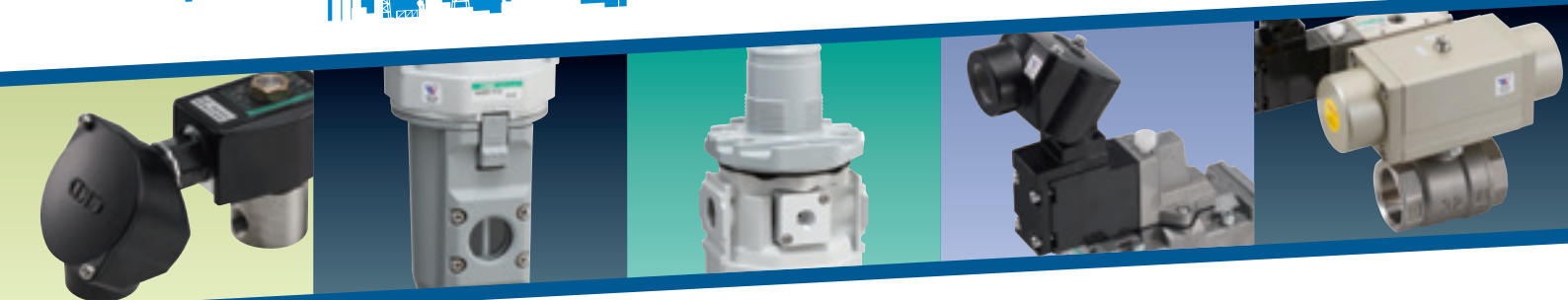


CKD

WP Series for Outdoors



Solid products that securely support outdoor facilities in harsh environments

WP Series for Outdoors

WEATHER PROOF



**WEATHER
PROOF**

CKD Corporation

CC-1276A **6**



Pursuit of outdoor equipment requirements,

Proven durability for outdoor use

- **Compound cycle test (JIS H8502:1999)** 960 hours cleared
Durability related to coating on metal parts
- **Accelerated durability (sunshine weather meter test)** cleared 1000 hours
Durability of resin parts
- **Ozone exposure test (JIS D0205:1987)** 400 hours cleared
Durability for rubber and gaskets

Accelerated weather resistance test	Combined cycle test	Ozone exposure test
3 Years equivalent	7 Years equivalent	400 Hours

Lineup of products compatible with min. ambient temp. of -20°C

Expanded range for use in harsh environments



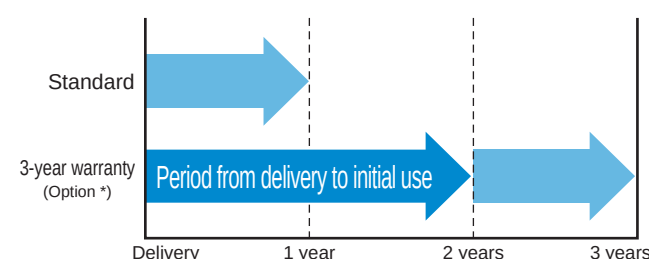
Each product has a maximum warranty of 3 years

Long-term peace of mind (option)

In order to support plants and overseas, the product is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.

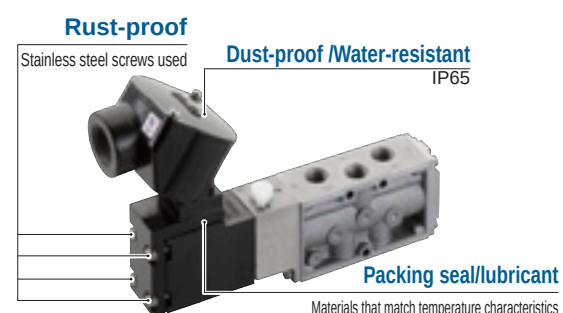
(with inspection certificate, inspection guidelines, drawings, traceability system diagram)

* Cylinders, speed controllers and silencers are excluded.



*A statement of specifications is exchanged to clarify the warranty period.

Parts with consideration for weather resistance

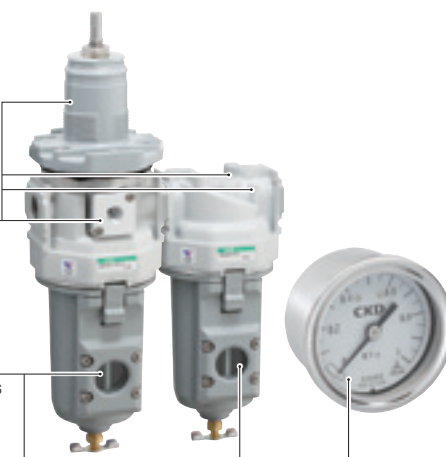


All-metal

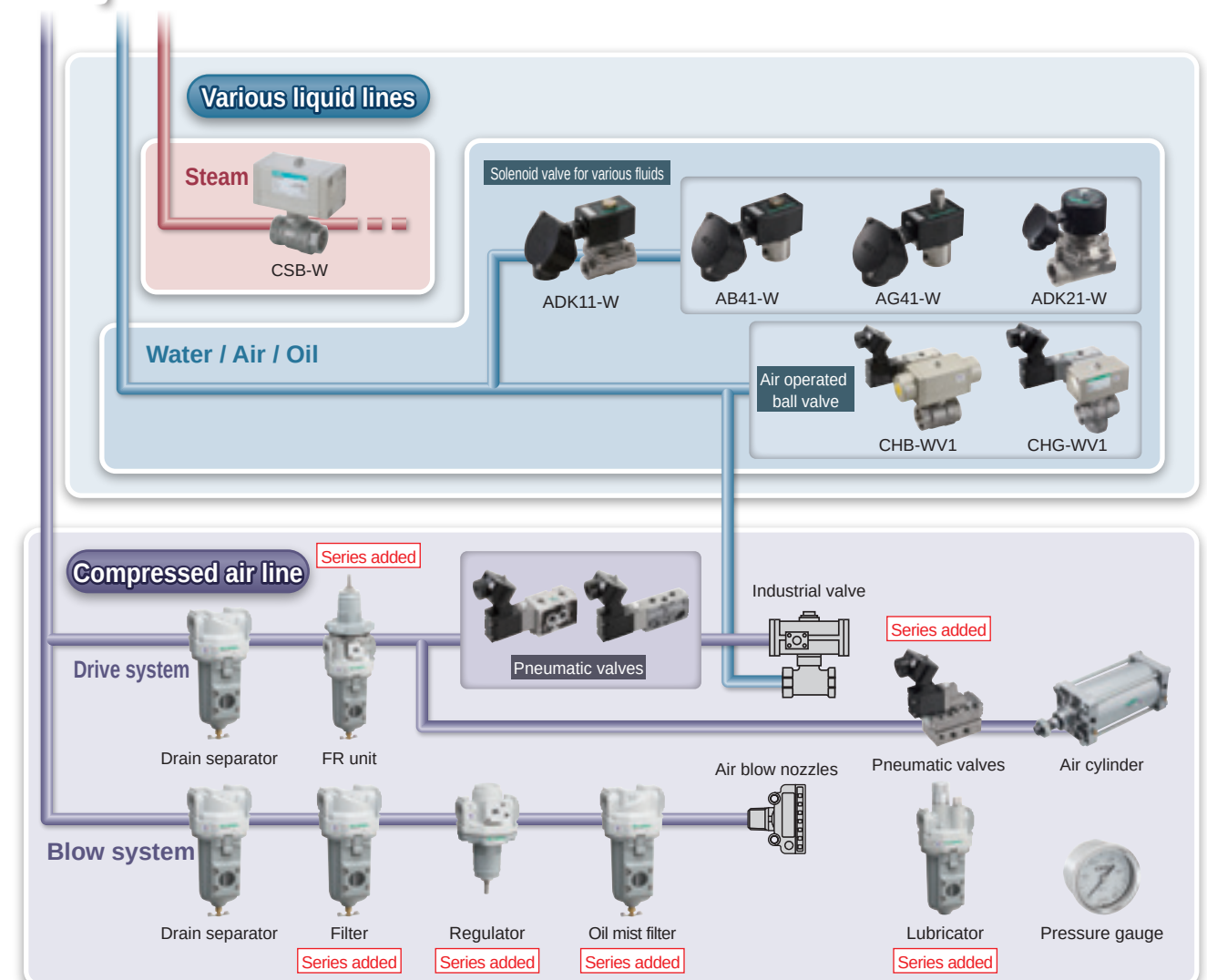
Weather resistance improved for general-purpose items such as covers and gauge plugs

Lens

Tempered glass specifications



expanded area of use and variations.



Outdoor series even for air cylinders (ø40 to ø250)

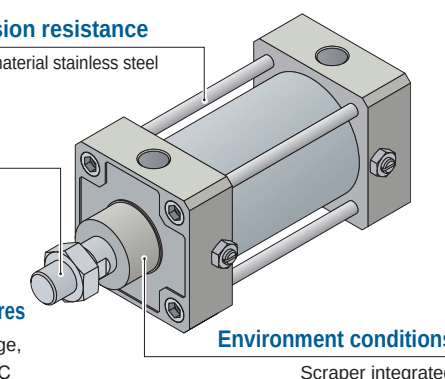
Standard

Corrosion resistance
Tie rod material stainless steel

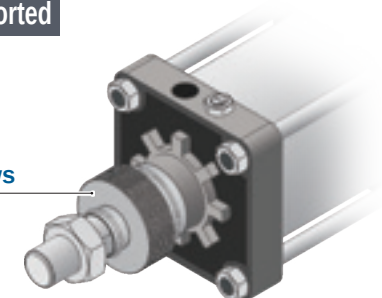
Individually supported

Corrosion resistance
Piston rod material
Stainless steel

Low temperature measures
Packing and grease change,
can be used even at -20°C



Silicone bellows



Compressed air line

Drain separator / F.R.L. unit

Drain separator **FXW Series** P.1

	Port size Rc,NPT,G	Max. flow rate m³/min	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
FXW1004	1/4, 3/8	0.55	●	●
FXW1011	1/4, 3/8, 1/2	1.8	●	●
FXW1037	3/4, 1	6.1	●	●



Regulator **RW Series** P.9

	Port size Rc,NPT,G	Max. flow rate m³/min	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
RW3000-W	1/4, 3/8	2.0/2.6	●	●
RW4000-W	1/4, 3/8, 1/2	2.5/4.4/5.0	●	●
RW8000-W	3/4, 1	14.0/11.0	●	●



F.R. unit **WW Series** P.21

	Port size Rc,NPT,G	Max. flow rate m³/min	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
WW3000-W	1/4, 3/8, 1/2	2.15/2.43/ 2.43	●	●
WW4000-W	1/4, 3/8, 1/2	2.5/4.35/ 4.75	●	●
WW8000-W	3/4, 1	10	●	●



Lubricator **LW Series** P.13

	Port size Rc,NPT,G	Max. flow rate m³/min	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
LW3000-W	1/4, 3/8	1.1/2.25	●	●
LW4000-W	1/4, 3/8, 1/2	1/1.7/ 2.7	●	●
LW8000-W	3/4, 1	6.3/10.0	●	●



Pneumatic valves

4F Series P.31, P.39

	Port size		Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
4F2-*-W	Rp, NPT, G	1/4	●	●
4F3-*-W		1/4, 3/8	●	●
4F4-*-W		1/4, 3/8	●	▲
4F5-*-W	Rc, NPT, G	3/8, 1/2	●	▲
4F6-*-W		1/2, 3/4	●	▲
4F7-*-W		3/4, 1	●	▲



4F NAMUR Series P.35

	Port size Rc	Ambient temp. compatibility	
		-10 to 60°C	-20 to 60°C
4F1-NM-*-W	1/4	●	▲
4F3-NM-*-W	1/4, 3/8	●	●



Air filter **FW Series** P.5

	Port size Rc,NPT,G	Max. flow rate m³/min	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
FW3000-W	1/4, 3/8	1.23/1.5	●	●
FW4000-W	1/4, 3/8, 1/2	1.32/ 2.14/3.0	●	●
FW8000-W	3/4, 1	6.4/6.8	●	●



Oil mist filter **MW Series** P.17

	Port size Rc,NPT,G	Max. flow rate m³/min	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
MW3000-W	1/4, 3/8	0.36	●	●
MW4000-W	1/4, 3/8, 1/2	0.825	●	●
MW8000-W	3/4, 1	2.6	●	●



F.R. unit **BW7019** P.25

	Port size Rc	Max. flow rate m³/min	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
BW7019	1/4	0.9	●	●



General-purpose pressure gauge **GW49D Series** P.28

	Port size Rc	Pressure range MPa	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
GW49D	1/8, 1/4	0 to 1.0	●	●



Pneumatic auxiliary components

SL-W Series P.29

	Port size R	Application Cylinder diameter (Guideline)	Ambient temperature compatibility	
			-10 to 60°C	-20 to 60°C
SL-8A-W	1/4	ø40 to 100	●	●
SL-10A-W	3/8	ø63 to 140	●	●
SL-15A-W	1/2	ø75 to 180	●	●



SC1-W Series P.30

	Port size Rc	Application Cylinder diameter (Guideline)	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
SC1-8-W	1/4	ø32 to 75	●	●
SC1-10-W	3/8	ø50 to 140	●	●
SC1-15-W	1/2	ø80 to 160	●	●



Various fluid lines

Fluid control valves

Direct acting 2-port solenoid valve **AB41 Series** P.47

	Port size Rc	Working fluid	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
AB41-*-W	1/4 to 1/2 Orifice size ø1.5 to 10	Air, low vacuum, Water, kerosene	●	●



Pilot kick 2-port solenoid valve **ADK11 Series** P.55

	Port size Rc	Working fluid	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
ADK11-*-W	1/2 to 1 Orifice size ø16 to 28	Air, low vacuum, Water, kerosene	●	●



Air operated ball valve **CHB/G-W, -WV, -WX Series** P.63

	Port size Rc	Working fluid	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
CHB/CHG-W CHB/CHG-WV, X (With solenoid valve)	1/4 to 1 Orifice size ø10 to 40	Air, low vacuum, Water, kerosene	●	●



Direct acting 3-port solenoid valve **AG41 Series** P.51

	Port size Rc	Working fluid	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
AG41-*-W	1/4 to 3/8 Orifice size ø2.0 to 2.3	Air, low vacuum, Water, kerosene	●	●



Pilot kick 2-port solenoid valve **ADK21 Series** P.59

	Port size Rc, flange	Working fluid	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
ADK21-*-W	1 1/4 to 2 32F, 40F, 50F Orifice size ø35 to 53	Air, low vacuum, Water, kerosene	●	●



Air operated ball valve **CSB-W Series** P.79

	Port size Rc	Working fluid	Ambient temp. compatibility	
			-10 to 60°C	-20 to 60°C
CSB-W	3/8 to 1 Orifice size ø10 to 40	Steam/hot water	●	●



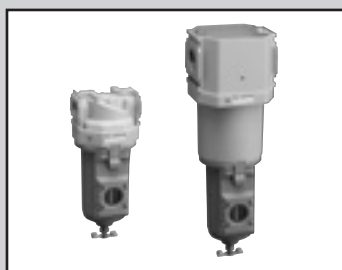
Drive components

Pneumatic cylinders

Medium bore size cylinder **SCA2-W, SCS2-W Series** P.83, P.87

	Bore size	Ambient temperature compatibility	
		-10 to 60°C	-20 to 60°C
SCA2-*-W	ø40 to 100	●	●
SCS2-*-W	ø125 to 250	●	●





Drain separator Outdoor series

FXW-W Series

Lightweight compact drain separator Compatible compressor 0.75kW to 37kW

● Port size: 1/4 to 1

JIS symbol



Specifications

Item	FXW1004	FXW1011	FXW1037
Working fluid	Compressed air		
Working pressure MPa	0.1 to 1.0 *3		
Proof pressure MPa	1.5		
Fluid temperature °C	-20 to 60 (no freezing)		
Ambient temperature °C	-20 to 60		
Water separation efficiency%	99 *2		
Max. processing flow rate *1 L/min (ANR)	550	1800	6100
Port size Rc, NPT, G	1/4, 3/8	1/4, 3/8, 1/2	3/4, 1
Product weight kg	0.4	0.6	1.3

*1: At inlet pressure 0.7 MPa.

*2: Water separation efficiency during max. processing flow rate. (Evaporated water droplets (water vapor) cannot be separated)

*3: In the case of "F" with auto-drain, the min. working pressure of auto-drain is 0.1MPa. Air is purged with initial drain until pressure reaches 0.1 MPa.

*4: In the case of "F1" with auto-drain, the min. working pressure of auto-drain is 0.15MPa.

*5: When "F""F1" with auto-drain is selected, be careful of freezing the drain.

Option weight

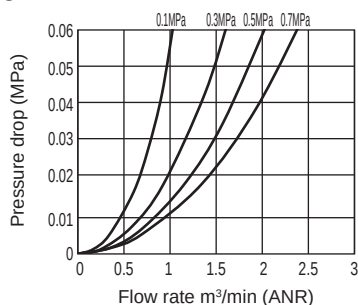
* Add to the weight of the standard accessories.

Unit:kg

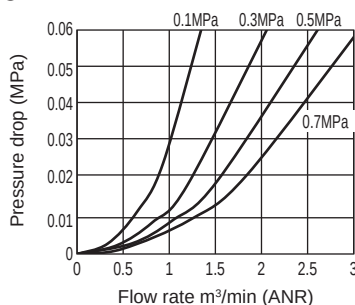
Code	Drain discharge			Attachment
	C	F	F1	BW
FXW1004	0	0.02	0.02	0.17
FXW1011	0	0.02	0.02	0.21
FXW1037	0	0.02	0.02	0.36

Flow characteristics

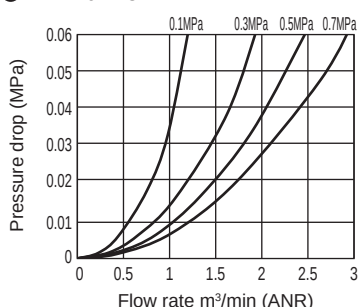
● FXW1004-8-W



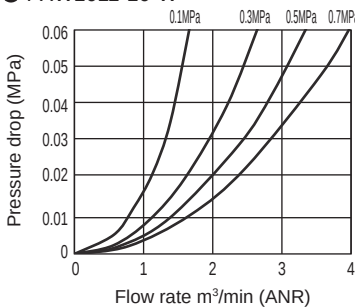
● FXW1004-10-W



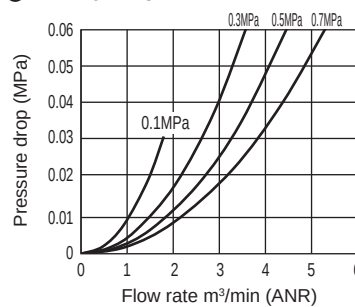
● FXW1011-8-W



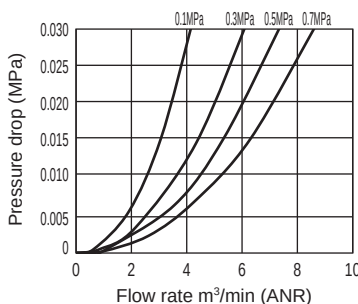
● FXW1011-10-W



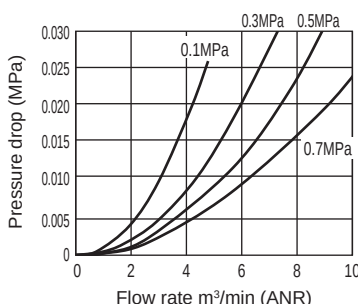
● FXW1011-15-W



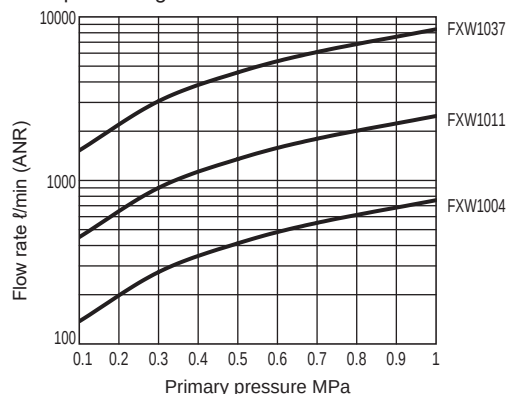
● FXW1037-20-W



● FXW1037-25-W



Max. processing flow rate



How to order

FXW1011 - 10 - W - F -

A Model No.

B Port size

C Port thread

D Option

E Attachment

A Model No.

FXW1004

FXW1011

FXW1037

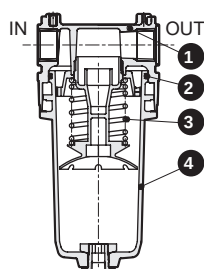
Code	Description	FX1	FX1	FX1		
B Port size						
8	1/4	●	●			
10	3/8	●	●			
15	1/2		●			
20	3/4			●		
25	1			●		
C Port thread						
*1, *3						
Blank	Rc thread (pressure unit: MPa temperature unit indicated: °C)	●	●	●		
N	NPT thread (pressure unit: psi temperature unit indicated: °F)	●	●	●		
G	G thread (pressure unit: bar temperature display unit: °C)	●	●	●		
D Option						
*4						
Drain discharge *5	Blank	Drain outlet Rc1/8	*2	●	●	●
	C	With manual cock		●	●	●
	F	Auto-drain with manual override (NO: Exhaust when not pressurized)		●	●	●
	F1	Auto-drain with manual override (NC: No exhaust w/o pressurization)		●	●	●
guarantee period	Blank	1 year after delivery		●	●	●
	G	3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *6, *7		●	●	●
Flow Direction	Blank	Standard flow (left → right)		●	●	●
	X1	Reverse flow (right → left)		●	●	●
E Attachment						
Blank		Not included		●	●	●
BW		C-bracket		●	●	●

⚠ Precautions for model No. selection

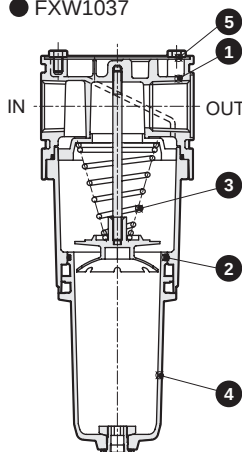
- *1: G and NPT threads are available for IN, OUT and drain outlet of auto-drain.
- *2: When the optional drain discharge is "blank", "N" or "G" piping thread cannot be selected.
- *3: In compliance with the Measurement Act, the psi display cannot be used in Japan.
- *4: Select options for the drainage, warranty period and flow direction items. When selecting options for several items, list options in order from the top.
- *5: Refer to "Pneumatic, Vacuum, and Auxiliary components (Catalog No.CB-024SA)" for the auto-drain use conditions.
- *6: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *7: For option G, the specifications and drawings must be exchanged. Refer to page 98 for details.

Internal structure diagram and parts list

● FXW1004, FXW1011



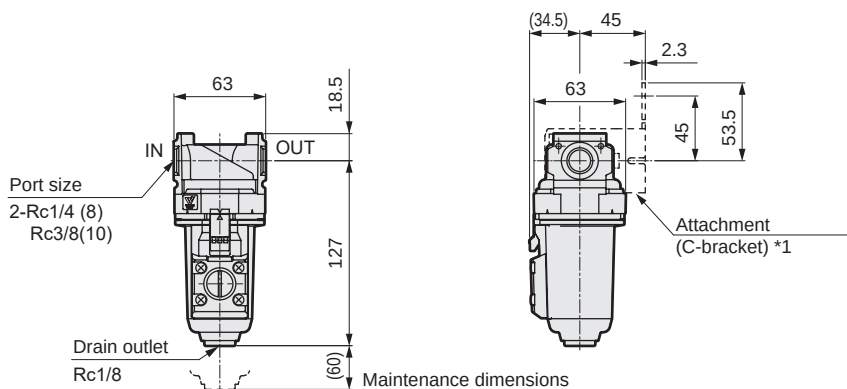
● FXW1037



No.	Part name	Material
1	Body	Aluminum alloy die-casting
2	O-ring	Special nitrile rubber
3	Spring	Stainless steel
4	Metal bowl assembly	Aluminum alloy die-casting, brass, zinc alloy die-casting, nitrile rubber
5	Plate cover	Aluminum

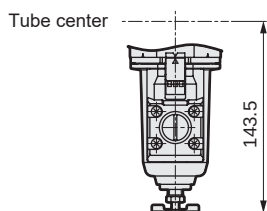
Dimensions

● FXW1004-W

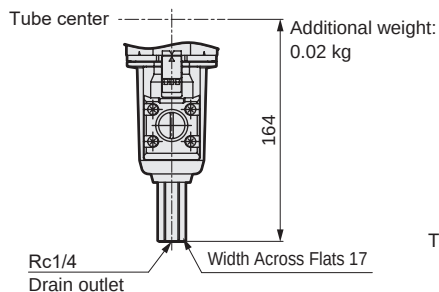


*1: Bracket is optionally included.

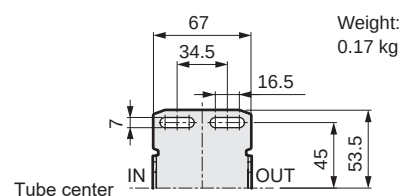
• Optional dimensions Manual drain cock (C)



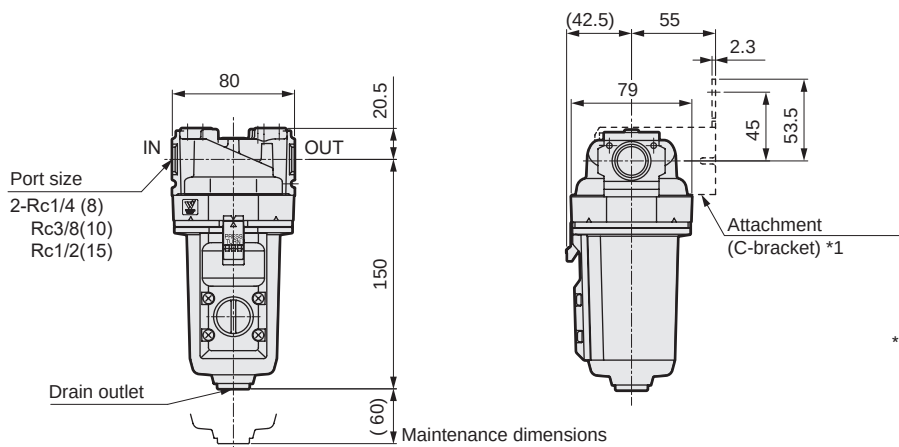
• Optional dimensions With auto-drain (F, F1)



• Attachment C-bracket (-BW) Part model No.: B320

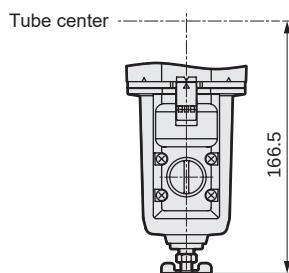


● FXW1011-W

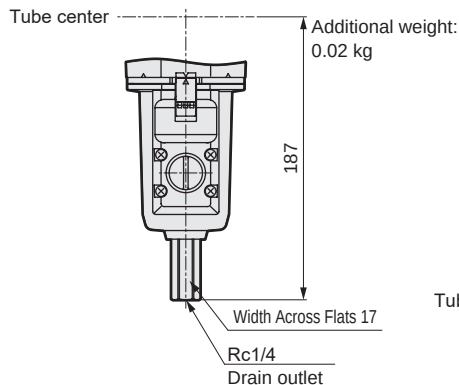


*1: Bracket is optionally included.

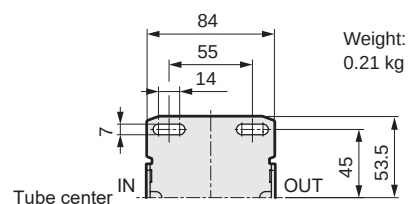
• Optional dimensions Manual drain cock (C)



• Optional dimensions With auto-drain (F, F1)

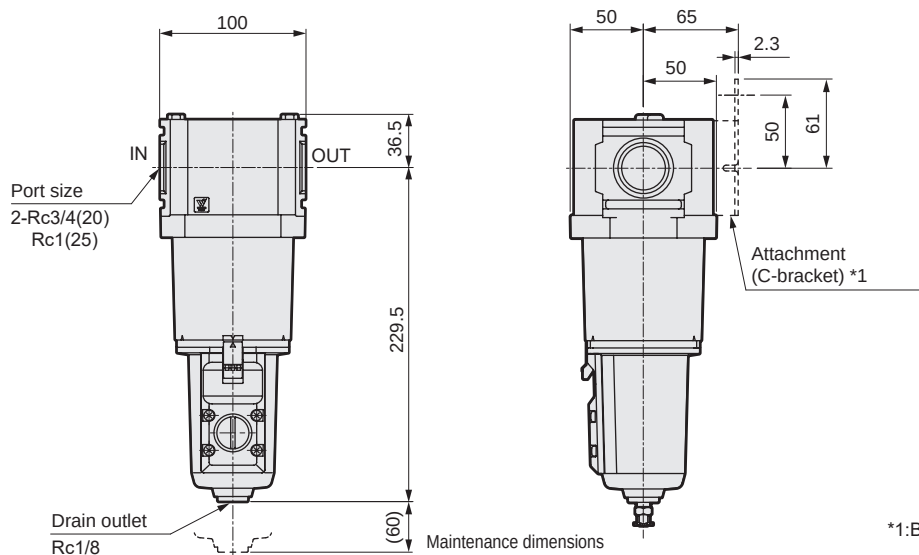


• Attachment C-bracket (-BW) Part model No.: B420



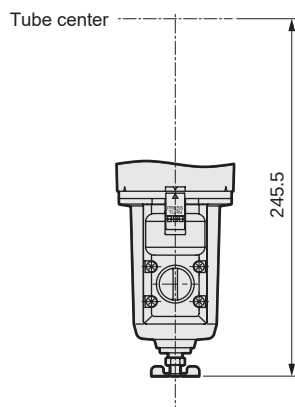
Dimensions

● FXW1037-W

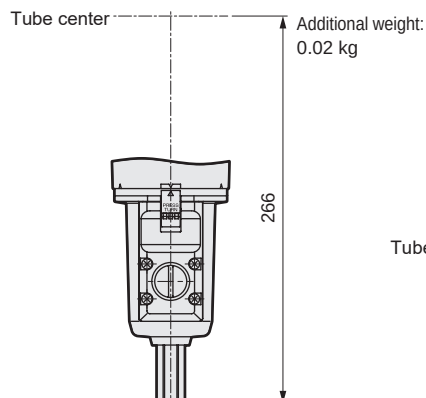


*1: Bracket is optionally included.

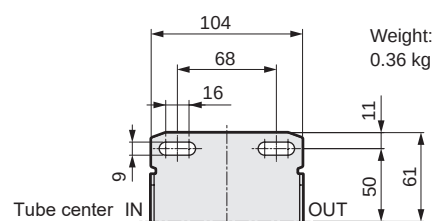
· Optional dimensions
Manual drain cock (C)

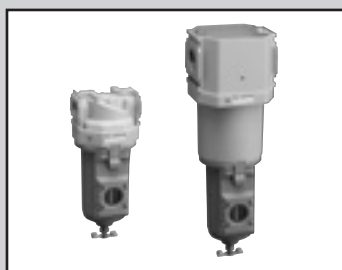


· Optional dimensions
With auto-drain (F, F1)



· Attachment
C-bracket (-BW)
Part model No.: B820





Air filter Outdoor series

FW3000/FW4000/FW8000-W Series

A series of outdoor specification products.

● Port size: 1/4 to 1

JIS symbol



Specifications

Item	FW3000-W	FW4000-W	FW8000-W
Working fluid	Compressed air		
Max. working pressure MPa	1.0 *1, 2		
Proof pressure MPa	1.5		
Fluid temperature °C	-20 to 60 (no freezing)		
Ambient temperature °C	-20 to 60		
Filtration rating μm	5 or 0.3		
Drain capacity cm ³	45	80	80 (*4)
Port size Rc, NPT, G	1/4, 3/8	1/4, 3/8, 1/2	3/4, 1
Weight kg	0.35	0.55	1.26

*1: In the case of "F" with auto-drain, the min. working pressure of auto-drain is 0.1MPa.
Air is purged with initial drain until pressure reaches 0.1 MPa.

*2: In the case of "F1" with auto-drain, the min. working pressure of auto-drain is 0.15 MPa.

*3: When "F" or "F1" with auto-drain is selected, be careful of drain freezing.

*4: Only the manual petcock type can store up to 170 cm³.

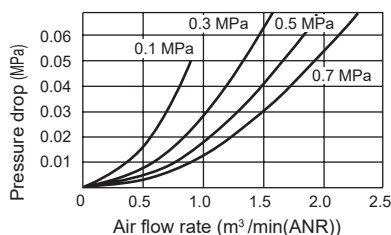
Option weight

* Add to the weight of the standard accessories. Unit: kg

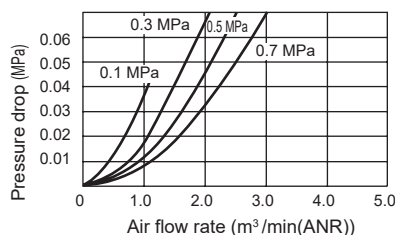
Code	Drain discharge		Attachment
	F	F1	BW
FW3000	0.02	0.02	0.17
FW4000	0.02	0.02	0.21
FW8000	0.02	0.02	0.36

Flow characteristics

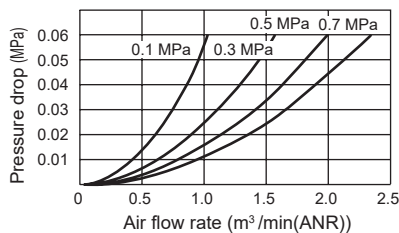
● FW3000-8-W



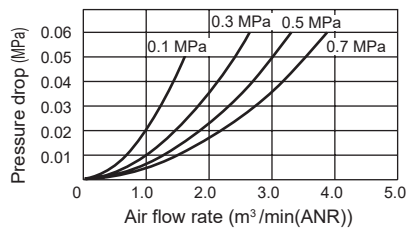
● FW3000-10-W



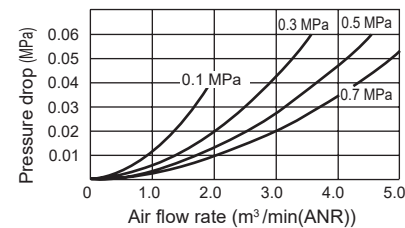
● FW4000-8-W



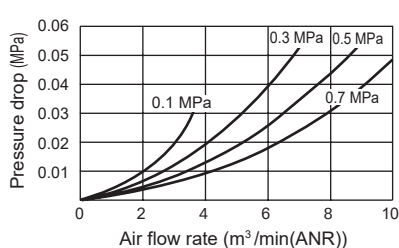
● FW4000-10-W



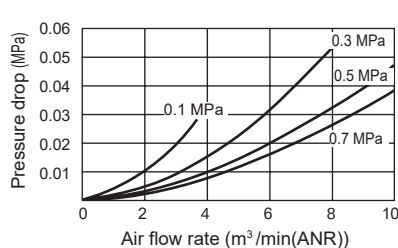
● FW4000-15-W



● FW8000-20-W

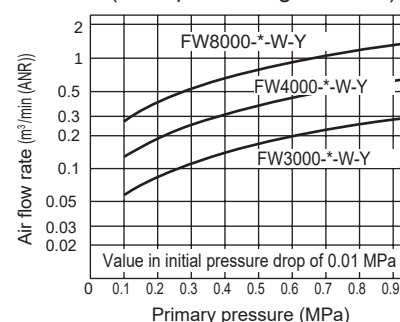


● FW8000-25-W

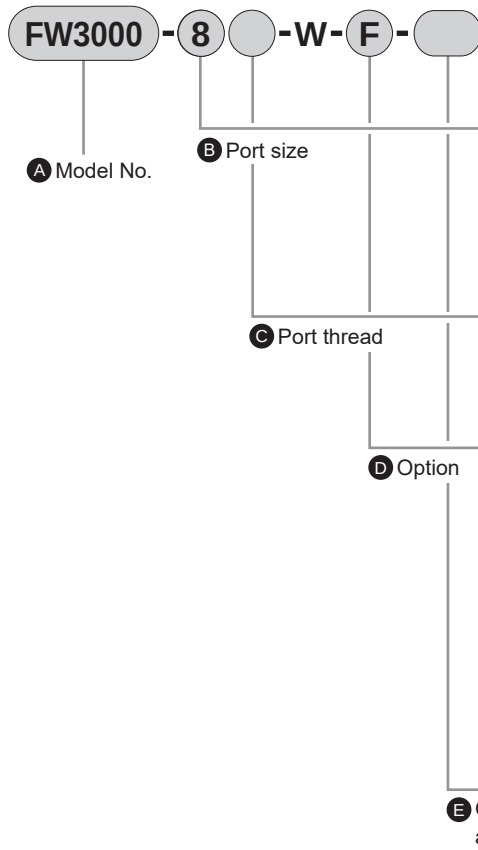


- FW3000
- FW4000
- FW8000

(Max. processing flow rate)



How to order



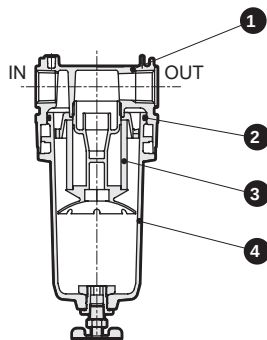
		A Model No.		
		FW3000	FW4000	FW8000
Code	Description			
B Port size				
8	1/4	●	●	
10	3/8	●	●	
15	1/2		●	
20	3/4			●
25	1			●
C Port thread				
		*1, *2		
Blank	Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N	NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G	G thread (pressure unit: bar temperature display unit: °C)	●	●	●
D Option				
		*3		
Drain discharge *4	Blank	With manual cock	●	●
	F	Auto-drain with manual override (NO: Exhaust when not pressurized)	●	●
	F1	Auto-drain with manual override (NC: No exhaust w/o pressurization)	●	●
Element	Blank	5 μm	●	●
	Y	0.3 μm (submicron) *5	●	●
guarantee period	Blank	1 year after delivery	●	●
	G	3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *6, *7	●	●
Flow Direction	Blank	Standard flow (left → right)	●	●
	X1	Reverse flow (right → left)	●	●
E Other attachments				
Blank	Not included	●	●	●
BW	C-bracket	●	●	●

⚠ Precautions for model No. selection

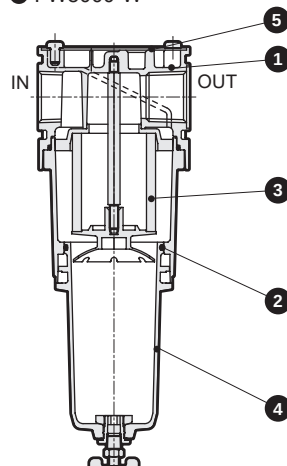
- *1: G and NPT threads are available for IN, OUT and drain outlet of auto-drain.
- *2: In compliance with the Measurement Act, the psi display cannot be used in Japan.
- *3: Select options for the drainage, element, warranty period and flow direction items. When selecting options for several items, list options in order from the top.
- *4: Refer to "Pneumatic, Vacuum, and Auxiliary Components (Catalog No.CB-024SA)" for the auto-drain use conditions.
- *5: Refer to page 1 for max. processing flow rate when option "Y" is selected.
- *6: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *7: For option G, the specifications and drawings must be exchanged. Refer to page 98 for details.

Internal structure and parts list

● FW3000-W, FW4000-W



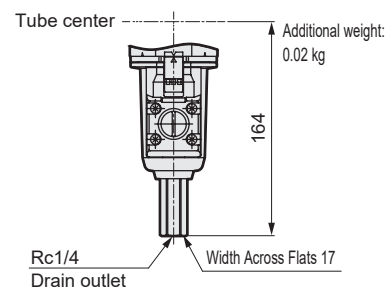
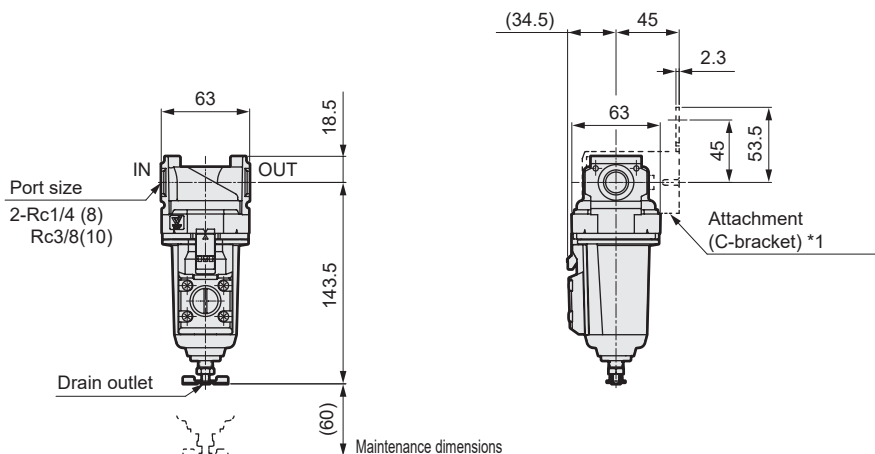
● FW8000-W



No.	Part name	Material
1	Body	Aluminum alloy die-casting
2	O-ring	Special nitrile rubber
3	Element	Polypropylene
4	Metal bowl assembly	Aluminum alloy die-casting, brass, zinc alloy die-casting, nitrile rubber
5	Plate cover	Aluminum

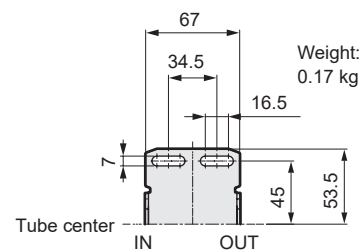
Dimensions

- Optional dimensions
With auto-drain (F, F1)

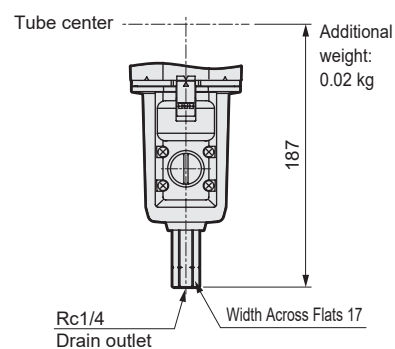
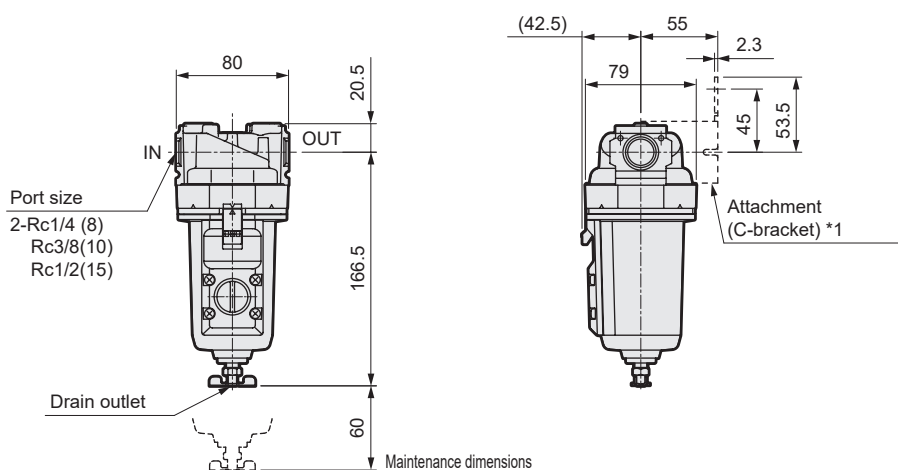


- Attachment
C-bracket (-BW)
Part model No.: B320
- Material: Steel
Zinc plated

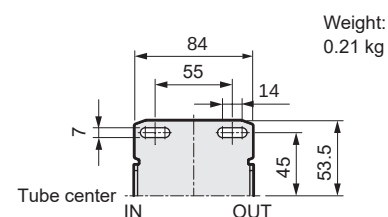
*1:Bracket is optionally included.



- Optional dimensions
With auto-drain (F, F1)



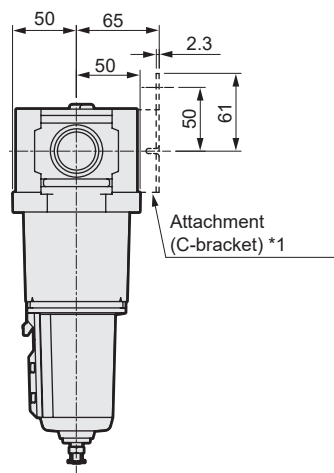
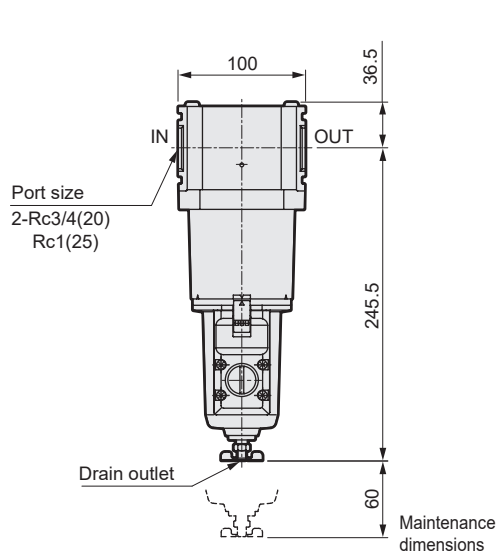
- Attachment
C-bracket (-BW)
Part model No.: B420



*1: Bracket is optionally included.

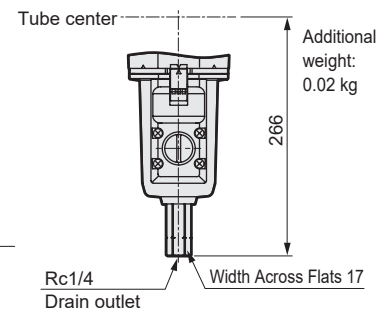
Dimensions

● FW8000-W

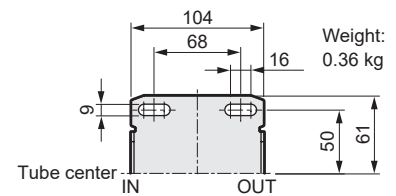


*1: Bracket is optionally included.

· Optional dimensions
With auto-drain (F, F1)



· Attachment
C-bracket (-BW)
Part model No.: B820



Drain separator
F.R.L. unit

Pneumatic auxiliary
components

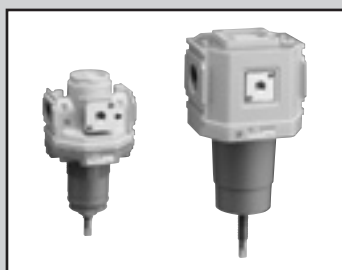
Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions

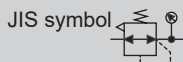


Regulator Outdoor series

RW3000/RW4000/RW8000-W Series

A series of outdoor specification products.

● Port size: 1/4 to 1



Specifications

Item	RW3000-W	RW4000-W	RW8000-W
Working fluid	Compressed air		
Max. working pressure MPa	1.0		
Proof pressure MPa	1.5		
Fluid temperature °C	-20 to 60(no freezing)		
Ambient temperature °C	-20 to 60		
Set pressure MPa	0.05 to 0.85		
Pressure relief	With relief mechanism		
Port size Rc, NPT, G	1/4, 3/8	1/4, 3/8, 1/2	3/4, 1
Weight kg	0.5	0.75	1.65

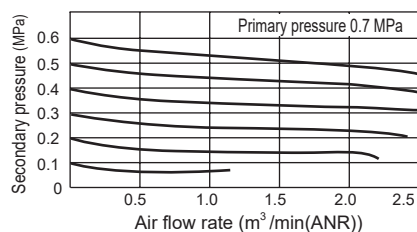
Option weight

* Add to the weight of the standard accessories. Unit: kg

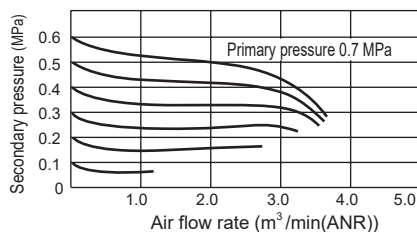
Code	Knob	Attachment
	K	BW
RW3000	0.1	0.17
RW4000	0.1	0.21
RW8000	0.1	0.36

Flow characteristics

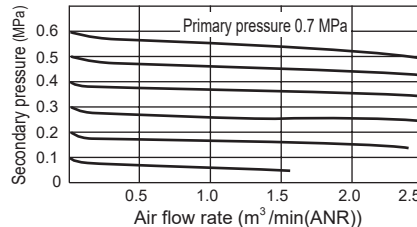
● RW3000-8-W



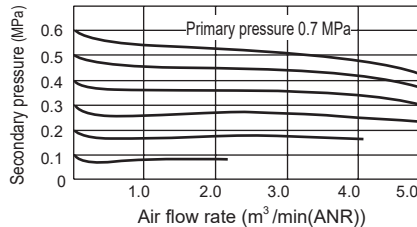
● RW3000-10-W



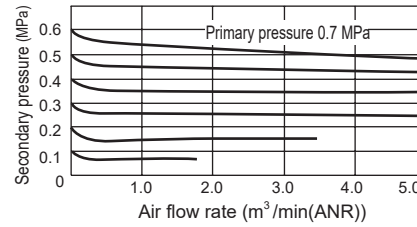
● RW4000-8-W



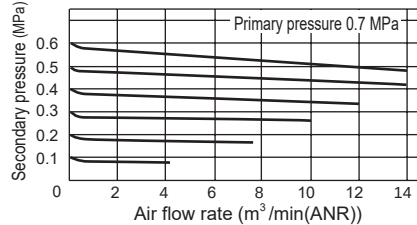
● RW4000-10-W



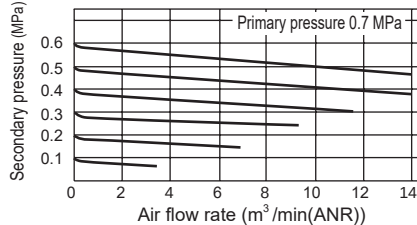
● RW4000-15-W



● RW8000-20-W

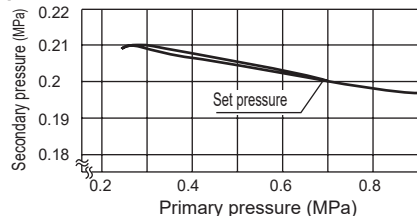


● RW8000-25-W

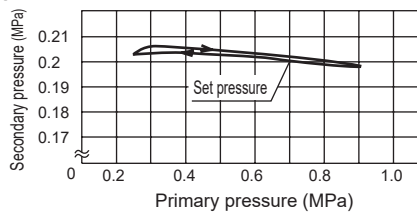


Pressure characteristics

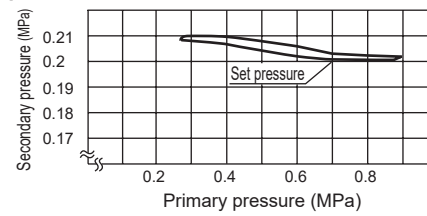
● RW3000-W



● RW4000-W



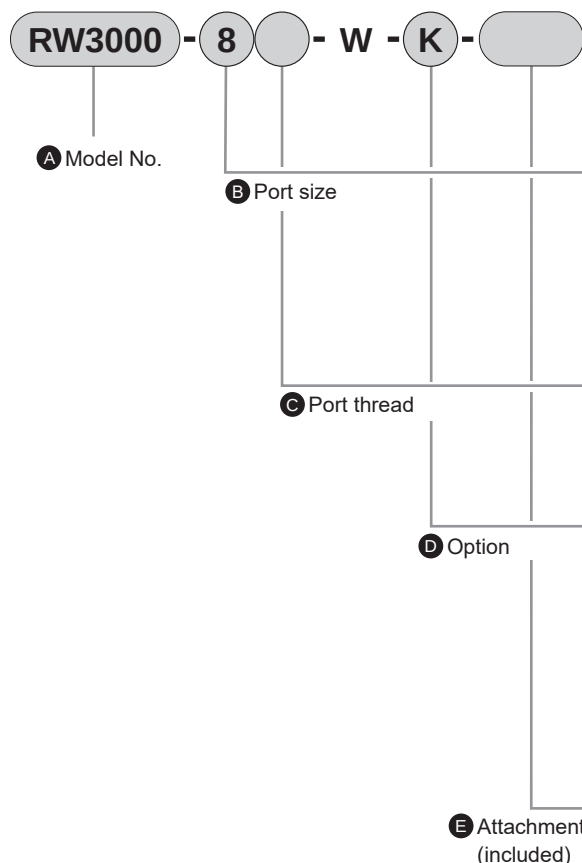
● RW8000-W



Regulator Series

How to order/Internal structure diagram and parts list

How to order



		A Model No.		
		RW3000	RW4000	RW8000
Code	Description			
B Port size				
8	1/4	●	●	
10	3/8	●	●	
15	1/2		●	
20	3/4			●
25	1			●
C Port thread				
		*1, *2		
Blank	Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N	NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G	G thread (pressure unit: bar temperature display unit: °C)	●	●	●
D Option				
		*3, *4		
Knob	Blank	Without knob	●	●
	K	With knob	●	●
guarantee period	Blank	1 year after delivery	●	●
	G	3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *4, *5	●	●
Flow Direction	Blank	Standard flow (left → right)	●	●
	X1	Reverse flow (right → left)	●	●
E Other attachments				
Blank	Not included	●	●	●
BW	C-bracket	●	●	●
GW49P	Pressure gauge (GW49D-6-P10) *6	●	●	●

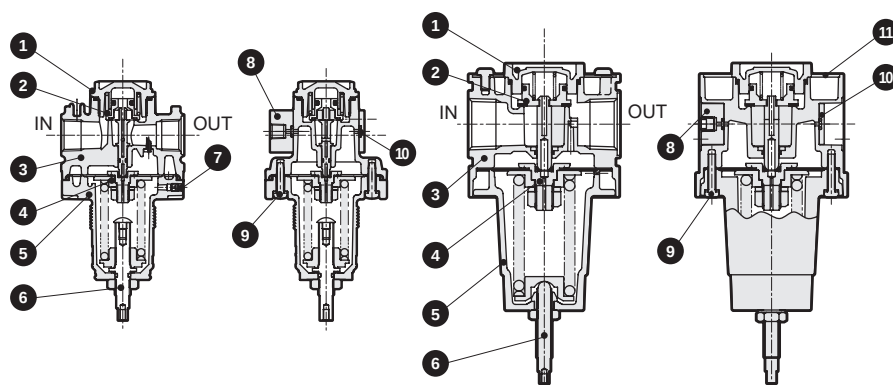
⚠ Precautions for model No. selection

- *1: G and NPT threads are available for IN, OUT and gauge ports.
- *2: In compliance with the Measurement Act, the psi display cannot be used in Japan.
- *3: Select options for the knob, warranty period and flow direction items. When selecting options for several items, list options in order from the top.
- *4: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *5: For option G, the specifications and drawings must be exchanged. Refer to page 98 for details.
- *6: The pressure gauge cannot be attached when using NPT threads or G threads. (Consult with CKD if required.)

Internal structure and parts list

● RW3000-W/RW4000-W

● RW8000-W

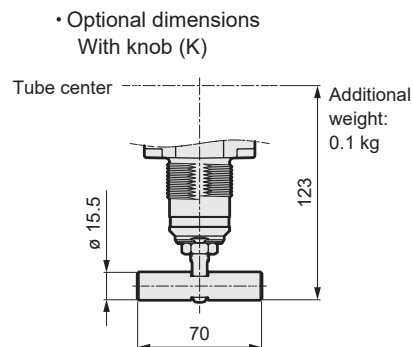
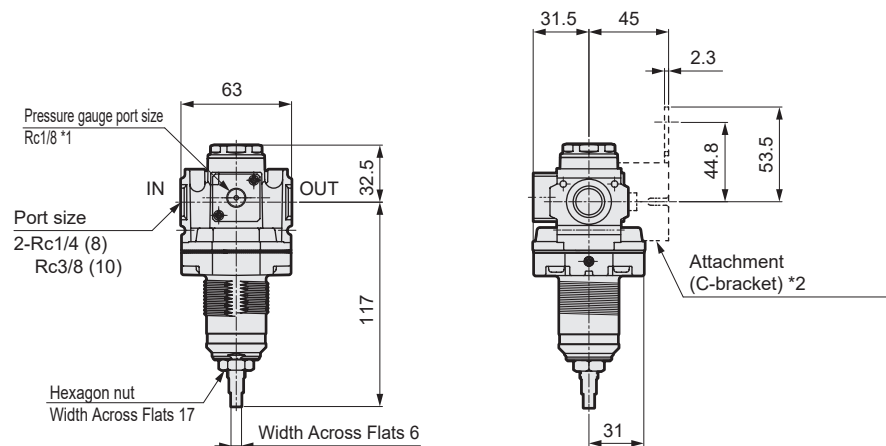


No.	Part name	Material
1	Bottom plug	Aluminum alloy die-casting
2	Valve assembly	Brass, hydrogenated nitrile rubber (polyacetal resin: RW3000 and RW4000)
3	Body	Aluminum alloy die-casting
4	Diaphragm assembly	Stainless steel, nitrile rubber, aluminum
5	Cover	Aluminum alloy die-casting
6	Adjusting screw assembly	Stainless steel (aluminum, nitrile rubber, polyacetal resin: RW3000, RW4000)
7	Plug	Stainless steel
8	Gauge plug assembly	Aluminum, nitrile rubber, stainless steel
9	Screws	Stainless steel
10	Seal plug assembly	Aluminum, nitrile rubber, stainless steel
11	Plate cover	Aluminum

Regulator Series

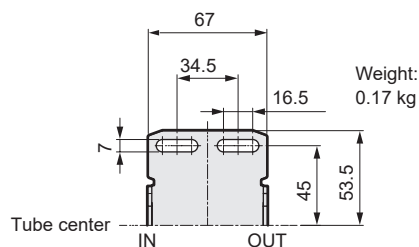
Dimensions

● RW3000-W

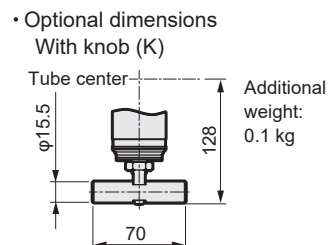
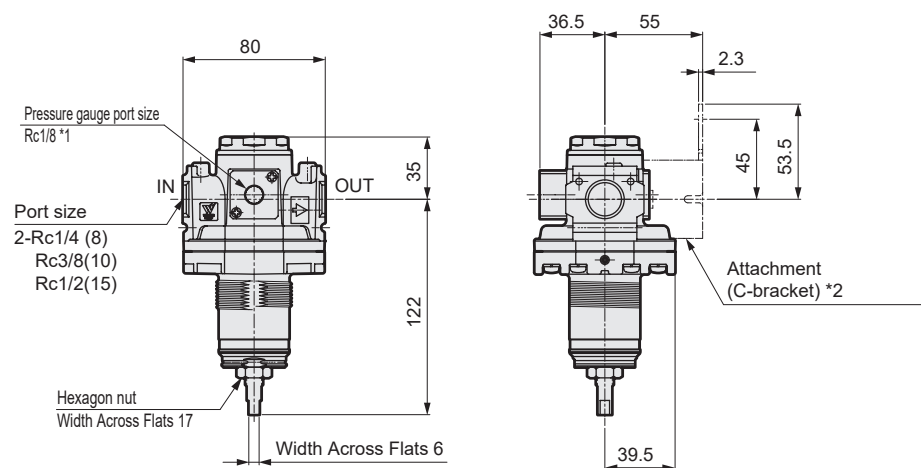


- Attachment
C-bracket (-BW)
Part model No.: B320
- Material: Steel
Zinc plated

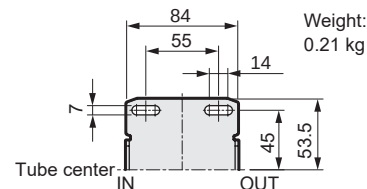
- *1: Pressure gauge port is left open.
Use the included pipe plug when sealing.
- *2: Bracket is optionally included.
- *3: Dimensions at 0 MPa pressure setting.



● RW4000-W



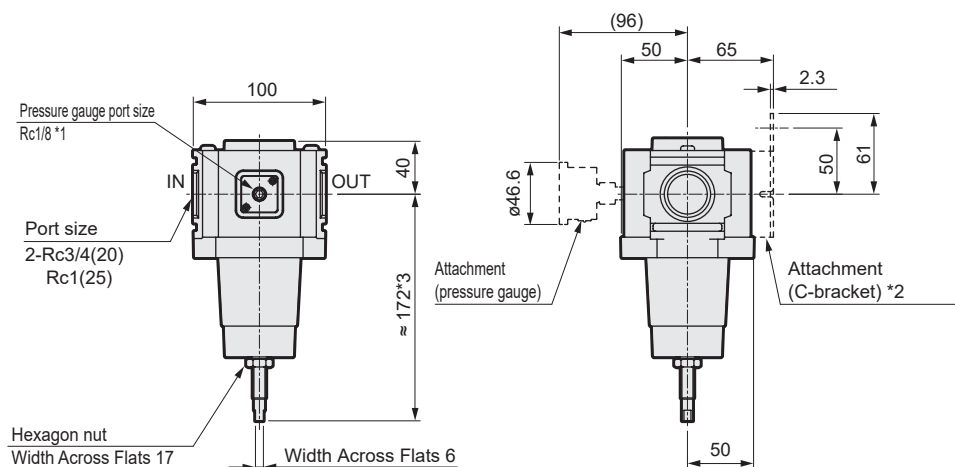
- Attachment
C-bracket (-BW)
Part model No.: B420



- *1: Pressure gauge port is left open.
Use the included pipe plug when sealing.
- *2: Bracket is optionally included.
- *3: Dimensions at 0 MPa pressure setting.

Dimensions

● RW8000-W

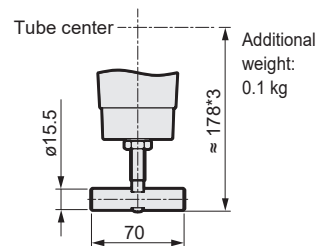


*1: The pressure gauge connection port is left open when shipped. Use the included pipe plug when sealing.

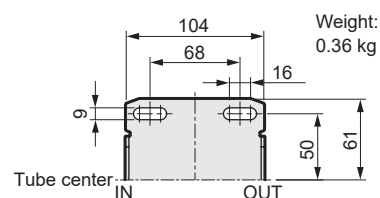
*2: Bracket is optionally included.

*3: Dimensions at 0 MPa pressure setting.

· Optional dimensions
With knob (K)



· Attachment
C-bracket (-BW)
Part model No.: B820



Drain separator
F.R.L. unit

Pneumatic auxiliary
components

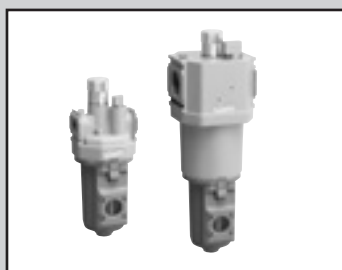
Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Lubricator Outdoor Series

LW3000, LW4000, LW8000-W Series

Supplies fine oil mist.

● Port size: 1/4 to 1

JIS symbol



Specifications

Item	LW3000-W	LW4000-W	LW8000-W
Working fluid	Compressed air		
Max. working pressure MPa	1.0		
Proof pressure MPa	1.5		
Fluid temperature °C	5 to 60 (no freezing)		
Ambient temperature °C	-10 to 60		
Min. drip flow rate m ³ /min(ANR)	0.03	0.065	
Oil storage capacity cm ³	85	170	170 (MAX360) *2
Oil used	Turbine oil Class 1 ISO VG32 (spindle oil cannot be used)		
Port size Rc, NPT, G	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	0.38	0.55	1.5

Option weight

* Add to the weight of the standard accessories.

Unit:kg

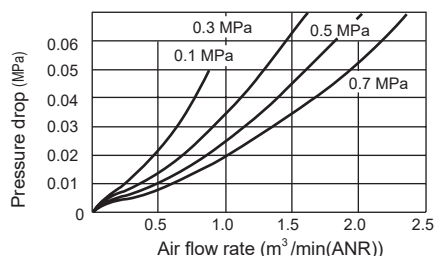
Code	Drain discharge	Attachment
	C	BW
LW3000	0	0.17
LW4000	0	0.21
LW8000	0	0.36

*1: The min. drip flow is that at which five drops of turbine oil drip per minute at the primary pressure of 0.5MPa and inlet air temperature of 20°C. (It cannot be used for dry fog.)

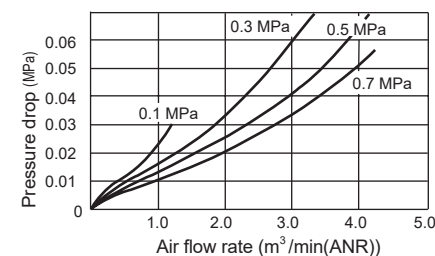
*2: When lubricating from the filling plug, set 300cm³ or less below the top of the cup window.

Flow Rate Characteristics

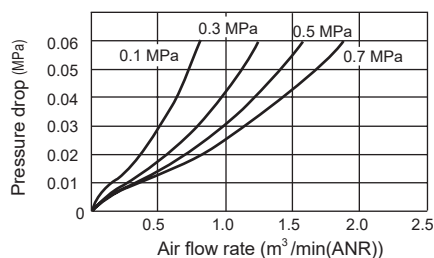
● LW3000-8-W



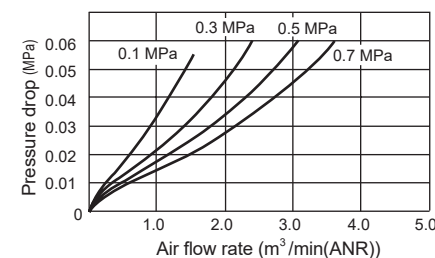
● LW3000-10-W



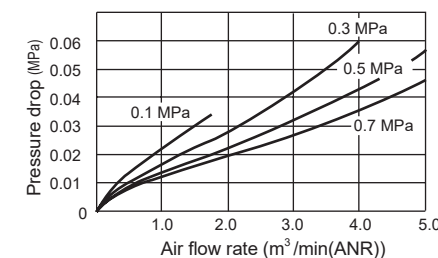
● LW4000-8-W



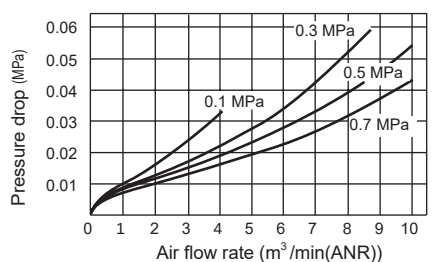
● LW4000-10-W



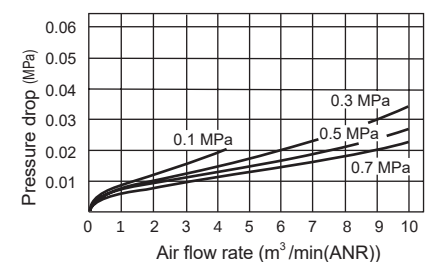
● LW4000-15-W



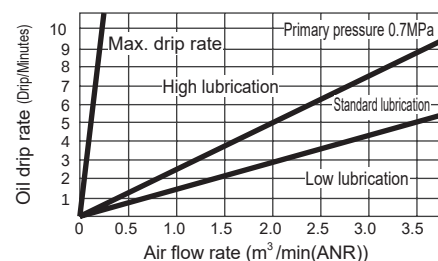
● LW8000-20-W



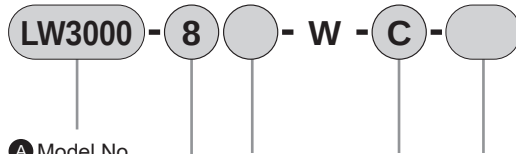
● LW8000-25-W



Oil drip rate



How to order



A Model No.

B Port size

C Port thread

D Option

E Bracket (Included)

*For descriptions of options, see Pneumatic / and Vacuum / Auxiliary Components (Catalog NO.CB-024SA).

Code		Description		
B Port size				
8	1/4		●	●
10	3/8		●	●
15	1/2			●
20	3/4			●
25	1			●
C Port thread		*1, *3		
Blank	Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N	NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G	G thread (pressure unit: bar temperature display unit: °C)	●	●	●
D Option		*2		
Drain	Blank	Without manual cock	●	●
Discharge	C	With manual cock	●	●
guarantee	Blank	1 year after delivery	●	●
period	G	3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *4, *5	●	●
Flow	Blank	Standard flow (left → right)	●	●
Direction	X1	Reverse flow (right → left)	●	●
E Bracket (included)				
Blank	Not included	●	●	●
BW	C-bracket	●	●	●

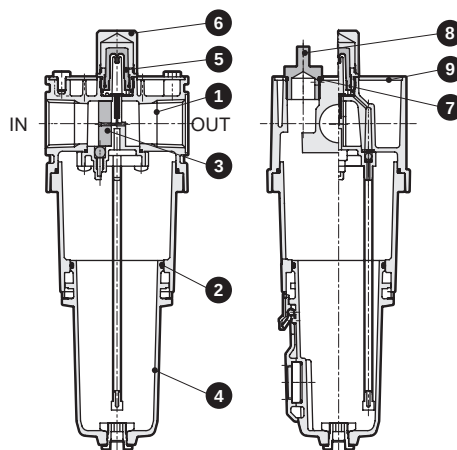
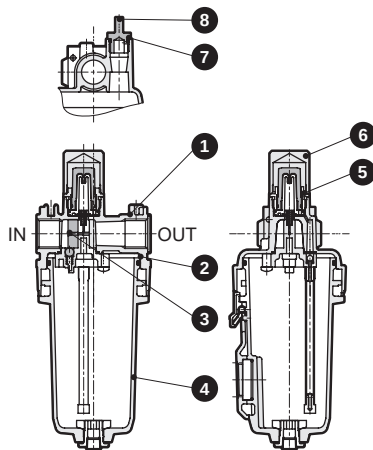
⚠ Precautions for model No. selection

- *1: G and NPT threads are available for IN and OUT.
- *2: When selecting options for several items, list options in order from the top.
- *3: In compliance with the Measurement Act, the psi display cannot be used in Japan.
- *4: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *5: For option G, the specifications and drawings must be exchanged. Refer to page 98 for details.

Internal structure and parts list

● LW3000-W, LW4000-W

● LW8000-W

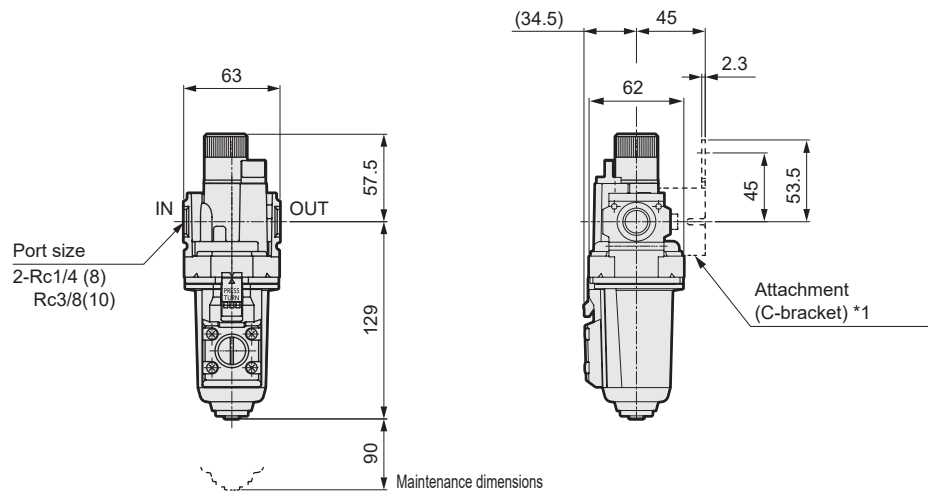


No.	Part name	Material
1	Body	Aluminum alloy die-casting
2	O-ring	Special nitrile rubber
3	Flow guide	Nitrile rubber
4	Metal bowl assembly	Aluminum alloy die-casting, zinc alloy die-casting, stainless steel
5	Adjusting dome Assembly	Stainless steel, nitrile rubber, polycarbonate resin
6	Dome cover	Aluminum
7	O-ring	Nitrile rubber
8	Filling plug	Stainless steel
9	Plate cover	Aluminum

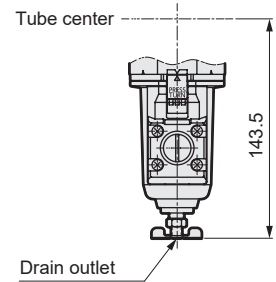
Lubricator Series

Dimensions

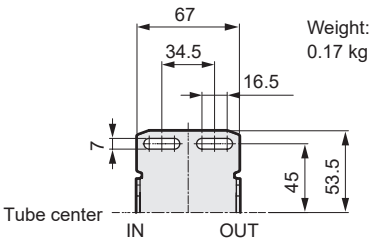
● LW3000-W



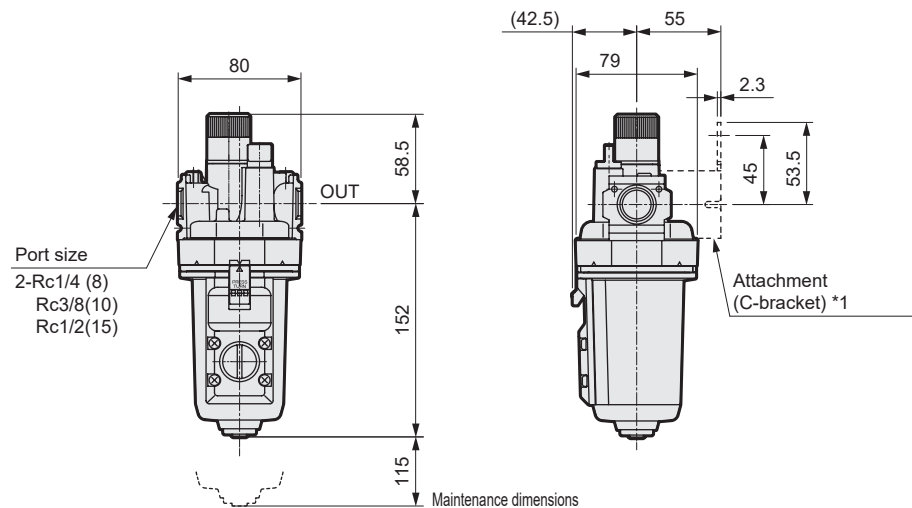
· Optional dimensions
With manual petcock (C)



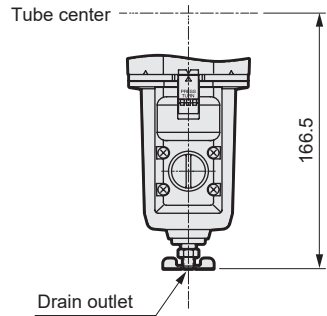
· Attachment
C-bracket (-BW)
Part model No.: B320
· Material: Steel
Zinc plated



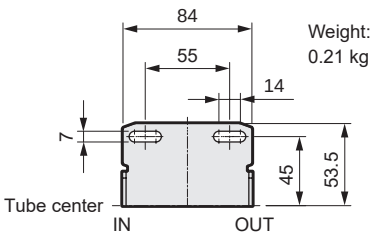
● LW4000-W



· Optional dimensions
With manual petcock (C)

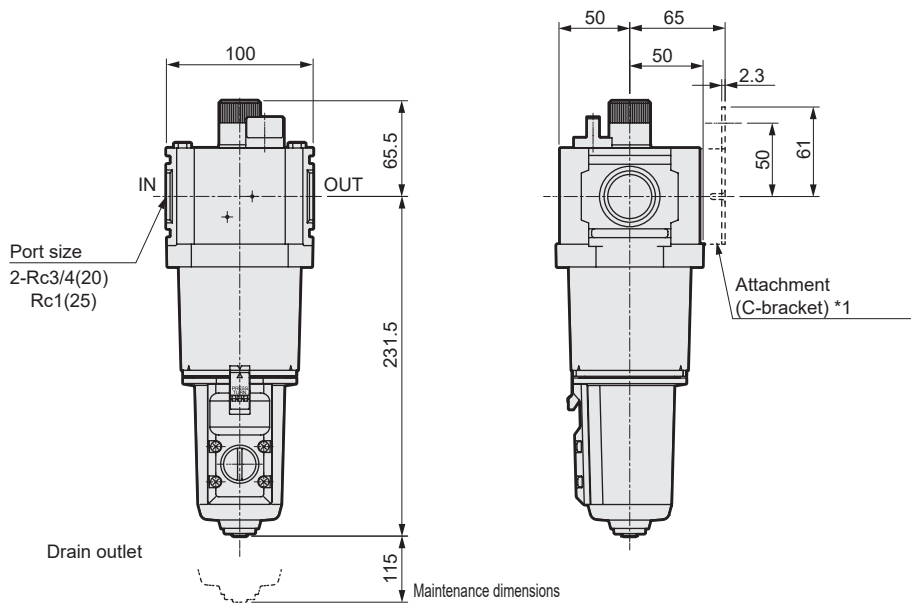


· Attachment
C-bracket (-BW)
Part model No.: B420



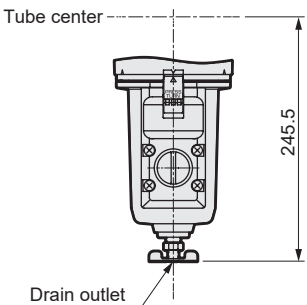
Dimensions

● LW8000-W

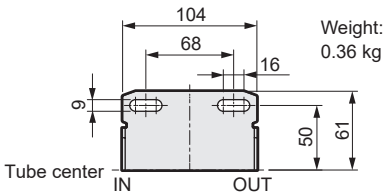


*1: Bracket is optionally included.

· Optional dimensions
With manual petcock (C)



· Attachment
C-bracket (-BW)
Part model No.: B820



Drain separator
F.R.L. unit

Pneumatic auxiliary
components

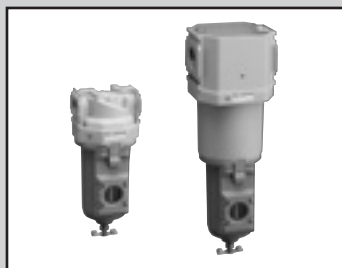
Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Oil mist filter Outdoor series

MW3000/MW4000/MW8000-W Series

A series of outdoor specification products.

● Port size: 1/4 to 1

JIS symbol



Specifications

Item	MW3000-W	MW4000-W	MW8000-W
Working fluid	Compressed air		
Working pressure MPa	0.1 to 1.0 *2		
Proof pressure MPa	1.5		
Drain capacity cm ³	45	80	80
Port size Rc,NPT, G	1/4, 3/8	1/4, 3/8, 1/2	3/4, 1
Weight kg	0.38	0.62	1.45

Option weight

* Add to the weight of the standard accessories. Unit: kg

Code	Drain discharge	Attachment
	F1	BW
MW3000	0.02	0.17
MW4000	0.02	0.21
MW8000	0.02	0.36

Mantle option name		Blank (M type)	S (S type)
Max. processing flow rate *1	MW3000-□W	360	450
l/min (ANR)	MW4000-□W	825	1000
Primary pressure 0.7 MPa/hour	MW8000-□W	2600	2900
Fluid temperature °C	-20 to 60(no freezing)		
Ambient temperature °C	-20 to 60		
Filtration rating μm	0.01 (nominal)		
Secondary side oil concentration mg/m ³	0.01 or less (0.1 or less after oil saturation) *3, *4		
Mantle (element) change	1 year (6000 hours) or pressure drop 0.1 MPa		

*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: In the case of "F1" with auto-drain, the min. working pressure is 0.15 MPa.

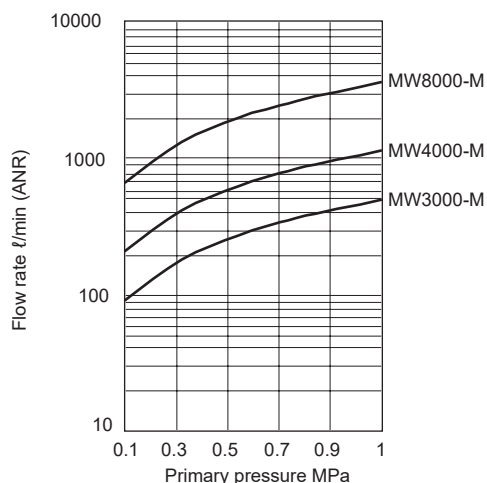
*3: The secondary oil concentration is the value when the primary oil concentration is 30 mg/m³ and inlet air temperature is 21°C.

*4: Install an oil mist filter (S type) as a pre-filter on the primary side to prevent early clogging.

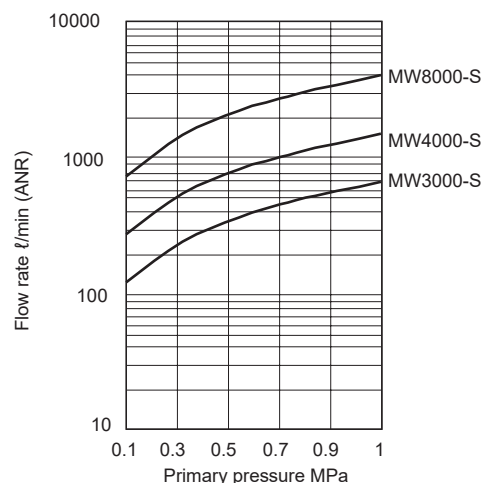
*5: In the case of "F1" with auto-drain, be careful of freezing the drain.

Flow characteristics (max. processing flow rate)

● MW*000-W-M



● MW*000-W-S



Oil Mist Filter Series

How to order/Internal structure diagram and parts list

How to order

MW3000 - **8** - **W** - **S** -

A Model No.

B Port size

C Port thread

D Option

E Other attachments

A Model No.

MW3000
MW4000
MW8000

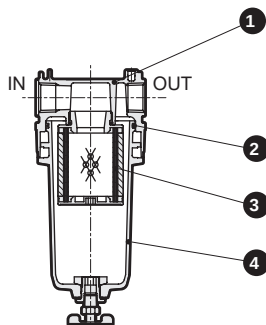
Code	Description			
B Port size				
8	1/4	●	●	
10	3/8	●	●	
15	1/2		●	
20	3/4			●
25	1			●
C Port thread				
Blank	Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N	NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G	G thread (pressure unit: bar temperature display unit: °C)	●	●	●
D Option				
Drain discharge	Blank With manual cock	●	●	●
^{*4} ^{*5}	F1 Auto-drain with manual override (NC: No exhaust w/o pressurization)	●	●	●
Mantle (Element)	Blank M type (nominal 0.01 μm; remaining oil 0.01mg/m ³)	●	●	●
	S S type (nominal 0.3 μm; remaining oil 0.5mg/m ³)	●	●	●
guarantee period	Blank 1 year after delivery	●	●	●
	G 3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) ^{*6} , ^{*7}	●	●	●
Flow Direction	Blank Standard flow (left → right)	●	●	●
	X1 Reverse flow (right → left)	●	●	●
E Other attachments				
Blank	Not included	●	●	●
BW	C-bracket	●	●	●

⚠ Precautions for model No. selection

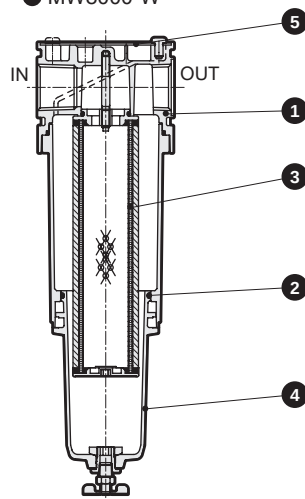
- *1: G and NPT threads are available for IN, OUT and drain outlet of auto-drain.
- *2: In compliance with the Measurement Act, the psi display cannot be used in Japan.
- *3: Select options for the drainage, mantle, warranty period and flow direction. When selecting options for several items, list options in order from the top.
- *4: NO auto-drain cannot be selected.
- *5: Refer to "Pneumatic, Vacuum, and Auxiliary Components (Catalog No.CB-024SA)" for the auto-drain use conditions.
- *6: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *7: For option G, the specifications and drawings must be exchanged. Refer to page 98 for details.

Internal structure and parts list

● MW3000-W/MW4000-W



● MW8000-W

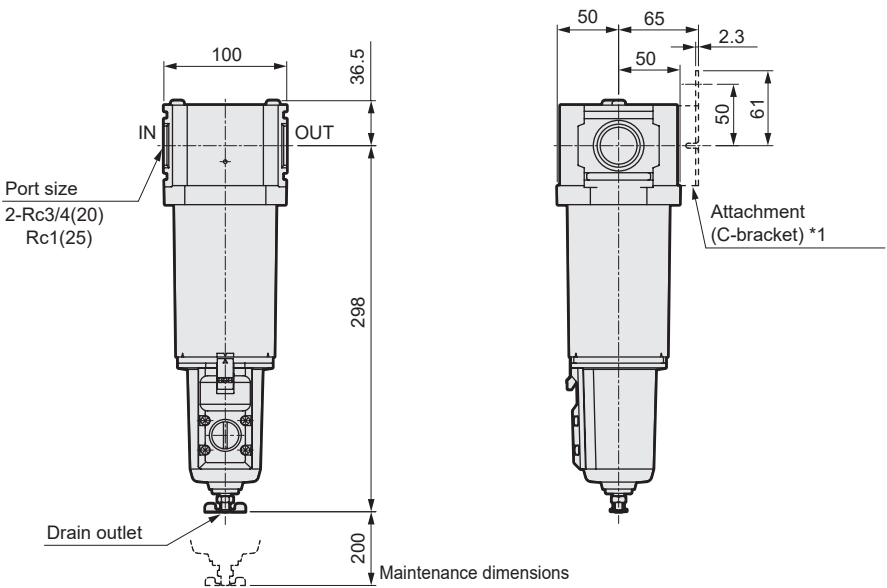


No.	Part name	Material
1	Body	Aluminum alloy die-casting
2	O-ring	Special nitrile rubber
3	Mantle assembly	-
4	Metal bowl assembly	Aluminum alloy die-casting, brass, zinc alloy die-casting, nitrile rubber
5	Plate cover	Aluminum

Dimensions

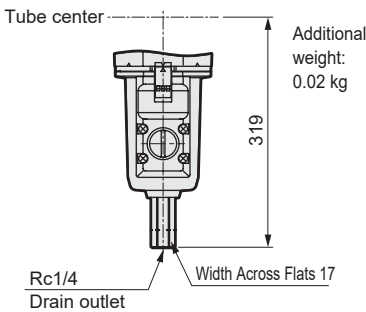
Dimensions

● MW8000-W



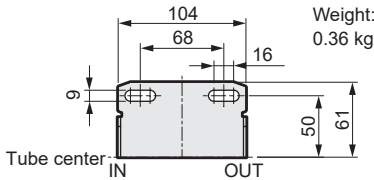
*1: Bracket is optionally included.

· Optional dimensions
With auto-drain (F1)



Additional weight:
0.02 kg

· Attachment
C-bracket (-BW)
Part model No.: B820



Weight:
0.36 kg

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

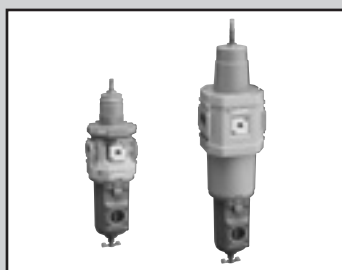
Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Filter/regulator Outdoor series

WW3000, WW4000, WW8000-W Series

A series of outdoor specification products.

● Port size: 1/4 to 1

JIS symbol



Specifications

Item	WW3000-W	WW4000-W	WW8000-W
Working fluid	Compressed air		
Max. working pressure MPa	1.0 *1, 2		
Proof pressure MPa	1.5		
Fluid temperature °C	-20 to 60 (no freezing)		
Ambient temperature °C	-20 to 60		
Filtration rating μm	5 or 0.3		
Set pressure MPa	0.05 to 0.85		
Pressure relief	With relief mechanism		
Drain capacity cm ³	45	80	80 (*3)
Port size Rc, NPT, G	1/4, 3/8, 1/2	1/4, 3/8, 1/2	3/4, 1
Weight kg	0.8	1.1	2.3

Option weight

* Add to the weight of the standard accessories.

Unit: kg

Code	Drain discharge		Knob	Attachment
	F	F1	K	BW
WW3000	0.02	0.02	0.1	0.17
WW4000	0.02	0.02	0.1	0.21
WW8000	0.02	0.02	0.1	0.36

*1: In the case of "F" with auto-drain, the min. working pressure of auto-drain is 0.1 MPa. Air is purged with initial drainage until pressure reaches 0.1 MPa.

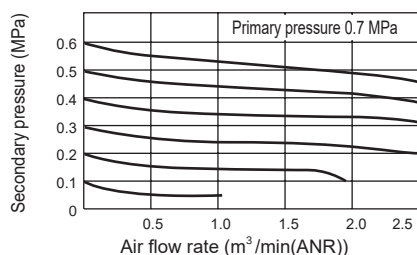
*2: In the case of "F1" with auto-drain, the min. working pressure of auto-drain is 0.15 MPa.

*3: Up to 170cm³ is stored with the manual cock only.

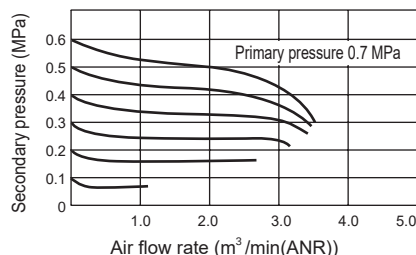
*4: When "F" or "F1" with auto-drain is selected, be careful of drain freezing.

Flow characteristics

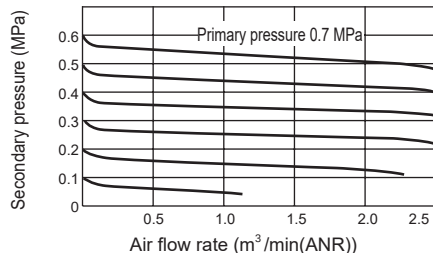
● WW3000-8-W



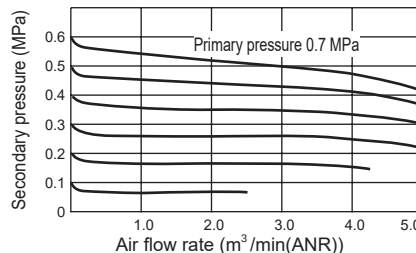
● WW3000-10-W/WW3000-15-W



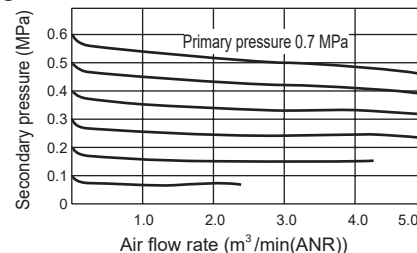
● WW4000-8-W



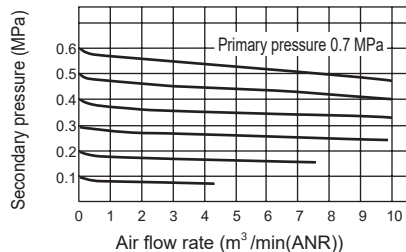
● WW4000-10-W



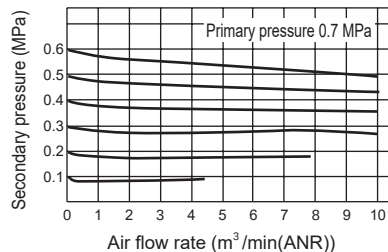
● WW4000-15-W



● WW8000-20-W

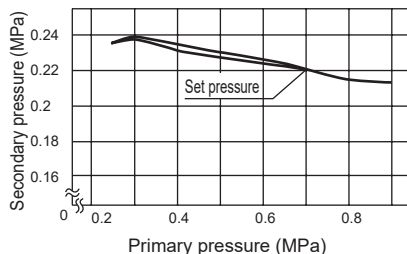


● WW8000-25-W

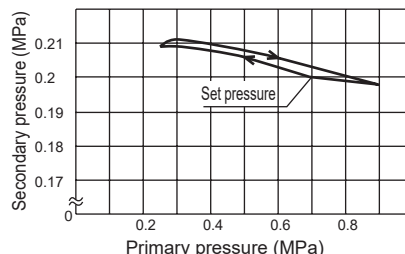


Pressure characteristics

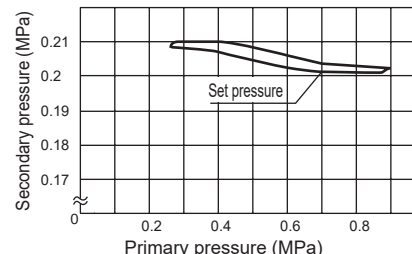
● WW3000-W



● WW4000-W



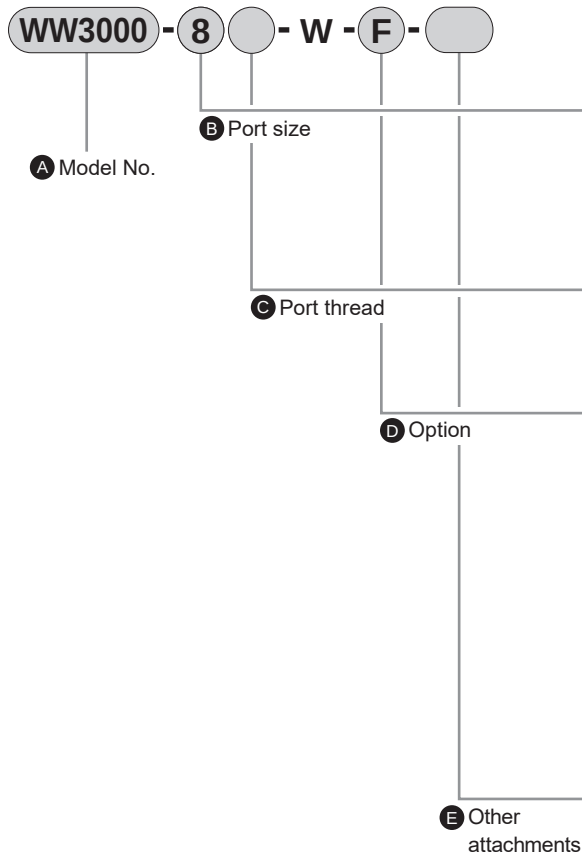
● WW8000-W



Filter/Regulator Series

How to order/Internal structure diagram and parts list

How to order



		A Model No.		
		WW3000	WW4000	WW8000
Code	Description			
B Port size				
8	1/4	●	●	
10	3/8	●	●	
15	1/2	●	●	
20	3/4			●
25	1			●
C Port thread				
		*1, *2		
Blank	Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N	NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G	G thread (pressure unit: bar temperature display unit: °C)	●	●	●
D Option				
		*3, *4		
Drain discharge *4	Blank	With manual cock	●	●
	F	Auto-drain with manual override (NO: Exhaust when not pressurized)	●	●
	F1	Auto-drain with manual override (NC: No exhaust w/o pressurization)	●	●
Element	Blank	5 µm	●	●
	Y	0.3 µm (submicron) *5	●	●
Knob	Blank	Without knob	●	●
	K	With knob	●	●
guarantee period	Blank	1 year after delivery	●	●
	G	3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *6, *7	●	●
Flow Direction	Blank	Standard flow (left → right)	●	●
	X1	Reverse flow (right → left)	●	●
E Other attachments				
Blank		Not included	●	●
BW		C-bracket	●	●
GW49P		Pressure gauge (GW49D-6-P10) *8	●	●

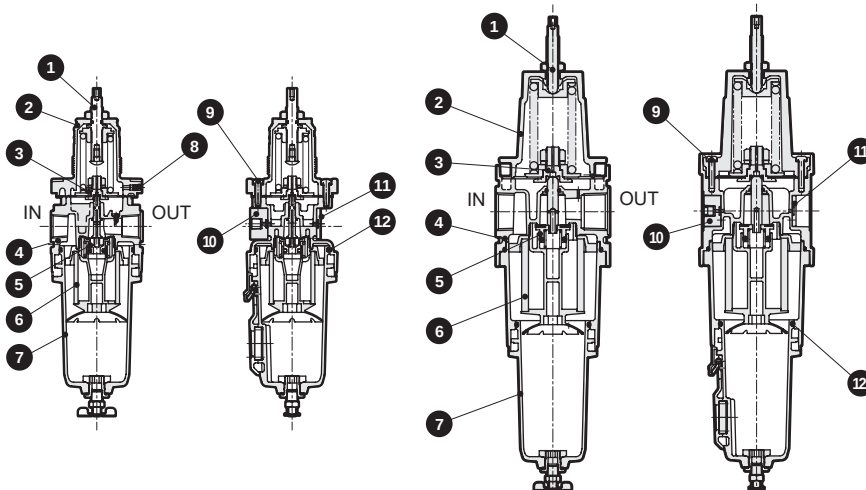
⚠ Precautions for model No. selection

- *1: G and NPT threads are available for IN, OUT, gauge port and drain outlet of auto-drain.
- *2: In compliance with the Measurement Act, the psi display cannot be used in Japan.
- *3: Select options for the drainage, element, knob, warranty period and flow direction items. When selecting options for several items, list options in order from the top.
- *4: Refer to "Pneumatic, Vacuum, and Auxiliary Components (Catalog No.CB-024SA)" for the auto-drain use conditions.
- *5: Refer to page 7 for max. processing flow rate when option "Y" is selected.
- *6: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *7: For option G, the specifications and drawings must be exchanged.
- *8: The pressure gauge cannot be attached when using NPT threads or G threads. (Consult with CKD if required.)

Internal structure diagram and parts list

● WW3000-W, WW4000-W

● WW8000-W



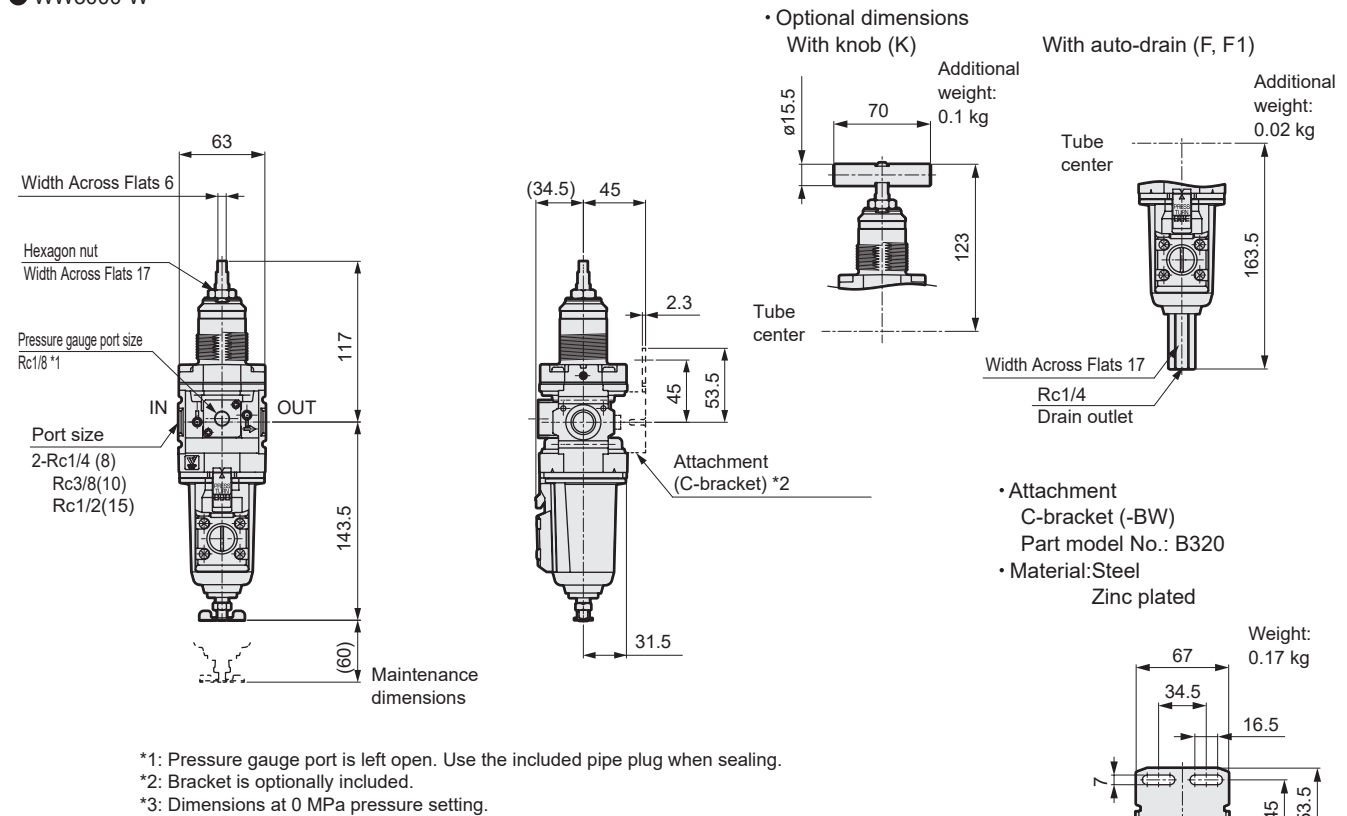
No.	Part name	Material
1	Adjusting screw assembly	Stainless steel (aluminum, nitrile rubber, polyacetal resin: WW3000, WW4000)
2	Cover	Aluminum alloy die-casting
3	Diaphragm assembly	Stainless steel, nitrile rubber, aluminum
4	Body	Aluminum alloy die-casting
5	Valve assembly	Brass, hydrogenated nitrile rubber (polyacetal resin: WW3000 and WW4000)
6	Element	Polypropylene
7	Metal bowl assembly	Aluminum alloy die-casting, brass, zinc alloy die-casting, nitrile rubber
8	Plug	Stainless steel
9	Screws	Stainless steel
10	Gauge plug assembly	Aluminum, nitrile rubber, stainless steel
11	Seal plug assembly	Aluminum, nitrile rubber, stainless steel
12	O-ring	Special nitrile rubber

CKD

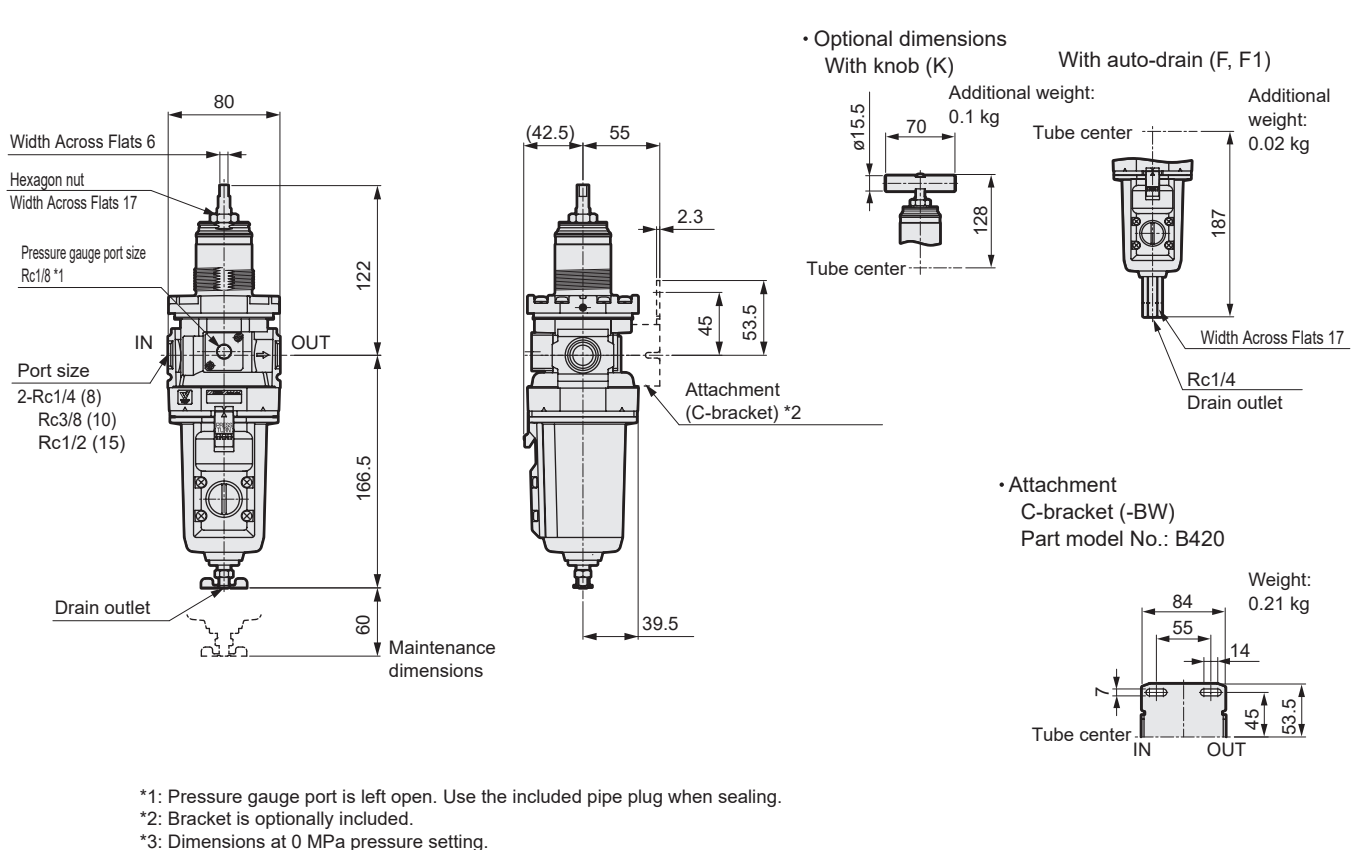
Filter/Regulator Series

Dimensions

● WW3000-W

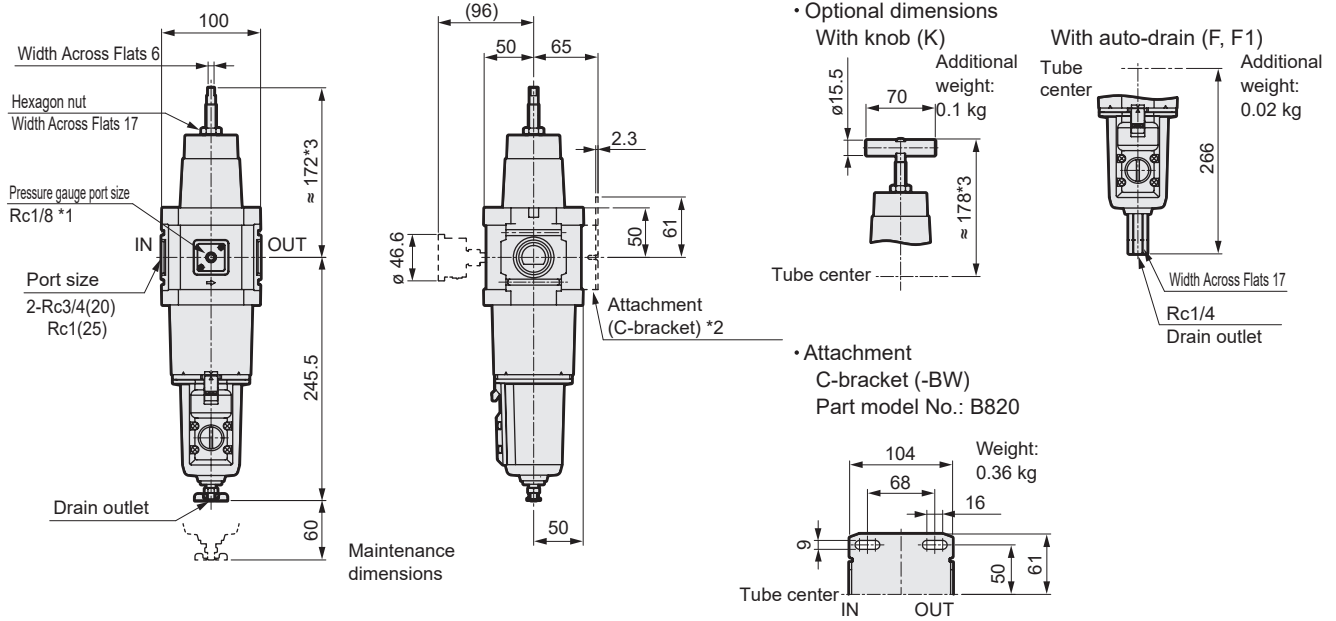


● WW4000-W



Dimensions

● WW8000-W



*1: Pressure gauge port is left open. Use the included pipe plug when sealing.

*2: Bracket is optionally included.

*3: Dimensions at 0 MPa pressure setting.

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Filter/Regulator Outdoor series

BW7019 Series

Air filter/regulator integrated.

● Port size: Rc1/4

JIS symbol



Specifications

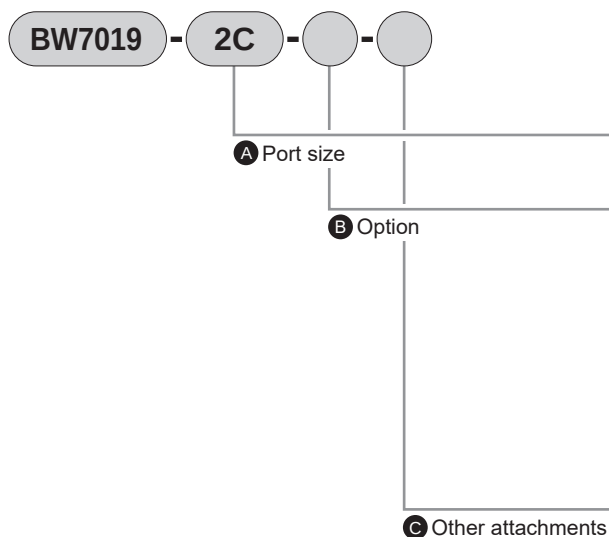
Item		BW7019
Max. working pressure	MPa	1.0
Proof pressure	MPa	1.5
Fluid temperature	°C	-20 to 60 (no freezing)
Ambient temperature	°C	-20 to 60
Filtration rating	μm	5
Set pressure	MPa	0.04 to 0.83
Pressure relief		With relief mechanism
Port size	Rc	1/4
Weight	kg	0.45

*1: When a piston drain "D" is used, min. working pressure is 0.1MPa.

Do not use this device on equipment that experiences impacts.

*2: When using the piston drain "D", be careful of freezing the drain.

How to order

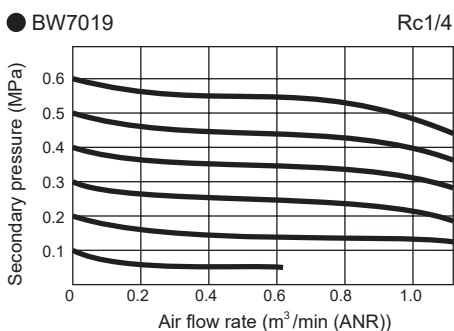


⚠ Precautions for model No. selection

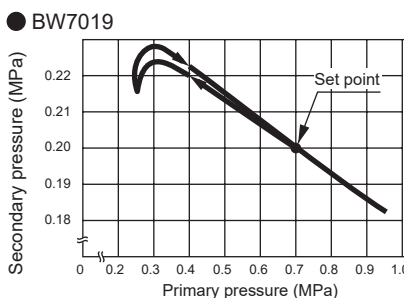
*1: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.

*2: For option G, the specifications and drawings must be exchanged. Refer to page 98 for details.

Flow Rate Characteristics



Pressure characteristics



Code	Description
A Port size	
2C	Rc1/4
B Option	
Drain discharge	Blank Tire valve
	D Piston drain
Element	Blank 5 μm
guarantee period	Blank 1 year after delivery
	G 3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *1, *2
Flow Direction	Blank Standard flow (left → right)
	X1 Reverse flow (right → left)
C Other attachments	
Blank	Not included
GW49P	Pressure gauge (GW49D-6-P10)
BW	Bracket (6506-W)

Option weight

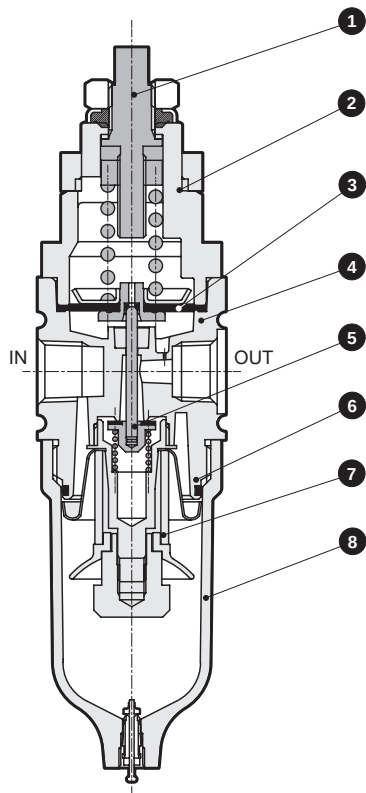
* Add to the weight of the standard accessories.

Unit: kg

	Drain discharge	Pressure gauge	Bracket
Code	D	GW49P	BW
BW7019	0	0.086	0.03

Internal structure and parts list

● BW7019

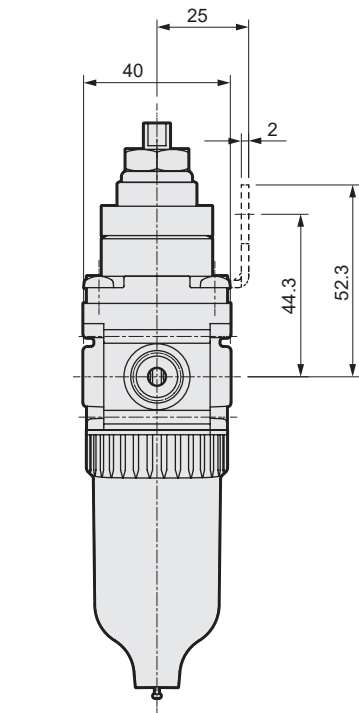
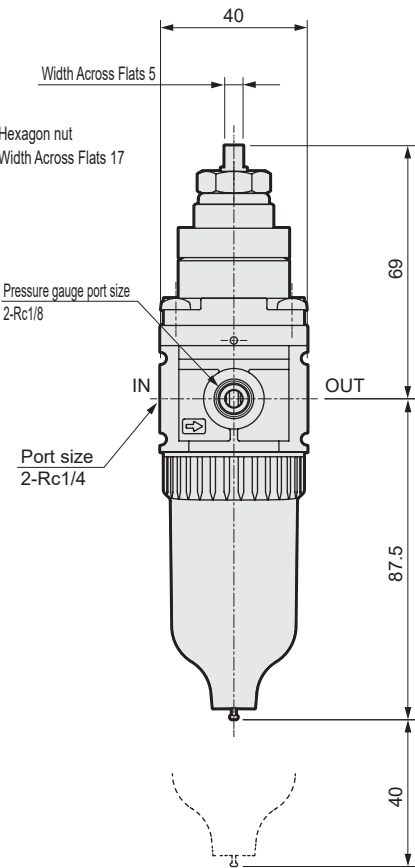


No.	Part name	Material
1	Adjusting screw	Stainless steel
2	Cover	Zinc alloy die-casting, aluminum
3	Diaphragm assembly	Nitrile rubber, copper, zinc alloy die-casting
4	Body	Aluminum alloy die-casting
5	Valve assembly	Copper alloy/hydrogenated nitrile rubber
6	O-ring	Special nitrile rubber
7	Element	Polypropylene
8	Metal bowl assembly	Zinc alloy die-casting

Dimensions

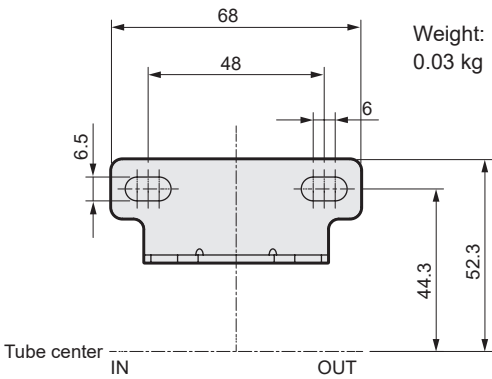


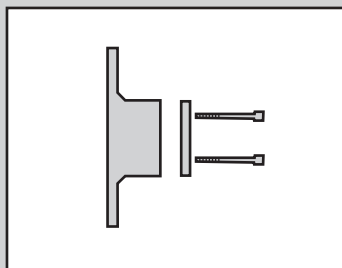
● BW7019



Maintenance dimensions

● Attachment
Bracket (-BW)
Part model No.: 6506-W





Included component

Bracket Outdoor Series

BW Series

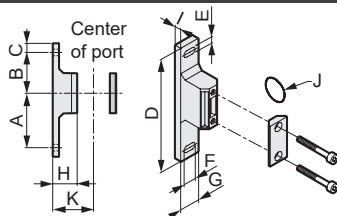
Joiner Outdoor Series

JW Series



Dimensions

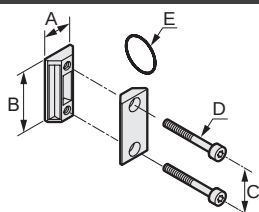
T-bracket set



Material: Aluminum die-casting
Stainless steel mounting screws used

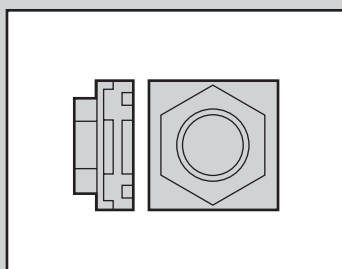
Model No.	Compatibility	A	B	C	D	E	F	G	H	I	J	K	kg
BW310-W	3000 Series FXW1004 Series	60	45	10	125	7	14	22	27	7	JIS B2401-P21	45	0.086
BW410-W	4000 Series FXW1011 Series	60	45	10	125	7	14	22	37	7	JIS B2401-P21	55	0.094
BW810-W	8000 Series FXW1037 Series	70	50	15	150	9	14	27	37	8	AS568-127	65	0.169

Joiner set



Material: Aluminum die-casting
Stainless steel mounting screws used

Model No.	Compatibility	A	B	C	D	E	kg
C4000-JW400-W	3000 Series 4000 Series FXW1004 Series FXW1011 Series	21	44	32	M5	JIS B2401-P21	0.036
C8000-JW800-W	8000 Series FXW1037 Series	26	65	50	M6	AS568-127	0.094



Pipe adaptor Outdoor Series

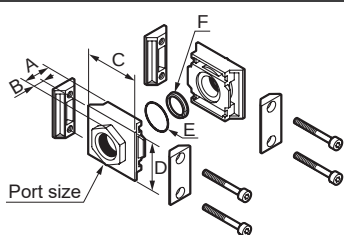
AW400, AW800 Series

Port size: Rc1/4 to Rc11/4



Dimensions

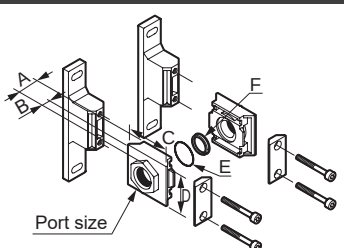
Pipe adaptor set



Material: Aluminum die-casting
Stainless steel mounting screws used

Model No.	Port size	Compatibility	A	B	C	D	E (O-ring)	F (gasket)	Other
AW400-8-W	Rc ¹ / ₄	3000 Series 4000 Series FXW1004 Series FXW1011 Series	20 (25) [34]	6 (11) [20]	50	45	JISB2401 P21 1 pc.	1 pc.	Values in () are for Rc ³ / ₄ Values in [] are for the Rc1
AW400-10-W	Rc ³ / ₈								
AW400-15-W	Rc ¹ / ₂								
AW400-20-W	Rc ³ / ₄								
AW400-25-W	Rc1	8000 Series FXW1037 Series	35 (38)	15 (18)	81	66	AS568-127 1 pc.	1 pc.	Values in () are for Rc1 ¹ / ₄
AW800-20-W	Rc ³ / ₄								
AW800-25-W	Rc1								
AW800-32-W	Rc1 ¹ / ₄								

Pipe adaptor set



Material: Aluminum die-casting
Stainless steel mounting screws used

Model No.	Port size	Compatibility	A	B	C	D	E (O-ring)	F (gasket)	Other
AW400-8-W-B31W	Rc ¹ / ₄	3000 Series FXW1004 Series	20	6	50	45	JISB2401 P21 1 pc.	1 pc.	-
AW400-10-W-B31W	Rc ³ / ₈								
AW400-15-W-B31W	Rc ¹ / ₂								
AW400-8-W-B41W	Rc ¹ / ₄	3000 Series 4000 Series FXW1004 Series FXW1011 Series	20 (25) [34]	6 (11) [20]	50	45	JISB2401 P21 1 pc.	1 pc.	Values in () are for Rc ³ / ₄ Values in [] are for the Rc1
AW400-10-W-B41W	Rc ³ / ₈								
AW400-15-W-B41W	Rc ¹ / ₂								
AW400-20-W-B41W	Rc ³ / ₄								
AW400-25-W-B41W	Rc1	8000 Series FXW1037 Series	35 (38)	15 (18)	81	66	AS568-127 1 pc.	1 pc.	Values in () are for Rc1 ¹ / ₄
AW800-20-W-B81W	Rc ³ / ₄								
AW800-25-W-B81W	Rc1								
AW800-32-W-B81W	Rc1 ¹ / ₄								



Pressure Gauge Outdoor Series

GW49D Series

● Port size: R1/8, R1/4

JIS symbol

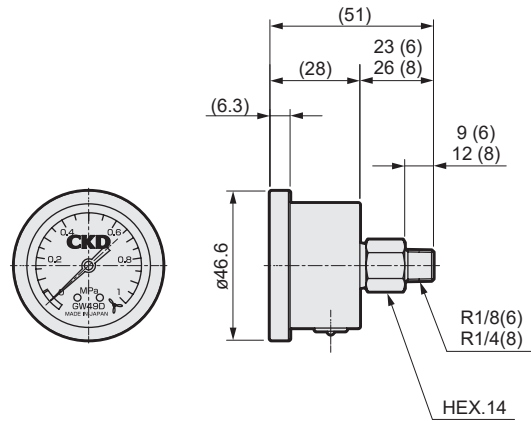


Specifications

Item		GW49D
Working fluid		Compressed air
Fluid temperature °C		-20 to 60 (no freezing)
Ambient temperature °C		-20 to 60
Accuracy *1		Full scale ±3% (with 5 to 35 °C)
Shape		D type (rear side screw, stock section hexagon)
Display system		ø46.6
Material	Bourdon tube	Copper alloy
	Stock	Copper alloy (nickel plating)
	Housing	Stainless steel
	Lens	Tempered glass
Pressure range	MPa	0 to 1.0
Port size	R	1/8, 1/4
Weight	g	100

*1: The guaranteed temperature indicator accuracy is 20±15°C.

Dimensions



How to order

GW49D - 6 - P10

A Model No.

B Port size

C Pressure display

Code	Description
A Model No.	
GW49D	
B Port size	
6	R ¹ / ₈
8	R ¹ / ₄
C Pressure display [MPa] *1	
P10	0 to 1.0 MPa

*1: Consult with CKD concerning psi or bar display.

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Silencer Metal body Outdoor Series

SL-W Series

● Port size: R1/4 to R1/2

JIS symbol



Specifications

Item	SL-8A-W	SL-10A-W	SL-15A-W
Working fluid	Compressed air		
Max. working pressure MPa	0.9		
Min. working pressure MPa	0		
Proof pressure MPa	1.35		
Fluid temperature °C	5 to 60		
Ambient temperature °C	-10 to 60 (no freezing)		
Port size	R 1/4	R 3/8	R 1/2
Weight g	75	100	105
Noise reduction effect dB [A]	20 and over		
Flow rate *1 m ³ /min(ANR)	2.4	3.2	4.1
Effective cross-sectional area mm ²	36	48	61

*1: Flow rate is the atmospheric pressure conversion value at pressure 0.5 MPa.

How to order

SL - **8A** - W

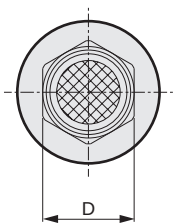
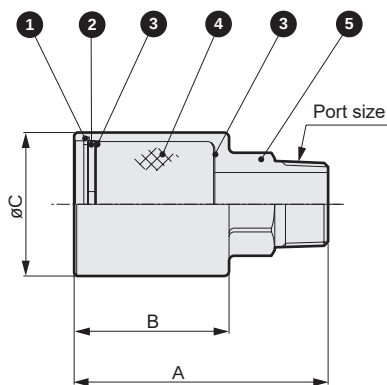
● Replacement element

SL - **8A** - EL

A Port size	
8A	R1/4
10A	R3/8
15A	R1/2

Dimensions/Internal structure and main parts list

● SL-8A to 15A-W



Model No.	Port size	A	B	øC	D
SL-8A-W	R1/4	64	41	30	17
SL-10A-W	R3/8	74.5	49.5	36	24
SL-15A-W	R1/2	77.5	49.5	36	24

Part No.	Part name	Material
1	C-snap ring	Stainless steel
2	Perforated metal	Stainless steel
3	Wire mesh	Stainless steel
4	Element	Vinylidene chloride
5	Body	Aluminum

⚠ Safety precautions

- Use appropriate torque to tighten the pipes when connecting them.
- Noise reduction effect values are based on JIS standards.
Silencing could vary with the type of circuit and pressure used.

[Recommended tightening torque]

Port thread	Tightening torque N·m
R1/4	6 to 8
R3/8	13 to 15
R1/2	16 to 18



Speed controller Medium bore size Outdoor Series

SC1-W Series

● Port size: Rc1/4 to Rc1/2

JIS symbol



Specifications

Item	Item	SC1-8-W	SC1-10-W	SC1-15-W
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	-10 to 60 (no freezing)		
Port size	Rc	1/4	3/8	1/2
Weight	g	95	205	195
Dial value (needle position)		10	10	10
Free flow	Flow rate/l/min (ANR)	930	2600	2900
	Effective cross-sectional area mm ²	14	39	43
Controlled flow	Flow rate/l/min (ANR)	870	1500	2400
	Effective cross-sectional area mm ²	13	22	36

*1: Flow rate is the atmospheric pressure conversion at 0.5MPa.

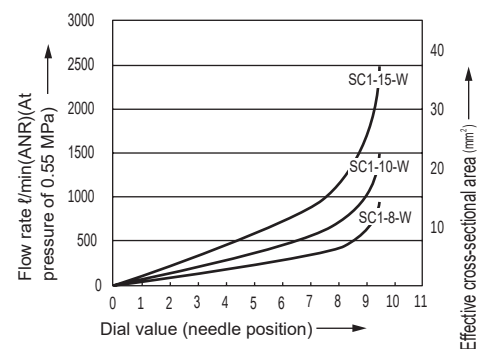
How to order

SC1 - 8 - W

A Port size

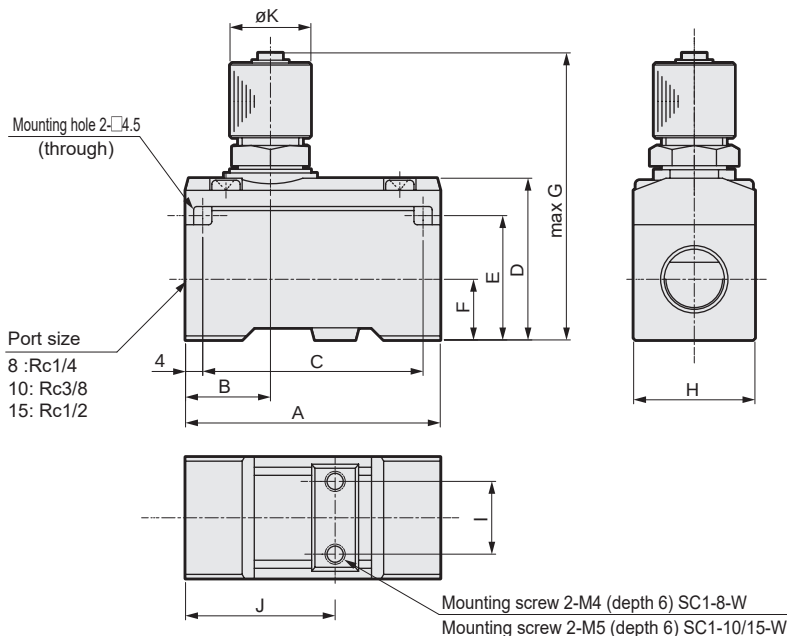
Code	Description
A Port size	
8	Rc1/4
10	Rc3/8
15	Rc1/2

Flow characteristics



Dimensions

● SC1-W



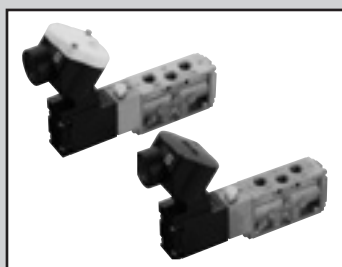
Model No.	A	B	C	D	E	F
SC1-8-W	50	20	42	31	23	11
SC1-10/15-W	63	21	55	40	31	15

Model No.	G	H	I	J	K
SC1-8-W	67	22	12	31	19
SC1-10/15-W	83	30	18	37	23

⚠ Safety precautions

- When operating in the low pressure range (0.05 MPa or less), or when the piping, etc., before and after the product are excessively constricted, note that vibrating sounds can be easily generated if the cylinder speed is rapid, or if the differential pressure is small.
- When tightening, do not tighten the needle or lock nut section excessively. (Tightening torque approx. 3 Nm)

CKD



Single valve/body piping
Pilot operated 5-port pneumatic valve

4F2/3-W Series

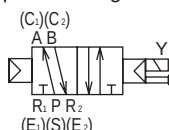
● Cylinder bore size: $\varnothing 40$ to $\varnothing 100$



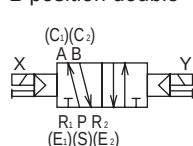
JIS symbol

● 5-port valve

2 position single

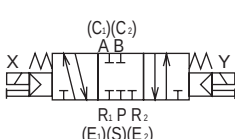


2-position double

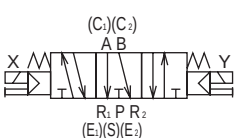


3-position

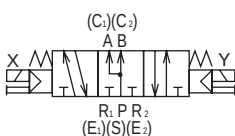
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Common specifications

Item	Description
Valve and operation	Pilot operated soft spool valve
Working fluid	Compressed air
Max. working pressure MPa	1.0
Min. working pressure MPa	2-position: 0.1 (WC:0.2) 3-position: 0.15 (WC:0.25)
Proof pressure	1.5
Ambient temperature(*1) °C	-10 to 60 (WC: -20 to 60°C)
Fluid temperature °C	5 to 60 (WC: -20 to 60 and no freezing)
Lubrication	Not required (*2)
Degree of protection	IP65
Vibration resistance m/s ²	50 or less
Shock resistance m/s ²	300 or less
Atmosphere	Cannot be used in corrosive gas environments

*1: The ambient temperature indicates the temperature for storage and upon installation, which will differ from the fluid temperature during operation.

*2: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Electrical specifications

Item	Description
Rated voltage V	AC: 100, 200 (50/60Hz) DC: 12, 24
Voltage fluctuation range	±10%
Starting current	AC: 100V: 0.170/0.140 200V: 0.090/0.070 DC: 12V: 0.500 24V: 0.250
Holding current	AC: 100V: 0.100/0.080 200V: 0.050/0.040 DC: 12V: 0.500 24V: 0.250
Power consumption W	AC: 100V: 5.0/4.0 200V: 5.0/4.0 DC: 12V: 6.0 24V: 6.0
Thermal class	B (molded coil)

Reference: Rated voltage 100 VAC 50/60Hz is available at 110 VAC 60Hz, while 200 VAC 50/60Hz is available at 220 VAC 60Hz.

Individual specifications

Item	4F2	4F3
Weight kg	2-position: Single: 0.82 Double: 1.37 3-position: 1.50	2-position: 0.92 Double: 1.48 3-position: 1.67

Flow Rate Characteristics

Model No.	Solenoid position	Port size	Sonic conductance C[dm ³ /(s/bar)]	Critical pressure ratio b	Q[L/min(ANR)]
4F2	2-position	Single	3.0	0.33	778
		Double			
	3-position	All ports closed	2.5	0.43	695
		A/B/R connection			
4F3	2-position	Single	3.9	0.42	1077
		Double			
	3-position	All ports closed	4.0	0.35	1051
		A/B/R connection			
		P/A/B connection			
		P/A/B connection			
	2-position	Single	5.8	0.42	1601
		Double			
	3-position	All ports closed	4.4	0.42	1215
		A/B/R connection			
		P/A/B connection			

*4: Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

How to order

4F2 1 0 - 08 - M2 B W - AC100V

A Model No.

B Solenoid position

C Port size

D Manual override

E Electrical connections

F Outdoor type

G Other options

H Voltage

! Precautions for model No. selection

- *1: As Rc threads can also be used for piping port, Contact CKD for details.
- *2: When using the unit in a complete outdoor exposure environment (where direct sunlight strikes constantly), select the non-locking manual override M2 (metal). Further, as a metal locking manual override is available made to order, contact CKD for details.
- *3: 12 VDC is not available for BL with lamp and GL.
- *4: Support with a manifold is not available.
- *5: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *6: For option G, the specifications and drawings must be exchanged. Refer to page 101 for more information.

[Model No. example]

4F210-08-M2BW-AC100V

- A Model : 4F2
- B Solenoid position : 2-position single
- C Port size : Rp1/4
- D Manual override : Non-locking
- E Electrical connections : Round terminal box(G1/2)
- F Outdoor type : Outdoors (General environment)
- G Other options : No option
- H Voltage : 100 VAC

Code	Description	4F2	4F3
A Model No.			
4F2	4F2 Series	●	
4F3	4F3 Series		●
B 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		●
C Port size *1			
08	Rp1/4	●	●
10	Rp3/8		●
08N	NPT1/4	●	●
10N	NPT3/8		●
08G	G1/4	●	●
10G	G3/8		●
D Manual override *2			
Blank	Locking (resin)	●	●
M2	Non-locking (metal)	●	●
M3	Locking with manual lever (resin)	●	●
R	Position change of manual override	●	●
E Electrical connections			
B1	Round terminal box (G3/4)	●	●
B	Round terminal box (G1/2)	●	●
BL	Round terminal box (G1/2) with lamp *3	●	●
G	Round terminal box (G1/2) With gland (A-15a)	●	●
GL	Round terminal box (G1/2) with lamp *3 Gland (A-15a) attached	●	●
F Outdoor type			
W	Outdoor (general)	●	●
WC	Outdoor specification (low temperature environment)	●	●
G Other options			
Blank	No option	●	●
S	Surge suppressor included	●	●
H	Check valve attached (only applicable to 3-position all ports closed)	●	●
N	Plug included (3-portvalve)	●	●
NC	3-port valve specifications plug assembly (C1 (A), E1 (R1) assembly)	●	●
NO	3-port valve specifications plug assembly (C2 (B), E2 (R2) assembly)	●	●
G	3-year warranty after delivery *5,*6 (with inspection certificate, inspection guidelines, traceability system diagram)	●	●
H Voltage			
AC100V	100 VAC 50/60 Hz	●	●
AC200V	200 VAC 50/60 Hz	●	●
AC110V	110 VAC 50/60 Hz	●	●
AC220V	220 VAC 50/60 Hz	●	●
DC12V	12 VDC *3	●	●
DC24V	24 VDC	●	●
* Other made-to-order products			
48 VDC		●	●
100 VDC		●	●
110 VDC		●	●

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

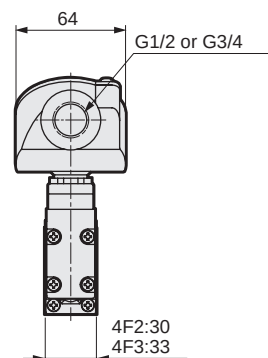
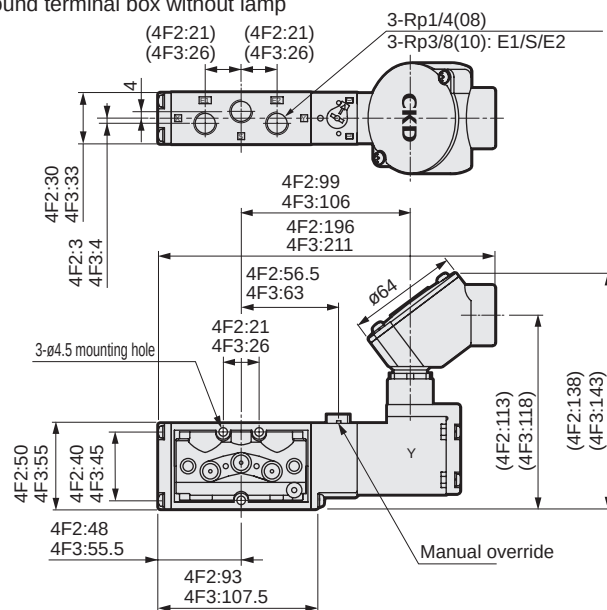
Safety
precautions

4F2, 4F3-W Series

Dimensions

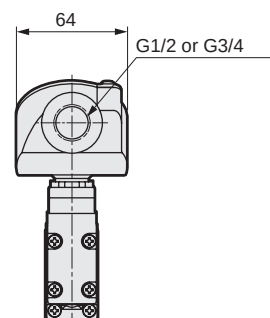
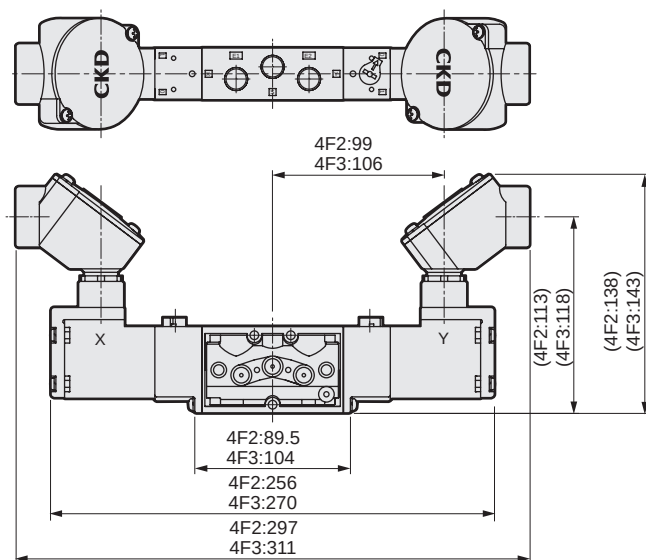
4F210, 4F310

- 2-position single: round terminal box without lamp



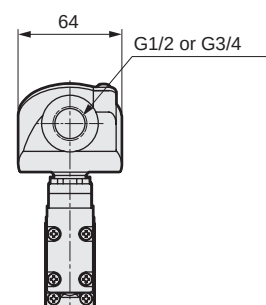
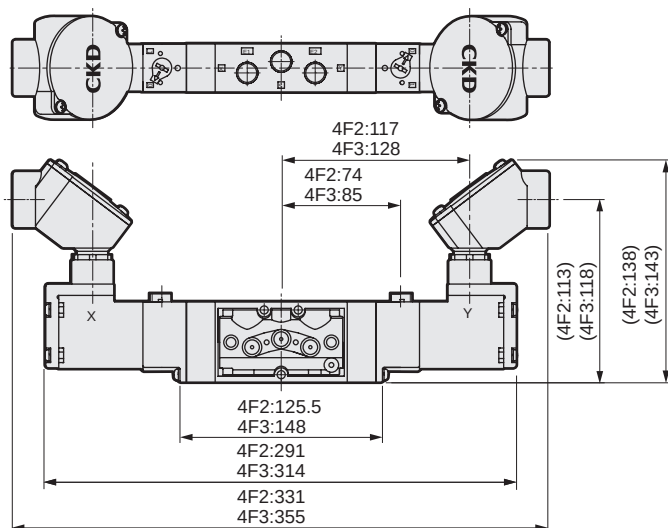
4F220, 4F320

- 2-position double solenoid: round terminal box without lamp



4F2₄₀, 4F3₅₀

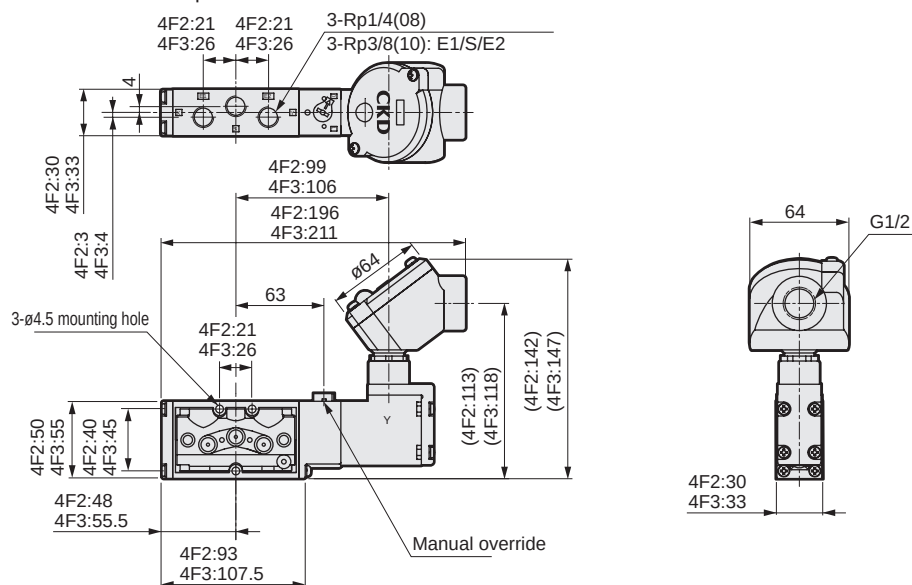
- 3-position: round terminal box without lamp



Dimensions

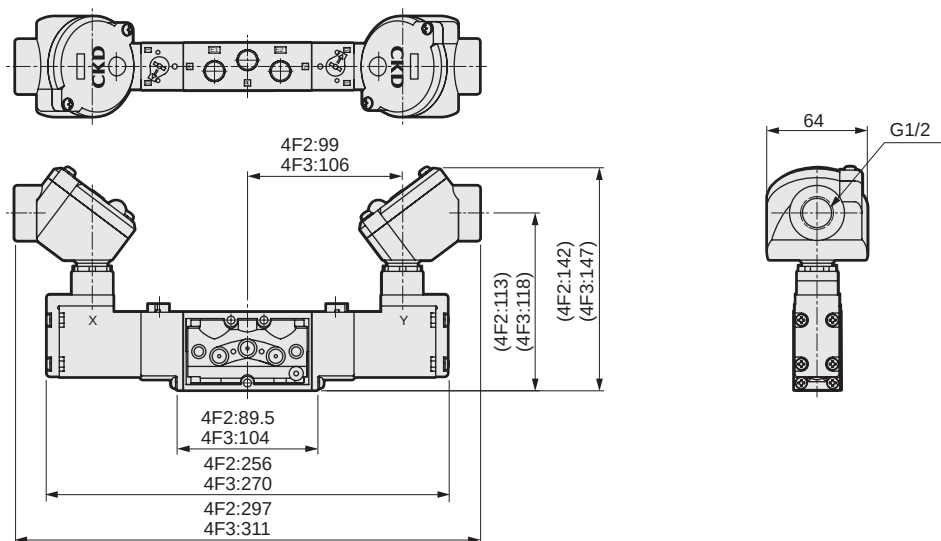
4F210, 4F310

- 2-position single: round terminal box with lamp



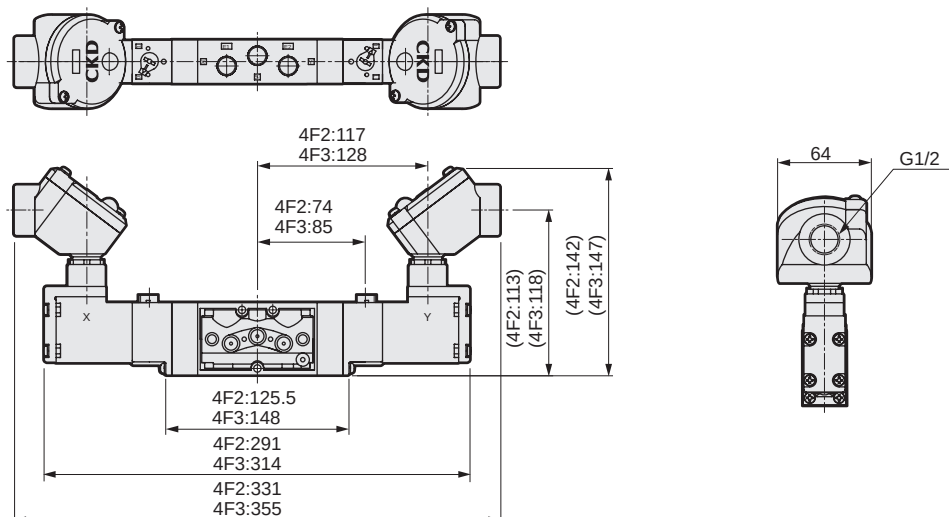
4F220, 4F320

- 2-position double solenoid: round terminal box with lamp



4F2³/₄0, 4F3³/₅0

- 3-position: round terminal box with lamp





Single valve/body piping
Pilot operated 5-port pneumatic valve

4F1/3-NM Series

NAMUR standards option



Common specifications

Item	Description
Valve and operation	Pilot operated soft spool valve
Working fluid	Compressed air
Max. working pressure MPa	1.0
Min. working pressure MPa	0.1 (WC:0.2)
Guaranteed proof pressure MPa	1.5
Ambient temperature (*1) °C	-10 to 60 (for WC -20 to 60°C)
Fluid temperature °C	5 to 60 (WC:-20 to 60; no freezing)
Lubrication	Not required (*2)
Degree of protection	IP65
Vibration/shock resistance m/s ²	50 or less/300 or less
Working atmosphere	Cannot be used in corrosive gas environments

*1: The ambient temperature indicates the temperature for storage and upon installation, which will differ from the fluid temperature during operation.

*2: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Electrical specifications

Item	Description
Rated voltage	AC 100, 200 (50/60Hz)
V DC	12, 24
Rated voltage fluctuation range	±10%
Starting current	AC 100V 0.170/0.140
A DC 12V	0.090/0.070
DC 24V	0.500
Holding current	AC 100V 0.100/0.080
A DC 12V	0.050/0.040
DC 24V	0.500
Power consumption	AC 100V 5.0/4.0
W DC 12V	5.0/4.0
DC 24V	6.0
Thermal class	6.0
Thermal class	B (molded coil)

Reference: Rated voltage 100 VAC 50/60Hz is available at 110 VAC 60Hz, while 200 VAC 50/60Hz is available at 220 VAC 60Hz.

Flow Rate Characteristics

Model No.	Solenoid position	Port size	Sonic conductance C[dm ³ /(s·bar)]
4F1	2-position	Single	1.6
		Double	
4F3	2-position	Single	3.1
		Double	

*1: Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

How to order

4F3 1 0 - NM - M2 B W - AC100V

A Model No.

B Solenoid position

C Port size

D Manual override

E Electrical connections

F Outdoor type

G Other options

H Voltage

4F1 4F3

Code	Description	4F1	4F3
A Model No.			
4F1	4F1 Series	●	
4F3	4F3 Series		●
B Solenoid position			
1	2 position single	●	●
2	2-position double	●	●
C Port size			
NM	NAMUR standards (port size Rc1/4) *3	●	●
D Manual override *4			
Blank	Locking (resin)	●	●
M2	Non-locking (metal)	●	●
M3	Locking with manual lever (resin)	●	●
R	Position change of manual override	●	●
E Electrical connections			
B1	Round terminal box (G3/4)	●	●
B	Round terminal box (G1/2)	●	●
BL	Round terminal box (G1/2) with lamp*5	●	●
G	Round terminal box (G1/2) With gland (A-15a)	●	●
GL	Round terminal box (G1/2) with lamp*5 Gland (A-15a) attached	●	●
F Outdoor type			
W	Outdoor (general)	●	●
WC	Outdoor specification (low temperature environment)		●
G Other options			
Blank	No option	●	●
S	Surge suppressor included	●	●
G	3-year warranty after delivery *7,*8 (with inspection certificate, inspection guidelines, traceability system diagram)	●	●
H Voltage			
AC100V	100 VAC 50/60 Hz	●	●
AC200V	200 VAC 50/60 Hz	●	●
AC110V	110 VAC 50/60 Hz	●	●
AC220V	220 VAC 50/60 Hz	●	●
DC12V	12 VDC *5	●	●
DC24V	24 VDC	●	●
* Other made-to-order products			
	48 VDC	●	●
	100 VDC	●	●
	110 VDC	●	●

⚠ Precautions for model No. selection

- *1: With 4F1, the body repair parts, etc. are 4F1 standard products. 4F3 products are used in coil assembly.
- *2: For 4F3, note that the repair parts of the body are dedicated parts.
- *3: The only piping port is Rc1/4. The C1/C2 ports on the NAMUR surface have not been threaded.
- *4: Complete outdoor exposure environment (When using the product in a place where it is exposed to continuous direct sunlight, select the manual override of non-locking M2 (metal). Further, as a metal locking manual override is available made to order, contact CKD for details.
- *5: 12 VDC models are not available for BL with lamp and GL.
- *6: 4F1-NM series WC outdoor specifications (low temperature environments) can be made to order supported. Contact CKD for details.
- *7: The warranty period of option G is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *8: For option G, the specifications and drawings must be exchanged. Refer to page 101 for details.

[Model No. example]

4F310-NM-M2BW-AC100V

- A Model : 4F3
- B Solenoid position : 2-position single
- C Port size : Rc1/4
- D Manual override : Non-locking
- E Electrical connections : Round terminal box (G1/2)
- F Outdoor type : Outdoors (General environment)
- G Other options : None
- H Voltage : 100 VAC

Drain separator
F.R.L. unit
Pneumatic auxiliary components
Pneumatic valves
Fluid control valves
Pneumatic cylinders
Related products
Safety precautions

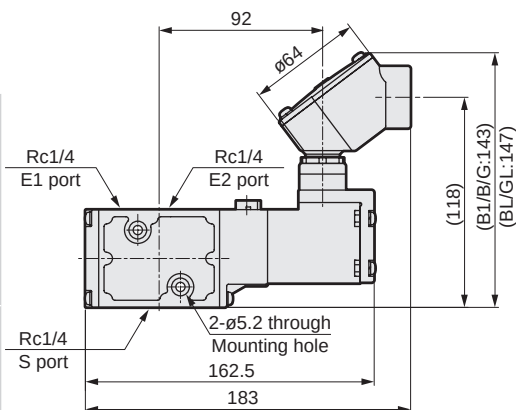
4F1, 4F3-NM Series

Dimensions

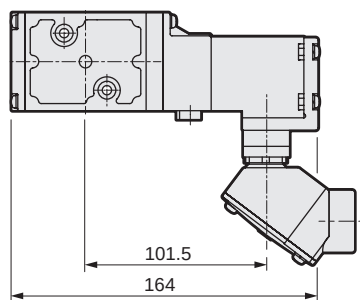
● 4F110-NM

- 2 position single

Round terminal box: (B1/B/BL/G/GL)

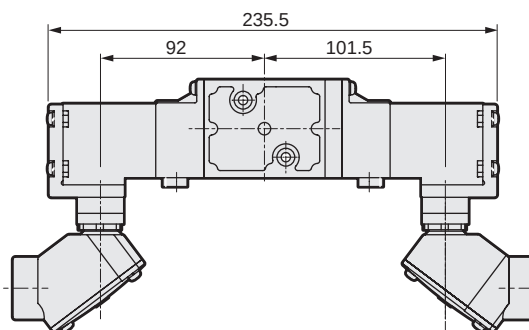
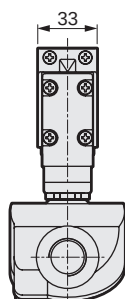
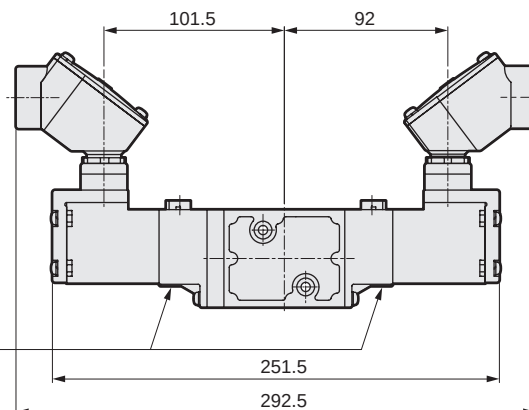
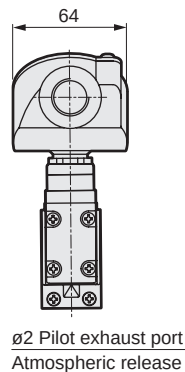


Position change of manual override: (R)



● 4F120-NM

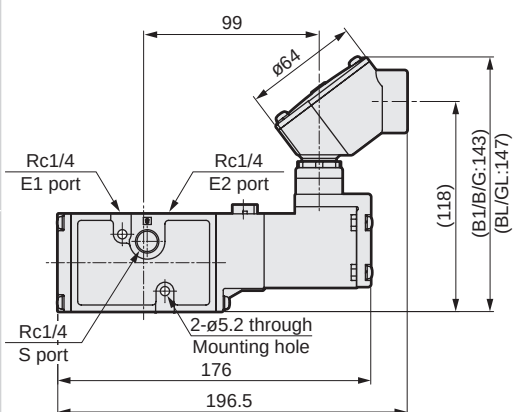
- 2-position double



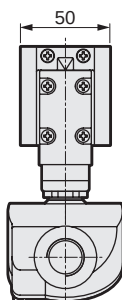
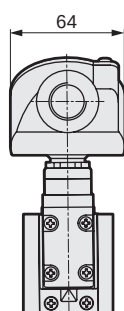
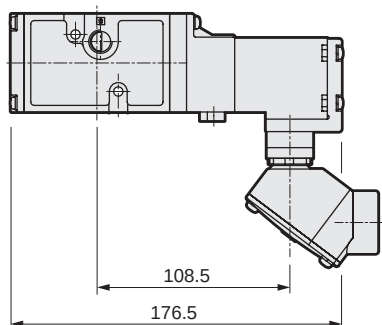
● 4F310-NM

- 2 position single

Round terminal box: (B1/B/BL/G/GL)

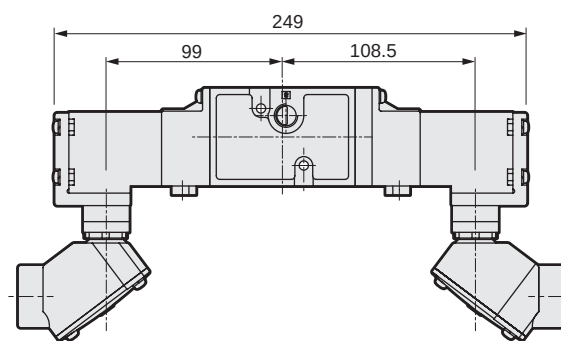
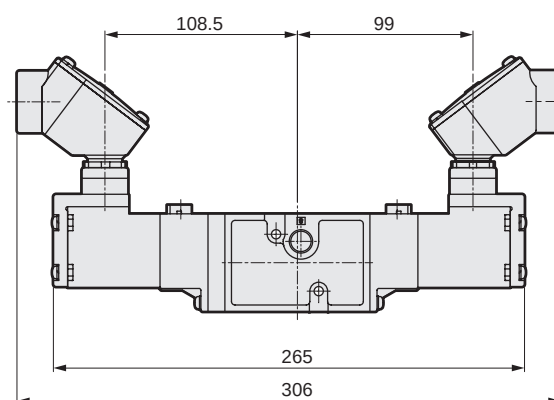


Position change of manual override: (R)



● 4F320-NM

- 2-position double



Drain separator F.R.L. unit	Pneumatic auxiliary components	Pneumatic valves	Fluid control valves	Pneumatic cylinders	Related products	Safety precautions
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Single valve/sub-plate piping
Pilot operated 5-port pneumatic valve

4F4/5/6/7-W Series

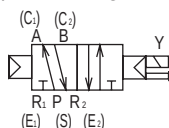
● Cylinder bore size: $\varnothing 63$ to $\varnothing 250$



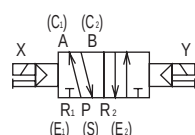
JIS symbol

● 5-port valve

2 position single

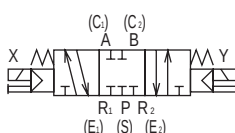


2-position double

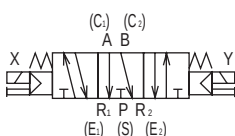


3-position

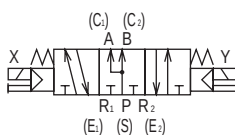
All ports closed



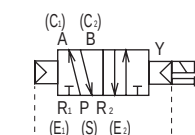
3-position A/B/R connection



3-position P/A/B connection



● External pilot



(Code indicates 2-position single)

Common specifications

Item	Description
Valve and operation	Pilot operated soft spool valve
Working fluid	Compressed air
Max. working pressure MPa	1.0
Min. working pressure MPa (*2)	Refer to Individual specifications listed below
Proof pressure MPa	1.5
Ambient temperature °C (*1)	-10 to 60 (no freezing)
Fluid temperature °C	5 to 60
Lubrication	Not required (turbine oil ISO VG32 if necessary for lubrication)
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.

*1: The ambient temperature indicates the temperature for storage and upon installation, which will differ from the fluid temperature during operation.

*2: The working pressure range is 0 to 1.0 MPa when the external pilot (option code: K) is selected. Set the external pilot pressure between 0.15 and 1.0 MPa.

Electrical specifications

Item			4F4 to 7		
Rated voltage V	AC		100, 200, 110, 220(50/60Hz)		
	DC		12,24		
Voltage fluctuation range			±10%		
Starting current	A	AC	100V 0.170/0.140 200V 0.090/0.070 110V 0.15/0.13 220V 0.08/0.06		
		DC	12V 0.500 24V 0.250		
		Holding current	A	AC	100V 0.100/0.080 200V 0.050/0.040 110V 0.09/0.07 220V 0.05/0.04
	DC			12V 0.500 24V 0.250	
				Power consumption	W
DC	12V 6.0 24V 6.0				
	Thermal class		B (molded coil)		

Reference: Rated voltage 100 VAC 50/60Hz is available at 110 VAC 60Hz, while 200 VAC 50/60Hz is available at 220 VAC 60Hz.

Individual specifications

Item			4F4		4F5		4F6		4F7	
Min. working Pressure MPa	2-position	Single	0.10		0.10		0.15		0.15	
		Double								
	3-position	All ports closed	0.15							
		A/B/R connection								
		P/A/B connection								
Port size			Rc1/4 NPT1/4 G1/4	Rc3/8 NPT3/8 G3/8	Rc3/8 NPT3/8 G3/8	Rc1/2 NPT1/2 G1/2	Rc1/2 NPT1/2 G1/2	Rc3/4 NPT3/4 G3/4	Rc3/4 NPT3/4 G3/4	Rc1 NPT1 G1

Performance / Characteristics by model

Item	4F4	4F5	4F6	4F7
Response time *1 ms	60	70	200	300

*1: The response times are values with working pressure of 0.5 MPa, without lubrication, and with the power ON. They depend on the pressure and the lubricant quality.

Weight

Item			4F4	4F5	4F6	4F7
Weight kg	2-position	Single	1.01	1.26	1.92	3.46
		Double	1.29	1.58	2.26	3.78
	3-position		1.45	1.84	2.56	4.80

Flow characteristics

Model No.	Solenoid position	Port size	C[dm ³ /(s·bar)]	b	S (mm ²)
4F4	2-position	Single	Rc1/4, Rc3/8 NPT1/4, NPT3/8 G1/4, G3/8	5.0	0.21
		Double			
	3-position	All ports closed		4.7	0.24
		A/B/R connection		5.3	0.29
		P/A/B connection		5.3	0.29
4F5	2-position	Single	Rc3/8, Rc1/2 NPT3/8, NPT1/2 G3/8, G1/2	10.0	0.32
		Double			
	3-position	All ports closed		9.7	0.28
		A/B/R connection		9.8	0.25
		P/A/B connection			
4F6	2-position	Single	Rc1/2, Rc3/4 NPT1/2, NPT3/4 G1/2, G3/4	18.0	0.31
		Double			
	3-position	All ports closed		15.0	0.23
		A/B/R connection			
		P/A/B connection			
4F7	2-position	Single	Rc3/4, Rc1 NPT3/4, NPT1 G3/4, G1	-	-
		Double			
	3-position	All ports closed			
		A/B/R connection			
		P/A/B connection			

*1: Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

4F4 to 7-W Series

How to order single valve/sub-plate piping

4F4 1 0 -08-M2 B W - AC100V

● Discrete solenoid valve Discrete

4F4 1 9 -00-M2 B W - AC100V

(4F4.5.6.7)

A Model No.

B Solenoid position

C Port size

D Manual override

E Electrical connections

⚠ Precautions for model No. selection

*1: Use of vacuum with external pilot (K), cylinder pressurizing and exhaust pressurizing, contact CKD separately. NPT and G thread cannot be selected. Manual override M3 cannot be selected.

*2: BL/GL DC12V is not supported.

*3: BL, The DC type of GL has a built-in surge suppressor.

*4: Contact CKD as WC outdoor specifications (low temperature environments) are made to order supported.

*5: The warranty period of option G is 3 years from the date of delivery or 1 year from initial use.

*6: For option G, the specifications and drawings must be agreed upon. Refer to page 101 for details.

F Other options

G Voltage

[Model No. example]

4F440-08-M2BW-AC100V

- A Model : 4F4
- B Solenoid position : 3-position A/B/R connection
- C Port size : Rc1/4
- D Manual override : Non-locking
- E Electrical connections : Round terminal box (G1/2)
- F Other options : No option
- G Voltage : 100 VAC

A Model No.

4F4 4F5 4F6 4F7

Code	Description	4F4	4F5	4F6	4F7
B Solenoid position					
1	2 position single	●	●	●	●
2	2-position double	●	●	●	●
3	3-position all ports closed	●	●	●	●
4	3-position A/B/R connection	●	●	●	●
5	3-position P/A/B connection	●	●	●	●

C Port size					
08	Rc1/4	●			
10	Rc3/8	●	●		
15	Rc1/2		●	●	
20	Rc3/4			●	●
25	Rc1				●
08N	NPT1/4	●			
10N	NPT3/8	●	●		
15N	NPT1/2		●	●	
20N	NPT3/4			●	●
25N	NPT1				●
08G	G1/4	●			
10G	G3/8	●	●		
15G	G1/2		●	●	
20G	G3/4			●	●
25G	G1				●
00	Solenoid valve Discrete for manifold (without adaptor)	●	●	●	●
D00	Solenoid valve Discrete for manifold (with adaptor)			●	
E00	Solenoid valve Discrete for manifold (with adaptor)				●

D Manual override					
Blank	Locking	●	●	●	●
M2	Non-locking	●	●	●	●
M3	Locking with manual lever	●	●	●	●

E Electrical connections					
B1	Round terminal box(G3/4)	●	●	●	●
B	Round terminal box(G1/2)	●	●	●	●
BL	Round terminal box(G1/2) with / lamp (*2)(*3)	●	●	●	●
G	Round terminal box Gland(A-15a)with	●	●	●	●
GL	Round terminal box Gland(A-15a)/ with lamp (*2)(*3)	●	●	●	●

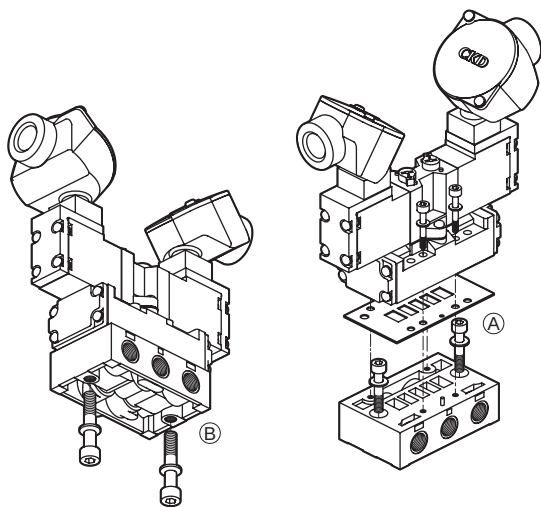
F Other options					
Blank	No option	●	●	●	●
K	External pilot (*1)	●	●	●	●
S	Surge suppressor included	●	●	●	●
H	(Check valve included)(3-position all ports closed only)	●	●	●	●
N	Plug included(for 3-port valve)	●	●	●	●
NC	3-way valve used plug assembly (C1(A).E1(R1)Assembly)	●	●	●	●
NO	3-way valve used plug assembly (C2(B).E2(R2)Assembly)	●	●	●	●
G	3-year warranty after delivery *5, *6 (with inspection certificate, inspection guidelines, traceability system diagram)	●	●	●	●

G Voltage					
AC100V	100 VAC 50/60 Hz	●	●	●	●
AC200V	200 VAC 50/60 Hz	●	●	●	●
DC12 V	12 VDC	●	●	●	●
DC24V	24 VDC	●	●	●	●
AC110V	110 VAC 50/60 Hz	●	●	●	●
AC220V	220 VAC 50/60 Hz	●	●	●	●

* Other made-to-order products					
48 VDC		●	●	●	●
100 VDC		●	●	●	●
110 VDC		●	●	●	●

4F4 to 7 Discrete installation method

● Mounting



	For B	For A
4F4	M8	M6
4F5	M8	M6
4F6	M10	M8
4F7	M12	M10

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

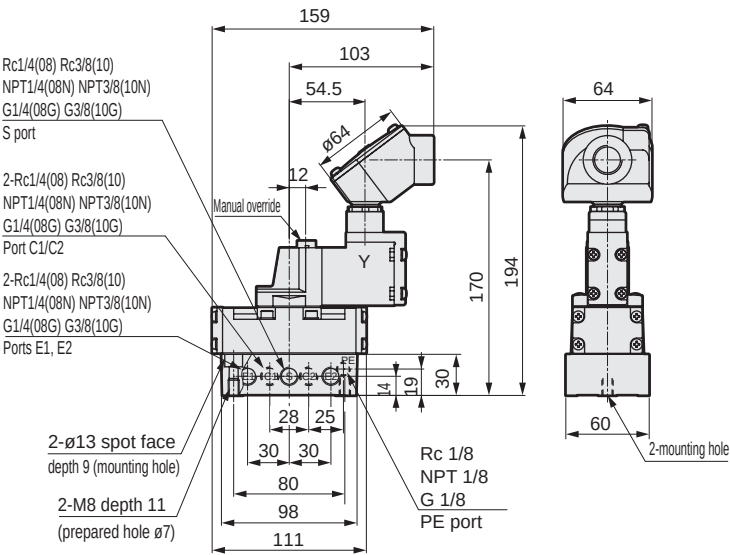
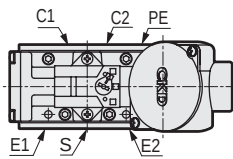
Related
products

Safety
precautions

Dimensions

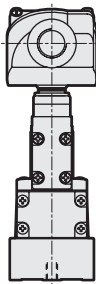
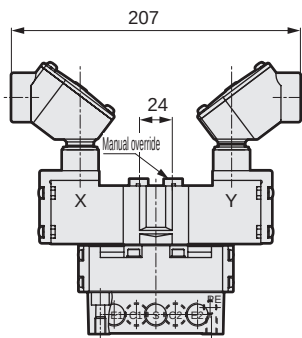
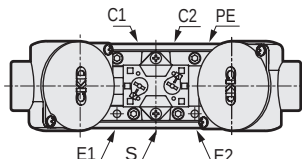
4F410

● 2-position single



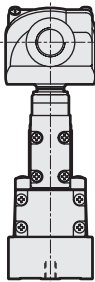
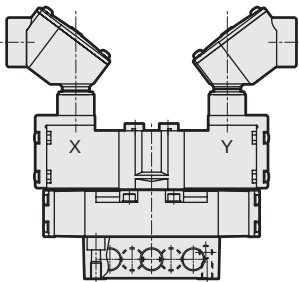
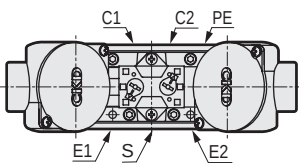
4F420

● 2-position double



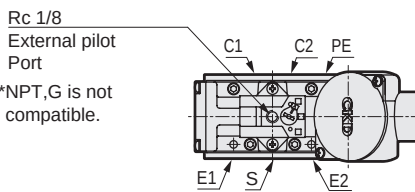
3
4F4 0
5

● 3-position

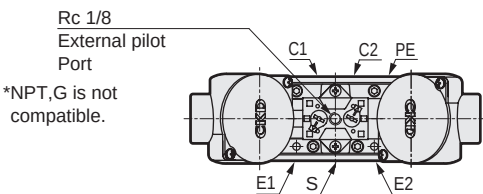


4F4

● External pilot (K)
• 2 position single



• 2-position double solenoid/3-position

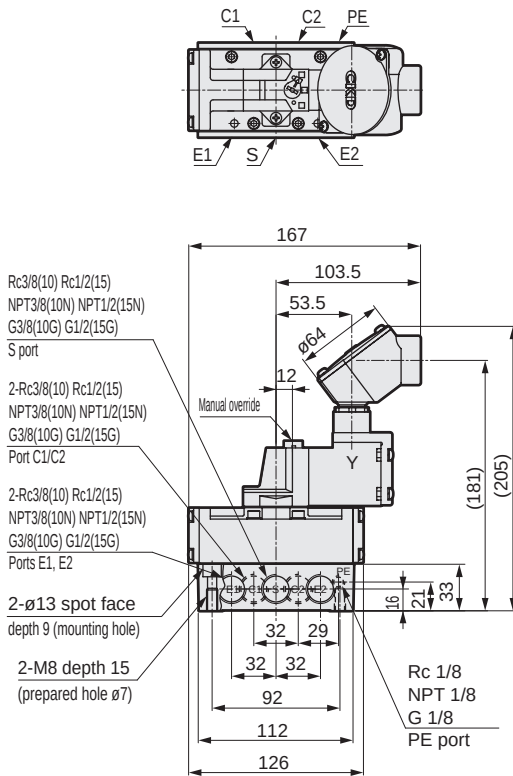


* Refer to "Pneumatic Valves (Catalog No.CB-023SA)" for check valves.

Dimensions

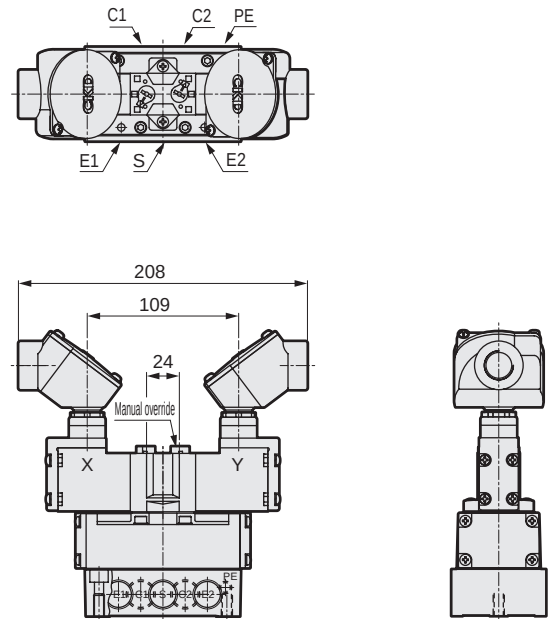
4F510

- 2-position single



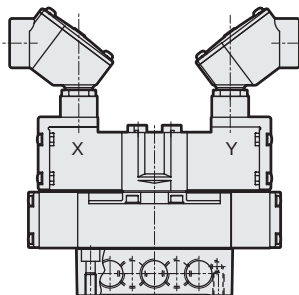
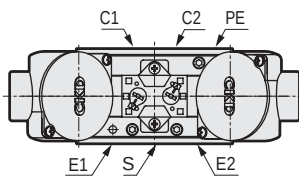
4F520

- 2-position double



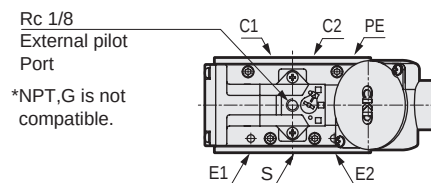
4F540

- 3-position

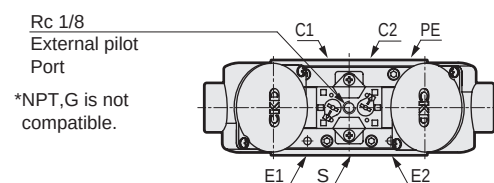


4F5

- External pilot (K)
- 2 position single



- 2-position double solenoid/3-position

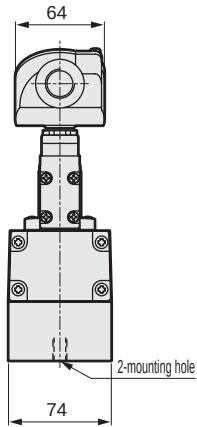
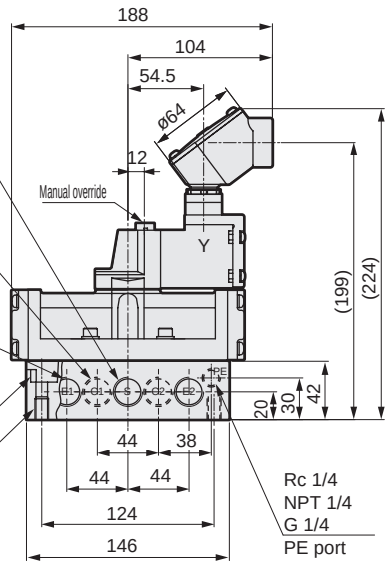
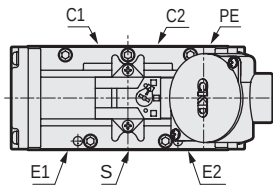


* Refer to "Pneumatic Valves (Catalog No.CB-023SA)" for check valves.

Dimensions

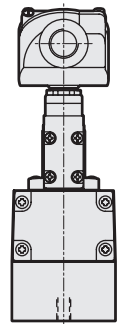
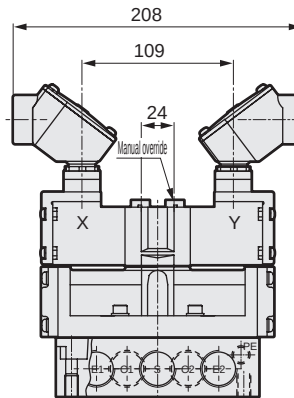
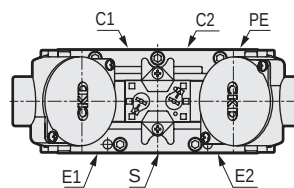
4F610

- 2-position single



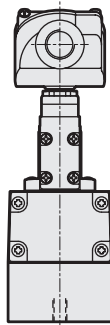
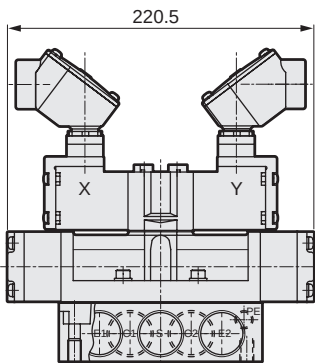
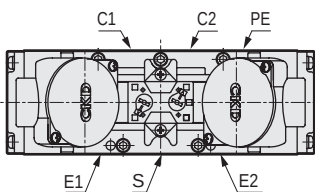
4F620

- 2-position double



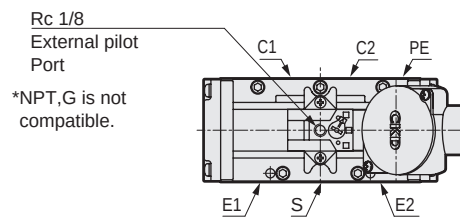
4F6³₅40

● 3-position

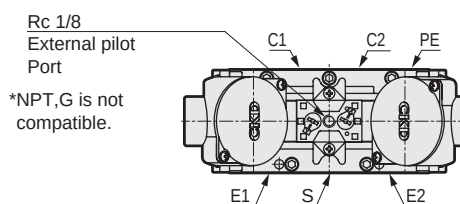


4F6

- External pilot (K)
 - 2 position single



- 2-position double solenoid/3-position

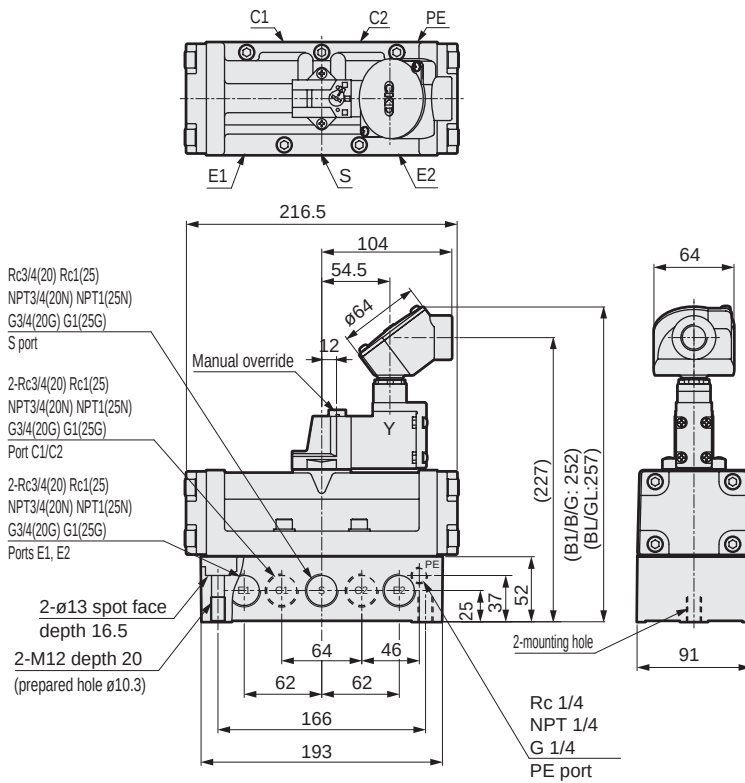


* Refer to "Pneumatic Valves (Catalog No.CB-023SA)" for check valves.

Dimensions

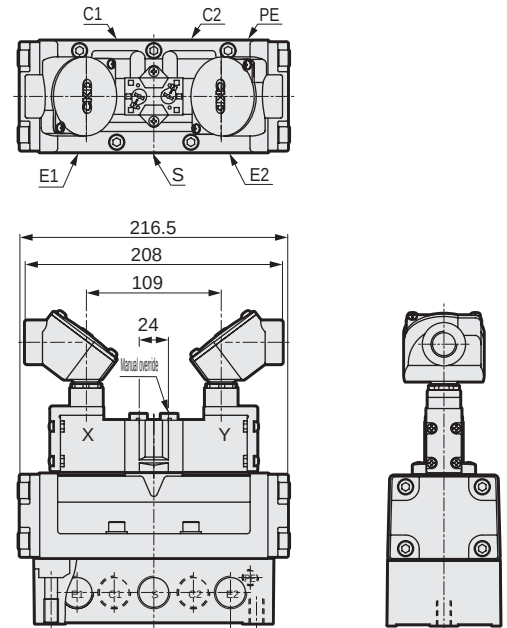
4F710

- 2-position single



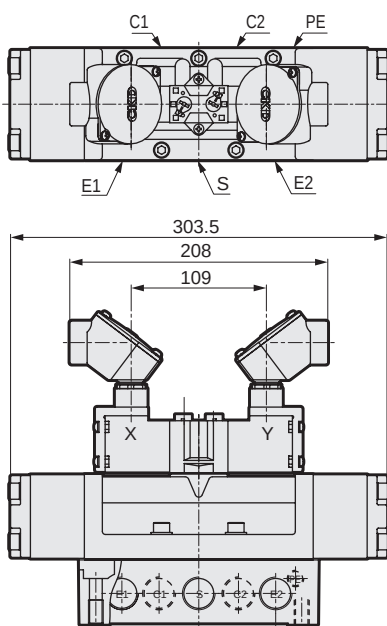
4F720

- 2-position double



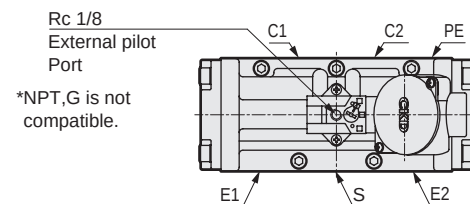
4F740

- 3-position

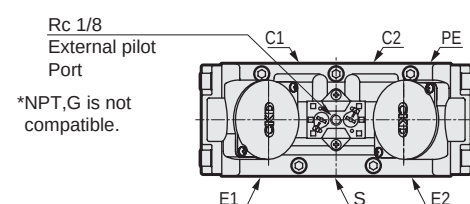


4F7

- External pilot (K)
- 2 position single



- 2-position double solenoid/3-position



* Refer to "Pneumatic Valves (Catalog No.CB-023SA)" for check valves.



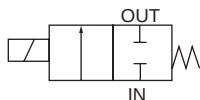
Direct acting 2-port solenoid valve, single unit
General purpose

AB41-W Series

- NC (Open when energized)
- Port size: Rc1/4 to Rc1/2



JIS symbol



Mounting orientation



Common specifications

Item	Standard specifications
Working fluid	Air/Low vacuum ($1.33 \times 10^2 \text{Pa(absolute)}$)/Water/Kerosene/Oil (50mm ² /s or less *1)
Working pressure differential MPa	0 to 5 (refer to max. working pressure differential in individual specifications.)
Proof pressure (water) MPa	10 (burst pressure: 25 or more)
Fluid temperature °C	Nitrile rubber(D): -20 to 60 (no freezing) Fluoro rubber(E): -10 to 60 (no freezing)
Ambient temperature °C	Nitrile rubber(D): -20 to 60, fluoro rubber(E): -10 to 60
Thermal class	Class 130 (B)
Working environment	Indoors/outdoors
Atmosphere	A place free of corrosive gases, liquids, chemicals, and explosive gases
Valve structure	Direct acting poppet structure
Valve seat leakage cm ³ /min(ANR)	0.2 or less (air)
Mounting orientation	Usable in a range of vertical to horizontal orientation with the coil on top
Degree of protection	IP65

*1: Dynamic viscosity varies depending on temperature. Check that the dynamic viscosity is 50 mm²/s or less within the temperature range being used. When exceeding 50 mm²/s, operation will become unstable.

Individual specifications

Item	Port size	Orifice size (mm)	Max. working pressure differential (MPa)			Max. Working pressure (MPa)	Rated voltage	Apparent power(VA)				Power consumption(W)		Weigh (kg)
			Air	Water/hot water/kerosene	Oil (50mm²/s)			When holding		When starting		AC		
			AC	AC	AC			50Hz	60Hz	50Hz	60Hz			
NC (open when energized)														
AB41- ⁰² ₀₃	-1	Rc1/4 Rc3/8	1.5	5.0	4.5	4.0	5	100 VAC 50/60Hz *5	18	15	29	24	6.7/5.7	0.8 (Rc1/4)
	-2		2.0	3.0	2.7	2.5								
	-3		3.0	1.5	1.3	0.9								
	-4		3.5	1.2	0.9	0.6								0.95 (Rc3/8)
	-5		4.0	1.0	0.7	0.5								
	-6		5.0	0.6	0.4	0.25								
	-7		7.0	0.25	0.2	0.15								
AB41- ⁰³ ₀₄	-8	Rc3/8 Rc1/2	10.0	0.1	0.1	0.05							1.15	

*1: The model numbers above are for the basic port size (Rc) and orifice size. Refer to How to order for other combinations.

*2: The port size model No. is 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: When using at low vacuum, vacuum the OUT port side.

*5: 100 VAC (50/60 Hz) can also be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) type can be used with 220 VAC (60 Hz).

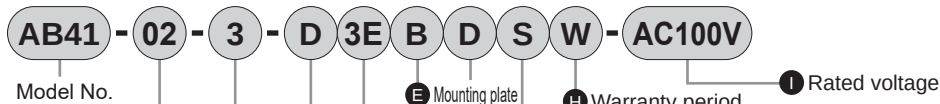
Flow characteristics

Model No.		Port size	Orifice size (mm)	Flow characteristics		
				C[dm ³ /(s·bar)]	b	Cv
NC (open when energized)						
AB41- ⁰¹ ₀₂	-1	Rc 1/4 Rc 3/8	1.5	0.29	0.53	0.1
	-2		2.0	0.53	0.52	0.15
	-3		3.0	1.1	0.52	0.31
	-4		3.5	1.5	0.47	0.40
	-5		4.0	1.9	0.47	0.48
	-6		5.0	2.6	0.38	0.62
	-7		7.0	4.6	0.37	0.82
AB41- ⁰³ ₀₄	-8	Rc 3/8 Rc 1/2	10.0	8.1	0.31	1.5

*1: Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

How to order

● NC (normally closed)



Model No.		Model No.	
AB41		AB41	AB41
		Low pressure	Large flow rate
Code			
A Port size			
02	Rc1/4	●	
03	Rc3/8	●	●
04	Rc1/2		●
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	Remarks
D	Stainless	Nitrile rubber *5	air/water/low vacuum/kerosene/oil
E	steel	Fluoro rubber *5	air/water/low vacuum/kerosene/oil
D to I			
Refer to the following table for details on the coil housing, other options, voltage, etc.			
H Warranty period			
W	1 year after delivery		
WG	3 years after delivery *3, *4 (with inspection certificate, inspection guidelines, traceability system diagram)		

The combinations indicated with ● in the above table are available.

[Example of model No. 1]

AB41-02-3-E3EWG-AC100V

Model: AB41

- A Port size : Rc1/4
 B Orifice size : ø3
 C Body/sealant combination : Body - stainless steel, sealant - fluoro rubber
 D Coil housing : Open frame with round terminal box
 E to G : None
 H Warranty period : 3 years after delivery
 I Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

For Items ④ to ⑩, the combinations indicated with codes are available.

However, ⑤ to ⑩ If an option for Item is not required, this item should be left blank.

D Coil housing			E	F Other options			G	I Rated voltage
Description			Mounting plate	Cable gland			With surge suppressor	Description
				(marine cable gland)				
				A-15a	A-15b	A-15c		
3E	Open	With round terminal box (G1/2)	B	D	E	F	S	100 VAC, 200 VAC
3L	Frame type	Round terminal box with lamp(G1/2)						

⚠ Refer to the following cautions for Items ④ to ⑩.

⚠ Precautions for model No. selection

Notes for Items ④ to ⑨

- *1: For Item ⑤, select an option from D, E and F.
 *2: The surge suppressor is mounted in the terminal box.
 *3: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first. Refer to page 101 for details.
 *4: For option WG, the specifications and drawings must be exchanged.
 *5: For option D, the ambient temperature is -20°C to 60°C. For option E, the ambient temperature is -10°C to 60°C.

Notes for Item ⑩

- *6: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz.

Dimensions: AB41-W Series



● Open frame + round terminal box

AB41-*.~.*

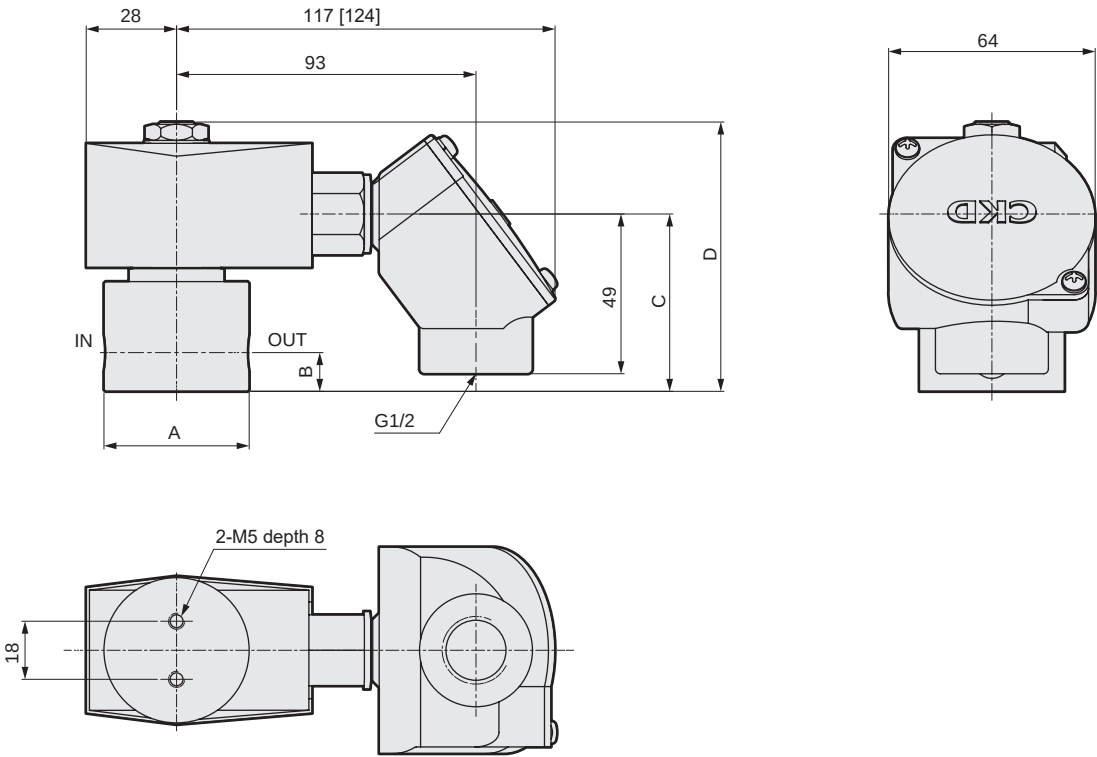
3E

3L

[] is for AB41-*.~.*

3L

 type



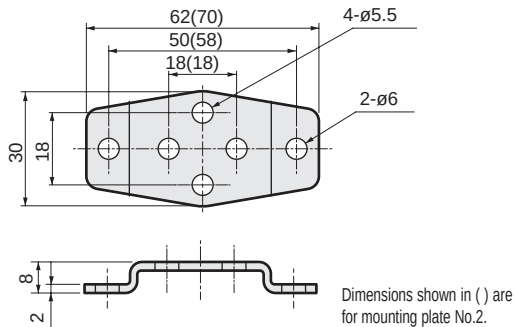
Model No.	A	B	C	D
AB41, 41-02-1to 6	ø37.5	11	52	80.5
AB41, 41-02-7 -03-1 to 7	ø45	12	55	83.5
AB41, 41-03-8 -04-8	ø50 *1	15	64	93

*1: The max. dimension is ø54.

Option dimensions: AB41-W Series



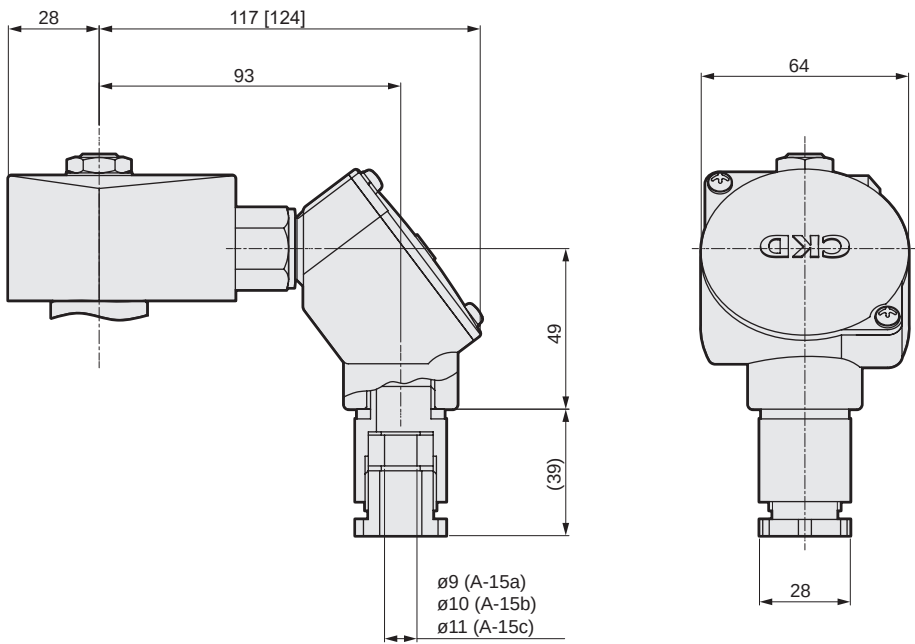
- Mounting plate
AB41-*.**[B]



Mounting plate model No.	Compatibility
AB4-W-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	AB41-02-1 to 6
AB4-W-GE-100159-MOUNT-PLATE-KIT (Mounting plate No.2)	AB41-02-7 AB41-03-1 to 8 AB41-04-8

- Cable gland
AB41-*.**[3E][D]
[3L][E]
[F]

[] is for AB41-*.**[3L] type



Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



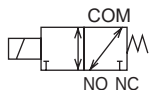
Direct acting 3-port solenoid valve, single unit
General purpose

AG41-W Series

- Universal
- Port size: Rc1/4, Rc3/8



JIS symbol



Mounting orientation



Common specifications

Item	Standard specifications	
Working fluid	Air/low vacuum ($1.33 \times 10^2 \text{ Pa(abs)}$)/Water/kerosene/oil (50 mm ² /s or less *1)	
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)	
Max. working pressure MPa	1	
Proof pressure (water) MPa	2 (burst pressure: 25 or more)	
Working temperature °C	Nitrile rubber (D): -20 to 60 (no freezing) Fluoro rubber (E): -10 to 60 (no freezing)	
Ambient temperature °C	Nitrile rubber (D): -20 to 60, fluoro rubber (E): -10 to 60	
Thermal class	Class 130 (B)	
Working environment	Indoors/outdoors	
Atmosphere	A place free of corrosive gases, liquids, chemicals, and explosive gases	
Valve structure	Direct acting poppet structure	
Valve seat leakage cm ³ /min(ANR)	0.2 or less (in air)	
Mounting orientation	Usable in a range of vertical to horizontal orientation with the coil on top	
Degree of protection	IP65	

*1: Dynamic viscosity varies depending on temperature. Check that the dynamic viscosity is 50 mm²/s or less within the temperature range being used. When exceeding 50 mm²/s, operation will become unstable.

Individual specifications

Item	Connection Bore size	Orifice size (mm)		Max. working pressure differential (MPa)			Rated voltage	Apparent power(VA)				Power consumption(W)	kg
				Air	Water/hot water/kerosene	Oil(50 mm ² /s)		When holding		When starting		AC	
Model No.		TOP	BODY	AC	AC	AC		50Hz	60Hz	50Hz	60Hz	50/60Hz	
AG41-02-1	Rc1/4	2.0	2.0	1.0	1.0	0.4	100 VAC 50/60Hz *4 200 VAC 50/60Hz *4	22	17	35	27	8.3/6.2	0.85
-02-2		2.3	2.3	0.7	0.7	0.25							
-03-1	Rc3/8	2.0	2.0	1.0	1.0	0.4							
-03-2		2.3	2.3	0.7	0.7	0.25							1.0

*1: The model numbers above are for the basic port size (Rc) and orifice. Refer to How to order for other combinations.

*2: The voltage fluctuation range must be within $\pm 10\%$ of the rated voltage.

*3: When using in a continuously energized state, use fluoro rubber seal.

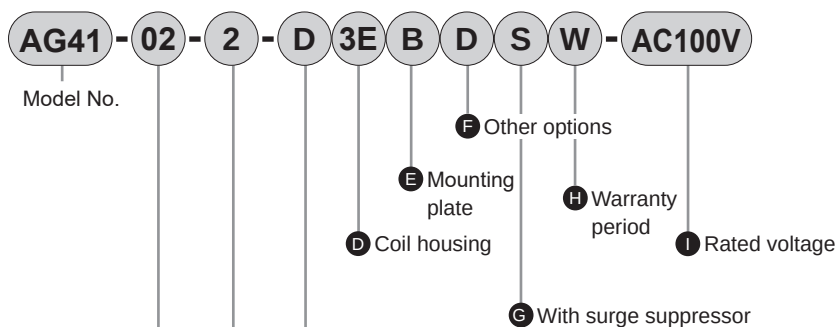
*4: 100 VAC (50/60 Hz) can also be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) type can be used with 220 VAC (60 Hz).

Flow characteristics

Model No.	Port size	Orifice size(mm)		Flow characteristics					
		TOP	BODY	C[dm ³ /(s·bar)]		b		Cv	
				TOP	BODY	TOP	BODY	TOP	BODY
AG41-02-1	Rc 1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19
-03-1	Rc 3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-03-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19

*1: Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

How to order



[Example of model No.]

AG41-03-2-E3EWG-AC100V

Model: AG41

- A** Port size : Rc3/8
- B** Orifice size : TOP-ø2.3, BODY-ø2.3
- C** Body/sealant combination : Body - stainless steel, sealant - fluoro rubber
- D** Coil housing: Open frame with round terminal box
- E** to **G** : None
- H** Warranty period : 3 years after delivery
- I** Rated voltage : 100 VAC 50/60Hz, 110 VAC 60Hz

Code	Description
A Port size	
02	Rc1/4
03	Rc3/8
B Orifice size	
	TOP BODY
1	ø2.0 ø2.0
2	ø2.3 ø2.3
C Body/sealant combination	
	Body Seal Remarks
D	Stainless Nitrile rubber *5 air/water/low vacuum/kerosene/oil
E	steel Fluoro rubber *5 air/water/low vacuum/kerosene/oil
D to I	
Refer to the following table for details on the coil housing, other options, voltage, etc.	
H Warranty period	
W	1 year after delivery
WG	3 years after delivery *3, *4 (with inspection certificate, inspection guidelines, traceability system diagram)

For Item **D** to **I**, the combinations indicated with codes are available.
Note that if options for Items **E** to **G** are not required, it should be blank.

D Coil housing			E	F Other options			G	I Rated voltage
Description			Mounting plate	Cable gland			With surge suppressor	Description
				(marine cable gland)				
				A-15a	A-15b	A-15c		
3E	Open	With round terminal box (G1/2)	B	D	E	F	S	100 VAC, 200 VAC
3L	Frame type	Round terminal box with lamp (G1/2)						

Refer to the following cautions for Items **C** to **I**.

Precautions for model No. selection

Notes for Items **C** to **H**

- *1: For Item **E**, select an option from D, E and F.
- *2: The surge suppressor is mounted in the terminal box.
- *3: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *4: For option WG, the specifications and drawings must be exchanged. Refer to page 101 for details.
- *5: For option D, the ambient temperature is -20°C to 60°C. For option E, the ambient temperature is -10°C to 60°C.

Notes for Item **I**

- *6: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz.

Dimensions: AG41-W Series



● Open frame + round terminal box

AG41-*.**

3E

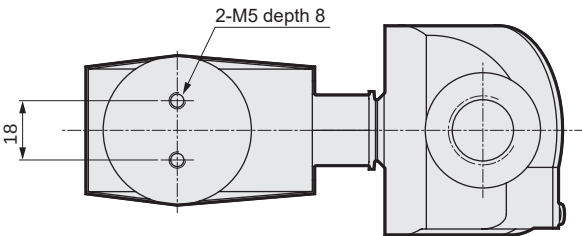
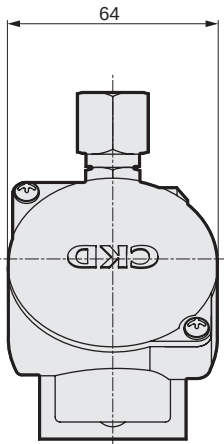
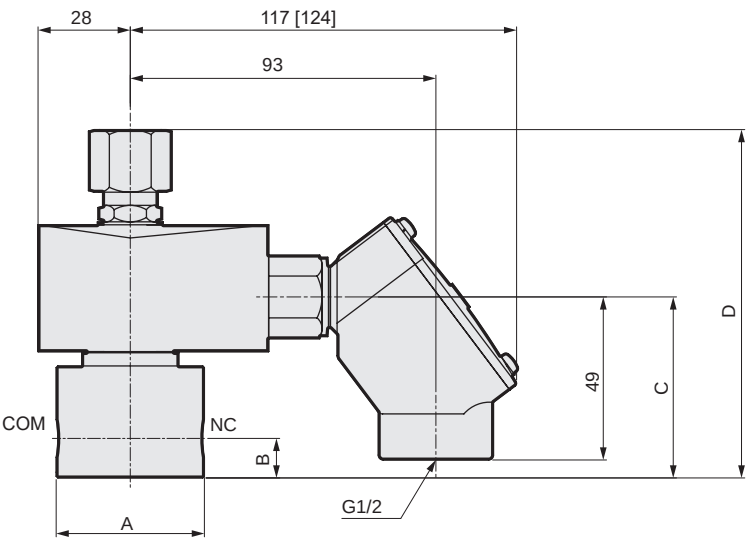
3L

[] is for AG41-*.**

3L

 type

[Reference]As the JIS symbol flow shows, pressure can be applied from any of the three piping ports. Generally, two orifices (TOP, BODY) have the same value and rated pressure.
When not energized: COM → NO or NO → COM
When energized : COM → NC or NC → COM

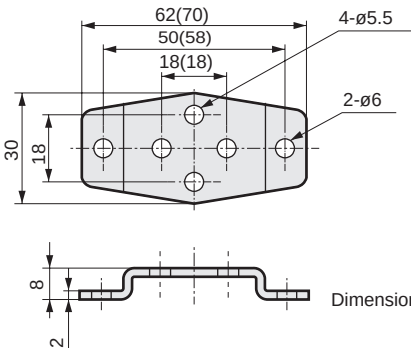


Model No.	A	B	C	D
AG41-02-1 to 2	ø37.5	11	52	99.5
AG41-03-1 to 2	ø45	12	55	106

Option Dimensions: AG41-W Series



- Mounting plate
AG41-**-*[B]

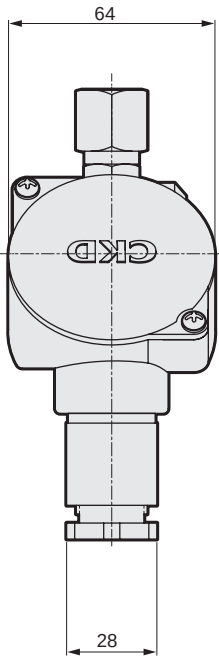
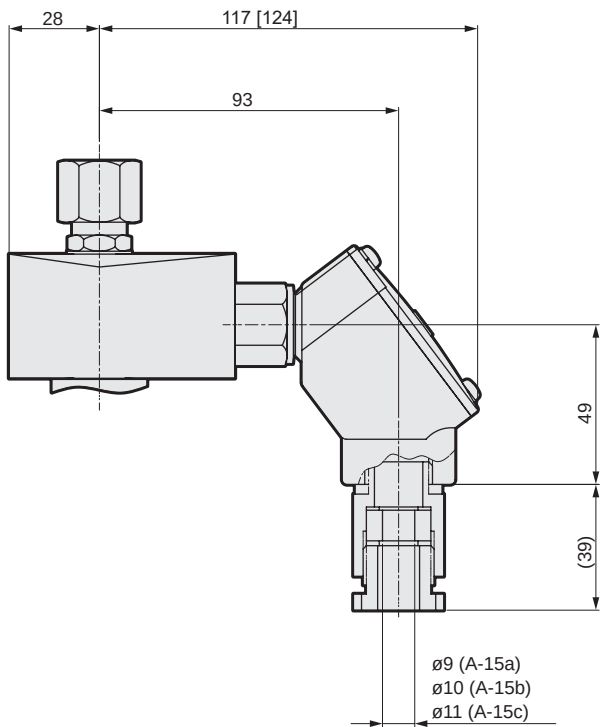


Dimensions shown in () are for mounting plate No. 2.

Mounting plate model No.	Compatibility
AG4-W-GE-100106-MOUNT-PLATE-KIT (mounting plate No.1)	AG41-02-1 to 2
AG4-W-GE-100159-MOUNT-PLATE-KIT (mounting plate No.2)	AG41-03-1 to 2

- Cable gland
AG41-**-*[3E D 3L E F]

[] is for AG41-**-*[3L] type



Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



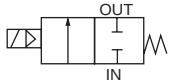
Pilot kick 2-port solenoid valve
(general purpose valve)

ADK11-W Series

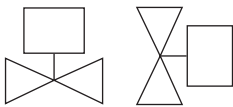
- NC (Normally Closed)
- Port size: Rc1/2 to Rc1
- Diaphragm drive



JIS symbol



Mounting orientation



Common specifications

Item	Standard specifications
Working fluid	Air/low vacuum (1.33×10^3 Pa (abs)/water/kerosene/oil (50mm ² /s or less *2)
Working pressure differential MPa	0 to 1.0 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	2
Proof pressure (water) MPa	4
Fluid temperature °C	Nitrile rubber(D): -20 to 60 (no freezing) Fluoro rubber(E): 5 to 60 (no freezing)
Ambient temperature °C	Nitrile rubber(D): -20 to 60, fluoro rubber(E): -10 to 60
Thermal class	Class 130 (B)
Working environment	Indoors / Outdoors
Atmosphere	A place free of corrosive gases, liquids, chemicals, and explosive gases
Valve structure	Pilot kick poppet, diaphragm drive
Valve seat leakage (*1) cm ³ /min (ANR)	1 or less (air)
Mounting orientation	Usable in a range of vertical to horizontal orientation with the coil on top
Degree of protection	IP65

*1: Value at pneumatic pressure 0.02 to 1.0MPa. When used at a pressure less than 0.02MPa, the operation or sealant may be unstable. Contact CKD in this case.

*2: Dynamic viscosity varies depending on temperature. Check that the dynamic viscosity is 50mm²/s or less within the temperature range being used. When exceeding 50 mm²/s, operation will become unstable.

Individual specifications

Item	Port size	Orifice (mm)	Min. working pressure differential (MPa)	Max. working pressure differential (MPa)			Rated voltage	Apparent power (VA)				Power consumption (W)	Weight (kg)	
				Air	Water/kerosene	Oil (50mm²/s)		When holding		When starting		AC		
				AC	AC	AC		50Hz	60Hz	50Hz	60Hz	50/60Hz		
NC (open when energized)														
ADK11-15A	Rc1/2	16	0	1	1	0.6	100 VAC 50/60Hz 200 VAC 50/60Hz	25	21	84	75	10/8.5	1.2	
ADK11-20A	Rc3/4	23											1.3	
ADK11-25A	Rc1	28											1.7	

*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.

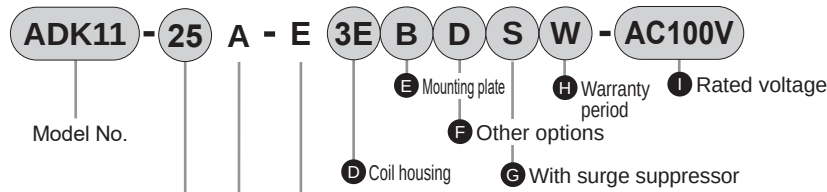
*3: When using at low vacuum, vacuum the OUT port side.

Flow characteristics

Model No.	Port size	Orifice size(mm)	Flow characteristics			
			C[dm³/(s·bar)]	b	Cv	S (mm²)
NC (open when energized)						
ADK11-15A	Rc1/2	16	20	0.31	4.5	-
ADK11-20A	Rc3/4	23	-	-	8.6	162
ADK11-25A	Rc1	28	-	-	12.0	231

*1: Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

How to order



Code	Description		
A Port size			
15	1/2		
20	3/4		
25	1		
B Thread			
A	Rc		
C Body/sealant combination			
	Body	Seal	Remarks
D	Stainless	Nitrile rubber *5	air/water/low vacuum/kerosene/oil
E	steel	Fluoro rubber *5	air/water/low vacuum/kerosene/oil
D to I			
Refer to the following table for details on the coil housing, other options, voltage, etc.			
H Warranty period			
W	1 year after delivery		
WG	3 years after delivery *3, *4 (with inspection certificate, inspection guidelines, traceability system diagram)		

[Example of model No. 1]

ADK11-15A-E3EWG-AC100V

- A** Port size : 1/2
- B** Thread : Rc
- C** Body/sealant combination : Body - stainless steel, sealant - fluoro rubber
- D** Coil housing: Open frame with round terminal box
- E** to **G** : None
- H** Warranty period : 3 years after delivery
- I** Rated voltage : 100 VAC 50/60Hz, 110 VAC 60Hz

For Items ④ to ⑩, the combinations indicated with codes are available.
Note that if options for Items ⑤ to ⑦ are not required, it should be blank.

D Coil housing			E	F Other options			G	I Rated voltage
Description			Mounting plate	Cable gland			With surge suppressor	Description
				(marine cable gland)				
				A-15a	A-15b	A-15c		
3E	Open	With round terminal box (G1/2)	B	D	E	F	S	100 VAC, 200 VAC
3L	Frame type	Round terminal box with lamp(G1/2)						

⚠ Refer to the following cautions for Items ③ to ⑩.

⚠ Precautions for model No. selection

Notes for Items ③ to ⑨

- *1: For Item ⑤, select an option from D, E and F.
- *2: The surge suppressor is mounted in the terminal box.
- *3: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *4: For option WG, the specifications and drawings must be exchanged. Refer to page 101.
- *5: The ambient temperature for option D is -20°C to 60°C. For option E, the ambient temperature is -10°C to 60°C.

Notes for Item ⑩

- *6: 100 VAC coil can be used at 100 VAC 50/60Hz and 110 VAC 60Hz, and 200 VAC coil can be used at 200 VAC 50/60Hz and 220 VAC 60Hz.

Dimensions: ADK11-W Series

- Open frame + round terminal box
ADK11-15A/20A/25A-*

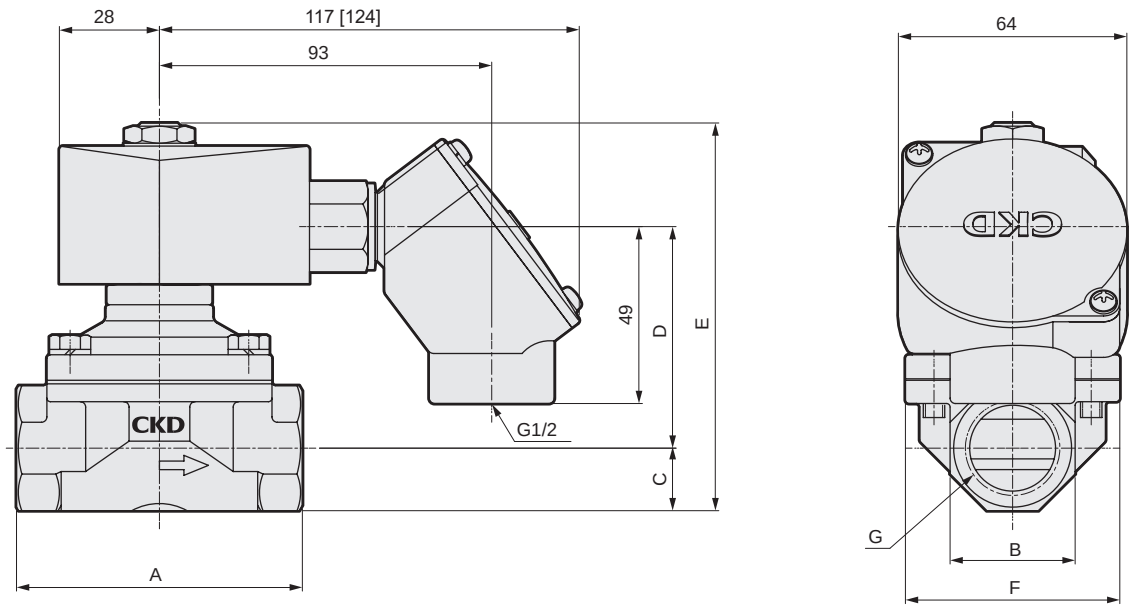
3E

3L

Values in [] are for the the ADK11-15A/20A/25A-*

3L

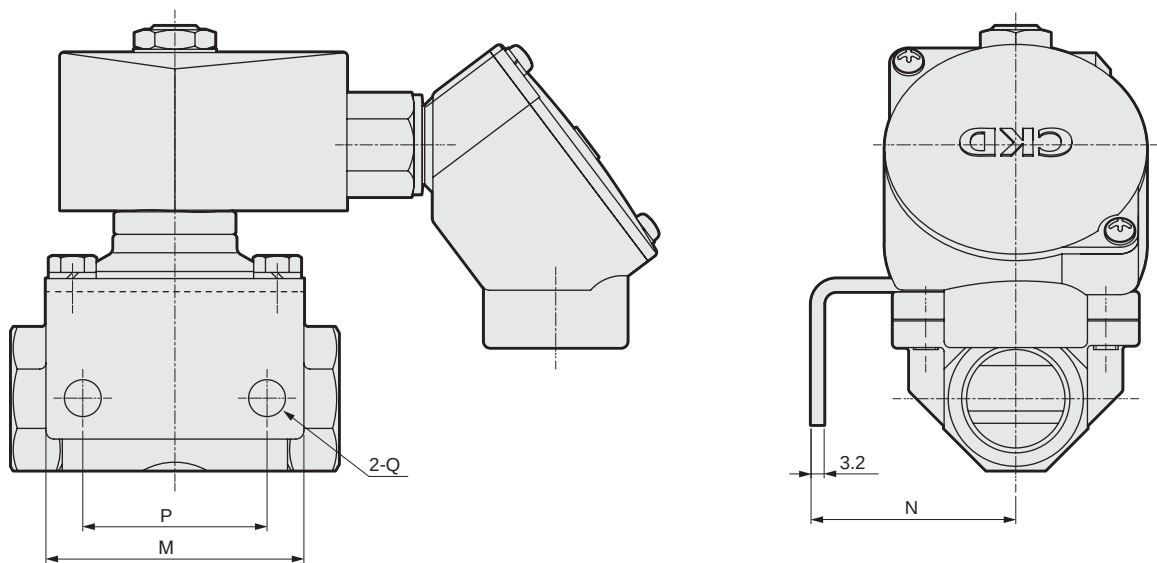
 type.



Model No.	A	B	C	D	E	F	G
ADK11-15A-*3E/3L	71	29	14.5	58.5	102	50	Rc1/2
ADK11-20A-*3E/3L	80	35	17.5	62	108.5	60	Rc3/4
ADK11-25A-*3E/3L	90	45	22.5	67.5	119	71	Rc1

Dimensions: ADK11-W Series

- Mounting plate
ADK11-15A/20A/25A-*B



Model No.	M	N	P	Q
ADK11-15A-*3E/3LB	56	45	40	ø9
ADK11-20A-*3E/3LB	63	50	45	ø9
ADK11-25A-*3E/3LB	75	56	50	ø11

- Open frame + round terminal box + cable gland
ADK11-15A/20A/25A-*

3E

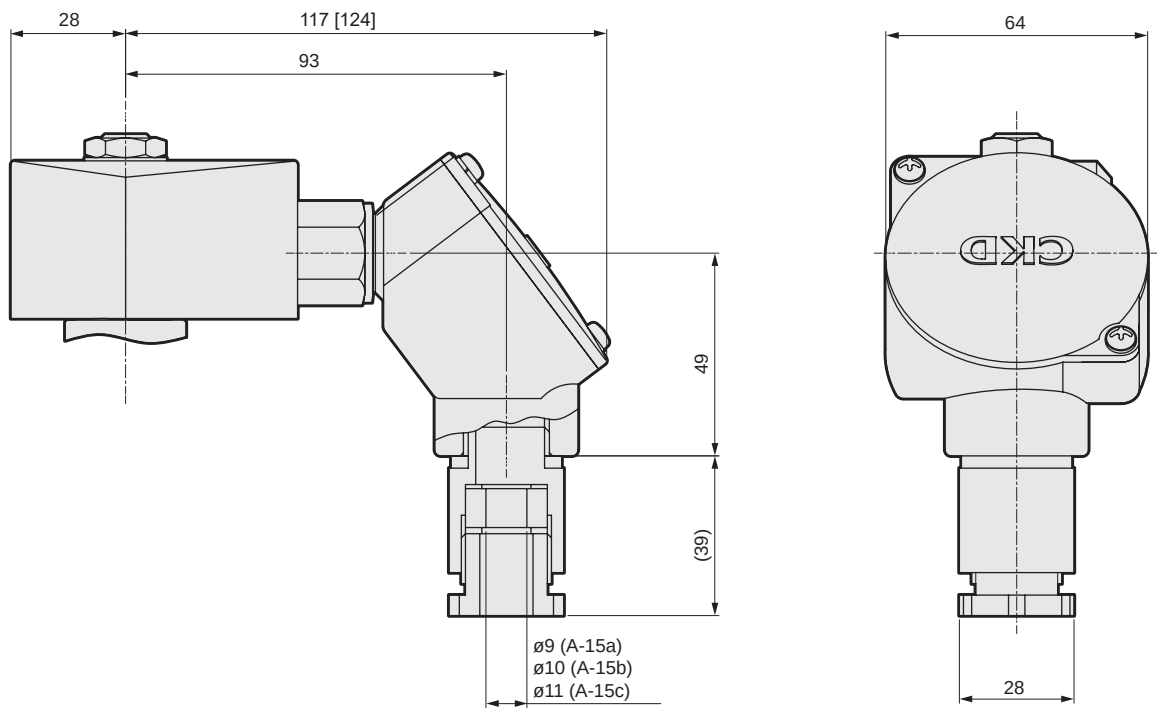
3L

D

E

F

Values in [] are for the the ADK11-15A/20A/25A-*3L type.





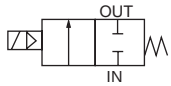
Pilot kick 2-port solenoid valve
General purpose

ADK21-W Series

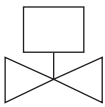
- NC (Normally Closed)
- Port size: Rc1¹/₄ to Rc2, 32 to 50 flange
- Diaphragm drive



JIS symbol



Mounting orientation



Common specifications

Item	Standard specifications
Working fluid	Air/low vacuum (1.33 × 10 ³ Pa (abs)/water/kerosene/oil (50mm ² /s or less *2)
Working pressure differential MPa	0 to 0.7 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	1
Proof pressure (water) MPa	3.2
Fluid temperature °C	Nitrile rubber (D): -20 to 60 (no freezing) Fluoro rubber (E): 5 to 60 (no freezing)
Ambient temperature °C	Nitrile rubber (D): -20 to 60, fluoro rubber (E): -10 to 60
Thermal class	Class 130 (B)
Working environment	Indoors/outdoors
Atmosphere	A place free of corrosive gases, liquids, chemicals, and explosive gases
Valve structure	Pilot kick poppet, diaphragm drive
Valve seat leakage (*1) cm ³ /min (ANR)	1 or less (air)
Mounting orientation	Limited to vertical orientation with the coil on top
Degree of protection	IP65

*1: Value at pneumatic pressure 0.02 to 0.7MPa. When used at a pressure less than 0.02 MPa, the sealant may be unstable. Contact CKD in this case.

*2: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 50mm²/s or less within the temperature range being used. When exceeding 50 mm²/s, operation will become unstable.

Individual specifications

Item	Connection Bore size	Orifice size (mm)	Min. working pressure differential (MPa)	Max. working pressure differential (MPa)			Rated voltage	Apparent power (VA)				Power consumption (W)	Weight (kg)
Model No.				Air	Water/kerosene	Oil (50mm ² /s)		When holding		When starting		AC	
				AC	AC	AC		50Hz	60Hz	50Hz	60Hz	50/60Hz	
ADK21-32A	Rc1 ¹ / ₄	35	0	0.7	0.7	0.5	100 VAC 50/60Hz 200 VAC 50/60Hz	64	69	274	289	44/48	4.5
ADK21-32F	32 flange												7.5
ADK21-40A	Rc1 ¹ / ₂	43											5.5
ADK21-40F	40 flange												8.5
ADK21-50A	Rc2	53											6.5
ADK21-50F	50 flange												10.5

*1: The model numbers above are for the basic port size. Refer to How to order for other combinations.

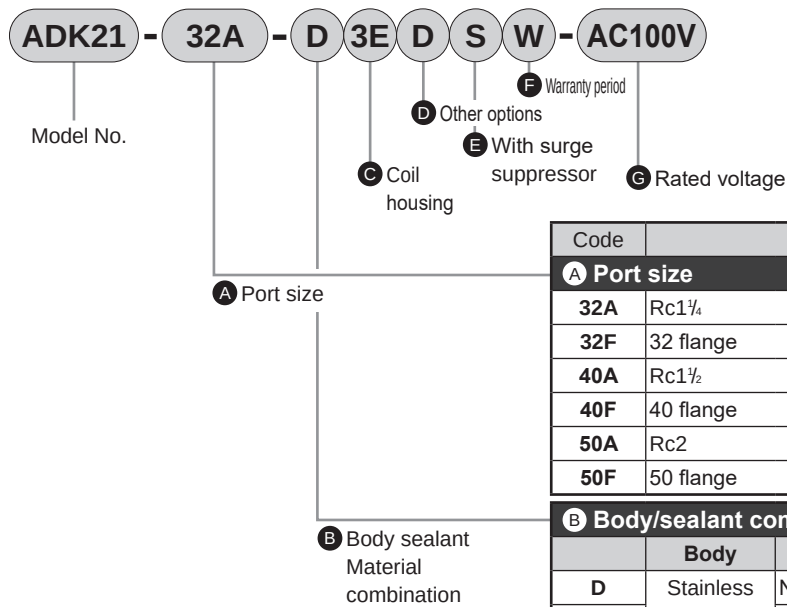
*2: The voltage fluctuation range must be within ±10% of the rated voltage.

*3: When using at low vacuum, vacuum the OUT port side.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Cv	Effective cross-sectional area (mm ²)
ADK21-32A	Rc1 ¹ / ₄	35	25	460
ADK21-32F	32 flange			
ADK21-40A	Rc1 ¹ / ₂	43	34	625
ADK21-40F	40 flange			
ADK21-50A	Rc2	53	53	975
ADK21-50F	50 flange			

How to order



Code	Description		
A Port size			
32A	Rc1¼		
32F	32 flange		
40A	Rc1½		
40F	40 flange		
50A	Rc2		
50F	50 flange		
B Body/sealant combination			
	Body	Seal	Remarks
D	Stainless	Nitrile rubber	*6 air/water/low vacuum/kerosene/oil
E	steel	Fluoro rubber	*6 air/water/low vacuum/kerosene/oil
C to G			
Refer to the following table for details on the coil housing, other options, voltage, etc.			
F Warranty period			
W	1 year after delivery		
WG	3 years after delivery *4*5 (with inspection certificate, inspection guidelines, traceability system diagram)		

[Example of model No. 1]

ADK21-50F-E3EWG-AC100V

Model: ADK21

- A** Port size : 50 flange
B Body/sealant combination : Body - stainless steel, sealant - fluoro rubber
C Coil housing : Open frame with round terminal box
D **E** : None
F Warranty period : 3 years after delivery
G Rated voltage : 100 VAC 50/60Hz

For Items © to ©, the combinations indicated with codes are available.
 Note that if options for Items © to © are not required, it should be blank.

C Coil housing			D Other options			E	G Rated voltage
Description			Cable gland (marine cable gland)			With surge suppressor	Description
			A-15a	A-15b	A-15c		
			D	E	F		
3E	Open	With round terminal box (G1/2)					
3L	Frame type	Round terminal box with lamp (G1/2)					100 VAC, 200 VAC

⚠ Refer to the following cautions for Items A to G.

⚠ Precautions for model No. selection

Notes for Items A to F

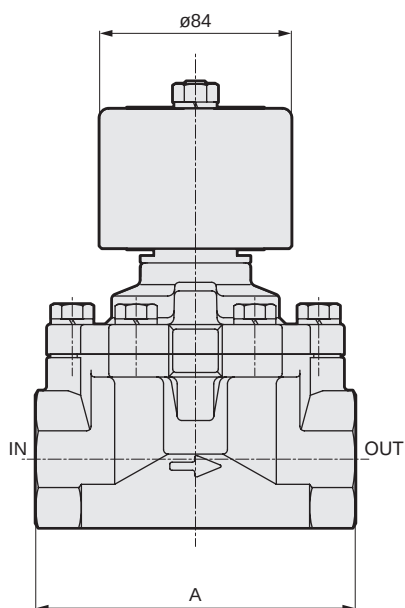
- *1: The companion flange is JIS B2210 10K. (Flange is not included with the product and must be purchased separately.)
 *2: For Item D, select an option from D, E and F.
 *3: The surge suppressor is mounted in the terminal box.
 *4: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
 *5: For option WG, the specifications and drawings must be exchanged. Refer to page 101 for details.
 *6: For option D, the ambient temperature is -20°C to 60°C.
 For option E, the ambient temperature is -10°C to 60°C.

ADK21-W Series

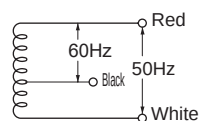
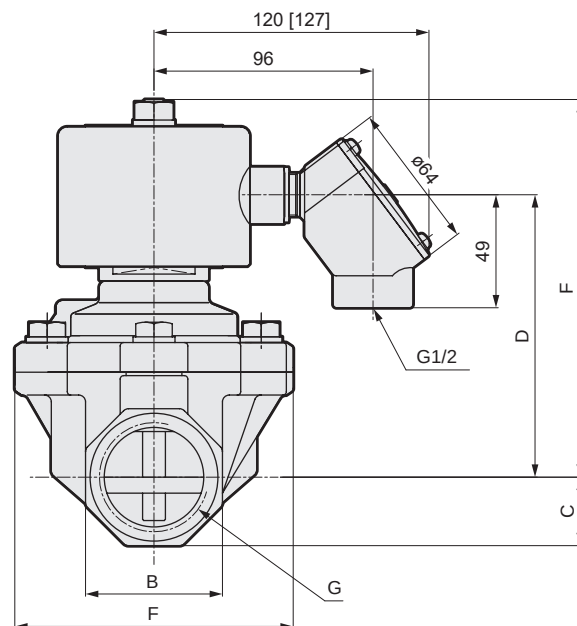
Dimensions

- Open frame + round terminal box (Rc screw-in)

ADK21-32A/40A/50A-* 



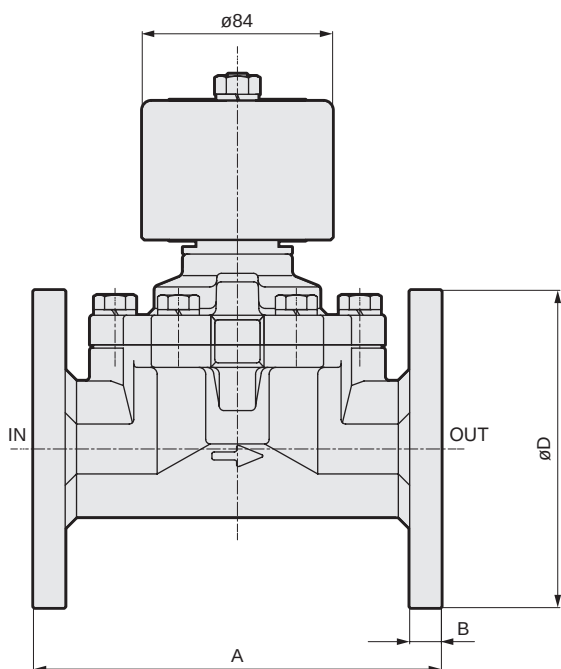
Model No.	A	B	C	D	E	F	G
ADK21-32A	125	54	27	116.5	158.5	112	Rc1 ¹ / ₄
ADK21-40A	140	60	30	123.5	165.5	122	Rc1 ¹ / ₂
ADK21-50A	160	74	37	132.5	174.5	132	Rc2



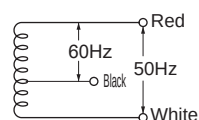
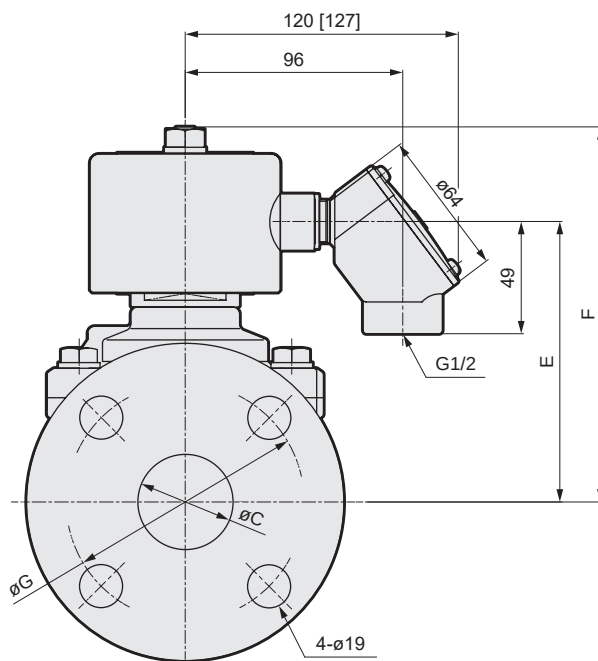
- Conduit size
Thin steel conduit thread
JIS B 0204 CTC19

- Open frame + round terminal box (flange)

ADK21-32F/40F/50F-* 



Model No.	A	B	C	D	E	F	G
ADK21-32F	170	12	35	135	116.5	158.5	100
ADK21-40F	180	14	42	140	123.5	165.5	105
ADK21-50F	180	14	52	155	132.5	174.5	120



- Conduit size
Thin steel conduit thread
JIS B 0204 CTC19

Optional dimensions



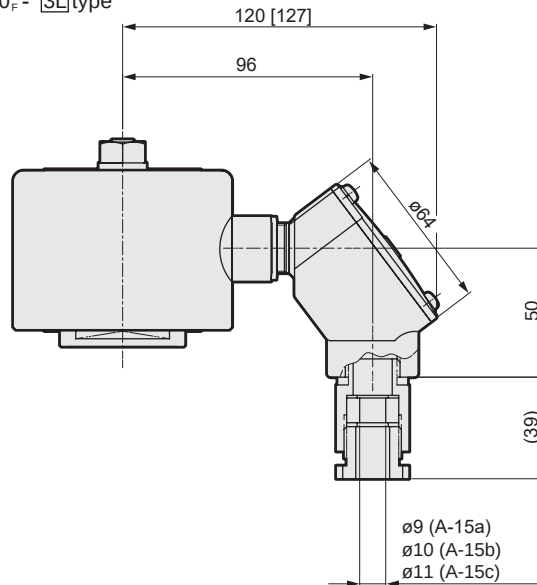
- Open frame + round terminal box + cable gland

ADK21-32^A_F to 50^A_F-*

3E
3L

D
E
F

Values in [] are for the ADK21-32_F to 50_F-* **3L** type





Air operated 2-port ball valve
(Compact rotary valves)

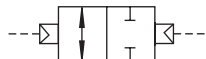
CHB-W/CHB-WR* Series

● Port size: Rc3/8 to Rc2



JIS symbol

● CHB-W
(double acting)



● CHB-WR1
(Single acting-NC)



● CHB-WR2
(Single acting-NO)



Common specifications

Item	CHB-W	CHB-WR*
Actuation	Air operated: Double acting	Air operated: Single acting
Working fluid	Water/Air/Oil (500 mm ² /s or less) (*1)	
Working pressure MPa	0 to 1.0	
Proof pressure (water) MPa	2.0	
Fluid temperature °C	Water/Oil: 0 to 80 (no freezing) Air: -20 to 80 (no freezing) (*2)	
Ambient temperature °C	Fluoro rubber: -10 to 60, Special fluoro rubber: -20 to 60	
Working environment	Indoors/outdoors	
Valve seat leakage cm ³ /min	0 (at initial water pressure 1 MPa)	
Mounting orientation	Unrestricted	
Frequency cycles/min.	1 or less	
Rotary actuator	Pilot fluid	Compressed air
	Lubrication	Not required (*3)
	Proof pressure (water) MPa	1.5
	Working pressure MPa	0.35 to 0.7
	Fluid temperature °C	5 to 60
Port size	Rc1/8	Rc1/8

*1: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 500mm²/s or less within the temperature range being used. When exceeding 500 mm²/s, operation will become unstable.

*2: When using fluid: air at -20 to 80°C, select the special fluoro rubber (F).

*3: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Individual specifications

Item		Port size	Orifice size (mm)	Cv	Weight (kg)	
Model No.					Double acting	Single acting
Standard bore	CHB-W(R*)-10	Rc3/8	10	10	1.0	1.1
	CHB-W(R*)-15	Rc1/2	10	6	1.0	1.1
	CHB-W(R*)-20	Rc3/4	15	16	1.2	1.3
	CHB-W(R*)-25	Rc1	20	29	1.3	2.2
	CHB-W(R*)-32	Rc1¼	25	50	2.3	2.8
	CHB-W(R*)-40	Rc1½	32	98	2.7	4.9
	CHB-W(R*)-50	Rc2	40	125	3.5	5.7

1: CHB-W (R)-10 is a full bore type.

How to order

CHB - W R1 - 15 - E

Model No.

A Warranty period

B Actuator

C Port size

D Body / rubber material

Code	Description						
A Warranty period							
W	1 year after delivery						
WG	3 years after delivery *1, *2 (with inspection certificate, inspection guidelines, traceability system diagram)						
B Actuator							
Blank	Double acting						
R1	Single acting NC (Normally closed)						
R2	Single acting NO (Normally open)						
C Port size							
10	Rc3/8						
15	Rc1/2						
20	Rc3/4						
25	Rc1						
32	Rc1 $\frac{1}{4}$						
40	Rc1 $\frac{1}{2}$						
50	Rc2						
D Body / rubber material							
	<table> <tr> <th>Body</th><th>Rubber</th></tr> <tr> <td>E</td><td>Fluoro rubber *3</td></tr> <tr> <td>F</td><td>Stainless steel Special fluoro rubber *3</td></tr> </table>	Body	Rubber	E	Fluoro rubber *3	F	Stainless steel Special fluoro rubber *3
Body	Rubber						
E	Fluoro rubber *3						
F	Stainless steel Special fluoro rubber *3						

[Example of model No.]

CHB-WR1-15-E

Model No.: CHB (standard bore)

- A** Warranty period: 1 year after delivery
- B** Actuator : Single acting NC (Normally closed)
- C** Port size : Rc1/2
- D** Body material : Stainless steel

⚠ Precautions for model No. selection

- *1: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *2: For option WG, the specifications and drawings must be exchanged. Refer to page 101 for details.
- *3: For option E, the ambient temperature is -10°C to 60°C.
With option F, the ambient temperature is -20°C to 60°C.

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

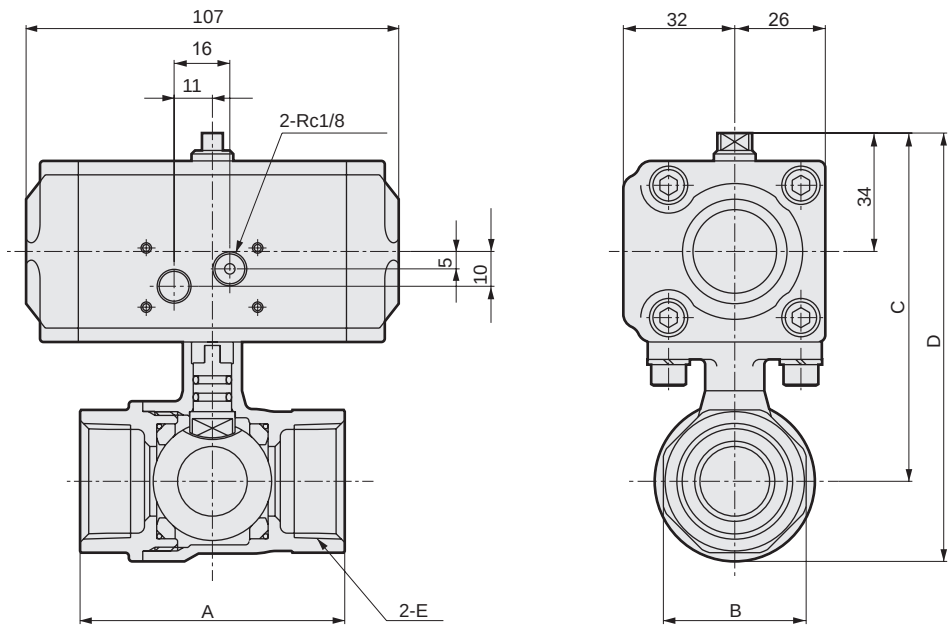
Pneumatic
cylinders

Related
products

Safety
precautions

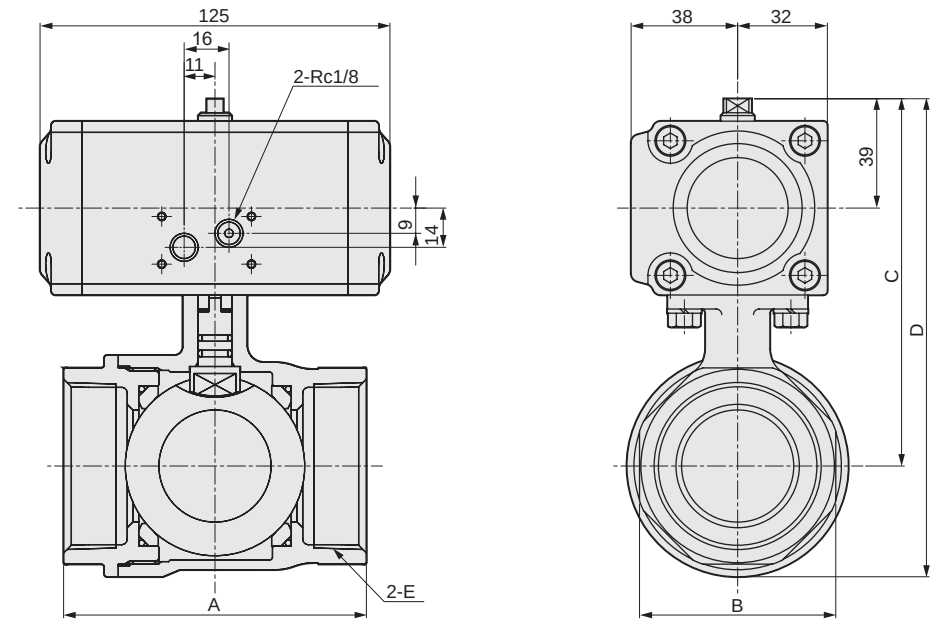
Dimensions: CHB-W Series

● CHB-W-10/15/20/25



Model No.	A	B	C	D	E
CHB-W-10	56	28	91	107	Rc3/8
CHB-W-15	56	28	91	107	Rc1/2
CHB-W-20	65	34	97	117.5	Rc3/4
CHB-W-25	76	41	100	124	Rc1

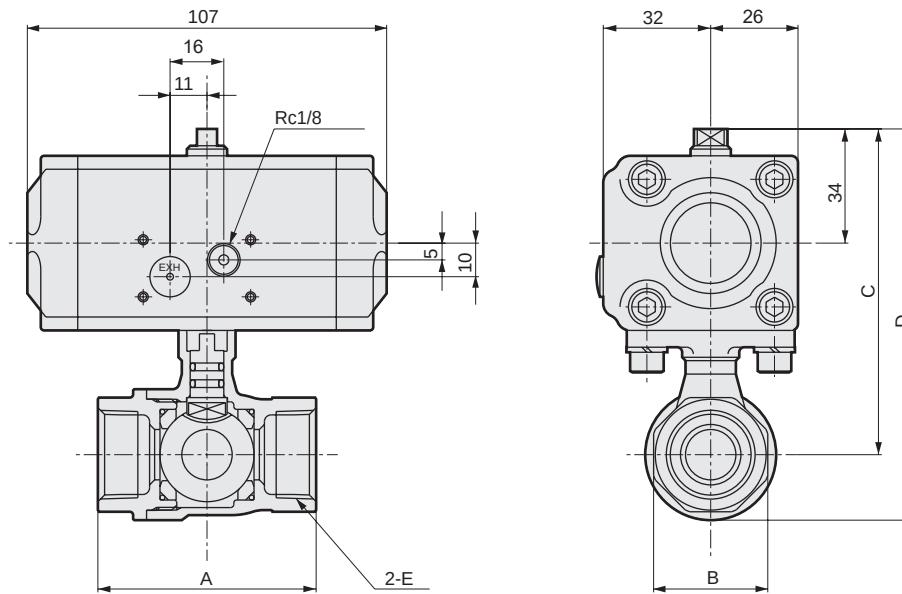
● CHB-W-32/40/50



Model No.	A	B	C	D	E
CHB-W-32	84	50	116	145.5	Rc1 $\frac{1}{4}$
CHB-W-40	94	57	122	157.5	Rc1 $\frac{1}{2}$
CHB-W-50	108	70	131	171.5	Rc2

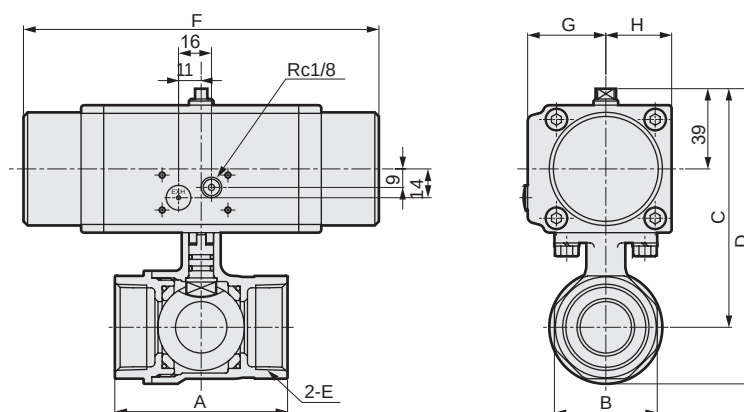
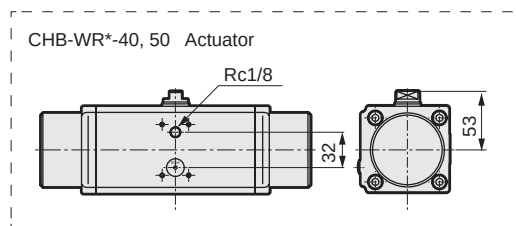
Dimensions: CHB-WR* Series

● CHB-WR*-10/15/20



Model No.	A	B	C	D	E
CHB-WR*-10	56	28	91	107	Rc3/8
CHB-WR*-15	56	28	91	107	Rc1/2
CHB-WR*-20	65	34	97	117.5	Rc3/4

● CHB-WR*-25/32/40/50



Model No.	A	B	C	D	E	F	G	H
CHB-WR*-25	76	41	110	134	Rc1	173	38	32
CHB-WR*-32	84	50	116	145.5	Rc1 1/4	173	38	32
CHB-WR*-40	94	57	156.5	192	Rc1 1/2	244	43	38
CHB-WR*-50	108	70	165.5	206	Rc2	244	43	38



Air operated 3-port ball valve
(Compact rotary valves)

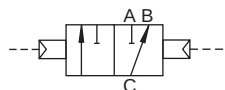
CHG-W/CHG-WR* Series

● Port size: Rc1/2 to Rc2

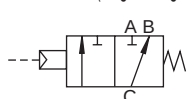


JIS symbol

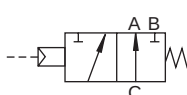
● CHG-W (Double acting)



● CHG-WR1 (Single acting - normally B-C path)



● CHG-WR2 (Single acting - normally A-C path)



Common specifications

Item	CHG-W	CHG-WR*
Actuation	Air operated: Double acting	Air operated: Single acting
Working fluid	Water/Air/Oil (500 mm ² /s or less) (*1)	
Working pressure MPa	0 to 1.0	
Proof pressure (water) MPa	2.0	
Fluid temperature °C	Water/Oil: 0 to 80 (no freezing) Air: -20 to 80 (no freezing) (*2)	
Ambient temperature °C	Fluoro rubber (E): -10 to 60, special fluoro rubber (F): -20 to 60	
Working environment	Indoors / Outdoors	
Valve seat leakage cm ³ /min	0 (at initial water pressure 1 MPa)	
Mounting orientation	Unrestricted	
Frequency cycles/min.	1 or less	
Pressurization direction	Port C pressurization only	
Flow path shape	Multi-fluid type (90° Rotation switching method)	
Rotary actuator	Pilot fluid	Compressed air
	Lubrication	Not required(*3)
	Proof pressure (water) MPa	1.5
	Working pressure MPa	0.35 to 0.7
	Fluid temperature °C	5 to 60
Port size	Rc1/8	Rc1/8

*1: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 500mm²/s or less within the temperature range being used. When exceeding 500 mm²/s, operation will become unstable.

*2: When using fluid: air at -20 to 80°C, select the special fluoro rubber (F).

*3: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Individual specifications

Item Model No.	Port size	Orifice size(mm)	Cv	Weight(kg)	
				Double acting	Single acting
CHG-W(R*)-15	Rc1/2	10	3	1.1	1.2
CHG-W(R*)-20	Rc3/4	14	6	1.3	1.4
CHG-W(R*)-25	Rc1	19	11	1.5	2.4
CHG-W(R*)-32	Rc1 ¹ / ₄	23	16	2.3	2.8
CHG-W(R*)-40	Rc1 ¹ / ₂	30	28	2.8	5.0
CHG-W(R*)-50	Rc2	38	47	3.7	5.9

How to order

CHG - W R1 - 20 - E

Model No.

A Warranty period

B Actuator

C Port size

D Body / Rubber material

Code	Description		
A Warranty period			
W	1 year after delivery		
WG	3 years after delivery *1*2 (with inspection certificate, inspection guidelines, traceability system diagram)		
B Actuator			
Blank	Double acting		
R1	Single acting, normally B-C path		
R2	Single acting, normally A-C path		
C Port size			
15	Rc1/2		
20	Rc3/4		
25	Rc1		
32	Rc1¾		
40	Rc1½		
50	Rc2		
D Body / rubber material			
	Body	Rubber	
E	Stainless steel	Fluoro rubber	*3
F		Special fluoro rubber	*3

[Example of model No.]

CHG-WR1-20-E

Model: CHG

- A** Warranty period : 1 year after delivery
- B** Actuator : Single acting, normally B-C path
- C** Port size : Rc3/4
- D** Body material : Stainless steel

⚠ Precautions for model No. selection

*1: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.

*2: For option WG, the specifications and drawings must be exchanged. Refer to page 101 for details.

*3: For option E, the ambient temperature is -10°C to 60°C. With option F, the ambient temperature is -20°C to 60°C.

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

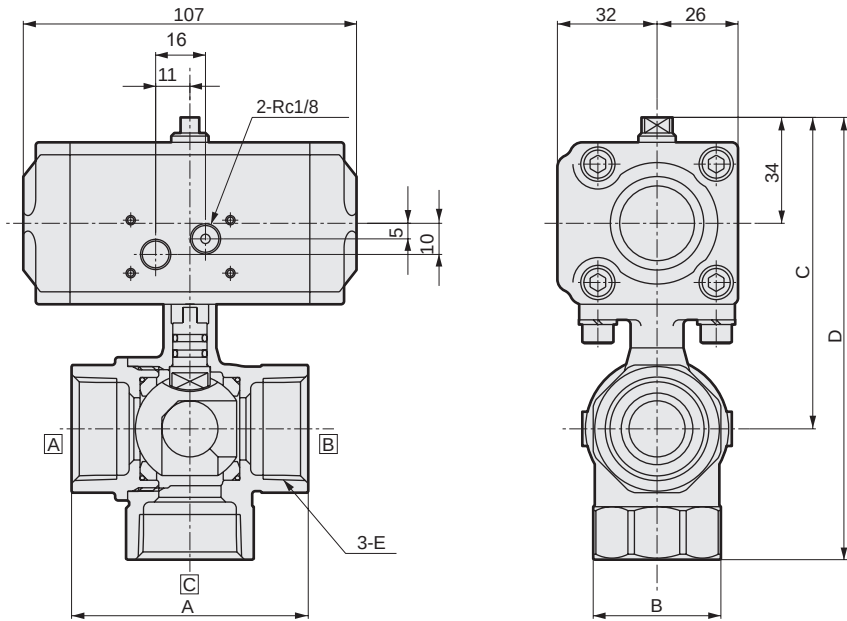
Pneumatic
cylinders

Related
products

Safety
precautions

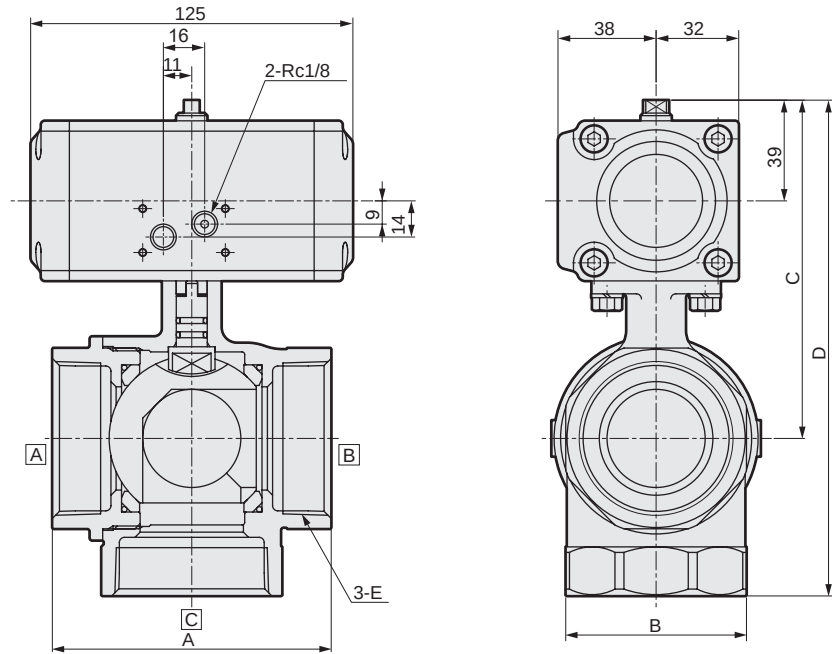
Dimensions: CHG-W Series

● CHG-W-15/20/25



Model No.	A	B	C	D	E
CHG-W-15	56	28	91	121	Rc1/2
CHG-W-20	65	34	97	133	Rc3/4
CHG-W-25	76	41	100	142	Rc1

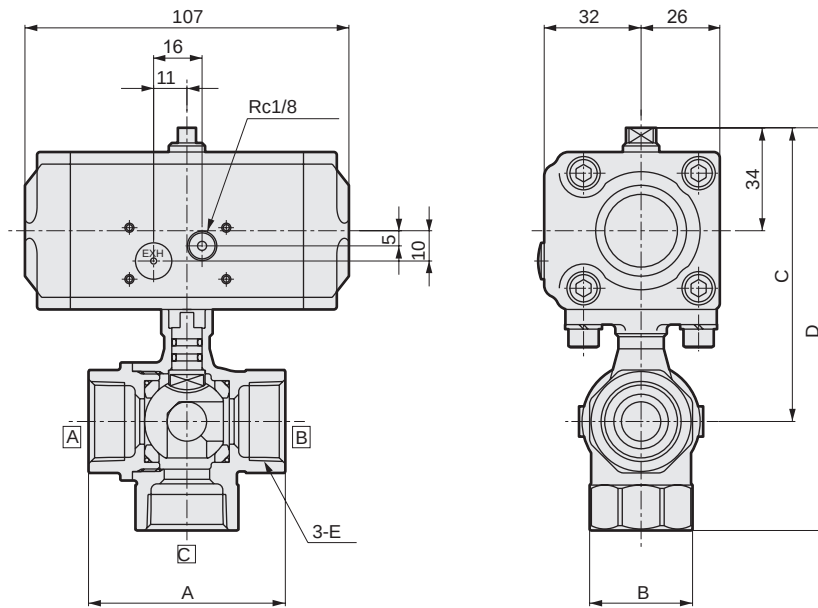
● CHG-W-32/40/50



Model No.	A	B	C	D	E
CHG-W-32	84	50	116	163	Rc1 1/4
CHG-W-40	94	57	122	175	Rc1 1/2
CHG-W-50	108	70	131	192	Rc2

Dimensions: CHG-WR* Series

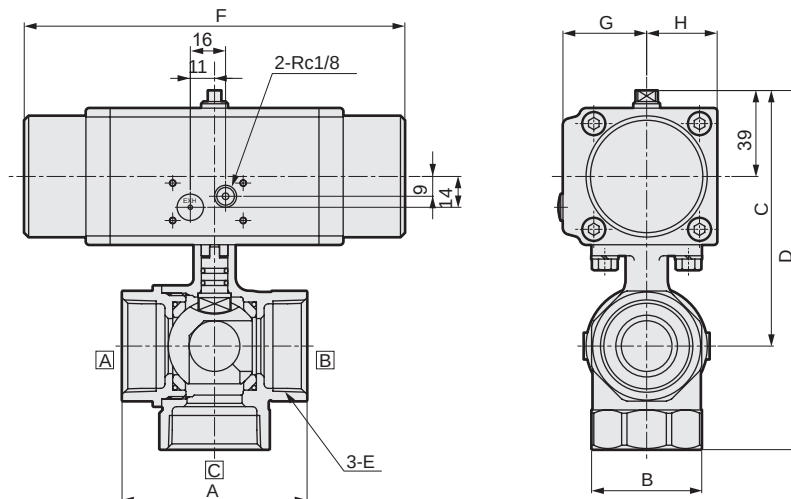
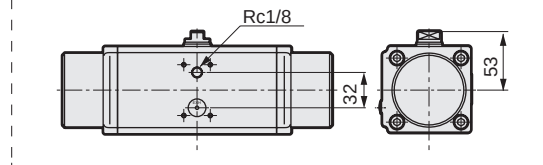
● CHG-WR*-15/20



Model No.	A	B	C	D	E
CHG-WR*-15	56	28	91	121	Rc1/2
CHG-WR*-20	65	34	97	133	Rc3/4

● CHG-WR*-25/32/40/50

● CHG-WR*-40, 50 Actuator



Model No.	A	B	C	D	E	F	G	H
CHG-WR*-25	76	41	110	152	Rc1	173	38	32
CHG-WR*-32	84	50	116	163	Rc1 1/4	173	38	32
CHG-WR*-40	94	57	156.5	209.5	Rc1 1/2	244	43	38
CHG-WR*-50	108	70	165.5	226.5	Rc2	244	43	38

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

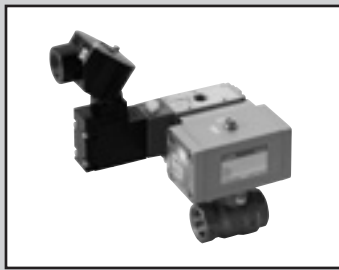
Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Air operated ball type 2-port solenoid valve
(Compact rotary valves)

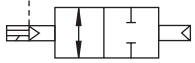
CHB-WV1/, CHB-WX1 Series

● Port size: Rc3/8 to Rc2

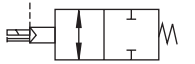


JIS symbol

● CHB-WV1
(Double acting-NC)



● CHB-WX1
(Single acting-NC)



Common specifications

Item	CHB-WV1	CHB-WX1
Actuation	With solenoid valve: Double acting	With solenoid valve: Single acting
Working fluid	Water/Air/Oil (500 mm ² /s or less) (*1)	
Working pressure MPa	0 to 1.0	
Proof pressure(water) MPa	2.0	
Fluid temperature °C	Water/Oil: 0 to 80 (no freezing) Air: -20 to 80 (no freezing) (*2)	
Ambient temperature°C	Fluoro rubber (E): -10 to 60, special fluoro rubber (F): -20 to 60	
Working environment	Indoors/outdoors	
Valve seat leakagecm ³ /min	0 (at initial water pressure 1 MPa)	
Mounting orientation	Vertical direction with the actuator on the top	
Frequency cycles/min.	1 or less	
Rotary actuator	Pilot fluid	Compressed air
	Lubrication	Not required (*3)
	Proof pressure(water) MPa	1.5
	Working pressureMPa	0.35 to 0.7
	Fluid temperature°C	5 to 60
	Port size	Rc1/4
	EXH port	Rc1/8

Electrical specifications

Rated voltage	100 VAC (50/60Hz), 200 VAC (50/60Hz), 24 VDC	
Starting current(A)	100 VAC	0.170/0.140 (50/60Hz)
	200 VAC	0.090/0.070 (50/60Hz)
	24 VDC	0.250
Holding current(A)	100 VAC	0.100/0.080 (50/60Hz)
	200 VAC	0.050/0.040 (50/60Hz)
	24 VDC	0.250
Power consumption(W)	100 VAC	5.0/4.0 (50/60Hz)
	200 VAC	5.0/4.0 (50/60Hz)
	24 VDC	6.0
Thermal class	Class 130 (B)	
Degree of protection	IP65	
Voltage fluctuation range	±10%	

*1: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 500mm²/s or less within the temperature range being used. When exceeding 500 mm²/s, operation will become unstable.

*2: When using fluid: air at -20 to 80°C, select the special fluoro rubber (F).

*3: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Individual specifications

Item		Port size	Orifice size(mm)	Cv	Weight (kg)	
Model No.					Double acting	Single acting
Standard bore	CHB-WV1/WX1-10-	Rc3/8	10	10	2.1	2.2
	CHB-WV1/WX1-15-	Rc1/2	10	6	2.1	2.2
	CHB-WV1/WX1-20-	Rc3/4	15	16	2.3	2.4
	CHB-WV1/WX1-25-	Rc1	20	29	2.4	3.3
	CHB-WV1/WX1-32-	Rc1¾	25	50	3.4	3.9
	CHB-WV1/WX1-40-	Rc1½	32	98	3.8	6.0
	CHB-WV1/WX1-50-	Rc2	40	125	4.6	6.8

How to order

CHB - W V1 - 25 - E B - S - AC100V

Model No.

A Warranty period

B Actuator

C Port size

D Body / rubber material

E Coil option

F Other options

G Voltage

Code	Description						
A Warranty period							
W	1 year after delivery						
WG	3 years after delivery *1, *2 (with inspection certificate, inspection guidelines, traceability system diagram)						
B Actuator							
V1	Double acting NC (Open when energized)						
X1	Single acting NC (Open when energized)						
C Port size							
10	Rc3/8						
15	Rc1/2						
20	Rc3/4						
25	Rc1						
32	Rc1¼						
40	Rc1½						
50	Rc2						
D Body / rubber material							
	<table> <tr> <th>Body</th><th>Rubber</th></tr> <tr> <td>E</td><td>Fluoro rubber *3</td></tr> <tr> <td>F</td><td>Special fluoro rubber *3</td></tr> </table>	Body	Rubber	E	Fluoro rubber *3	F	Special fluoro rubber *3
Body	Rubber						
E	Fluoro rubber *3						
F	Special fluoro rubber *3						
E Coil option							
B	Round terminal box (G½)						
BL	Round terminal box with lamp (G½)						
F Other options							
Blank	No						
S	Silencer *4						
G Voltage							
AC100V	100 VAC 50/60 Hz, 110 VAC 60 Hz						
AC200V	200 VAC 50/60 Hz and 220 VAC 60 Hz						
DC24V	24 VDC						

[Example of model No.]

CHB-WV1-25-EB-S-AC100V

Model No.: CHB (standard bore)

- A** Warranty period : 1 year after delivery
- B** Actuator : Double acting NC (Open when energized)
- C** Port size : Rc1
- D** Body material : Stainless steel
- E** Coil option : With round terminal box
- F** Other options : With 2 silencers
- G** Voltage : 100 VAC 50/60Hz. 110 VAC 60Hz

⚠ Precautions for model No. selection

- *1: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *2: For option WG, the specifications and drawings must be exchanged. Refer to page 101 for details.
- *3: For option E, the ambient temperature is -10°C to 60°C.
With option F, the ambient temperature is -20°C to 60°C.
- *4: Two CKD SL-8A-W are included with **B** WV1, and one is included with **B** WX1.

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

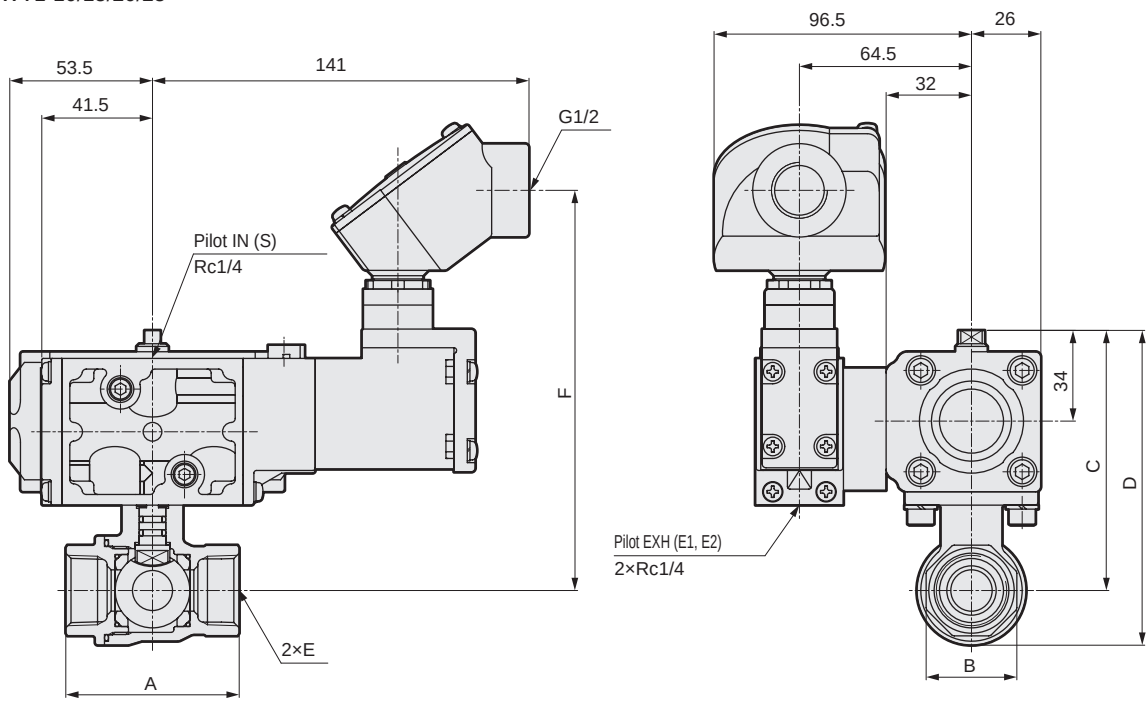
Related
products

Safety
precautions

CHB-WV1 Series

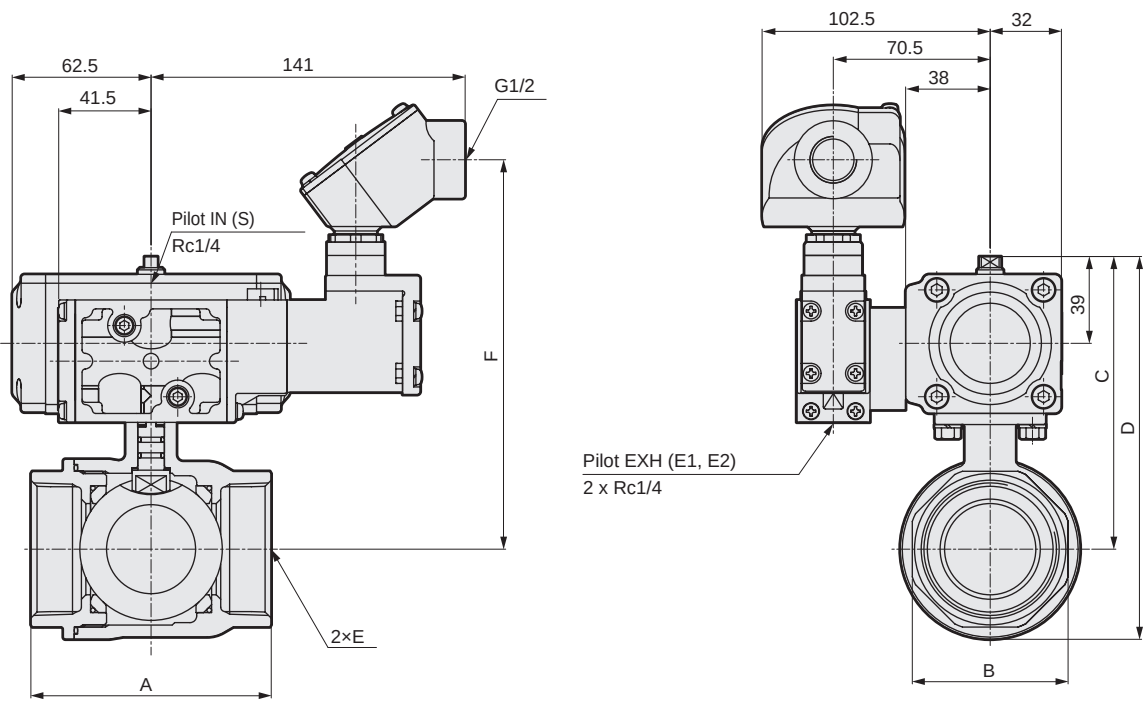
Dimensions CHB-WV1 Series

● CHB-WV1-10/15/20/25



Model No.	A	B	C	D	E	F
CHB-WV1-10	56	28	91	107	Rc3/8	144
CHB-WV1-15	56	28	91	107	Rc1/2	144
CHB-WV1-20	65	34	97	117.5	Rc3/4	150
CHB-WV1-25	76	41	100	124	Rc1	153

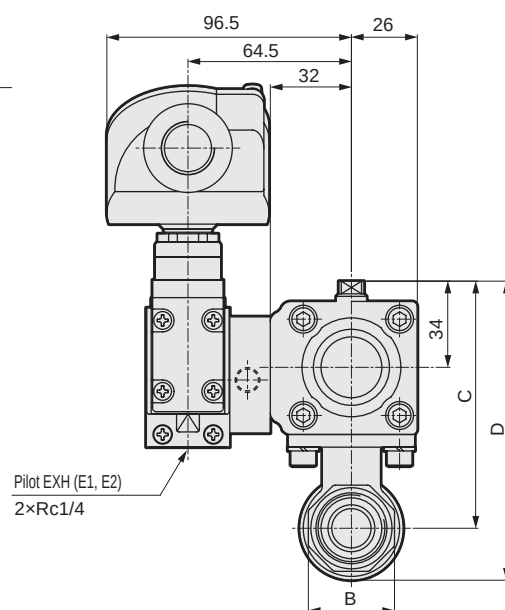
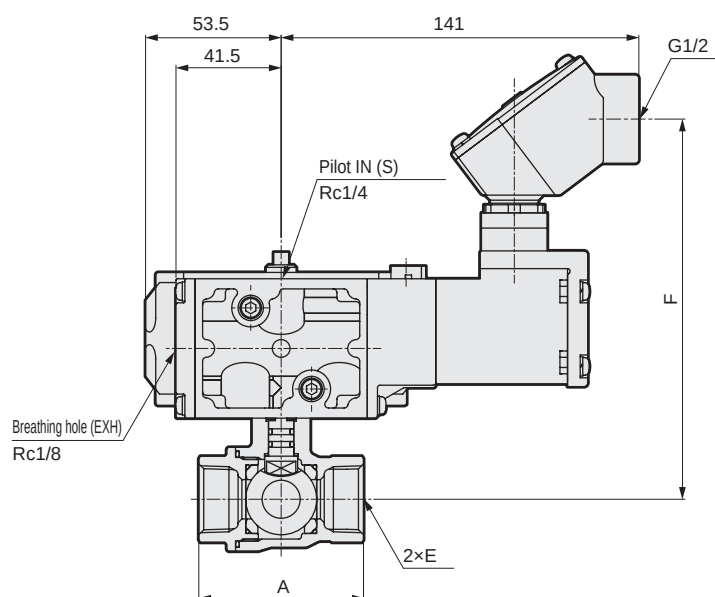
● CHB-WV1-32/40/50



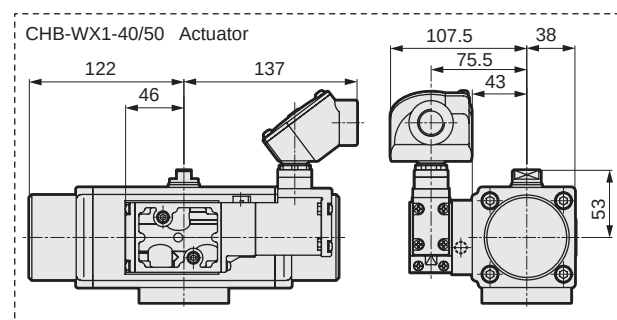
Model No.	A	B	C	D	E	F
CHB-WV1-32	84	50	116	145.5	Rc11/4	160
CHB-WV1-40	94	57	122	157.5	Rc11/2	166
CHB-WV1-50	108	70	131	171.5	Rc2	175

Dimensions CHB-WX1 Series

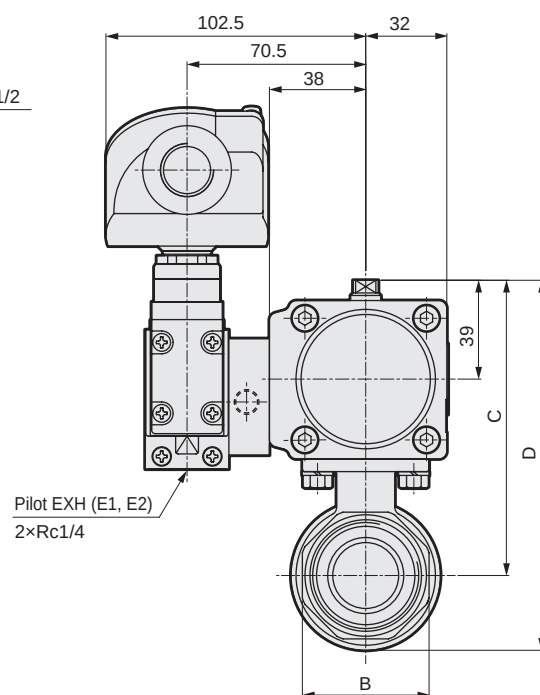
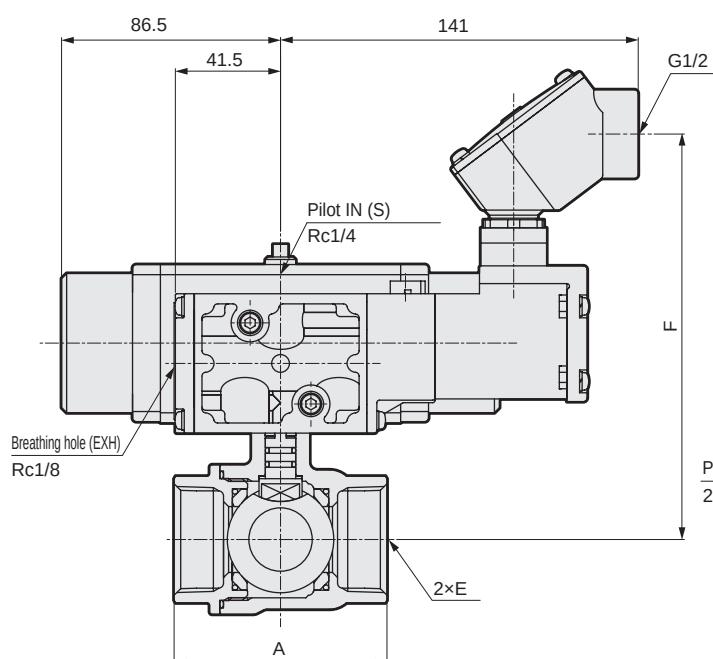
● CHB-WX1-10/15/20



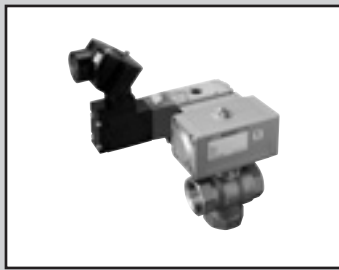
Model No.	A	B	C	D	E	F
CHB-WX1-10	56	28	91	107	Rc3/8	144
CHB-WX1-15	56	28	91	107	Rc1/2	144
CHB-WX1-20	65	34	97	117.5	Rc3/4	150



● CHB-WX1-25/32/40/50



Model No.	A	B	C	D	E	F
CHB-WX1-25	76	41	110	134	Rc1	153
CHB-WX1-32	84	50	116	145.5	Rc1 1/4	160
CHB-WX1-40	94	57	156.5	192	Rc1 1/2	194
CHB-WX1-50	108	70	165.5	206	Rc2	203



Air operated ball type 3-port solenoid valve
(Compact rotary valves)

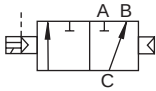
CHG-WV1, CHG-WX1 Series

● Port size: Rc1/2 to Rc2

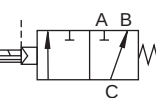


JIS symbol

● CHG-WV1 (Double acting - normally B-C path)



● CHG-WX1 (Single acting - normally B-C path)



Common specifications

Item	CHG-WV1	CHG-WX1
Actuation	With solenoid valve: Double acting	With solenoid valve: Single acting
Working fluid	Water/Air/Oil(500 mm ² /s or less) (*1)	
Working pressure MPa	0 to 1.0	
Proof pressure(water) MPa	2.0	
Fluid temperature °C	Water/Oil: 0 to 80 (no freezing) Air: -20 to 80 (no freezing) (*2)	
Ambient temperature °C	Fluoro rubber (E): -10 to 60, special fluoro rubber (F): -20 to 60	
Working environment	Indoors/outdoors	
Valve seat leakage cm ³ /min	0 (at initial water pressure 1 MPa)	
Mounting orientation	Vertical direction with the actuator on the top	
Frequency cycles/min.	1 or less	
Pressurization direction	Port C pressurization only	
Flow path shape	Multi-fluid type (90° Rotation switching method)	
Rotary actuator	Pilot fluid	Compressed air
	Lubrication	Not required (*3)
	Proof pressure(water) MPa	1.5
	Working pressure MPa	0.35 to 0.7
	Fluid temperature °C	5 to 60
	Port size	Rc1/4
	Ports S, E1, E2	
	EXH port	Rc1/8

Electrical specifications

Rated voltage		100 VAC (50/60Hz), 200 VAC (50/60Hz), 24 VDC
Starting current(A)	100 VAC	0.170/0.140 (50/60Hz)
	200 VAC	0.090/0.070 (50/60Hz)
	24 VDC	0.250
Holding current(A)	100 VAC	0.100/0.080 (50/60Hz)
	200 VAC	0.050/0.040 (50/60Hz)
	24 VDC	0.250
Power consumption(W)	100 VAC	5.0/4.0 (50/60Hz)
	200 VAC	5.0/4.0 (50/60Hz)
	24 VDC	6.0
Thermal class		Class 130 (B)
Degree of protection		IP65
Voltage fluctuation range		±10%

*1: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 500mm²/s or less within the temperature range being used. When exceeding 500 mm²/s, operation will become unstable.

*2: When using fluid: air at -20 to 80°C, select the special fluoro rubber (F).

*3: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Individual specifications

Item Model No.	Port size	Orifice size(mm)	Cv	Weight (kg)	
				Double acting	Single acting
CHG-WV1/WX1-15-	Rc1/2	10	3	2.2	2.3
CHG-WV1/WX1-20-	Rc3/4	14	6	2.4	2.5
CHG-WV1/WX1-25-	Rc1	19	11	2.6	3.5
CHG-WV1/WX1-32-	Rc1 1/4	23	16	3.4	3.9
CHG-WV1/WX1-40-	Rc1 1/2	30	28	3.9	6.1
CHG-WV1/WX1-50-	Rc2	38	47	4.8	7.0

How to order

CHG - W X1 - 15 - E B - S - AC200V

Model No.

A Warranty period

B Actuator

C Port size

D Body / rubber material

E Coil option

F Other options

G Voltage

Code	Description						
A Warranty period							
W	1 year after delivery						
WG	3 years after delivery *1, *2 (with inspection certificate, inspection guidelines, traceability system diagram)						
B Actuator							
V1	Double acting, normally B-C path						
X1	Single acting, normally B-C path						
C Port size							
15	Rc1/2						
20	Rc3/4						
25	Rc1						
32	Rc1 1/4						
40	Rc1 1/2						
50	Rc2						
D Body / rubber material							
	<table> <tr> <th>Body</th><th>Rubber</th></tr> <tr> <td>E</td><td>Fluoro rubber *3</td></tr> <tr> <td>F</td><td>Special fluoro rubber *3</td></tr> </table>	Body	Rubber	E	Fluoro rubber *3	F	Special fluoro rubber *3
Body	Rubber						
E	Fluoro rubber *3						
F	Special fluoro rubber *3						
E Coil option							
B	Round terminal box (G 1/2)						
BL	Round terminal box with lamp (G 1/2)						
F Other options							
Blank	No						
S	Silencer *4						
G Voltage							
AC100V	100 VAC 50/60 Hz, 110 VAC 60 Hz						
AC200V	200 VAC 50/60 Hz and 220 VAC 60 Hz						
DC24V	24 VDC						

[Example of model No.]

CHG-WX1-15-EB-S-AC200V

Model: CHG

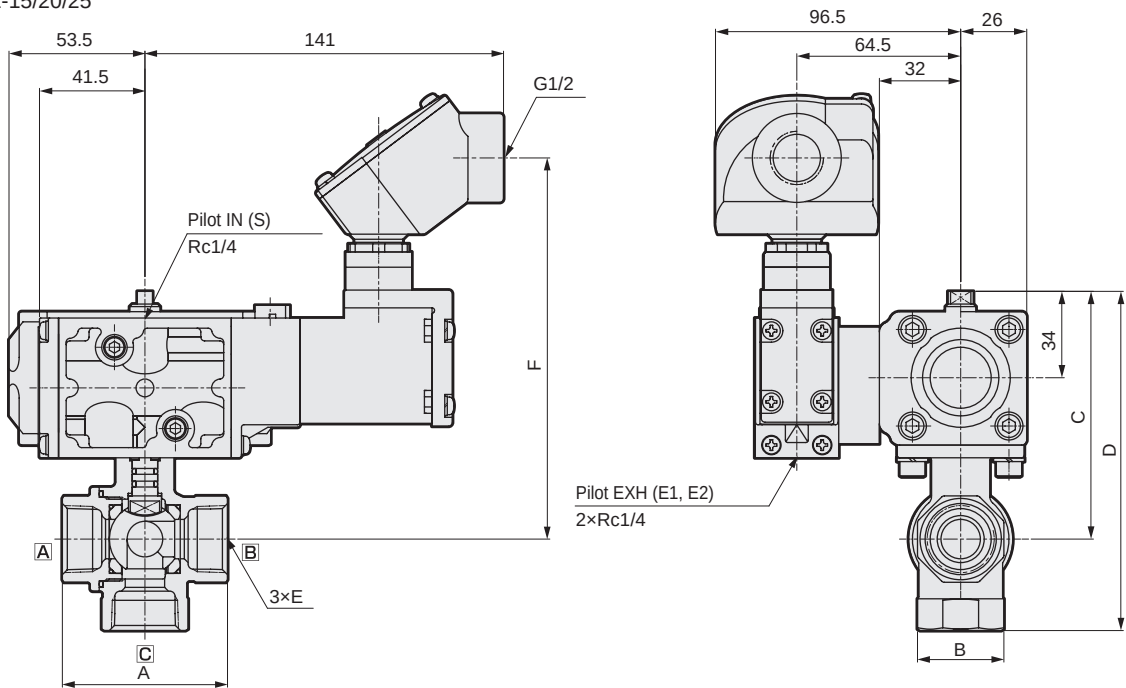
- A** Warranty period : 1 year after delivery
- B** Actuator : Single acting, normally B-C path
- C** Port size : Rc1/2
- D** Body material : Stainless steel
- E** Coil option : With round terminal box
- F** Other options : With 1 silencer
- G** Voltage : 200 VAC 50/60Hz. 220 VAC 60Hz

⚠ Precautions for model No. selection

- *1: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.
- *2: For option WG, the specifications and drawings must be exchanged. Refer to page 101 for details.
- *3: For option E, the ambient temperature is -10°C to 60°C.
With option F, the ambient temperature is -20°C to 60°C.
- *4: Two CKD SL-8A-W are included with **B** WV1, and one is included with **B** WX1.

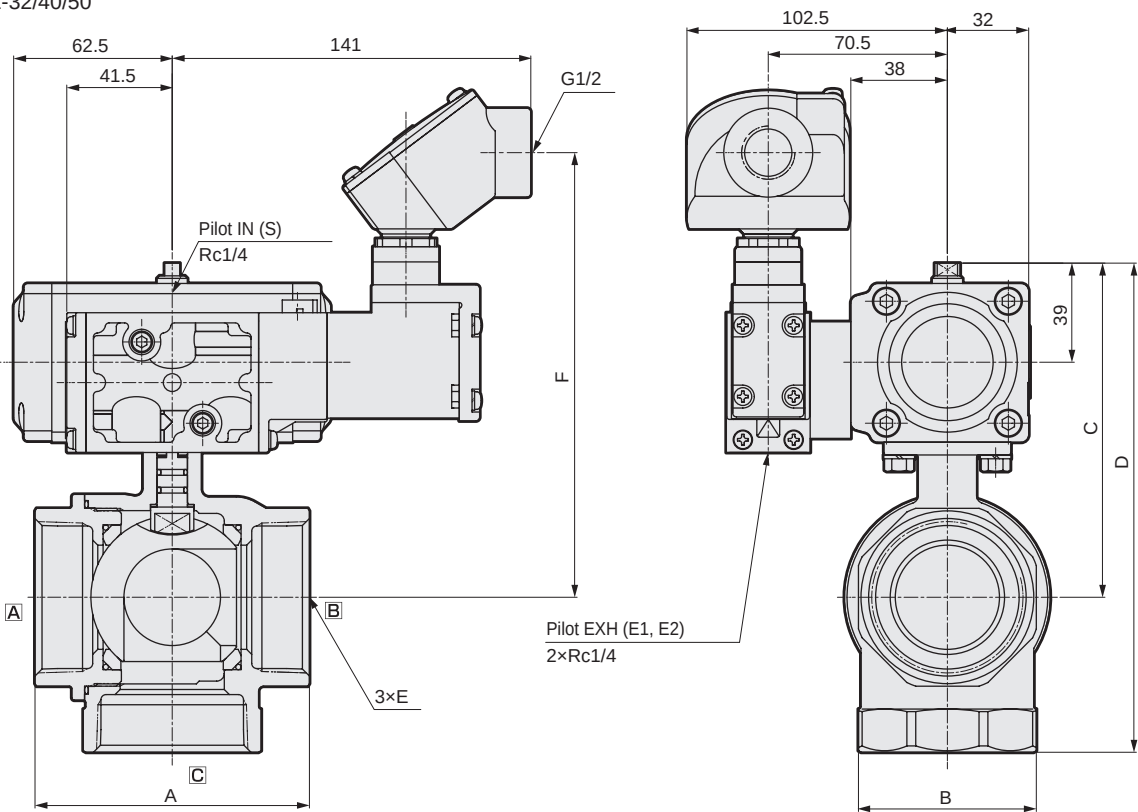
Dimensions: CHG-WV1 Series

● CHG-WV1-15/20/25



Model No.	A	B	C	D	E	F
CHG-WV1-15	56	28	91	121	Rc1/2	144
CHG-WV1-20	65	34	97	133	Rc3/4	150
CHG-WV1-25	76	41	100	142	Rc1	153

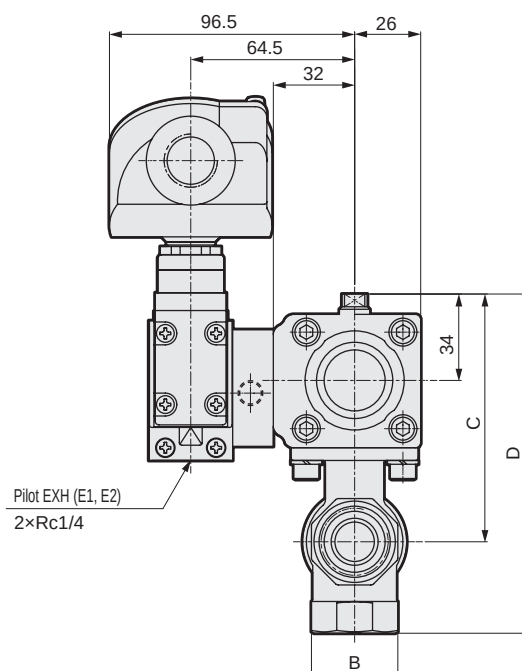
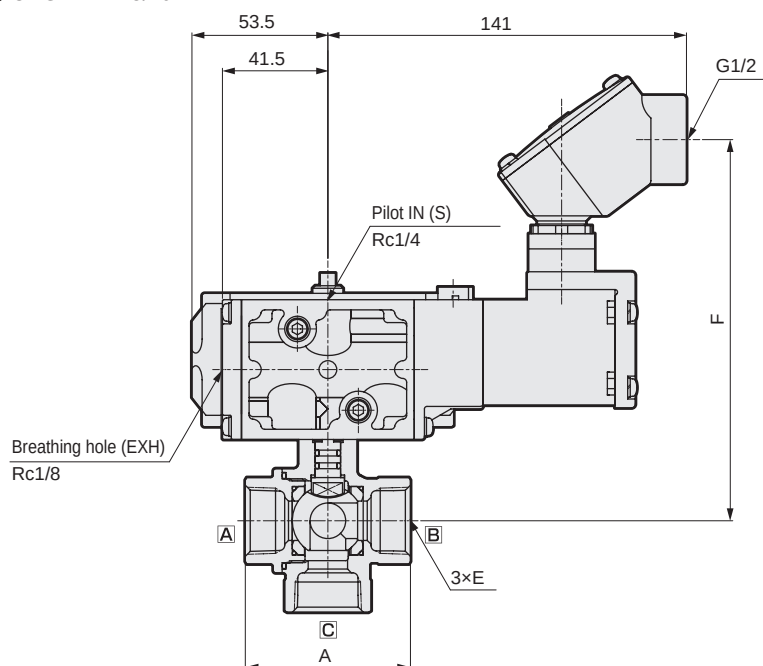
● CHG-WV1-32/40/50



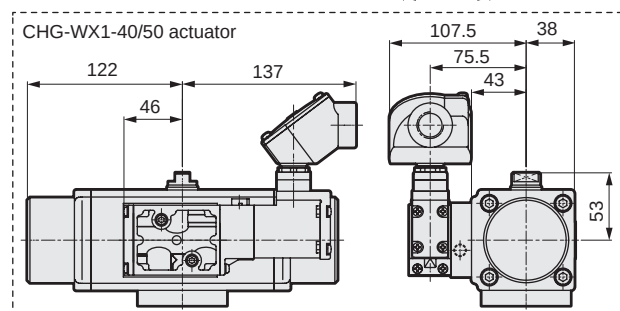
Model No.	A	B	C	D	E	F
CHG-WV1-32	84	50	116	163	Rc1 1/4	160
CHG-WV1-40	94	57	122	175	Rc1 1/2	166
CHG-WV1-50	108	70	131	192	Rc2	175

Dimensions CHG-WX1 Series

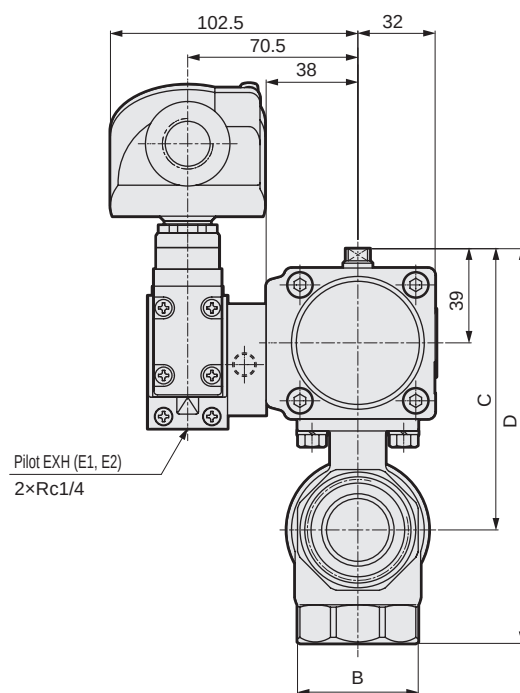
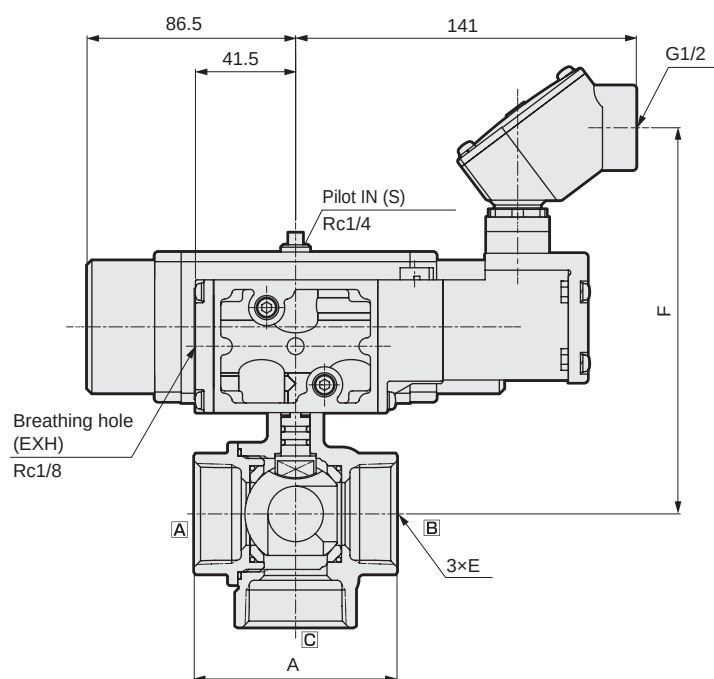
● CHG-WX1-15/20



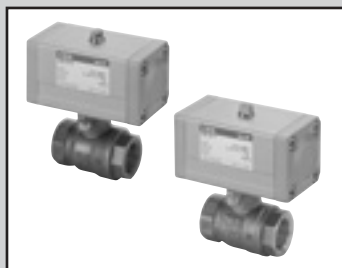
Model No.	A	B	C	D	E	F
CHG-WX1-15	56	28	91	121	Rc1/2	144
CHG-WX1-20	65	34	97	133	Rc3/4	150



● CHG-WX1-25/32/40/50



Model No.	A	B	C	D	E	F
CHG-WX1-25	76	41	110	152	Rc1	153
CHG-WX1-32	84	50	116	163	Rc1 1/4	160
CHG-WX1-40	94	57	156.5	209.5	Rc1 1/2	194
CHG-WX1-50	108	70	165.5	226.5	Rc2	203



Air operated 2-port ball valve
(Compact rotary valves)

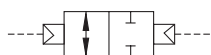
CSB-W, CSB-WR* Series

● Port size: Rc3/8 to Rc2



JIS symbol

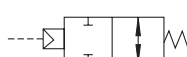
● CSB-W
(Double acting)



● CSB-WR1
(Single acting-NC)



● CSB-WR2
(Single acting-NO)



Common specifications

Item	CSB-W	CSB-WR*
Actuation	Air operated: Double acting	Air operated: Single acting
Working fluid	Steam/hot water	
Working pressure MPa	0 to 0.6	
Proof pressure(water) MPa	2.0	
Fluid temperature °C	0 to 164(no freezing)	
Ambient temperature°C	-10 to 60	
Working environment	Indoors/outdoors	
Valve seat leakagecm ³ /min	1 or less (at initial water pressure 0.6 MPa)	
Mounting orientation	Unrestricted	
Frequency cycles/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) MPa	1.5
	Working pressureMPa	0.35 to 0.7
	Fluid temperature°C	5 to 60
Port size	Rc1/8	

Individual specifications

Item	Model No.	Port size	Orifice size(mm)	Cv	Weight (kg)	
					Double acting	Single acting
Standard bore	CSB-W(R*)-10	Rc3/8	10	10	1.0	1.1
	CSB-W(R*)-15	Rc1/2	10	6	1.0	1.1
	CSB-W(R*)-20	Rc3/4	15	16	1.2	1.3
	CSB-W(R*)-25	Rc 1	20	29	1.3	2.2
	CSB-W(R*)-32	Rc1 ¹ / ₄	25	50	2.3	2.8
	CSB-W-40	Rc1 ¹ / ₂	32	98	2.7	-
	CSB-W-50	Rc 2	40	125	3.5	-

1: CSB- (WR) -10 is a full bore type.

*2: CSB (- WR *) -40/50 is not supported.

How to order

CSB - W R1 - 15 - W

Model No.

A Warranty period

B Actuator

C Port size
*3

D Body/seal material

Code	Description
A Warranty period	
W	1 year after delivery
WG	3 years after delivery *1, *2 (with inspection certificate, inspection guidelines, traceability system diagram)
B Actuator	
Blank	Double acting
R1	Single acting NC (normally closed)
R2	Single acting NO (normally open)
C Port size	
10	Rc 3/8
15	Rc 1/2
20	Rc 3/4
25	Rc 1
32	Rc 1 1/4
40	Rc 1 1/2
50	Rc 2
D Body/seal material	
W	Stainless steel - reinforced PTFE *3

[Example of model No.]

CSB-WR1-15-W

Model: CSB (standard bore)

- A** Warranty period : 1 year after delivery
- B** Actuator : Single acting NC (normally closed)
- C** Port size : Rc 1/2
- D** Body/seal material : stainless steel - reinforced PTFE

⚠ Precautions for model No. selection

*1: The warranty period of option WG is guaranteed for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.

*2: For option WG, the specifications and drawings must be exchanged. Refer to page 101 for details.

3: CSB-WR-40/50 is not supported.

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

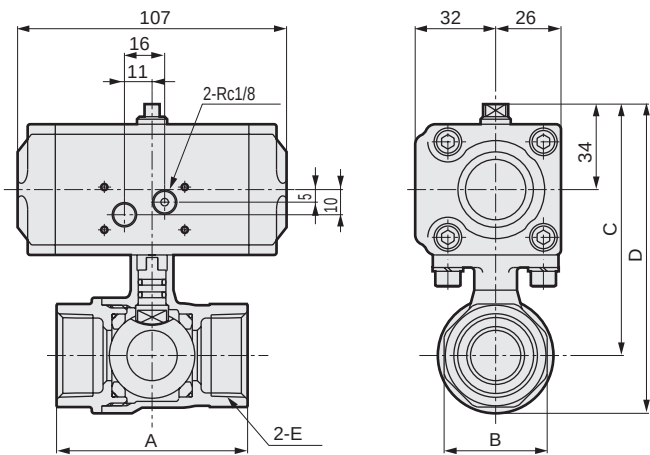
Related
products

Safety
precautions

CSB-W, CSB-WR* Series

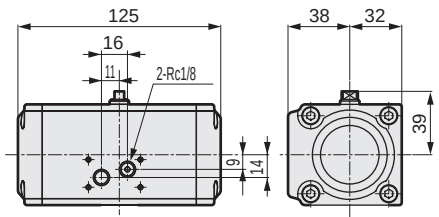
Dimensions: CSB-W Series

● CSB-W-10/15/20/25/32/40/50



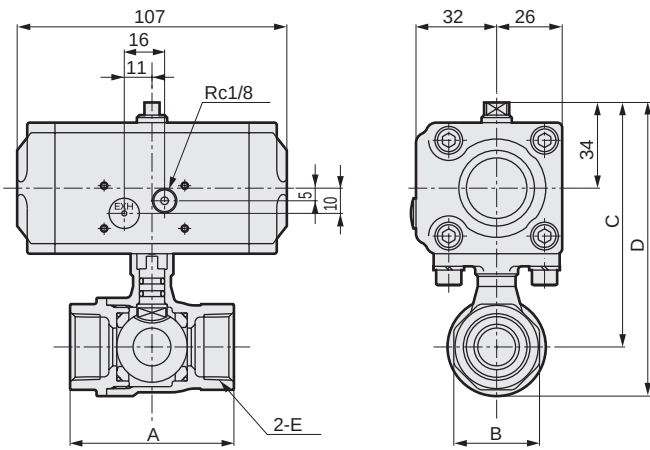
Model No.	A	B	C	D	E
CSB-W-10	56	28	91	107	Rc3/8
CSB-W-15	56	28	91	107	Rc1/2
CSB-W-20	65	34	97	117.5	Rc3/4
CSB-W-25	76	41	100	124	Rc 1
CSB-W-32	84	50	116	145.5	Rc1 ¹ / ₄
CSB-W-40	94	57	122	157.5	Rc1 ¹ / ₂
CSB-W-50	108	70	131	171.5	Rc 2

CSB-W-32/40/50 actuator



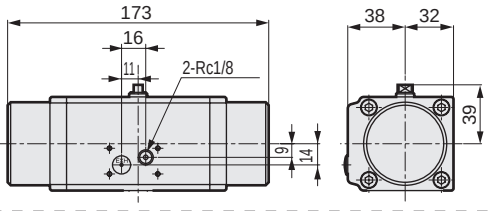
Dimensions: CSB-WR* Series

● CSB-WR*-10/15/20/25/32



Model No.	A	B	C	D	E
CSB-WR*-10	56	28	91	107	Rc3/8
CSB-WR*-15	56	28	91	107	Rc1/2
CSB-WR*-20	65	34	97	117.5	Rc3/4
CSB-WR*-25	76	41	110	134	Rc1
CSB-WR*-32	84	50	116	145.5	Rc1 ¹ / ₄

CSB-WR*-25/32 actuator



Drain separator F.R.L. unit	Pneumatic auxiliary components	Pneumatic valves	Fluid control valves	Pneumatic cylinders	Related products	Safety precautions
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Medium bore size cylinder
Double acting / Single rod outdoor type

SCA2 Series

● Bore size: ø40/ø50/ø63/ø80/ø100

JIS symbol



Specifications

Item		Description				
Bore size mm		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		-20 to 60 (no freezing) Note				
Port size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance mm		^{+0.9} ₀ (up to 360), ^{+1.4} ₀ (up to 800)				
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	16.6	20.6	23.6
Lubrication		Not available				
Allowable absorbed energy J	With cushion Note	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without a cushion, large energy generated by the external load cannot be absorbed. We recommend using an external shock absorber.				

Note: The temperature range of the cushion packing is -10 to 60°C. When using in a low-temperature environment, select the type without cushion and if necessary, use an external shock absorber.

Stroke

Bore size (mm)	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø40	25/50/75/100/150/200/250/300/350/400/450/500	600	1
ø50			
ø63		700	
ø80			
ø100		800	

*1: The custom strokes are available in 1 mm increments.

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when Stroke (S) = 0 mm			Per S = 100 mm Additional weight
	Basic (00)	Foot (LB)	Flange (FA, FB)	
ø40	0.92	1.04	1.28	0.39
ø50	1.29	1.49	1.73	0.46
ø63	1.69	2.01	2.73	0.50
ø80	2.88	3.48	4.60	0.90
ø100	4.48	5.25	7.08	1.12

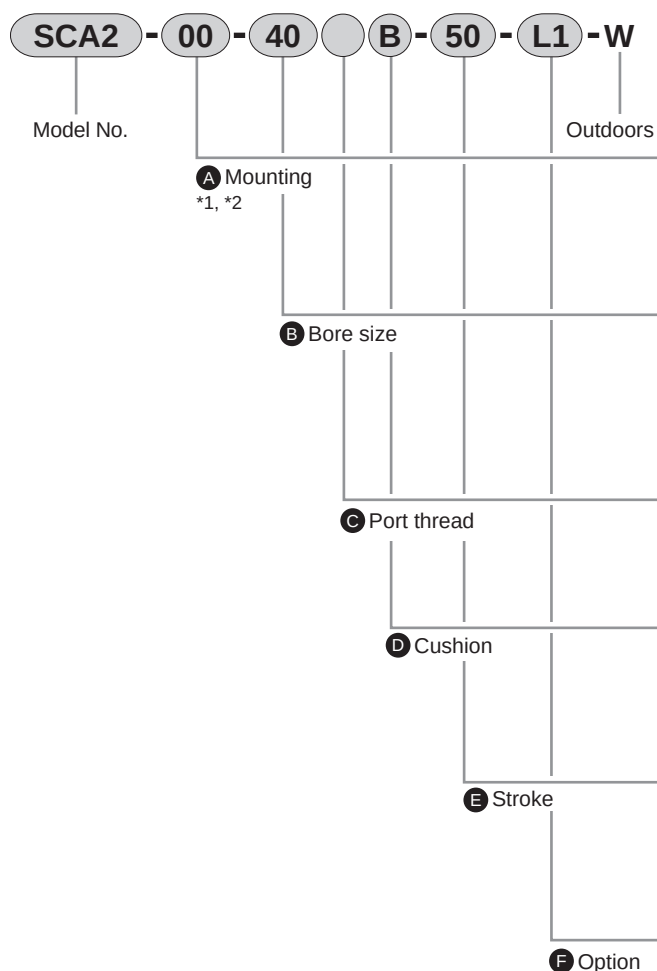
(Example) Product weight of SCA2-LB-50B-200-W ———— { Product weight for stroke 0 mm.....1.49 kg
Additional weight for 200 mm stroke..... 0.46x $\frac{200}{100}$ = 0.92 kg
Product weight.....1.49+0.92=2.41kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	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	Push	62.8	1.26 x 10 ²	1.88 x 10 ²	2.51 x 10 ²	3.77 x 10 ²	5.03 x 10 ²	6.28 x 10 ²	7.54 x 10 ²	8.80 x 10 ²	1.01 x 10 ³	1.13 x 10 ³	1.26 x 10 ³
	Pull	52.8	1.06 x 10 ²	1.58 x 10 ²	2.11 x 10 ²	3.17 x 10 ²	4.22 x 10 ²	5.28 x 10 ²	6.33 x 10 ²	7.39 x 10 ²	8.44 x 10 ²	9.50 x 10 ²	1.06 x 10 ³
ø50	Push	98.2	1.96 x 10 ²	2.95 x 10 ²	3.93 x 10 ²	5.89 x 10 ²	7.85 x 10 ²	9.82 x 10 ²	1.18 x 10 ³	1.37 x 10 ³	1.57 x 10 ³	1.77 x 10 ³	1.96 x 10 ³
	Pull	82.5	1.65 x 10 ²	2.47 x 10 ²	3.30 x 10 ²	4.95 x 10 ²	6.60 x 10 ²	8.25 x 10 ²	9.90 x 10 ²	1.15 x 10 ³	1.32 x 10 ³	1.48 x 10 ³	1.65 x 10 ³
ø63	Push	1.56 x 10 ²	3.12 x 10 ²	4.68 x 10 ²	6.23 x 10 ²	9.35 x 10 ²	1.25 x 10 ³	1.56 x 10 ³	1.87 x 10 ³	2.18 x 10 ³	2.49 x 10 ³	2.81 x 10 ³	3.12 x 10 ³
	Pull	1.40 x 10 ²	2.80 x 10 ²	4.20 x 10 ²	5.61 x 10 ²	8.41 x 10 ²	1.12 x 10 ³	1.40 x 10 ³	1.68 x 10 ³	1.96 x 10 ³	2.24 x 10 ³	2.52 x 10 ³	2.80 x 10 ³
ø80	Push	2.51 x 10 ²	5.03 x 10 ²	7.54 x 10 ²	1.01 x 10 ³	1.51 x 10 ³	2.01 x 10 ³	2.51 x 10 ³	3.02 x 10 ³	3.52 x 10 ³	4.02 x 10 ³	4.52 x 10 ³	5.03 x 10 ³
	Pull	2.27 x 10 ²	4.54 x 10 ²	6.80 x 10 ²	9.07 x 10 ²	1.36 x 10 ³	1.81 x 10 ³	2.27 x 10 ³	2.72 x 10 ³	3.17 x 10 ³	3.63 x 10 ³	4.08 x 10 ³	4.54 x 10 ³
ø100	Push	3.93 x 10 ²	7.85 x 10 ²	1.18 x 10 ³	1.57 x 10 ³	2.36 x 10 ³	3.14 x 10 ³	3.93 x 10 ³	4.71 x 10 ³	5.50 x 10 ³	6.28 x 10 ³	7.07 x 10 ³	7.85 x 10 ³
	Pull	3.57 x 10 ²	7.15 x 10 ²	1.07 x 10 ³	1.43 x 10 ³	2.14 x 10 ³	2.86 x 10 ³	3.57 x 10 ³	4.29 x 10 ³	5.00 x 10 ³	5.72 x 10 ³	6.43 x 10 ³	7.15 x 10 ³

How to order



Code		Description
A Mounting		
00	Basic *3	
LB	Axial foot	
FA	Rod side flange	
FB	Head side flange	
B Bore size (mm)		
40	ø40	
50	ø50	
63	ø63	
80	ø80	
100	ø100	
C Port thread		
Blank	Rc thread	
N	NPT thread (made to order)	
G	G thread (made-to-order product)	
D Cushion		
B	Both sides cushioned	
R	Rod side cushioned	
H	Head side cushioned	
N	Without cushion	
E Stroke (mm)		
Bore size	Stroke	Custom Stroke
ø40 to ø63	1 to 600	In 1 mm increments
ø80	1 to 700	
ø100	1 to 800	
F Option		
L1	With silicone bellows (external metal ring stainless steel) Max. ambient temperature: 250°C / instantaneous max. temperature: 400°C	
Blank	Cushion needle position R (standard)	
S	Cushion needle position S	
T	Cushion needle position T	

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped assembled with the product.

*2: Consult with CKD for mounting type for oscillation.

*3: For 00 mounting, remove the hexagon socket button head bolt and plain washer of the round nut screw hole used for cylinder assembly.

[Example of model No.]

SCA2-LB-40B-100-L1-W

Model: Medium bore size cylinder, double acting/single rod

- A** Mounting : Axial foot
- B** Bore size : ø40 mm
- C** Port thread : Rc thread
- D** Cushion : Both sides cushioned
- E** Stroke : 100mm
- F** Option : With the silicone bellows, Max. ambient temperature: 250 °C

Internal structure and parts list

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

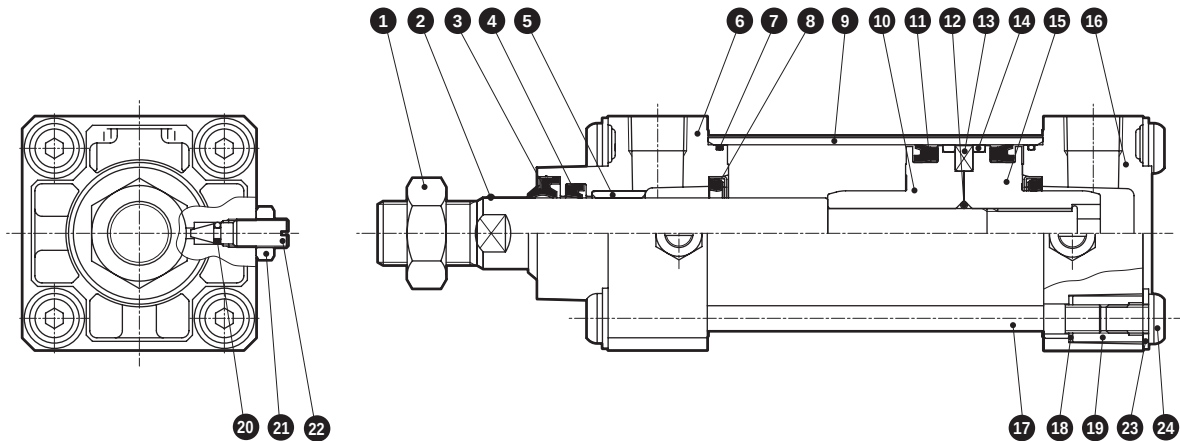
Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Part No.	Part name	Material	Remarks	Part No.	Part name	Material	Remarks
1	Rod nut	Stainless steel		13	Magnet	Plastic	
2	Piston rod	Stainless steel	Industrial chrome plating	14	Wear ring	Polyacetal resin	
3	Scraper	Nitrile rubber		15	Piston H	Aluminum alloy die-casting	
4	Rod packing	Hydrogenated nitrile rubber		16	Head cover	Aluminum alloy die-casting	Painted
5	Bush	Oil-impregnated bearing alloy		17	Tie rod	Stainless steel	
6	Rod cover	Aluminum alloy die-casting	Painted	18	Conical spring washer	Steel	Black finish
7	Cylinder gasket	Nitrile rubber		19	Round nut	Steel	Zinc chromate
8	Cushion packing	Nitrile rubber/steel		20	Needle gasket	Nitrile rubber	
9	Cylinder tube	Aluminum alloy	Hard alumite	21	Needle nut	Copper alloy	Nickel plating
10	Piston R	Aluminum alloy die-casting		22	Cushion needle	Copper alloy	Nickel plating
11	Piston packing	Hydrogenated nitrile rubber		23	Flat washer	Stainless steel	
12	Piston gasket	Nitrile rubber		24	Hexagon socket button head bolt	Stainless steel	

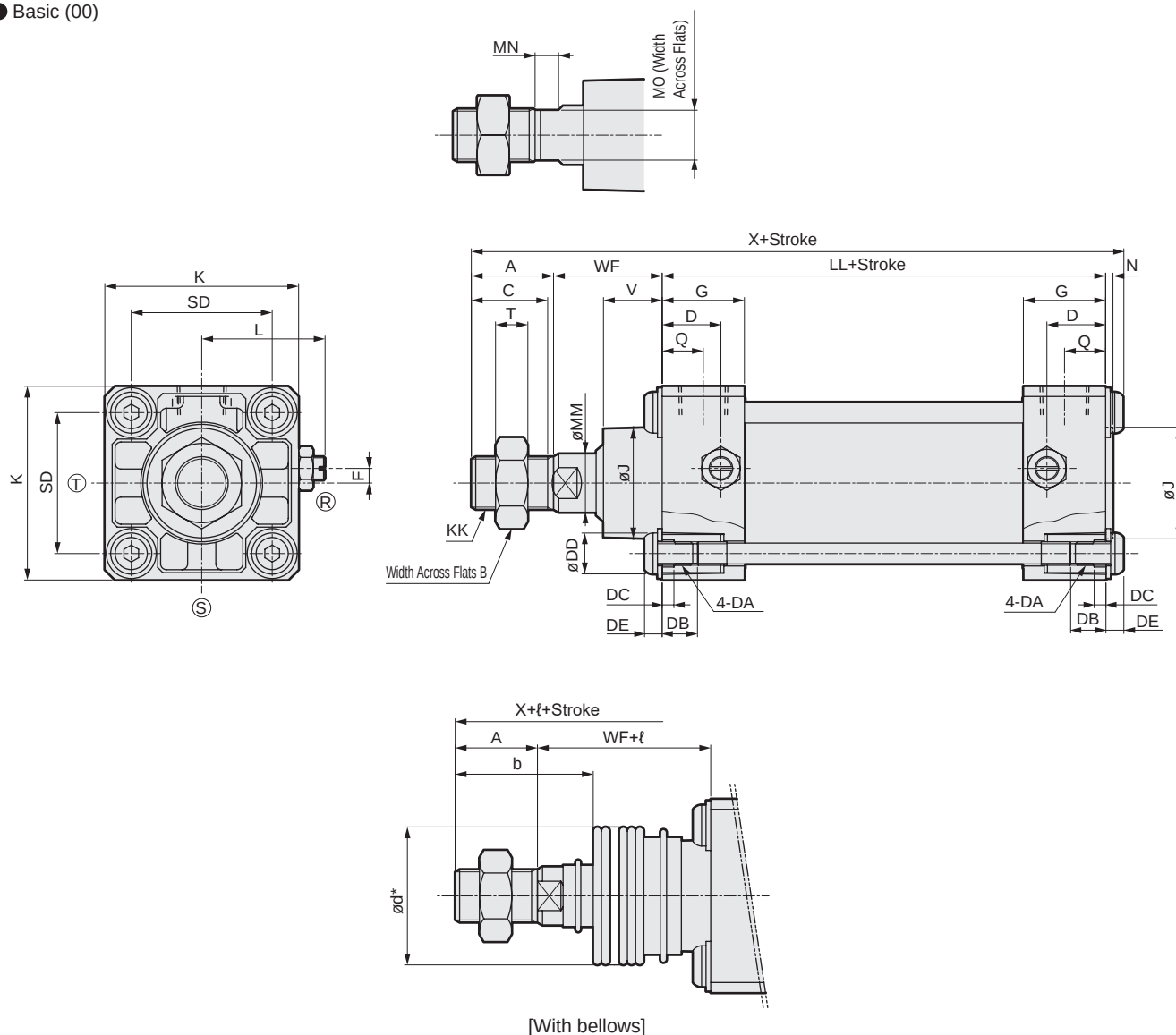
Consumable parts list

Bore size (mm)	Kit No.	Consumable parts No.
ø40	SCA2-40K-W	3 4 7 8 11 14 20
ø50	SCA2-50K-W	
ø63	SCA2-63K-W	
ø80	SCA2-80K-W	
ø100	SCA2-100K-W	

*1: Specify the kit No. when placing an order.

Dimensions

● Basic (00)



Code	Basic (00)																				
Bore size (mm)	A	B	C	D	DA	DB	DC	DD	DE	EE	F	G	J	K	KK	L	LL	MM	MN	MO	N
ø40	22	22	20	18	M8	12	4	14	6	Rc1/4	7.5	26	31	57	M 14 x 1.5	38 to 39.5	93	16	8	14	2
ø50	28	27	26	20	M8	12	4	14	6	Rc3/8	0	28	38	66	M 18 x 1.5	41 to 43.5	101	20	8	17	2.5
ø63	28	27	26	22	M8	12	4	14	6	Rc3/8	0	30	38	80	M 18 x 1.5	47.5 to 50.0	105	20	8	17	3
ø80	36	32	34	26	M12	16	5	21	9	Rc1/2	0	34	43	98	M 22 x 1.5	56 to 59	116	25	11	22	3.5
ø100	45	41	43	28	M12	16	5	21	9	Rc1/2	0	36	51	118	M 26 x 1.5	66 to 69	128	30	13	27	4

Code											With bellows									
Bore size (mm)	Q	SD	T	V	WF	X	b	d*	ℓ											
									50 or less	Over 50 to 100	Over 100 150 or less	Over 150 200 or less	Over 200 to 300	Over 300 to 400	Over 400 to 500	*1 Over 500				
ø40	13	40.5	8	17	33.5	154.5	41	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(stroke/3.0) + 8				
ø50	14	48	11	20	37	172	47	48	22	36	49	63	90	119	146	(stroke/3.6) + 7.5				
ø63	15	59	11	20.5	35	174	45	48	22	36	49	63	90	119	146	(stroke/3.6) + 7.5				
ø80	17	74	13	23	48	209	58.5	55	14	26	38	49	72	96	119	(stroke/4.3) + 2.5				
ø100	18	90	16	30.5	53	235	69.5	65	20	32	42	53	76	98	120	(stroke/4.5) + 9				

*1: ℓ dimensions should be rounded up to the nearest whole number.

*Installation dimensions of other mounting types are the same as those of the SCA2 (standard). Refer to the SCA2 (standard) Dimensions in "Pneumatic General Catalog (No. CB-029SA)".



Medium bore size cylinder
Double acting / Single rod outdoor type

SCS2 Series

● Bore size : $\phi 125/\phi 140/\phi 160/\phi 180/\phi 200/\phi 250$

JIS symbol



Specifications

Item		Description					
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		-20 to 60 (However, no freezing) Note					
Port size		Rc 1/2	Rc 3/4				Rc1
Stroke tolerance mm		^{+1.0} ₀ (to 300), ^{+1.4} ₀ (to 301)					
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 Note	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
without cushion, Cannot absorb high energy generated by an external load... Uses an external shock absorberthatRecommended.							

Note: The temperature range of the cushion packing is -5 to 60°C. When using in a low-temperature environment, select the type without cushion and if necessary, use an external shock absorber that Recommended.

Stroke

Bore size (mm)	Standard stroke (mm)	Max. Stroke(mm)	Min. stroke (mm)
ø125	50/ 75/ 100/ 150/ 200/ 250/ 300	800	1
ø140			
ø160		900	
ø180			
ø200		945	
ø250		751	

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

Cylinder weight

(Unit: kg)

Item/mounting Bore size (mm)	Product weight when stroke (S) = 0 mm			S=100mm Additional weight per
	Basic (00)	Axial foot (LB)	Flange (FA / FB)	
ø125	7.22	8.72	10.52	1.54
ø140	9.35	11.35	14.75	1.78
ø160	12.35	15.45	19.25	2.22
ø180	16.75	21.25	28.75	2.96
ø200	22.78	28.48	36.48	3.54
ø250	40.51	48.91	66.41	5.38

(Example) Product weight of SCS2-N-LB-125B-300-W

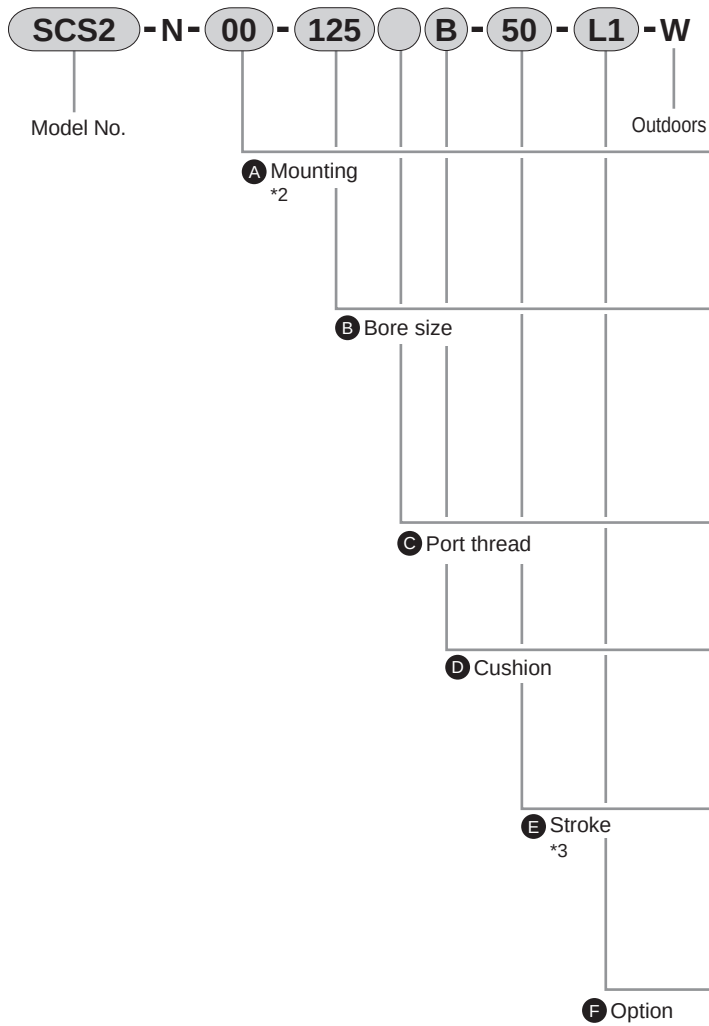
- Product weight for S = 0 mm stroke.....8.72 kg
- Additional weight for S = 300 mm stroke..... $1.54 \times \frac{300}{100} = 4.62$ kg
- Product weight8.72+4.62=13.34kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	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
$\phi 125$	Push	6.14×10^2	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	5.73×10^2	1.15×10^3	1.72×10^3	2.29×10^3	3.44×10^3	4.59×10^3	5.73×10^3	6.88×10^3	8.03×10^3	9.17×10^3	1.03×10^4	1.15×10^4
$\phi 140$	Push	7.70×10^2	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	7.29×10^2	1.46×10^3	2.19×10^3	2.92×10^3	4.38×10^3	5.84×10^3	7.29×10^3	8.75×10^3	1.02×10^4	1.17×10^4	1.31×10^4	1.46×10^4
$\phi 160$	Push	1.01×10^3	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	9.42×10^2	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
$\phi 180$	Push	1.27×10^3	2.54×10^3	3.82×10^3	5.09×10^3	7.63×10^3	1.02×10^4	1.27×10^4	1.53×10^4	1.78×10^4	2.04×10^4	2.29×10^4	2.54×10^4
	Pull	1.19×10^3	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
$\phi 200$	Push	1.57×10^3	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	1.47×10^3	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
$\phi 250$	Push	2.45×10^3	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	2.31×10^3	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

How to order



Code	Description	
A Mounting		
00	Basic	
LB	Axial foot	
FA	Rod side flange	
FB	Head side flange	
B Bore size (mm)		
125	ø125	
140	ø140	
160	ø160	
180	ø180	
200	ø200	
250	ø250	
C Port thread		
Blank	Rc thread	
N	NPT thread (made to order)	
G	G thread (made-to-order product)	
D Cushion		
B	Both sides cushioned	
R	Rod side cushioned	
H	Head side cushioned	
N	Without cushion	
E Stroke (mm)		
Bore size	Stroke	Custom Stroke
ø125 to ø160	1 to 800	In 1 mm increments
ø180	1 to 900	
ø200	1 to 945	
ø250	1 to 751	
F Option		
L1	With silicone bellows (external metal ring stainless steel) Max. ambient temperature: 250°C / instantaneous max. temperature: 400°C	
Blank	Cushion needle position (standard)	Standard TR S
R	Cushion needle position R	
S	Cushion needle position S	
T	Cushion needle position T	

Precautions for model No. selection

*1: Mounting bracket will be shipped assembled with the product.

*2: Consult with CKD for mounting type for oscillation.

*3: Outdoor type does not support class 2 pressure vessel.

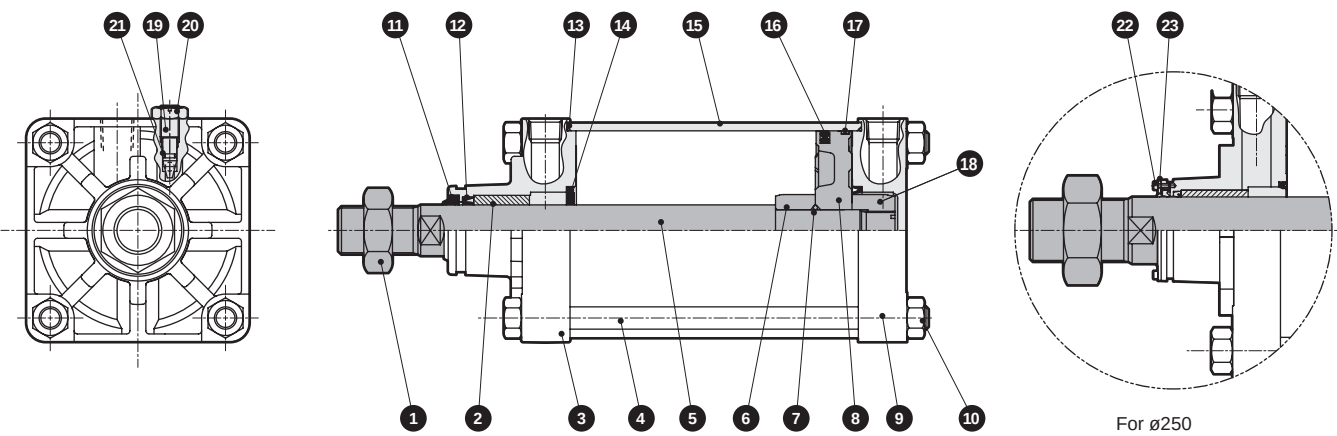
[Example of model No.]

SCS2-N-LB-125B-50-L1-W

Model: Medium bore size cylinder, double acting/single rod

- A** Mounting : Axial foot
B Bore size : Ø125 mm
C Port thread : Rc thread
D Cushion : Both sides cushioned
E Stroke : 50mm
F Option : With the silicone bellows, Max. ambient temperature: 250 °C

Internal structure and parts list



Note: The parts 14, 19, 20, and 21 are not required for the type without cushion.

Part No.	Part name	Material	Remarks	Part No.	Part name	Material	Remarks
1	Hexagon nut	Stainless steel		13	Cylinder gasket	Nitrile rubber	
2	Bush	Iron-copper oil impregnated bearing alloy		14	Cushion packing	Nitrile rubber/steel	
3	Rod cover	Aluminum alloy casting	Chromate	15	Cylinder tube	Aluminum alloy	Hard alumite
4	Tie rod	Stainless steel		16	Piston packing	Hydrogenated nitrile rubber	
5	Piston rod	Stainless steel	Industrial chrome plating	17	Wear ring	Polyacetal resin	
6	Cushion ring A	Steel	Zinc chromate	18	Cushion ring B	Steel	Zinc chromate
7	Piston gasket	Nitrile rubber		19	Cushion needle	Copper alloy	
8	Piston	Aluminum alloy casting		20	Hexagon nut	Stainless steel	
9	Head cover	Aluminum alloy casting	Chromate	21	Needle gasket	Nitrile rubber	
10	Hexagon nut	Stainless steel		22	Hexagon socket head cap screw	Stainless steel	ø250 only
11	Scraper	Nitrile rubber/steel		23	Retainer plate	Stainless steel	ø250 only
12	Rod packing	Hydrogenated nitrile rubber					

Consumable parts list

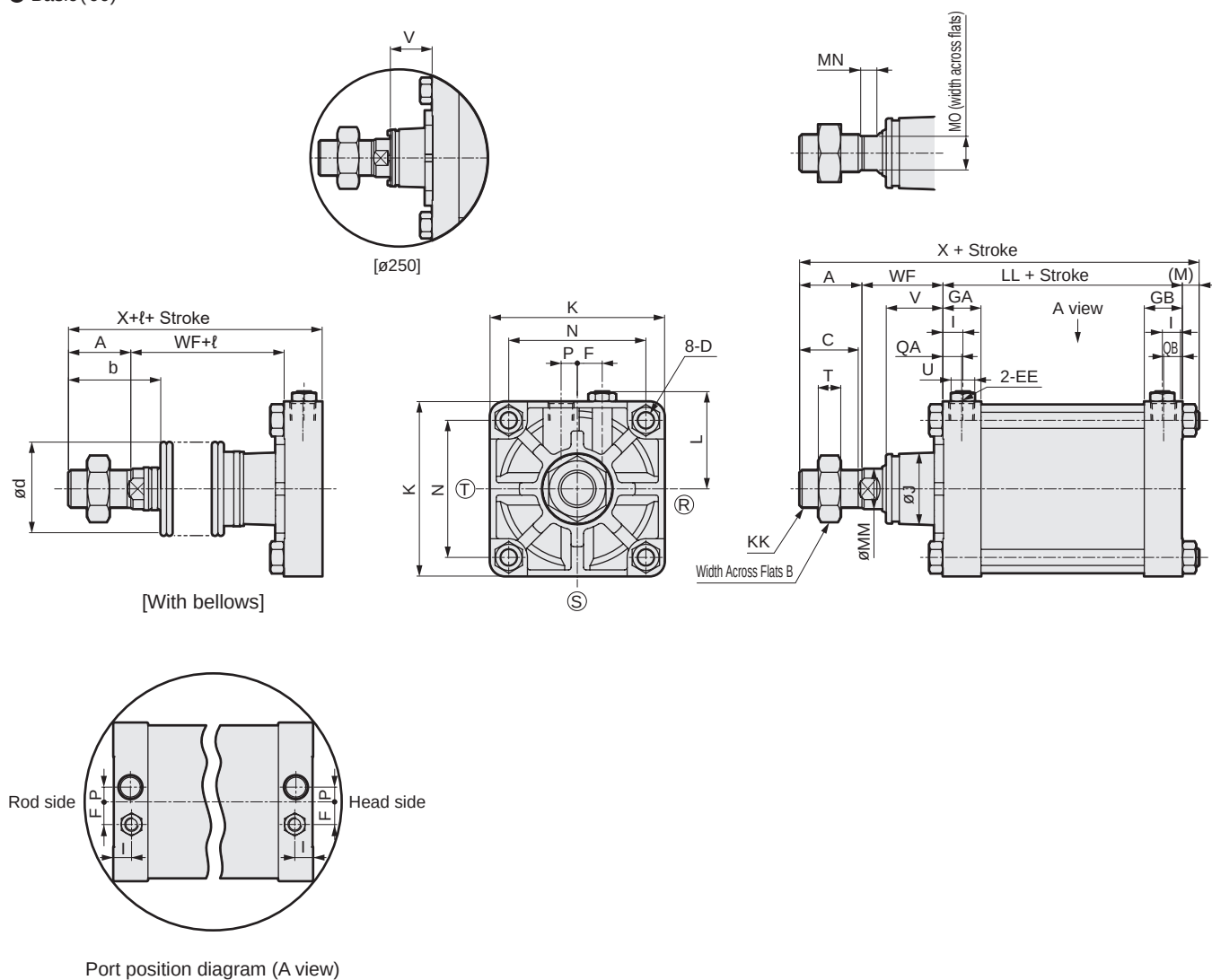
Bore size (mm)	Kit No.	Consumable parts No.
ø125	SCS2-N-125K-W	
ø140	SCS2-N-140K-W	
ø160	SCS2-N-160K-W	11 12 13 14 16 17
ø180	SCS2-N-180K-W	21
ø200	SCS2-N-200K-W	
ø250	SCS2-N-250K-W	

Dimensions

Same as double acting/rubber scraper SCS2-G. Refer to the SCS2-G dimensions in "Pneumatic Cylinders (No. CB-029SA)".

Dimensions

● Basic (00)



*1: (R) (S) (T) indicate the cushion needle position.

*2: ℓ dimensions below decimal point are rounded up.

Code	Basic (00) Basic dimensions																					
Bore size (mm)	A	B	C	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM	MN	MO	N	P	QA	QB
ø125	50	46	47	M 14 x 1.5	Rc1/2	30.5	30.5	20	16	57	140	M 30 x 1.5	78 to 82	92	13.5	32	13	27	110	13	15	15
ø140	50	46	47	M 14 x 1.5	Rc3/4	34.5	34.5	20	20	57	157	M 30 x 1.5	86.5 to 91	103	13.5	32	13	27	124	15	17	17
ø160	56	55	53	M 16 x 1.5	Rc3/4	34.5	34.5	24	20	62	177	M 36 x 1.5	96.5 to 101	106	15.5	40	15	36	142	15	17	17
ø180	63	60	60	M 18 x 1.5	Rc3/4	34.5	34.5	24	20	68	200	M 40 x 1.5	108 to 112	110	17.5	45	17	41	160	15	17	17
ø200	72	70	69	M 20 x 1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M 45 x 1.5	120.5 to 129	123	18.5	50	20	46	175	20	18	18
ø250	88	85	84	M 24 x 1.5	Rc1	42.5	42.5	24	20.5	93	274	M 56 x 2	147.5 to 156	141	21.5	60	22	55	216	22	21	21
Code						With bellows																
Bore size (mm)	T	U	V	WF	X	b	d	ℓ														
ø125	18	19	45.5	65	220.5	74	75	(Stroke/4.55) + 11														
ø140	18	19	45.5	67	233.5	74	75	(Stroke/4.55) + 9														
ø160	21	19	48	71	248.5	82	82	(Stroke/5.15) + 9														
ø180	24	19	53	78	268.5	91	91	(Stroke/5.15) + 9														
ø200	27	24	60	88	301.5	102	95	(Stroke/5.30) + 9														
ø250	34	24	67	94	344.5	120	120	(Stroke/6.40) + 9														



Main line filter

AF3000 Series**Outdoors**

Specifications

Item	AF3016 □-50	AF3032 □-80	AF3048 □-100	AF3064 □-100	AF3080 □-150	AF3096 □-150	AF3128 □-150	AF3160 □-200	AF3192 □-200	AF3256 □-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	0.07 to 1.0									
Proof pressure MPa	1.5									
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

□ indicates series name.

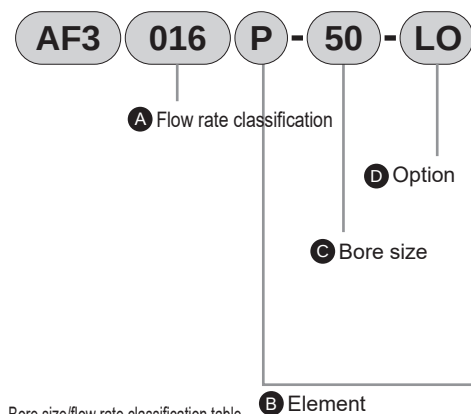
Item	P type	S type	M type	X type
Ambient temperature	5 to 60			
Filtration rating μm	3	0.3	0.01	Suction by activated carbon
Secondary side oil concentration mg/m ³	-	1.0 (inlet air 30°C)	0.1 (inlet air 30°C)	0.03 (inlet air 30°C)
Pressure drop	Initial MPa	Within 0.005	Within 0.01	Within 0.01
	Normal MPa	0.005 to 0.02	0.01 to 0.03	0.02 to 0.04
	Element replacement MPa	0.07	0.07	0.07
Differential pressure gauge	Standard (model No.: GA5102-S11)			
Drain discharger	Standard (model No.: 5100-4C-MG)			No

*1: Flange is 10K flange.

*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7MPa.

*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

How to order



Bore size/flow rate classification table

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", an air inlet is provided on the right port, with an air outlet provided on the left port.

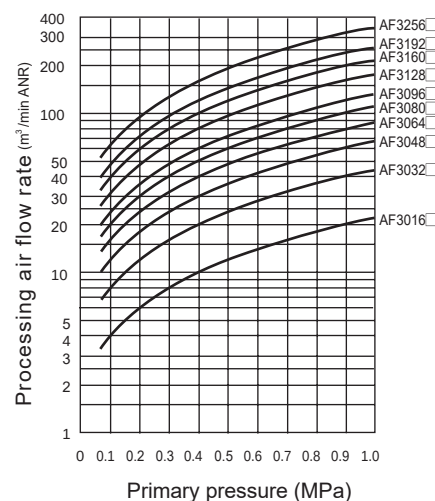
*2: Available for AF3032□ to AF3256□.

*3: When ordering several options, indicate the required options in alphabetical order.

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

Code	Description
A Flow rate classification	
016	16m ³ /min (ANR)
032	32m ³ /min (ANR)
048	48m ³ /min (ANR)
064	64m ³ /min (ANR)
080	80m ³ /min (ANR)
096	96m ³ /min (ANR)
128	128m ³ /min (ANR)
160	160m ³ /min (ANR)
192	192m ³ /min (ANR)
256	256m ³ /min (ANR)
B Element	
P	P Series (pre-filter)
S	S Series (oil removing filter)
M	M Series (high-performance oil removing filter)
X	X Series (activated carbon filter)
C Bore size	
Refer to the bore size/flow rate classification table on the left.	
D Option	
Blank	None
H	English language specifications
K	Companion flange included
L	Foundation bolt/nut included (*2)
L1	Stainless steel foundation bolt/nut included (*2)
O	Outdoors
X1	IN/OUT reverse direction (*1)
Y2	Product photo

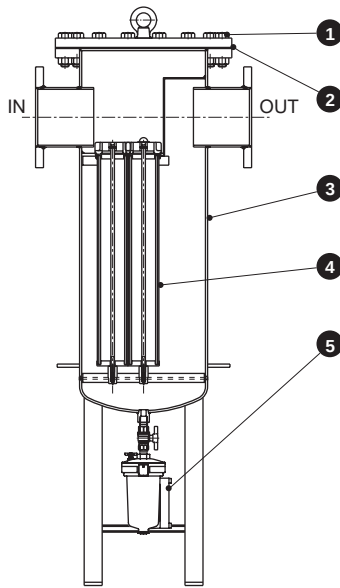
Flow characteristics



Note on selection

- Never use model numbers found to be below the point of intersection of the selection conditions.
- 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.
- Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.

Internal structure and parts list



Parts list

* Consumable parts

No.	Part name	Material
1	Upper flange	SS400
2	* Gasket	NBR
3	Body	SS400
4	* Element kit	PP, NBR, etc.
5	* Drain discharger	ZDC, PC, etc.

The drain discharger and stop valve are included.

Consumable parts model No.

Flow rate class m ³ /min (ANR)	2 Gasket	4 Element kit	5 Drain discharger
16	AF3016P-GASKET	AF3016 □-ELEMENT-KIT	5100-4C -MG
32	AF3032P-GASKET	AF3032 □-ELEMENT-KIT	
48	AF3048P-GASKET	AF3048 □-ELEMENT-KIT	
64	AF3064P-GASKET	AF3064 □-ELEMENT-KIT	
80	AF3080P-GASKET	AF3080 □-ELEMENT-KIT	
96	AF3096P-GASKET	AF3096 □-ELEMENT-KIT	
128	AF3128P-GASKET	AF3128 □-ELEMENT-KIT	
160	AF3160P-GASKET	AF3160 □-ELEMENT-KIT	
192	AF3192P-GASKET	AF3192 □-ELEMENT-KIT	
256	AF3256P-GASKET	AF3256 □-ELEMENT-KIT	

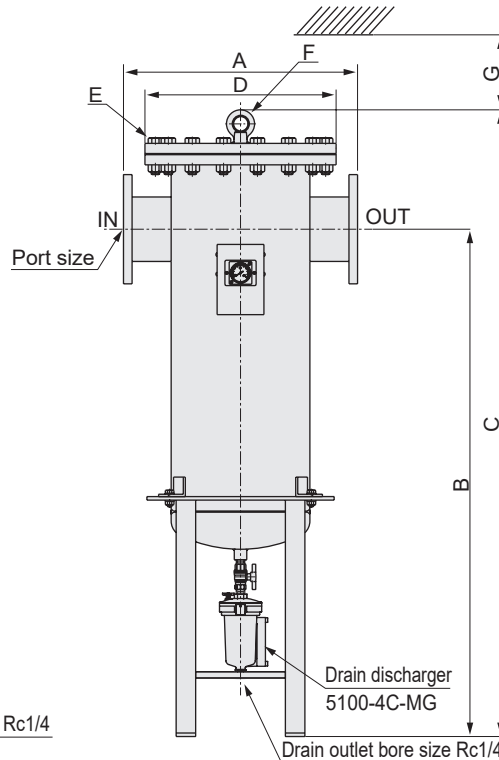
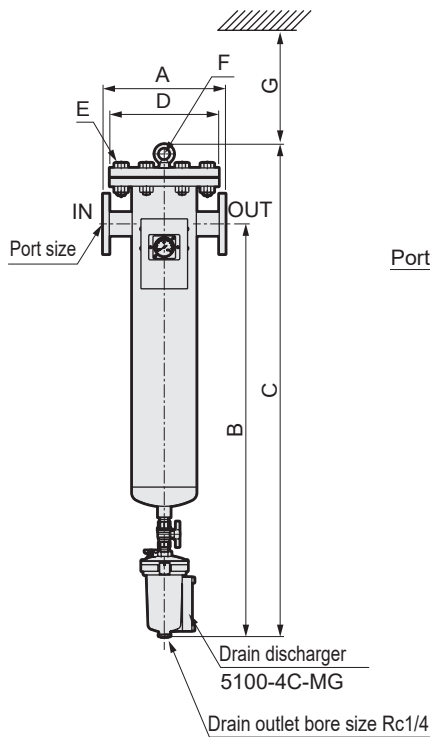
Element quantity is indicated in (). □ indicates series name.

Dimensions

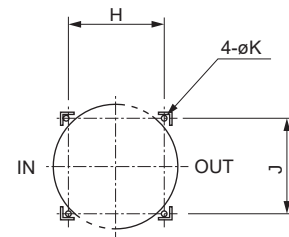


● AF3016□

● AF3032□ to 3256□



● Installation legs foundation bolt hole dimension



The drain discharger and stop valve cannot be mounted on the X Series.

Model No.	Port size	A	B	C	D	E	F	G
AF3016 □-50	Flange 2B	315	1045	1250	280	8-M20×70	M12	600
AF3032 □-80	Flange 3B	500	1255	1495	400	12-M22×80	M12	600
AF3048 □-100	Flange 4B	500	1255	1495	400	12-M22×80	M12	600
AF3064 □-100	Flange 4B	550	1270	1522	445	16-M22×80	M16	600
AF3080 □-150	Flange 6B	600	1300	1606	490	16-M22×80	M20	600
AF3096 □-150	Flange 6B	650	1320	1630	560	16-M24×90	M20	600
AF3128 □-150	Flange 6B	700	1350	1693	620	20-M24×90	M20	600
AF3160 □-200	Flange 8B	700	1350	1693	620	20-M24×90	M20	600
AF3192 □-200	Flange 8B	750	1360	1709	675	20-M24×100	M20	600
AF3256 □-200	Flange 8B	850	1400	1786	745	20-M30×110	M24	600

□ indicates series name.

Model No.	H	J	K
AF3032 □-80	210	210	φ15
AF3048 □-100	210	210	φ15
AF3064 □-100	250	250	φ15
AF3080 □-150	280	280	φ15
AF3096 □-150	320	320	φ15
AF3128 □-150	350	350	φ15
AF3160 □-200	350	350	φ15
AF3192 □-200	400	400	φ15
AF3256 □-200	450	450	φ15



Main line filter

AF5000 Series

Outdoors

Specifications

Item	AF5016 □ -50	AF5032 □ -80	AF5048 □ -100	AF5064 □ -100	AF5080 □ -150	AF5096 □ -150	AF5128 □ -150	AF5160 □ -200	AF5192 □ -200	AF5256 □ -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									
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

□ indicates series name.

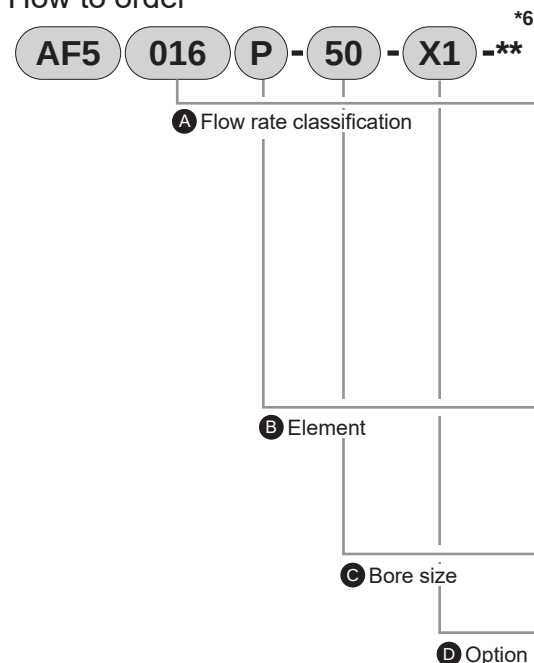
Item	P type	S type	M type	X type
Ambient temperature	5 to 60			5 to 30
Filtration rating μm	3	0.3	0.01	Suction by activated carbon
Secondary side oil concentration mg/m ³	-	0.5 (inlet air 21°C)	0.01 (inlet air 21°C)	0.003 (inlet air 21°C)
Pressure drop	Initial MPa	Within 0.005	Within 0.007	Within 0.01
	Normal MPa	0.01	0.014	0.02
	Element replacement MPa	0.035	0.035	0.035
Differential pressure gauge	Standard (model No.: GA5102-S11)			No
Drain discharger	Standard (model No.: 5100-4C-MG)			No

*1: Flange is 10K flange.

*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7MPa.

*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

How to order



Code	Description
A Flow rate classification	
016	16m ³ /min (ANR)
032	32m ³ /min (ANR)
048	48m ³ /min (ANR)
064	64m ³ /min (ANR)
080	80m ³ /min (ANR)
096	96m ³ /min (ANR)
128	128m ³ /min (ANR)
160	160m ³ /min (ANR)
192	192m ³ /min (ANR)
256	256m ³ /min (ANR)

B Element	
P	P Series (pre-filter)
S	S Series (oil removing filter)
M	M Series (high-performance oil removing filter)
X	X Series (activated carbon filter)

C Bore size	
Refer to the bore size/flow rate classification table to the lower left.	

D Option	
Blank	Standard product
E	Without drain discharger
K	Companion flange included
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

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	0.85
0.6	0.93
0.7	1.0
0.8	1.07
0.9	1.13
1.0	1.2

If working pressure is other than 0.7 MPa, multiply processing air flow rate by the above coefficient.

⚠ Precautions for model No. selection

*1: "L" "L1" corresponds to AF5032□ to AF5256□.

*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, 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 product. Contact CKD Sales for details.

*6: Contact CKD for model Nos.

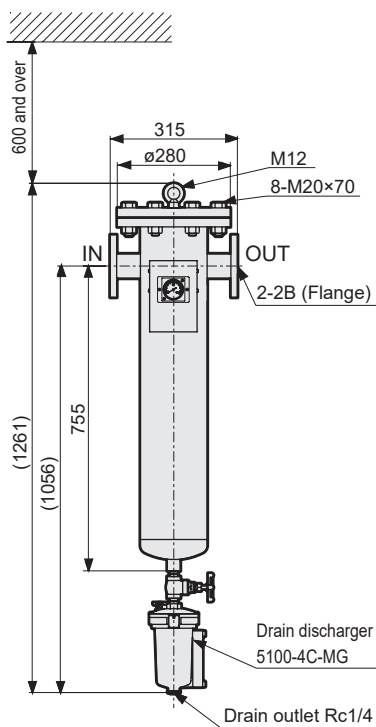
Bore size/flow rate classification table

Bore size		016	032	048	064	080	096	128	160	192	256
Flow rate classification											
50	Flange 2 B	●									
80	Flange 3 B		●								
100	Flange 4 B			●	●						
150	Flange 6 B					●	●	●			
200	Flange 8 B								●	●	●

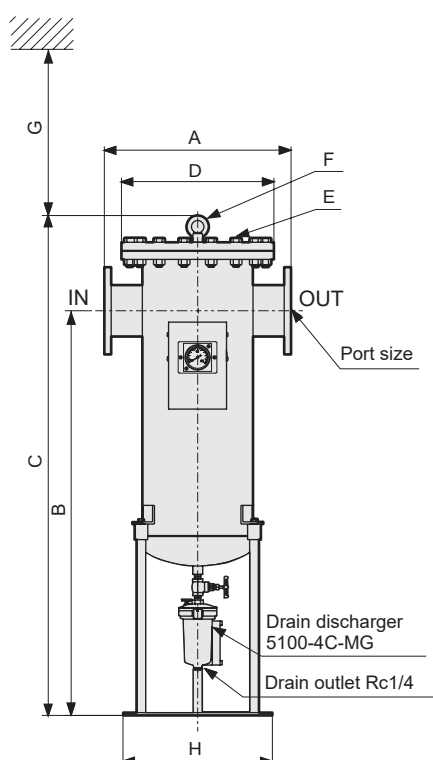
Dimensions



● AF5016□

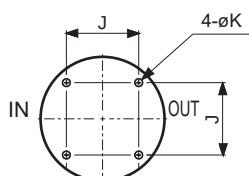


● AF5032□ to AF5256□



The X type does not have a differential pressure gauge.

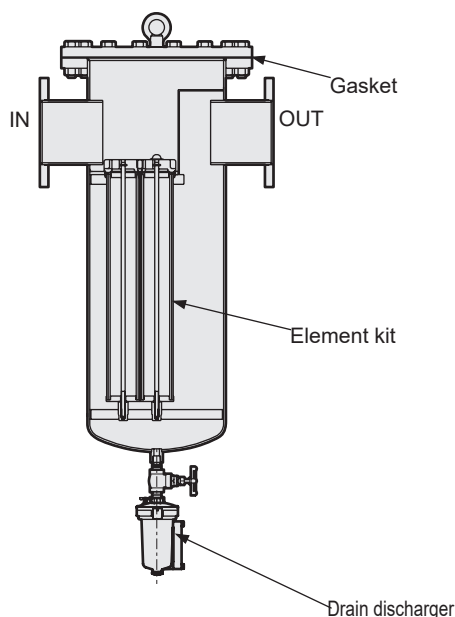
● Foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G	H	J	K
AF5032 □-80	Flange 3B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5048 □-100	Flange 4B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5064 □-100	Flange 4B	550	1270	1522	ø445	16-M22×80	M16	600	ø440	250	ø15
AF5080 □-150	Flange 6B	600	1300	1606	ø490	16-M22×80	M20	600	ø480	280	ø15
AF5096 □-150	Flange 6B	650	1320	1630	ø560	16-M24×90	M20	600	ø540	320	ø15
AF5128 □-150	Flange 6B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5160 □-200	Flange 8B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5192 □-200	Flange 8B	750	1360	1709	ø675	20-M24×100	M20	600	ø670	400	ø15
AF5256 □-200	Flange 8B	850	1400	1786	ø745	20-M30×110	M24	600	ø730	450	ø15

□ indicates series name.

Consumable parts list



● Ordering method

Flow rate classification m ³ /min (ANR)	Gasket	Element kit	Drain discharger
16	AF5016P-GASKET	AF5016 □-ELEMENT-KIT	5100-4C-MG
32	AF5032P-GASKET	AF5032 □-ELEMENT-KIT	
48	AF5048P-GASKET	AF5048 □-ELEMENT-KIT	
64	AF5064P-GASKET	AF5064 □-ELEMENT-KIT	
80	AF5080P-GASKET	AF5080 □-ELEMENT-KIT	
96	AF5096P-GASKET	AF5096 □-ELEMENT-KIT	
128	AF5128P-GASKET	AF5128 □-ELEMENT-KIT	
160	AF5160P-GASKET	AF5160 □-ELEMENT-KIT	
192	AF5192P-GASKET	AF5192 □-ELEMENT-KIT	
256	AF5256P-GASKET	AF5256 □-ELEMENT-KIT	

□ indicates series name. The drain discharger and differential pressure gauge are not included on the X type.

Made-to-order product

Xeroaqua GX5255D, GX5275D and GT9000(D) Series

- Stainless steel heat exchanger compatible with oil-free air
- IP03-equivalent weather resistance
- Compatible with high temperature environments (ambient temperature 48°C) (GX5255D, GX5275D, GT9075D to GT9190D)
- Energy-saving operation with 50% decreased power by limiting the number of refrigerant systems (GT9300(W) to GT9450(W))
- Energy-saving operation with 60% decreased power through inverter control (GT9710WV2, GT9960WV2)
- Easy maintenance
- Universal installation in any area
- Contact CKD for model No.





Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.

It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.

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.)
 - ①** 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.
 - ②** 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 device design and control, etc. ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components) 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.
 - ①** Inspect and service the machine and devices after confirming safety of all systems related to this product.
 - ②** Note that there may be hot or charged sections even after operation is stopped.
 - ③** 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.
 - ④** 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 warnings and cautions in the following pages to prevent accidents.
- The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

⚠ DANGER: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning.

⚠ WARNING: If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.

⚠ CAUTION: When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation. Every item provides important information and must be observed.

Warranty

- 1** **Warranty period**
The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.
- 2** **Warranty coverage**
If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge. However, following failures are excluded from this warranty:
 - 1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
 - 2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
 - 3) Failure not caused by the product.
 - 4) Failure caused by use not intended for the product.
 - 5) Failure caused by modifications/alterations or repairs not carried out by CKD.
 - 6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
 - 7) Failure caused by acts of nature and disasters beyond control of CKD.
 The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
Note: For details on the durability and consumable parts, contact your nearest CKD sales office.
- 3** **Compatibility check**
The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.



Safety precautions

WP Series: Warning / Precautions

Be sure to read this section before use.

Refer to "Pneumatic, Vacuum and Auxiliary Components (CB-024SA)", "Pneumatic Valves (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

Product-specific cautions: FRL, drain separator, pressure gauge (Outdoor Series)

*For product-specific cautions other than those below, refer to Safety precautions for the FRL unit (modular design) and the FRL unit (compact design) in "Pneumatic and Auxiliary Components (No. CB-024SA)".

WARNING

■ Design/Consideration

- This product is for industrial use. Do not use for medical purposes, or in any equipment or circuit that concerns human life.
- Output pressure exceeding the regulator's set pressure value could result in damage or faulty operation of the secondary side devices. Be sure to install a safety device.

■ Working environment

- This product has outdoor specifications, but should not be used in the following environments.
 - When ambient temperature exceeds the specifications. (The product temperature is at risk of exceeding the ambient temperature when exposed to direct sunlight.)
 - When air freezes.
 - In atmospheres containing corrosive gases, liquids and chemicals.
 - Locations with vibration or impact.

■ Precautions for use in cold climates

- When using this product in a cold climate, take the necessary measures to prevent freezing. Freezing can cause leakage or operation failure. Conduct appropriate dew point management of air quality.

■ Use/Maintenance

- Do not disassemble the filter/regulator or regulator cover.

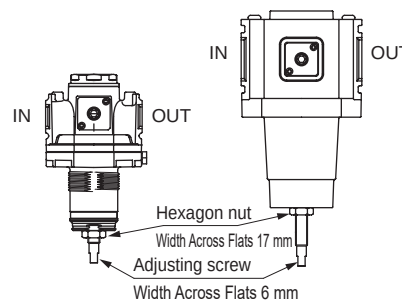
CAUTION

■ Use/Maintenance

- Except when adjusting the pressure, tighten the hex nut and secure the adjusting screw. (Use without tightening may lead to damage.)
- Do not apply a load to the product unless it is within the parameters of use. (Do not climb/step onto the product.)
- Using the regulator with the cover facing downward may cause the pressure regulation to fail due to freezing. Be especially careful in low-temperature environments.
- The set pressure changes from the initial set point due to the working environment and conditions, as well as aging of part materials. Check the pressure regularly, and reset if conditions have changed.
- Perform regular maintenance every six months to one year.
- Consumable parts (metal bowl assembly, valve assembly, bottom spring, element, the mantle assembly and O-ring) must be replaced every other year. Contact a CKD sales representative for details regarding consumable parts.
- When the set pressure is high, the operating force for rotating the adjusting screw (knob) will increase.

■ Working fluids

- Use only compressed air. Air containing corrosive gases, fluids or chemicals could result in improper pressure adjustment due to body damage or rubber deterioration.





Safety precautions

WP Series: Warning / Precautions

Be sure to read this section before use.

Refer to "Pneumatic, Vacuum and Auxiliary Components (CB-024SA)", "Pneumatic Valves (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

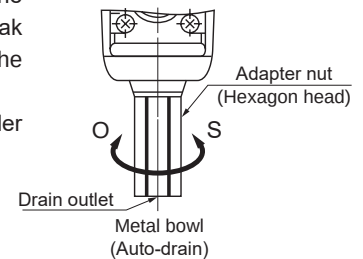
Product-specific cautions: FRL, drain separator, pressure gauge (Outdoor Series)

*For product-specific cautions other than those below, refer to Safety precautions for the FRL unit (modular design) and the FRL unit (compact design) in "Pneumatic and Auxiliary Components (No. CB-024SA)".

CAUTION

Other

- This product guarantees outdoor use, but not corrosion resistance (no rust or discoloration).
- Fix the hex side of the adaptor nut before screwing the fitting, etc., into the drain outlet of the auto-drain with metal cup. If the hex side of the adaptor nut is not fixed, the product may break due to excessive screw-in of the adaptor nut. When using the metal bowl with auto-drain, if the drain is piped with a tightening fitting, manual operation is not possible.
- Piston drain uses automatic discharge for intermittent flow. Drainage is not discharged under working conditions where air flows constantly.



3-year warranty after delivery (Option G)

When requesting the above options, CKD will prepare specifications with the following descriptions.

Please make a note of the start date of use, affix a seal, and return it to CKD. Indicate the start date of use within two years after delivery.

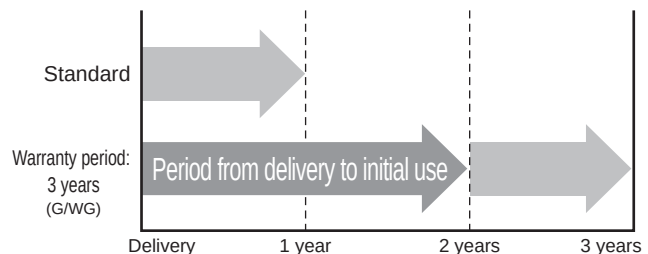
Expected start date: __/__/__/ Sign: _____

Warranty period:

A warranty for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.

* Please return it after the description of the scheduled date of use. Note that the 3-year warranty will not apply if there is no description or return.

* With inspection certificate, inspection guidelines, drawings, specifications, traceability system diagram



Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Safety precautions

WP Series: Warning / Precautions

Be sure to read this section before use.

Refer to "Pneumatic, Vacuum and Auxiliary Components (CB-024SA)", "Pneumatic Valves (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

Product-specific cautions: Silencer/Speed controller (Outdoor Series)

* For cautions other than those below, refer to Product-specific cautions of silencer/speed controller in "Pneumatic, Vacuum, Auxiliary Components (No. CB-C24SA)".



WARNING

■ Design/Consideration

- This product is for industrial use. Do not use for medical purposes, or in any equipment or circuit that concerns human life.

■ Working environment

- This product has outdoor specifications, but should not be used in the following environments.
 - When the ambient temperature and product temperature exceed the specifications.
(The product temperature is at risk of exceeding the ambient temperature when exposed to direct sunlight.)
 - When air freezes.
 - In atmospheres containing corrosive gases, liquids and chemicals.
 - locations with vibration or impact.

■ Precautions for use in cold climates

- When using this product in a cold climate, take the necessary measures to prevent freezing.
Freezing can cause leakage or operation failure. Conduct appropriate dew point management of air quality.

■ Use/maintenance

- Do not disassemble the speed controller.
- Do not install the exhaust outlet of the silencer facing upward.
Also, implement measures to prevent foreign matter, dust, and rainwater from entering the exhaust outlet.



CAUTION

■ Use/Maintenance

- Do not apply a load to the product unless it is within the parameters of use. (Do not climb/step onto the product.)
- Check that the C snap ring of the silencer does not pop off when removed or attached.
- Assemble the C snap ring of the silencer accurately when replacing the element.
Parts used inside could pop out and cause problems if assembly is not complete.
- Depending on the working status, the element could clog and reduce exhaust in the silencer.
Service, clean, and replace the element of the product regularly.

■ Working fluids

- Use only compressed air. Air containing corrosive gases, fluids, or chemicals could result in body damage or rubber deterioration.

■ Other

- This product guarantees outdoor use, but not corrosion resistance (no rust or discoloration).



Safety precautions

WP Series: Warning / Precautions

Be sure to read this section before use.

Refer to "Pneumatic, Vacuum and Auxiliary Components (CB-024SA)", "Pneumatic Valves (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

Product-specific cautions: Fluid control valves AB/G41, ADK11, ADK21-W, CHB/G-W (Outdoor Series), pneumatic valves 4F-W (Outdoor Series)

* For precautions other than the following, refer to Individual precautions AB, AG, ADK, CHB/G in "General Purpose Valves (No. CB-03-1SA)" and Individual precautions 4F in "General Purpose Valves (No. CB-023SA)".



WARNING

■ Design/Consideration

- This product is for industrial use. Do not use for medical purposes, or in any equipment or circuit that concerns human life.
- The W Series does not have explosion-proof certification, so it cannot be used in atmospheres requiring explosion-proofing.

■ Working environment

- This product has outdoor specifications, but should not be used in the following environments.
 - When the ambient temperature and product temperature exceed the specifications. (The product temperature is at risk of exceeding the ambient temperature when exposed to direct sunlight.)
 - When fluid freezes.
 - Corrosive gas / In atmospheres containing liquids, chemicals, and explosive gases.
 - Locations with vibration or impact.

■ Precautions for use in cold climates

- When using this product in a cold climate, take the necessary measures to prevent freezing. Freezing can cause leakage or operation failure. Conduct appropriate dew point management of air quality.



CAUTION

■ When piping (AB, AG, ADK-W Series, CHB/G-W Series)

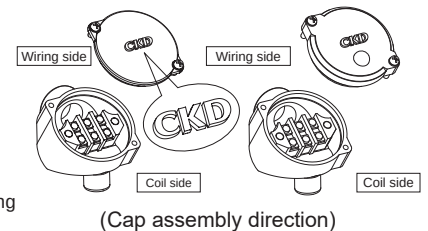
- 1) Precautions for implementing antifreezing measures
 - Take care not to interfere with heat dissipation at the coil.
 - The heat generated by the coil will increase, risking early deterioration or coil disconnection.

■ Wiring

- 1) Precautions for disassembly and assembly

● Precautions for assembly of cap

The cap must be assembled in a certain direction. When the cap is to be assembled after performing wiring work, etc., make sure to assemble the cap with attention to the assembly direction.
(In the figure to the right, align with the direction of the CKD logo mark)
When placed in the opposite direction, the cap cannot be assembled.



- 2) Wiring

- (1) Fasten crimp terminals to the electrical wiring and process the ends of the wires before installing them.

- * Use terminal thread of size M3 and a crimp terminal with an outer diameter of 7 mm or less.
- * The crimp terminals used should be sheathed terminals.

- (2) Tighten the screws with the following tightening torque.

- * Gap mounting screw tightening torque: 0.5 N·m.

- * Terminal screw tightening torque: 0.5 N·m.

- (3-1) When there are 2 lead wires wired from the terminal block of the coil.

- * Terminal box without lamp 3E (AB/G41, ADK11-W Series), B (CHB/G-W Series) terminal box 3L with lamp (AB/AG41, ADK11-W Series) has no polarity. Wire to the A terminal and C terminal on the terminal block.

- * Terminal box with lamp, BL (CHB/G-W Series)/ For DC voltage

If there is polarity, be careful while wiring.

Wire the ⊖ pole to the A terminal and the ⊕ pole to the C terminal on the terminal block.

- (The solenoid valve will operate even if the polarity is incorrect, but the lamp will not turn ON.)

- (3-2) When there are 3 lead wires wired from the terminal block of the coil. (*1)

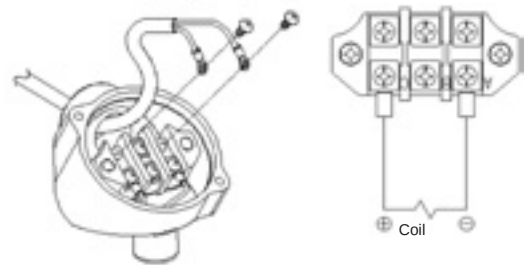
- * Terminal box 3E, 3L (ADK21-W Series) For, There is no polarity.

If the operating frequency is 50Hz, wire to the A terminal and C terminal on the terminal block.

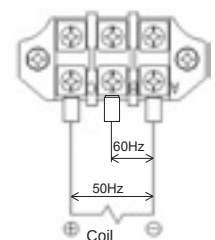
If the operating frequency is 60Hz, wire to the A terminal and B terminal on the terminal block.

- *1: 4F-W Series cannot have 3 wires.

- *2: It is recommended that you insert a fuse to the electrical circuit for safety and unit protection.



(Wiring method (for two lead wires))



(Wiring method (for three lead wires))

Drain separator
F.R.L. unit

Pneumatic auxiliary
components

Pneumatic
valves

Fluid control
valves

Pneumatic
cylinders

Related
products

Safety
precautions



Safety precautions

WP Series: Warning / Precautions

Be sure to read this section before use.

Refer to "Pneumatic, Vacuum and Auxiliary Components (CB-024SA)", "Pneumatic Valves (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

Product-specific cautions: Fluid control valves AB/G41, ADK11, ADK21-W, CHB-W (Outdoor Series), pneumatic valves 4F-W (Outdoor Series)

*For precautions other than the following, refer to Individual precautions AB/AG/ADK/CHB in "General Purpose Valves (No. CB-03-1SA)" and Individual precautions 4F in "General Purpose Valves (No. CB-023SA)".

CAUTION

When using the product

- The male thread section of the round terminal box main body is fixed to the coil section of the solenoid valve using an adhesive. Do not remove the round terminal box main body or change the direction of the wiring port. Doing so may cause rainwater to enter the round terminal box through the male thread section. With the CHB-W Series, follow the table below and do not configure the exhaust ports for atmosphere release, and be sure to implement measures to prevent foreign matter, dust, and rainwater from entering the body. In addition, implement waterproof measures for the electrical wires and piping with the use of cable glands, etc.

Actuator (actuation)	Applicable Port
W (double acting)	-
WR* (single acting)	EXH
WV1 (with solenoid valve/double acting)	E1,E2
WX1 (with solenoid valve/single acting)	E1,E2,EXH



*When using a silencer, install the silencer to E1 and E2 for the V1 type, and to E1 for the X1 type.

Installation environment

- With the 4F-W Series, the PE exhaust and breathing holes are connected to the atmosphere. Install the product so that rainwater, etc., does not enter directly.

Installation

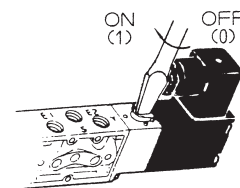
- Avoid plugging the E1 and E2 ports. This may cause malfunction. (4F1/4F3-NM Series)

Manual operation (CHB-W Series, 4F-W Series)

- Use the manual button for confirmation of operation during test operation. When used for long periods in the locked state, the locking mechanism may fail and switch the unit from ON to OFF.
- Manual override
As this is a pilot solenoid valve, the main valve will not be switched even if the manual override is operated unless air is supplied to the S port.
- Locking manual override
If the locking manual override is turned clockwise by approximately 45° with a screwdriver, the valve will be in the same state as when energized and locked. Do not force the rotation, as rotating the device further clockwise after the valve has been locked will cause damage. Be sure to release the lock (0 position) of the locking manual override prior to starting normal operation.

Other

- This product guarantees outdoor use, but not corrosion resistance (no rust, no discoloration, no peeling of paint).
- This product is provided with performance which enables outdoor use in standard environmental conditions. This product satisfies certain performance requirements after implementation of an accelerated weathering test (sunshine weathering meter) for 1000 hours and a (salt, dry, moisture) compound cycle test for 960 hours. However, the risk of defects such as rust occurring in a short amount of time may increase when using the unit in a special environment. Consult with CKD when using this device in a special environment.



3-year warranty after delivery (Option G)

When requesting the above options, CKD will prepare specifications with the following descriptions.

Please make a note of the start date of use, affix a seal, and return it to CKD. Indicate the start date of use within two years after delivery.

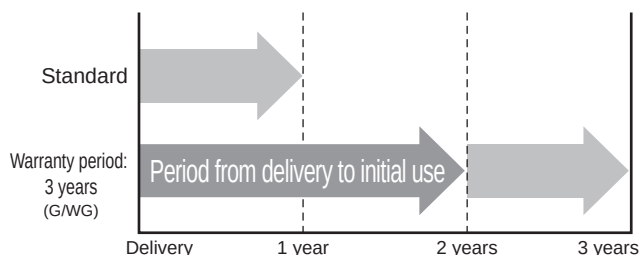
Expected start date: ____/____/____ Sign: _____

Warranty period:

A warranty for a period of three years from the date of delivery or for a period of one year from the start of use, whichever comes first.

* Please return it after the description of the scheduled date of use. Note that the 3-year warranty will not apply if there is no description or return.

* With inspection certificate, inspection guidelines, drawings, specifications, traceability system diagram





Safety precautions

WP Series: Warning / Precautions

Be sure to read this section before use.

Refer to "Pneumatic, Vacuum and Auxiliary Components (CB-024SA)", "Pneumatic Valves (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

Product-specific cautions: Pneumatic cylinder SCA2, SCS2 Series (Outdoor Series)

*Refer to the product-specific cautions in "Pneumatic Cylinders (No. CB-029SA)" for precautions other than the following SCA2, SCS2.



CAUTION

■ Design/Selection

- In dusty places or when exposed to rain or water, it is recommended to attach roofs or covers to extend the service life.
- Use dry air that does not condense according to the ambient temperature and working pressure.
- The bellows and the tie for fixing the bellows are consumable parts. Inspect and replace as necessary every 6 months.

[SCA2 Series]

- Cushion packing-Use the one with the 10 to 60°C specification. When using in a low-temperature environment, select the type without cushion and if necessary, use an external shock absorber.

[SCS2 Series]

- Cushion packing-Use the one with the 5 to 60°C specification. When using in a low-temperature environment, select the type without cushion and if necessary, use an external shock absorber.

■ Precautions for use in cold climates

- When using this product in a cold climate, take the necessary measures to prevent freezing.
- Protect the piston rod or cylinder from condensation, mist, and other moisture adhering to and freezing.

■ Other

- This product guarantees outdoor use, but not corrosion resistance (no rust or discoloration). However, rust and discoloration in parts other than the sliding parts should not cause basic operation problems.
- This product is provided with performance which enables outdoor use in standard environmental conditions. The product satisfies the specified performance after 1,000 hours of accelerated weathering test (Sunshine Weather Meter) and 960 hours of (salt, dry, wet) combined cycle test. However, the risk of defects such as rust occurring in a short amount of time may increase when using the unit in a special environment. Consult with CKD when using this device in a special environment.

■ Mounting, installation and adjustment

- The thermal expansion coefficient varies by material. The tightening force may change after the cylinder is fastened due to changes in the ambient temperature. Take measures to loosen, such as regularly tightening the screws.

Drain separator
F.R.L. unit

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Related
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Safety
precautions



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Revision details

Changes in the 3-year warranty

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