	32.0 (36.1) *2	44.0 (48.1) *2
Output shaft runout (*3)	mm	0.01				
Output shaft surface runout (*3)	mm	0.01				
Degree of protection		IP20				

*1: Use at a speed of 80 rpm or less during continuous rotation operation.
*2: Numbers in ( ) represent the actuator weight with mounting base option.
*3: Refer to the "Glossary" in ABSODEX Products (Catalog No. CB-054A) for index accuracy, repeatability, output shaft runout and output shaft surface runout.
*4: When using as a UL certified product, the maximum temperature is 40°C.

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.

How to order

● Set model No. (actuator, driver, cable)



Code	Content
A Size (max. torque)	
022	22 N·m
045	45 N·m
075	75 N·m
150	150 N·m
210	210 N·m
B Driver	
TS	With TS driver
TH	With TH driver
C Mounting base	
Blank	Standard (without mounting base)
BS	With mounting base
D Connector mounting direction	
Blank	Standard (connector horizontal mounting)
C	Connector downward mounting
E Cable length	
DM00	Without cable
DM02	2 m
DM04	4 m (standard length)
DM06	6 m
DM08	8 m
DM10	10 m
DM15	15 m
DM20	20 m
F Driver power voltage	
Refer to the driver power voltage compatibility table at left.	
G Interface specifications:	
U0	Parallel I/O (NPN specifications)
U1	Parallel I/O (PNP specifications)
U2	CC-Link
U3	PROFIBUS-DP
U4	DeviceNet
U5	EtherCAT
U6	EtherNet/IP

⚠ Precautions for model No. selection

*1: Select the driver according to the compatibility table below.

Driver power voltage compatibility table

Model \ Driver	TS driver		TH driver
	3-phase/single-phase 200 VAC to 230 VAC	Single-phase 100 VAC to 115 VAC	3-phase/single-phase 200 VAC to 230 VAC
AX1022T	Blank	J1	
AX1045T	Blank	J1	
AX1075T	Blank *2		
AX1150T			Blank *2
AX1210T			Blank *2

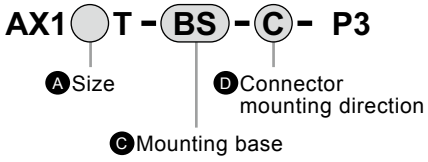
*2: For models with maximum torque 75 N·m or more, the calculation of torque limit region is different from the usual when used at single-phase 200 VAC. Contact CKD to determine usability.

*3: Cable is a movable cable.
For cable external dimensions, refer to ABSODEX Products (Catalog No. CB-054A).

*4: The lower surface positioning pin hole cannot be used if the "BS" option for C Mounting base is selected. The surface is treated with electroless nickel plating.

*5: Positioning pin holes may not be surface treated.

● Actuator body discrete model No.



● Driver discrete model No.

• 200 VAC to 230 VAC

AX9000TS - U0

AX9000TH - U0

• 100 VAC to 115 VAC

AX9000TS - J1 - U0

G Interface specifications

● Cable discrete model No.

• Motor cable

AX - CBLM5 - DM04

• Resolver cable

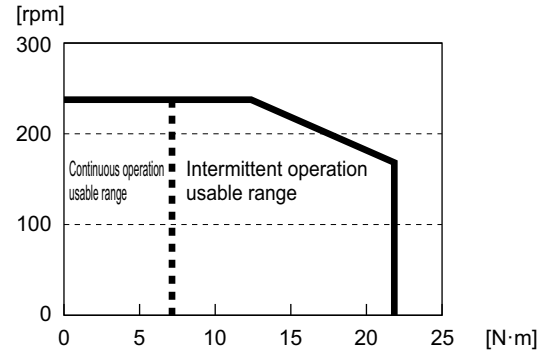
AX - CBLR5 - DM04

E Cable length
(Note: "DM04" when cable length is 4 m)

* Made to order products are CE, UL/cUL, and RoHS non-compliant. Contact CKD as needed.

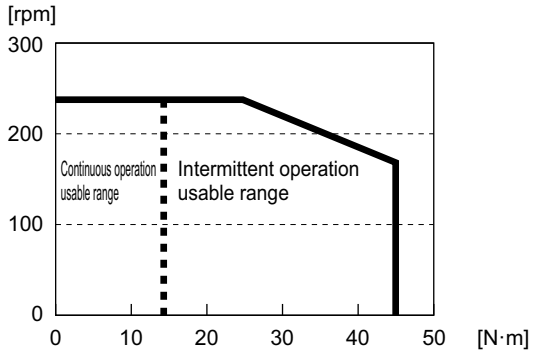
Speed/maximum torque characteristics

●AX1022T



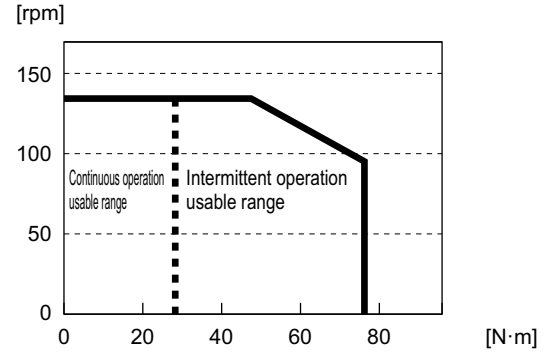
* The graph shows the characteristics of three-phase 200 VAC.

●AX1045T



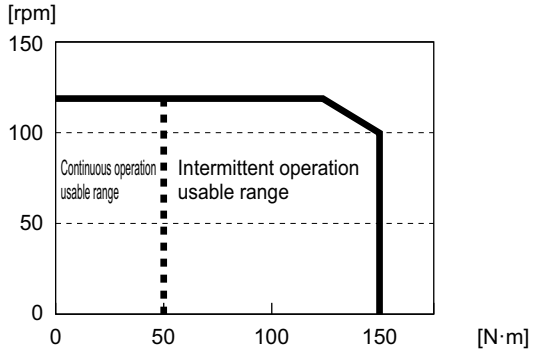
* The graph shows the characteristics of three-phase 200 VAC.

●AX1075T



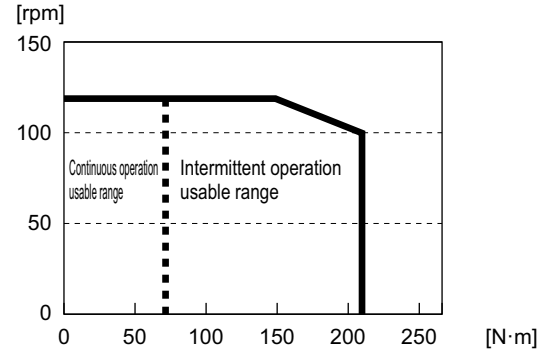
* The graph shows the characteristics of three-phase 200 VAC.

●AX1150T



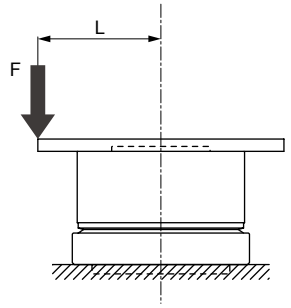
* The graph shows the characteristics of three-phase 200 VAC.

●AX1210T



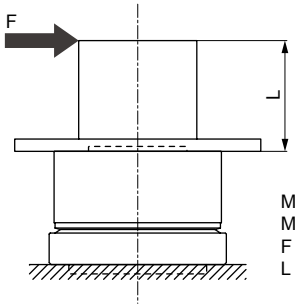
* The graph shows the characteristics of three-phase 200 VAC.

(Note) Moment load (simple formula)



M (N·m)=F (N) x (L) (m)
M : Moment load
F : Load
L : Distance from the output shaft center

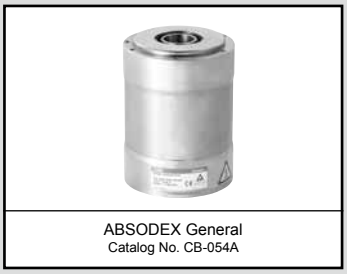
(Fig. a)



M (N·m)=F (N) x (L+0.02) (m)
M : Moment load
F : Load
L : Distance from the output shaft flange surface

(Fig. b)

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.



ABSODEX General
Catalog No. CB-054A

ABSODEX

AX2000T Series

High-speed rotation (max. rotation speed 300 rpm),
compact with small diameter, large hollow diameter (ø30)
Compatible function allows free combination of driver, actuator, and cable

- Max. torque: 6/12/18 N·m
- Supported driver: TS driver

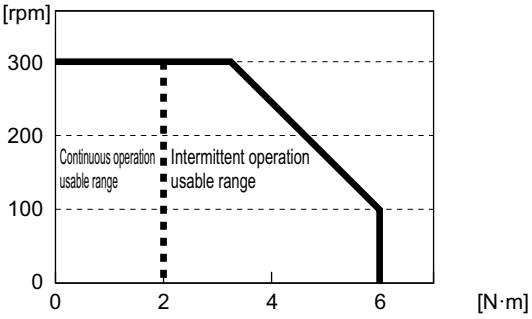
Actuator specifications

Descriptions		AX2006T	AX2012T	AX2018T
Max. output torque	N·m	6	12	18
Continuous output torque	N·m	2	4	6
Max. rotation speed	rpm	300 (*1)		
Allowable axial load	N	1000		
Allowable moment load	N·m	40		
Output shaft moment of inertia	$kg·m^2$	0.00575	0.00695	0.00910
Allowable moment of load inertia	$kg·m^2$	0.3	0.4	0.5
Index accuracy (*3)	sec	±30		
Repeatability (*3)	sec	±5		
Output shaft friction torque	N·m	0.6		0.7
Resolution	P/rev	540672		
Motor insulation class		Class F		
Motor withstand voltage		1500 VAC 1 min.		
Motor insulation resistance		10 MΩ and over 500 VDC		
Operating ambient temperature		0 to 45°C (0 to 40°C: *4)		
Operating ambient humidity		20 to 85% RH, no condensation		
Storage ambient temperature		-20 to 80°C		
Storage ambient humidity		20 to 90% RH, no condensation		
Atmosphere		No corrosive gas, explosive gas, or dust		
Weight	kg	4.7 (6.0) *2	5.8 (7.1) *2	7.5 (8.8) *2
Output shaft runout (*3)	mm	0.03		
Output shaft surface runout (*3)	mm	0.03		
Degree of protection		IP20		

*1: Use at a speed of 80 rpm or less during continuous rotation operation.
*2: Numbers in ( ) represent the actuator weight with mounting base option.
*3: Refer to the "Glossary" in ABSODEX Products (Catalog No. CB-054A) for index accuracy, repeatability, output shaft runout and output shaft surface runout.
*4: When using as a UL certified product, the maximum temperature is 40°C.

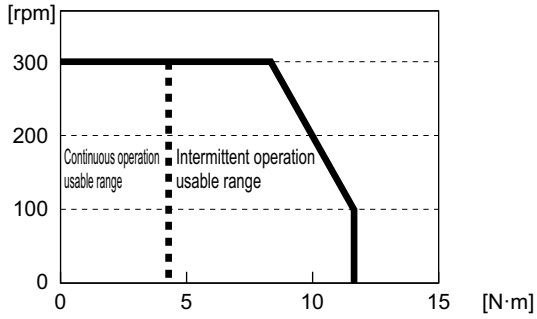
Speed/maximum torque characteristics

●AX2006T



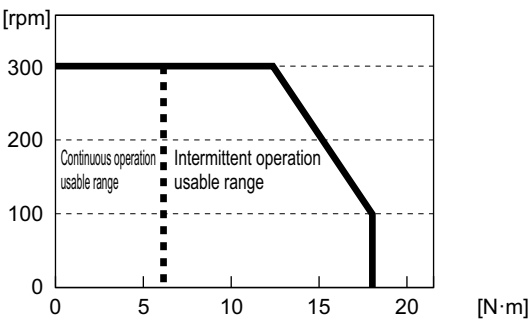
* The graph shows the characteristics of three-phase 200 VAC.

●AX2012T



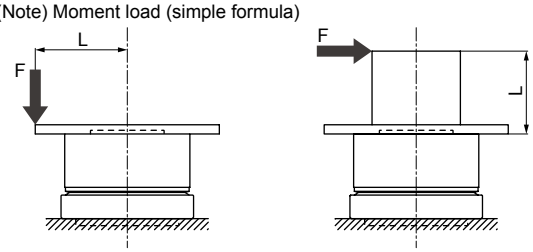
* The graph shows the characteristics of three-phase 200 VAC.

●AX2018T



* The graph shows the characteristics of three-phase 200 VAC.

(Note) Moment load (simple formula)



(Fig. a)
M (N·m)=F (N) x (L) (m)
M : Moment load
F : Load
L : Distance from the output shaft center

(Fig. b)
M (N·m)=F (N) x (L+0.02) (m)
M : Moment load
F : Load
L : Distance from the output shaft flange surface

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.

How to order

● Set model No. (actuator, driver, cable)

Body model No. | Option model no

AX2 018 TS - BS - DM04 - J1 - P3 - S - U0

- AX2: Model No.
- 018: Ⓐ Size (max. torque)
- TS: Ⓑ Driver
- BS: Ⓒ Mounting base *3
- DM04: Ⓓ Cable length *2
- J1: Ⓔ Driver power voltage *1
- P3: Fixed
- S: Fixed
- U0: Ⓕ Interface specifications

Code	Content
Ⓐ Size (max. torque)	
006	6 N·m
012	12 N·m
018	18 N·m
Ⓑ Driver	
TS	With TS driver
Ⓒ Mounting base	
Blank	Standard (without mounting base)
BS	With mounting base
Ⓓ Cable length	
DM00	Without cable
DM02	2 m
DM04	4 m (standard length)
DM06	6 m
DM08	8 m
DM10	10 m
DM15	15 m
DM20	20 m
Ⓔ Driver power voltage	
Refer to the driver power voltage compatibility table at left.	
Ⓕ Interface specifications:	
U0	Parallel I/O (NPN specifications)
U1	Parallel I/O (PNP specifications)
U2	CC-Link
U3	PROFIBUS-DP
U4	DeviceNet
U5	EtherCAT
U6	EtherNet/IP

Precautions for model No. selection

*1: Select the driver according to the compatibility table below.

Driver power voltage compatibility table

Model \ Driver	TS driver	
	3-phase/single-phase 200 VAC to 230 VAC	Single-phase 100 VAC to 115 VAC
AX2006T	Blank	J1
AX2012T	Blank	J1
AX2018T	Blank	J1

*2: Cable is a movable cable. For cable external dimensions, refer to ABSODEX Products (Catalog No. CB-054A). Body lead-out cable is not a movable cable.

*3: The lower surface positioning pin hole cannot be used if the "BS" option for Ⓒ Mounting base is selected. The surface is treated with electroless nickel plating.

*4: Positioning pin holes may not be surface treated.

*5: The body surface is treated with electroless nickel plating.

● Actuator body discrete model No.

AX2○T - BS - P3 - S

- ○: Ⓐ Size
- BS: Ⓒ Mounting base

● Driver discrete model No.

- 200 VAC to 230 VAC: **AX9000TS - U0**
- 100 VAC to 115 VAC: **AX9000TS - J1 - U0**

U0: Ⓗ Interface specifications

● Cable discrete model No.

- Motor cable: **AX - CBLM6 - DM04**
- Resolver cable: **AX - CBLR6 - DM04**

DM04: Ⓓ Cable length (Note: "DM04" when cable length is 4 m)

* Made to order products are CE, UL/cUL, and RoHS non-compliant. Contact CKD as needed.



ABSODEX General
Catalog No. CB-054A

ABSODEX

AX4000T Series

Supports large moment of inertia load
Compatible function allows free combination of driver, actuator, and cable
Large hollow diameter is convenient for cable wiring and piping, abundant options available
●Max. torque: 9/22/45/75 N·m
●Supported driver: TS driver

Actuator specifications

Descriptions		AX4009T	AX4022T	AX4045T	AX4075T
Max. output torque	N·m	9	22	45	75
Continuous output torque	N·m	3	7	15	25
Max. rotation speed	rpm	240 (*1)			140 (*1)
Allowable axial load	N	800	3700		20000
Allowable moment load	N·m	40	60	80	200
Output shaft moment of inertia	kg·m^2	0.009	0.0206	0.0268	0.1490
Allowable moment of load inertia	kg·m^2	0.35 (1.75) (*2)	0.60 (3.00) (*2)	0.90 (5.00) (*2)	5.00 (25.00) (*2)
Index accuracy (*5)	sec	±30			
Repeatability (*5)	sec	±5			
Output shaft friction torque	N·m	0.8	3.5		10.0
Resolution	P/rev	540672			
Motor insulation class		Class F			
Motor withstand voltage		1500 VAC 1 min.			
Motor insulation resistance		10 MΩ and over 500 VDC			
Operating ambient temperature		0 to 45°C (0 to 40°C: *5)			
Operating ambient humidity		20 to 85% RH, no condensation			
Storage ambient temperature		-20 to 80°C			
Storage ambient humidity		20 to 90% RH, no condensation			
Atmosphere		No corrosive gas, explosive gas, or dust			
Weight	kg	5.5	12.3 (14.6) *3	15.0 (17.3) *3	36.0 (41.0) *3
Total weight when brake is set	kg	-	16.4 (18.7) *3	19.3 (21.6) *3	54.0 (59.0) *3
Output shaft runout (*5)	mm	0.03			
Output shaft surface runout (*5)	mm	0.05			
Degree of protection		IP20			

*1: Use at a speed of 80 rpm or less during continuous rotation operation.
*2: When using in load conditions up to those given in ( ), set parameter 72 (integral gain magnification) = 0.3 (reference value).
*3: Numbers in ( ) represent the actuator weight with mounting base option.
*4: Contact CKD whenever using continuous rotation operation in combination with parameter 72 (integral gain magnification).
*5: Refer to the "Glossary" in ABSODEX Products (Catalog No. CB-054A) for index accuracy, repeatability, output shaft runout and output shaft surface runout.
*6: When using as a UL certified product, the maximum temperature is 40°C.

Electromagnetic brake specifications (option)

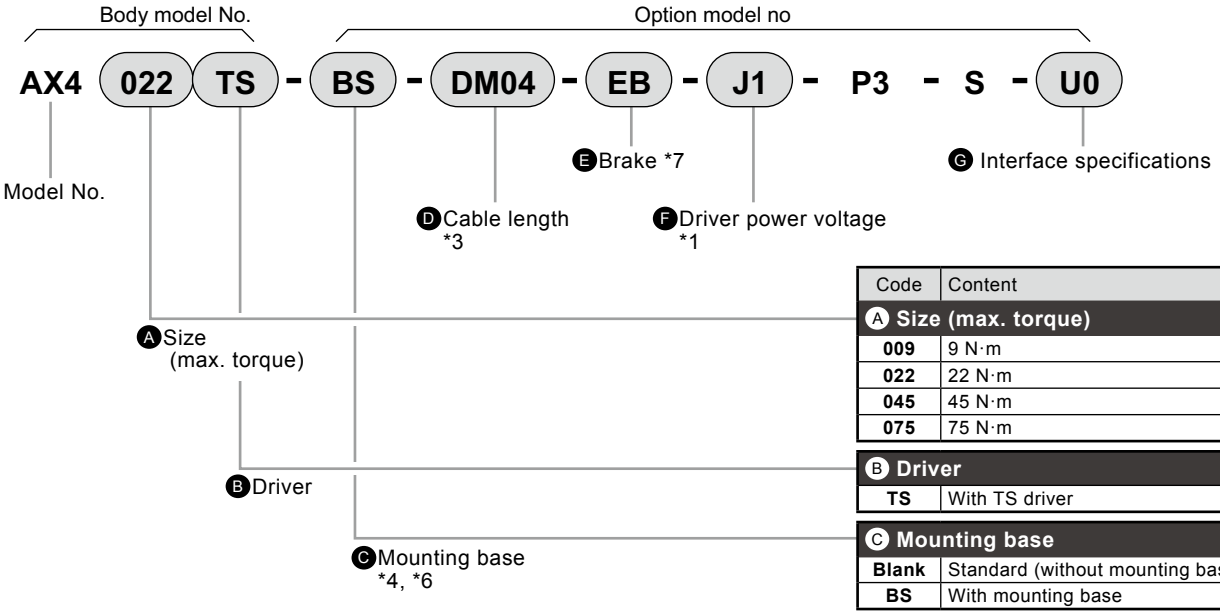
Descriptions \ Compatibility		AX4022T/AX4045T	AX4075T
Type		Non-backlash dry non-excitation	
Rated voltage	V	24 VDC	
Power capacity	W	30	55
Rated current	A	1.25	2.30
Static friction torque	N·m	35	200
Armature release time (brake on)	msec	50 (reference value)	50 (reference value)
Armature suction time (brake off)	msec	150 (reference value)	250 (reference value)
Retention accuracy	minutes	45 (reference value)	
Max. operating frequency	times/min.	60	40

*1: During output shaft rotation, the electromagnetic brake disc and fixed part may cause a scraping sound.
*2: For travel after brake off, you must change the parameter delay time by the above-mentioned armature suction time.
*3: Though it is a non-backlash, holding a constant position is difficult if load is applied in the rotation direction.
*4: The armature makes contact with the electromagnetic brake fixed part while the electromagnetic brake is operating, causing the sound.
*5: The electromagnetic brake can be manually released by uniformly tightening the bolts in the manual release tap (3 locations). Lightly fasten three bolts evenly, and stop tightening when there is clearance in the clamp disc part. Once the manual release work is over, be sure to promptly remove the 3 bolts and confirm that the brakes work and that the output shaft is retained.

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.

How to order

● Set model No. (actuator, driver, cable)



Code	Content
Ⓐ Size (max. torque)	
009	9 N·m
022	22 N·m
045	45 N·m
075	75 N·m

Ⓑ Driver	
TS	With TS driver

Ⓒ Mounting base	
Blank	Standard (without mounting base)
BS	With mounting base

Ⓓ Cable length	
DM00	Without cable
DM02	2 m
DM04	4 m (standard length)
DM06	6 m
DM08	8 m
DM10	10 m
DM15	15 m
DM20	20 m

Ⓔ Brake	
Blank	Standard (without electromagnetic brake)
EB	Negative-actuated electromagnetic brake

Ⓕ Driver power voltage
Refer to the driver power voltage compatibility table at left.

Ⓖ Interface specifications:	
U0	Parallel I/O (NPN specifications)
U1	Parallel I/O (PNP specifications)
U2	CC-Link
U3	PROFIBUS-DP
U4	DeviceNet
U5	EtherCAT
U6	EtherNet/IP

Precautions for model No. selection

*1: Select the driver according to the compatibility table below.

Driver power voltage compatibility table

Model \ Driver	TS driver	
	3-phase/single-phase 200 VAC to 230 VAC	Single-phase 100 VAC to 115 VAC
AX4009T	Blank	J1
AX4022T	Blank	J1
AX4045T	Blank	J1
AX4075T	Blank *2	

*2: For models with maximum torque of 75 N·m, the calculation of torque limit region is different from the usual when used at single-phase 200 VAC. Contact CKD to determine usability.

*3: Cable is a movable cable.
For cable external dimensions, refer to ABSODEX Products (Catalog No. CB-054A).
Body lead-out cable is not a movable cable.

*4: The lower surface positioning pin hole cannot be used if the "BS" option for Ⓒ Mounting base is selected. The surface is treated with electroless nickel plating.

*5: Positioning pin holes may not be surface treated.

*6: For options, select according to the "Option compatibility table" below.

Option compatibility table

	AX4009T	AX4022T	AX4045T	AX4075T
Mounting base (-BS)	×	○	○	○
Brake (-EB)	×	○	○	○

*7: The body surface is treated with electroless nickel plating.

● Actuator body discrete model No.

AX4 ○ T - BS - ○ - P3 - S

Ⓐ Size　Ⓔ Brake　Ⓒ Mounting base

● Driver discrete model No.

• 200 VAC to 230 VAC

AX9000TS - U0

• 100 VAC to 115 VAC

AX9000TS - J1 - U0

Ⓘ Interface specifications

● Cable discrete model No.

• Motor cable

AX - CBLM6 - DM04

• Resolver cable

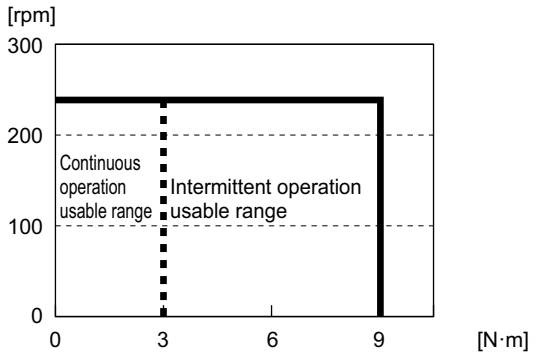
AX - CBLR6 - DM04

Ⓓ Cable length (Note: "DM04" when cable length is 4 m)

* Made to order products are CE, UL/cUL, and RoHS non-compliant. Contact CKD as needed.

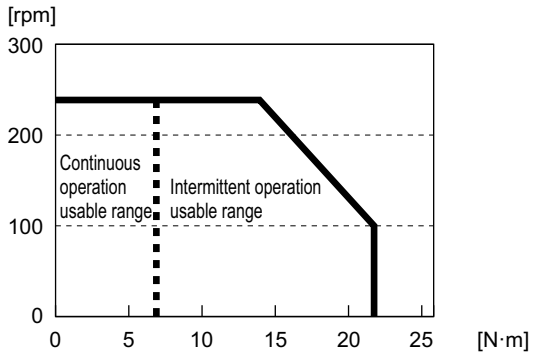
Speed/maximum torque characteristics

●AX4009T



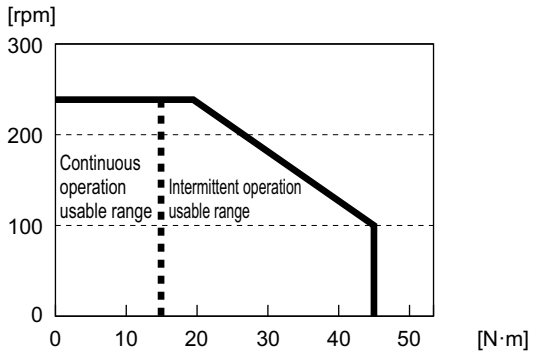
* The graph shows the characteristics of three-phase 200 VAC.

●AX4022T



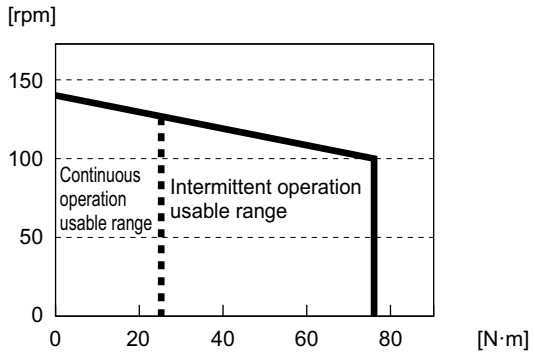
* The graph shows the characteristics of three-phase 200 VAC.

●AX4045T



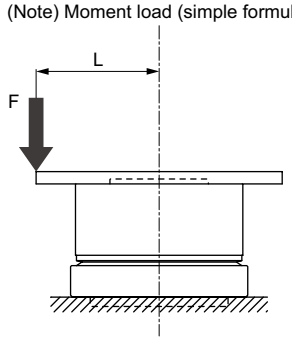
* The graph shows the characteristics of three-phase 200 VAC.

●AX4075T



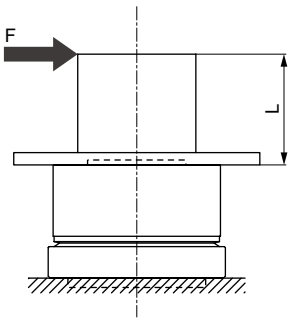
* The graph shows the characteristics of three-phase 200 VAC.

(Note) Moment load (simple formula)



M (N·m)=F (N) x (L) (m)
M : Moment load
F : Load
L : Distance from the output shaft center

(Fig. a)



M (N·m)=F (N) x (L+0.02) (m)
M : Moment load
F : Load
L : Distance from the output shaft flange surface

(Fig. b)

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.



ABSODEX General
Catalog No. CB-054A

ABSODEX

AX4000T Series

Supports large moment of inertia load
Compatible function allows free combination of driver, actuator, and cable
Large hollow diameter is convenient for cable wiring and piping, abundant options available
●Max. torque: 150/300/500/1000 N·m
●Supported driver: TH driver

Actuator specifications

Descriptions		AX4150T	AX4300T	AX4500T	AX410WT
Max. output torque	N·m	150	300	500	1000
Continuous output torque	N·m	50	100	160	330
Max. rotation speed	rpm	100 (*1)		70	30
Allowable axial load	N	20000			
Allowable moment load	N·m	300	400	500	400
Output shaft moment of inertia	kg·m^2	0.2120	0.3260	0.7210	2.7200
Allowable moment of load inertia	kg·m^2	75.00 (*2)	180.00 (*2)	300.00 (*2)	600.00 (*2)
Index accuracy (*4)	sec	±30			
Repeatability (*4)	sec	±5			
Output shaft friction torque	N·m	10.0		15.0	20.0
Resolution	P/rev	540672			
Motor insulation class		Class F			
Motor withstand voltage		1500 VAC 1 min.			
Motor insulation resistance		10 MΩ and over 500 VDC			
Operating ambient temperature		0 to 45°C (0 to 40°C: *4)			
Operating ambient humidity		20 to 85% RH, no condensation			
Storage ambient temperature		-20 to 80°C			
Storage ambient humidity		20 to 90% RH, no condensation			
Atmosphere		No corrosive gas, explosive gas, or dust			
Weight	kg	44.0 (49.0) *3	66.0 (74.0) *3	115.0 (123.0) *3	198.0 (217.0) *3
Total weight when brake is set	kg	63.0 (68.0) *3	86.0 (94.0) *3	-	-
Output shaft runout (*4)	mm	0.03			
Output shaft surface runout (*4)	mm	0.05			0.08
Degree of protection		IP20			

*1: Use at a speed of 80 rpm or less during continuous rotation operation.
*2: Settings when shipped support large moments of inertia.
*3: Numbers in ( ) represent the actuator weight with mounting base option.
*4: Refer to the "Glossary" in ABSODEX Products (Catalog No. CB-054A) for index accuracy, repeatability, output shaft runout and output shaft surface runout.
*5: When using as a UL certified product, the maximum temperature is 40°C.

Electromagnetic brake specifications (option)

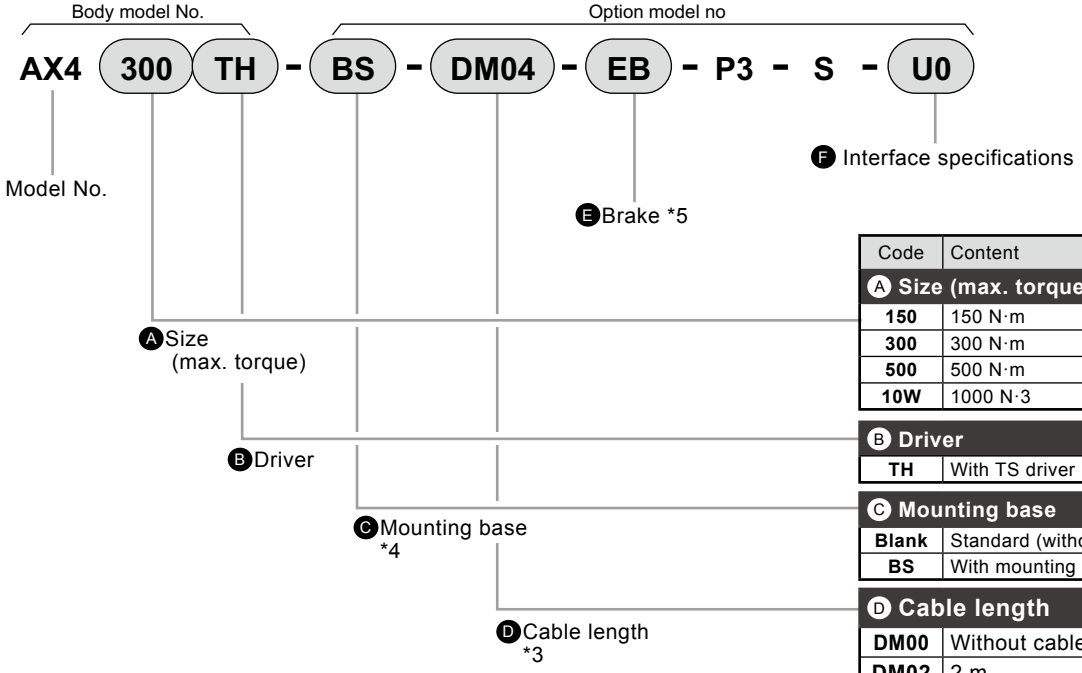
Descriptions \ Compatibility		AX4150T/AX4300T
Type		Non-backlash dry non-excitation
Rated voltage	V	24 VDC
Power capacity	W	55
Rated current	A	2.30
Static friction torque	N·m	200
Armature release time (brake on)	msec	50 (reference value)
Armature suction time (brake off)	msec	250 (reference value)
Retention accuracy	minutes	45 (reference value)
Max. operating frequency	times/min.	40

*1: During output shaft rotation, the electromagnetic brake disc and fixed part may cause a scraping sound.
*2: For travel after brake off, you must change the parameter delay time by the above-mentioned armature suction time.
*3: Though it is a non-backlash, holding a constant position is difficult if load is applied in the rotation direction.
*4: The armature makes contact with the electromagnetic brake fixed part while the electromagnetic brake is operating, causing the sound.
*5: The electromagnetic brake can be manually released by uniformly tightening the bolts in the manual release tap (3 locations). Lightly fasten three bolts evenly, and stop tightening when there is clearance in the clamp disc part. Once the manual release work is over, be sure to promptly remove the 3 bolts and confirm that the brakes work and that the output shaft is retained.

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.

How to order

● Set model No. (actuator, driver, cable)



Code	Content
Ⓐ Size (max. torque)	
150	150 N·m
300	300 N·m
500	500 N·m
10W	1000 N·3
Ⓑ Driver	
TH	With TS driver
Ⓒ Mounting base	
Blank	Standard (without mounting base)
BS	With mounting base
Ⓓ Cable length	
DM00	Without cable
DM02	2 m
DM04	4 m (standard length)
DM06	6 m
DM08	8 m
DM10	10 m
DM15	15 m
DM20	20 m
Ⓔ Brake	
Blank	Standard (without electromagnetic brake)
EB	Negative-actuated electromagnetic brake
Ⓕ Interface specifications:	
U0	Parallel I/O (NPN specifications)
U1	Parallel I/O (PNP specifications)
U2	CC-Link
U3	PROFIBUS-DP
U4	DeviceNet
U5	EtherCAT
U6	EtherNet/IP

Precautions for model No. selection

*1: Select the driver according to the compatibility table below.

Driver power voltage compatibility table

Model \ Driver	TH driver
	Three-phase/single-phase 200 VAC to 230 VAC
AX4150T	Blank *2
AX4300T	Blank *2
AX4500T	Blank *2
AX410WT	Blank *2

*2: The calculation of torque limit region is different from the usual when used at single-phase 200 VAC. Contact CKD to determine usability.

*3: Cable is a movable cable.
For cable external dimensions, refer to ABSODEX Products (Catalog No. CB-054A).

*4: The lower surface positioning pin hole cannot be used if the "BS" option for Ⓒ Mounting base is selected. The surface is treated with electroless nickel plating.

*5: For options, select according to the "Option compatibility table" below.
Option compatibility table

	AX4150T	AX4300T	AX4500T	AX410WT
Electromagnetic brake (-EB)	○	○	×	×

*6: Positioning pin holes may not be surface treated.

*7: The body surface is treated with electroless nickel plating.

● Actuator body discrete model No.

AX4 ◯ T - BS - ◯ - P3 - S

Ⓐ Size
Ⓔ Brake
Ⓒ Mounting base

● Driver discrete model No.

• 200 VAC to 230 VAC

AX9000TH - U0

Ⓕ Interface specifications

● Cable discrete model No.

• Motor cable

AX - CBLM6 - DM04

• Resolver cable

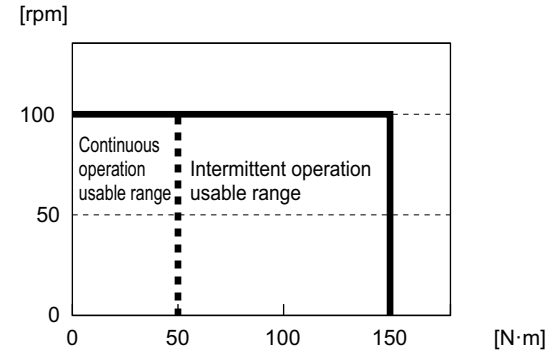
AX - CBLR6 - DM04

Ⓓ Cable length
(Note: "DM04" when cable length is 4 m)

* Made to order products are CE, UL/cUL, and RoHS non-compliant. Contact CKD as needed.

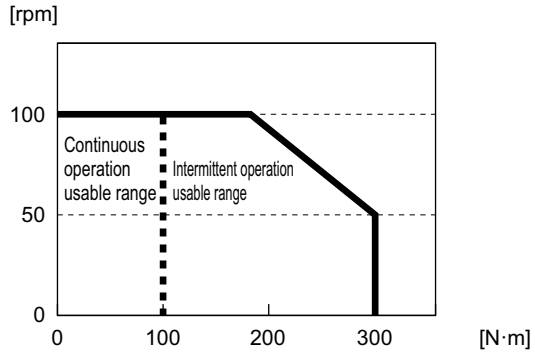
Speed/maximum torque characteristics

●AX4150T



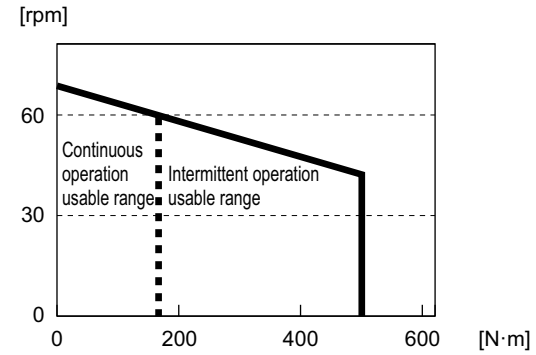
* The graph shows the characteristics of three-phase 200 VAC.

●AX4300T



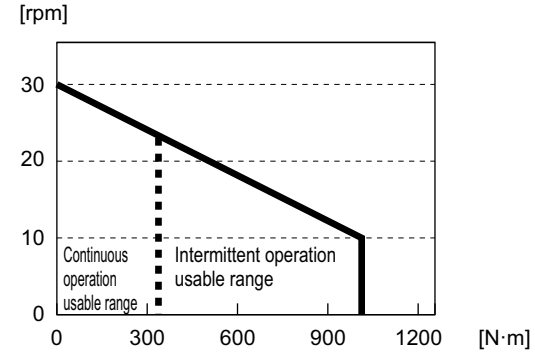
* The graph shows the characteristics of three-phase 200 VAC.

●AX4500T



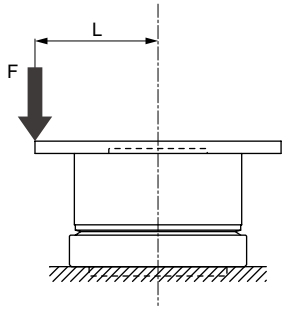
* The graph shows the characteristics of three-phase 200 VAC.

●AX410WT



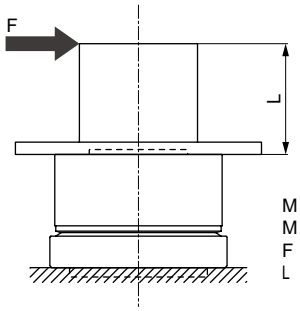
* The graph shows the characteristics of three-phase 200 VAC.

(Note) Moment load (simple formula)



M (N·m)=F (N) x (L) (m)
M : Moment load
F : Load
L : Distance from the output shaft center

(Fig. a)



M (N·m)=F (N) x (L+0.02) (m)
M : Moment load
F : Load
L : Distance from the output shaft flange surface

(Fig. b)

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.



ABSODEX General
Catalog No. CB-054A

ABSODEX (for AX1000T/AX2000T/AX4000T Series)

TS/TH driver

Interface specifications: Parallel I/O (NPN), Parallel I/O (PNP)
CC-Link, PROFIBUS-DP, DeviceNet
EtherCAT, EtherNet/IP

c UL us LISTED CE RoHS

Features

- Power supply is divided into main power supply and control power supply
- Wiring method is changed from terminal block to connector
- Small/lightweight (resin body adopted)
- 7-segment LED 2-digit display
- Supports encoder output (parallel I/O only)
- Serial communication options available
- Monitoring functions such as position information, alarm status, etc. (U2, U3, U4, U5, U6 options only)

How to order

• 200 VAC to 230 VAC

AX9000TS - U0

AX9000TH - U0

• 100 VAC to 115 VAC

AX9000TS - J1 - U0

Interface specifications
U0: Parallel I/O (NPN)
U1: Parallel I/O (PNP)
U2 : CC-Link
U3 : PROFIBUS-DP
U4 : DeviceNet
U5 : EtherCAT
U6 : EtherNet/IP

General specifications

Descriptions		Model	
		TS driver AX9000TS	TH driver AX9000TH
Power supply voltage	Main power supply	Three-phase, single-phase 200 VAC ±10% to 230 VAC ±10% (*1) 100 VAC ±10% to 115 VAC ±10% (J1 option) (*2) (*3)	
	Control power	200 VAC ±10% to 230 VAC ±10% 100 VAC ±10% to 115 VAC ±10% (J1 option) (*2) (*3)	
Power frequency		50/60 Hz	
Rated input current		200 VAC: 1.8 A 100 VAC: 2.4 A	200 VAC: 5.0 A
Rated output current		1.9 A	5.0 A
Structure		Driver and controller integrated (open)	
Operating ambient temperature		0 to 50°C	
Operating ambient humidity		20 to 90% RH (no condensation)	
Storage ambient temperature		-20 to 65°C	
Storage ambient humidity		20 to 90% RH (no condensation)	
Atmosphere		No corrosive gas or dust	
Anti-noise		1000 V (P-P), pulse width 1 μsec, rising 1 nsec impulse noise test, induction noise (capacitive coupling)	
Vibration resistance		4.9 m/s^2	
Weight		Approx. 1.6 kg	Approx. 2.1 kg
Degree of protection		IP2X (excluding CN4, CN5)	

*1) For models with maximum torque of 75 N·m or more, the calculation of torque limit region is different from the usual when used at single-phase 200 VAC. Contact CKD to determine usability.
*2) If 200 to 230 VAC is connected by mistake when using power voltage 100 to 115 VAC specifications (-J1 option), the driver internal circuit will be damaged.
*3) For models with maximum torque of 75 N·m or more, "-J1" cannot be selected.
*4) If the main power is cut OFF while the actuator is rotating, the rotation may continue due to inertia.
*5) After the main power supply is cut OFF, the motor may rotate due to the residual voltage of the driver.

Performance specifications

Descriptions	Content
No. of control axes	1 axis, 540672 pulse/1 rotation
Angle setting unit	° (degree), pulse, indexing No.
Angle min. setting unit	0.001°, 1 pulse
Speed setting unit	sec, rpm
Speed setting range	0.01 to 100 sec. / 0.11 to 300 rpm (*1)
Equal divisions	1 to 255
Max. command value	7-digit numeric input ±9999999
Timer	0.01 sec to 99.99 sec
Programming language	NC
Programming method	Set the data through RS-232C port with an interactive terminal, PC, etc.
Operation mode	Auto, MDI, jog, single block, servo OFF, pulse train input mode
Coordinates	Absolute, incremental
Acceleration curve	[5 types] Modified Sine (MS), Modified Constant Velocity (MC/MC2), Modified Trapezoid (MT), Trapecloid (TR)
Status display	LED display CHARGE: Main power POWER: Control power
Operation display	Display with 7-segment LED (2 digits)
Communication interface	RS-232C compliant
I/O signal	Refer to interface specification pages.
Program capacity	Approx. 6000 characters (256)
Electronic thermal	Overheating protection for actuator

*1) Maximum rotation speed differs depending on the actuator connected.

Breaker capacity

TS driver

Actuator model No.	Driver model No.	Rush current (A)		Breaker capacity
		Single-phase 100 V	Single-phase/three-phase 200 V	Rated current (A)
AX2006T	AX9000TS	16 (*1)	56 (*1)	10
AX1022T, AX2012T, AX2018T AX4009T, AX4022T				
AX1045T, AX4045T				
AX1075T, AX4075T		—		

*1) The value of the rush current is a representative value at 115 VAC and 230 VAC.

TH driver

Actuator model No.	Driver model No.	Rush current (A)	Breaker capacity
		Three-phase 200 V	Rated current (A)
AX1150T, AX4150T	AX9000TH	56 (*1)	20
AX1210T, AX4300T			
AX4500T			
AX410WT			

*1) The value of the rush current is a representative value at 230 VAC.



ABSODEX General
Catalog No. CB-054A

ABSODEX

AX6000M Series

Minimum size of 80 mm diameter
Compatible function allows free combination of driver, actuator, and cable
●Max. torque: 1/2/3 N·m
●Supported driver: MU driver

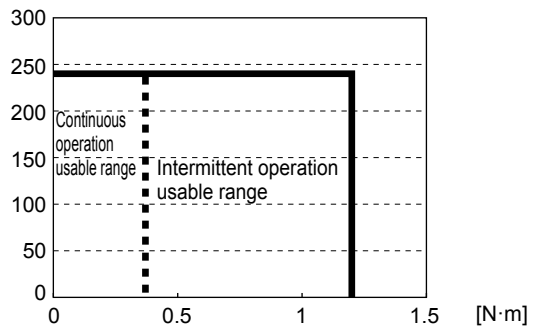
Actuator specifications

Descriptions		AX6001M	AX6003M
Max. output torque	N·m	1.2	3.0
Continuous output torque	N·m	0.4	1.0
Max. rotation speed	rpm	240 (*1)	
Allowable axial load	N	600	
Allowable moment load	N·m	5	
Output shaft moment of inertia	kg·m^2	0.00034	0.00059
Allowable moment of load inertia	kg·m^2	0.034	0.059
Index accuracy (*3)	sec	±90	
Repeatability (*3)	sec	±10	
Output shaft friction torque	N·m	0.13	0.22
Resolution	P/rev	540672	
Motor insulation class		Class A	
Motor withstand voltage		550 VAC 1 minute	
Motor insulation resistance		10 MΩ and over 500 VDC	
Operating ambient temperature		0 to 40°C	
Operating ambient humidity		20 to 85% RH, no condensation	
Storage ambient temperature		-10 to 65°C	
Storage ambient humidity		20 to 90% RH, no condensation	
Atmosphere		No corrosive gas, explosive gas, or dust	
Weight	kg	1.2 (1.4) *2	1.8 (2.0) *2
Output shaft runout (*3)	mm	0.03	
Output shaft surface runout (*3)	mm	0.05	
Degree of protection		IP20	

*1: Use at a speed of 80 rpm or less during continuous rotation operation.
*2: Numbers in ( ) represent the actuator weight with mounting base option.
*3: Refer to the "Glossary" in ABSODEX Products (Catalog No. CB-054A) for index accuracy, repeatability, output shaft runout and output shaft surface runout.

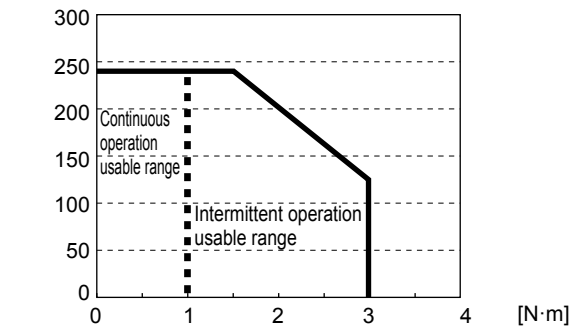
Speed/maximum torque characteristics

●AX6001M



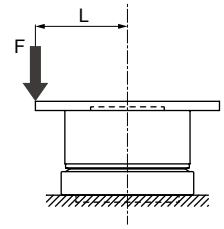
* The graph shows the characteristics when 24 VDC (ambient temperature: 25°C) is connected.

●AX6003M



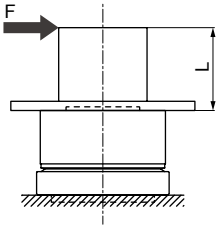
* The graph shows the characteristics when 24 VDC (ambient temperature: 25°C) is connected.

(Note) Moment load (simple formula)



M (N·m)=F (N) x (L) (m)
M : Moment load
F : Load
L : Distance from the output shaft center

(Fig. a)



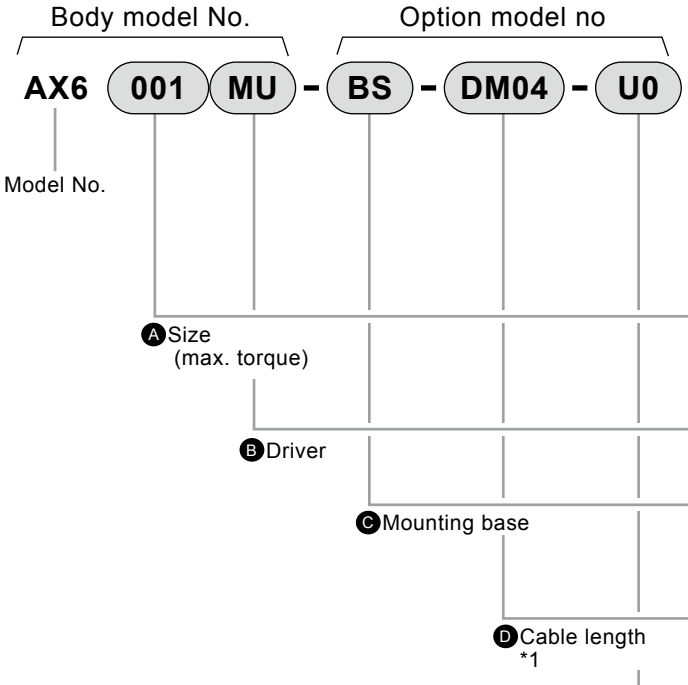
M (N·m)=F (N) x (L+0.02) (m)
M : Moment load
F : Load
L : Distance from the output shaft flange surface

(Fig. b)

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.

How to order

● Set model No. (actuator, driver, cable)



Code	Content
Ⓐ Size (max. torque)	
001	1.2 N·m
003	3.0 N·m
Ⓑ Driver	
MU	With MU driver
Ⓒ Mounting base	
Blank	Standard (without mounting base)
BS	With mounting base
Ⓓ Cable length	
DM00	Without cable
DM02	2 m
DM04	4 m
DM06	6 m
DM08	8 m
DM10	10 m
Ⓔ Interface specifications:	
U0	Parallel I/O (NPN specifications)
U1	Parallel I/O (PNP specifications)

Precautions for model No. selection

*1: Cable is a movable cable.
For cable external dimensions, refer to ABSODEX Products (Catalog No. CB-054A).
Body lead-out cable is not a movable cable.

*2: The lower surface positioning pin hole cannot be used if the "BS" option for Ⓒ Mounting base is selected. The surface is treated with electroless nickel plating.

*3: Positioning pin holes may not be surface treated.

*4: The rotating part surface is treated with electroless nickel plating.
The fixed section is made of stainless steel.

Actuator body discrete model No.

AX6 001 M – BS

Ⓐ Size　Ⓒ Mounting base

Driver discrete model No.

AX9000MU – U0

Ⓔ Interface specifications

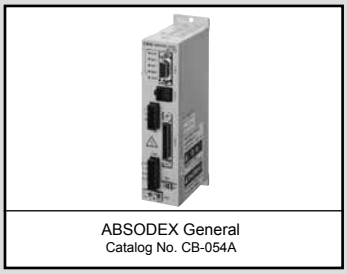
Cable discrete model No.

● Motor cable
AX-CBLM8 – DM04

● Resolver cable
AX-CBLR8 – DM04

Ⓓ Cable length
(Note: "DM04" when cable length is 4 m)

Made to order products are CE and RoHS non-compliant. Contact CKD as needed.



ABSODEX General
Catalog No. CB-054A

ABSODEX (for AX6000M Series)

MU driver

Interface specifications: Parallel I/O (NPN)
Parallel I/O (PNP)

Features

- Ultra-compact/lighter weight (resin body adopted)
- Easy wiring with connector

How to order

AX9000MU – U0
AX9000MU – U1

Interface specifications
U0: Parallel I/O (NPN)
U1: Parallel I/O (PNP)

General specifications

Descriptions		Content MU driver AX9000MU
Power supply voltage	Main power supply	24 VDC ±10%
	Control power	24 VDC ±10%
Structure		Driver and controller integrated
Operating ambient temperature		0 to 50°C
Operating ambient humidity		20 to 90% RH (no condensation)
Storage ambient temperature		-10 to 65°C
Storage ambient humidity		20 to 90% RH (no condensation)
Atmosphere		No corrosive gas or dust
Anti-noise		1000 V (P-P), pulse width 1 μsec, rising/falling time 1 nsec Impulse noise test, induction noise (capacitive coupling)
Vibration resistance		4.9 m/s^2
Weight		Approx. 0.5 kg
Degree of protection		IP2X

Performance specifications

Descriptions	Content
No. of control axes	1 axis, 540,672 pulse/1 rotation
Angle setting unit	° (degree), pulse, indexing No.
Angle min. setting unit	0.001°, 1 pulse
Speed setting unit	sec, rpm
Speed setting range	0.01 to 100 sec. / 0.11 to 240 rpm
Equal divisions	1 to 255
Max. command value	7-digit numeric input ±9,999,999 pulse
Timer	0.01 sec to 99.99 sec
Programming language	NC
Programming method	Set data through RS-232C port with a PC.
Operation mode	Auto, MDI, jog, single block, servo OFF, pulse train input mode
Coordinates	Absolute, incremental
Acceleration curve	[5 types] Modified Sine (MS), Modified Constant Velocity (MC/MC2) Modified Trapezoid (MT), Trapecloid (TR)
Status display	RUN: Normal operating state
	ALM2: Alarm 2 state
	ALM1: Alarm 1 state
	SERVO: Servo state
	CHARGE: Charge state
Communication interface	RS-232C compliant
I/O signal	Refer to interface specification pages.
Program capacity	Approx. 6000 characters (256)
Electronic thermal	Overheating protection for actuator

Power capacity

Actuator model No.	Driver model No.	Rated input current	Max. input current
AX6001M, AX6003M	AX9000MU	3.3 A	10 A

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.

Made to order products are CE and RoHS non-compliant. Contact CKD as needed.



ABSODEX General
Catalog No. CB-054A

ABSODEX

AX7000X Series

High-end model equipped with high-resolution encoder
Compatible function allows free combination of driver, actuator, and cable

- Maximum torque: 22/45 N·m
- Supported driver: XS driver

RoHS

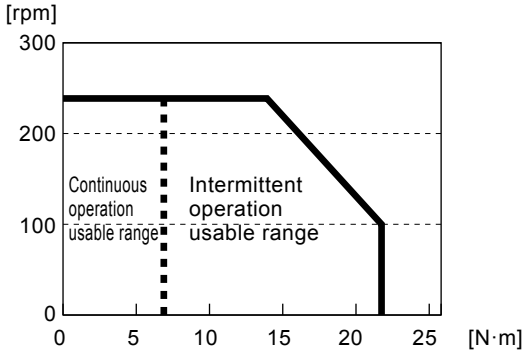
Actuator specifications

Descriptions		AX7022X	AX7045X
Max. output torque	N·m	22	45
Continuous output torque	N·m	7	15
Max. rotation speed	rpm	240 (*1)	
Allowable axial load	N	400	
Allowable moment load	N·m	20	
Output shaft moment of inertia	kg·m^2	0.0182	0.0254
Allowable moment of load inertia	kg·m^2	0.60	0.90
Index accuracy (*3)	sec	±30	
Repeatability (*3)	sec	±2	
Output shaft friction torque	N·m	2.5	
Resolution	P/rev	4,194,304	
Motor insulation class		Class F	
Motor withstand voltage		1500 VAC 1 min.	
Motor insulation resistance		10 MΩ and over 500 VDC	
Operating ambient temperature		0 to 40°C	
Operating ambient humidity		20 to 85% RH, no condensation	
Storage ambient temperature		-20 to 80°C	
Storage ambient humidity		20 to 90% RH, no condensation	
Atmosphere		No corrosive gas, explosive gas, or dust	
Weight	kg	10.0 (12.9) *2	13.2 (16.1) *2
Output shaft runout (*3)	mm	0.03	
Output shaft surface runout (*3)	mm	0.03	
Degree of protection		IP20	

*1: Use at a speed of 80 rpm or less during continuous rotation operation. *2: Numbers in ( ) represent the actuator weight with mounting base option.
*3: Refer to the "Glossary" in ABSODEX Products (Catalog No. CB-054A) for index accuracy, repeatability, output shaft runout and output shaft surface runout.

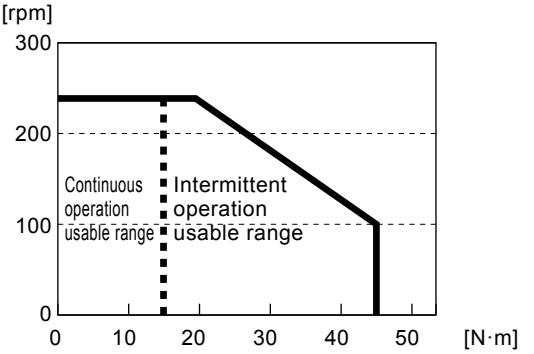
Speed/maximum torque characteristics

●AX7022X



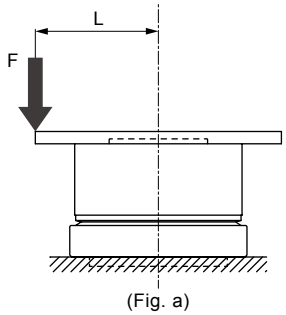
* The graph shows the characteristics of three-phase 200 VAC.

●AX7045X



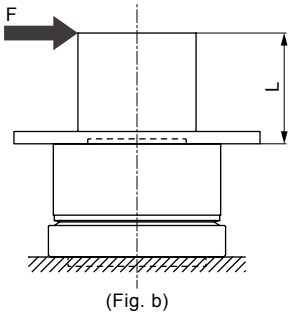
* The graph shows the characteristics of three-phase 200 VAC.

(Note) Moment load (simple formula)



(Fig. a)

M (N·m)=F (N) x (L) (m)
M : Moment load
F : Load
L : Distance from the output shaft center



(Fig. b)

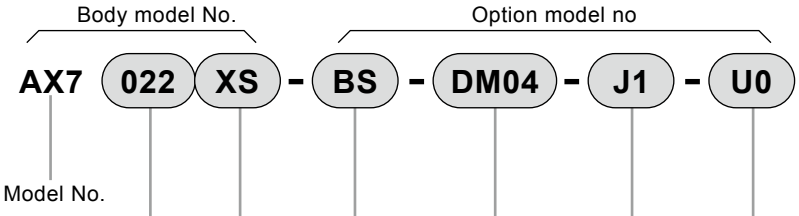
M (N·m)=F (N) x (L+0.02) (m)
M : Moment load
F : Load
L : Distance from the output shaft flange surface

Peripheral devices

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.

How to order

● Set model No. (actuator, driver, cable)



Ⓐ Size (max. torque)

Code	Content
022	22 N·m
045	45 N·m

Ⓑ Driver

Code	Content
XS	With XS driver

Ⓒ Mounting base

Code	Content
Blank	Standard (without mounting base)
BS	With mounting base

Ⓓ Cable length *2

Code	Content
DM00	Without cable
DM02	2 m
DM04	4 m
DM06	6 m
DM08	8 m
DM10	10 m
DM15	15 m
DM20	20 m

Ⓔ Driver power voltage

Code	Content
Blank	Single-phase/three-phase 200 VAC to 230 VAC
J1	Single-phase 100 VAC to 115 VAC

Ⓕ Interface specifications

Code	Content
U0	Parallel I/O (NPN)
U2	CC-Link
U4	DeviceNet

Precautions for model No. selection

*1: Select the driver according to the compatibility table below.

Driver power voltage compatibility table

Model \ Driver	XS driver	
	Three-phase/single-phase 200 VAC to 230 VAC	Single-phase 100 VAC to 115 VAC
AX7022X	Blank	J1
AX7045X	Blank	J1

*2: Cable is a movable cable.
For cable external dimensions, refer to ABSODEX Products (Catalog No. CB-054A).
Body lead-out cable is not a movable cable.

*3: The lower surface positioning pin hole cannot be used if the "BS" option for Ⓒ Mounting base is selected. The surface is treated with electroless nickel plating.

*4: Positioning pin holes may not be surface treated.

*5: The body surface of AX7022X and AX7045X is treated with electroless nickel plating.

● Actuator body discrete model No.

AX7 022 X - BS

Ⓐ Size

Ⓒ Mounting base

● Driver discrete model No.

• 200 VAC to 230 VAC

AX9000XS - U0

• 100 VAC to 115 VAC

AX9000XS-J1- U0

Ⓕ Interface specifications

● Cable discrete model No.

• Motor cable

AX-CBLM6- DM04

• Encoder cable

AX-CBLR10- DM04

Ⓓ Cable length
(Note: "DM04" when cable length is 4 m)

* Made to order products are RoHS non-compliant. Contact CKD as needed.



ABSODEX General
Catalog No. CB-054A

ABSODEX (for AX7000X Series)

XS driver

Interface specifications: Parallel I/O (NPN)
CC-Link
DeviceNet

RoHS

Features

- Power supply is divided into main power supply and control power supply
- Small/lightweight (resin body adopted)
- 7-segment LED 2-digit display
- Supports encoder output (parallel I/O only)
- Serial communication options available
- Drive condition setting and command are possible (CC-Link and DeviceNet only) depending on the host controller

How to order

• 200 VAC to 230 VAC

AX9000XS -U0

• 100 VAC to 115 VAC

AX9000XS-J1-U0

Interface specifications
U0: Parallel I/O (NPN)
U2 : CC-Link
U4 : DeviceNet

General specifications

Descriptions		Model XS driver AX9000XS
Power supply voltage	Main power supply	Three-phase, single-phase 200 VAC ±10% to 230 VAC ±10% 100 VAC ±10% to 115 VAC ±10% (J1 option) (*1)
	Control power	200 VAC ±10% to 230 VAC ±10% 100 VAC ±10% to 115 VAC ±10% (J1 option) (*1)
Power frequency		50/60 Hz
Rated input current		200 VAC: 1.8 A 100 VAC: 2.4 A
Rated output current		1.9 A
Structure		Driver and controller integrated (open)
Operating ambient temperature		0 to 50°C
Operating ambient humidity		20 to 90% RH (no condensation)
Storage ambient temperature		-20 to 65°C
Storage ambient humidity		20 to 90% RH (no condensation)
Atmosphere		No corrosive gas or dust
Anti-noise		1000 V (P-P), pulse width 1 μsec, rising 1 nsec Impulse noise test, induction noise (capacitive coupling)
Vibration resistance		4.9 m/s^2
Weight		Approx. 1.6 kg
Degree of protection		IP2X (excluding CN4, CN5)

*1) If 200 to 230 VAC is connected by mistake when using power voltage 100 to 115 VAC specifications (-J1 option), the driver internal circuit will be damaged.
*2) If the main power is cut OFF while the actuator is rotating, the rotation may continue due to inertia.
*3) After the main power supply is cut OFF, the motor may rotate due to the residual voltage of the driver.

Performance specifications

Descriptions	Content
No. of control axes	1 axis, 4194304 pulse/1 rotation
Angle setting unit	° (degree), pulse, indexing No.
Angle min. setting unit	0.001°, 1 pulse
Speed setting unit	sec, rpm
Speed setting range	0.01 to 100 sec / 0.11 to 240 rpm
Equal divisions	1 to 255
Max. command value	8-digit numeric input ±99999999
Timer	0.01 sec to 99.99 sec
Programming language	NC
Programming method	Set data through RS-232C port with a PC, etc.
Operation mode	Auto, MDI, jog, single block, servo OFF, pulse train input mode, network operation mode
Coordinates	Absolute, incremental
Acceleration curve	[5 types] Modified Sine (MS), Modified Constant Velocity (MC/MC2), Modified Trapezoid (MT), Trapecloid (TR)
Status display	LED display CHARGE = Main power POWER = Control power
Operation display	Display with 7-segment LED (2 digits)
Communication interface	RS-232C compliant
I/O signal	Refer to interface specification pages.
Program capacity	Approx. 6000 characters (256)
Electronic thermal	Overheating protection for actuator

Breaker capacity

Actuator model No.	Driver model No.	Rush current (A)		Breaker capacity
		Single-phase 100 V	Single-phase/three-phase 200 V	Rated current (A)
AX7022X, AX7045X	AX9000XS	16 (*1)	56 (*1)	10

*1) The value of the rush current is a representative value at 115 VAC and 230 VAC.

Peripheral devices

⚠ Always read the precautions described in ABSODEX Products (Catalog No. CB-054A) before use.

* Made to order products are RoHS non-compliant.

ABSODEX Model Selection Specification Check Sheet Table direct drive		(Note) For chain drive or gear drive, contact CKD.	
Company		Name	
Department			
TEL		FAX	

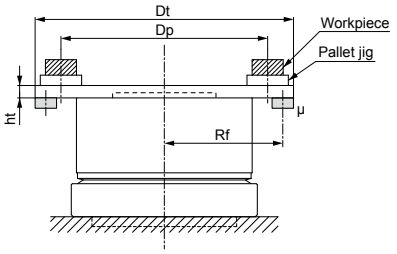
■ Operating conditions

1. Indexing 2. Oscillating			
Travel angle	Ψ (°)		or indexing No.
Travel time	t_1 (s)		
Cycle time	t_0 (s)		Cycle time = travel time + stop time

(Note) Indexing time is travel time + settling time.
Though the settling time depends on working conditions, it is approximately 0.025 to 0.20 seconds.

■ Load conditions

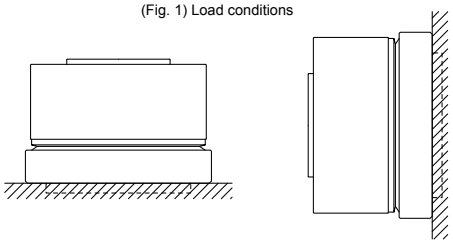
Table	
Material 1. Steel 2. Aluminum	
Exterior Dt (mm)	
Thickness ht (mm)	
Weight m1 (kg)	
Workpiece	
Quantity nw (pcs)	
Maximum weight mw (kg/pc)	
Mounting center Dp (mm)	
Pallet jig	
Quantity np (pcs)	
Maximum weight mp (kg/pc)	



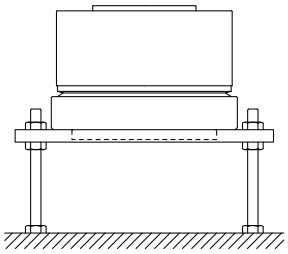
(Fig. 1) Load conditions

■ Other load conditions

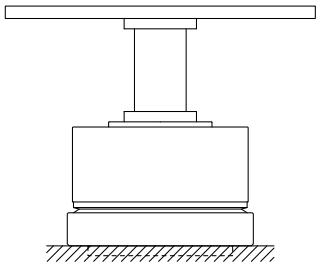
Mounting direction	
1. Horizontal (Fig. 2) 2. Vertical (Fig. 3)	
External work	
1. No 2. Yes	
(Note) Eccentric load due to gravity during vertical mounting, external load due to crimping work, etc.	
Table underside support	
1. No 2. Yes	
Coefficient of friction μ	
Action radius Rf (mm)	
Equipment rigidity	
1. High 2. Low (Note)	
(Note) Use of spline, when unable to fix directly to equipment (Fig. 4), when there are mechanisms such as chucks on the table, etc.	
Extension by table shaft	
1. No 2. Yes (Fig. 5)	
Movable actuator	
1. No 2. Yes	
(Note) When the actuator is movable by mounting on an X-Y table or hoist mechanism, etc.	
(Note) If selecting "2" for any items, contact CKD.	



(Fig. 2) Mounting direction: Horizontal (Fig. 3) Mounting direction: Vertical

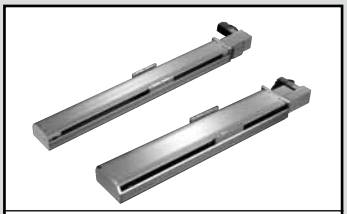


(Fig. 4) Mounting rigidity: Low



(Fig. 5) Extension by shaft

(Note) For more accurate model selection, we recommend that you attach reference drawings giving an overview of the equipment.



Electric Actuator Motorless General
Catalog No. CB-055A

Electric actuator Belt

ETV Series

●Applicable motor capacity: 100 W/200 W/400 W/750 W

RoHS

Specifications

[Applicable motor capacity: 100 W]

Descriptions			Model		
			ETV-05	ETV-06	ETV-10
Belt width		mm	9	12	15
Lead		mm	40	40	32
Repeatability		mm	±0.08		±0.04
Max. load capacity *1	Horizontal	kg	3	3	10
	Vertical	kg	-	-	-
Max. speed *1		mm/s	2000	2000	1600
Stroke length *2		mm	100 to 800	100 to 800	100 to 2550
Thrust		N	42	42	61

*1: The value when acceleration/deceleration time is 0.4 sec.
*2: Stroke length is 50 pitch.

[Applicable motor capacity: 200 W]

Descriptions			Model
			ETV-14
Belt width		mm	22
Lead		mm	40
Repeatability		mm	±0.04
Max. load capacity *1	Horizontal	kg	25
	Vertical	kg	-
Max. speed *1		mm/s	2000
Stroke length *2		mm	100 to 3050
Thrust		N	100

*1: The value when acceleration/deceleration time is 0.4 sec.
*2: Stroke length is 50 pitch.

[Applicable motor capacity: 400 W]

Descriptions			Model
			ETV-17
Belt width		mm	30
Lead		mm	40
Repeatability		mm	±0.04
Max. load capacity *1	Horizontal	kg	45
	Vertical	kg	-
Max. speed *1		mm/s	2000
Stroke length *2		mm	100 to 3500
Thrust		N	204

*1: The value when acceleration/deceleration time is 0.4 sec.
*2: Stroke length is 50 pitch.

[Applicable motor capacity: 750 W]

Descriptions			Model
			ETV-22
Belt width		mm	50
Lead		mm	40
Repeatability		mm	±0.04
Max. load capacity *1	Horizontal	kg	85
	Vertical	kg	-
Max. speed *1		mm/s	2000
Stroke length *2		mm	100 to 3500
Thrust		N	367

*1: The value when acceleration/deceleration time is 0.4 sec.
*2: Stroke length is 50 pitch.

CAUTION:
This product does not have a motor mounted. The user must prepare, mount, and adjust the motor and driver.

The maximum speed is based on the assumption that the motor mounted will have 3000 rpm output.
Thrust and maximum load capacity are at speeds assuming that the motor mounted will output the rated torque.

How to order

ETV - 06 - 40 010 - D M 1 X C B D P

Model No. ETV

Ⓐ Body size

Code	Content
Ⓐ Body size (mm)	
05	Width 50 x height 54
06	Width 65 x height 56
10	Width 102 x height 66
14	Width 135 x height 93
17	Width 170 x height 108
22	Width 220 x height 134

Ⓑ Lead

Ⓑ Lead (refer to table 1 on the next page)	
32	32 mm
40	40 mm

Ⓒ Stroke length

Ⓒ Stroke length (refer to table 1 on the next page)	
010 to 350	100 mm to 3500 mm (50 mm pitch) Display is 1/10.

Ⓓ Motor mounting method

Ⓓ Motor mounting method (refer to table 2 on the next page)	
U	Upward mounting
D	Downward mounting
R	Right mounting
S	Upper right mounting
T	Lower right mounting
L	Left mounting
V	Upper left mounting
W	Lower left mounting

Ⓔ Mounted motor specification

Ⓔ Mounted motor specification	
M	Select the mounted motor specification from the table below.
Y	
P	

Ⓕ Motor capacity

Ⓕ Motor capacity (refer to table 2 on the next page)	
1	100 W
2	200 W
4	400 W
8	750 W

Ⓖ Belt

Ⓖ Belt	
X	Standard (rubber)
L	Low dust generation (urethane) *

Ⓗ Origin sensor

Ⓗ Origin sensor (1 pc) (refer to table 4 on the next page)	
N	None
C	Outside motor side (attached at shipment)
D	Outside motor opposite side (attached at shipment)

Ⓘ Limit sensor

Ⓘ Limit sensor (2 pcs) (refer to table 4 on the next page)	
N	None
B	Outside (attached at shipment)

Ⓙ Grease nipple

Ⓙ Grease nipple (refer to table 5 on the next page)	
N	Body mounting direction standard/without
D	Body mounting direction bottom/without
R	Right
L	Left

Ⓚ Positioning pin hole

Ⓚ Positioning pin hole	
N	None
P	Yes

[Example of model No.]

ETV-06-40010-DM1XCBDN

Ⓐ Body size: Width 65 × height 56 mm

Ⓑ Lead: 40 mm

Ⓒ Stroke length: 100 mm

Ⓓ Motor mounting method: Downward mounting

Ⓔ Mounted motor specifications: Mitsubishi Electric Co., Ltd.

Ⓕ Motor capacity: 100 W

Ⓖ Drive belt: Standard (rubber)

Ⓗ Origin sensor: Outside motor side

Ⓘ Limit sensor: Outside

Ⓙ Grease nipple: Mounting direction bottom/without

Ⓚ Positioning pin hole: None

* For Ⓐ Body size "05" and "06", Ⓖ Belt "L" cannot be selected.

Ⓔ Mounted motor specification (refer to table 3 on the next page)

Manufacturer	100 W	200 W	400 W	750 W
Mitsubishi Electric Corporation	M	M	M	M
Delta Electronics Co., Ltd.	M	M	M	M
Sanyo Denki Co., Ltd.	M	M	M	-
YASKAWA Electric Corporation	Y	Y	Y	Y
Keyence Corporation	Y	Y	Y	Y
Panasonic Co., Ltd.	P	P	P	P
OMRON Corporation	M	P	P	P

Ⓙ Motor and grease nipple mounting position

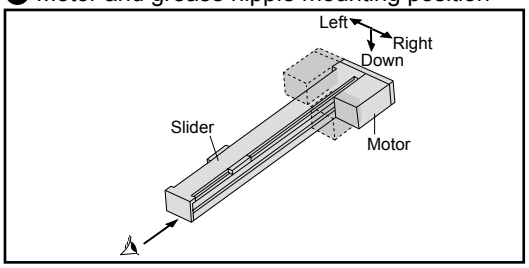


Table 1 Ⓑ Lead and Ⓒ Stroke length

Model	Ⓑ Lead (mm)		Ⓒ Stroke length (mm) (50 mm pitch)
	32	40	
ETV-05	-	○	100-800
ETV-06	-	○	100-800
ETV-10	○	-	100-2550
ETV-14	-	○	100-3050
ETV-17	-	○	100-3500
ETV-22	-	○	100-3500

Table 2 Ⓓ Motor mounting method and Ⓕ Motor capacity

Model	Ⓓ Motor mounting method								Ⓕ Motor capacity			
	U Upper	D Lower	R Right	S Upper right	T Lower right	L Left	V Upper left	W Lower left	1 100 W	2 200 W	4 400 W	8 750 W
ETV-05	○	○	-	-	-	-	-	-	○	-	-	-
ETV-06	○	○	-	-	-	-	-	-	○	-	-	-
ETV-10	-	-	○	○	○	○	○	○	○	-	-	-
ETV-14	-	-	○	○	○	○	○	○	-	○	-	-
ETV-17	-	-	○	○	○	○	○	○	-	-	○	-
ETV-22	-	-	○	○	○	○	○	○	-	-	-	○

Table 3 Ⓔ Mounted motor specifications and recommended motor model number/rated output

Ⓔ Manufacturer	Motor (without brake)	Motor (with brake)	Rated output
Mitsubishi Electric Corporation	HG-KR13	HG-KR13B	100 W
	HG-KR23	HG-KR23B	200 W
	HG-KR43	HG-KR43B	400 W
	HG-KR73	HG-KR73B	750 W
Delta Electronics (Japan), Inc. Corporation	ECMA-C10401ES	ECMA-C10401FS	100 W
	ECMA-C10602ES	ECMA-C10602FS	200 W
	ECMA-C10604ES	ECMA-C10604FS	400 W
	ECMA-C10807ES	ECMA-C10807FS	750 W
Sanyo Denki Co., Ltd.	R2AA04010FX	R2AA04010FC	100 W
	R2AA06020FX	R2AA06020FC	200 W
	R2AA06040HX	R2AA06040HC	400 W
	-	-	750 W
YASKAWA Electric Corporation	SGMJV-01ADA21	SGMJV-01ADA2C	100 W
	SGMJV-02ADA21	SGMJV-02ADA2C	200 W
	SGMJV-04ADA21	SGMJV-04ADA2C	400 W
	SGMJV-08ADA21	SGMJV-08ADA2C	750 W

Ⓔ Manufacturer	Motor (without brake)	Motor (with brake)	Rated output
Keyence Corporation	SV-M010□□	SV-B010□□	100 W
	SV-M020□□	SV-B020□□	200 W
	SV-M040□□	SV-B040□□	400 W
	SV-M075□□	SV-B075□□	750 W
Panasonic Co., Ltd.	MSMD012G1A	MSMD012G1B	100 W
	MSMD022G1A	MSMD022G1B	200 W
	MSMD042G1A	MSMD042G1B	400 W
	MSMD082G1A	MSMD082G1B	750 W
OMRON Corporation	R88M-K10030H	R88M-K10030H-B	100 W
	R88M-K20030□	R88M-K20030□-B	200 W
	R88M-K40030□	R88M-K40030□-B	400 W
	R88M-K75030H	R88M-K75030H-B	750 W

* Contact CKD for mounting other than the above recommended motor model numbers and products of other motor manufacturers.

* Contact CKD regarding other motor manufacturers and models.

Table 4 Ⓗ Origin sensor and Ⓘ Limit sensor

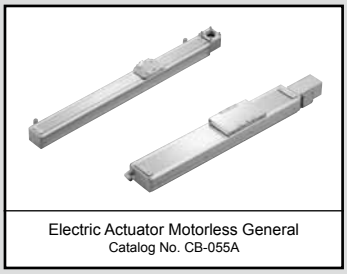
Model	Ⓗ Origin sensor (1 pc)			Ⓘ Limit sensor (2 pcs)	
	None *1	Outside		None *1	Outside
		Motor side	Motor opposite side		
ETV-05	○	○	○	○	○
ETV-06	○	○	○	○	○
ETV-10	○	○	○	○	○
ETV-14	○	○	○	○	○
ETV-17	○	○	○	○	○
ETV-22	○	○	○	○	○

*1: Origin sensor and limit sensor are available as a set. Select "None" for both of them if selecting it for either.
Example: Set of origin sensor "None" + limit sensor "Outside" is not available.
*2: The user can adjust the sensor position. (Attached at shipment)

Table 5 Ⓙ Motor mounting method and options

Model	Ⓙ Option							
	U Upper	D Lower	R Right	S Upper right	T Lower right	L Left	V Upper left	W Lower left
ETV-05	N only (body mounting direction: standard (bottom only))							
ETV-06	N: Body mounting direction: standard (top side ø4.5 spot face), D: Body mounting direction: bottom side from bottom surface M5							
ETV-10 to 22	-		N/L			N/R		

*1: The grease nipple is not assembled for ETV-05, 06.
*2: ETV-06 has an indication of the body mounting direction. Select "N": mounting direction standard or "D": mounting direction bottom.
*3: As for ETV-10 to 22, the grease nipple is optional. Select "N": None, "R": Right, or "L": Left.



Electric Actuator Motorless General
Catalog No. CB-055A

Electric actuator Low dust generation belt

ECV Series

● Applicable motor capacity: 100 W/200 W/400 W/750 W

RoHS

Specifications

[Applicable motor capacity: 100 W]

Descriptions			Model		
			ECV-05	ECV-06	ECV-10
Belt width		mm	9	12	15
Lead		mm	40	40	32
Repeatability		mm	±0.08		±0.04
Max. load capacity *1	Horizontal	kg	3	3	10
	Vertical	kg	-	-	-
Max. speed *1		mm/s	2000	2000	1600
Stroke length *2		mm	100 to 800	100 to 800	100 to 2550
Thrust		N	42	42	61

*1: The value when acceleration/deceleration time is 0.4 sec.
*2: Stroke length is 50 pitch.

[Applicable motor capacity: 200 W]

Descriptions			Model
			ECV-14
Belt width		mm	22
Lead		mm	40
Repeatability		mm	±0.04
Max. load capacity *1	Horizontal	kg	25
	Vertical	kg	-
Max. speed *1		mm/s	2000
Stroke length *2		mm	100 to 3050
Thrust		N	100

*1: The value when acceleration/deceleration time is 0.4 sec.
*2: Stroke length is 50 pitch.

[Applicable motor capacity: 400 W]

Descriptions			Model
			ECV-17
Belt width		mm	30
Lead		mm	40
Repeatability		mm	±0.04
Max. load capacity *1	Horizontal	kg	45
	Vertical	kg	-
Max. speed *1		mm/s	2000
Stroke length *2		mm	100 to 3500
Thrust		N	204

*1: The value when acceleration/deceleration time is 0.4 sec.
*2: Stroke length is 50 pitch.

[Applicable motor capacity: 750 W]

Descriptions			Model
			ECV-22
Belt width		mm	50
Lead		mm	40
Repeatability		mm	±0.04
Max. load capacity *1	Horizontal	kg	85
	Vertical	kg	-
Max. speed *1		mm/s	2000
Stroke length *2		mm	100 to 3400
Thrust		N	367

*1: The value when acceleration/deceleration time is 0.4 sec.
*2: Stroke length is 50 pitch.

CAUTION:
This product does not have a motor mounted.
The user must prepare, mount, and adjust the motor and driver.

The maximum speed is based on the assumption that the motor mounted will have 3000 rpm output.
Thrust and maximum load capacity are values assuming that the motor mounted will output the rated torque.

How to order

ECV - 06 - 40 010 - D M 1 X C B N N

- ECV: Model No.
- 06: Ⓐ Body size
- 40: Ⓑ Lead
- 010: Ⓒ Stroke length
- D: Ⓓ Motor mounting method
- M: Ⓔ Mounted motor specification
- 1: Ⓕ Motor capacity
- X: Ⓖ Belt
- C: Ⓗ Origin sensor
- B: Ⓘ Limit sensor
- N: Ⓙ Grease nipple
- N: Ⓚ Positioning pin hole

Code	Content
Ⓐ Body size (mm)	
05	Width 50 x height 54
06	Width 65 x height 56
10	Width 108 x height 78.5
14	Width 135 x height 91
17	Width 170 x height 107
22	Width 220 x height 138
Ⓑ Lead (refer to table 1 on the next page)	
32	32 mm
40	40 mm
Ⓒ Stroke length (refer to table 1 on the next page)	
010 to 350	100 mm to 3500 mm (50 mm pitch) Display is 1/10.
Ⓓ Motor mounting method (refer to table 2 on the next page)	
U	Upward mounting
D	Downward mounting
R	Right mounting
S	Upper right mounting
T	Lower right mounting
L	Left mounting
V	Upper left mounting
W	Lower left mounting
Ⓔ Mounted motor specification	
M	Select the mounted motor specification from the table below.
Y	
P	
Ⓕ Motor capacity (refer to table 2 on the next page)	
1	100 W
2	200 W
4	400 W
8	750 W
Ⓖ Belt	
X	Standard (rubber)
L	Low dust generation (urethane) *
Ⓗ Origin sensor (1 pc) (refer to table 4 on the next page)	
N	None
C	Outside motor side (attached at shipment)
D	Outside motor opposite side (attached at shipment)
Ⓘ Limit sensor (2 pcs) (refer to table 4 on the next page)	
N	None
B	Outside (attached at shipment)
Ⓙ Grease nipple (refer to table 5 on the next page)	
N	Body mounting direction standard/without
R	Right
L	Left
Ⓚ Positioning pin hole	
N	None
P	Yes

[Example of model No.]

ECV-06-40010-DM1XCBNN

- Ⓐ Body size: Width 65 × height 56 mm
- Ⓑ Lead: 40 mm
- Ⓒ Stroke length: 100 mm
- Ⓓ Motor mounting method: Downward mounting
- Ⓔ Mounted motor specifications: Manufactured by Mitsubishi Electric Co., Ltd.
- Ⓕ Motor capacity: 100 W
- Ⓖ Belt: Standard (rubber)
- Ⓗ Origin sensor: Outside motor side
- Ⓘ Limit sensor: Outside
- Ⓙ Grease nipple: Mounting direction standard
- Ⓚ Positioning pin hole: None

* For Ⓐ Body size "05" and "06", Ⓖ Belt "L" cannot be selected.

Ⓔ Mounted motor specification (refer to table 3 on the next page)

Manufacturer	100 W	200 W	400 W	750 W
Mitsubishi Electric Corporation	M	M	M	M
Delta Electronics Co., Ltd.	M	M	M	M
Sanyo Denki Co., Ltd.	M	M	M	-
YASKAWA Electric Corporation	Y	Y	Y	Y
Keyence Corporation	Y	Y	Y	Y
Panasonic Co., Ltd.	P	P	P	P
OMRON Corporation	M	P	P	P

Ⓙ Motor and grease nipple mounting position

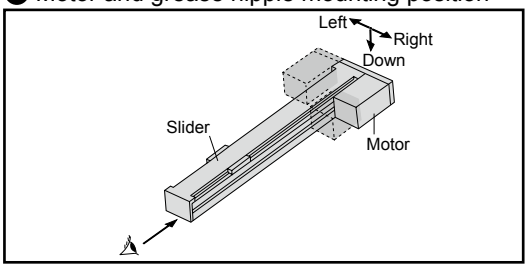


Table 1 Ⓑ Lead and Ⓒ Stroke length

Model	Ⓑ Lead (mm)		Ⓒ Stroke length (mm) (50 mm pitch)
	32	40	
ECV-05	-	○	100-800
ECV-06	-	○	100-800
ECV-10	○	-	100-2550
ECV-14	-	○	100-3050
ECV-17	-	○	100-3500
ECV-22	-	○	100-3400

Table 2 Ⓓ Motor mounting method and Ⓕ Motor capacity

Model	Ⓓ Motor mounting method								Ⓕ Motor capacity			
	U Upper	D Lower	R Right	S Upper right	T Lower right	L Left	V Upper left	W Lower left	1 100 W	2 200 W	4 400 W	8 750 W
ECV-05	○	○	-	-	-	-	-	-	○	-	-	-
ECV-06	○	○	-	-	-	-	-	-	○	-	-	-
ECV-10	-	-	○	○	○	○	○	○	○	-	-	-
ECV-14	-	-	○	○	○	○	○	○	-	○	-	-
ECV-17	-	-	○	○	○	○	○	○	-	-	○	-
ECV-22	-	-	○	○	○	○	○	○	-	-	-	○

Table 3 Ⓔ Mounted motor specifications and recommended motor model number/rated output

Ⓔ Manufacturer	Motor (without brake)	Motor (with brake)	Rated output
Mitsubishi Electric Corporation	HG-KR13	HG-KR13B	100 W
	HG-KR23	HG-KR23B	200 W
	HG-KR43	HG-KR43B	400 W
	HG-KR73	HG-KR73B	750 W
Delta Electronics (Japan), Inc. Corporation	ECMA-C10401ES	ECMA-C10401FS	100 W
	ECMA-C10602ES	ECMA-C10602FS	200 W
	ECMA-C10604ES	ECMA-C10604FS	400 W
	ECMA-C10807ES	ECMA-C10807FS	750 W
Sanyo Denki Co., Ltd.	R2AA04010FX	R2AA04010FC	100 W
	R2AA06020FX	R2AA06020FC	200 W
	R2AA06040HX	R2AA06040HC	400 W
	-	-	750 W
YASKAWA Electric Corporation	SGMJV-01ADA21	SGMJV-01ADA2C	100 W
	SGMJV-02ADA21	SGMJV-02ADA2C	200 W
	SGMJV-04ADA21	SGMJV-04ADA2C	400 W
	SGMJV-08ADA21	SGMJV-08ADA2C	750 W

Ⓔ Manufacturer	Motor (without brake)	Motor (with brake)	Rated output
Keyence Corporation	SV-M010□□	SV-B010□□	100 W
	SV-M020□□	SV-B020□□	200 W
	SV-M040□□	SV-B040□□	400 W
	SV-M075□□	SV-B075□□	750 W
Panasonic Co., Ltd.	MSMD012G1A	MSMD012G1B	100 W
	MSMD022G1A	MSMD022G1B	200 W
	MSMD042G1A	MSMD042G1B	400 W
	MSMD082G1A	MSMD082G1B	750 W
OMRON Corporation	R88M-K10030H	R88M-K10030H-B	100 W
	R88M-K20030□	R88M-K20030□-B	200 W
	R88M-K40030□	R88M-K40030□-B	400 W
	R88M-K75030H	R88M-K75030H-B	750 W

* Contact CKD regarding other motor manufacturers, models and details.

* Contact CKD for mounting other than the above recommended motor model numbers and products of other motor manufacturers.

Table 4 Ⓗ Origin sensor and Ⓘ Limit sensor

Model	Ⓗ Origin sensor (1 pc)			Ⓘ Limit sensor (2 pcs)	
	None *1	Outside		None *1	Outside
		Motor side	Motor opposite side		
ECV-05	○	○	○	○	○
ECV-06	○	○	○	○	○
ECV-10	○	○	○	○	○
ECV-14	○	○	○	○	○
ECV-17	○	○	○	○	○
ECV-22	○	○	○	○	○

*1: Origin sensor and limit sensor are available as a set. Select "None" for both of them if selecting it for either.
Example: Set of origin sensor "None" + limit sensor "Outside" is not available.
*2: The user can adjust the sensor position. (Attached at shipment)

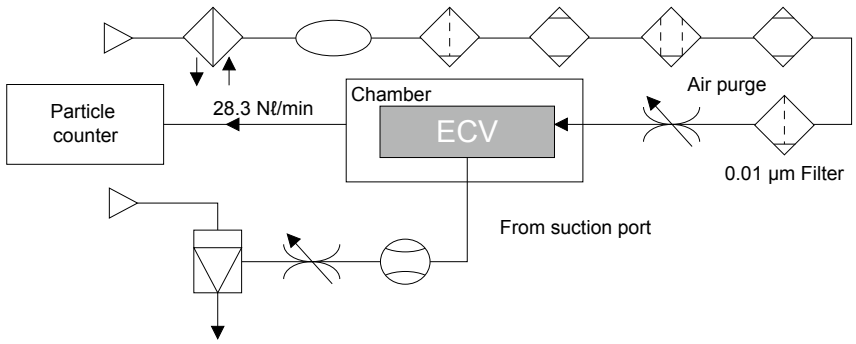
Table 5 Ⓙ Motor mounting method and options

Model	Ⓙ Option							
	U Upper	D Lower	R Right	S Upper right	T Lower right	L Left	V Upper left	W Lower left
ECV-05/06	N only (body mounting direction: standard)							
ECV-10 to 22	-		N/L			N/R		

*1: The grease nipple is not attached for ECV-05 and 06.
*2: As for ECV-10 to 22, the grease nipple is optional. Select "N": None, "R": Right, or "L": Left.

Dust generation characteristics Reference data

Test circuit



Measuring method

(1) Set a test sample in the acrylic resin chamber.

(2) Supply clean air at the same flow rate as the particle counter intake rate (28.3 Nℓ/min).

(3) Place the chamber in an ISO class 4 (class 10) clean bench.

(4) Activate the test sample, and measure changes in particle concentration over time during the specified measurement time.

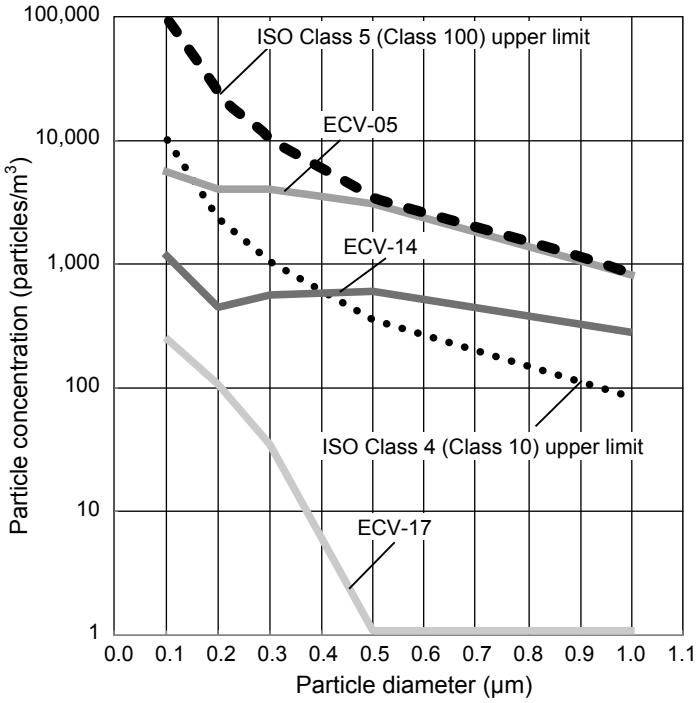
(5) Test sample operating speed

Measuring conditions

Descriptions		Content
Test sample	Model No.	Operating speed 800 mm/sec for ECV-05-40040
		Operating speed 800 mm/sec for ECV-14-40040
		Operating speed 800 mm/sec for ECV-17-40040
	Acceleration/deceleration time	0.4 sec
	Air intake	30.0 Nℓ/min for ECV-05-40040
		60.0 Nℓ/min for ECV-14-40040
		80.0 Nℓ/min for ECV-17-40040
Chamber	Internal capacity	28.3 Nℓ
Particle counter	Name	Laser dust monitor
	Min. measurable particle diameter	0.1 μm
	Intake	28.3 Nℓ/min
Setting conditions	Sampling	10 min
	Interval	40 min
	Measurement time	50 h

Dust generation data

The values in the data are measured values under the above conditions, and are not guaranteed.



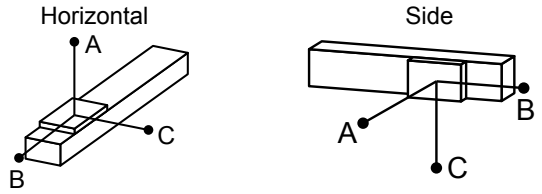
ETV/ECV Model Selection Check Sheet → **CKD** (Contact)

Fill in the form and send to the nearest CKD Sales Office. We will respond with the model selection results.

Customer:

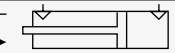
Company		Department	
Name		E-mail	
TEL		FAX	

Selecting conditions:

Desired model	ETV- ECV-	
Basic specifications	Max. stroke length:	mm, belt lead: mm
Operating conditions	Travel stroke:	mm, travel time: sec
	Set speed:	mm/s
	Set acceleration/deceleration:	mm/s^2 (set acceleration/deceleration time: sec)
	Repeatability: ±	mm
Load conditions	Mounting orientation: Horizontal (upward) / Horizontal (side) / Other 	
	Load weight: kg	
	Overhang (distance from the slider center to the load center of gravity): A direction mm, B direction mm, C direction mm	
	Pressing load: No / Yes (N) Operating / Stopped Direction of the force applied to slider center ( )	
Working environment	Ambient temperature: °C, ambient humidity: %	
	Atmosphere:	
Motor used	Manufacturer: , Model No.:	
	Motor capacity: W	
Remarks		

Theoretical thrust table (double acting)

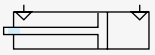
(Unit: N)



Bore size (mm)	Compatible models	Operating direction	Working pressure MPa											
			0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø4	MDC2	Push	-	-	-	2.51	3.77	5.03	6.28	7.54	8.80	-	-	-
		Pull	-	-	-	1.88	2.83	3.77	4.71	5.65	6.60	-	-	-
ø6	SCPD3	Push	-	-	-	5.65	8.48	11.3	14.1	17.0	19.8	22.6	25.4	28.3
		Pull	-	-	-	4.24	6.36	8.48	10.6	12.7	14.8	17.0	19.1	21.2
	MDC2	Push	-	-	-	5.65	8.48	11.3	14.1	17.0	19.8	-	-	-
		Pull	-	-	-	3.14	4.71	6.28	7.85	9.42	11.0	-	-	-
	MSD/MSD-K MSDG-L	Push	-	-	-	5.65	8.48	11.3	14.1	17.0	19.8	22.6	25.4	28.3
		Pull	-	-	-	3.14	4.71	6.28	7.85	9.42	11.0	12.6	14.1	15.7
	MVC	Push	-	-	-	5.65	8.48	11.3	14.1	17.0	19.8	-	-	-
		Pull	-	-	-	3.14	4.71	6.28	7.85	9.42	11.0	-	-	-
	SMG	Push	-	-	-	5.65	8.48	11.3	14.1	17.0	19.8	-	-	-
		Pull	-	-	-	4.24	6.36	8.48	10.6	12.7	14.8	-	-	-
	MRL2/MRL2-G	Push	-	-	-	-	8.48	11.3	14.1	17.0	19.8	-	-	-
		Pull	-	-	-	-	8.48	11.3	14.1	17.0	19.8	-	-	-
	MRL2-W	Push	-	-	-	-	17.0	22.6	28.3	33.9	39.6	-	-	-
		Pull	-	-	-	-	17.0	22.6	28.3	33.9	39.6	-	-	-
	STR2	Push	-	-	-	11.3	17.0	22.6	28.3	33.9	39.6	-	-	-
		Pull	-	-	-	6.28	9.42	12.6	15.7	18.8	22.0	-	-	-
	LCR	Push	-	-	8.48	11.3	17.0	22.6	28.3	33.9	39.6	-	-	-
		Pull	-	-	6.36	8.48	12.7	17.0	21.2	25.4	29.7	-	-	-
	LCG	Push	-	-	8.48	11.3	17.0	22.6	28.3	33.9	39.6	-	-	-
		Pull	-	-	6.36	8.48	12.7	17.0	21.2	25.4	29.7	-	-	-
ø8	MDC2	Push	-	-	-	10.1	15.1	20.1	25.1	30.2	35.2	-	-	-
		Pull	-	-	-	6.13	9.19	12.3	15.3	18.4	21.4	-	-	-
	MSD/MSD-K MSDG-L	Push	-	-	-	10.1	15.1	20.1	25.1	30.2	35.2	40.2	45.2	50.3
		Pull	-	-	-	6.13	9.19	12.3	15.3	18.4	21.4	24.5	27.6	30.6
	LCR	Push	-	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4	-	-	-
		Pull	-	-	11.3	15.1	22.6	30.2	37.7	45.2	52.8	-	-	-
	LCG	Push	-	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4	-	-	-
		Pull	-	-	11.3	15.1	22.6	30.2	37.7	45.2	52.8	-	-	-
ø10	SCPD3	Push	-	7.85	11.8	15.7	23.6	31.4	39.3	47.1	55.0	62.8	70.7	78.5
		Pull	-	6.60	9.90	13.2	19.8	26.4	33.0	39.6	46.2	52.8	59.4	66.0
	MDC2	Push	-	7.85	11.8	15.7	23.6	31.4	39.3	47.1	55.0	-	-	-
		Pull	-	5.03	7.54	10.1	15.1	20.1	25.1	30.2	35.2	-	-	-
	MVC	Push	-	7.85	11.8	15.7	23.6	31.4	39.3	47.1	55.0	-	-	-
		Pull	-	5.03	7.54	10.1	15.1	20.1	25.1	30.2	35.2	-	-	-
	SMG	Push	-	7.85	11.8	15.7	23.6	31.4	39.3	47.1	55.0	-	-	-
		Pull	-	6.60	9.90	13.2	19.8	26.4	33.0	39.6	46.2	-	-	-
	MRL2/MRL2-G	Push	-	-	-	-	23.6	31.4	39.3	47.1	55.0	-	-	-
		Pull	-	-	-	-	23.6	31.4	39.3	47.1	55.0	-	-	-
	MRL2-W	Push	-	-	-	-	47.1	62.8	78.5	94.2	1.10×10^2	-	-	-
		Pull	-	-	-	-	47.1	62.8	78.5	94.2	1.10×10^2	-	-	-
	MRG2	Push	-	-	-	-	23.6	31.4	39.3	47.1	55.0	-	-	-
		Pull	-	-	-	-	23.6	31.4	39.3	47.1	55.0	-	-	-
	STR2	Push	-	-	-	31.4	47.1	62.8	78.5	94.2	1.10×10^2	-	-	-
		Pull	-	-	-	20.1	30.2	40.2	50.3	60.3	70.4	-	-	-
	UCA2	Push	-	-	-	20.1	30.2	40.2	50.3	60.3	70.4	80.4	90.5	1.01×10^2
		Pull	-	-	-	20.1	30.2	40.2	50.3	60.3	70.4	80.4	90.5	1.01×10^2
ø12	MSD-K/ MSDG-L	Push	-	11.3	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	1.02×10^2	1.13×10^2
		Pull	-	8.48	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
	SSD/SSD2	Push	-	11.3	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	1.02×10^2	1.13×10^2
		Pull	-	8.48	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
	SSG	Push	-	-	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	1.02×10^2	1.13×10^2
		Pull	-	-	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
	SRL3	Push	-	-	-	27.7	41.5	55.3	69.1	83.0	96.8	-	-	-
		Pull	-	-	-	27.7	41.5	55.3	69.1	83.0	96.8	-	-	-
	LCR	Push	-	-	33.9	45.2	67.9	90.5	1.13×10^2	1.36×10^2	1.58×10^2	-	-	-
		Pull	-	-	25.4	33.9	50.9	67.9	84.8	1.02×10^2	1.19×10^2	-	-	-
	LCG	Push	-	-	33.9	45.2	67.9	90.5	1.13×10^2	1.36×10^2	1.58×10^2	-	-	-
		Pull	-	-	25.4	33.9	50.9	67.9	84.8	1.02×10^2	1.19×10^2	-	-	-
	LCW	Push	-	-	17	23	34	45	57	68	79	-	-	-
		Pull	-	-	13	17	25	34	42	51	59	-	-	-
	STG	Push	-	-	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	1.02×10^2	1.13×10^2
		Pull	-	-	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	SCPD3/ULKP	Push	-	20.1	30.2	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
		Pull	-	18.1	27.2	36.3	54.4	72.6	90.7	1.09×10^2	1.27×10^2	1.45×10^2	1.63×10^2	1.81×10^2

Theoretical thrust table (double acting)

(Unit: N)

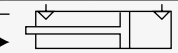


Bore size (mm)	Compatible models	Operating direction	Working pressure MPa											
			0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø16	MSD-K/ MSDG-L	Push	-	20.1	30.2	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
		Pull	-	15.1	22.6	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
	SMG	Push	-	20.1	30.2	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	-	-	-
		Pull	-	17.3	25.9	34.6	51.8	69.1	86.4	1.04×10^2	1.21×10^2	-	-	-
	STG	Push	-	-	30.2	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
		Pull	-	-	22.6	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
	MRL2/MRL2-G	Push	-	-	-	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	-	-	-
		Pull	-	-	-	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	-	-	-
	MRL2-W	Push	-	-	-	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2	-	-	-
		Pull	-	-	-	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2	-	-	-
	MRG2	Push	-	-	-	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	-	-	-
		Pull	-	-	-	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	-	-	-
	STR2	Push	-	40.2	60.3	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2	-	-	-
		Pull	-	24.5	36.8	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2	-	-	-
	UCA2	Push	-	-	-	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2	1.96×10^2	2.21×10^2	2.45×10^2
		Pull	-	-	-	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2	1.96×10^2	2.21×10^2	2.45×10^2
	SSD/SSD2	Push	-	20.1	30.2	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
		Pull	-	15.1	22.6	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
	SSG	Push	-	-	30.2	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
		Pull	-	-	22.6	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
	SRL3	Push	-	-	-	43.2	64.8	86.4	1.08×10^2	1.30×10^2	1.51×10^2	-	-	-
		Pull	-	-	-	43.2	64.8	86.4	1.08×10^2	1.30×10^2	1.51×10^2	-	-	-
	LCR	Push	-	-	60.3	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2	-	-	-
		Pull	-	-	51.8	69.1	1.04×10^2	1.38×10^2	1.73×10^2	2.07×10^2	2.42×10^2	-	-	-
	LCG	Push	-	-	60.3	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2	-	-	-
		Pull	-	-	51.8	69.1	1.04×10^2	1.38×10^2	1.73×10^2	2.07×10^2	2.42×10^2	-	-	-
	LCW	Push	-	-	30	40	60	80	101	121	141	-	-	-
		Pull	-	-	26	35	52	69	86	104	121	-	-	-
ø20	CMK2/ULK SSD2/SSD	Push	-	31.4	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
		Pull	-	23.6	35.3	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
	SSG	Push	-	-	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
		Pull	-	-	35.3	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
	USSD/ USSD-K	Push	-	-	-	− (*1)	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
		Pull	-	-	-	− (*1)	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
	SMG	Push	-	31.4	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	-	-	-
		Pull	-	26.4	39.6	52.8	79.2	1.06×10^2	1.32×10^2	1.58×10^2	1.85×10^2	-	-	-
	MRL2/MRL2-G	Push	-	-	-	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	-	-	-
		Pull	-	-	-	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	-	-	-
	MRL2-W	Push	-	-	-	1.26×10^2	1.88×10^2	2.51×10^2	3.14×10^2	3.77×10^2	4.40×10^2	-	-	-
		Pull	-	-	-	1.26×10^2	1.88×10^2	2.51×10^2	3.14×10^2	3.77×10^2	4.40×10^2	-	-	-
	STR2	Push	-	62.8	94.2	1.26×10^2	1.88×10^2	2.51×10^2	3.14×10^2	3.77×10^2	4.40×10^2	-	-	-
		Pull	-	40.2	60.3	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2	-	-	-
	LCR	Push	-	-	94.2	1.26×10^2	1.88×10^2	2.51×10^2	3.14×10^2	3.77×10^2	4.40×10^2	-	-	-
		Pull	-	-	79.2	1.06×10^2	1.58×10^2	2.11×10^2	2.64×10^2	3.17×10^2	3.69×10^2	-	-	-
	LCG	Push	-	-	94.2	1.26×10^2	1.88×10^2	2.51×10^2	3.14×10^2	3.77×10^2	4.40×10^2	-	-	-
		Pull	-	-	79.2	1.06×10^2	1.58×10^2	2.11×10^2	2.64×10^2	3.17×10^2	3.69×10^2	-	-	-
	LCW	Push	-	-	47	63	94	126	157	188	220	-	-	-
		Pull	-	-	40	53	79	106	132	158	185	-	-	-
	STG	Push	-	-	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
		Pull	-	-	35.3	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
	STK/STK-M	Push	-	-	-	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
		Pull	-	-	-	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
	STK-Y1/STK-MY1	Push	-	-	-	-	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
		Pull	-	-	-	-	45.6	65.7	85.8	1.06×10^2	1.26×10^2	1.46×10^2	1.66×10^2	1.86×10^2
	SCM	Push	-	31.4	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
		Pull	-	26.4	39.6	52.8	79.2	1.06×10^2	1.32×10^2	1.58×10^2	1.85×10^2	2.11×10^2	2.38×10^2	2.64×10^2
	SRL3	Push	-	-	-	62.9	94.4	1.26×10^2	1.57×10^2	1.89×10^2	2.20×10^2	-	-	-
		Pull	-	-	-	62.9	94.4	1.26×10^2	1.57×10^2	1.89×10^2	2.20×10^2	-	-	-
ø25	CMK2/ULK SSD2/SSD	Push	-	49.1	73.6	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
		Pull	-	37.8	56.7	75.6	1.13×10^2	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
	SSG	Push	-	-	73.6	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
		Pull	-	-	56.7	75.6	1.13×10^2	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
	USSD/ USSD-K	Push	-	-	-	− (*1)	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
		Pull	-	-	-	− (*1)	1.13×10^2	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
	SMG	Push	-	49.1	73.6	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	-	-	-
		Pull	-	41.2	61.9	82.5	1.24×10^2	1.65×10^2	2.06×10^2	2.47×10^2	2.89×10^2	-	-	-

*1: The min. starting pressure for USSD and USSD-K is 0.25 MPa. Refer to Pneumatic Cylinders II (Catalog No. CB-030SA) for the theoretical thrust at 0.25 MPa.

Theoretical thrust table (double acting)

(Unit: N)

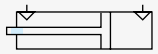


Bore size (mm)	Compatible models	Operating direction	Working pressure MPa											
			0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø25	MRL2/MRL2-G	Push	-	-	-	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	-	-	-
		Pull	-	-	-	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	-	-	-
	MRL2-W	Push	-	-	-	1.96×10^2	2.95×10^2	3.93×10^2	4.91×10^2	5.89×10^2	6.87×10^2	-	-	-
		Pull	-	-	-	1.96×10^2	2.95×10^2	3.93×10^2	4.91×10^2	5.89×10^2	6.87×10^2	-	-	-
	MRG2	Push	-	-	-	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	-	-	-
		Pull	-	-	-	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	-	-	-
	LCR	Push	-	-	1.47×10^2	1.96×10^2	2.95×10^2	3.93×10^2	4.91×10^2	5.89×10^2	6.87×10^2	-	-	-
		Pull	-	-	1.24×10^2	1.65×10^2	2.47×10^2	3.30×10^2	4.12×10^2	4.95×10^2	5.77×10^2	-	-	-
	LCG	Push	-	-	1.47×10^2	1.96×10^2	2.95×10^2	3.93×10^2	4.91×10^2	5.89×10^2	6.87×10^2	-	-	-
		Pull	-	-	1.24×10^2	1.65×10^2	2.47×10^2	3.30×10^2	4.12×10^2	4.95×10^2	5.77×10^2	-	-	-
	LCX	Push	-	-	74	99	148	197	246	296	345	-	-	-
		Pull	-	-	57	76	114	152	190	228	266	-	-	-
	STG	Push	-	-	73.6	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
		Pull	-	-	56.7	75.6	1.13×10^2	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
	STR2	Push	-	98.2	1.47×10^2	1.96×10^2	2.95×10^2	3.93×10^2	4.91×10^2	5.89×10^2	6.87×10^2	-	-	-
		Pull	-	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2	-	-	-
	UCA2	Push	-	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2	5.39×10^2	6.06×10^2	6.74×10^2
		Pull	-	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2	5.39×10^2	6.06×10^2	6.74×10^2
	SCM	Push	-	49.1	73.6	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
		Pull	-	41.2	61.9	82.5	1.24×10^2	1.65×10^2	2.06×10^2	2.47×10^2	2.89×10^2	3.30×10^2	3.71×10^2	4.12×10^2
	SRL3	Push	-	54.2	81.4	1.08×10^2	1.63×10^2	2.17×10^2	2.71×10^2	3.25×10^2	3.80×10^2	-	-	-
		Pull	-	54.2	81.4	1.08×10^2	1.63×10^2	2.17×10^2	2.71×10^2	3.25×10^2	3.80×10^2	-	-	-
	FCD	Push	-	49.3	73.9	98.5	1.48×10^2	1.97×10^2	2.46×10^2	2.96×10^2	3.45×10^2	-	-	-
		Pull	-	37.9	56.9	75.9	1.14×10^2	1.52×10^2	1.90×10^2	2.28×10^2	2.66×10^2	-	-	-
ø32	SCG	Push	40.2	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
		Pull	34.6	69.1	1.04×10^2	1.38×10^2	2.07×10^2	2.76×10^2	3.46×10^2	4.15×10^2	4.84×10^2	5.53×10^2	6.22×10^2	6.91×10^2
	SSD/SSD2	Push	-	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
		Pull	-	60.3	90.5	1.21×10^2	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
	CMK2/ULK SCM	Push	-	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
		Pull	-	69.1	1.04×10^2	1.38×10^2	2.07×10^2	2.76×10^2	3.46×10^2	4.15×10^2	4.84×10^2	5.53×10^2	6.22×10^2	6.91×10^2
	USSD/ USSD-K	Push	-	-	-	− (*1)	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
		Pull	-	-	-	− (*1)	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
	SMG	Push	-	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	-	-	-
		Pull	-	69.1	1.04×10^2	1.38×10^2	2.07×10^2	2.76×10^2	3.46×10^2	4.15×10^2	4.84×10^2	-	-	-
	MRL2/MRL2-G	Push	-	-	-	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	-	-	-
		Pull	-	-	-	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	-	-	-
	MRL2-W	Push	-	-	-	3.22×10^2	4.83×10^2	6.43×10^2	8.04×10^2	9.65×10^2	1.13×10^3	-	-	-
		Pull	-	-	-	3.22×10^2	4.83×10^2	6.43×10^2	8.04×10^2	9.65×10^2	1.13×10^3	-	-	-
	UCA2	Push	-	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2	9.65×10^2	1.09×10^3	1.21×10^3
		Pull	-	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2	9.65×10^2	1.09×10^3	1.21×10^3
	LCX	Push	-	-	116	155	233	310	388	466	543	-	-	-
		Pull	-	-	99	133	199	265	332	398	464	-	-	-
	SRL3	Push	-	81.4	1.22×10^2	1.63×10^2	2.44×10^2	3.26×10^2	4.07×10^2	4.88×10^2	5.70×10^2	-	-	-
		Pull	-	81.4	1.22×10^2	1.63×10^2	2.44×10^2	3.26×10^2	4.07×10^2	4.88×10^2	5.70×10^2	-	-	-
	FCD	Push	-	77.6	1.16×10^2	1.55×10^2	2.33×10^2	3.10×10^2	3.88×10^2	4.66×10^2	5.43×10^2	-	-	-
		Pull	-	57.5	86.3	1.15×10^2	1.73×10^2	2.30×10^2	2.88×10^2	3.45×10^2	4.03×10^2	-	-	-
	STG	Push	-	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
		Pull	-	60.3	90.5	1.21×10^2	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
	STK/STK-M	Push	-	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
		Pull	-	49.0	73.5	98.0	1.47×10^2	1.96×10^2	2.45×10^2	2.94×10^2	3.43×10^2	3.92×10^2	4.41×10^2	4.90×10^2
	STK-Y1/STK-MY1	Push	-	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
		Pull	-	17.6	42.1	66.6	1.16×10^2	1.65×10^2	2.14×10^2	2.63×10^2	3.12×10^2	3.61×10^2	4.10×10^2	4.59×10^2
	STR2	Push	-	1.61×10^2	2.41×10^2	3.22×10^2	4.83×10^2	6.43×10^2	8.04×10^2	9.65×10^2	1.13×10^3	-	-	-
		Pull	-	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2	-	-	-
ø40	SCG	Push	62.8	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
		Pull	52.8	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
	JSC3 SCM/SSD	Push	-	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
		Pull	-	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
	USSD/ USSD-K	Push	-	-	-	− (*1)	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
		Pull	-	-	-	− (*1)	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
	CMK2/ULK	Push	-	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
		Pull	-	1.10×10^2	1.65×10^2	2.21×10^2	3.31×10^2	4.41×10^2	5.51×10^2	6.62×10^2	7.72×10^2	8.82×10^2	9.92×10^2	1.10×10^3
	CMA2/JSM2	Push	-	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	-	-	-
		Pull	-	1.10×10^2	1.65×10^2	2.21×10^2	3.31×10^2	4.41×10^2	5.51×10^2	6.62×10^2	7.72×10^2	-	-	-
	SRL3	Push	-	1.27×10^2	1.90×10^2	2.53×10^2	3.80×10^2	5.06×10^2	6.33×10^2	7.60×10^2	8.86×10^2	-	-	-
		Pull	-	1.27×10^2	1.90×10^2	2.53×10^2	3.80×10^2	5.06×10^2	6.33×10^2	7.60×10^2	8.86×10^2	-	-	-

*1: The min. starting pressure for USSD and USSD-K is 0.25 MPa. Refer to Pneumatic Cylinders II (Catalog No. CB-030SA) for the theoretical thrust at 0.25 MPa.

Theoretical thrust table (double acting)

(Unit: N)



Bore size (mm)	Compatible models	Operating direction	Working pressure MPa											
			0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	FCD	Push	-	1.29×10^{2}	1.94×10^{2}	2.58×10^{2}	3.87×10^{2}	5.16×10^{2}	6.45×10^{2}	7.75×10^{2}	9.04×10^{2}	-	-	-
		Pull	-	1.09×10^{2}	1.63×10^{2}	2.18×10^{2}	3.27×10^{2}	4.36×10^{2}	5.45×10^{2}	6.54×10^{2}	7.63×10^{2}	-	-	-
	STG	Push	-	1.26×10^{2}	1.88×10^{2}	2.51×10^{2}	3.77×10^{2}	5.03×10^{2}	6.28×10^{2}	7.54×10^{2}	8.80×10^{2}	1.01×10^{3}	1.13×10^{3}	1.26×10^{3}
		Pull	-	1.06×10^{2}	1.58×10^{2}	2.11×10^{2}	3.17×10^{2}	4.22×10^{2}	5.28×10^{2}	6.33×10^{2}	7.39×10^{2}	8.44×10^{2}	9.50×10^{2}	1.06×10^{3}
	STK/STK-M	Push	-	1.26×10^{2}	1.88×10^{2}	2.51×10^{2}	3.77×10^{2}	5.03×10^{2}	6.28×10^{2}	7.54×10^{2}	8.80×10^{2}	1.01×10^{3}	1.13×10^{3}	1.26×10^{3}
		Pull	-	76.6	1.15×10^{2}	1.53×10^{2}	2.30×10^{2}	3.06×10^{2}	3.83×10^{2}	4.59×10^{2}	5.36×10^{2}	6.13×10^{2}	6.89×10^{2}	7.66×10^{2}
	STK-Y1/STK-MY1	Push	-	1.26×10^{2}	1.88×10^{2}	2.51×10^{2}	3.77×10^{2}	5.03×10^{2}	6.28×10^{2}	7.54×10^{2}	8.80×10^{2}	1.01×10^{3}	1.13×10^{3}	1.26×10^{3}
		Pull	-	32.2	70.5	1.09×10^{2}	1.85×10^{2}	2.62×10^{2}	3.38×10^{2}	4.15×10^{2}	4.92×10^{2}	5.68×10^{2}	6.45×10^{2}	7.21×10^{2}
ø50	SCG	Push	98.2	1.96×10^{2}	2.95×10^{2}	3.93×10^{2}	5.89×10^{2}	7.85×10^{2}	9.82×10^{2}	1.18×10^{3}	1.37×10^{3}	1.57×10^{3}	1.77×10^{3}	1.96×10^{3}
		Pull	82.5	1.65×10^{2}	2.47×10^{2}	3.30×10^{2}	4.95×10^{2}	6.60×10^{2}	8.25×10^{2}	9.90×10^{2}	1.15×10^{3}	1.32×10^{3}	1.48×10^{3}	1.65×10^{3}
	SSD2/JSC3 SCM/SSD	Push	-	1.96×10^{2}	2.95×10^{2}	3.93×10^{2}	5.89×10^{2}	7.85×10^{2}	9.82×10^{2}	1.18×10^{3}	1.37×10^{3}	1.57×10^{3}	1.77×10^{3}	1.96×10^{3}
		Pull	-	1.65×10^{2}	2.47×10^{2}	3.30×10^{2}	4.95×10^{2}	6.60×10^{2}	8.25×10^{2}	9.90×10^{2}	1.15×10^{3}	1.32×10^{3}	1.48×10^{3}	1.65×10^{3}
	USSD/ USSD-K	Push	-	-	-	− (*1)	5.89×10^{2}	7.85×10^{2}	9.82×10^{2}	1.18×10^{3}	1.37×10^{3}	1.57×10^{3}	1.77×10^{3}	1.96×10^{3}
		Pull	-	-	-	− (*1)	4.95×10^{2}	6.60×10^{2}	8.25×10^{2}	9.90×10^{2}	1.15×10^{3}	1.32×10^{3}	1.48×10^{3}	1.65×10^{3}
	SRL3	Push	-	1.99×10^{2}	2.98×10^{2}	3.98×10^{2}	5.96×10^{2}	7.95×10^{2}	9.94×10^{2}	1.19×10^{3}	1.39×10^{3}	-	-	-
		Pull	-	1.99×10^{2}	2.98×10^{2}	3.98×10^{2}	5.96×10^{2}	7.95×10^{2}	9.94×10^{2}	1.19×10^{3}	1.39×10^{3}	-	-	-
	FCD	Push	-	1.93×10^{2}	2.90×10^{2}	3.86×10^{2}	5.80×10^{2}	7.73×10^{2}	9.66×10^{2}	1.16×10^{3}	1.35×10^{3}	-	-	-
		Pull	-	1.62×10^{2}	2.43×10^{2}	3.24×10^{2}	4.85×10^{2}	6.47×10^{2}	8.09×10^{2}	9.71×10^{2}	1.13×10^{3}	-	-	-
	STG	Push	-	1.96×10^{2}	2.95×10^{2}	3.93×10^{2}	5.89×10^{2}	7.85×10^{2}	9.82×10^{2}	1.18×10^{3}	1.37×10^{3}	1.57×10^{3}	1.77×10^{3}	1.96×10^{3}
		Pull	-	1.65×10^{2}	2.47×10^{2}	3.30×10^{2}	4.95×10^{2}	6.60×10^{2}	8.25×10^{2}	9.90×10^{2}	1.15×10^{3}	1.32×10^{3}	1.48×10^{3}	1.65×10^{3}
	STK/STK-M	Push	-	1.96×10^{2}	2.95×10^{2}	3.93×10^{2}	5.89×10^{2}	7.85×10^{2}	9.82×10^{2}	1.18×10^{3}	1.37×10^{3}	1.57×10^{3}	1.77×10^{3}	1.96×10^{3}
		Pull	-	1.26×10^{2}	1.88×10^{2}	2.51×10^{2}	3.77×10^{2}	5.03×10^{2}	6.28×10^{2}	7.54×10^{2}	8.80×10^{2}	1.01×10^{3}	1.13×10^{3}	1.26×10^{3}
	STK-Y1/STK-MY1	Push	-	1.96×10^{2}	2.95×10^{2}	3.93×10^{2}	5.89×10^{2}	7.85×10^{2}	9.82×10^{2}	1.18×10^{3}	1.37×10^{3}	1.57×10^{3}	1.77×10^{3}	1.96×10^{3}
		Pull	-	40.9	1.04×10^{2}	1.67×10^{2}	2.92×10^{2}	4.18×10^{2}	5.44×10^{2}	6.69×10^{2}	7.95×10^{2}	9.21×10^{2}	1.05×10^{3}	1.17×10^{3}
ø63	SCG	Push	1.56×10^{2}	3.12×10^{2}	4.68×10^{2}	6.23×10^{2}	9.35×10^{2}	1.25×10^{3}	1.56×10^{3}	1.87×10^{3}	2.18×10^{3}	2.49×10^{3}	2.81×10^{3}	3.12×10^{3}
		Pull	1.40×10^{2}	2.80×10^{2}	4.20×10^{2}	5.61×10^{2}	8.41×10^{2}	1.12×10^{3}	1.40×10^{3}	1.68×10^{3}	1.96×10^{3}	2.24×10^{3}	2.52×10^{3}	2.80×10^{3}
	SSD2/SSG/JSC3 SCM/SSD	Push	-	3.12×10^{2}	4.68×10^{2}	6.23×10^{2}	9.35×10^{2}	1.25×10^{3}	1.56×10^{3}	1.87×10^{3}	2.18×10^{3}	2.49×10^{3}	2.81×10^{3}	3.12×10^{3}
		Pull	-	2.80×10^{2}	4.20×10^{2}	5.61×10^{2}	8.41×10^{2}	1.12×10^{3}	1.40×10^{3}	1.68×10^{3}	1.96×10^{3}	2.24×10^{3}	2.52×10^{3}	2.80×10^{3}
	USSD/ USSD-K	Push	-	-	-	− (*1)	9.35×10^{2}	1.25×10^{3}	1.56×10^{3}	1.87×10^{3}	2.18×10^{3}	2.49×10^{3}	2.81×10^{3}	3.12×10^{3}
		Pull	-	-	-	− (*1)	8.41×10^{2}	1.12×10^{3}	1.40×10^{3}	1.68×10^{3}	1.96×10^{3}	2.24×10^{3}	2.52×10^{3}	2.80×10^{3}
	SRL3	Push	-	3.14×10^{2}	4.70×10^{2}	6.27×10^{2}	9.41×10^{2}	1.25×10^{3}	1.57×10^{3}	1.88×10^{3}	2.20×10^{3}	-	-	-
		Pull	-	3.14×10^{2}	4.70×10^{2}	6.27×10^{2}	9.41×10^{2}	1.25×10^{3}	1.57×10^{3}	1.88×10^{3}	2.20×10^{3}	-	-	-
	FCD	Push	-	3.18×10^{2}	4.77×10^{2}	6.36×10^{2}	9.53×10^{2}	1.27×10^{3}	1.59×10^{3}	1.91×10^{3}	2.22×10^{3}	-	-	-
		Pull	-	2.86×10^{2}	4.30×10^{2}	5.73×10^{2}	8.59×10^{2}	1.15×10^{3}	1.43×10^{3}	1.72×10^{3}	2.00×10^{3}	-	-	-
	STG	Push	-	3.12×10^{2}	4.68×10^{2}	6.23×10^{2}	9.35×10^{2}	1.25×10^{3}	1.56×10^{3}	1.87×10^{3}	2.18×10^{3}	2.49×10^{3}	2.81×10^{3}	3.12×10^{3}
		Pull	-	2.80×10^{2}	4.20×10^{2}	5.61×10^{2}	8.41×10^{2}	1.12×10^{3}	1.40×10^{3}	1.68×10^{3}	1.96×10^{3}	2.24×10^{3}	2.52×10^{3}	2.80×10^{3}
ø80	SCG	Push	2.51×10^{2}	5.03×10^{2}	7.54×10^{2}	1.01×10^{3}	1.51×10^{3}	2.01×10^{3}	2.51×10^{3}	3.02×10^{3}	3.52×10^{3}	4.02×10^{3}	4.52×10^{3}	5.03×10^{3}
		Pull	2.27×10^{2}	4.54×10^{2}	6.80×10^{2}	9.07×10^{2}	1.36×10^{3}	1.81×10^{3}	2.27×10^{3}	2.72×10^{3}	3.17×10^{3}	3.63×10^{3}	4.08×10^{3}	4.54×10^{3}
	SSD2/SSG/JSC3 SCM/SSD	Push	-	5.03×10^{2}	7.54×10^{2}	1.01×10^{3}	1.51×10^{3}	2.01×10^{3}	2.51×10^{3}	3.02×10^{3}	3.52×10^{3}	4.02×10^{3}	4.52×10^{3}	5.03×10^{3}
		Pull	-	4.54×10^{2}	6.80×10^{2}	9.07×10^{2}	1.36×10^{3}	1.81×10^{3}	2.27×10^{3}	2.72×10^{3}	3.17×10^{3}	3.63×10^{3}	4.08×10^{3}	4.54×10^{3}
	USSD/ USSD-K	Push	-	-	-	− (*1)	1.51×10^{3}	2.01×10^{3}	2.51×10^{3}	3.02×10^{3}	3.52×10^{3}	4.02×10^{3}	4.52×10^{3}	5.03×10^{3}
		Pull	-	-	-	− (*1)	1.36×10^{3}	1.81×10^{3}	2.27×10^{3}	2.72×10^{3}	3.17×10^{3}	3.63×10^{3}	4.08×10^{3}	4.54×10^{3}
	SRL2	Push	-	5.06×10^{2}	7.60×10^{2}	1.01×10^{3}	1.52×10^{3}	2.03×10^{3}	2.53×10^{3}	3.04×10^{3}	3.54×10^{3}	-	-	-
		Pull	-	5.06×10^{2}	7.60×10^{2}	1.01×10^{3}	1.52×10^{3}	2.03×10^{3}	2.53×10^{3}	3.04×10^{3}	3.54×10^{3}	-	-	-
	STG	Push	-	5.03×10^{2}	7.54×10^{2}	1.01×10^{3}	1.51×10^{3}	2.01×10^{3}	2.51×10^{3}	3.02×10^{3}	3.52×10^{3}	4.02×10^{3}	4.52×10^{3}	5.03×10^{3}
		Pull	-	4.54×10^{2}	6.80×10^{2}	9.07×10^{2}	1.36×10^{3}	1.81×10^{3}	2.27×10^{3}	2.72×10^{3}	3.17×10^{3}	3.63×10^{3}	4.08×10^{3}	4.54×10^{3}
ø100	SCG	Push	3.93×10^{2}	7.85×10^{2}	1.18×10^{3}	1.57×10^{3}	2.36×10^{3}	3.14×10^{3}	3.93×10^{3}	4.71×10^{3}	5.50×10^{3}	6.28×10^{3}	7.07×10^{3}	7.85×10^{3}
		Pull	3.57×10^{2}	7.15×10^{2}	1.07×10^{3}	1.43×10^{3}	2.14×10^{3}	2.86×10^{3}	3.57×10^{3}	4.29×10^{3}	5.00×10^{3}	5.72×10^{3}	6.43×10^{3}	7.15×10^{3}
	SSD2/SSG/JSC3 SCM/SSD	Push	-	7.85×10^{2}	1.18×10^{3}	1.57×10^{3}	2.36×10^{3}	3.14×10^{3}	3.93×10^{3}	4.71×10^{3}	5.50×10^{3}	6.28×10^{3}	7.07×10^{3}	7.85×10^{3}
		Pull	-	7.15×10^{2}	1.07×10^{3}	1.43×10^{3}	2.14×10^{3}	2.86×10^{3}	3.57×10^{3}	4.29×10^{3}	5.00×10^{3}	5.72×10^{3}	6.43×10^{3}	7.15×10^{3}
	USSD/ USSD-K	Push	-	-	-	− (*1)	2.36×10^{3}	3.14×10^{3}	3.93×10^{3}	4.71×10^{3}	5.50×10^{3}	6.28×10^{3}	7.07×10^{3}	7.85×10^{3}
		Pull	-	-	-	− (*1)	2.14×10^{3}	2.86×10^{3}	3.57×10^{3}	4.29×10^{3}	5.00×10^{3}	5.72×10^{3}	6.43×10^{3}	7.15×10^{3}
	SRL3	Push	-	7.91×10^{2}	1.19×10^{3}	1.58×10^{3}	2.37×10^{3}	3.16×10^{3}	3.95×10^{3}	4.74×10^{3}	5.53×10^{3}	-	-	-
		Pull	-	7.91×10^{2}	1.19×10^{3}	1.58×10^{3}	2.37×10^{3}	3.16×10^{3}	3.95×10^{3}	4.74×10^{3}	5.53×10^{3}	-	-	-
	STG	Push	-	7.85×10^{2}	1.18×10^{3}	1.57×10^{3}	2.36×10^{3}	3.14×10^{3}	3.93×10^{3}	4.71×10^{3}	5.50×10^{3}	6.28×10^{3}	7.07×10^{3}	7.85×10^{3}
		Pull	-	7.15×10^{2}	1.07×10^{3}	1.43×10^{3}	2.14×10^{3}	2.86×10^{3}	3.57×10^{3}	4.29×10^{3}	5.00×10^{3}	5.72×10^{3}	6.43×10^{3}	7.15×10^{3}
ø125	SCS2/JSC4 SSD/SSD2	Push	-	1.23×10^{3}	1.84×10^{3}	2.45×10^{3}	3.68×10^{3}	4.91×10^{3}	6.14×10^{3}	7.36×10^{3}	8.59×10^{3}	9.82×10^{3}	1.10×10^{4}	1.23×10^{4}
		Pull	-	1.13×10^{3}	1.70×10^{3}	2.26×10^{3}	3.39×10^{3}	4.52×10^{3}	5.65×10^{3}	6.79×10^{3}	7.92×10^{3}	9.05×10^{3}	1.02×10^{4}	1.13×10^{4}
ø140	SCS2/JSC4 SSD	Push	-	1.54×10^{3}	2.31×10^{3}	3.08×10^{3}	4.62×10^{3}	6.16×10^{3}	7.70×10^{3}	9.24×10^{3}	1.08×10^{4}	1.23×10^{4}	1.39×10^{4}	1.54×10^{4}
		Pull	-	1.44×10^{3}	2.16×10^{3}	2.89×10^{3}	4.33×10^{3}	5.77×10^{3}	7.22×10^{3}	8.66×10^{3}	1.01×10^{4}	1.15×10^{4}	1.30×10^{4}	1.44×10^{4}
ø160	SCS2/JSC4 SSD/SSD2	Push	-	2.01×10^{3}	3.02×10^{3}	4.02×10^{3}	6.03×10^{3}	8.04×10^{3}	1.01×10^{4}	1.21×10^{4}	1.41×10^{4}	1.61×10^{4}	1.81×10^{4}	2.01×10^{4}
		Pull	-	1.88×10^{3}	2.83×10^{3}	3.77×10^{3}	5.65×10^{3}	7.54×10^{3}	9.42×10^{3}	1.13×10^{4}	1.32×10^{4}	1.51×10^{4}	1.70×10^{4}	1.88×10^{4}
ø180	SCS2/JSC4 SSD2	Push	-	2.54×10^{3}	3.82×10^{3}	5.09×10^{3}	7.63×10^{3}	1.02×10^{4}	1.27×10^{4}	1.53×104	1.78×10^{4}	2.04×10^{4}	2.29×10^{4}	2.54×10^{4}
		Pull	-	2.39×10^{3}	3.58×10^{3}	4.77×10^{3}	7.16×10^{3}	9.54×10^{3}	1.19×10^{4}	1.43×10^{4}	1.67×10^{4}	1.91×10^{4}	2.15×10^{4}	2.39×10^{4}
ø200	SCS2	Push	-	3.14×10^{3}	4.71×10^{3}	6.28×10^{3}	9.42×10^{3}	1.26×10^{4}	1.57×10^{4}	1.88×10^{4}	2.20×10^{4}	2.51×10^{4}	2.83×10^{4}	3.14×10^{4}
		Pull	-	2.95×10^{3}	4.42×10^{3}	5.89×10^{3}	8.84×10^{3}	1.18×10^{4}	1.47×10^{4}	1.77×10^{4}	2.06×10^{4}	2.36×10^{4}	2.65×10^{4}	2.95×10^{4}
	SSD2	Push	-	3.14×10^{3}	4.71×10^{3}	6.28×10^{3}	9.43×10^{3}	1.26×10^{4}	1.57×10^{4}	1.89×10^{4}	2.20×10^{4}	2.51×10^{4}	2.83×10^{4}	3.14×10^{4}
		Pull	-	3.02×10^{3}	4.52×10^{3}	6.03×10^{3}	9.05×10^{3}	1.21×10^{4}	1.51×10^{4}	1.81×10^{4}	2.11×10^{4}	2.41×10^{4}	2.71×10^{4}	3.02×10^{4}
ø250	SCS2	Push	-	4.91×10^{3}	7.36×10^{3}	9.82×10^{3}	1.47×10^{4}	1.96×10^{4}	2.45×10^{4}	2.95×10^{4}	3.44×10^{4}	3.93×10^{4}	4.42×10^{4}	4.91×10^{4}
		Pull	-	4.63×10^{3}	6.94×10^{3}	9.25×10^{3}	1.39×10^{4}	1.85×10^{4}	2.31×10^{4}	2.78×10^{4}	3.24×10^{4}	3.70×10^{4}	4.16×10^{4}	4.63×10^{4}

*1: The min. starting pressure for USSD and USSD-K is 0.25 MPa. Refer to Pneumatic Cylinders II (Catalog No. CB-030SA) for the theoretical thrust at 0.25 MPa.

Safety Precautions

Be sure to read this section before use.

When designing and manufacturing equipment using CKD products, the manufacturer is obligated to ensure that the safety of the mechanism, pneumatic control circuit and/or water control circuit and the system that runs the electrical controls are secured.
It is important to select, use, handle and maintain CKD products appropriately to ensure their safe usage.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience.

2 Use this product in accordance with specifications.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

❶ Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.

3 Observe organization standards and regulations, etc., related to the safety of the device design and control, etc.

ISO4414, JIS B 8370 (General rules for pneumatic systems)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility. Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe the warnings and cautions on the following pages to prevent accidents.

■ Precautions are ranked as "DANGER", "WARNING", and "CAUTION" in this section.

DANGER: In the case where the product operation is mishandled and/or when the urgency of a dangerous situation is high, it may lead to fatalities or serious injuries.

WARNING: A dangerous situation may occur if handling is mistaken, leading to fatal or serious injuries.

CAUTION: A dangerous situation may occur if handling is mistaken, leading to minor injuries or property damage.

Note that some items indicated with "CAUTION" may lead to serious results depending on the conditions.
All items contain important information and must be observed.

Limited warranty and disclaimer

1 Warranty period

This warranty is valid for one (1) year after delivery to the customer's designated site.

2 Scope of warranty

In case any defect clearly attributable to CKD is found during the warranty period, CKD shall, at its own discretion, repair the defect or replace the relevant product in whole or in part and at no cost, according to its own judgment.
Note that the following failures are excluded from the warranty scope:
(1) Failures due to use outside the conditions and environments set forth in the catalog or these specifications.
(2) Failures resulting from factors other than this product.
(3) Failures caused by improper use of the product.
(4) Failures resulting from modifications or repairs made without CKD consent.
(5) Failures caused by matters that could not be predicted with the technologies in practice when the product was delivered.
(6) Failures resulting from natural disasters or accidents for which CKD is not liable.
The warranty covers the actual delivered product, as a single unit, and does not cover any damages resulting from losses induced by malfunctions in the delivered product.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

Always read the precautions described in each catalog before use.

Design/selection

⚠WARNING

■ Application, load current, voltage, temperature, impact, environment, etc., outside the specifications will result in damage or operation faults. Use the device as instructed in the specifications.

■ Never use this product in an explosive gas atmosphere. The cylinder switch does not have an explosive-proof structure. Never use in an explosive gas atmosphere as explosions or fires could result.

⚠CAUTION

■ Take care when using this product for an interlock circuit.

When using the cylinder switch for an interlock signal requiring high reliability, provide a double interlock by installing a mechanical protection function or a switch (sensor) other than a cylinder switch as a guard if problems occur.
Regularly inspect and confirm that the interlock activates correctly.

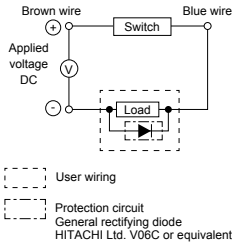
■ Pay attention to the contact capacity.

Do not use a load that exceeds the switch's specified voltage and current. This may lead to failure.

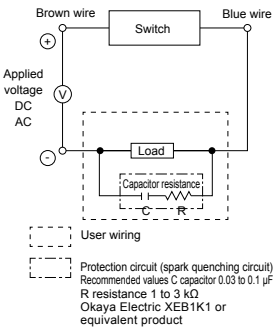
■ Pay attention to the contact protection circuit. (Reed switch)

● When an inductive load (relay or solenoid valve) is connected, a surge voltage is generated when the switch is turned OFF. Provide a contact protection circuit.

● Diode used



● Capacitor and resistance used



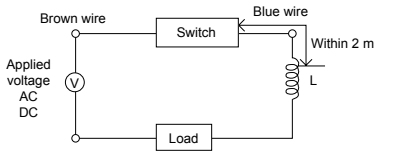
● When a capacious load (capacitor) is connected, starting current is generated when the switch is turned ON. Provide a contact protection circuit.

● If the wiring increases, the wiring capacity will be reached and a rush current will occur, damaging the switch or shortening the service life. Provide a contact protection circuit if the wiring length exceeds what is in Table 1.
If using at 200 VAC with T8, contact CKD since the usable wiring length may be shortened.

Switch	Voltage	Wiring length
M, T, K, H, V, F, ETO	DC	50 m
M, T, K, H, V, ETO	AC	10 m
RO, 5, 6, EO	DC	100 m
RO, 5, EO	AC	10 m
R4	AC	50 m

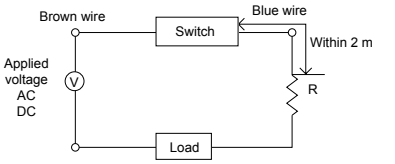
Table 1

● Choke coil used



● Choke coil
L = Several hundred μH to several mH
Item with outstanding high frequency characteristics

● Resistance used



● Rush current limiting resistor
R = Largest resistor tolerated by load circuit side

■ Avoid using in an environment constantly exposed to water.

● Insulation failure can cause malfunctions.

■ Avoid using this product in environments containing oil or chemicals.

● The cylinder switch may be adversely affected (insulation failure, malfunction caused by swelling of the filled resin, hardening of lead wire sheath, etc.) if used in an environment containing oil, coolant, cleaning fluid, or chemicals. Consult with CKD.

● A coolant proof cylinder switch is available. Refer to "Guide to pneumatic devices compatible with coolants" (No. CC-N-375A) for details.

■ Do not use in a high-impact environment.

For reed switch, if a strong impact (294 m/s^2 or more) is applied while in use, the contact may malfunction by momentarily (1 ms or less) being connected or disconnected. It may be necessary to use a proximity switch depending on the working environment. Consult with CKD.

■ Do not use this product in surge generating areas.

If there are devices and components (solenoid lifters, high frequency induction furnace, motors, etc.) around the cylinder with proximity switch that generate a large surge, consider surge protection of the source as it may lead to deterioration or damage of the switch internal circuit element.

■ Be careful of accumulation of iron powder and contact with magnetic substances.

If a large amount of iron chips such as cutting chips or welding spatter accumulate or if magnetic objects (material attracted to magnets) contact the cylinder with a cylinder switch, the cylinder will be demagnetized and cylinder switch operations may be inhibited.

■ Catalogs



Eight different catalogs are available.

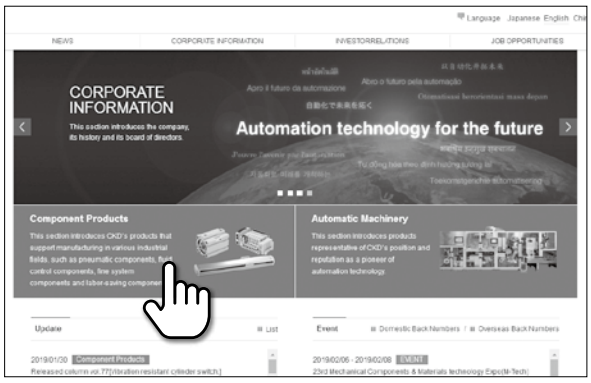
- Pneumatic Valves (Catalog No. CB-023SA)
- Pneumatic Cylinders I/II (Catalogs No. CB-029SA and CB-030SA)
- General Purpose Valves (Catalog No. CB-03-1SA)
- Pneumatic, Vacuum and Auxiliary Components (Catalog No. CB-024SA)
- Vacuum system equipment SELVACS (Catalog No. CC-796A)
- ABSODEX Products (Catalog No. CB-054A)
- Electric Actuator Motorless General (Catalog No. CB-055A)

- Please do not hesitate to make use of these resources, through application with your sales officer or nearest CKD sales office.

Home page

Catalog PDFs and CAD data of CKD products are available for download.

https://www.ckd.co.jp/english



For PDF and DXF data of catalogs, visit the

CKD website Components > **Materials/downloads Digital catalogs/catalog PDFs**

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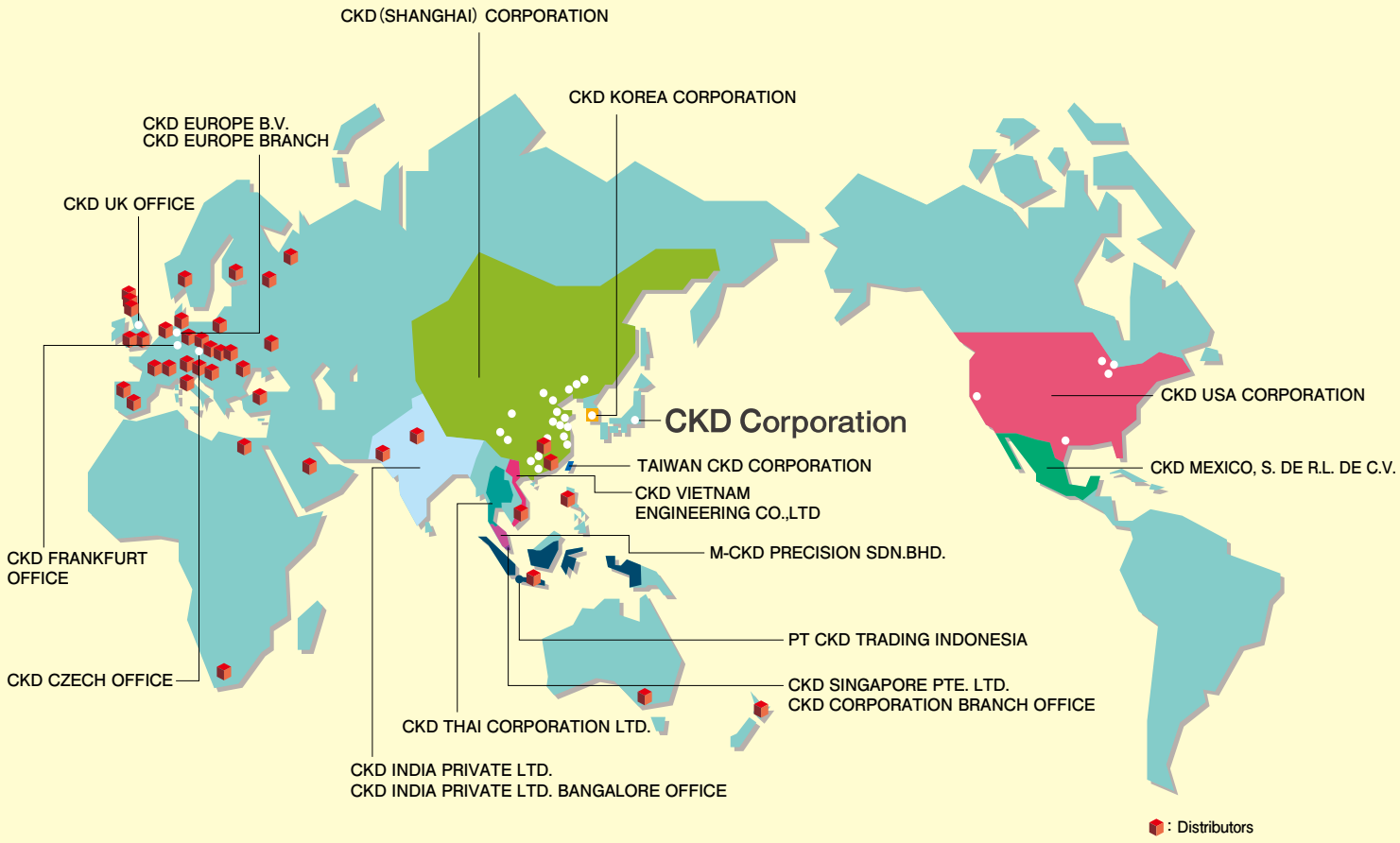
MEMO

WORLD-NETWORK



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