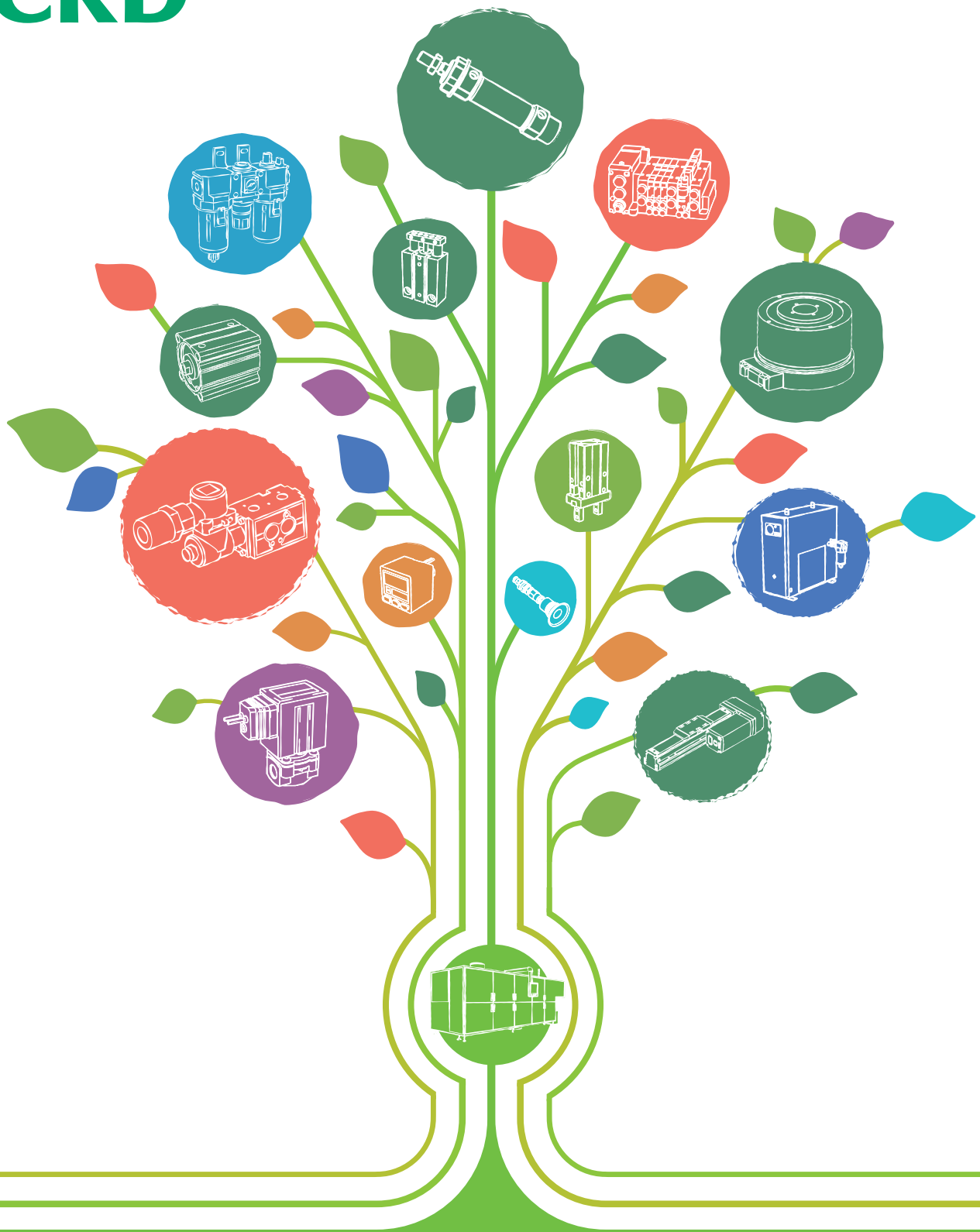


CKD



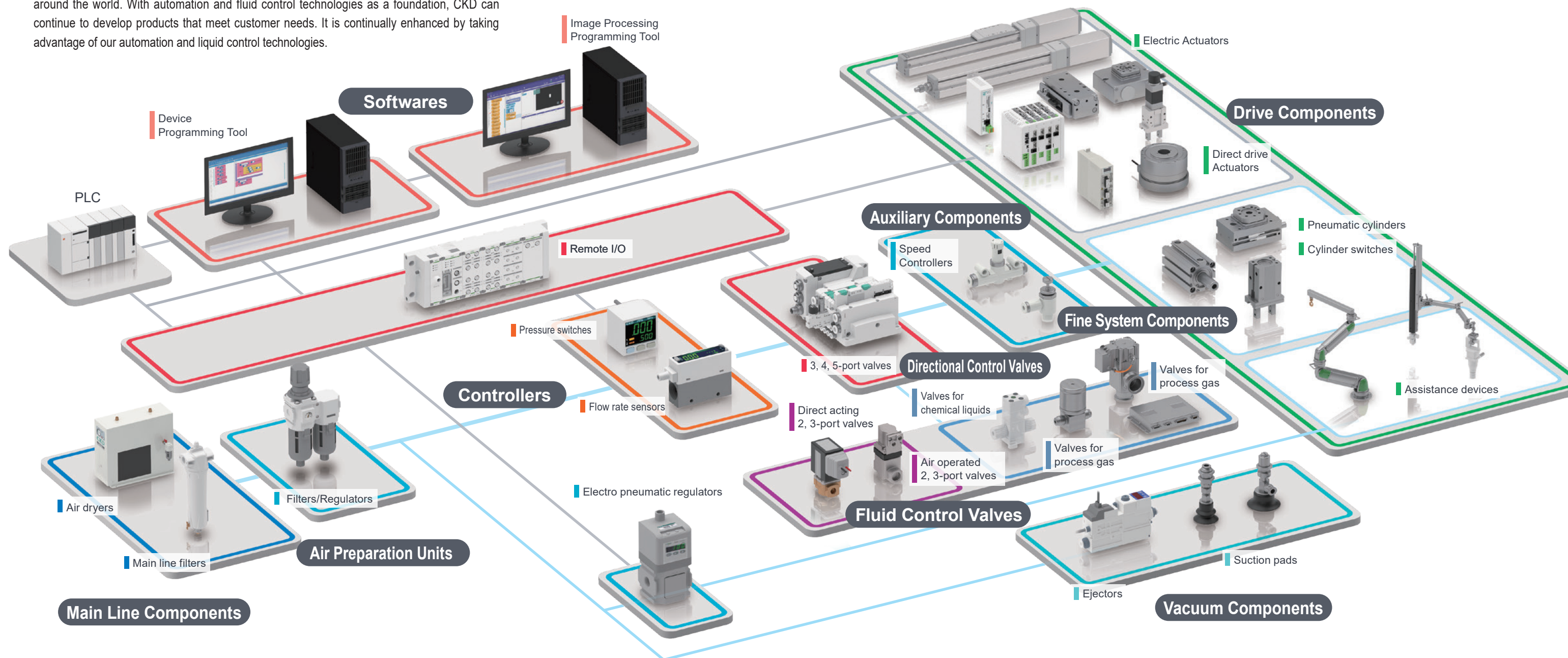
Search by Category and Application

Components Product Digest

CKD products seen from their configuration images

Both Air and Electric. From software to I/O units

CKD's product lineup has been expanding steadily, contributing to the creation of products around the world. With automation and fluid control technologies as a foundation, CKD can continue to develop products that meet customer needs. It is continually enhanced by taking advantage of our automation and liquid control technologies.



CKD products by application

High Durability Components
HP Series

Long Service Life
Environmental Resistance
HP
HIGH PRODUCTIVITY



CC-1421A

For Food Manufacturing Processes
FP Series

FP
Food Process™



CC-1271A

For Outdoor Use WP Series

**WEATHER
PROOF**



CC-1276A

Rechargeable Battery
Manufacturing Process P4 Series

Material
restrictions
1/5 or less dust
generation rate



CC-1226AA

For Clean Components
P5/P7 Series

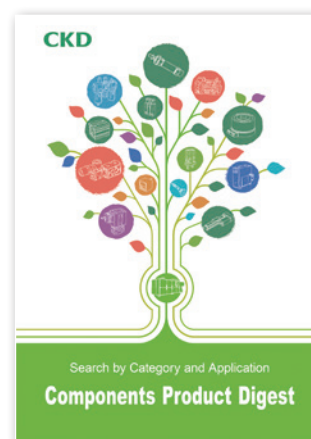
Low particle
generation
exhaust port



CB-033SA

Guide to the CKD catalog

Learn more about each product category in the booklet catalog



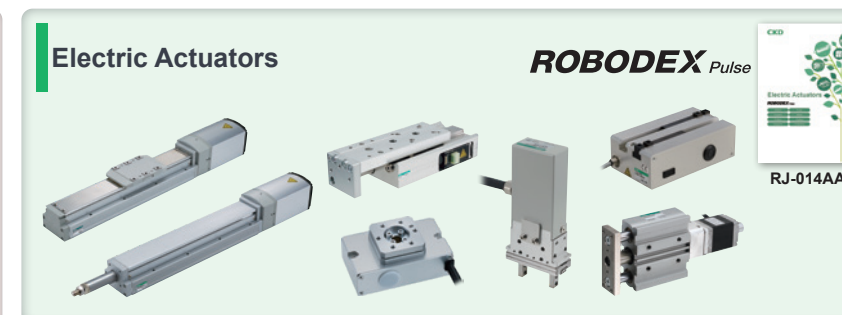
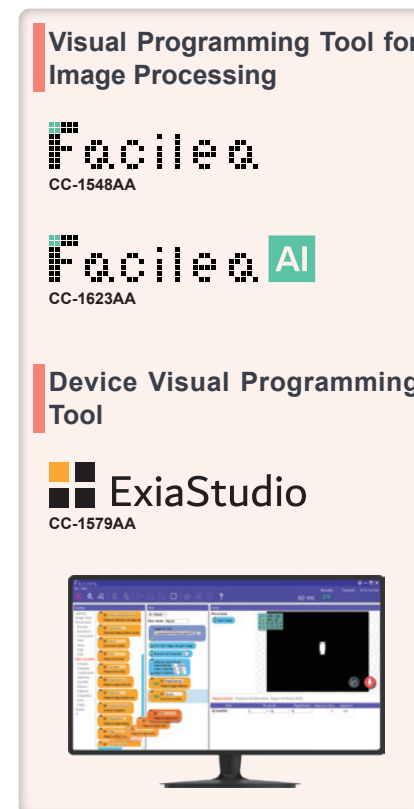
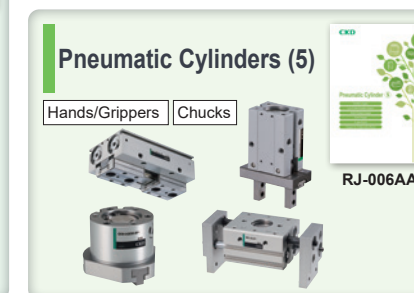
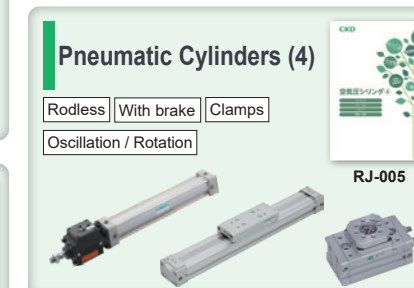
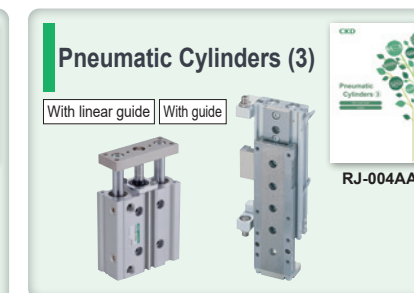
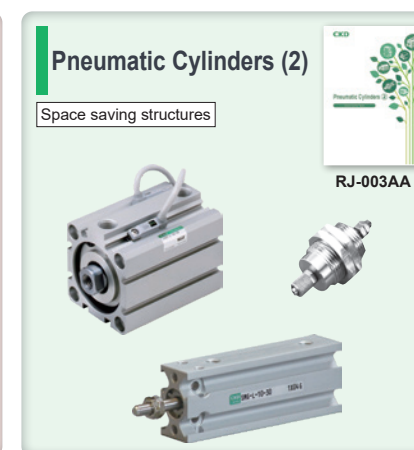
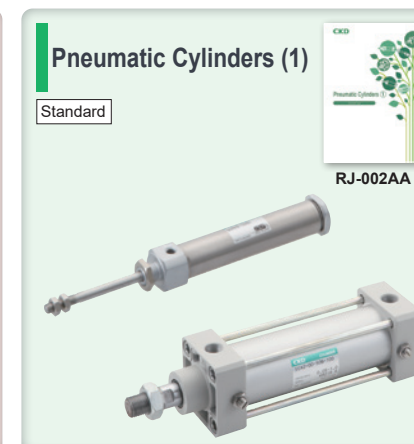
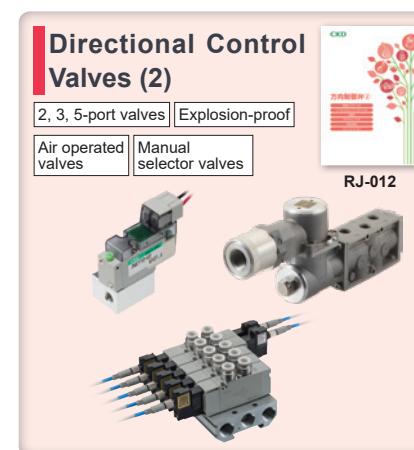
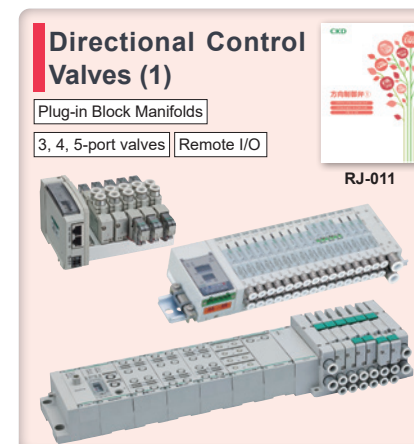
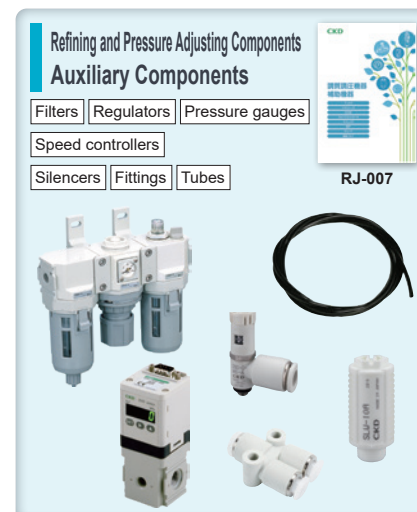
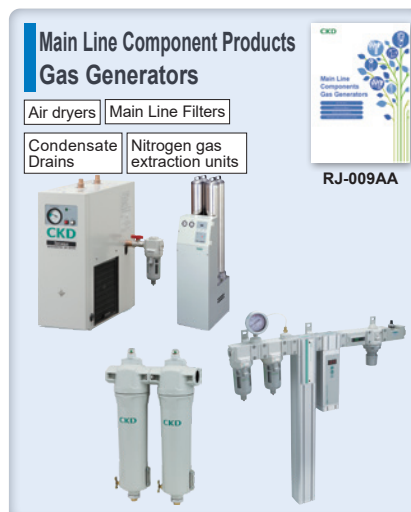
RJ-001AA

The Digest Catalog allows you to search for components you are looking for by overview

Detailed specifications are available in the respective Booklet and WEB catalogs.

Learn more in the WEB

<https://www.ckd.co.jp/kiki/en/>



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 Actuators - Electric Actuators	P. 78	 For Food Manufacturing Processes FP Series	P. 461
 Directional Control Valve	P. 111	 For Outdoor Use - WP Series	P. 467
 Air Preparation Equipment	P. 151	 For Rechargeable Battery Manufacturing Processes - P4 Series	P. 471
 Auxiliary Equipment/Speed Controllers Silencers/Fittings/Tubes	P. 229	 For Clean Environment Components P5/ P7 Series	P. 477
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Ending	
Select Tube Inner Diameter and Peripheral Pneumatic Components from the Table	Ending 1
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Product Category

Actuators - Pneumatic Cylinders	
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High Durability Components HP Series	P. 453
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Actuators

Actuators - Pneumatic Cylinders

Search by Product System P. 5

Select Tube I.D. and Peripheral Pneumatic Components from the Table Ending 1

Select from WEB Model Selection SystemEnding 30

Actuators, Electric Actuators

Search by Product System P. 85

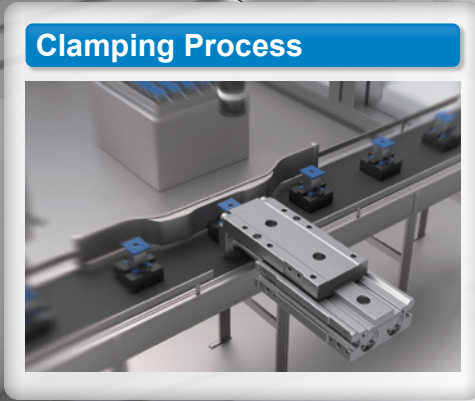
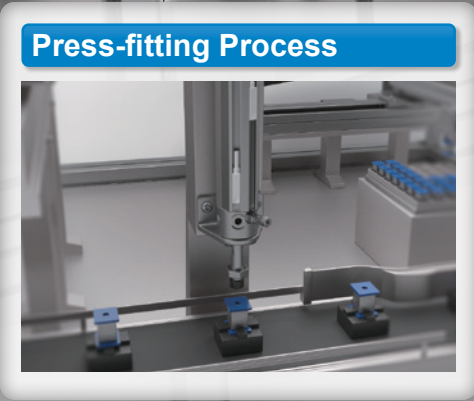
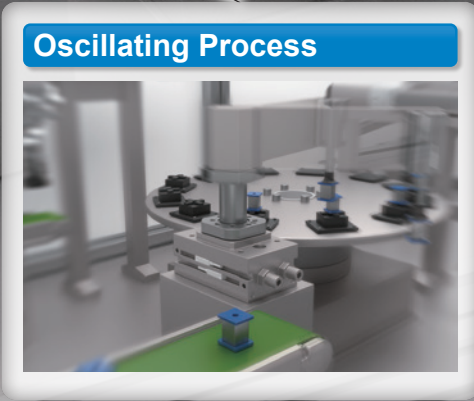
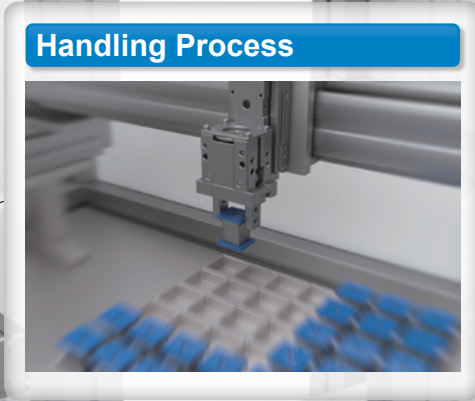
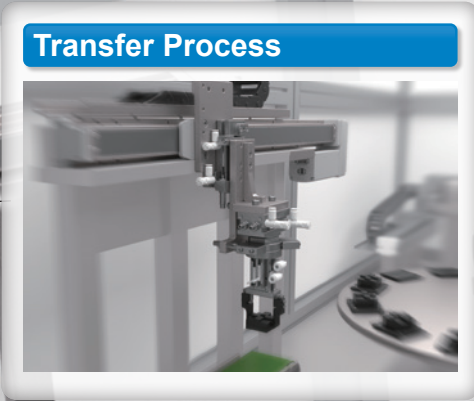
Select from WEB Model Selection SystemEnding 30

Search by Product System

Proposing optimal solutions with both "Pneumatic and Electric" options

Pneumatic Cylinder			Electric Actuators		
Product System/Mounting Type/Max. Stroke			Product System		
Transfer/Conveyance/Press-fitting/Clamping			Transfer/Conveyance/Press-fitting/Clamping		
Slider			Slider		
General Type	SCP□3, CMK2, CMA2, SCM	P. 15	With Motor	EJSG EBS-G, EBS-M KBX, EXS-M	P. 85
General Type Tie-rod	SCG, SCA2, SCS2	P. 15	Motorless Specification	EBS-L ETS ECS, EVT, ECV EKS-L	P. 85
Space-saving Type	SSD2, SSG, SSD CAT, MDC2, SMG, MSD, FC□	P. 19	Rod		
With Linear Guide	LCM, LCR, LCG, LCW, LCX MSDG-L	P. 23	With Motor	EBR-G GSSD2, DSSD2 KBX	P. 87
Guided	STM, STG, STS, STL STR2, UCA2	P. 25	Motorless Specification	EBR-L	P. 87
Rodless Type	SRL3, SRG3, SRM3, SRT3 MRL2, MRG2, SM-25	P. 27	Guided (with Motor)		
With Brake	ULK, JSK2, JSM2, JSG JSC3/JSC4	P. 31	Guided (with Motor)	GSTG, GSTS, GSTL DSTG, DSTS, DSTL DMSDG	P. 90
With Lock	USSD, UFCD-KL, USC	P. 33	Stopper (with Motor)		
Lock Unit	UB, JSB3, LMB, LML	P. 35	Stopper (with Motor)	GSTK, DSTK	P. 90
With Valve	CKV2, CAV2, COVP/N2	P. 37	Table (with Motor)		
Clamp Cylinder	CAC4, UCAC2, CAC-N UCAC-N, RCS2, RCC2, PCC	P. 39	Table (with Motor)	FLCR	P. 90
Special Cylinder	MVC, STK, MCP, GLC, BBS NHS, HR, LN	P. 41	Gripping/Robot Handling		
High Speed Type	HCM, HCA	P. 44	2-Finger Gripper	FFLD, FLSH, DLSH	P. 93
Gripping/Robot Handling			3-Finger Gripper	GCKW, DCKW	P. 93
2-Finger Gripper		P. 47	Indexing/Swing/Continuous Rotation		
3-Jaw Chuck		P. 53	Direct Drive Actuator	AX1R, AX2R, AX4R AX1000T, AX2000T AX4000T, AX6000M rdisk NX4	P. 97
Auto Gripper Changer		P. 55	Rotary (with Motor)	FGRC	P. 99
Gripper for Collaborative Robots		P. 55	Mechanical Index	ZRS, PCIS, PCOS, PPLX	P. 99
Swing/Rotary			Transfer/Pick & Place		
Rack & Pinion Type	RRC	P. 59	Orthogonal Axis Combination	KBX	P. 103
Table type	GRC	P. 59	SCARA Robot	KHL, KHE	P. 104
Vane Type	RV3□	P. 59	3D Transfer/P&P System	ESM	P. 104
Unit			Related Components		
Assisting Device	PAW, CAW, FAW	P. 63	Controllers/Drivers	ECMG, ECG, ECR, ESC4, KCA AXD, AX9000MU AX9000TS/TH, NXD VPH (Model No. NCR-H)	P. 107
Related Components					
Shock absorber	SKL, NCK, SCK, FCK	P. 67			
Free Joint	FJ, FK	P. 69			
Cylinder Switch	SW-	P. 71			

We propose optimal solutions with both "Pneumatic and Electric" options.



To achieve carbon neutrality by 2050, we need to reduce CO₂ emissions through various initiatives, such as improving energy conservation and utilizing renewable energy.

Reducing air consumption in production facilities is also a major theme, but how should pneumatic and electric systems be used differently? We receive inquiries from many customers.

CKD, which manufactures both Pneumatic and Electric Motions and uses them in production sites, introduces the selection points that CO₂ emissions are taken into account for each process, and that the company has judged completely, including functionality and cost. We propose the best of both pneumatic and electric systems.

In the "Pneumatic and Electric Motion Best and Best" content, we compare the Pneumatic and Electric Motion advantages over Cost, Dimensions, Positioning time, and CO₂ emissions.

Click here for details

Click!

Recommended points by process based on the features of pneumatic and electric systems

Air Recommended Points	
Space-saving, Lightweight	Handling Reduces the load on the X-axis and robot for size reduction
High Thrust	Press-fitting High pressing force in a compact size
Point-to-Point Movement	Oscillating, Clamping Short operating time reduces equipment cycle time

Electric Recommended Points	
Multi-point Positioning	Transfer Stops at any position with high-precision positioning via program settings
Smooth Operation	Transfer Acceleration/deceleration and running speed can be set for stable, shockless operation
IoT Integration	Control Supports various networks for a wide range of control

Pneumatic Cylinder

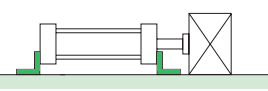
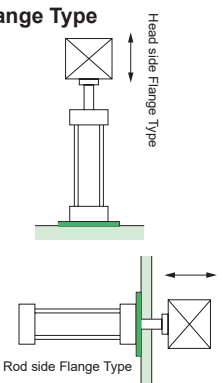
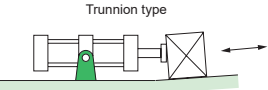
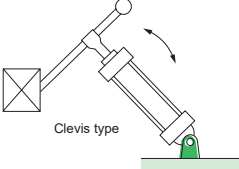
Search by Product System

Product System	P. 9
Direction of Load Motion and Mounting Type	P. 10
About Max. Stroke	P. 11

Product System

Transfer/Conveyance Press-fitting/Clamping	General Type		P. 15	With Brake/Lock		P. 31
	General Type Tie-rod		P. 15	Lock Unit		P. 35
	Space-saving Type		P. 19	With Valve		P. 37
	With Linear Guide		P. 23	Clamp Cylinder		P. 39
	Guided		P. 25	Special cylinder		P. 41
	Rodless Type		P. 27	High Speed Type		P. 44
Gripping Robot Handling	2-Finger Gripper/3-Jaw Chuck/Gripper for Collaborative Robots					P. 47
Swing/Rotary	Rack & Pinion Type/Table type/Vane Type					P. 59
Balancer Unit	Assisting Device					P. 63

Direction of Load Motion and Mounting Type

Direction of Load Motion	Mounting type		Precautions
Operating The load moves linearly.	Foot type		Flange Type  Head side Flange Type Rod side Flange Type Fix the cylinder body so that the direction of load movement and the direction of piston movement are parallel.
	Trunnion Type		
Operating Load oscillates within a plane			Adopt the mounting type on the left if the stroke is long or if the direction of load movement and the direction of piston movement are not parallel and in the same direction. However, be careful to avoid applying a lateral load to the piston rod or bushing.
Operating The load oscillates in various directions			Align the swing direction of the clevis or trunnion supporting the cylinder with the swing direction of the load. Also, align the swinging direction of the rod end fitting. When a lateral load is applied to the bushing, its value must be within 1/20 of the cylinder output.
			Use a knuckle for the connecting fitting between the rod and the load. When a lateral load is applied to the bushing, its value must be within 1/20 of the cylinder output.

Mounting Type and Model No.

Model No.	Axial Foot Type		Flange Type		Clevis Type		Trunnion type						
	Both Sides	One Side	Rod side	Head side	Single Clevis	Double Clevis	Intermediate	Rod side	Head side	Intermediate hole type	Rod side hole type	Head side hole type	
	LB	LS	FA	FB	CA	CB	TC	TA	TB	TF	TD	TE	
General Type	SCP□3	●	●	●		●							
	CMK2	●	●	●	●	●		●	●				
	CMA2	●	●	●	●	●		●	●				
	SCM	●		●	●	●		●	●				
	SCG	●		●	●	●	●	●	●				
	SCA2	●		●	●	●	●	●	●	●	●	●	
Rodless Type	SCS2	●		●	●	●	●	●	●	●	●	●	
	SRL3, SRG3	LB, LB1											
Space-saving Type	SRT3	●											
	SSD2	●				●		●	●				
With Valve	SSD	LB, LB2				CB, CB2		●	●				
	CKV2	●		●				●	●				
Clamp Cylinder	CAV2	●		●									
	COVP/N2	●		●	●		●			●			
High Speed Type	CAC4/UCAC2		AL, BL										
	RCS2, RCC2			●	●								
High Speed Type	HCM, HCA	●		●	●								

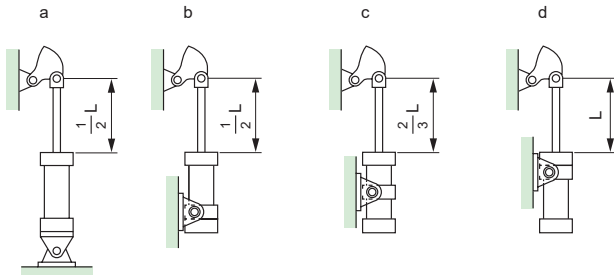
* For mounting bracket selection availability, please refer to the catalog specifications.
*1 -D (Double rod type) only

About Max. Stroke

Relationship between Dimensions by Mounting Type and Max. Stroke (L) for Buckling Strength

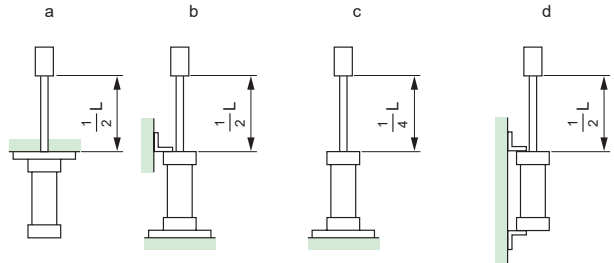
1

For double end pin joint



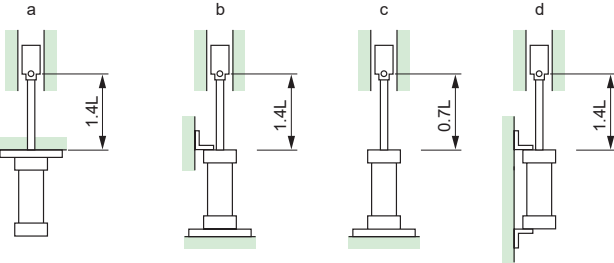
2

Rod end free



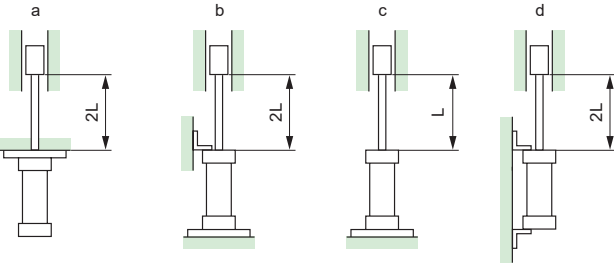
3

Rod end guided (pin joint)



4

Cylinder fixed, rod end guided



Max. Stroke

Pencil Shaped Cylinder SCP□3 Series			
D (mm)	ø6	ø10	ø16
F0 (N)			
5	570		
10	405	720	
30	230	415	650
50		320	500
100			355
CMA2, CMK2, JSM2 Series			
D (mm)	ø20	ø25, ø30, ø32	ø40
F0 (N)			
50	2020		
100	1440	2040	
200	1000	1440	2000
400		1000	1500
600			1160
800			980

SCG/SCA2/JSG/JSC3

D (mm)	ø40	ø50	ø63	ø80	ø100
F0 (N)					
200	2600	4100			
400	1810	2900	2900		
600	1500	2400	2400	3600	
800	1280	2000	2000	3140	4500
1000		1820	1820	2800	4000
1500			1480	2300	3300
2000				1980	2840
2500				1760	2560
3000				1600	2300
3500					2140
4000					2000
5000					1800

SCS2

D (mm)	ø125	ø140	ø160	ø180	ø200	ø250
F0 (N)						
1500	3700	3700				
2000	3200	3200				
2500	2900	2900	4600			
3000	2600	2600	4100	5300		
3500	2400	2400	3800	5000	5900	
4000	2300	2300	3600	4600	5600	
5000	2000	2000	3200	4100	5000	7400
6000	1900	1900	2900	3800	4600	6800
7000	1700	1700	2700	3500	4200	6200
8000		1600	2500	3300	3900	5800
9000		1500	2400	3100	3700	5500
10000			2300	2900	3500	5200
15000				2400	2900	4200
20000					2500	3600
25000						3300
30000						3000

JSC4

D (mm)	ø125	ø140	ø160	ø180
F0 (N)				
1500	4600			
2000	3900	3900		
2500	3500	3500	4600	
3000	3200	3200	4100	5300
3500	3000	3000	3800	5000
4000	2800	2800	3600	4600
5000	2500	2500	3200	4100
6000	2300	2300	2900	3800
7000	2100	2100	2700	3500
8000		2000	2500	3300
9000		1880	2400	3100
10000			2300	2900
15000				2400

D: Cylinder bore [mm]
F0: Load [N]
L: Max. Stroke [mm]

Note)
The values in the table are calculated values based only on buckling strength. They are listed in the specification field for each model.
Consult with CKD if the stroke exceeds the max. stroke.

Precautions for Exceeding Max. Stroke

- ⚠

Caution: If exceeding the max. stroke described on the "Specifications" page for each model, note the following points.
1.

Min. Operating Pressure

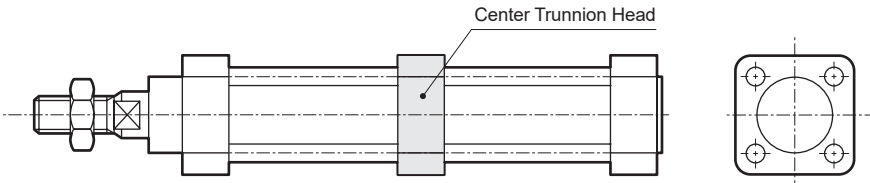
Starting pressure increases due to deflection of the piston rod inside the cylinder.
2.

Piston Rod Buckling

This becomes difficult unless used with the internal stopper that brings the piston into contact with the cylinder cover.
When using with an external stopper, refer to "Technical data" for the max. stroke length (L) relation between mounting style dimensions and buckling strength (P. 11)".
3.

Tie Rod Reinforcement

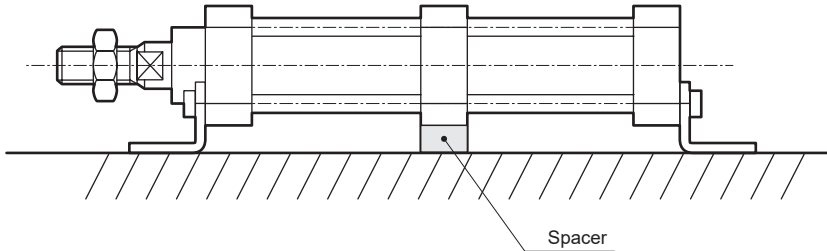
A center trunnion head is inserted to prevent the tie rod from deflecting and touching the cylinder tube.



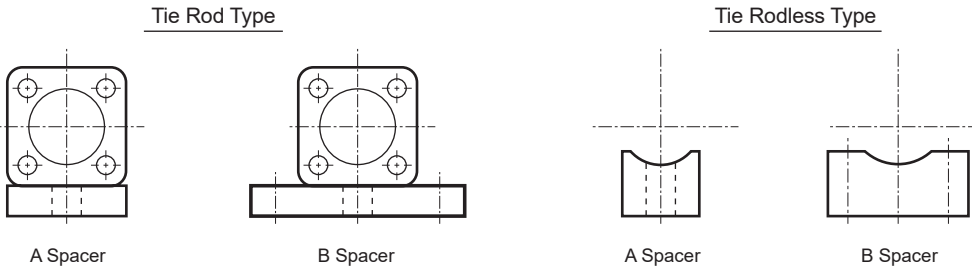
4.

Cylinder Tube Deflection Prevention

When mounted horizontally, tube deflection prevention is necessary. Consider deflection prevention using the center trunnion head inserted for tie rod reinforcement.



* The spacer in the figure below is a custom product.



Pneumatic Cylinder

Search by Product System
Transfer/Conveyance/Press-fitting/Clamping

General Type	With Brake
SCP□3, CMK2, CMA2, SCM	ULK, JSK2, JSM2, JSG
P. 15	JSC3, JSC4, SRT3
	P. 31
General Type Tie-rod	With Lock
SCG, SCA2, SCS2	USSD, UFCD-KL, USC
P. 15	UCAC-N, UCAC2
	P. 33
Space-saving Type	Lock Unit
SSD2, SSG, SSD	UB, JSB3, LMB, LML
CAT, MDC2, SMG, MSD, FC□	P. 35
P. 19	
With Linear Guide	With Valve
LCM, LCR, LCG, LCW, LCX	CKV2, CAV2, COVP/N2
MSDG-L	P. 37
P. 23	
Guided	Clamp Cylinder
STM, STG, STS, STL	CAC4, UCAC2, CAC-N
STR2, UCA2	UCAC-N, RCS2, RCC2, PCC
P. 25	P. 39
Rodless Type	Special Cylinder
SRL3, SRG3, SRM3, SRT3	MVC, STK, GLC, BBS, MCP
MRL2, MRG2, SM-25	NSR, NHS, HRL, LN
P. 27	P. 41
	High Speed Type
	HCM, HCA
	P. 44

General Type

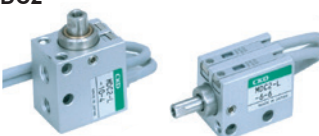
* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features		Model No./Appearance	Tube I.D. ø(mm)									Tube I.D. ø(mm)															Click here for detailed specifications		
			2.5	4	6	8	10	12	15	16		20	25	30	32	40	50	63	80	100	125	140	160	180	200	250	Catalog Name [No.]	WEB	
												Max. Stroke (mm) (Producible Stroke (mm)) *1																	
General Type	Pencil shaped compact cylinder	SCP□3 	10	20	100 (105)		200 (210)			260 (270)																	Pneumatic Cylinder ① [R-J-002AA]	 Click!	
	Stainless steel tube adopted Crimped type	CMK2 									750		750															 Click!	
	Maintainable disassembly type	CMA2 									700 (1000)		700 (1200)		700 (1500)													 Click!	
	Wide Variations Most compact among general types	SCM 									1000		1000		1500													 Click!	
	Tie-rod	Compact type among tie rods	SCG 													600 (700)		700 (1200)	800 (1400)	800 (1500)									 Click!
		Robust type with No. 1 reliability Wide Variations	SCA2 														600 (1600)		700 (2000)	800 (2500)									 Click!
		Compatible with ø125 and above	SCS2 																		800 (2000)		900	1000	1200				 Click!

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Space-saving Type

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features		Model No./Appearance	Tube I.D. ø(mm)								Tube I.D. ø(mm)															Click here for detailed specifications	
			2.5	4	6	8	10	12	15	16																Catalog Name [No.]	WEB
											Max. Stroke (mm) *1																
Space-saving	Wide Variations Switch can be mounted on 4 surfaces Wide range of standard strokes	SSD2 						100		100		200	300													Pneumatic Cylinder ② [RJ-003AA1]	 Click!
	For SSD Series Equipped with guide rod and plate	SSG 						30		30		50			100												 Click!
	Wide Variations Switch can be mounted on 3 surfaces	SSD 						100		100		200	300														 Click!
	Outer diameter part is a fully threaded type	CAT 			15		15		15																		 Click!
	Reinforced bearing type Compact Cylinder	MDC2 		6	8		10																				 Click!
	Direct mounting on 5 surfaces is possible	SMG 			60		60			60		100		100													 Click!
	Small bore series of SSD	MSD 			30			30		30																	 Click!
	Compact in the width direction, ideal for tight spaces	FC□ 										150			150												 Click!

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Space-saving Type Variation List

Model No./Appearance Tube I.D. ø(mm)			SSD2															SSG														
																																
Variation Name/Model No.			12	16	20	25	32	40	50	63	80	100	125	140	160	180	200	12	16	20	25	32	40	50	63	80	100					
													Maximum Stroke (mm) *1																			
Double Acting Single Rod		-	30	50	100					300					30	50	100															
	High Load	K	30	50	100																											
	Long Stroke	L	100	200	300																											
Single Acting	Push Type	X	10					20																								
	Retracting Type	Y	10					20																								
Changes in Shape or Work	Non-rotating Type	M	30	50	100																											
	Fail Prevention *For with brake, go to p.31	Q	100																													
	Double Rod	-	D	30	50	100					300																					
		Non-rotating	DM	30	50	100																										
	Back-to-back	B	30	50	100																											
	Two-stage	W	30	50																												
	Ultra Low Speed (Ultra-Low Speed Operation from 1 mm/s)	-	F	30	50	100																										
		High Load	KF	30	50	100																										
	Low Speed [Low speed operation (10 mm/s~)]	O	30	50	100																											
	Low Friction [Minimizes sliding resistance from low to high pressure]	KU		50	100																											
Speed and Friction Reduction	Heat Resistant	T1, T1L	30	50	100																											
	Heavy-duty Scraper [Prevents intrusion of debris]	G		50	100																											
	Cutting Oil/ Water Resistant Structure	-	G2, G3	30	50	100																										
		High Load	KG2, KG3	30	50	100																										
	Coil Scraper/ Spatter Adhesion Prevention	-	G1, G4		50	100																										
		Double Rod	DG1, DG4		50	100																										
		High Load	KG1, KG4		50	100																										
	Environment Resistant Scraper [Prevents fine metal or ceramic particles]	-	G5		50	100																										
		High Load	KG5		50	100																										
	Environment Resistant	With Strong Magnetic Field Resistant Switch	-	L4		100																										
With Coil Scraper			G1L4		100																											
High Load			KL4		100																											
With High Load Coil Scraper			KG1L4		100																											
Others	With Rubber Air Cushion	High Load	K-□C		50	100																										

* For details on series for specific applications, refer to p. 451.

Series for Specific Applications	High-Durability/Environment-Resistant Series	HP1	●	●	●	●	●	●																			
		G-HP1	●	●	●	●	●	●	●	●	●	●															
	For Cleanroom Equipment	P7□	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●										
		P5□	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●										
	For Food Manufacturing Process	FP1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	For Rechargeable Battery Manufacturing	P4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.
Note) *□* indicates a Custom Product.

SSD																CAT			MDC2			SMG					MSD				FC□					
																																				
12	16	20	25	32	40	50	63	80	100	125	140	160	6	10	15	4	6	8	10	6	10	16	20	25	32	6	8	12	16	25	32	40	50	63		
Maximum Stroke (mm) *1																																				
30		50								300						6	8	10	60		100		30					50								
100	200	300																					30					150								
10				20										5, 10, 15			6	8	10	15		15		10					10	20						
10				20													6	8	10	15		15		10					10	20						
30		50																		60		100														
100	200	300																																		
30		50								300																			50							
30		50																																		
30		50																																		
30		50																																		
100		150				200																							30							
30		50																																		
30		50																																		
100		150				200																														
30		50																																		
200		300																																		
30		50																																		
30		50																																		
100		150				200																														
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				300																																
50																																				
200		300																																		
				50																																
				50																																
				150		200																														
				150		200																														
200		300																																		

With Linear Guide

* For details, refer to CKD Components Product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features		Model No./ Appearance	Tube I.D. ø(mm)														Click here for detailed specifications	
			4.5	6	8	10	12	16	20	25	32	40	50	63	80	100	Catalog Name [No.]	WEB
			Max. Stroke (mm) *1															
With Linear Guide	Compact (Compact Specification) A compact model that combines high precision and rigidity in a small size	LCM 	10 30														Pneumatic Cylinder ③ [RJ-004AA]	 Click!
	Standard (Standard Specification) An all-round model that can be freely selected	LCR 	50 75 100 125 150															 Click!
	High Spec (High-Precision Specification) A high-performance model that emphasizes high precision and high rigidity	LCG 	50 75 100 125 150															 Click!
	Basic (Multi-surface Mounting Specification) A model with aggregated common specs for easy model selection	LCW 	75															 Click!
	Slim (Low-profile/Unitized Specification) A low-profile model ideal for use in tight spaces	LCX 	50															 Click!
	Compact (Space-saving Specification) A model that achieves high precision and rigidity in a space-saving design	MSDG-L 	30 30															 Click!

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Features	Model No./Appearance	Positioning	Max. Stroke (mm)	Max. Payload (kg)		Page
				Horizontal	Vertical	
Equivalent dimensions and thrust to pneumatic LCR	FLCR 	64 points 512 points	100	11	8.5	P. 90

With Linear Guide Variation List

Model No./Appearance Tube I.D. ø(mm)		Compact			Standard					High-Precision/High-Rigidity					Multi-surface Mounting			Low-profile		Space-saving					
		LCM			LCR					LCG					LCW			LCX		MSDG-L					
																									
Variation Name/Model No.		4.5	6	8	6	8	12	16	20	25	6	8	12	16	20	25	12	16	20	25 Equivalent	32 Equivalent	6	8	12	16
								Maximum Stroke (mm) *1																	
Single Rod			10	30	50	75	100	125	150		50	75	100	125	150		75		50		30		30		
		Long Stroke																		150					
Stroke Adjustment	Push	P	10	30																					
	Retract	R	10	30																					
Side Mounting		A	10	30																					
Fall Prevention		Q				75	100	125	150		75	100	125	150		75		50							
		Long Stroke	□L																150						
Ultra Low Speed		F					100	125	150															30	

* For details on series for specific applications, refer to p. 451.

Series for Specific Applications	High-Durability/ Environment-Resistant Series	HP1																						
		G-HP1																						
	For Cleanroom Equipment	P7□																						
		P5□																						
	For Rechargeable Battery Manufacturing Process	P4□																						

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Guided

* For details, refer to CKD Components Product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features		Model No./ Appearance	Tube I.D. ø(mm)														Click here for detailed specifications	
			4.5	6	8	10	12	16	20	25	32	40	50	63	80	100	Catalog Name [No.]	WEB
			Max. Stroke (mm) (Producible Stroke (mm)) *1															
Guided	Compact Size	STM 		15		20										Pneumatic Cylinder ③ [RJ-004AA]	 Click!	
	Compact type among guided cylinders High-Precision/High-Rigidity Space-saving Lighter and improved load resistance compared to STS/STL	STG 					250			400					 Click!			
	High-Precision/High-Rigidity Space-saving	STS, STL 			200		200			400				200	 Click!			
	Twin Rod	STR2 		50 (100)		50 (100)			100 (200)								 Click!	
	Built-in shock absorber for transfer with less impact and noise	UCA2 				100		200		200						 Click!		

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Click here for electric actuators that inherit pneumatic cylinder features

Features	Model No./Appearance	Positioning	Max. Stroke (mm)	Max. Payload (kg)		Page
				Horizontal	Vertical	
Uses the same body as pneumatic cylinders, with the same rigidity as STS, STL, and STG Multi-point Positioning	GSTS 	64 points	50	14.8	19.6	P. 89
	GSTL 		200			P. 89
	GSTG 		100			P. 89
Uses the same body as pneumatic cylinders, with the same rigidity as STS, STL, and STG Easy operation without dedicated software	DSTS 	2 points	50	14.8	13.2	P. 89
	DSTL 		200			P. 89
	DSTG 		100			P. 89
	DMSDG 		30	-	-	P. 89

Guided Variation List

Model No./Appearance Tube I.D. ø(mm)			Guided																Twin Rod																		
			STM	STG												STS/STL				STR2				UCA2													
																																					
Variation Name/Model No.		Sleeve Bearing	Ball Bearing	6	10	12	16	20	25	32	40	50	63	80	100	8	12	16	20	25	32	40	50	63	80	100	6	10	16	20	25	32	10	16	25	32	
				Maximum Stroke (mm) *1																																	
Single Rod		M	B	15	20	250		400								200		400						200	50 (100)		100 (200)		100		200						
Stroke Adjustment		MP	BP													200		400										100		200							
Fall Prevention		MQ	BQ					400								400		375		350	100																
Double Rod		MD	BD																	50		100															
Speed	Low Speed	MO	BO													150		300						50 (100)		100 (200)											
	Ultra Low Speed	MF	BF													200						50 (100)		100 (200)													
Environment Resistant	Heat Resistant	MT	BT													200		*2		400																	
	Packing Material Fluororubber	MT2	BT2													200		400																			
	Heavy-duty Scraper [Prevents foreign materials from entering]	MG	BG					400								400																					
	Coil Scraper	MG1	BG1					400								400																					
	Cutting Oil Resistant	MG2 MG3	BG2 BG3					400 *3								400																					
	Spatter Adhesion Prevention	MG4	BG4					400								400																					
Others	Environment-resistant scraper [Prevents fine metal and ceramic particles]	MG5*	-					400																													
	Rubber Air Cushion	M-□C	B-□C					400								400																					
	Air Cushion	MC	BC	250		400										400						375															
	With Valve	MV	BV													100																					
Guide Rod		K	-					200		200																											
Series for Specific Applications	High-Durability/ Environment-Resistant Series	M-HP1	B-HP1	●	●	●	●	●	●	●	●													●				●	●	●	●	●					
		MG-HP1	BG-HP1	●												●																					
	For Cleanroom Equipment	-	B-P7 B-P5	●	●	●	●	●	●	●	●	●													●				●	●	●	●	●				
				* * * * *																																	
	For Food Manufacturing Process	M-FP1	-	●				●	●	●	●	●	●	●	●	●																					
For Rechargeable Battery Manufacturing Process	M-P4	B-P4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.
*2 For STS/L, ø20 and ø25 ball bearing heat-resistant type "-BT-" cannot be manufactured.
*3 For STG, ball bearing cutting oil resistant "-BG2-" and cutting oil/water resistant structure "-BG3-" cannot be manufactured.
Note) * * indicates a Custom Product.

Rodless Cylinder

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features			Model No./Appearance		Tube I.D. ø(mm)													Click here for detailed specifications	
					6	10	12	16	20	25	32	40	50	63	80	100	Catalog Name [No.]	WEB	
					Maximum Stroke (mm) *1														
Slit Type	Basic Type	Achieves high sealing performance and lateral load resistance by adopting a flat piston	SRL3 													Pneumatic Cylinder ㊤ [Ru-005AA]	 Click! 		
	With Linear Guide	With high-precision single-axis linear guide	SRG3 														 Click! 		
		With higher-precision dual-axis linear guide	SRM3 														 Click! 		
	With Brake	Can be stopped at any intermediate position With long-life brake	SRT3 														 Click! 		
Magnet Type	Basic Type	Improved lubrication mechanism significantly enhances lifespan and operational safety Low-profile design with low slider height	MRL2 														 Click! 		
	With Linear Guide	Integrated with linear guide for high precision and high rigidity	MRG2 														 Click! 		
Shuttle Mover		A 3D transfer system that enables flexible 3D layouts	SM-25 		Max. Allowable Payload : 2 kg, 4 kg * Total mounted load weight Max. Transfer Distance : 20 m													 Click! 	

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Click here for slider type electric actuators

Features	Model No./Appearance	Max. Stroke (mm)	Max. Payload (kg)		Page
			Horizontal	Vertical	
Built-in outer rail type guide reduces the need for parallel installation Variations available for dusty environments, low dust generation, food manufacturing processes, and rechargeable battery manufacturing processes	EJSG 	1100	80	43.3	P. 79
	EBS-G EBS-M EBS-L 	1100	80	43.3	P. 79
	ETS 	1500	150	55	P. 79
Motorless specification that can be controlled by attaching motors from various manufacturers Variations available for low dust generation, food manufacturing processes, and secondary battery manufacturing processes	ECS 	1500	150	55	P. 79

Features	Model No./Appearance	Max. Stroke (mm)	Max. Payload (kg)		Page
			Horizontal	Vertical	
Long stroke with belt drive Variations for low particle emission and food manufacturing processes	ETV 	3500	85	-	P. 79
	ECV 	3500	85	-	P. 79
Achieves high rigidity by adopting an iron-based outer rail Accelerates equipment at 2G for high speed	EKS 	1500	171.5	24.5	P. 79

Rodless Cylinder Variation List

Model No./Appearance Tube I.D. ø(mm)		Slit Type													
		Basic										Linear Guide			
		SRL3										SRG3			
															
		* Tube I.D. is "equivalent".										* Tube I.D. is "equivalent".			
Variation Name/Model No.		12	16	20	25	32	40	50	63	80	100	12	16	20	25
		Maximum Stroke (mm) *1													
Double Acting/Basic Type		5000										450	800	1000	
With Fall Prevention	Q	5000													
With Resin Guide	G	5000													
With Resin Guide/With Fall Prevention	GQ	5000													
Full Cowl Type	J				3000										
Ultra Low Speed Type	F														
Simple Guide Type/1 Piston	G														
Simple Guide Type/1 Piston/Ultra Low Speed	GF														
Simple Guide Type/2 Pistons	W														
Simple Guide Type/2 Pistons/Ultra Low Speed	WF														

Series for Specific Applications	For Cleanroom Equipment	P7□													
		P5□													
	For Food Manufacturing Process	FP1	●	●	●	●	●	●	●	●	●				
	For Rechargeable Battery Manufacturing Process	P4□	●	●	●	●	●	●	●	●	●				

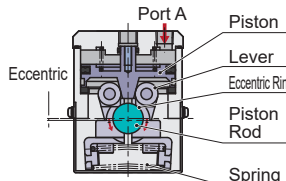
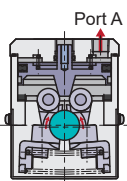
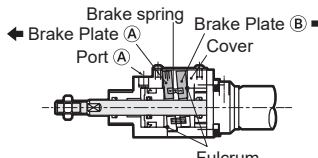
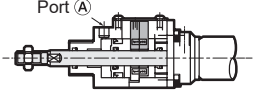
*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Slit Type												Magnet Type									
Linear Guide				With Brake								Basic				Linear Guide					
SRM3				SRT3								MRL2				MRG2					
																					
* Tube I.D. is "equivalent".				* Tube I.D. is "equivalent".																	
25	32	40	63	12	16	20	25	32	40	50	63	6	10	16	20	25	32	10	16	25	
				Maximum Stroke (mm) *1																	
1000		2000		1000			1500			2000		300	500	1000	1500		300		500	700	
1000		2000																			
												300	500	1000	1500						
												300	500	1000	1500						
												300	500	1000	1500						
												300	500	1000	1500						
												300	500	1000	1500						

												●	●	●	●	●	●			
												●	●	●	●	●	●			
●	●	●	●									●	●	●	●	●	●			

With Brake

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Function/Application		Structure/Operating Principle		Features	Model No./ Appearance	Driving Cylinder	Tube I.D. ø(mm)																	Specifications details here	
							12	16	20	25	30	32	40	50	63	80	100	125	140	160	180	Catalog Name [No.]	WEB		
							Max. Stroke (mm) (Producible Stroke (mm)) *1																		
With Brake (Operation stop) (Maintaining stationary state) Locking is bidirectional	Cylinder with Brake It can be stopped or held stationary during operation [Application] · Stopping during operation · Multi-point positioning · Drop Prevention · Emergency stop workpiece lock	Rod clamping method ● Brake Release Principle  When air is supplied through port A, the lower piston is pushed, opening the lever. The eccentric ring directly connected to the lever rotates, and the piston rod becomes free. ● Brake Operation Principle  When air is exhausted from port A, the eccentric ring rotates due to the spring force, generating an eccentric load and applying the brake to the piston rod.	General Type	Crimped type	JSK2	CMK2			700			700								Pneumatic Cylinder ④ [RJ-005AA]	 Click!				
				Separable/ Maintainable	JSM2	CMA2			700		700		700												
				Robust tie-rod medium bore	JSG	SCG										600 (800)	700 (1200)	800 (1400)							
					JSC3	SCA2										600 (1600)	700 (2000)	800 (2500)							
		Robust tie-rod medium to large bore	JSC4	SCS2														800 (2000)	900						
		Swash plate method ● Brake Operation Principle  When air is exhausted from port A, brake plates A and B tilt in the direction of the arrows from their respective fulcrums, the braking force is amplified by the cylinder thrust, and the piston rod is held. ● Brake Release Principle  When air is supplied through port A, brake plates A and B are pushed by the release piston, the brake plates and piston rod become perpendicular, and the piston rod becomes free.	General Type	Brake section height is lower compared to JSK2	ULK	CMK2			700			700									 Click!				
				Space-saving in the stroke direction	SRT3	SRL3			1000		1500		1500		2000								 Click!		

With Brake Variation List

Model No./Appearance Tube I.D. ø(mm)			ULK					JSK2				JSM2				JSG				JSC3/JSC4												
																																
			16	20	25	32	40	20	25	32	40					20	30	40	40	50	63	80	100	40	50	63	80	100	125	140	160	180
																				Max. Stroke (mm)												
Variation Name/Model No.																				(Producible Stroke (mm)) *1												
Single Rod	-	-		700				700					700				600 (800)		700 (1200)		800 (1400)		900 (1500)		600 (1600)		700 (2000)		800 (2500)		900 (2000)	
	With Brake Release Valve	V		700				700					700				600 (800)		700 (1200)		800 (1400)		900 (1500)		600 (1600)		700 (2000)		800 (2500)		900 (2000)	
	Low Hydraulic Pressure	H LH																						600 (1600)		700 (2000)		800 (2500)		900 (2000)		
	Heat Resistant	T																						600 (1600)		700 (2000)		800 (2500)		900 (2000)		

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

With Lock

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Function/Application		Structure/Operating Principle	Features	Model No./ Appearance	Driving Cylinder	Tube I.D. ø(mm)															Specifications details here	
						20	25	30	32	40	50	63	80	100	125	140	160	180	Catalog Name [No.]	WEB		
						Max. Stroke (mm) (Producible Stroke (mm)) *1																
Free position fall prevention (holding a stationary state) Locking is unidirectional	Cylinder with fall prevention mechanism (holding the stationary state of the cylinder) 2 lock direction types Opposite locking direction is free [Applications] When fall prevention is required	Circular slit method Lock release port High wear resistance circular slit method Adopts a new fall prevention mechanism with excellent lifespan. By applying rotational force M to the lock plate, a force F is generated in the axial direction, holding the rod. Lock plate FB FB FB M Arrow A Arrow B When locked When unlocked Rod contact area	Space-saving Type	Uses a space-saving cylinder with a shorter overall length as a base	USSD	SSD	30				50								Pneumatic Cylinder ④ [R-J-005AA]	 Click!		
					SSD-K	200					300										 Click!	
					UFCD-KL		150				150											 Click!
					USC							600	700	800								 Click!
					UCAC-N							150										
			Clamp Cylinder	Lightweight compared to UCAC2	UCAC2								150						 Click!			

With Lock Variation List

Model No./Appearance Tube I.D. ø(mm)			USSD								UFCD-KL						USC				
			20	25	32	40	50	63	80	100	20	25	32	40	50	63	40	50	63	80	100
Variation Name/Model No.											Maximum Stroke (mm) (Manufacturable Stroke (mm)) *1										
Single Rod	-	-	30				50										(1600)	600 (2000)		700 (2500)	800
	High Load	K KL	200				300							150							
	Coil Scraper Type	G1															(1600)	600 (2000)		700 (2500)	800

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

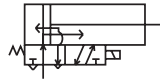
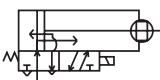
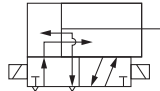
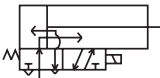
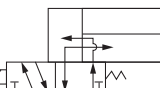
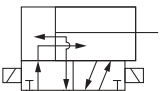
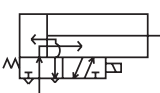
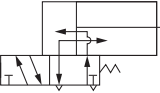
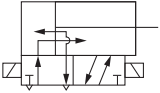
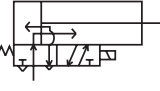
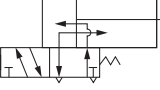
Brake/Lock Unit

* For details, refer to CKD Components Product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Function	Features	Model No./Appearance	Shaft Size Rail Width	Click here for detailed specifications	
				Catalog Name [No.]	WEB
Locking in a stationary state	Lightweight and compact lock unit that holds the shaft's position in the thrust direction Effective for contouring conveyance of workpieces	UB 	Shaft Size ø8, ø16	Pneumatic Cylinder ④ [RJ-005AA]	 Click!
Brake (Stopping during operation) (Holding a stationary state)	Brake section of JSC3 / JSC4 series unitized Function that can stop and lock movable rods instantaneously Can be widely used for safety and clamping mechanisms	JSB3 	Shaft Size ø16, ø20, ø25 ø30, ø35, ø40, ø45		 Click!
Locking in a stationary state	Lock unit to be mounted on a linear guide Can lock a workpiece after moving it to a specified position or perform an emergency stop for safety LMB has reduced width compared to LML, and LML has reduced height compared to LMB	LMB 	Made by THK Rail Width 15/20/25 For SR/SSR		 Click!
		LML 	Made by THK Made by IKO Rail Width 15/20/25/30/35		 Click!

With Valve

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features		Model No./Appearance		Circuit Diagram Symbol		Tube I.D. ø(mm)						Click here for detailed specifications		
						20	25	32	40	50	75	100	Catalog Name [No.]	WEB
						Max. Stroke (mm) (Producible Stroke (mm)) *1								
The CMK2 Series has a compactly integrated 4-way solenoid valve Built-in speed adjustment valve saves space and provides excellent installability	Double Acting/Single Rod Type	CKV2				750						Pneumatic Cylinder ④ [RJ-005AA]		
	Double Acting/Non-rotating Type	CKV2-M												
Piping is neat with a cylinder with valve The distance between the cylinder and valve is minimized for quick response Single solenoid can be changed to pushed out when energized ⇔ pull when energized The double solenoid allows self-holding of the cylinder position when the energizing is OFF (CAV2) Robust design of tie rod	Double Acting/Double Solenoid Lubricated Type	CAV2				500 600 700 (1000)								
	Double Acting/Single Solenoid Energized-to-Push Lubricated Type	COVP2												
	Double Acting/Single Solenoid Energized-to-Retract Lubricated Type	COVN2												
	Double Acting/Double Solenoid Non-lube Type	CAV2-N												
	Double Acting/Single Solenoid Energized-to-Push Non-lube Type	COVP2-N												
	Double Acting/Single Solenoid Energized-to-Retract Non-lube Type	COVN2-N												
	Double Acting/Double Solenoid with Cushion Short Overall Length Type	CAV2-S CAV2-NS												
	Double Acting/Single Solenoid Energized-to-Push with Cushion Short Overall Length Type	COVP2-S COVP2-NS												
	Double Acting/Single Solenoid Energized-to-Retract with Cushion Short Overall Length Type	COVN2-S COVN2-NS												

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Clamp Cylinder

* For details, refer to CKD Components Product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features	Model No./Appearance		Tube I.D. ø(mm)										Click here for detailed specifications	
			12	16	20	25	32	40	50	63	80	100	Catalog Name [No.]	WEB
			Maximum Stroke (mm) *1											
Cylinder Clevis Mounting for Clamping (with 2 Knuckles)	CAC4											Pneumatic Cylinder ④ [RJ-005AA]	 Click!	
Spatter Adhesion Prevention	CAC4-G4										150			
Fall Prevention	UCAC2										150			 Click!
Compact/ Lightweight Type	CAC-N													 Click!
Fall Prevention	UCAC-N										150			

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features	Model No./Appearance		Tube I.D. ø(mm)										Click here for detailed specifications	
			12	16	20	25	32	40	50	63	80	100	Catalog Name [No.]	WEB
			Maximum Stroke (mm) *1											
Rotary Clamp Cylinder	RCS2												Pneumatic Cylinder ④ [RJ-005AA]	 Click!
Packing Material Fluororubber	RCS2-T2		10, 20, 30 30, 50											
Spatter Adhesion Prevention	RCS2-G4		10, 20, 30 30, 50											
Improved wear resistance with 2 guide grooves	RCC2		10, 20 20, 50											
	Spatter Adhesion Prevention		RCC2-G4	10, 20 20, 50										
Pin Clamp Cylinder	PCC		12											 Click!
Fall Prevention	PCC-Q													

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

*2 This is the clamp stroke. Please refer to the catalog for the rotation stroke.

Special Cylinder

* For details, refer to CKD Components Product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features/Applications	Model No./Appearance	Tube I.D. ø(mm)									Click here for detailed specifications	
		6	10	20	32	40	50	63	80	100	Catalog Name [No.]	WEB
		Maximum Stroke (mm) *1										
	MVC 		30								Pneumatic Cylinder ④ [RJ-005AA]	 Click!
Cylinder and vacuum suction pad are compactly integrated. Ideal for suction transport of electronic parts and precision parts												 Click!
	STK 			20	30							 Click!
A square, space-saving cylinder specialized for use as a stopper with a powerful bearing												 Click!
	GLC 					500	700	800				 Click!
A high-function cylinder that does not require a guide, equipped with a non-rotating and lateral load resistant mechanism												 Click!
	BBS-A (Automatic Pressure Adjustment Type) BBS-O (Fixed Pressure Adjustment Type) 						1500					 Click!
For transferring heavy objects of approx. 300 kg Automatically recognizes changes in weight and maintains optimal balance												 Click!

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Features/Applications		Model No./Appearance		Actual Thrust (Thrust at 0.6 MPa)	Stroke (mm)	Specifications details here	
						Catalog Name [No.]	WEB
Achieve high thrust power of up to approx. 7t at any position with only a pneumatic source	Fast Forward + Power Boost	MCP-W		For 2t	50, 100, 150, 200 250, 300, 350, 400 450, 500	Pneumatic Cylinder ④ [RJ-005AA]	 Click!
Flexible response to multi-product production lines	Power Boost Section Only	MCP-S		For 5t	10		

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features/Applications	Model No./ Appearance	Payload (kg)												Click here for detailed specifications	
		X-axis				Z-axis								Catalog Name [No.]	WEB
		10	15	30	50	3	5	7	10	12	20	33			
		Maximum Stroke (mm) *1													
Achieves design savings with flexible combinations of X and Z axes New handling system for small component transfer kit	NSR 	2000				-								Pneumatic Cylinder ④ [RJ-005AA]	 Click!
	NHS-H 	2000				300 (Standard Body) 600 (Long Body)									
	NHS-S 	2000				200		200		200		200			

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Features/Applications	Model No./ Appearance	Payload (kg)						Click here for detailed specifications	
		5	10	15	25	50	65	Catalog Name [No.]	WEB
		Maximum Stroke (mm) *1							
High-rigidity guide rod integrated with general-type cylinder SCM Single-axis unit that achieves long-stroke transfer function	HRL 	300 (Standard Body) 600 (Long Body)						Pneumatic Cylinder ④ [RJ-005AA]	 Click!

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Special Cylinder

* For details, refer to CKD Components Product site
(https://www.ckd.co.jp/kiki/en/) → "Model No."

Features/Applications		Model No./ Appearance	Tube I.D. ø(mm)	Stroke (mm)	Click here for detailed specifications	
					Catalog [No.]	WEB
Compact cylinders and gripper devices are equipped with a Linear Norm Sensor (a special magnetic sensor that provides nearly linear output in response to the travel of a piston with a magnet) Simultaneously realizes work on workpiece (actuator function) and judgment/ discrimination (pass/ fail judgment/simple length measurement)	Super Compact Cylinder SSD Series	SSD-LN SSD-O-LN 	ø12, ø16	20, 30	Pneumatic Cylinder ④ [RJ-005AA]	 Click! 
			ø20, ø25 ø32, ø50	20, 50		
	Cross Roller Parallel Gripper BHA/BHG Series	BHA-LN BHG-LN (with rubber cover) 	ø12	5		 Click! 
			ø16	9		
			ø20	11		
			ø25	15		
	High-rigidity Centering Gripper BHE Series	BHE-LN 	ø12	7		
			ø16	10		
			ø20	14		
			ø25	16		
	Sensor Amplifier Indicator	LN-DN 	Output Type Analog output 1 point x 2 channels (1-5 V voltage output) Switch output 4 pointsx2ch			-

High Speed Type

* For details, refer to CKD Components Product site
(https://www.ckd.co.jp/kiki/en/) → "Model No."

Features/Applications		Model No./Appearance	Tube I.D. ø(mm)								Click here for detailed specifications	
			20	25	32	40	50	63	80	100	Catalog Name [No.]	WEB
			Maximum Stroke (mm) *1									
Capable of high speed (2000 mm/s) and high energy absorption	For removing molded products such as resin	HCM									Pneumatic Cylinder ④ [RJ-005AA]	 Click!
		700										
Capable of high speed (3000 mm/s) and high energy absorption		HCA										 Click!
		700										

*1 Tube I.D. and stroke represent typical models. Please refer to the catalog specifications for details.

Pneumatic Cylinder

Search by Product System
Gripping/Robot Handling

2-Finger Gripper

Parallel Gripper	LSH-HP1, LSHL-HP1 LSHM-HP2, LSH FH100, BSA2 BHA, BHG, BHE LHA, LHAG HAP, HKP, HCP, HGP BHA-FC	P. 47
Low-profile Parallel Gripper	LST-HP1, LSTM-HP2 HLF2, HLA, HLB HLAG, HLBG, HLC, HLD	P. 49
Wide Parallel Gripper	HMC-HP1 HMF, HMF-G HMFB, HFP	P. 50
Fulcrum Gripper	FH500, HBL, HJL HMD, HDL, HJD	P. 51

3-Jaw Chuck

3-Jaw Chuck	CKW-A-HP1 CKW-G-HP1, CKW-F-HP1 CKWL-A-HP1 CKL2, CKLG2, CKL2-HC CKH2, CKLB2 CKG, CK, CKA, CKS, CKS-F CKF, CKJ, CKL2-FC	P. 53
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Auto Gripper Changer

CHC	P. 55
Gripper for Collaborative Robots	
RLSH, RHLF, RCKL	P. 55

Gripping/Robot Handling

2-Finger Gripper

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Features		Model No./ Appearance	Gripping Force (N) *1			Click here for detailed specifications		Series for Specific Applications			
			50	100	500	Catalog Name [No.]	WEB	Food	Retractable Battery		
			Gripping Force (Stroke)					FP	P4		
Parallel Gripper	Linear Slide Gripper	High-Durability HP Series High Rigidity (30% UP) High Precision (Repeatability 0.01 mm) High Durability (2x conventional) With rubber cover available	LSH-HP1	3.3 to 158 N (4 to 22 mm)			Pneumatic Cylinder ⑤ [RJ-006AA]		Click!		
		Long Stroke	LSHL-HP1	11 to 65 N (8 to 22 mm)							
		With Measurement Function High-precision analog output of finger position	LSHM-HP2	11 to 65 N (8 to 22 mm)							
		Gently grips workpieces even at high speeds with a unique shockless mechanism (option)	LSH	11 to 65 N (4 to 14 mm)							
	Feather Gripper (Mini Parallel Gripper)	Lightweight and compact basic model	FH100	6 to 30 N (8 to 20 mm)					Click!	●	
	Compact Cross Roller	Ultra-compact type that allows multiple installations	BSA2	3.2 N (4 mm)					Click!	●	
		With cross roller guide High precision and smooth operation are possible For gripping at 80 N or less	BHA	15 to 80 N (5 to 15 mm)					Click!	●	●
		With Rubber Cover	BHG	15 to 70 N (5 to 15 mm)							

*1 Gripping force is the value for one finger on the closing side at an air pressure of 0.5 MPa.
The actual gripping force varies depending on the distance to the gripping point and the finger angle, so please check the page for each product when selecting.

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Features		Model No./ Appearance	Gripping Force (N) *1					Click here for detailed specifications		Series for Specific Applications	
			50	100	500	1000	1500	Catalog Name [No.]	WEB	Food	Rechargeable Battery
			Gripping Force (Stroke)							FP	P4
Parallel Gripper 	Centering Gripper High-hardness stainless steel adopted	 BHE	15 to 125 N (7 to 22 mm)					Pneumatic Cylinder ⑤ [RJ-006AA]	 Click! 		
	Linear Guide Gripper Pursues high durability with an integrated linear guide	 LHA	5.5 to 145 N (4 to 20 mm)						 Click! 		
	With Rubber Cover	 LHAG	18 to 145 N (5 to 20 mm)								
	Long stroke allows for dual use as a parallel clamp without adjustment	 HAP	18 to 100 N (8 to 41 mm)						 Click! 		
	Cross roller guide enables high-precision and smooth operation For gripping at 160 N or more	 HKP	160 to 1480 N (24 to 60 mm)						 Click! 		
	Long stroke allows for dual use as a parallel clamp without adjustment Low-profile/Compact	 HCP	12 to 75 N (20 to 40 mm)						 Click! 		
	Ultra-long stroke due to increased cam ratio	 HGP	17 N (56 mm)						 Click! 		
	Mechanical Gripper Grips the outer diameter with spring force Ideal for locations where air piping cannot be used	 BHA-FC	12 to 100 N (5 to 20 mm)						 Click! 		

*1 Gripping force is the value for one finger on the closing side at an air pressure of 0.5 MPa.
The actual gripping force varies depending on the distance to the gripping point and the finger angle, so please check the page for each product when selecting.

Gripping/Robot Handling

2-Finger Gripper

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Features		Model No./ Appearance	Gripping Force (N) *1		Click here for detailed specifications		Series for Specific Applications		
			50	100	Catalog Name [No.]	WEB	Food	Rechargeable Battery	
			Gripping Force (Stroke)				FP	P4	
Low-profile Parallel Gripper	Low-profile Long Stroke	Long-life HP Series High Rigidity (30% UP) High precision (Repeatability 0.03 mm) High Durability (2x conventional)	LST-HP1		19 to 141 N (8 to 80 mm)	Pneumatic Cylinder ⑤ [RJ-006AA]			
		With Measurement Function For high-precision gripping position detection	LSTM-HP2		48 to 141 N (12 to 20 mm)				
		Three stroke types can be selected to suit the application	HLF2		20 to 135 N (12 to 96 mm)				●
		Uses impact-resistant push guide	HLA, HLB		21 to 70 N (13 to 25 mm)				
		With Rubber Cover	HLAG, HLBG		21 to 70 N (13 to 25 mm)				
	High-rigidity Low-profile	Long stroke and high rigidity	HLC		18 to 310 N (20 to 140 mm)				●
		Ultra low profile Evolved model of low-profile gripper Achieves high gripping force using 4 pistons	HLD		35 to 250 N (12 to 30 mm)				●

*1 Gripping force is the value for one finger on the closing side at an air pressure of 0.5 MPa.
The actual gripping force varies depending on the distance to the gripping point and the finger angle, so please check the page for each product when selecting.

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Features		Model No./ Appearance	Gripping Force (N) *1		Click here for detailed specifications		Series for Specific Applications	
			50	100				
			Gripping Force (Stroke)		Catalog Name [No.]	WEB	Food	Rechargeable Battery
	Long-life HP Series	HMC-HP1		14 to 396 N (20 to 200 mm)	Pneumatic Cylinder ⑤ [RJ-006AA]			
		Wide variations of bore sizes and strokes allow for optimal selection	HMF					●
	With Scraper	For environments where cutting oil, etc., is present	HMF-G			66 to 170 N (30 to 120 mm)		●
		Low overall height allows for effective use of limited space	HMFB			120 to 310 N (100 to 200 mm)		
	Finger Operation Long stroke eliminates the need for adjustment for parallel clamping	HFP		20 to 240 N (20 to 60 mm)				

*1 Gripping force is the value for one finger on the closing side at an air pressure of 0.5 MPa.
The actual gripping force varies depending on the distance to the gripping point and the finger angle, so please check the page for each product when selecting.

Gripping/Robot Handling

2-Finger Gripper

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

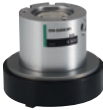
Features			Model No./ Appearance	Gripping Force (N) *1		Click here for detailed specifications		Series for Specific Applications			
				50	100	500	1000 1500			Catalog Name [No.]	WEB
				Gripping Force (Opening/Closing Angle)							
Pivot Gripper 180° wide opening/closing angle	Feather Gripper (Mini Fulcrum)	Lightweight, compact basic model	FH500		2 to 15 N (-5 to 20 degrees)	Pneumatic Cylinder ⑤ [RJ-006AA]		Food	Rechargeable Battery		
		Lightweight/ Compact For gripping up to 15 N							FP	P4	
	Toggle	Lightweight/ Compact For gripping from 10 to 125 N	HBL		10 to 125 N (-5 to 20 degrees)						
		High gripping force with toggle mechanism For gripping at 250 N or more	HJL		250 to 1800 N (-3 to 28 degrees)						
	Low-profile	Allows for flexible line configuration in a space-saving manner	HMD		16 to 120 N (-4 to 184) degrees					Food	Rechargeable Battery
		Body is lightweight and compact Powerful gripping force	HDL		20 to 80 N (0 to 180 degrees)						
Toggle	High gripping force with toggle mechanism For gripping at 200 N or more	HJD		200 to 1250 N (-4 to 184 degrees)							

*1 Gripping force is the value for one finger on the closing side at an air pressure of 0.5 MPa.
The actual gripping force varies depending on the distance to the gripping point and the finger angle, so please check the page for each product when selecting.

Gripping/Robot Handling

3-Jaw Chuck

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Features		Model No./ Appearance	Gripping Force (N) *1				Click here for detailed specifications		Series for Specific Applications	
			5010050010001500				Catalog Name [No.]	WEB	Food FP	Packaging Battery P4
			Gripping Force (Stroke)							
3-Jaw Chuck	High-Durability HP Series High Durability (2x conventional) High Rigidity (1.3x or more conventional)	CKW-A-HP1 	14 to 185 N (4 to 8 mm)				Pneumatic Cylinder ⑤ [RJ-006AA]	 Click!		
	With Rubber Cover	CKW-G-HP1 CKW-F-HP1 	9 to 97 N (4 to 8 mm)							
	Long Stroke	CKWL-A-HP1 	14 to 118 N (10 to 12 mm)							
	Standard Model	CKL2 	17 to 750 N (5 to 40 mm)					 Click!		●
	With Rubber Cover Prevents intrusion of chips and water droplets	CKLG2 	28 to 750 N (5 to 23 mm)					 Click!		●
	Fall Prevention Type	CKL2-HC 	32 to 250 N (8 to 20 mm)					 Click!		
	High Gripping Force	CKH2 	320 to 1300 N (6 to 12 mm)					 Click!		
	2-Direction (Parallel Gripper)	CKLB2 	32 to 1050 N (5 to 23 mm)					 Click!		●

*1 Gripping force is the value for one finger on the closing side at an air pressure of 0.5 MPa.
The actual gripping force varies depending on the distance to the gripping point and the finger angle, so please check the page for each product when selecting.

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Features		Model No./ Appearance	Gripping Force (N) *1				Click here for detailed specifications		Series for Specific Applications	
			50	100	500	1000	1500	Catalog Name [No.]	WEB	Food
			Gripping Force (Stroke)							
3-Jaw Chuck	Uses cross roller guide	CKG 	13 to 160 N (6 to 16 mm)				Pneumatic Cylinder ⑤ [RJ-006AA]	 Click! 		
	Long Stroke	CK 	15 to 80 N (20 to 40 mm)					 Click! 		
	Powerful Compact	CKA 	4 to 600 N (6 to 38 mm)					 Click! 		
	Low-profile Chuck	CKS 	17 to 320 N (10 to 32 mm)					 Click! 		
	Hollow Hole Type	CKS-F 	75 to 800 N (16 to 50 mm)							
	Hollow Hole Type	CKF 	12 to 130 N (5 to 16 mm)					 Click! 		
	Ultra-long Stroke Low overall height and large gripping force	CKJ 	86 to 1550 N (40 to 130 mm)					 Click! 		
	Mechanical Chuck Grips the outer diameter with spring force Ideal for locations where air piping cannot be used	CKL2-FC 	20 to 150 N (5 to 10 mm)					 Click! 		

*1 Gripping force is the value for one finger on the closing side at an air pressure of 0.5 MPa.
The actual gripping force varies depending on the distance to the gripping point and the finger angle, so please check the page for each product when selecting.

Gripping/Robot Handling

Auto Gripper Changer

Features	Model No./Appearance	Option
Automatically changes robot end-of-arm tooling		Standard
		Electrode Block Solder Specification
		Electrode Block D-sub Connector
		Check Valve

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Payload				Click here for detailed specifications	
1 kg	5 kg	10 kg	20 kg	Catalog Name [No.]	WEB
●	●	●	●	Pneumatic Cylinder ⑤ [RJ-006AA]	 Click!
●	●	●	●		
	●	●	●		
	●	●	●		

Gripper for Collaborative Robots

Features	Model No./Appearance	Gripping Force (N) (Stroke (mm))	Click here for detailed specifications	
			Catalog Name [No.]	WEB
Grippers certified and compatible with various collaborative robots Edgeless resin cover Equipped with a 360° visible LED indicator lamp for high safety consideration	Compact Type Compact body that does not interfere with robot's trajectory 	42 (18)	Pneumatic Cylinder ⑤ [RJ-006AA]	 Click!
	Long Stroke Type Long stroke with reduced height and thin profile 	85 (32)		
	3-Jaw Type 3-finger jaw ideal for cylindrical and round workpieces 	125 (10)		

Compatible with Various Collaborative Robots							
Manufacturer	UNIVERSAL ROBOTS Certified	TECHMAN ROBOT Certified	OMRON Robot Certified	FANUC Robot Compatible	JAKARobot Compatible	YASKAWA Robot Compatible	Kawasaki Robot Compatible
Model No./ Appearance	-UR	-TM	-TM	-FN	-JK	-YS	-KW
							

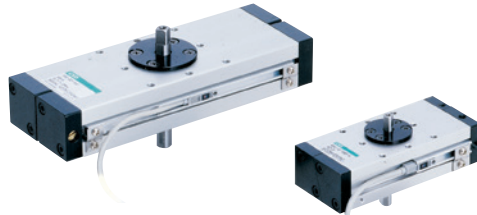
Pneumatic Cylinder

Search by Product System
Swing/Rotary

Swing/Rotary		
Rack & Pinion Type	RRC	P. 59
Table type	GRC	P. 59
Vane Type	RV3□	P. 59

Swing/Rotary

Rack & Pinion Type

Features	Model No.	Appearance			Effective Torque (RRC)/Theoretical Torque (GRC) *At 0.5 MPa (N·m)								Max. Swing Angle (°)			Specifications details here		Series for Specific Applications		
					0.5	0.7	1.0	2.0	3.0	3.1	5.2	5.6	8.1	90	180	270	Catalog Name [No.]	WEB	Rechargeable Battery	Clean
																			P4	P5/P7
Shaft type Mechanism combining two cylinders and a rack & pinion Torque is stable even at low pressure, with minimal internal and external leakage	RRC																			
Table type Bearing guide enables direct mounting of high loads and high positional accuracy Torque is stable even at low pressure, with minimal internal and external leakage	GRC		Basic Type													Pneumatic Cylinder ④ [RJ-005AA]				
	GRC-K		High-Precision Type																	
	GRC-F		Ultra Low Speed Type																	
	GRC-KF		High-Precision Type/ Ultra Low Speed Type																	

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Vane Type

Features	Model No.		Appearance	Variation	Vane Type		Effective Torque *At 0.5 MPa (N·m)					Swing Angle (°)					Click here for detailed specifications	
							1	3	10	20	30	90	100	180	270	280	Catalog Name [No.]	WEB
Compact	RV3S	1/3/10/20/30		Standard Type	Single		0.12	0.31	0.98	1.70	3.19	●		●	●		Pneumatic Cylinder ④ [RJ-005AA]	
	RV3D	10/20/30			Double		0.28	0.71	2.11	3.88	7.70	●						
	RV3S $\frac{V}{W}$	10/20/30		With Valve	Single				0.98	1.70	3.19	●		●	●			
	RV3D $\frac{V}{W}$	10/20/30			Double				2.11	3.88	7.70	●						
	RV3SA	3/10/20/30		Variable Angle Type	Single			0.31	0.98	1.70	3.19			● ^{*1}	● ^{*2}			
	RV3DA	3/10/20/30			Double			0.71	2.11	3.88	7.70	●						
Large	RV3S	50/150/300/800		Standard Type	Single		50	150	300	800								
	RV3D	50/150/300/800			Double		4.7	14.7	27.9	102		●		●	●	●		
	RV3S $\frac{V}{W}$	50/150/300/800		With Valve	Single		10.1	34.3	66.6	206		●	●					
	RV3D $\frac{V}{W}$	50/150/300/800			Double		4.7	14.7	27.9	102		●		●	●	●		
	RV3SH	50/150/300/800		Low Hydraulic Pressure Type	Single		10.1	34.3	66.6	206		●	●					
	RV3SD	50/150/300/800			Double		4.7	14.7	27.9	102		●		●	●	●		
				Shock absorber			10.1	34.3	66.6	206		●	●					
	RVC											●	●	●	●	●		

*1 For sizes 3, 10, and 20.
*2 For size 30.

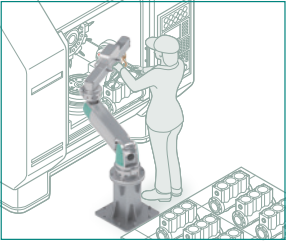
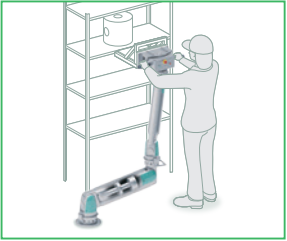
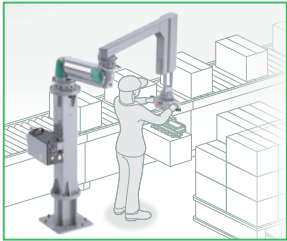
Pneumatic Cylinder

Search by Product System
Unit

Unit		
Assisting Device	PAW CAW FAW BBS	P. 63

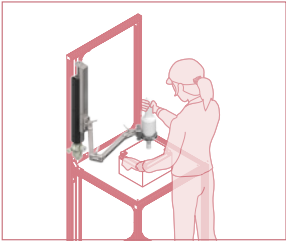
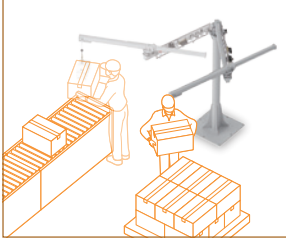
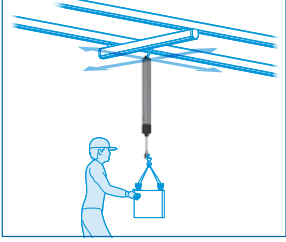
Unit

Assisting Device

Features	Application Examples	Model No.	Payload *1	Movable Range or Stroke	Click here for detailed specifications	
					Catalog Name [No.]	WEB
Pneumatic balancer that enables assistance from below	Attaching/detaching workpieces from the front of machine tools or transferring heavy objects from a workbench to a conveyor in a narrow assembly area  PAW Series Powerful Arm	PAW	Up to 83 kg	Movable Range Single Axis: Vertical up to 650 mm Multi-axis: Vertical to 1750 mm Horizontal to 2300 mm	PowerArm PAW Series [CC-1418AA] 	
Mechanical Lock Specification Built-in lock mechanism Can be locked at any position within the vertical movable range while the arm is stopped	For safer use Eliminates arm lift and sink 	PAW-B	Up to 71 kg	Movable Range Single Axis: Vertical up to 650 mm multi-axis: Vertical to 1750 mm Horizontal to 2300 mm		
Palletizing specification that enables stacking and unloading in a space-saving manner	Want to perform stacking and unloading work where space is limited 	PAW-A	Up to 51 kg	Transfer unit vertical movable range: Up to 1100 mm Transfer unit max. movable radius: Up to 2100 mm		

*1: Payload changes depending on the supply pressure. (At 0.5 MPa pressure)

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features	Application Examples	Model No.	Payload *1	Movable Range or Stroke	Click here for detailed specifications	
					Catalog Name [No.]	WEB
A compact air balancer that supports holding and maneuvering tools, etc.	 CAW Series Compact Arm	CAW-L-300	Up to 5 kg	Vertical Stroke: 300 mm	Compact Arm CAW Series [CC-1613AA] 	
		CAW-H-450	Up to 15 kg	Vertical Stroke: 450 mm		
An air balancer with a wide working range that can be installed even in low-ceiling areas	Transferring cardboard boxes or material bags from pallets to conveyors in low-ceiling work areas  FAW Series Flex Arm	FAW	Up to 50 kg	Movable range *2 vertical: 1500 mm Horizontal: 2500 mm	Flex Arm FAW Series [CC-1615AA] 	
A balancer unit with a simple structure that allows heavy objects to be operated with minimal force	To a distant location in a wide work area Vertical balance when transferring heavy objects 	BBS	(Max. Load Range) Up to 285 kg *At 0.6 MPa	Max. Stroke: 1500 mm	Pneumatic Cylinder ④ [RJ-005AA] 	

*1: Payload changes depending on the supply pressure. (At 0.5 MPa pressurized)

*2: Maximum rotation radius of the arm tip.

Pneumatic Cylinder

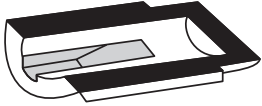
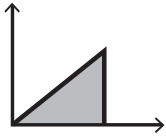
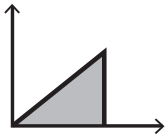
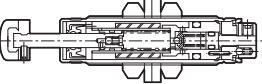
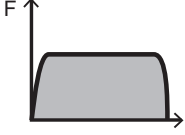
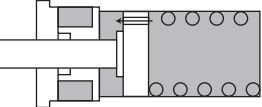
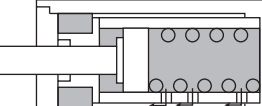
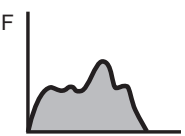
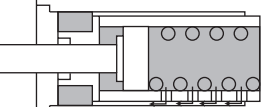
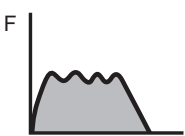
Search by Product System
Related Components

Shock absorber	
SKL, NCK, SCK, FCK	P. 67
Free Joint	
FJ, FK	P. 69
Cylinder Switch	
SW-	P. 71

Related Equipment

Shock absorber

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Operating Characteristics	Model No./Appearance	Operating Speed (m/s)			Max. Absorbed Energy (J)						Operating Conditions		Size/Structure				Energy Absorption Characteristics	Click here for detailed specifications		Series for Specific Applications
		Low speed up to 1	Medium speed up to 2	High speed 2~	5	10	50	100	500	1000	Thrust combined	Free fall (high-speed collision)	Outer diameter thread size (mm)	Adjuster adjustment	Tube	Orifice	Stroke (S) - Resistance (F) Relationship	Catalog Name [No.]	WEB	Rechargeable Battery P4
Slit orifice matched to the linear slide cylinder provides high cycle time and smooth stopping performance	SKL 	◎	-	-	0.2 to 3.6						◎	△	M8x0.75 M10x1.0 M12x1.0	Fixed	Single	 Slit orifice		Pneumatic Cylinder ④ [RJ-005AA1]	 Click!	
Smooth stopping performance achieved with slit orifices Energy is absorbed as speed gradually decreases due to triangular waveform	NCK 	◎	◎	△	1 to 200						◎	△	M8x0.75 to M27x1.5	Fixed	Single	 Slit orifice			 Click!	●
Trapezoidal waveform enables the most efficient energy absorption	SCK 	△	△	◎	0.049 to 588						△	◎	M10x1.0 to M27x3.0	Adjustable (Fixed)	Double	 Balance valve			 Click!	
Since the orifice surface is constant over the entire stroke, the effect immediately after impact is large, and as the stroke progresses and the speed decreases, the resistance also decreases	FCK 	L (Low Speed)	◎	-	1.5 to 720						△	△	M10x1.0 to M42x1.5	Adjustable	Single/ Double	 Single-hole orifice			 Click!	●
Designed to absorb kinetic energy in the first half of the stroke and control speed in the latter half. Therefore, energy absorption is ideally performed with respect to the cylinder thrust.		M (Medium Speed)	-	◎							◎	○			Double	 Irregular multi-hole orifice				
As the stroke progresses and the speed decreases, the orifice area decreases in stages, so the resistance fluctuates in a ripple-like manner, but the maximum resistance can be kept low		H (High Speed)	-	-							△	○			Double	 Multi-hole orifice				

◎ : Best ○ : Good △ : Yes

Related Components

Free Joint

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Features		Model No.	Appearance	Thread Size									Thread Size										Click here for detailed specifications		Series for Specific Applications	
				M3 x 0.5	M4 x 0.7	M5 x 0.8	M6 x 1.0	M8 x 1.0	M8 x 1.25	M10 x 1.25	M12 x 1.25		M12 x 1.5	M14 x 1.5	M16 x 1.5	M18 x 1.5	M22 x 1.5	M26 x 1.5	M30 x 1.5	M36 x 1.5	M40 x 1.5	M45 x 1.5	Catalog Name [No.]	WEB	Food	Rechargeable Battery
																									FP	P4
Eliminates misalignment and parallelism errors during cylinder mounting for smooth rod operation With dust cover, lubricant-filled, no lubrication required.	Basic Type	FJ-0		●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	Pneumatic Cylinder ④ [PJ-005AA]	 Click!	●	
	Foot type	FJ-L		-	-	-	-	●	●	●	●		●	●	●	●	●	●	●	●	●	●			●	●
	Flange type	FJ-F		-	-	-	-	●	●	●	●		●	●	●	●	●	●	●	●	●	●				

Free Joint - Simple Flow Controller

● : Standard ◎ : Option ○ : Custom - : Not manufacturable

Features		Model No.	Appearance	Thread Size								Thread Size									Click here for detailed specifications		Series for Specific Applications
				M3 x 0.5	M4 x 0.7	M5 x 0.8	M6 x 1.0	M8 x 1.0	M8 x 1.25	M10 x 1.25		M10 x 1.5	M12 x 1.5	M14 x 1.5	M16 x 1.5	M16 x 2.0	M18 x 1.5	M20 x 2.5	M22 x 1.5	M26 x 1.5	Catalog Name [No.]	WEB	Rechargeable Battery
																							P4
Eliminates misalignment and parallelism errors during cylinder installation, ensuring smooth Rod operation with a simple free joint	Male Thread Type	FK-□-N		●	●	●	●	-	●	-		●	-	-	-	●	-	●	-	-	Pneumatic Cylinder ④ [RJ-005AA]	 Click!	●
	Female Thread Type	FK		●	●	●	●	●	●	●		-	●	●	●	-	●	-	●	●			

Actuators - Electric Actuators

Search by Product System

Product System

Transfer/Conveyance/Press-fitting/Clamping

Slider		
with Motor	EJSG EBS-G, EBS-M KBX, EKS-M	P. 85
Motorless Specification	EBS-L ETS, ECS ETV, ECV EKS-L	
Rod		
with Motor	EBR-G, EBR-M GSSD2, DSSD2 KBX	P. 87
Motorless Specification	EBR-L	
Guided (with Motor)		
GSTG, GSTS, GSTL DSTG, DSTS, DSTL DMSDG		P. 89
Stopper (with Motor)		
GSTK, DSTK		P. 90
Table (with Motor)		
FLCR		P. 90
Gripping/Robot Handling		
2-Finger Gripper (with Motor)		
FFLD, FLSH, DLSH		P. 93
3-Finger Gripper (with Motor)		
GCKW, DCKW		P. 93

Indexing/Swing/Continuous Rotation

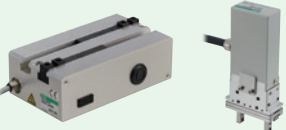
Direct Drive Actuator	
AX1R, AX2R, AX4R AX1000T, AX2000T, AX4000T AX6000M, NX4 ND-s, ND-sHS, DD-s, HD-s, FD-s	P. 97
Rotary (with Motor)	
FGRC	P. 99
Mechanical Index	
ZRS, PCIS, PCOS, PPLX	P. 99
Transfer/Pick & Place/Palletizing	
Orthogonal Axis Combination	
KBX, ETS-Multi	P. 103
SCARA Robot	
KHL, KHE	P. 104
3D Transfer	
ESM	P. 104
Related Equipment	
Controllers/Drivers	
ECMG, ECG, ECR, ESC4 KCA, NXD AXD, AX9000TS/TH AX9000MU, NXD VPH (Model No. NCR-H)	P. 107

Product System of Drive Section (Select by Application)

Electric Actuator

Application	Product Group			Model No.	Page
Transfer Conveyance Press-fitting Clamping	With Motor	Slider	Standard	 EJSG EBS-G, EBS-M	P. 85
			High Payload	 KBX	P. 85
			High Cycle Time/ High Rigidity	 EKS-M	P. 85
		Rod		 EBR-G, EBR-M GSSD2, DSSD2 KBX	P. 87
			Guided	 GSTG GSTS, GSTL DSTG DSTS/DSTL* DMSDG	P. 89
		Stopper		 GSTK DSTK	P. 90
		Table		 FLCR	P. 90
	Motorless Specification	Slider	Standard	 EBS-L ETS ECS	P. 85
			Long Stroke (Belt Drive)	 ETV ECV	
			High Cycle Time/ High Rigidity	 EKS-L	
		Rod		 EBR-L	P. 87

* DSSD2, DSTS, DSTL, DSTG (sliding screw) cannot be used in press fitting/clamping applications.

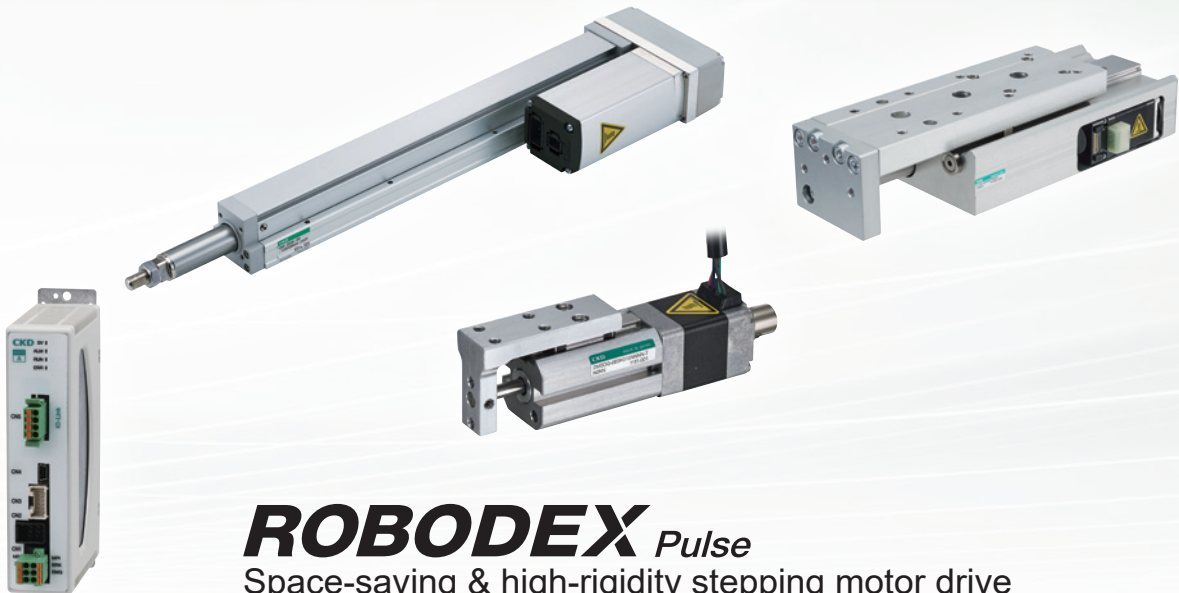
Application	Product Group		Model No.	Page
Gripping Robot Handling	Gripper	2-Finger	 FFLD FLSH DLSH	P. 93
		3-Finger	 GCKW DCKW	
Indexing Swing Continuous Rotation	Direct Drive Actuator		 AX1R, AX2R AX4R AX1000T AX2000T AX4000T AX6000M/NX4 rdisk (Series Name)	P. 97
	Rotary		 FGRC	P. 99
	Mechanical Index		 ZRS PCIS/PCOS PPLX	P. 99
	Orthogonal Axis Combination		 KBX ETS-Multi (Motorless)	P. 103
Transfer Pick & Place Palletizing	SCARA Robot		 KHL KHE [Sales limited to Japan]	P. 104
	3D Transfer		 ESM (Motorless Specification)	
Control	Controller Driver		 ECMG ECG, ECR, ESC4 KCA, NXD	P. 107
			 AXD AX9000TS/TH AX9000MU NXD VPH	P. 109

ROBODEX

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A wide variety of **ROBODEX** series.

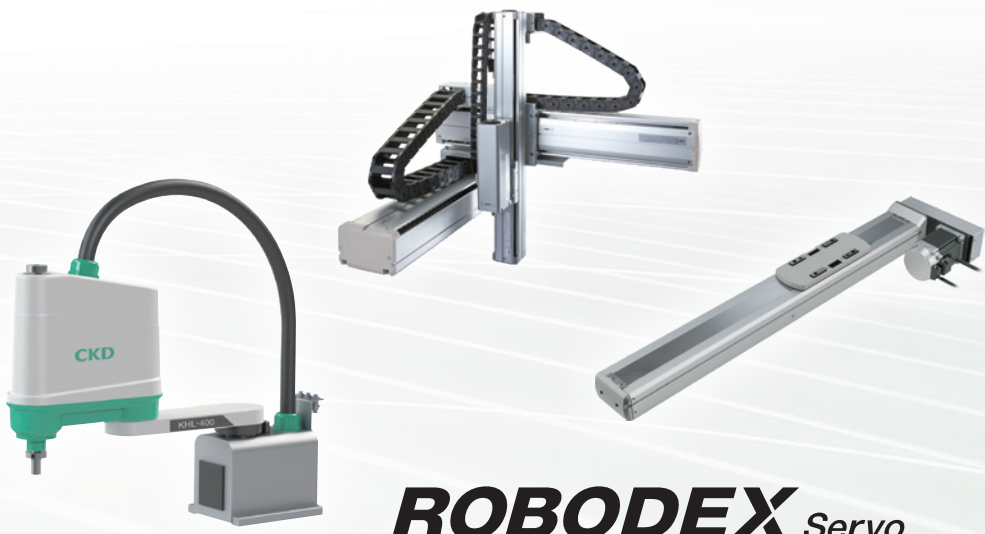
ROBODEX



ROBODEX Pulse
Space-saving & high-rigidity stepping motor drive



ROBODEX Std.
Motorless, allowing you to attach your desired motor



ROBODEX Servo
Servo motor drive for a wide range of applications

Actuators - Electric Actuators

Search by Product System: Transfer/Conveyance, Press-fitting, Clamping

Slider		Guided (with Motor)	
With Motor	EJSG EBS-G, EBS-M KBX, EKS-M	GSTG, GSTS, GSTL DSTG, DSTS, DSTL DMSDG	P. 89
Motorless Specification	EBS-L ETS, ECS ETV, ECV EKS-L	Stopper (with Motor)	
		GSTK, DSTK	P. 90
Rod		Table (with Motor)	
With Motor	EBR-G, EBR-M GSSD2, DSSD2 KBX	FLCR	P. 90
Motorless Specification	EBR-L		

Transfer/Conveyance/Press-fitting/Clamping

* For details, refer to CKD components product site
(https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, please refer to P. 451.

Motor	Features/Applications	Model No./ Appearance	Drive Method	Max. Payload (kg)		Max. Pushing Force (N)	Max. Stroke (mm)	Max. Speed (mm/s)	Connecting Controller	Low Particle Emission	Click here for specifications		Series for Specific Applications	
				Horizontal	Vertical						Catalog Name [No.]	WEB	Food	Rechargeable Battery
													FP	P4

Slider Type (with Motor)

ROBODEX Pulse

With Motor	Stepping	Lineup includes specifications for dusty environments, low particle emission, rechargeable battery manufacturing processes, and food manufacturing processes Adopts an outer rail guide to achieve a compact and high-rigidity body		Ball Screw	80	43.3	965	1100	1120	ECMG ECG-A	○	 Click!	○	○
					Ball Screw	80	43.3	965	1100	1120	ECMG ECG-A			○
				80		40	970	1100	1100	ECR			○	○

ROBODEX Servo

With Motor	Stepping	Multi-axis configurations from single-axis up to 4 axes are possible Supports a wide range of transfer applications from light to heavy loads		Ball Screw	250	100	-	1700	2300	KCA	 Click!			
				Belt Drive	200	-	-	4450	2000					
	Servo	Achieves high rigidity with a steel-based body and outer rail guide Contributes to higher equipment speeds with support for max. 2G acceleration/deceleration [Sales limited to Japan]		Ball Screw	118.5	33.5	-	1500	2500	NXD	 Click!			

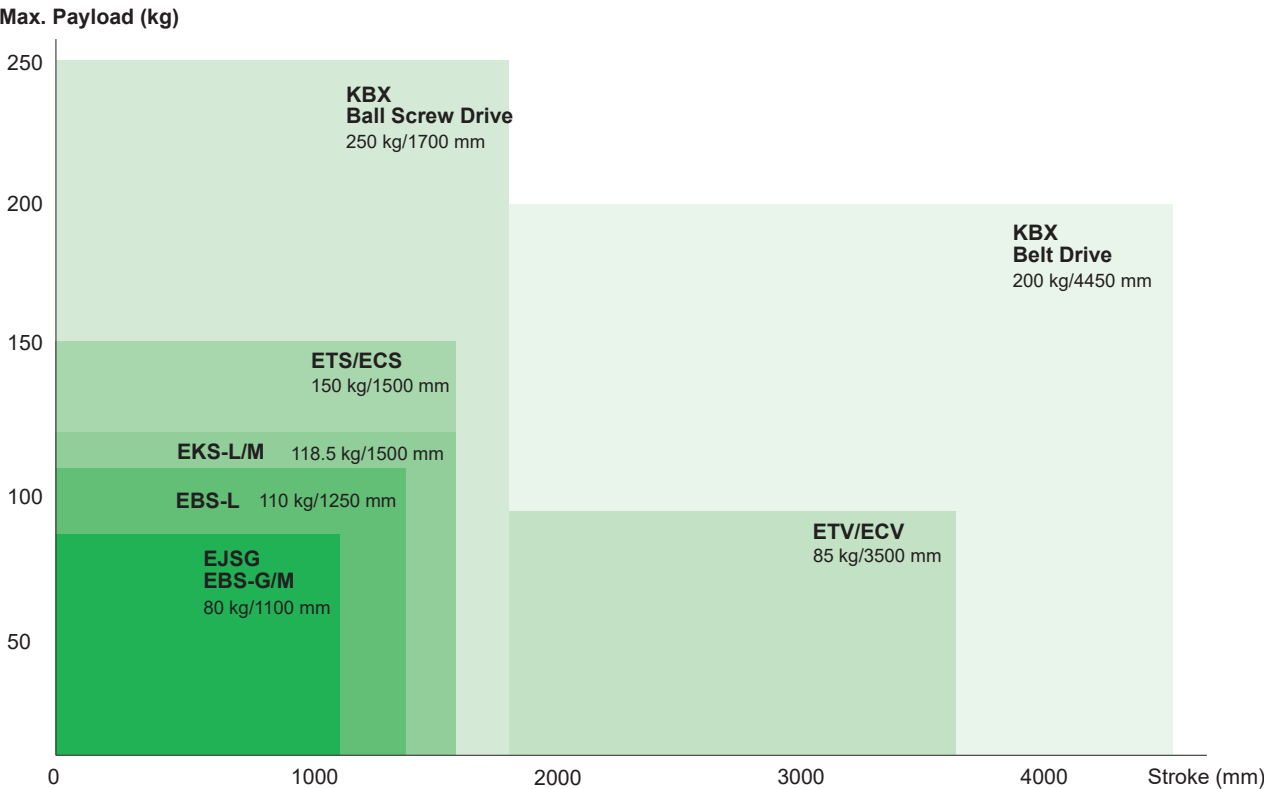
Slider Type (Motorless Specification)

ROBODEX Std.

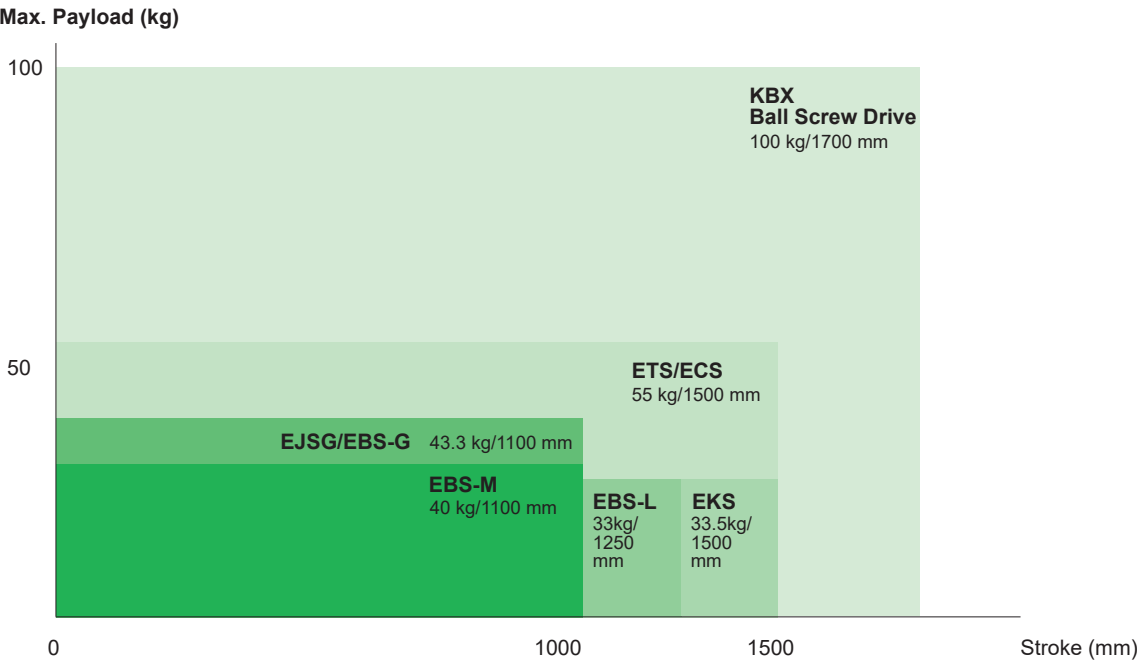
Motorless Specification	Stepping	Adopts an outer rail guide to achieve a compact and high-rigidity body		Ball Screw	110	33		1250	1600		 Click!	○	○
					50	15		1100	1000				
	Stepping	A high-rigidity actuator that uses a linear guide, available in larger sizes than EBS-L		Ball Screw	150	55		1500	2000		 Click!	○	○
					150	55		1500	2000				
	Stepping	A high-rigidity actuator that uses a linear guide		Ball Screw	150	55		1500	2000		 Click!	○	○
					150	55		1500	2000				
	Servo	Supports long stroke and high-speed transfer		Belt Drive	85	-		3500	2000		 Click!	○	
	Servo	Supports long strokes and high-speed transport Low dust emission model with full cover structure and suction port		Belt Drive	85	-		3500	2000		 Click!	○	
	Servo	Achieves high rigidity with a steel-based outer rail Supports higher equipment speeds with max. 2G acceleration/deceleration		Ball Screw	118.5	33.5		1500	2500		 Click!	○	○

*1: EBS-G-P4 is not compatible with ECMG. If you have any requests, please contact your nearest sales office.

During Horizontal Transfer



During Vertical Transfer



Supported servo motor manufacturers list (model No.: EBS-L, ETS, ECS, EKS-L, ECV, ETV)

Mitsubishi Electric Corporation, Delta Electronics, Inc., Sanyo Denki Co., Ltd., Yaskawa Electric Corporation
Keyence Corporation, Panasonic Corporation, Omron Corporation, Fuji Electric Co., Ltd.
FANUC CORPORATION, DENSO WAVE INCORPORATED ^{Note1)}, Bosch Rexroth AG, Rockwell Automation, Inc. SIEMENS AG
^{Note1)} Only compatible with metal stopper specification (ETS-X).

Supported stepping motor manufacturers list (model No.: EBS-L, ETS, ECS)

Oriental Motor Co., Ltd., MinebeaMitsumi Inc., Dyadic Systems Co., Ltd.

Transfer/Conveyance/Press-fitting/Clamping

* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, please refer to P. 451.

Motor	Features/Applications	Model No.	Drive Method	Max. Payload (kg)		Max. Pushing Force (N)	Max. Stroke (mm)	Max. Speed (mm/s)	Connecting Controller	Click here for specifications		Series for Specific Applications	
				Horizontal	Vertical							Food	Rechargeable Battery
				Catalog Name [No.]	WEB					FP	P4		

Rod (with Motor)

ROBODEX Pulse

With Motor	Stepping	Adopts an outer rail guide, reducing the need for an additional guide	EBR-G	Ball Screw	80	55	965	700	700	ECMG ECG-A	Electric Actuator ROBODEX Pulse Stepping Motor [R-J-014AA]		○	*2
			EBR-M		80	38.3	1050	700	900	ECR				
	For replacing pneumatic cylinders with electric actuators	Adopts the same body as pneumatic cylinder SSD2 Multi-point positioning and pressing operations are possible	GSSD2	Lead Screw	14.8	19.6	590	100	500	ECMG ECG-A			○	
		Adopts the same body as pneumatic cylinder SSD2 For point-to-point operation only	DSSD2 *1		14.8	13.2	-	100	180	ESC4				

ROBODEX Servo

With Motor	Servo	For transfer applications	KBX (Rod type)	Ball Screw	25	6.5	-	300	600	KCA	Electric Actuator KBX Series [CC-1275AA]			
------------	-------	---------------------------	----------------	------------	----	-----	---	-----	-----	-----	--	---	--	--

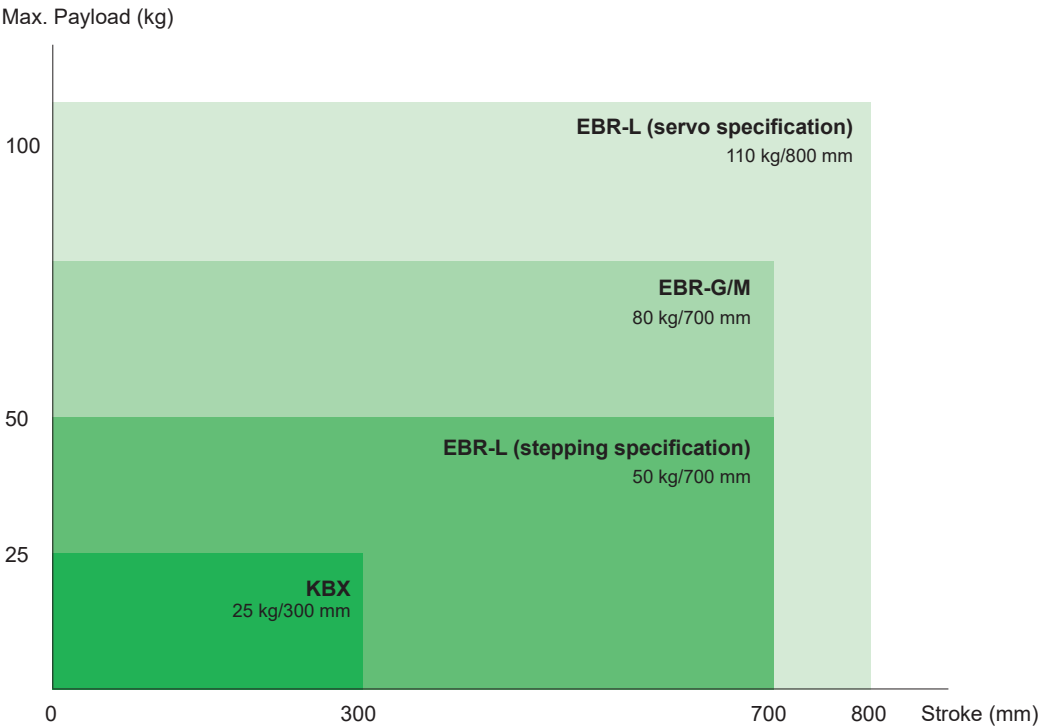
Rod (Motorless Specification)

ROBODEX Std.

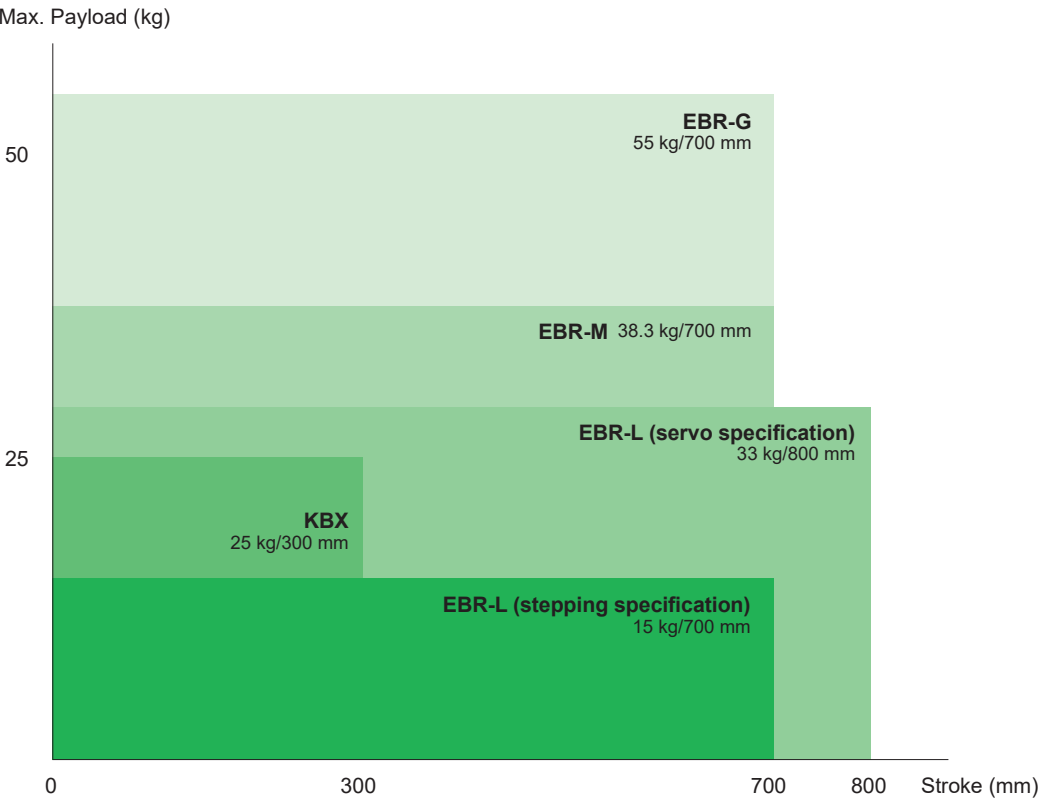
Motorless Specification	Servo	Adopts an outer rail guide, reducing the need for an additional guide	EBR-L	Ball Screw	110	33	-	800	1600	-	Electric Actuator ROBODEX Std. Motorless Specification [R-J-015AA]		○	○
	Stepping				50	15	-	700	1000	-				

*1: DSSD2 (lead screw) cannot be used for press-fitting or clamping applications.
*2: EBR-G-P4 is not compatible with ECMG. If you have any requests, please contact your nearest sales office.

Horizontal Payload



Vertical Payload



Supported servo motor manufacturers list (model No.: EBR-L)

Mitsubishi Electric Corporation, Delta Electronics, Inc., Sanyo Denki Co., Ltd., Yaskawa Electric Corporation
Keyence Corporation, Panasonic Corporation, Omron Corporation, Fuji Electric Co., Ltd.
FANUC CORPORATION, Bosch Rexroth AG, Rockwell Automation, Inc., SIEMENS AG

Supported stepping motor manufacturers list (model No.: EBR-L)

Oriental Motor Co., Ltd., MinebeaMitsumi Inc., Dyadic Systems Co., Ltd.

Transfer/Conveyance/Press-fitting/Clamping

Guided (with Motor)

* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

ROBODEX Pulse

Motor		Features/Applications	Model No./Appearance	Drive Method	Max. Payload (kg)		Max. Pushing Force (N)	Max. Stroke (mm)	Max. Speed (mm/s)	Connecting Controller	Click here for specifications		
					Horizontal	Vertical					Catalog Name [No.]	WEB	
With Motor	Stepping	For replacing pneumatic cylinders with electric actuators	Adopts the same body as pneumatic cylinder STG Multi-point positioning and pressing operations are possible	GSTG 	Lead Screw	14.8	19.6	590	100	500	ECMG ECG-A	Electric Actuator ROBODEX Pulse Stepping Motor Drive [RJ-014AA]	 Click! 
			Adopts the same body as pneumatic cylinder STS Multi-point positioning and pressing operations are possible	GSTS 	Lead Screw	14.8	19.6	590	50	500	ECMG ECG-A		 Click! 
			Adopts the same body as pneumatic cylinder STL Multi-point positioning and pressing operations are possible	GSTL 	Lead Screw	14.8	19.6	590	200	500	ECMG ECG-A		 Click! 
			Adopts the same body as pneumatic cylinder STG Point-to-point operation	DSTG * 	Lead Screw	14.8	13.2	-	100	180	ESC4		 Click! 
			Adopts the same body as pneumatic cylinder STS Point-to-point operation	DSTS * 	Lead Screw	14.8	13.2	-	50	180	ESC4		 Click! 
			Adopts the same body as pneumatic cylinder STL Point-to-point operation	DSTL * 	Lead Screw	14.8	13.2	-	200	180	ESC4		 Click! 
			Adopts the same body as pneumatic cylinder MSDG Point-to-point operation	DMSDG 	Coil Spring	0.35	0.35	20	30	77	ESC4		 Click! 

* DSTG, DSTS, DSTL (sliding screw) cannot be used in press fitting/clamping applications.

Stopper (with Motor)

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Motor		Features/Applications		Model No./Appearance	Drive Method	Max. Thrust (N)	Max. Pushing Force (N)	Max. Stroke (mm)	Max. Speed (mm/s)	Connecting Controller	Click here for specifications	
											Catalog Name [No.]	WEB
Stepping with Motor	For replacing pneumatic cylinders with electric actuators	Adopts the same body as pneumatic cylinder STK Multi-point positioning and pressing operations are possible	GSTK 	Lead Screw	192	590	30	350	ECG-A ECMG	Electric Actuator ROBODEX Pulse Stepping Motor Drive [R4-014AA1]	 Click!	
		Adopts the same body as pneumatic cylinder STK Point-to-point operation	DSTK 	Lead Screw	137	-	30	180	ESC4		 Click!	

Table (with Motor)

ROBODEX Pulse

Motor		Features/Applications		Model No./ Appearance	Drive Method	Max. Payload (kg)		Max. Pushing Force (N)	Max. Stroke (mm)	Max. Speed (mm/s)	Connecting Controller	Click here for specifications		Series for Specific Applications	
						Horizontal	Vertical					Catalog Name [No.]	WEB	Food	Rechargeable Battery
														FP	P4
Stepping with Motor		For replacing pneumatic cylinders with electric actuators	Equivalent dimensions and performance to pneumatic components Built-in motor for space saving	FLCR 	Ball screw + belt	11	8.5	210	100	300	ECMG ECG-B ECR	Electric Actuator ROBODEX Pulse Stepping Motor Drive [RJ-014AA]	 Click! 	-	○

Actuators - Electric Actuators

Search by Product System: Gripping/Robot Handling

Gripping/Robot Handling

2-Finger Gripper		
FFLD, FLSH, DLSH		P. 93
3-Finger Gripper		
GCKW, DCKW		P. 93

Gripping/Robot Handling

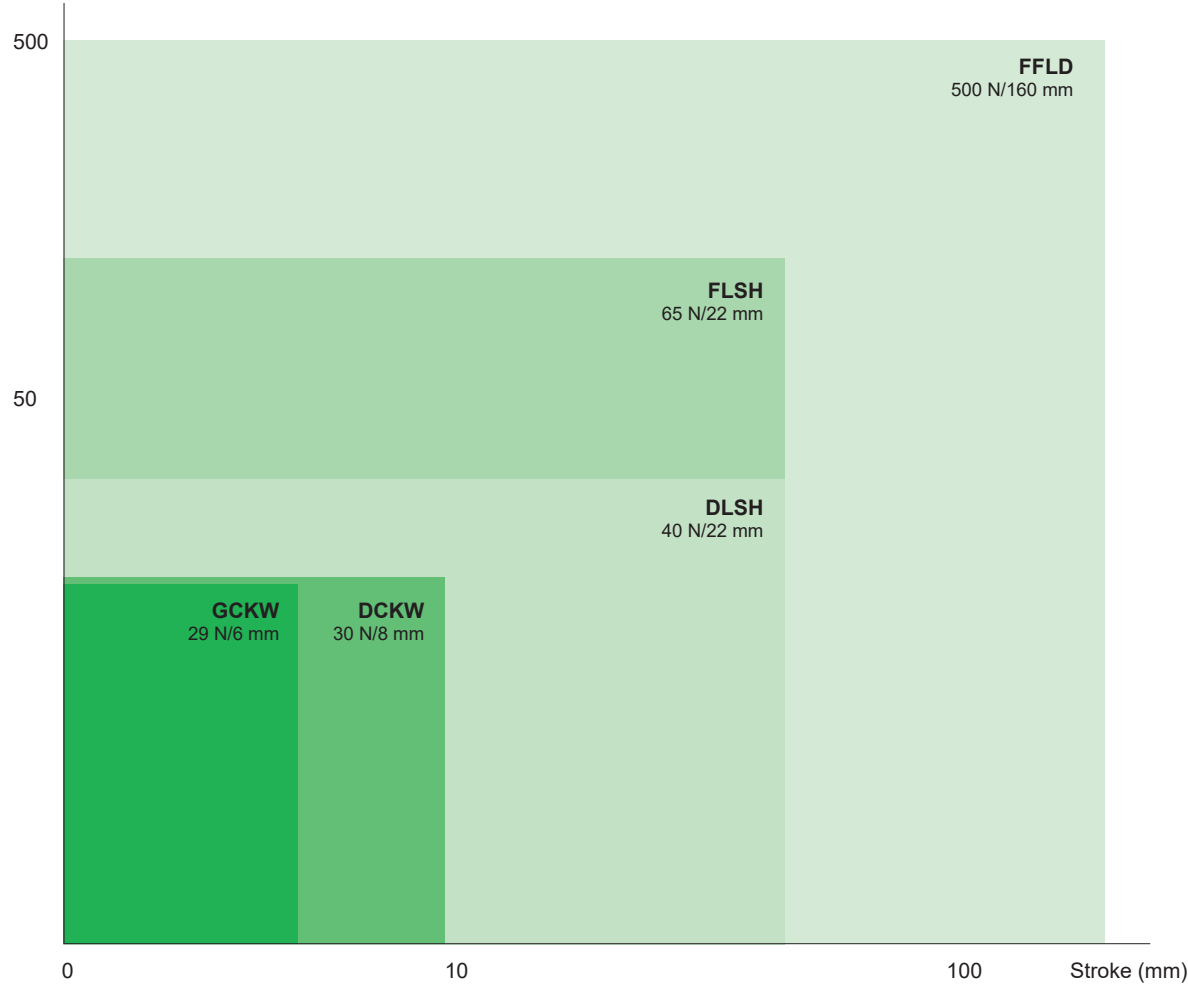
Gripper (with Motor)

ROBODEX Pulse

* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, please check P. 451.

Motor		Features/Applications	Model No./ Appearance	Drive Method	Max. Gripping Force (N) (One Side)	Max. Stroke (mm)	Max. Speed (mm/s) (per side)	Connecting Controller	Click here for specifications		Series for Specific Applications		
									Catalog Name [No.]	WEB	Food	Rechargeable Battery	
With Motor	Stepping	For robot end-of-arm applications	Low-profile, high grip, long stroke with built-in controller Ideal for robot end-of-arm applications 2-Finger		Rack, pinion, worm gear	500	160 (80 per side)	10	Built-in Controller	Electric Actuator ROBODEX Pulse Stepping Motor Drive [RJ-0144A]	 Click! 	-	-
			Equivalent dimensions and performance to pneumatic LSH For gripping various workpieces 2-Finger		Lead Screw	65	22 (11 per side)	50	ECMG ECG-B ECR		 Click! 	-	-
			Adopts the same body as pneumatic LSH Point-to-point operation 2-Finger		Coil Spring	40	22 (11 per side)	63	ESC4		 Click! 	-	-
			Adopts the same body as pneumatic CKW For gripping various and round workpieces 3-Finger		Lead Screw	29	6 (3 per side)	50	ECMG ECG-B		 Click! 	-	-
			Adopts the same body as pneumatic CKW Point-to-point operation 3-Finger		Coil Spring	30	8 (4 per side)	63	ESC4		 Click! 	-	-

Max. gripping force (N/one side)



Actuators - Electric Actuators

Search by Product System: Indexing/Swing/Continuous Rotation

Indexing/Swing/Continuous Rotation

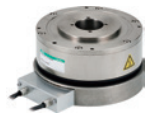
Direct Drive Actuator	
AX1R, AX2R, AX4R AX1000T, AX2000T, AX4000T AX6000M, NX4 ND-s, ND-sHS, DD-s, HD-s, FD-s	P. 97
Rotary (with Motor)	
FGRC	P. 99
Mechanical Index	
ZRS, PCIS, PCOS, PPLX	P. 99

Indexing/Swing/Continuous Rotation

Direct Drive Actuator

* For details, refer to CKD components product site
(https://www.ckd.co.jp/kiki/en/) → "Model No."

ABSODEX

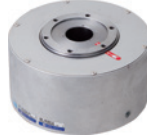
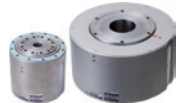
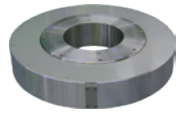
Features/ Applications		Model No./Appearance	Max. Torque (N·m)	Continuous Output Torque (N·m)	Indexing Accuracy (arc-sec)	Repeatability (arc-sec)	Resolution (P/rev)	Compatible Driver	Click here for specifications	
									Catalog Name [No.]	WEB
General-purpose	High-Precision Type	AX1R 	22 to 210	7 to 70	±15	±5	540672/ 2097152 *1	AXD	ABSODEX AX□R AXD Series [CC-1614AA]	
	High-speed Rotation Type	AX2R 	6 to 18	2 to 6	±30	±5				
	Standard Type	AX4R 	9 to 1000	3 to 330	±30	±5				
General-purpose	High-Precision Type	AX1000T 	22 to 210	7 to 70	±15	±5	540672	AX9000 TS/TH	ABSODEX General [CB-054AA]	
	High-speed Rotation Type	AX2000T 	6 to 18	2 to 6	±30	±5				
	Standard Type	AX4000T 	9 to 1000	3 to 330	±30	±5				
	Compact Type	AX6000M 	1.2 3.0	0.4 1.0	±90	±10	540672	AX9000 MU	ABSODEX General [CB-054AA]	
	Standard Type	NX4  [Sales limited to Japan]	22 to 300	7 to 100	±30	±5	540672	NXD	ABSODEX NX4/NXD Series [CC-1456AA]	

*1: The product is shipped with a resolution of 540672 P/rev. It can be switched to a resolution of 2097152 P/rev using PC software.

Direct Drive Motor

* For details, refer to CKD components product site
(https://www.ckd.co.jp/kiki/en/) → "Model No."



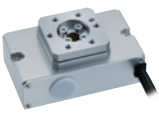
Features/ Applications		Model No./ Appearance	Max. Torque (N·m)	Rated Torque (N·m)	Absolute Positioning Accuracy (arcsec)	Positioning Repeatability * During reciprocating operation (sec)	Detection Pulse (ppr)	Compatible Driver	Click here for specifications	
									Catalog Name [No.]	WEB
High-Precision	Standard Type	ND-s 	8.5 to 1000	3.4 to 500	±15 (option) *2	±1 to ±2	+2097152 6815744	VPH	Direct Drive Servo Motor rDISC [C002]	
	High-speed Rotation Type	ND-s HS 	19.2 to 65	8 to 24	±15 (option) *2	±1 to ±2	1280000 1600000 1680000	VPH		
	High-Rigidity/ High-Precision Type	DD-s 	23 to 3700	10 to 2000	±50 ±10 (option) *2	±1	+2097152 6815744 12582912	VPH		
	High-response Type	HD-s 	67.5 to 145	27 to 68	±15 (option) *2	±1	3360000	VPH		
	Large Hollow Bore Type	FD-s 	37 to 1150	17 to 600	±25	±3	+4194304 8388608	VPH	Large Hollow Bore Type rDISC FD-s Series [C059G]	

*2: This is the value when using the absolute position correction function option.

Swing/Rotation/Oscillating/Indexing

Rotary (with Motor)

* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, please check P. 451.

Motor	Features/Applications		Model No./ Appearance	Drive Method	Max. Torque (N·m)	Max. Angular Velocity (deg/s)	Connecting Controller	Click here for specifications		Series for Specific Applications	
								Catalog Name [No.]	WEB	Food	Rechargeable Battery
With Motor Stepping	For replacing pneumatic cylinders with electric actuators	Equivalent dimensions and performance to pneumatic GRC Built-in motor for space saving	FGRC 	Worm gear + belt	4.66	200	ECMG ECG-B ECR	Electric Actuator ROBODEX Pulse Stepping Motor Drive [RJ-014AA]	 Click!	-	-

Indexing/Swing/Pick & Place

Mechanical Index

Features/Applications	Model No./Appearance	Drive Method	Click here for specifications	
			Catalog Name [No.]	WEB

Roller Gear Cam Unit

High-precision positioning is possible Input and output shafts are arranged orthogonally For table indexing operations	ZRS 	Roller Gear Cam	Mechanical Index ZRS Series [CC-1601AA]	 Click!
--	--	-----------------	--	---

Parallel Cam Unit

Input and output shafts are arranged in parallel Index/Oscillating Operation For conveyor drives, etc.	PCIS PCOS 	Parallel Cam	-	 Click!
--	---	--------------	---	---

Pick & Place Unit

Compact and low-profile linear motion type High-precision positioning and high-speed driving are possible	PPLX 	Roller Gear Cam	-	 Click!
--	---	-----------------	---	---

MEMO

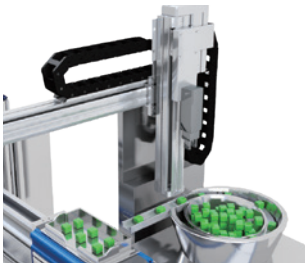
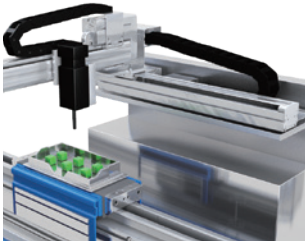
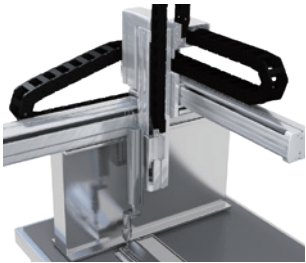
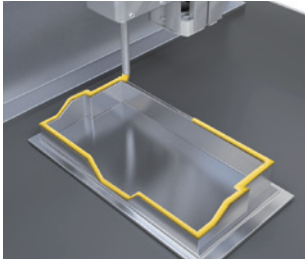
Actuators - Electric Actuators

Search by Product System: Transfer/Pick & Place/Palletizing

Orthogonal Axis Combination	
KBX, ETS-Multi	P. 103
SCARA Robot	
KHL, KHE	P. 104
3D Transfer	
ESM	P. 104

Orthogonal Combination

* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

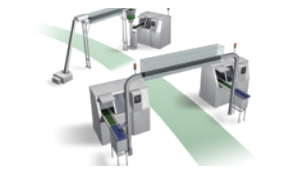
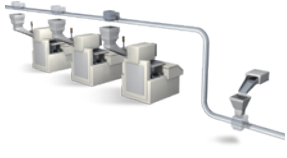
Motor	Shape	Features/Applications	Model No./ Appearance	Application Examples	Drive Method	Click here for specifications	
						Catalog Name [No.]	WEB
With Motor	Servo	Orthogonal	 KBX	Transport / Parts supply: YZ 	Ball Screw/Timing Belt	Electric Actuator KBX Series [CC-1275AA] 	
				Inspection: XY  Adhesive application: XYZ 			
Motorless Specification			 ETS Multi Axis	Sealing: XYZR 		Electric Actuator ROBODEX Std. Motorless Specification [RJ-015AA] 	
				Stocker: XZ 			

SCARA Robot

* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Motor	Shape	Features/Applications	Model No./Appearance	Application Examples	Click here for specifications	
					Catalog Name [No.]	WEB
With Motor	SCARA Robot	A robot with an arm that moves horizontally Enables high-speed operation, shortening cycle times and saving space Dedicated software allows for advance motion simulation Can be connected to various vision systems [Sales limited to Japan]	 KHL	Palletizing 	SCARA Robot KHL/KHE Series [CC-1436AA] 	
			 KHE	Pick & Place 		

3D Transfer

Motorless Specification	3D Transfer System	Single-axis 2D transfer up to 20 m Multi-point positioning, soft start & stop are possible For transferring workpieces from one piece of equipment to another using the available overhead space	 ESM	Transfer between equipment to the next process  Supplying parts to parallel identical equipment 	Electric Shuttle Mover ESM Series [CC-1259AA] 	

Actuators - Electric Actuators

Search by Product System: Related Equipment

Controller	
ECMG, ECG, ECR ESC4, KCA, NXD	P. 107
Driver	
AXD, AX9000TS/TH AX9000MU, NXD VPH (Model No. NCR-H)	P. 109

Related Equipment

Controller

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Features/Applications	Model No./Appearance	Applicable Models	Max. Operation No. of axes	Support Motor Size	Compatible encoders Type		Interface							Function					Click here for specifications	
							PIO	IO-Link	CC-Link	DeviceNet	EtherCAT	EtherNet/IP	MECHATROLINK	Number of Positioning Points	High Payload Mode	Calendar Function	Warning Function	Program Operation	Catalog Name [No.]	WEB
Up to 16 actuators can be connected Up to 40% less installation space than conventional models Significantly improves the basic performance of the actuator Multi Axis	ECMG 	EJSG EBS-G EBR-G FLCR-G FGRC-G FLSH-G GSSD2 GSTK, GSTG GSTS, GSTL GCKW	16	□20 to □56	Battery-less Absolute/Incremental				✓		✓	✓		64 points	●	●	●	Electric Actuator ROBODEX Pulse Stepping Motor Drive [RJ-014AA]	 Click!	
Compact, can be installed adjacently Common controller reduces spare parts Single Axis	ECG-A 	EJSG EBS-G EBR-G GSSD2 GSTK, GSTG GSTS, GSTL	1	□35 to □56										64 points			●		 Click!	
	ECG-B 	FLCR-G FGRC-G FLSH-G GCKW		□20 to □35	Incremental		✓	✓	✓		✓	✓							 Click!	
Compact, can be installed adjacently Common controller reduces spare parts Single Axis	ECR 	EBS-M EBR-M FLCR, FLSH FGRC	1	□20 to □56	Battery-less Absolute/Incremental		✓	✓	✓		✓			512 points		●	●		 Click!	
No dedicated software required Various settings can be completed on-site Can be operated with 3 input point signals Single Axis	ESC4 	DSSD2 DSTK, DSTG DSTS, DSTL DMSDG DLSH, DCKW	1	□20 to □56	Incremental		✓							2 points					 Click!	
High-function controller compatible with up to 4 axes Linear and circular interpolation movements are also possible Multi Axis	KCA 	KBX	4	50 to 750 W	Absolute		✓		✓	✓		(Custom order)		999 points			●	Electric Actuator KBX Series [CC-1275AA]	 Click!	
Supports motion control networks Single Axis	NXD [Release in Japan only] 	EKS-M	1	100 to 750 W	Absolute		✓		✓		✓		✓					Electric Actuator EKS-M Series [CC-1457AA] Driver NXD Series [CC-1457AA]	 Click!	

Related Equipment

Driver

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Features/Applications	Model No./Appearance	Applicable Actuators		Interface								Function				Click here for specifications	
				PIO	CC-Link	PROFINET	DeviceNet	EtherCAT	EtherNet/IP	MECHATROLINK	SSCNET III/H	STO (Safety Torque Off)	Program Operation	Equal Division Operation	Motion Control	Catalog Name [No.]	WEB
Driver volume reduced by up to 50% compared to conventional models Uses USB mini-B for connection with a setup PC	AXD 	AX1R AX2R AX4R		✓	✓			✓	✓			●	●	●		ABSODEX AXDR AXD Series [CC-1614AA]	 Click!
Ideal for IoT implementation in equipment	AX9000TS/TH 	AX1000T AX2000T AX4000T		✓	✓	✓	✓	✓	✓			●	●	●		ABSODEX General [CB-054AA]	 Click!
Compact driver that uses 24 VDC power supply	AX9000MU 	AX6000M		✓									●	●			 Click!
Supports motion control networks	NXD 	NX4		✓	✓			✓		✓		●	●				 Click!
Significantly suppresses torque ripple and improves speed stability Easy tuning even with large inertia loads Supports motion control	VPH Model (NCR-H) 	ND-s, ND-s HS HD-s, DD-s, FD-s		✓	✓			✓		✓	✓	●	●		●	Direct Drive Servo Motor rDISC [C002]	 Click!

Product Category		Specific Applications	
Actuators, Pneumatic Cylinders	P. 3	High Durability Components HP Series	P. 453
Actuators - Electric Actuators	P. 78	For Food Manufacturing Processes FP Series	P. 461
Directional Control Valve		For Outdoor Use WP Series	P. 467
Air Preparation Equipment	P. 151	For Rechargeable Battery Manufacturing Processes P4 Series	P. 471
Auxiliary Equipment/Speed Controllers/ Silencers/Fittings/Tubes	P. 229	For Clean Components P5/P7 Series	P. 477
Sensors/Controllers	P. 263	Others P12, P8, P9, P11, P6 (Oil-free, ozone resistant, copper ion restricted)	P. 481
Main Line Components / Nitrogen Gas Generators	P. 279		
Precision Components	P. 311		
Vacuum Components	P. 327		
Fluid Control Valves	P. 343		
Fine System Components (Pure water/chemical liquids/process gas)	P. 427		
Software	P. 443		

Directional Control Valve

Search by Product System P. 114

Search by Communication System or Wiring Connection List P. 140

Select Tube I.D. and Peripheral Pneumatic Components from the Table Ending 1

Select from WEB Model Selection System Ending 30

Search by Product System P. 114

Remote I/O Pilot Operated 3-Port Valve P. 127

Remote I/O	RT	P. 115
IO-Link Wireless Input Unit	WD	P. 119

Plug-in Block Manifold P. 121

TVG
W4GB2
MW4GA2, MW4GB2, MW4GZ2
W4GB4, W4GZ4
MW4GB4, MW4GZ4

Pilot Operated 3, 4, 5-Port Valve P. 123

Pilot Operated 3, 5-Port Valve	4GAR, 4GBR M4GAR, M4GBR, MN4GAR, MN4GBR 4GDR, 4GER M4GDR, M4GER, MN4GDR, MN4GER
Pilot Operated 5-Port Valve	4GA4, 4GB4 M4GA4, M4GB4
Pilot Operated 3, 4-Port Valve	MN3E, MN4E
Pilot Operated 5-Port Valve	4SA, 4SB M4SA, M4SB

Direct Acting 3-Port Valve P. 125

3QE, M3QE, M3QZ
3QB, M3QB
3QRA, 3QRB, M3QRA, M3QRB
MN3Q
MV3QRA, MV3QRB
3MA0, 3MB0, M3MA0, M3MB0
3PA, 3PB, M3PA, M3PB

3GA/3GB (Single Unit)
3GD/3GE (Single Unit)
3KA1 (Single Unit)
NP, NAP, NVP

Pilot Operated 2, 3, 5-Port Valve P. 129

P51, M51, B51, W2P513
B□P51, N□P51

4KA, 4KB
M4KA, M4KB, MN4KB

4F, M4F, 4F-NM
PV5, GFM

Explosion-proof P. 133

4GD□□0EJ, 4GE□□0EJ
4GD□□0EX, 4GE□□0EX
4GD□□0EA, 4GE□□0EA
4F□□0EX, 4F□□0E

Air Operated Valve (Master Valve) P. 135

4GA, 4GB, M4GA, M4GB
4KA, 4KB, M4KA, M4KB
4F, M4F

Manual Switching Valve P. 135

HMVE, HSVE
HNV, HSV

Shockless Valve P. 137

SKH

Search by Communication System or Wiring Connection List P. 140

Reduced Wiring Manifold - Reduced Wiring Device Unit (Compatible Communication Systems) P. 141

Reduced Wiring Manifold - Reduced Wiring Block (Wiring Method List) P. 143

Single Unit Valve/Individual Wiring Manifold (Wiring Connection List) P. 145

Directional Control Valve

Search by Product System

Remote I/O			Pilot Operated 3-Port Valve			
Remote I/O	RT	P. 115	3GA/3GB (Single Unit) 3GD/3GE (Single Unit) 3KA1 (Single Unit) NP, NAP, NVP			
IO-Link Wireless Input Unit	WD	P. 119				
Plug-in Block Manifold			Pilot Operated 2, 3, 5-Port Valve			
TVG W4GB2 MW4GA2, MW4GB2, MW4GZ2 W4GB4, W4GZ4 MW4GB4, MW4GZ4		P. 121	P51, M51, B51, W2P513 B□P51, N□P51			
			4KA, 4KB M4KA, M4KB, MN4KB			
Pilot Operated 3, 4, 5-Port Valve			4F, M4F, 4F-NM PV5, GFM			
Pilot Operated 3, 5-Port Valve		P. 123	Explosion-proof			
4GAR, 4GBR M4GAR, M4GBR MN4GAR, MN4GBR 4GDR, 4GER M4GDR, M4GER MN4GDR, MN4GER			4GD□□0EJ, 4GE□□0EJ 4GD□□0EX, 4GE□□0EX 4GD□□0EA, 4GE□□0EA 4F□□0EX, 4F□□0E 4F□□0EX-NM, 4F□□0E-NM			
Pilot Operated 5-Port Valve	4GA4, 4GB4 M4GA4, M4GB4					
Pilot Operated 3, 4-Port Valve	MN3E, MN4E					
Pilot Operated 5-Port Valve	4SA, 4SB M4SA, M4SB		Air Operated Valve (Master Valve)			
			4GA, 4GB, M4GA, M4GB 4KA, 4KB, M4KA, M4KB 4F, M4F			
Direct Acting 3-Port Valve			Manual Switching Valve			
3QE, M3QE, M3QZ 3QB, M3QB 3QRA, 3QRB, M3QRA, M3QRB		P. 125	HMVE, HSVE HMV, HSV			
MN3Q MV3QRA, MV3QRB 3MA0, 3MB0, M3MA0, M3MB0 3PA, 3PB, M3PA, M3PB						
			Shockless Valve			
			SKH			

Remote I/O

Fast! Connected! Tough!

Remote I/O for the Shop Floor

■ Updates cycle as fast as 0.5 ms

High-speed internal communication enables high-speed equipment control and status monitoring. Contributes to faster production cycle times.

■ Max. connection units: 18

Supports a total of 512 bytes (4096 points) of I/O. Unit types and quantities can be selected to match equipment specifications.

■ IP65/IP67 design for tough use

IP65/IP67 (dust-proof, jet-proof) design. Can be installed as-is near the actuator. Eliminates the need for a control panel, improving layout flexibility.

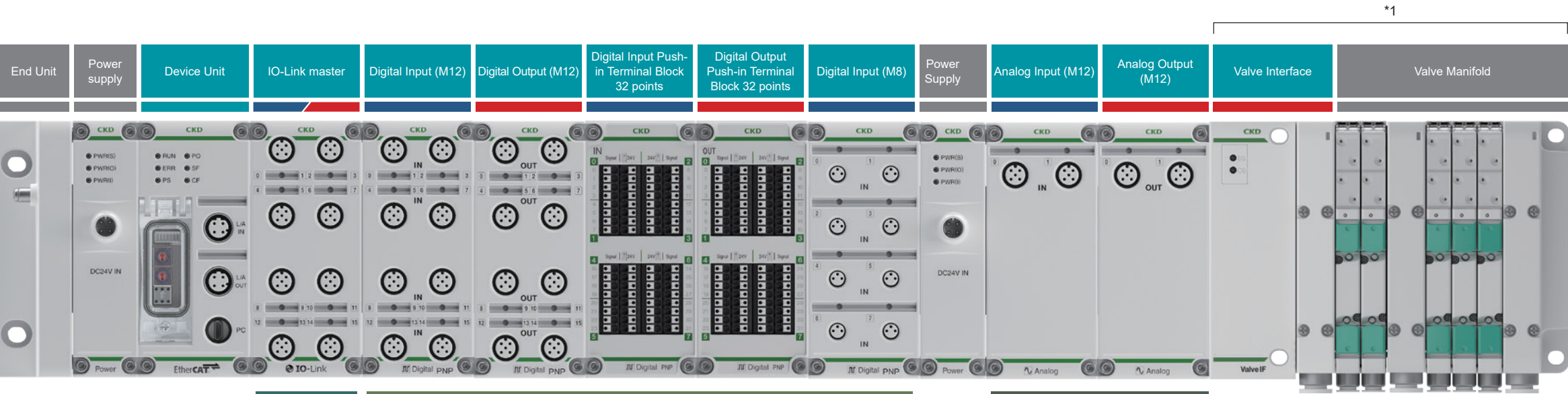
* Push-in terminal block type is IP40.



Remote I/O

IP65

IP67



- Count as a connected unit
- Do not count as a connected unit
- Input
- Output

*1 Valve interface and valve manifold must be ordered separately. For details, please see the Plug-in Block Manifold TVG Series "Directional Control Valve ① RJ-011AA". Valve interface and valve manifold are not UL compliant.

IO-Link

Digital input/output

Analog input/output

Electric gripper with built-in controller

Electro-Pneumatic Regulator

Flow Controller

Electric Actuator

Flow sensor for water

Solenoid Valve

Flow sensor for fluids

Flow sensor for gases

Pressure Sensor

Seating Sensor

Cylinder Switch

Pressure Switch

Pneumatic Valve

Vacuum Ejector

Length Measurement Gripper

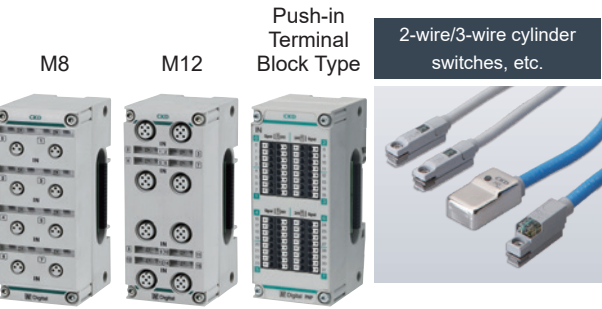
Flow Sensor

Electro-Pneumatic Regulator

Remote I/O

A lineup of units tailored to on-site needs

Digital input unit



Inputs digital signals (ON/OFF signals). It takes in signals from 2-wire/3-wire cylinder switches and feeds them back to the PLC through the Remote I/O device unit, allowing for management over the network. Two on a single port using the Y-branch connector. Switch input is possible. (M12 type only)

Analog input unit



A unit that inputs analog signals (voltage/current). It is possible to monitor the current pressure by inputting the analog signal from a pressure sensor.

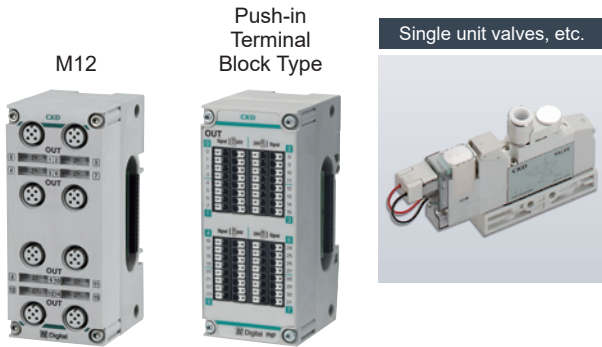
* CKD's analog input (output) units can supply both analog signals and power (24 VDC), contributing to reduced wiring.

Power supply unit



Since the power supply for the unit and the load are separate, the load power can be cut off without interrupting communication. Any number of units can be added depending on the connected load.

Digital output unit



Outputs a digital signal (24 VDC, 0.5 A). Can operate single unit valves, vacuum switching units, etc. Ideal for locally installing vacuum switching units near actuators using communication from the PLC. Output to two components on a single port using the Y-branch connector. (M12 type only)

Analog output unit



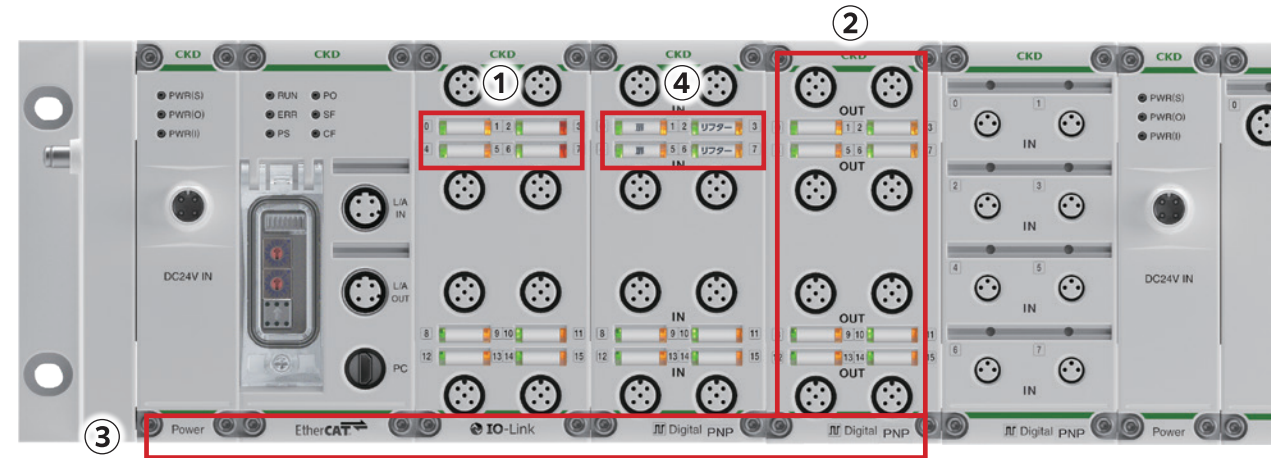
A unit that outputs analog signals (voltage/current). It is possible to control pressure by outputting an analog signal to an electro-pneumatic regulator.

Valve Interface



This is an interface for connecting plug-in valve TVG. Up to 32 solenoid valves can be connected.
Discrete model No.: TVG□P-TB-□-□□KA1□
For details, please see the Plug-in Block Manifold TVG Series "Directional Control Valve ① RJ-011AA". Valve interface and valve manifold are not UL compliant.

Easy-to-use design



- ① I/O status is displayed clearly with the 3-color LEDs
Green: Normal
Red : Error (disconnection, communication error, etc.)
Orange: Orange: Information (output exceeding set value, etc.)
- ② Pin layout for easy plug rotation
- ③ Function, input and output of each unit are displayed in an easy-to-understand manner
- ④ Tag plate can be attached to the LED light section

Remote I/O model No. system

Category	Head Model No.	Network	Appearance	Click here for specifications	
				Catalog [No.]	WEB
Remote I/O	Single Unit	RT-X	EtherNet/IP EtherCAT	Directional Control Valve ① [RJ-011AA]	 Click!
	Manifold IP65 IP67 (*4)	RT-E RT-F (*2)	PROFINET IO-Link (*1)		

*1: This is the network between the IO-Link master unit and the downstream IO-Link devices.
*2: RT-E: Direct mount, RT-F: DIN rail mounting
*3: Please inquire about models with solenoid valves.
*4: IP40 when including a push-in terminal block type.

Compliant with Global Standards



Remote I/O (IO-Link Wireless Input Unit)

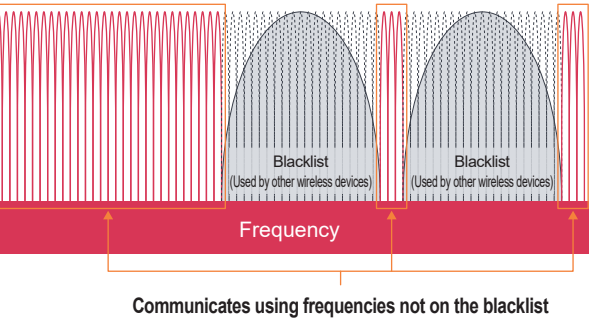
What is IO-Link Wireless *1

Uninterrupted wireless that can be used for control. Error rate 1/1 billion. *2
By wiring sensors or switches to the input unit, input signals can be transmitted to the IO-Link Wireless master.

Item	Wireless LAN	Bluetooth	ZigBee	IO-Link Wireless
Standard	IEEE802.11b	IEEE802.15.1	IEEE802.15.4	IEEE802.15.1
Frequency	2.4 GHz	2.4 GHz	2.4 GHz	2.4 GHz
Communication Distance	Up to 100 m	Up to 10 m	Up to 100 m	Up to 20 m
Transmission speed	11 Mbps	1 Mbps	250 kbps	21 kbps
Unit (Node)	32	-	128	40
Cycle Time	50 ms	10 to 30 ms	100 ms	5 ms
Reliability	Low	Low	Medium	High

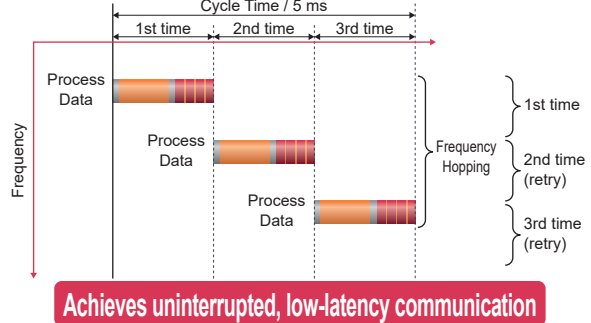
Blacklist Function

Avoids frequencies used by other wireless devices.
Can coexist with other wireless devices.

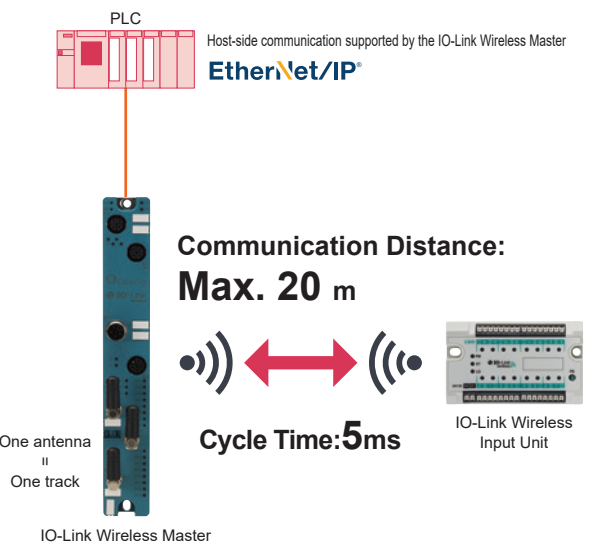


Frequency Hopping Function

Performs 3 communication retries in one cycle time.
Retries are performed by switching frequency bands.



IO-Link Wireless System Configuration Example



Model No./ Appearance	Number of connected units per IO-Link master (1 track)		Cycle Time
WD	16-point input	1 to 4 units	5 ms
Click here for specifications			
Catalog Name [No.]	WD Series [CC-1629AA]		
WEB			

*1. As of February 2024, according to our research. CKD IO-Link Wireless components compatible Region: Japan, EU, USA
*2. Achieves wired-level reliability with blacklist and frequency hopping functions. Wireless quality suitable for control.

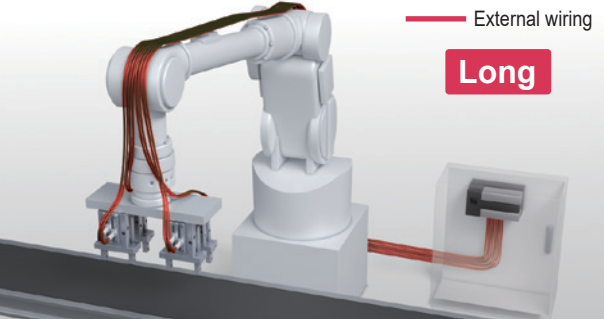
Application

Wireless Cylinder Switches for Robot Grippers

Wireless operation confirmation switches for robot end-of-arm grippers that handle multiple workpieces. Power is supplied to the IO-Link Wireless input unit from the robot's internal wiring, eliminating external wiring and reducing the risk of disconnection.

Before Robot machine external wiring

The risk of disconnection increases, and the robot's range of motion is also limited.



After No wiring outside the robot unit. Internal wiring for power only

Signals from the IO-Link Wireless input unit are wireless, reducing the risk of disconnection.

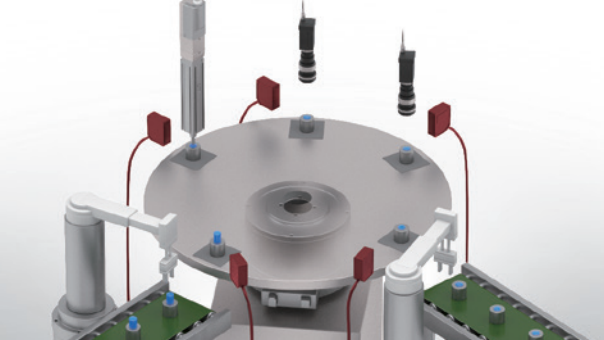


Assembly/Inspection (Rotary Table)

Since the signal lines are wireless, a photoelectric sensor can be installed on the rotary table. Contributes to improved workpiece positioning accuracy.

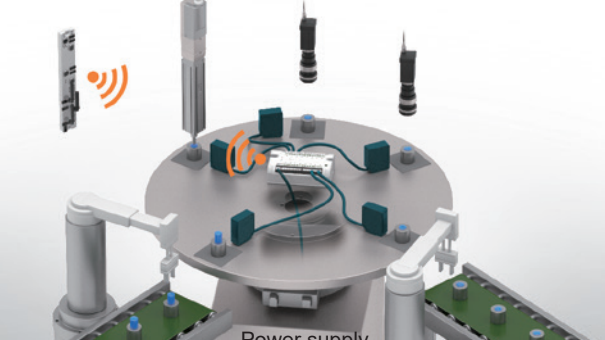
Before The photoelectric switch is installed outside the table

Positioning confirmation becomes unstable.



After A photoelectric switch is mounted on the table

Positioning confirmation accuracy improves.

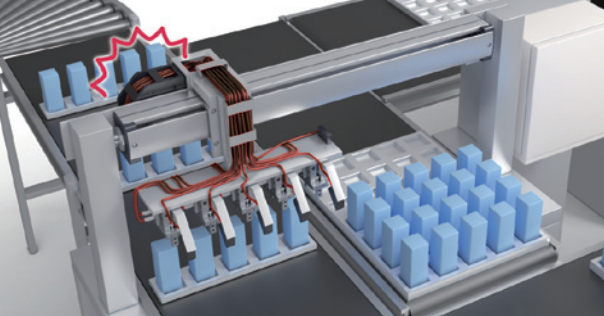


Reduced Wiring in Cable Carrier

The wiring of switches installed in moving parts is made wireless by using an IO-Link Wireless input unit as a repeater. Contributes to reducing the number of wires in the cable carrier.

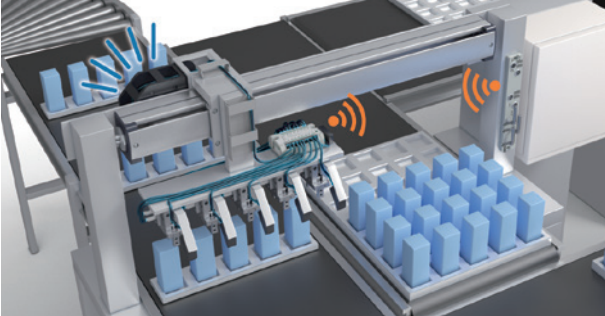
Before Cable carrier internal wiring 11 wires *1

Wiring replacement inside the cable carrier is required, resulting in high maintenance man-hours.



After Cable carrier internal wiring 1 wire *1

Since wiring replacement inside the cable carrier is not required, maintenance man-hours can be reduced.



*1: Applications: 10 switches for air hand, 1 photoelectric switch. WD can input up to 16 switch points.

Directional Control Valve

*2: Please consult with us as this is a custom product.

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
 * For details on series for specific applications, refer to P. 451.

[illegible]

Pilot Operated 3-Port Valve (Single Unit)

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, refer to P. 451.

Features/Applications	Model No.	Appearance	Applicable Cylinder Bore										Switching Position Category					Operating Pressure Range (MPa)		Piping Port Position		Port Size (Supply Port/A, B Ports)		Power supply	Wiring Connection (See p. 145 for details)					Click here for specifications		Series for Specific Applications		
													3-Port												Single Unit/Individual Wiring					Catalog Name [No.]		WEB	Rechargeable Battery	Food
			ø6	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	2-position single NC	2-position single NO	2-position universal	Two valves integrated			2-position double	Direct Piping	Base Piping (Sub-plate)	One-touch Fitting		Female Thread	Grommet Lead Wire	C/D-type Connector	E/EJ Connector	DIN Terminal Box	Compact Terminal Box				
			Sonic conductance C $\text{dm}^3/(\text{s}\cdot\text{bar})$ Flow rate Q L/min (ANR)										2-position single NC	2-position single NO	2-position universal	Two valves integrated	2-position double			One-touch Fitting	Female Thread	Grommet Lead Wire	C/D-type Connector		E/EJ Connector	DIN Terminal Box	Compact Terminal Box	Catalog Name [No.]	WEB	P4	FP	P5 P7		
High-Function Type In addition to 3GD/ER, low friction and long life Durability count 100 million cycles (Single solenoid)	3GAR																		Metric	ø1.8 (barb fitting) ø1.8 to ø10	M5 Rc1/8 to Rc1/4	VAC VDC						Directional Control Valve ② [RJ-012AA]	 Click!					
	3GBR																		Inch	ø1/8 to ø3/8	NPT1/8 to NPT1/4 G1/8 to G1/4													
Standard Type Upward/Lateral common wiring connector Protective cover prevents accidental operation of manual device	3GDR																		Metric	ø4 to ø10	M5 Rc1/8 Rc1/4										 Click!			
	3GER																																	
For driving cylinders up to ø40	3KA1																		Metric	ø4 ø6	M5								 Click!					



Features/Applications	Model No.	Appearance	Applicable Cylinder Bore														No. of Ports	Actuation Method		Operating Pressure Range	Port size of port A/P (female thread)	Power supply	Coil Housing					Click here for specifications		Series for Specific Applications		
			Grommet Coil	DIN terminal box (P 9 thread)	DIN terminal box with lamp (Pg9 thread)	With T-type terminal box (G1/2)	T type terminal box with lamp (G1/2)	Rechargeable Battery	Food																							
										Catalog Name [No.]	WEB	P4	FP																			
Internal Pilot Solenoid Valve Mounted Type	NP13R		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3	NC type		0.2 to 0.8 (MPa)	Rc3/8 to Rc2	AC DC	●	●	●	●	●	Directional Control Valve ② [RJ-012AA]	 Click!	●	
	NP14R		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		NO type					●								
Air Operated Solenoid Valve Mounted Type Can be used for both positive and negative pressure	NVP11R		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3	Universal type		0 to 0.8 (MPa) When using vacuum 1.3x10 ² to 8x10 ⁵ Pa (abs)	Rc3/8 to Rc2	AC DC	●	●	●	●	●	Directional Control Valve ② [RJ-012AA]	 Click!	●	
Air Operated 3-Port Valve Can be used for both positive and negative pressure	NAP11		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3	Universal type		0 to 0.8 (MPa) When using vacuum 1.3x10 ² to 8x10 ⁵ Pa (abs)			Rc3/8 to Rc2	AC DC							



Pilot Operated 5-Port Valve

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Features/Applications	Model No./Appearance		Applicable Cylinder Bore												Switching Position Category		Operating Pressure Range (MPa)	Connection Port Size		Wiring Connection/Power Supply		Specifications details here		
			ø6	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø140				ø160	P/A/B (Rc)	R1, R2 (Rc)	DIN Terminal Box	IO Connector	Catalog Name [No.]	WEB
ISO Size 1	Single Unit: PV5G-6 	Manifold: GMF1 															0.15 to 1.0	1/4 3/8	3/8 1/2	100 VAC 200 VAC 12 VDC 24 VDC 110 VAC 220 VAC	24 VDC	Directional Control Valve ② [R-J-012AA]	 Click!	
	Single Unit: PV5-6R 		●	●	●	●	●	●	●	●	●	●												
	Master valve: PV5S-6-0 																		3/8					
ISO Size 2	Single Unit: PV5G-8 	Manifold: GMF2 															0.15 to 1.0	3/8 1/2 3/4	1/2 3/4	100 VAC 200 VAC 12 VDC 24 VDC 110 VAC 220 VAC	24 VDC	Directional Control Valve ② [R-J-012AA]	 Click!	
	Single Unit: PV5-8R 		●	●	●	●	●	●	●	●	●	●	●	●	●	●								
	Master valve: PV5S-8-0 																							

Explosion-proof

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Explosion-proof Performance	Features/ Applications	Model No.	Appearance	Certified Regions					Applicable Cylinder Bore										Switching Position Category					Operating Pressure Range (MPa)	Manifold Type		Piping Port Position	Port Size (Supply Port/ A, B Ports)		Power supply	Wiring Connection			Click here for specifications																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
				Japan	Europe	International	China	Korea	Taiwan	ø6	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160	ø250		5-Port		3-port	Integrated Base	Block Manifold		Direct Piping	Base Piping (Sub-plate)	One-touch Fitting	Female Thread	M8 connector	External Lead Wire Entry	Conduit screw connection method	Catalog Name 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Single	Double	Closed center	A/B/R Connection	P/A/B Connection																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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(ANR)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

Air Operated Valve (Master Valve)

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features/ Applications	Model No.	Appearance	Applicable Cylinder Bore														Switching Position Category							Operating Pressure Range (MPa)	Piping Port Position		Port Size (Supply Port/A, B Ports)			Click here for specifications	
																	4, 5-Port					3-Port			Direct Piping	Base Piping (Sub-plate)				One-touch Fitting	Female Thread
			ø10	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160	ø250	2-position		3-position		2-position single NC	2-position single NO									
			Sonic conductance C dm ³ /(s·bar) Effective cross-sectional area S mm ² Flow rate Q L/min (ANR)														Single	Double	Block closed center	A/B/R Connection							P/A/B Connection				
Switching operation by air source (no power required) type	3GA 4GA 3GB 4GB M3GA M4GA M3GB M4GB																													Directional Control Valve ② [RJ-012AA]	
	3KA 4KA 3KB 4KB M3KA M4KA M3KB M4KB																														
	4F																														



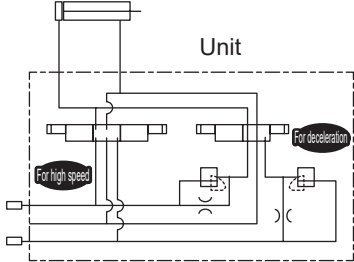
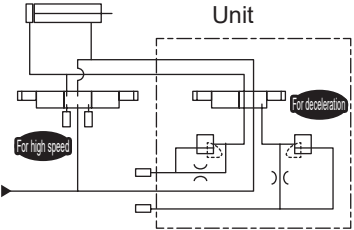
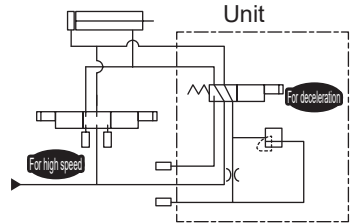
Manual Switching Valve

Features/ Applications	Model No.	Appearance	Applicable Cylinder Bore													No. of Ports	Switching Position Category	Operating Pressure Range (MPa)	Port Size (Rc)	Specifications details here	
			ø6	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160					Catalog Name [No.]	WEB
Miniature	HMVE															4	3-position closed center, 3-position exhaust center	0.05 to 1.0	1/4	Directional Control Valve ② [RJ-012AA]	 Click!
Standard	HSVE																		3/8 1/2 3/4		



Shockless Valve

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Features/ Applications	Model No.	Appearance	Circuit Diagram		Applicable Cylinder Bore								Click here for specifications	
					ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	Catalog name Catalog Name	WEB
Variable Speed Unit	SKH-320				●	●		●					Directional Control Valve ② [RJ-012AA]	
	SKH-420						●	●	●	●				
	SKH-520								●	●	●	●		
Deceleration at Both Ends	SKH-328				●	●	●	●						
	SKH-428						●	●	●	●				
	SKH-318				●	●	●	●						
	SKH-418						●	●	●	●				

Directional Control Valve

Search by Communication System or Wiring Connection List

Reduced Wiring Manifold - Reduced Wiring Device Unit (Compatible Communication Systems)	P. 141
Reduced Wiring Manifold - Reduced Wiring Block (Wiring Method List)	P. 143
Single Unit Valve/Individual Wiring Manifold (Wiring Connection List)	P. 145

Reduced Wiring Manifold - Reduced Wiring Device Unit (Compatible Communication Systems)

Serial Transmission (Reduced Wiring Device Unit Model No.)													Reduced Wiring Device Unit						Mounted Manifold Model No.																											
SAVE NET	CC-Link	PROFINET T8UST	DeviceNet	EtherNet/IP	EtherCAT	PROFINET TNETT	CC-Link IE Field Basic	CC-Link IE Field	CC-Link IE TSN	IO-Link	IO-Link wireless		Web API (HTTP)	I/O	Number of Output Points	Low-profile	Features	Device Unit Model No.	Appearance	TVG	MM4GA/B/Z2, MM4GA/B/Z2	MM4GB/Z4	M3GA/BR, M4GA/BR	MN3GA/BR, MN4GA/BR	M3GD/ER, M4GD/ER	MN3GD/ER, MN4GD/ER	M4GA/B4	MN3E, MN4E																		
		-DP				EN	EC	EP	EA	-	For Remote I/ O Connection IP65/67 compliant	RT-XT	●																●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		JA2					JA1	JA4	JA3	JA6	JA5	JA7	JA8																JA9	JB1																
		T7G					T7D	T7EN	T7EC	T7EP	T7EB																																			
		T7G					T7D	T7EN	T7EC	T7EP	T7EB	T7EF *1	T7TG *1																T7KC *1																	
		T8G				T8P	T8D	T8EN	T8EC	T8EP	T8EB	T8EF	T8TG																T8KC																	
		T7G					T7D	T7EN	T7EC																																					
		T7L1																																												
	T6G1																																													

*1: 16-point output only

*2: When using digital/analog I/O units, up to 512 bytes of I/O data can be controlled.

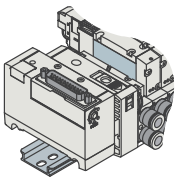
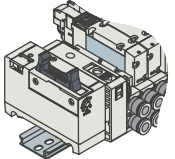
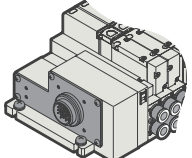
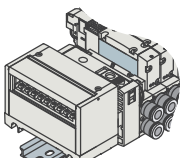
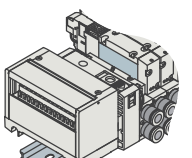
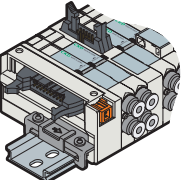
When ordering a reduced wiring manifold, the wiring block model number is indicated as follows.

(e.g.) MN4GA210 - Connection Port Size - T8EN2 Option - Number of stations - Voltage

M: Manifold
MN: Block Manifold

Reduced Wiring Device Unit Model No.

Reduced Wiring Manifold - Reduced Wiring Block (Wiring Method List)

Reduced Wiring Block					Mounted Valve Model No.					
Features	Wiring method	Wiring Block Model No. * Appearance is a typical example	Appearance		TVG	MW4GA/B/Z2	MW4GB/Z4	M4GA/BR M3GA/BR MN4GA/BR M4GD/ER MN4GD/ER	M4GA/B4	MN4E MN3E
One-touch connection with a cable with connector Processing of relay terminal block and common wiring is not required	D-sub Connector RS232C 25-pin	T30 (24 points) GA1□ (24 points)			●	●		●	●	●
One-touch connection with a cable with connector Processing of relay terminal block and common wiring is not required An amplification circuit embedded type is also available	Flat Cable Connector MIL standard compliant	T50 (16 points) T51 (16 points) T52 (16 points) T53 (26 points)				●		●	●	●
One-touch connection with a cable with connector Processing of relay terminal block and common wiring is not required	Multi-connector 20-pin	T20 (16 points)			●	● T51 T53				
Valve wiring is OK with one signal wire and one common wire A relay terminal block is not required	Centralized Terminal	T10 (16-point/M3 thread) EA1 (20-point/M3 thread)			●	●	●	●	●	
		T11 (Push-clamp type)						●	●	
Reduced wiring connection to the center of the manifold is possible [n]Eliminates the shortage of control points	Intermediate Electrical Block	TM1A (10-point RITS connector 6-pin x2) TM1C (5-point RITS connector 6-pin x2) TM52 (8-point 10-pin flat cable connector)								●

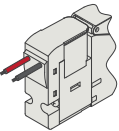
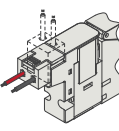
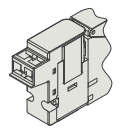
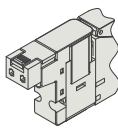
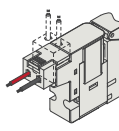
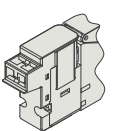
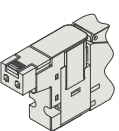
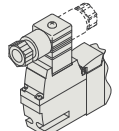
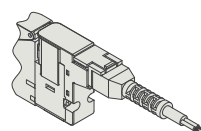
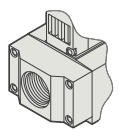
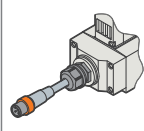
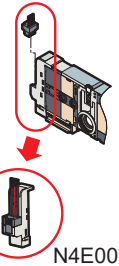
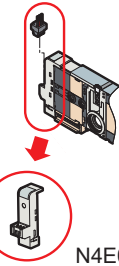
When ordering a reduced wiring manifold, the wiring block model number is indicated as follows.

(e.g.) MN4GA210 - (Connection Port Size) - **T10** (Option) - (Number of stations) - (Voltage)

M: Manifold
MN: Block Manifold

Reduced Wiring Block Model No.

Single Unit Valve/Individual Wiring Manifold (Wiring Connection List) 1/3

Wiring Connection/ Appearance		Grommet Lead Wire	E-type Connector					E-type Connector		DIN Terminal Box	EJ-type Connector with Cover		Terminal Block	I/O Connector	Individual Wiring D-type Connector	
															 N4E00	 N4E0
Option																
Lead wire length (mm)		300	300 500 1000 2000 3000	None	None	300 500 1000 2000 3000		None	None	None	1000 2000 3000		None	500	300 500 1000 2000 3000	
Surge Suppressor						●		●	●	●		●	●	●	●	●
Lamp						●		●	●	●		●	●	●	●	●
Without Socket				●				●								●
Socket Terminals Attached					●				●							●
Mounted Valve Model No.	W4G2, W3G2, MW4G2, MW3G2												Blank	R1		
	3GA/BR, 4GA/BR, M3GA/BR, M4GA/BR MN3GA/BR, MN4GAB/R 3GD/ER, 4GD/ER, M3GD/ER, M4GD/ER MN3GD/ER, MN4GD/ER	Blank	E0□	E0N	E1	E2□		E2N	E3	B, BN	E0□J	E2□J				
	4GA4, 4GB4, M4GA4, M4GB4	Blank	E0□	E0N	E1	E2□		E2N	E3	B	E0□J	E2□J				
	MN3E, MN4E														D□	D□
	3QE, M3QE, M3QZ	Blank	E0□	E0N	E1	E2□		E2N	E3		E0□J	E2□J				

When ordering a single unit valve/individual wiring manifold, the wiring connection is indicated as follows.

(e.g.) 4GB210R - Connection Port Size - **E0** **1** - Option - Voltage

Single Unit Valve

Lead wire length

Wiring Connection Model No.

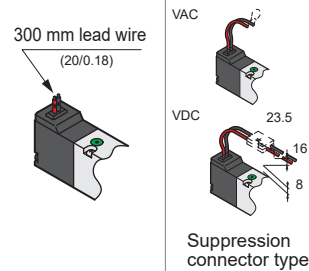
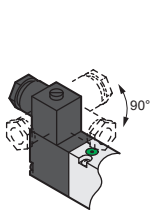
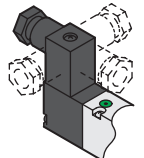
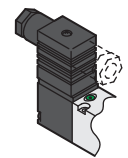
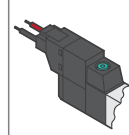
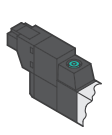
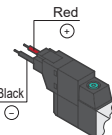
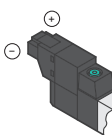
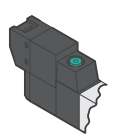
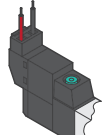
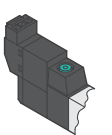
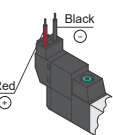
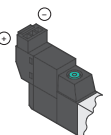
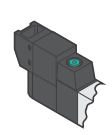
(e.g.) MN4GA210 - Connection Port Size - **E2** Option - Number of stations - Voltage

M: Manifold

MN: Block Manifold

Wiring Block Model No.

Single Unit Valve/Individual Wiring Manifold (Wiring Connection List) 2/3

Wiring Connection/ Appearance		Grommet Lead Wire	Compact Terminal Box (G1/4)	Compact Terminal Box			C-type Connector					D-type Connector				
Option																
Lead wire length (mm)		300	300	-	-	-	300 500 1000 2000	-	300 500 1000 2000	-	-	300 500 1000 2000	-	300 500 1000 2000	-	
Surge Suppressor			●			●			●	●	●			●	●	●
Lamp				●	●	●			●	●	●			●	●	●
Without Socket											●					●
Socket Terminals Attached										●				●		
Mounted Valve Model No.	3QB, M3QB 3QRA, 3QRB, M3QRA, M3QRB	Blank							C2□	C3	C2N			D2□	D3	D2N
	3MA0, 3MB0 M3MA0, M3MB0	Blank					C□□	C1	C2□	C3		D□	D1	D2□	D3	
	3PA, 3PB, M3PA, M3PB	Blank		B (No Lamp)	L	LS	C□□	C1	C2□	C3		D□	D1	D2□	D3	
	MV3QRA, MV3QRB	Blank							C2□	C3				D2□	D3	
	4SA, 4SB, M4SA, M4SB	Blank					C□	C1	C2□	C3	C2N	D□	D1	D2□	D3	D2N
	3KA, 4KA, 4KB M3KA, M4KA, M4KB, MN4KB	Blank	B	L	LS		C□	C1	C2□	C3		D□	D1	D2□	D3	

When ordering a single unit valve/individual wiring manifold, the wiring connection is indicated as follows.

(e.g.) 3QB110R

-

Connection Port Size

-

C2

0

-

Option

-

Voltage

Lead wire length

Wiring Connection Model No.

(e.g.) M3QB110

-

Connection Port Size

-

C2

0

-

Option

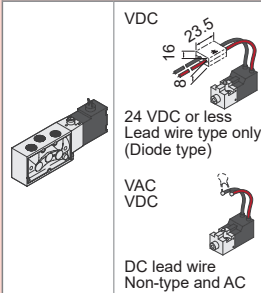
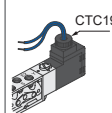
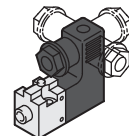
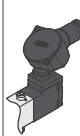
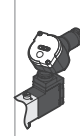
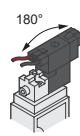
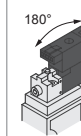
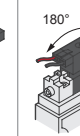
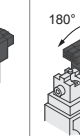
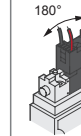
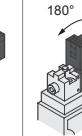
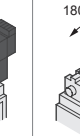
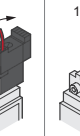
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Voltage

Lead wire length

Wiring Connection Model No.

Single Unit Valve/Individual Wiring Manifold (Wiring Connection List) 3/3

Wiring Connection/ Appearance		Grommet Lead Wire		Conduit lead wire	Compact Terminal Box			DIN Terminal Box			IO Connector		Round Terminal Box (G1/2, G3/4)	Round Terminal Box	Round Terminal Box + Gland (A-15a)		C-type Connector				D-type Connector			
																								
Option																								
Lead wire length (mm)		300	300	300	-	-	-	-	-	-	-	-	-	-	-	-	300 500 1000 2000 3000	-	300 500 1000 2000 3000	-	300 500 1000 2000 3000	-	300 500 1000 2000 3000	
Surge Suppressor			●			●			●									●	●			●	●	
Lamp						●	●		●	●			●		●			●	●			●	●	
Mounted Valve Model No.	Micro-sol P51, M51, B51	E			B	L	LS										C□□	C1	C2□	C3	D□□	D1	D2	D3
	4F0, 4F1	Blank E	Blank/E (Option S)	E1, E2	Blank B	L											C□□	C1	C2□	C3	D□□	D1	D2	D3
	4F2 to 4F7	E	E (Option S)					Blank	L			B, B1	BL	G	GL									
	PV5G									Standard N *1														
	PV5 GMF										Standard													

When ordering a single unit valve/individual wiring manifold, the wiring connection is indicated as follows.

(e.g.) 4F310 - (Connection Port Size) - **B** (Option) - (Voltage) (e.g.) M4F310 (Connection Port Size) - (Manual Device) - **L** (Option) - (Number of stations) - (Voltage)

Wiring Connection Model No. M: Manifold Wiring Block Model No.

*1: N is with surge suppressor lamp

Product Category

Actuators, Pneumatic Cylinders	P. 3
Actuators, Electric Actuators	P. 78
Directional Control Valve	P. 111
Air Preparation Equipment	
Auxiliary Equipment/Speed Controllers/ Silencers/Fittings/Tubes	P. 229
Sensors/Controllers	P. 263
Main Line Components / Nitrogen Gas Generators	P. 279
Precision Components	P. 311
Vacuum Components	P. 327
Fluid Control Valves	P. 343
Fine System Components (For DI water, chemicals, and process gas)	P. 427
Software	P. 443

Specific Applications

High Durability Components HP Series	P. 453
For Food Manufacturing Processes FP Series	P. 461
For Outdoor Use WP Series	P. 467
For Rechargeable Battery Manufacturing Processes P4 Series	P. 471
For Clean Components P5/P7 Series	P. 477
Others P12, P8, P9, P11, P6 (Oil-free, ozone resistant, copper ion restricted)	P. 481

Air Preparation Equipment

Recommended Air Filter Equipment System Configuration P. 153

Search by Product System P. 156

Search by Application/Industry P. 194

Recommended System Configuration for Air Filter Equipment P. 153

Search by Product System

F.R.L.	P. 156
F.R.L. Combination	C□000-W, C□010-W, C□020-W, K60570 C□030-W, C□040-W, C□050-W C□060-W, C□070-W
Filter Regulator	W□000-W, W□000-G4 WB500, B7019-□C
Related Equipment Attachment Combinations	C□0□0-W, W□000-W
Air Filter	F□000-W, F□000-G4, FM□000 FW□000, FCS, FSL, A1019, 1138, 1126 A1338, 1326, 1219, 1238, 1226□
Oil Mist Filter	M□000-W, MX□000-W MM□000-W, MW□000-W
Regulator	R□000-W, R□100-W
Relief Valve	B6061
Lubricator	L□000-W, A3019, 300□E
Drain Separator	FX

Search by Application/Industry

Compact	P. 195
F.R.L.	K60570
Air Filter	A1019, 1219, FSL
Filter Regulator	B□7019, WB500
Regulator	RA800, RB500, MNRB500, B2019, 2419
Lubricator	A3019
Relief Valve	B6061

Large Bore	P. 199
Air Filter	1138, 1126, A1338, 1326, 1226□, 1238
Regulator	2215, 2216, 2415, 230□-□C-□
Lubricator	300□E

Antibacterial, Bacterial-removing, Deodorizing	P. 205
Filter	SFC, SFS

Flame Resistant	P. 209
Filter Regulator	W□000-G4, W□100-G4
Air Filter	F□000-G4
Regulator	R□000-G4

Oil-free	P. 211
Regulator	RN□000

Medium Pressure	P. 211
Air Filter	FM□000-W
Oil Mist Filter	MM□000-W
Regulator	RM□000-W

Mechanical Pressure SW	P4000-W, P□1000-W, APE, APS-W
Adapter/Joiner	B-W/B, J-W, AW□00, A□0□-W
Proportional Pressure Control Equipment	EVD-□000, EVR, EVS2 EV2100V, EVL, MEVT
Air Unit Equipment	CXU, CAU30

Residual Pressure Release Valve P. 189

Residual Pressure Release Valve	V□0□0-W, 2QV, 3QV, SNS, SNP
Slow Start Valve	V3301-W, V3321-W

Pressure Gauge P. 191

Pressure Gauge/Indicator	G401-W, G□□□D, GW49D VG41D, GA400-8-P02
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Copper Ion Restricted (No copper/PTFE Specification) P. 215

F.R.L.	C□000-W-TP6
Filter Regulator	W□000-W-TP6, W□100-W-TP6
Air Filter	F□000-W
Oil Mist Filter	M□000-W□-□
Regulator	R□000-W-TP6, R□100-W-TP6
Lubricator	L□000-W
General-Purpose Pressure Gauge	G□9D-P6
Residual Pressure Release Valve	V3000-W, V□010-W
Exhaust Cleaner	FA

Ozone Resistant
Siloxane/Ozone Remover P. 221

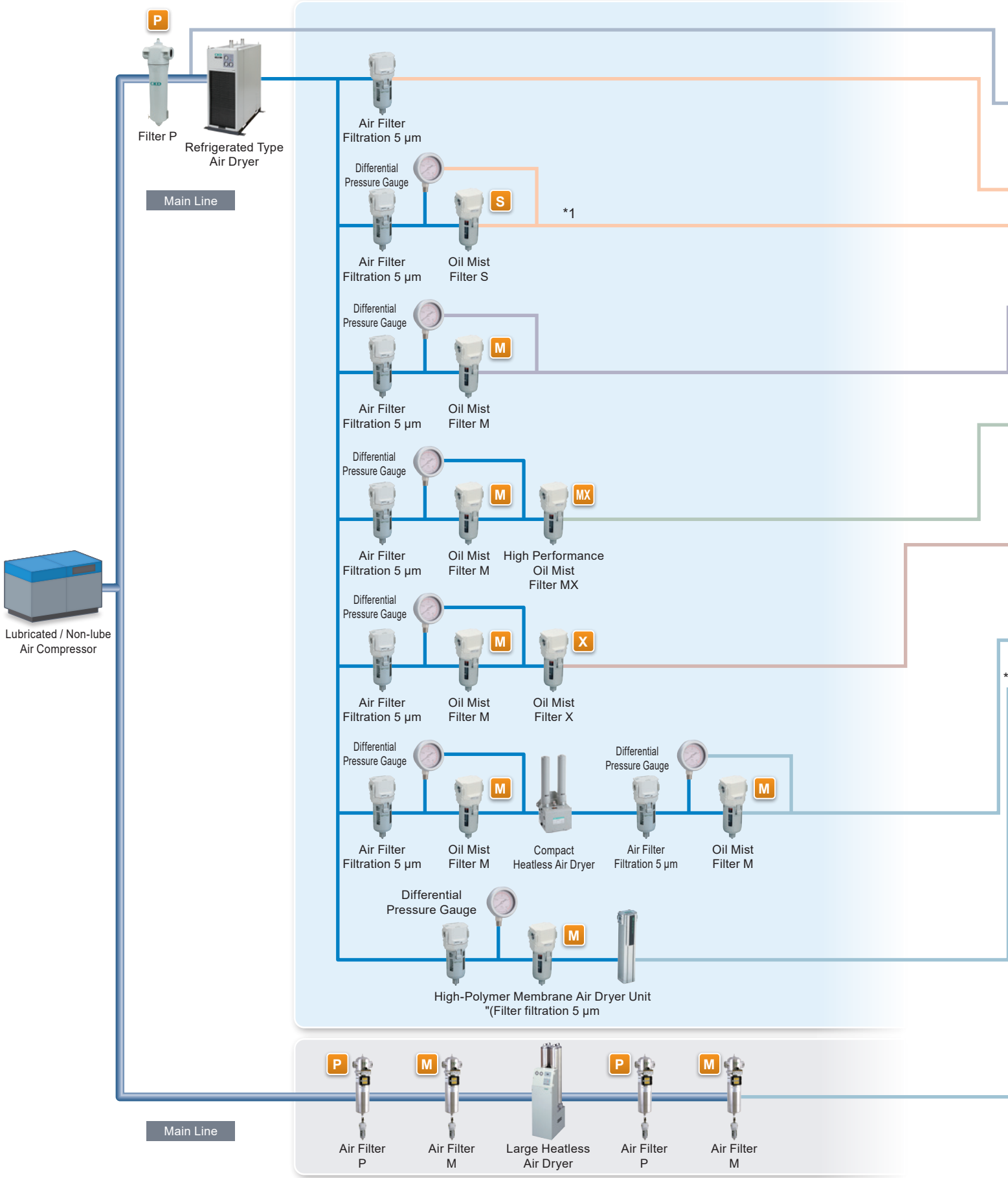
Siloxane/Ozone Remover	SFX
Filter Regulator	W□000-W-P11, W□100-W-P11
Regulator	R□000-W-P11, RB500-P11, B2019-P11, 2415-P11

Precision	P. 225
Regulator	RJB500, RPE1000, RP1000, RP2000

Clean	P. 227
Inline Clean Filter	FCS500, 1000
Clean Exhaust Filter	FAC
Regulator	RC2000, 2619

For Water	P. 227
Regulator	WR

Recommended System Configuration for Filter Equipment



Air quality	Application	Impurities in Compressed Air				Compressed Air Purity Class according to ISO 8573-1
		Solid particles (Nominal value)	Moisture	Secondary side oil concentration (at 21°C)	Odor	
Coarse Dust Removal	For construction and civil engineering machinery Air for cleaning (dry air not required)	1 μm	-	-	-	2: -: -
General dry air	General pneumatic components General pneumatic tools Labor saving components Pneumatic jigs and tools Air chuck	0.3 μm	Pressure dew point 10°C	- (0.5 mg/m³)	-	2.6:- (2.6.3)
			Pressure dew point 7°C			2.5:- (2.5.3)
Oil-less Clean Dry Air	For instrumentation Measurement Sequence control Painting	0.01 μm	Pressure dew point 10°C	0.01 mg/m³	-	1.6.1
			Pressure dew point 7°C			1.5.1
Super Oil-less Clean Dry Air	For precision measurement High-grade painting	0.01 μm	Pressure dew point 10°C	0.001 mg/m³	-	1.6.1
			Pressure dew point 7°C			1.5.1
Odorless Air	Food and pharmaceutical processes (Agitation/dry blow/package/air for brewing/ pressure feeding/filling) Cosmetics Manufacturing Process * If making direct contact with the workpiece, we recommend installing a bacteria- removing filter.	0.01 μm	Pressure dew point 10°C	0.003 mg/m³	None	1.6.1
			Pressure dew point 7°C			1.5.1
Ultra Dry Air	Ozone generator Powder transport Drying of furnace atmosphere gas Drying of insulating gas for high-voltage generators Drying for computer rooms For centralized control instrumentation LCD panel manufacturing Chemical plant Painting	0.01 μm	Pressure dew point -20°C	0.01 mg/m³	-	1.3.1
			Pressure dew point -40°C			1.2.1
			Pressure dew point -60°C			1.2.1

*1: The compressed air purity class is indicated in ().
*2: Pressure dew point -60°C is not available on the high polymer membrane air dryer.
*3: The system No. is based on the class below. X in the table indicates odor removal. "-" indicates no specification.
*4: The table shows the highest compressed air purity grade that can be achieved by the CKD clean air system. The class is affected by the conditions on the filter inlet side.

ISO 8573-1: 2010 Compressed air purity grade

Grade	Solid particles			Humidity and water content		Oil
	Max. number of particles per 1 m³ for particle diameter d (μm)			Pressure Dew Point	Water concentration Cw	
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	°C	g/m³	mg/m³
0	Conditions stricter than Grade 1 to be specified by user or supplier					
1	≤ 20000	≤ 400	≤ 10	≤ -70	-	≤ 0.01
2	≤ 400000	≤ 6000	≤ 100	≤ -40	-	≤ 0.1
3	-	≤ 90000	≤ 1000	≤ -20	-	≤ 1
4	-	-	≤ 10000	≤ +3	-	≤ 5
5	-	-	≤ 100000	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5
8	-	-	-	-	-	0.5 < Cw ≤ 5
9	-	-	-	-	-	5 < Cw ≤ 10
X	-	-	-	Cp > 10	-	Cw > 10

For example,
"Grade 1:2:1" means:
● Solid particles:
0.1 to 0.5 μm are 20000 particles or less, 0.5 to 1.0 μm are 400 particles or less, and 1.0 to 5.0 μm are 10 particles or less
● Pressure dew point -40°C or less
● Oil concentration 0.01mg/m³ or less
indicates such Classes.

Air Preparation Equipment

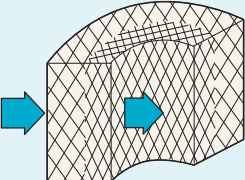
Search by Product System

F.R.L.					
F.R.L. Combination	C□000-W C□010-W C□020-W K60570	P. 157	Oil Mist Filter	M□000-W MX□000-W MM□000-W MW□000-W	P. 169
	C□030-W C□040-W C□050-W C□060-W C□070-W	P. 159	Regulator	R□000-W R□100-W	P. 173
Filter Regulator	W□□00-W W□□00-G4 WB500 B7019-□C	P. 161	Relief Valve	B6061	P. 177
			Lubricator	L□000-W A3019, 300□E	P. 179
Related Equipment Attachment Combinations	C□0□0-W W□□00-W	P. 163	Drain Separator	FX	P. 179
Air Filter	F□000-W F□000-G4 FM□000 FW□000, FCS FSL, A1019 1138, 1126 A1338, 1326 1219, 1238 1226□	P. 165	Mechanical Pressure SW	P4000-W P□1000-W APE, APS-W	P. 181
			Adapter/Joiner	B-W/B, J-W AW□00 A□0□-W	P. 182
			Proportional Pressure Control Equipment	EVD-□000 EVR, EVS2 EV2100V EVL, MEVT	P. 183
			Air Unit Equipment	CXU, CAU30	P. 185

F.R.L. Combination

P1 = Primary pressure P2 = Set pressure Δ P2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series/Appearance	Filtration μm	Set pressure MPa		Min. drip rate m³/min (ANR)	Model No.	Connection Port Size						Click here for specifications		Series for Specific Applications
								Rc, NPT, G						Catalog Name [No.]	WEB	Food
								1/8	1/4	3/8	1/2	3/4	1			
								Max. flow rate m³/min (Reference)*1								
Modular	Full-fledged Modular Type Compact modular design with unified key dimensions for filters, regulators, lubricators, etc. ● Supplies a variety of clean air Can supply clean air, oil-less air, etc. according to the application and purpose ● Uses long-life elements Original chemical fiber structure greatly reduces clogging  ● Louver optimization for compact, space-saving design Optimized louver design improves cyclone effect Size reduction achieved while maintaining moisture separation capability ● Double-layer element for longer life Adopts a unique double-layer element to improve filtration capacity and achieve a longer life ● Element structure 	F.R.L. Combination  P1 = 0.7 MPa, P2 = 0.5 MPa, ΔP2 = 0.1 MPa	Standard: 5 Option: 0.3	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		0.015	C1000-W	0.45	0.63					Air Preparation/Auxiliary Components [R-J-007AA]	 Click!	
		0.03	C2000-W		1.2	1.7										
		0.03	C2500-W		1.2	1.7										
		0.03	C3000-W		1.28	1.75										
		0.065	C4000-W		1.43	2.4	3.0	3.0 *2								
		0.065	C6500-W					4.5	5.0							
		0.065	C8000-W					7.0	7.5							
		0.015	C1010-W	0.45	0.63											
		0.03	C2010-W		1.2	1.7										
		0.03	C3010-W		1.28	1.75										
		0.065	C4010-W		1.43	2.4	3.0	3.0 *2								
		0.065	C8010-W					7.0	7.5							
		-	C1020-W	0.77	1.1											
		-	C2020-W		1.75	2.5										
		-	C2520-W		1.75	2.5										
		-	C3020-W		2.0	2.6										
		-	C4020-W		2.5	4.4	5.0	5.0 *2								
		-	C6020-W					7.0	7.7							
		-	C8020-W					10.0	10.0							
		Compact F.R.L. Kit/Set Type Set of filter, regulator, and lubricator K series, a nipple connection type with a wide variety of models  P1 = 0.7 MPa, P2 = 0.5 MPa, ΔP2 = 0.1 MPa		F.R.L. Kit/Set Type	5	0.04 to 0.83		0.02 *3	K60570	0.2 (Rc, NPT)	0.3 (Rc, NPT)					

*1: Degree of filtration 5 μ m, set pressure is max. processing flow rate by standard time.
*2: Pipe adaptor is assembled.
*3: The min. drip flow rate is the value at which five drops of oil drip per minute when the primary pressure is 0.5 Mpa.

F.R.L. Combination

P1 = Primary pressure P2 = Secondary pressure ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series	Filtration μm	Secondary side oil concentration mg/m³ or less		Set pressure MPa	Model No.	Connection Port Size						Click here for specifications		Series for Specific Applications
								Rc, NPT, G						Catalog Name [No.]	WEB	
								1/8	1/4	3/8	1/2	3/4	1			
								Max. flow rate m³/min (Reference) *1								Food FP
Modular	Full-fledged Modular Type Compact modular type with unified key dimensions for filters, regulators, lubricators, etc. Supplies a variety of clean air Can supply clean air, oil-less air, etc. according to the application and purpose Uses long-life elements Original chemical fiber structure greatly reduces clogging Louver optimization for compact, space-saving design Optimized louver design improves cyclone effect Size reduction achieved while maintaining moisture separation capability Double-layer element for longer life Adopts a unique double-layer element to improve filtration capacity and achieve a longer life Element structure	F.M.R. Combination Filter Oil Mist Filter Regulator P1 = 0.7 MPa	0.01	0.01		0.05 to 0.85 ^{*2}	C1030-W C2030-W C2530-W C3030-W C4030-W C6030-W C8030-W	0.15 0.36 0.36	0.15 0.25 0.36 0.36 0.825	0.825^{*3} 1.27 2.6	Air Preparation/Auxiliary Components [RJ-007AA]	Click!	●			
		W.M. Combination Filter Regulator Oil Mist Filter P2 = 0.7 MPa, ΔP2 = 0.01 MPa	0.01	0.01		Standard: 0.1 to 0.85 Low pressure specifications: 0.1 to 0.35 ^{Note 2}	C1040-W C2040-W C3040-W C4040-W C8040-W	0.15 0.36 0.825	0.15 0.25 0.36 0.825 2.6	0.825^{*3} 2.6			●			
		R.M. Combination Regulator Oil Mist Filter P2 = 0.7 MPa, ΔP2 = 0.01 MPa	0.01	0.01		0.1 to 0.85 ^{*2}	C1050-W C2050-W C2550-W C3050-W C4050-W C6050-W C8050-W	0.25 0.36 0.36 0.825	0.25 0.36 0.36 0.825 1.27 2.6	0.825^{*3} 1.27 2.6			●			
		F.M. Combination Filter Oil Mist Filter P1 = 0.7 MPa, ΔP2 = 0.01 MPa	0.01	0.01		-	C1060-W C2060-W C3060-W C4060-W C6060-W C8060-W	0.15 0.36	0.15 0.25 0.36 0.825	0.825 1.27 2.6			0.825^{*3} 1.27 2.6	●		
		F.F.M. Combination Filter (5 μm) Filter (0.3 μm) Oil Mist Filter P1 = 0.7 MPa, ΔP2 = 0.01 MPa	0.01	0.01		-	C3070-W C4070-W C6070-W C8070-W		0.5	0.5 0.5^{*3} 0.8 1.1			1.1			

*1: Degree of filtration 5 μm, set pressure is max. processing flow rate by standard time.
*2: When using the auto-drain "F1", the NC auto-drain is included for both the filter and oil mist filter. The min. working pressure is 0.2 MPa and the max. working pressure is 0.7 MPa. For the max. operating flow rate, refer to the detailed catalog. Operating flow rate should be equal to or less than the max. flow rate.
*3: Pipe adaptor is assembled.

Filter Regulator

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series	Filtration μm	Setting Pressure MPa		Model No.	Connection Port Size								Click here for specifications		Series for Specific Applications			
							ø		Rc, NPT, G						Catalog Name [No.]	WEB	Rechargeable Battery	Food	Clean	Outdoor
							4	6	1/8	1/4	3/8	1/2	3/4	1						
Modular	Compact Type Equipped with One-touch fittings as standard, with two piping direction types available: straight and elbow Easy piping work	WB500  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	5	Standard: 0.05 to 0.7 Low pressure specifications: 0.05 to 0.35		WB500	0.08	0.18							Air Preparation/Auxiliary Components [RJ-007AA]	 Click!				
	Standard Specification Integrated filter and regulator, with elements for dust removal (5 μm) and tar removal (0.3 μm) available in series.	W□000-W  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	5	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W1000-W			0.83	1.15										
						W2000-W				1.5	2.0									
			Standard: 5 Option: 0.3	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W3000-W				2.15	2.43	2.43								
						W4000-W				2.5	4.35	4.75								
						W8000-W							10.0	10.0						
	Reverse Filter/Regulator Integrated filter and regulator, with elements for dust removal (5 μm) and tar removal (0.3 μm) available in series.	W□100-W  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	5	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W1100-W			0.83	1.15										
						W2100-W				1.5	2.0									
			Standard: 5 Option: 0.3	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W3100-W				2.15	2.43	2.43								
						W4100-W				2.5	4.35	4.75								
						W8100-W							10.0	10.0						
	Flame Resistant Specification Exterior: Flame-resistant integrated flame-resistant material, metal bowl filter and Regulators, resistant to spatter	W□000-G4  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	Standard: 5 Option: 0.3	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W3000-G4				2.15	2.43									
						W4000-G4				2.5	4.35	4.75								
						W8000-G4							10.0	10.0						
	Flame Resistant Specification Built-in reverse flow function Integrated filter and regulator, flame-resistant type strong against spatter.	W□100-G4  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	Standard: 5 Option: 0.3	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W3100-G4				2.15	2.43									
						W4100-G4				2.5	4.35	4.75								
						W8100-G4							10.0	10.0						
	Compact Filter/Regulator Unit Compact F.R. unit with integrated filter and regulator 5 μm element for dust removal	B7019  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	5	Standard: 0.04 to 0.83 Low pressure specifications: 0.02 to 0.34		B7019				0.5 (Rc, NPT)	0.9 (Rc, NPT)									
	Outdoor Specification All-metal construction Improved weather resistance of general-purpose products such as covers	BW7019  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	5	0.04 to 0.83		BW7019				0.9 (Rc)										
	Outdoor All-metal construction Improved weather resistance of general-purpose products such as covers and gauge ports	WW□000  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	Standard: 5 Option: 0.3	0.05 to 0.85		WW4000				2.5	4.35	4.75								
						WW8000							10.0	10.0						

*1: Degree of filtration 5 μm, set pressure is max. processing flow rate by standard time.

Related Equipment Attachment Combinations

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Series/Appearance	Model No.	Combination Option List (Model No. U□□□)										Combination Option List (Model No. U□□□)								Combination Position	Click here for specifications						
		D	N	P	V	V1	K	DS	DP	DV	DK	DSV	DSK	DPV	DPK	SV	SV1	SK	PV		PK	Catalog Name [No.]	WEB				
F.M.L Combination *5		C1000-W	D	N		V			DS		DV	DK				DSV	DSK	DPV	DPK	SV	SV1	SK	PV	PK			
		C2000-W	D	N	P	V		K	DS	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C2500-W	D	N	P	V		K	DS	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C3000-W	D	N	P	V		K	DS	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C4000-W	D	N	P	V		K	DS	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C4000-20-W	D	N	P	V		K	DS	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C6500-W	D	N				K	DS			DK				DSK					SK						
W.L. Combination *5		C8000-W	D	N				K	DS			DK				DSK						SK					
		C1010-W		N		V										SV											
		C2010-W		N	P	V		K								SV		SK	PV	PK							
		C3010-W		N	P	V		K								SV		SK	PV	PK							
		C4010-W		N	P	V		K								SV		SK	PV	PK							
		C4010-20-W		N	P	V		K								SV		SK	PV	PK							
F.R. Combination *5		C8010-W		N				K												SK							
		C1020-W	D	S□		V	V1		DS□		DV	DK				DSV				SV	SV1						
		C2020-W	D	S□	P	V	V1	K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV	SV1	SK	PV	PK			
		C2520-W	D	S□	P	V	V1	K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV	SV1	SK	PV	PK			
		C3020-W	D	S□	P	V	V1	K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV	SV1	SK	PV	PK			
		C4020-W	D	S□	P	V	V1	K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV	SV1	SK	PV	PK			
		C4020-20-W	D	S□	P	V	V1	K	DS□			DK				DSV	DSK	DPV	DPK	SV	SV1	SK	PV	PK			
		C6020-W	D	S□				K	DS□			DK				DSK					SK						
F.M.R. Combination *5		C8020-W	D	S□				K	DS□			DK				DSK					SK						
		C1030-W	D	S□		V			DS□		DV	DK				DSV				SV							
		C2030-W	D	S□	P	V		K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C2530-W	D	S□	P	V		K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C3030-W	D	S□	P	V		K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C4030-W	D	S□	P	V		K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C4030-20-W	D	S□	P	V		K	DS□	DP	DV	DK				DSV	DSK	DPV	DPK	SV		SK	PV	PK			
		C6030-W	D	S□				K	DS□			DK				DSK					SK						
W.M Combination *5		C8030-W	D	S□				K	DS□			DK				DSK					SK						
		C1040-W		N		V														SV							
		C2040-W		N	P	V		K												SV		SK	PV	PK			
		C3040-W		N	P	V		K												SV		SK	PV	PK			
		C4040-W		N	P	V		K												SV		SK	PV	PK			
		C4040-20-W		N	P	V		K												SV		SK	PV	PK			
Filter Regulator		C8040-W		N				K												SK							
		W1000-W		N		V														SV							
		W2000-W		N		V														SV							
		W3000-W		N		V														SV							
Reverse Filter/Regulator		W4000-W		N		V														SV							
		W1100-W		N			V1													SV1							
		W2100-W		N			V1													SV1							
		W3100-W		N			V1													SV1							
		W4100-W		N			V1													SV1							

Air Preparation/Auxiliary Components [RJ-007AA]



Click!



Click!

* Piping adapter is installed.
*1: Two T-brackets are included with the combination option.
*2: The T-bracket installation position changes depending on the combination.
*3: T-bracket standard installation position is on the inner side of the end product of each combination. However, if a piping adapter is combined at the end, it is attached to the product further inside the piping adapter.
*4: Use customized combination specifications sheet to change the bracket installation position and for combinations other than combination options.
*5: The pipe adaptor set A400-20-W is assembled on both ends of the C40□0-20-W (port size Rc3/4). For products other than the pipe adaptor, the port size is "15" (Rc1/2).
*6: Only the upward branch direction is available for option "D".

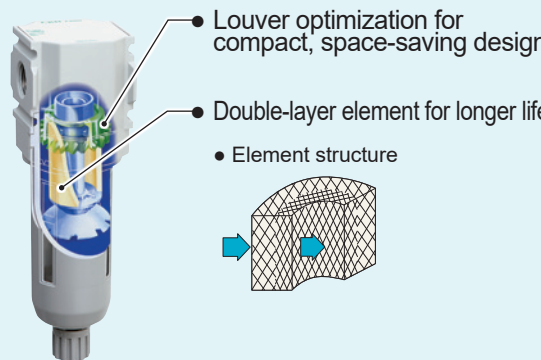
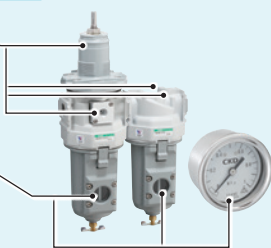
Combination Option Equipment

D	S	P	V (V1)	K
Distributor	Mechanical Compact Pressure Switch	Mechanical Pressure Switch	Residual Pressure Release Valve	Discharge Valve with Keyhole
D□01-W	P□100-W	P4000	V□00-W	V□010-W
Click here for specifications				

Filter

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series/Appearance	Filtration μm		Model No.	Connection Port Size											Click here for specifications		Series for Specific Applications				
						ø					Rc, NPT, G						Catalog Name [No.]	WEB	Rechargeable Battery	Food	Clean	Outdoor	
						4	6	8	10	12	1/8	1/4	3/8	1/2	3/4	1			P4	FP	P5 P7	WP	
						Max. flow rate m³/min (Reference) ※1																	
Modular	Filter/standard specifications 	F□000-W  P1 = 0.7 MPa △P = 0.02 MPa	5		F1000-W						0.46	0.61					Air Preparation/Auxiliary Components [RJ-007AA]	 Click!					
		F2000-W						1.3	1.7														
		F3000-W						1.23	1.5														
		F4000-W						1.32	2.14	3.0													
		F6000-W									5.6	6.2											
		F8000-W									6.4	6.8											
	Flame Resistant Specification Exterior: Flame-resistant material and metal bowl used	F□000-G4  P1 = 0.7 MPa △P = 0.02 MPa	Standard: 5 Option: 0.3		F3000-G4						1.23	1.5				 Click!							
		F4000-G4						1.32	2.14	3.0													
		F8000-G4									6.4	6.8											
	Medium Pressure Specification Max. Operating Pressure: 1.6 MPa Proof Pressure: 2.4 MPa	FM□000-W  P1 = 1.3 MPa △P = 0.02 MPa	Standard: 5 Option: 0.3		FM3000-W						1.6	2.0				 Click!							
		FM4000-W						1.9	2.8	3.8													
		FM6000-W									6.7	8.1											
		FM8000-W									8.1	9.0											
	Outdoor Specification ● All-metal construction Improved weather resistance of general-purpose parts such as covers and gauge plugs ● Tempered glass specification 	FW□000  P1 = 0.7 MPa △P2 = 0.02 MPa	Standard: 5 Option: 0.3		FW4000							1.32	2.14	3.0				 Click!					
		FW8000										6.4	6.8										
Inline	Inline Clean Filter (P90) Removal efficiency 99.99%	FCS  P1 = 0.7 MPa △P = 0.03 MPa	0.01		FCS500	0.05	0.05	0.08			0.05 (R, RC)	0.08 (R, RC)					 Click!						
		FCS1000			0.3	0.3	0.4		0.3 (R, RC)	0.4 (R, RC)													
	Inline Filter Can be used for both positive and negative pressure Can be used with positive pressure while maintaining the usability of conventional vacuum inline filters	FSL  P1 = 0.7 MPa △P2 = 0.02 MPa	10		FSL100	0.07	0.10										 Click!						
		FSL200	0.08	0.14																			
		FSL500		0.18	0.36	0.44																	

*1: Max. processing flow rate at 5 μm. Refer to the detailed catalog for max. processing flow rate when 0.3 μm is used.

Filter

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

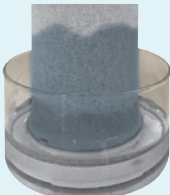
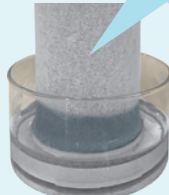
Type	Features	Series/Appearance	Filtration μm		Model No.	Connection Port Size										Click here for specifications		
						Rc, NPT										Catalog Name [No.]	WEB	
						1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2				
								Max. flow rate m³/min (Reference) *1										
Separate	Compact Air Filter Compact for Dust Removal	A1019  P1 = 0.7 MPa △P2 = 0.02 MPa	5		A1019-□C	0.55	0.7								Air Preparation/Auxiliary Components [R-J-007AA]	 Click!		
	Air Filter Large-bore nipple connection type Extensive lineup of both series and sizes	1138, 1126  P1 = 0.7 MPa △P2 = 0.02 MPa	Standard: 5 Option: 0.3		1138					5.5	7.0					 Click!		
												18	21	25				
	Large Volume Drain Removal Type Heavy Duty Specification Float type special drain (NC: No exhaust when not pressurized), large amounts of drainage are removed	A1338, 1326  P1 = 0.7 MPa △P2 = 0.002 MPa	Standard: 5 Option: 3, 0.3		A1338					1.55	1.55						 Click!	
												5.8	5.8	5.8				
	For tar removal Submicron Air Filter Removes up to 99% of solid substances such as tar and carbon down to 0.3 μm	1138, 1126□C-EY A1338, 1326□C-Y  P1 = 0.7 MPa △P2 = 0.01 MPa	0.3		1138-Y					1.55	1.55							 Click!
											1.55	1.55						
													4.9	4.9		4.9		
													4.9	4.9		4.9		
	Compact filter, for tar removal Oil removal rate 0.1 PPMW/W (at inlet temperature of 30°C) Compact size of 92 mm (H) x 38 mm (W), ideal for applications requiring space saving, such as compact devices	1219  P1 = 0.7 MPa △P2 = 0.01 MPa	-		1219-2C		0.056									 Click!		
	Filter, For Oil Mist Removal Oil removal rate 0.1 PPMW/W (at inlet temperature of 30°C) Micro-coalescer/Micro-Naught Type For measurement/instrumentation, high-grade painting	1238-6C, 1226□-□C  P1 = 0.7 MPa △P2 = 0.01 MPa	-		1238					1.27						 Click!		
											2.49							
													4.8	4.8				
	For Odor Removal Micro-coalescer, Odor Naught Type Adsorbs odor particles to make compressed air odorless	1238-6C-X, 1226□-□C-X  P1 = 0.7 MPa △P2 = 0.01 MPa	-		1238-X					1.27								
										2.49								
												4.8	4.8					

*1: Max. processing flow rate at 5 μm. Refer to the detailed catalog for max. processing flow rate when 0.3 μm is used.

Oil Mist Filter

P1 = Primary pressure; ΔP2 = Differential pressure

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series/Appearance	Filtration Rating μm	Secondary side oil concentration mg/m³ or less		Model No.	Connection Port Size						Click here for specifications		Series for Specific Applications											
							Rc, NPT, G						Catalog Name [No.]	WEB	Rechargeable Battery	Food	Clean									
							1/8	1/4	3/8	1/2	3/4	1														
							Max. flow rate m³/min (Reference)																			
Modular	Standard Specification ● Long-life mantle Special coating on the mantle surface suppresses pressure drop and allows for stable use over a long period  No coating  With coating Oil adheres in a short time, causing pressure loss No oil adhesion for long-term stable operation With differential pressure switch, option available Notifies of element deterioration that can cause reduced machining accuracy, secondary side equipment failure, or reduced service life Replacement time double-checked with switch and indicator, compatible with M2000 to M6000  Mantle Option Codes and Shapes <table><tr><th>Option Code</th><th>Appearance</th></tr><tr><td>Blank (M-type)</td><td>  End plate black Plastic foam </td></tr><tr><td>S (S-type)</td><td>  End plate green Plastic foam </td></tr><tr><td>X (X-type)</td><td>  End plate black Non-woven fabric </td></tr></table> Caution: Changes for product upgrades may be made without prior notice. When ordering parts in particular, please check the option code of the product model number on the main unit before ordering.	Option Code	Appearance	Blank (M-type)	 End plate black Plastic foam	S (S-type)	 End plate green Plastic foam	X (X-type)	 End plate black Non-woven fabric	M□000-W		0.01	0.01 ^{*1}		M1000-W	0.15	0.15					Air Preparation/Auxiliary Components [R□-007AA]	 Click!			
		Option Code	Appearance																							
		Blank (M-type)	 End plate black Plastic foam																							
		S (S-type)	 End plate green Plastic foam																							
		X (X-type)	 End plate black Non-woven fabric																							
								M2000-W		0.25	0.25															
								M3000-W		0.36	0.36															
								M4000-W		0.825	0.825	0.825														
								M6000-W					1.27	1.27												
								M8000-W					2.6	2.6												
								M1000-W□-S	0.15	0.15																
								M2000-W□-S		0.31	0.31															
								M3000-W□-S		0.45	0.45															
								M4000-W□-S		1.0	1.0	1.0														
								M6000-W□-S					1.4	1.4												
								M8000-W□-S					2.9	2.9												
								M1000-W□-X	0.15	0.15																
								M2000-W□-X		0.36	0.36															
							M3000-W□-X		0.45	0.45																
							M4000-W□-X		1.0	1.0	1.0															
							M6000-W□-X					1.4	1.4													
							M8000-W□-X					2.9	2.9													
			M□000-W□-S		0.3	0.5 ^{*1}																				
			M□000-W□-X		Adsorption by activated carbon	0.003 ^{*2}																				

*1: The outlet oil concentration is the value at an inlet oil concentration of 30 mg/m³ and an inlet air temperature of 21 °C.
*2: When an oil mist filter (M Series M type) is installed on the primary side.

Oil Mist Filter

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, please refer to P. 451.

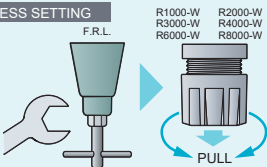
Type	Features	Series/Appearance	Filtration Rating μm	Secondary side oil concentration mg/m³ or less		Model No.	Connection Port Size						Click here for specifications		Series for Specific Applications				
							Rc, NPT, G								Food	Clean	Outdoor		
							1/8	1/4	3/8	1/2	3/4	1	Catalog Name [No.]	WEB	FP	P7	WP		
							Max. flow rate m³/min (Reference)												
Modular	High Performance Specification	MX□000  P1 = 0.7 MPa △P2 = 0.01 MPa	0.01 (Nominal value)	0.001 *1		MX1000-W	0.075	0.075				Air Preparation/Auxiliary Components [RJ-007AA]		●	●				
	Highly efficient oil removing mantle removes oil up to a secondary oil concentration 0.001 mg/m³ High-performance type with 10 times the oil removal capacity (compared to the M series oil mist filter)	MX3000-W					0.18	0.18											
		MX4000-W					0.37	0.37	0.37										
		MX6000-W								0.67	0.67								
		MX8000-W								1.48	1.48								
	Medium Pressure Specification	MM□000-W□-S  P1 = 1.4 MPa △P2 = 0.01 MPa	0.3	0.5 *1		MM3000-W□-S		0.61	0.61										
						MM4000-W□-S		1.37	1.37	1.37									
						MM6000-W□-S					1.92							1.92	
						MM8000-W□-S					3.98							3.98	
		MM□000-W  P1 = 1.4 MPa △P2 = 0.01 MPa	0.01	0.01 (Nominal value) *1		MM3000-W		0.49	0.49										
						MM4000-W		1.13	1.13	1.13									
						MM6000-W					1.74							1.74	
						MM8000-W					3.56							3.56	
		MM□000-W□-X  P1 = 1.4 MPa △P2 = 0.01 MPa	Adsorption by activated carbon	0.003 *2		MM3000-W□-X		0.61	0.61										
						MM4000-W□-X		1.37	1.37	1.37									
						MM6000-W□-X					1.92							1.92	
						MM8000-W□-X					3.98							3.98	
		Outdoor Specification	MW□000-S  P1 = 0.7 MPa △P2 = 0.01 MPa	0.3	0.5 *1		MW4000-S		0.825	0.825	0.825								
							MW8000-S											2.6	2.6
			MW□000-M  P1 = 0.7 MPa △P2 = 0.01 MPa	0.01	0.01 *1		MW4000-M		1.0	1.0	1.0								
							MW8000-M											2.9	2.9

*1: The secondary oil concentration is the value when the primary oil concentration is 30 mg/m³ and inlet air temperature is 21°C.
*2: Value when an oil mist filter (M Series M type) is installed on the primary side.

Regulator

P1 = Primary pressure; P2 = Set pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size									Click here for specifications		Series for Specific Applications		
						Rc, NPT, G									Catalog Name [No.]	WEB	Rechargeable Battery	Food	Clean
						1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2			P4	FP	P7
						Max. flow rate m³/min (Reference) *1													
Modular	Standard Specification Embedded pressure gauge for compact design, tool-free pressure adjustment [Tool-free pressure adjustment] Pressure can be adjusted with one hand, locked with a single push Knob can be easily operated manually even when setting pressure 	R□000  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		R1000-W 0.771.35									Air Preparation/Auxiliary Components [R□-007AA]					
	R2000-W 1.752.5																		
	R3000-W 2.02.6																		
	R4000-W 2.54.45.0																		
	R6000-W 77.7																		
	R8000-W 14.011.0																		
	R1100-W 0.771.35																		
	R2100-W 1.752.5																		
	R3100-W 2.02.6																		
	R4100-W 2.54.45.0																		
	R6100-W 77.7																		
	R8100-W 14.011.0																		
Regulator, Flame Resistant Specification Exterior: Flame-resistant material, panel mounting nut Pressure can be adjusted without tools, flame-resistant type strong against spatter 	R□000-G4 P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		R3000-G4 2.02.6															
R4000-G4 2.54.45.0																			
R8000-G4 14.011.0																			
R3100-G4 2.02.6																			
R4100-G4 2.54.45.0																			
R8100-G4 14.011.0																			

*1: The max. processing flow rate is the value for the standard set pressure adjustment range.

Regulator

P1 = Primary pressure; P2 = Set pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (https://www.ckd.co.jp/kiki/en/).
* For details on series for specific applications, refer to P. 451.

Type	Features	Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size										Click here for specifications		Series for Specific Applications		
						ø			Rc, NPT, G											
						4	6	8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	Catalog Name [No.]	WEB	Rechargeable Battery	Outdoor	
						Max. flow rate m³/min (Reference) *1												P4	WP	
Modular	Oil-free Specification Flow path circuit: Oil-prohibited Ideal for applications where grease is not desired All parts in the fluid path are degreased and cleaned, and no grease is used	RN  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.7 Low pressure specifications: 0.05 to 0.3		RN3000-W					1.6	2.6				Air Preparation/Auxiliary Components [RJ-007AA]	 Click!				
					RN4000-W					2.4	3.0	3.0					 Click!			
					RN8000								4.5	6.0						
	Medium Pressure Specification Max. Operating Pressure: 1.6 MPa Medium pressure specification for R3000/R4000-W series Max. operating pressure 1.6 MPa, proof pressure 2.4 MPa	RM  P1 = 1.6 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	0.05 to 0.85		RM3000-W					2.0	2.0						 Click!			
					RM4000-W					3.0	3.0	3.0								
	Outdoor Specification All-metal construction Improved weather resistance of general-purpose products such as covers and gauges	RW□000  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	0.05 to 0.85		RW3000-W					2.0	2.6							 Click!		
					RW4000-W					2.5	4.4	5.0								
					RW8000-W								14.0	11.0						
Compact	Compact Piston Type Compact, lightweight, piston-type with improved operability	RA800  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		RA800					0.35 (Rc)	0.35 (Rc)					 Click!				
	Reverse Regulator, Compact Piston Type Compact, space-saving, built-in reverse flow function type Manifold type available (MNRJB500A/B) * For detailed specifications of the manifold type, please check the detailed catalog.	RB500  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.7 Low pressure specifications: 0.05 to 0.35		RB500		0.1	0.2								 Click!				
Precision	Precision Type Grease-free specification, compact, space saving compact direct acting precision Manifold type available (MNRJB500A/B) For the manifold type, please check the detailed catalog.	RJB500  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.02 to 0.5 Low pressure specifications: 0.01 to 0.2		RJB500		0.06	0.08								 Click!				
Clean	Oil-free Specification Compact, oil-free specification for use in cleanrooms	2619  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.04 to 0.83 Low pressure specifications: 0.04 to 0.34		2619					0.18 (Rc)	0.18 (Rc)					 Click!				
	Oil-free Specification Supported fluids: Compressed air, N2 Adopts oil-free specifications and a stainless steel body, making it ideal for controlling the pressure of clean air and N2 Ideal for air (N2) blow due to its compact size and high flow rate	RC2000  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.7 Low pressure specifications: 0.02 to 0.2		RC2000					0.8 (Rc)	0.8 (Rc)	0.8 (Rc)				 Click!				

*1: The max. processing flow rate is the value for the standard set pressure adjustment range.

Regulator

P1 = Primary pressure; P2 = Set pressure; ΔP2 = Differential pressure

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Features	Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size									Click here for specifications			
						Rc, NPT												
						1/8	1/4	3/8	1/2	3/4	1	1 ¼	1 ½	2				
							Max. flow rate m³/min (Reference) *1						Catalog Name [No.]	WEB				
Separate	Regulator	B2019  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.04 to 0.83 Low pressure specifications: 0.02 to 0.34		B2019-□C									Air Preparation/Auxiliary Components [RJ-007AA]	 Click!			
	Compact Type					0.5	0.5											 Click!
	Large Bore	2215, 2216  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.07 to 0.83 Low pressure specifications: 0.07 to 1.23		2215-□C 2216-□-C					14.0	14.0	14.0				 Click!		
	Supports 3/4 to 2														11.0	11.0		 Click!
	Reverse Regulator	2419  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.04 to 0.83 Low pressure specifications: 0.02 to 0.34		2419-□C	0.5	0.5									 Click!		
	Built-in check valve, no bypass circuit required Check valve quickly exhausts secondary side No bypass circuit required, easy piping																 Click!	
		2415  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	0.07 to 0.83		2415-□C					14	14	14						
	With Setting Dial	230□-□C  P1 = 0.7 MPa P2 = 0.5 MPa	Standard: 0.05 to 1.08 Low pressure specifications: 0.05 to 0.27		2302-□C 2303-□C 2304-□C		3.0	3.0	3.0	3.0							 Click!	
	With dial for easy pressure adjustment Can also control large flow rates									10.0	10.0	10.0						
																30.0		30.0
	With remote control dial for remote operation	230□-C-R  P1 = 0.7 MPa P2 = 0.5 MPa	0.05 to 1.08		2302-□C-R 2303-□C-R 2304-□C-R		3.0	3.0	3.0	3.0								
With pilot port for pressure setting Remote operation possible									10.0	10.0	10.0							
														30.0	30.0			

*1: The maximum processing flow rate is the value in the standard time range.

Relief Valve

Features	Model No.	Set pressure range MPa	Connection Port Size			Click here for specifications	
			Rc, NPT			Catalog Name [No.]	WEB
			1/8	1/4			
			Max. flow rate m³/min (Reference) *1				
When pressure rises, compressed air is released to the atmosphere to maintain the set pressure	B6061-□C 	Standard: 0.04 to 0.69 Option: 0.04 to 0.34				Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!
			0.15	0.15			

*1: Set pressure 0.7 MPa, pressure rise 0.08 MPa

Lubricator

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series/Appearance	Min. drip rate m³/min (ANR)		Model No.	Connection Port Size									Click here for specifications		Series for Specific Applications
						Rc, NPT, G									Catalog Name [No.]	WEB	Outdoor
						1/8	1/4	3/8	1/2	3/4	1	1 ¼	1 ½	2			WP
Modular	Standard	L□000  P1 = 0.5 MPa △P2 = 0.03 MPa	0.015 *1		L1000-W	0.55	0.7							Air Preparation/Auxiliary Components [RJ-007AA]	 Click!		
	Set of filter, regulator, and lubricator. K series, a nipple connection type with a wide variety of models.		0.03 *1		L3000-W			1.1	2.25								
			0.065 *1		L4000-W			1.0	1.7	2.7							
			0.065 *1		L8000-W						6.3	10					
	Outdoor Specification	LW□000  P1 = 0.5 MPa △P2 = 0.03 MPa	0.03 *1		LW3000-W			1.1	2.25						 Click!	●	
	All-metal construction		0.065 *1		LW4000-W			1.0	1.7	2.7							
	Improved weather resistance of general-purpose products such as covers and gauges				LW8000-W						6.3	10					
	Separate		Economist Type		A3019  P1 = 0.5 MPa △P2 = 0.03 MPa	0.02 *2		A3019-□C			0.1 (Rc, NPT)	0.4 (Rc, NPT)					
Compact Lubricator																	
Supplies fine oil mist																	
Economist Type		3003E  P1 = 0.5 MPa △P2 = 0.03 MPa	0.06 *2		3003E-□C						3.5 (Rc, NPT)	4.0 (Rc, NPT)					
Large Lubricator																	
Supplies fine oil mist (atomized oil)																	
Automatic Supply Type	3004E, 3005E  P1 = 0.7 MPa △P2 = 0.03 MPa	0.2 *2		3004E-□C							20 (Rc, NPT)	20 (Rc, NPT)					
														27 (Rc, NPT)			
Automatic Supply Type	3003E-□C-V  P1 = 0.5 MPa △P2 = 0.03 MPa	-		3003E-□C-V						3.5 (Rc, NPT)	4.0 (Rc, NPT)						
		Double plastic structure allows checking of dripping status from any angle															

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

Drain Separator

Features	Series/Appearance		Model No.	Connection Port Size								Click here for specifications	Series for Specific Applications					
				Rc, NPT, G									Catalog Name [No.]	WEB	Rechargeable Battery	Food	Outdoor	
				1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2			P4	FP	WP	
				Max. flow rate m³/min (Reference)														
Drain Separator Lightweight and compact drain separator Cyclone effect causes water droplets in compressed air to hit the inner wall of the bowl, where they collect and grow, removing over 99% of moisture Ideal for simple water removal in air piping	FX  P1 = 0.7 MPa		FX1004		0.55	0.55							Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!				
	FX1011			1.8	1.8	1.8										●	●	●
	FX1037						6.1	6.1										

Related Equipment

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Drain Ejector			Click here for specifications	
Snap Drain	Super Drain	Heavy Duty Drain	Catalog Name [No.]	WEB
DT3000, 4000-W 	DB1000, 3000 	5100-4C 	Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!

F.R.L.

Mechanical Pressure SW

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Features	Model No./Appearance	Set pressure range MPa	Port size Rc						Click here for specifications		Series for Specific Applications	
			1/8	1/4	3/8	1/2	3/4	1	Catalog Name [No.]	WEB	Food	Rechargeable Battery
											FP	P4
Wide range of pressure settings possible	P4000-W 	0.1 to 0.8		●	●	●			Air Preparation/Auxiliary Components [Ru-007AA]			
Also supports module connection with Selex F.R.L	P□100-W 	0.1 to 0.6	●	●	●	●	●	●			●	●
Single Unit Specification	APE 	0.1 to 0.8		●								●
Single unit specification compatible with various general-purpose mountings	APS-W 	0.1 to 0.6	●									

Related Equipment (Digital Pressure SW)

Digital Pressure Sensor for Regulator Mounting Only	Click here for specifications		Digital Pressure Sensor	Click here for specifications	
	Catalog Name [No.]	WEB		Catalog Name [No.]	WEB
PPR 	Sensor/Controller [RJ-008AA]		PPX 	Sensor/Controller [RJ-008AA]	

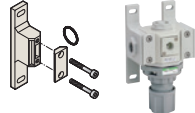
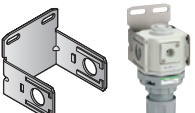
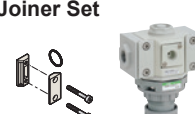
Distributor

Series/Appearance	Applicable Model	Model No.	Port Size Rc							Click here for specifications	
			1/8	1/4	3/8	1/2	3/4	1	1 1/4	Catalog Name [No.]	WEB
D□01 	1000 Series	D101	●	●						Air Preparation and Auxiliary Equipment [RJ-007AA]	
	2000, 3000, 4000 Series	D401		●	●	●					
	6000, 8000 Series	D801					●	●			
D300 	2000, 3000, 4000 Series	D300		●	●						

F.R.L.

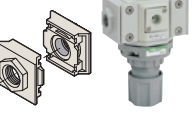
Adapter Joiner

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Applicable Model Series	1000 Series	2000 Series	3000 Series	4000 Series	6000 Series	8000 Series	Click here for specifications		Series for Specific Applications Outdoor WP
							Catalog Name [No.]	WEB	
T-Bracket Set 	B110-W	B310-W	B310-W	B410-W	B810-W	B810-W	Air Preparation/Auxiliary Components [RJ-007AA]		●
C-Bracket Set 	B120	B220	B320	B420	B620	B820			●
L-Bracket Set 	B130	B230	B330	B430	B430	-			
Joiner Set 	C1000-J100-W	C4000-J400-W	C4000-J400-W	C4000-J400-W	C8000-J800-W	C8000-J800-W			●

*1: Select B410-W when using the 3000-W Series and 4000-W Series combined.

Adapter Set

Series	Applicable Model	Model No.	Port Size Rc							Click here for specifications		Series for Specific Applications Outdoor WP
			1/8	1/4	3/8	1/2	3/4	1	1 1/4	Catalog Name [No.]	WEB	
Piping Adapter Set 	1000 Series	A100-□-W	●	●	●					Air Preparation/Auxiliary Components [RJ-007AA]		
	2000, 3000 Series	A400-□-W		●	●	●						
	4000 Series	A400-□-W		●	●	●	●	●				
	6000, 8000 Series	A800-□-W					●	●	●			
With T-bracket Piping Adapter Set 	1000 Series	A100-□-W-B11W	●	●	●					Air Preparation/Auxiliary Components [RJ-007AA]		●
	2000, 3000 Series	A400-□-W-B31W		●	●	●						
	4000 Series	A400-□-W-B41W		●	●	●	●	●				
	6000, 8000 Series	A800-□-W-B81W					●	●	●			
L-type Piping Adapter 	1000 Series	A101-□W	●	●						Air Preparation/Auxiliary Components [RJ-007AA]		
	2000, 3000, 4000 Series	A401-□W		●	●	●						
	6000, 8000 Series	A801-□W					●	●				

Proportional Pressure Control Equipment

Electro-Pneumatic Regulator

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Features	Series/Appearance	Wiring method	Connection Port Size	Input Signal						Model No.		Pressure control range kPa *1, 2, 3, 4	Max. flow rate L/min (ANR) *5	Step response (no load) 0.1 s or less 0.2 s or less 0.6 s or less	Linearity (%F.S.) ±0.3 or less ±0.5 or less	Hysteresis (%F.S.) 0.4 or less 0.5 or less	Application ● Optimum ○ Usable Blow Pressing Tension Pilot pressure control Workpiece suction	Click here for specifications		Series for Specific Applications		
				0-10 VDC	0-5 VDC	4-20 mA	Parallel 10 bit	0-20 mA	1-5 VDC	IO-Link								Catalog Name [No.]	WEB	Rechargeable Battery	Clean	Food
Digital Electro-Pneumatic Regulator Compact and high-performance type with many functions such as error display and direct memory, and equipped with a digital display	EVD-1000 	D-sub Connector IO-Link	Rc, G, NPT 1/4	●	●	●				●	EVD-1100	0 to 100	60									
				●	●	●				●	EVD-1500	0 to 500	400	●	●	●	○	○	○	●		
				●	●	●				●	EVD-1900	0 to 900	400									
	EVD-3000 	D-sub Connector IO-Link	Rc, G, NPT 1/4, 3/8	●	●	●				●	EVD-3100	0 to 100	700									
				●	●	●				●	EVD-3500	0 to 500	1500	●	●	●	○	○	○	●		
				●	●	●				●	EVD-3900	0 to 900	1500									
High-precision Electro-pneumatic Regulator Adopts feedback control with a semiconductor pressure sensor electronic control circuit, enabling high-precision control of air pressure with electrical signals	EVR 	FA connector	Rc, G, NPT 1/4	●	●	●					EVR-2100/2109	5 to 100	250									
				●	●	●					EVR-2200/2209	5 to 200	400									
				●	●	●					EVR-2300/2309	5 to 300	480									
				●	●	●					EVR-2400/2409	5 to 400	600									
				●	●	●					EVR-2500/2509	5 to 500	800	●	●	●	○	○	○			
				●	●	●					EVR-2600/2609	10 to 600	850									
				●	●	●					EVR-2700/2709	10 to 700	900									
				●	●	●					EVR-2800/2809	10 to 800	950									
				●	●	●					EVR-2900/2909	10 to 900	1000									
				●	●	●																
Parect Electro-Pneumatic Regulator Compact type that is smaller than conventional models and uses a direct cable from the main unit for ease of use and space saving	EVS2 	FA connector	One-touch Fitting ø4, 6	●	●	●		●	●		EVS2-10V	-91.2 to -5.3	0.3									
				●	●	●		●	●		EVS2-100	1 to 100	2									
				●	●	●		●	●		EVS2-200	2 to 200	2	●	●	●	○	○	○			
				●	●	●		●	●		EVS2-500	5 to 500	8									
				●	●	●		●	●		EVS2-900	9 to 900	8									
Parect Electro-Pneumatic Regulator High precision vacuum pressure control	EV2100V 	FA connector	Rc1/4	●	●	●				●	EV2100V	-91.2 to -10.1	150		●	●	●	○			●	
				●	●	●				●	EV2109V	-91.2 to -10.1	120									
Low Pressure Electro-Pneumatic Regulator High-precision proportional control of 50 kPa or less	EVL 	FA connector	Rc1/4	●	●	●		●	●		EVL-1050	0 to 50	100		●	●	●	○	○	○	○	
Low-profile Electro-Pneumatic Regulator Manifold type that saves space Network compatible for reduced wiring	MEVT 	Terminal block, D-sub connector, serial transmission	One-touch fitting ø4, 6	●	●	●					MEVT100	2 to 100	2		●	●	●	○	○	○		
				●	●	●					MEVT500	10 to 500	6	●	●	●	○	○	○		●	

*1: The EVD Series has 1%F.S. or less residual pressure when the input signal is 0%.
*2: EVR Series stops control when the input signal is 1%F.S. or less.
*3: The EV210*V Series has 0 to 5 kPa residual pressure when the input signal is 0%. For the input characteristic graph, please check the detailed catalog.
*4: EVS2: 1%F.S. or less input signal cannot be controlled.

*5: The characteristics when the working pressure is maximum and the control pressure is maximum are shown.
*6: EVS2-10V is 0.6 s or less.

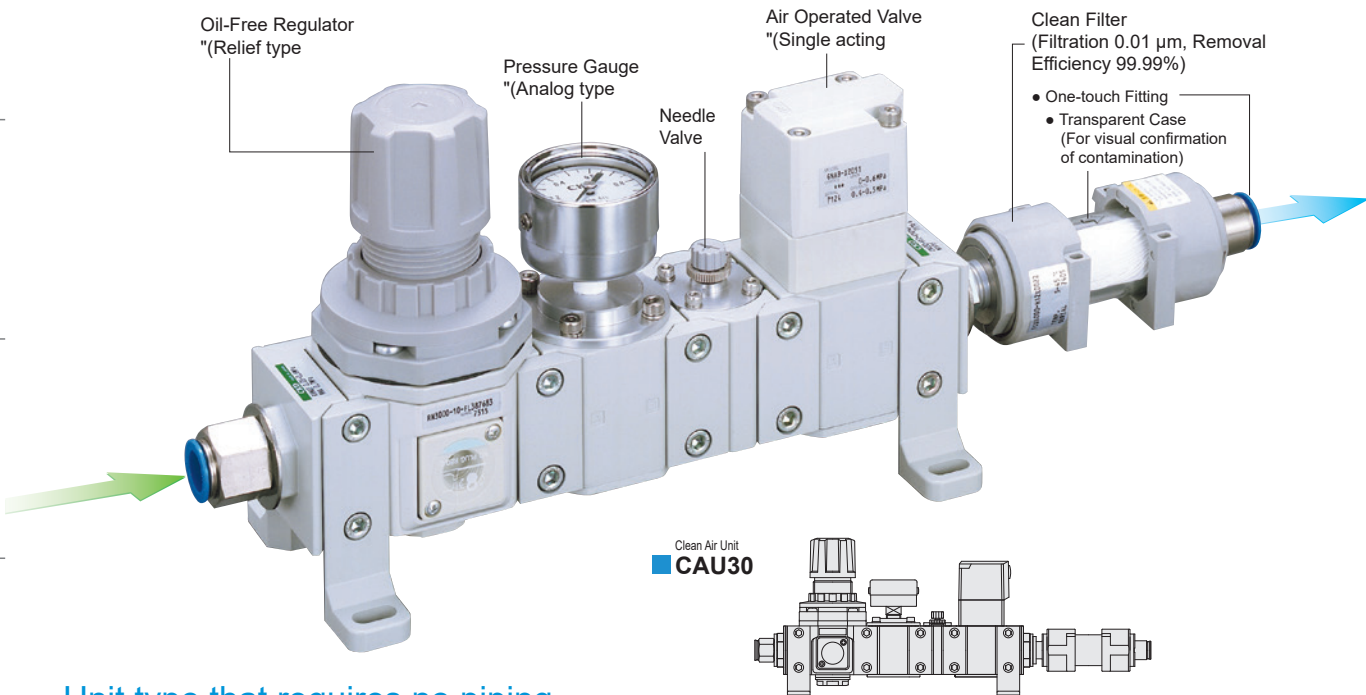
F.R.L. Unit

Air Unit Equipment

Aluminum body for high rigidity, transparent filter also adopted

Clean Air Unit

CAU30 Series



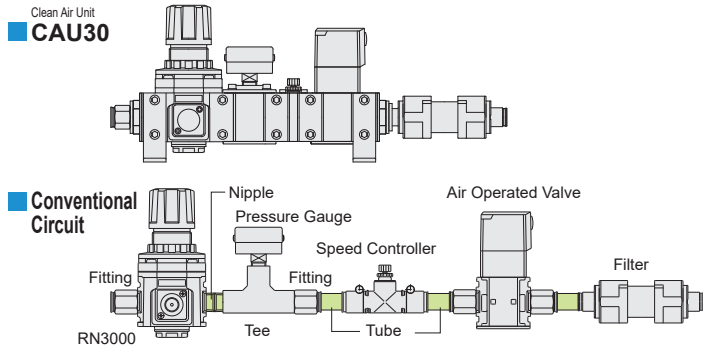
Unit type that requires no piping

Piping is just inserting the tube.
Assembly man-hours can be significantly reduced, and it is compact and space-saving. Model number management at the time of arrangement also becomes easy.

All oil-free specification

The fluid passage part is degreased and cleaned, and production is integrated from assembly to packaging in a dust-proof room.

High precision filtration 0.01 μm (removal efficiency 99.99%)

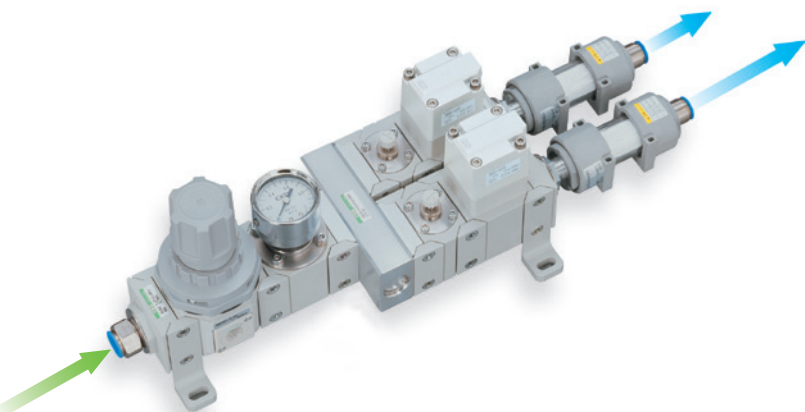


Stable supply of high flow rate air

* processing flow rate 400 L/min (ANR) (Primary pressure: 0.7 MPa, set pressure: 0.5 MPa and pressure drop: 0.15 MPa)

2-system type available

Expands the variations of air supply methods.



Click here for specifications

Catalog
[No]

Air Preparation
and Auxiliary
Equipment
[RJ-007AA]

WEB

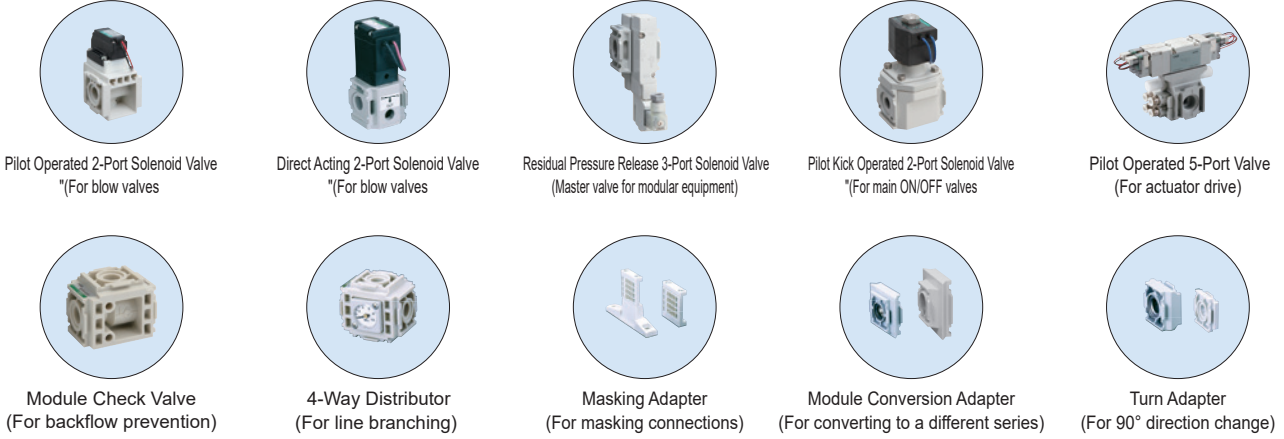
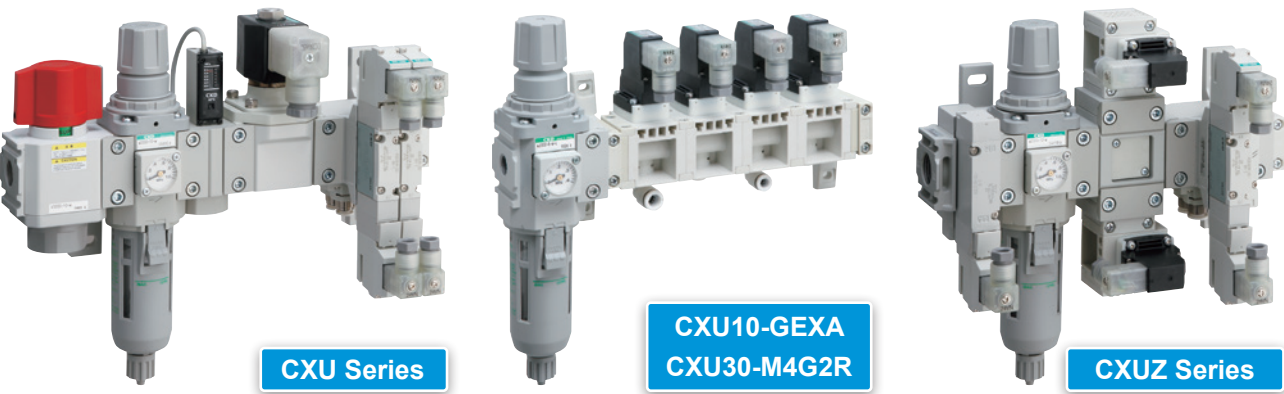


Click!

No piping required. Hassle-free. Freely combinable

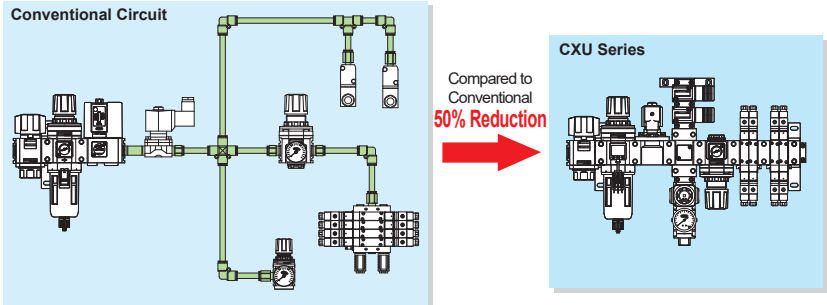
Air Unit

CXU / CXUZ Series



Pipeless and space-saving

Eliminates troublesome piping design and piping work.



Freely combinable

Vertical and horizontal piping is freely available. Solenoid valves can also be connected directly. Layout is easy, and piping design man-hours can be reduced. (AIR UNIT Custom-made product)

Click here for specifications

Catalog
[No]

Air Preparation
and Auxiliary
Equipment
[RJ-007AA]

WEB



Click!

Air Preparation Equipment

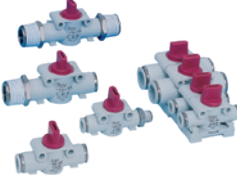
Search by Product System

Residual Pressure Release Valve			Pressure Gauge		
Residual Pressure Release Valve	V□0□0-W 2QV, 3QV SNS, SNP	P. 189	Pressure Gauge/ Indicator	G401-W/G□□D GW49D/VG41D GA400-8-P02	P. 191
Slow Start Valve	V3301-W V3321-W	P. 189			

F.R.L.

Residual Pressure Release Valve

* For details, please see "Model No." on the CKD Components product site (https://www.ckd.co.jp/kiki/en/).
* For details on series for specific applications, refer to P. 451.

Features	Appearance	Model No.	Connection Port Size					Connection Port Size							Click here for specifications		Series for Specific Applications		
			ø					Rc, NPT, G							Catalog Name [No.]	WEB	Rechargeable Battery	Clean	Food
			4	6	8	10	12		1/8	1/4	3/8	1/2	3/4	1			P4	P7	FP
Residual Pressure Release Valve To prevent residual pressure accidents in pneumatic lines		V1000-W							●	●					Air Preparation/Auxiliary Components [RJ-007AA]	 Click!			●
		V3000-W								●	●	●					●		●
Residual pressure exhaust valve with locking hole(OSHA compliant) To prevent residual pressure accidents in pneumatic lines		V3010-W								●	●	●					●		●
		V6010-W											●	●			●		●
Quick Valve 2-Port and 3-Port valves in the lineup		2QV	●	●	●	●	●		● (R)	● (R)	● (R)	● (R)			 Click!		●	●	
		3QV	●	●	●	●	●		● (R)	● (R)	● (R)	● (R)					●	●	
With spool position detection Residual Pressure Release Valve Industry's smallest class with ISO 13849-1 safety standard certification		SNS									● (Rc, NPT)	●			 Click!				
With spool position detection 3-Port Solenoid Valve Signal output of valve open/close status is possible Double shut-off can be configured by connecting two modules		SNP									● (Rc)	● (Rc)	● (Rc)				●		

Slow Start Valve

Features	Appearance	Model No.	Connection Port Size					Connection Port Size							Click here for specifications		Series for Specific Applications		
			ø					Rc							Catalog Name [No.]	WEB	Rechargeable Battery	Clean	Food
			4	6	8	10	12		1/8	1/4	3/8	1/2	3/4	1			P4	P7	FP
To ensure safety at startup and shutdown Two types available: manual switching and solenoid valve switching		V3301-W								●	●	●			Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!			●
		V3321-W								●	●	●							

Pressure Gauge

Pressure Gauge/Indicator

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, refer to P. 451.

Features	Model No./Appearance		Pressure display range						Port Size R			Click here for specifications		Series for Specific Applications		
			-100 kPa to 0 kPa	0 to 0.1 MPa	0 to 0.2 MPa	0 to 0.4 MPa	0 to 1.0 MPa	0 to 2.0 MPa	1/16	1/8	1/4	Catalog Name [No.]	WEB	Clean P7 P9	Rechargeable Battery P4	Outdoor WP
Low-profile Pressure Gauge (for built-in F.R.L. equipment) Low-profile and compact design ideal for built-in equipment Ideal for filter regulators, regulators, and pressure switches (P4000-W)	G401-W 					●	●		O-ring seal Screw Fastening			Air Preparation/Auxiliary Components [RJ-007AA]	 Click!			
With safety mark Easy visual management with green and red color zone display	G40D *1 				●	●	●			●	●		 Click!		●	
With limit mark Easy visual management with green color arrow	G45D *1 				●	●	●			●	●		 Click!			
General-purpose Wide range of pressure displays Clean specifications are also available	G49D, G59D *1 				●	●	●	●		●	●		 Click!	●	●	
Outdoor Compatible Supports a wide range of ambient temperatures	GW49D 						●			●	●		 Click!			●
For Panel Mounting Flush-mount panel mounting added to conventional pressure gauges, and M5 standardized for port size	G53D 				●	●	●			●	●		 Click!			
With Switch Pressure switch function added to analog type pressure gauge Also, non-polar connector and operation check lamp are optional	G52D *1 						●				●		 Click!			
Ultra-Compact Ultra-compact general-purpose pressure gauge (ø21.5)	G29D 						●		●	●			 Click!			
Compact Round Ultra-compact general-purpose pressure gauge (ø27)	G39D 					●	●			●			 Click!			
For Vacuum with Limit Mark Easy visual management of vacuum pressure with green color arrow	VG41D 		●							●			 Click!			
Differential Pressure Gauge For managing the life of air filters * Nylon differential pressure gauge and tightening fitting are attached as standard accessories with the tube (GA400-8-P02).	GA400-8-P02 				●						●		 Click!	●		

*1: Specify R1/4 when mounting on the Selex F.R.L. Series.
*2: With M5 female thread

Air Preparation Equipment

Search by Application/Industry

Compact

F.R.L.	K60570
Air Filter	A1019, 1219, FSL
Filter Regulator	B□7019 WB500
Regulator	RA800, RB500 MNRB500 B2019, 2419
Lubricator	A3019
Relief Valve	B6061

P. 195

Large Bore

Air Filter	1138, 1126 A1338, 1326 1226□, 1238
Regulator	2215, 2216 2415 230□-□C-□
Lubricator	300□E

P. 199

Compact | Port size ø4 to 1/4

F.R.L. Kit

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series/Appearance	Filtration Rating µm	Set pressure MPa	Min. drip rate m³/min (ANR)		Model No.	Connection Port Size				Click here for specifications	
								Rc				Catalog Name [No.]	WEB
								1/8	1/4	3/8	1/2		
Modular	Compact F.R.L. Kit/Set Type Set of filter, regulator, and lubricator K series, a nipple connection type with a wide variety of models	F.R.L. Kit/Set Type  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	5	0.04 to 0.83	0.02		K60570	Max. flow rate m³/min (Reference)				Air Preparation and Auxiliary Equipment [RJ-007AA]	
								0.2	0.3				

Filter Regulator

Type	Features	Series/Appearance	Filtration μm	Set pressure MPa		Model No.	Connection Port Size								Click here for specifications		Series for Specific Applications		
							ø		Rc, NPT, G									Catalog Name [No.]	WEB
							4	6	1/8	1/4	3/8	1/2	3/4	1	1 1/4				
										Max. flow rate m³/min (Reference)									
Separate	Compact F.R. Unit Compact F.R. unit with integrated filter and regulator 5 μm element for dust removal	B7019  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	5	Standard: 0.04 to 0.83 Low pressure specifications: 0.02 to 0.34		B7019-□C				0.5 (Rc, NPT)	0.9 (Rc, NPT)					Air Preparation/Auxiliary Components [RJ-007AA]	 Click!	Outdoor WP	
	Modular	Outdoor Specification All-metal construction Improved weather resistance of general-purpose products such as covers and gauges	BW7019  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	5	0.04 to 0.83		BW7019				0.9 (Rc)						 Click!	●	
		F.R. Unit Equipped with One-touch fittings as standard, with two piping direction types available: straight and elbow Easy piping work	WB500  P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa	5	Standard: 0.05 to 0.7 Low pressure specifications: 0.05 to 0.35		WB500	0.08	0.18									 Click!	

Filter

Type	Features	Series/Appearance	Filtration µm		Model No.	Connection Port Size											Specifications details here	
						ø					Rc, NPT						Catalog Name [No.]	WEB
						4	6	8	10	12	1/8	1/4	3/8	1/2	3/4	1		
Separate	Compact Air Filter Compact air filter for dust removal	A1019  P1 = 0.7 MPa △P = 0.02 MPa	5		A1019-□C						0.55	0.7					Air Preparation/Auxiliary Components [RJ-007AA]	
Inline	Inline Filter Can be used for both positive and negative pressure Can be used with positive pressure while maintaining the usability of conventional vacuum inline filters	FSL  P1 = 0.7 MPa △P = 0.02 MPa	10		FSL100	0.07	0.10											
					FSL200	0.08	0.14											
Separate	Compact filter, for tar removal Oil removal rate 0.1 PPMW/W (at inlet temperature of 30°C). Compact size of 92 mm (H) x 38 mm (W), ideal for applications requiring space saving, such as compact devices.	1219  P1 = 0.7 MPa △P2 = 0.01 MPa	-		1219-2C							0.056					Air Preparation/Auxiliary Components [RJ-007AA]	

Compact | ø4 to Rc/NPT1/4

Regulator

P1 = Primary pressure; P2 = Secondary pressure; △P2 = Differential pressure

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, please refer to P. 451.

Type	Features	Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size									Click here for specifications		Series for Specific Applications	
						ø			Rc, NPT						Catalog Name [No.]	WEB	Rechargeable Battery	
						4	6	8	1/8	1/4	3/8	1/2	3/4	1			P4	
									Max. flow rate m³/min (Reference) *1									
Separate	Regulator, Piston Type Compact, lightweight, piston-type with improved operability	RA800  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		RA800				0.35 (Rc)	0.35 (Rc)					Air Preparation/Auxiliary Components [Ru-007AA]	 Click!		
	Reverse Regulator, Piston Type Compact, space-saving, built-in reverse flow function type Manifold type available (MNRJB500A/B) *For detailed specifications of the manifold type, please check the detailed catalog.	RB500  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.7 Low pressure specifications: 0.05 to 0.35		RB500	0.1	0.2									 Click!		
	Regulator Compact Type	B2019  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.04 to 0.83 Low pressure specifications: 0.02 to 0.34		B2019-□C				0.5	0.5							 Click!	
	Reverse Regulator Built-in check valve, no bypass circuit required Check valve quickly exhausts secondary side No bypass circuit required, easy piping	2419  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.04 to 0.83 Low pressure specifications: 0.02 to 0.34		2419-□C				0.5	0.5							 Click!	

*1: The max. processing flow rate is the value for the standard set pressure adjustment range.

Lubricator

Type	Features	Series/Appearance	Min. drip rate m³/min (ANR)		Model No.	Connection Port Size								Click here for specifications	
						Rc, NPT								Catalog [No.]	WEB
						1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2		
Separate	Compact Lubricator Supplies fine oil mist	A3019  P1 = 0.5 MPa △P2 = 0.3 MPa	0.02 *1		A3019-□C	Max. flow rate m³/min (Reference)								Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!

*1: The min. drip flow rate is the value at which five drops of oil drip per minute when the primary pressure is 0.5 MPa.

Relief Valve

Features	Model No.	Set pressure range MPa	Connection Port Size			Click here for specifications	
			Rc, NPT				
			1/8	1/4			
			Max. flow rate m³/min (Reference) *1				
For holding set pressure When pressure rises, compressed air is released to the atmosphere to maintain the set pressure	B6061-□C 	Standard: 0.04 to 0.69 Low pressure specifications: 0.04 to 0.34	 0.15 	 0.15 		Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!

*1: Set pressure 0.7 MPa, pressure rise 0.08 MPa

Large Bore | Rc/NPT port size 3/4 to 2

Air Filter

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Type	Features	Series/Appearance	Filtration μm		Model No.	Connection Port Size									Click here for specifications	
						Rc, NPT									Catalog Name [No.]	WEB
						1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
Separate	Air Filter	1138, 1126  P1 = 0.7 MPa ΔP2 = 0.02 MPa	Standard: 5 Option: 3, 0.3		1138 1126					5.5 7.0					Air Preparation/Auxiliary Components [RJ-007AA]	 Click!
	Large-bore filter with nipple connection Extensive lineup of both series and sizes												18 21 25			
	Large Volume Drain Removal Type	A1338, 1326  P1 = 0.7 MPa ΔP2 = 0.02 MPa	Standard: 5 Option: 3, 0.3		A1338 1326					1.55 1.55						
	Heavy Duty Air Filter Float type special drain (NC: No exhaust when not pressurized), large amounts of drainage are removed												5.8 5.8 5.8			
	For tar removal	1138, 1126-Y A1338, 1326-Y  P1 = 0.7 MPa ΔP2 = 0.01 MPa	0.3		1138-Y A1138-Y 1126-Y 1326-Y					1.55 1.55			4.9 4.9 4.9			
	Submicron Air Filter Removes up to 99% of solid substances such as tar and carbon down to 0.3 μm															
	For Oil Mist Removal	1238, 1226, 1226J  P1 = 0.7 MPa ΔP2 = 0.01 MPa	-		1238 1226 1226J					1.27 2.49			4.8 4.8			
	Oil removal rate 0.1 PPMW/W Micro-coalescer/Micro-Naught type for measurement/instrumentation, high-grade painting															
	For Odor Removal	1238, 1226, 1226J-X  P1 = 0.7 MPa ΔP2 = 0.01 MPa	-		1238-X 1226-X 1226J-X					1.27 2.49			4.8 4.8			
	Micro-coalescer, Odor Naught Type Adsorbs odor particles to make compressed air odorless															

*1: Max. processing flow rate at 5 μm. For max. flow rate at 0.3 μm, please check the detailed catalog.

Large Bore | Rc/NPT port size 1/4 to 2

Regulator

P1 = Primary pressure; P2 = Set pressure; ΔP2 = Differential pressure

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Features	Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size								Click here for specifications		
						Rc, NPT								Catalog Name [No.]	WEB	
						1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2			2
Separate	Regulator	2215, 2216  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.07 to 0.83 Low pressure specifications: 0.07 to 1.23		2215-□C					14.0	14.0	14.0			Air Preparation/Auxiliary Components [RJ-007AA]	 Click!
					2216-□C								11.0	11.0		
	Reverse Regulator	2415  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.07 to 0.83		2415-□C					14.0	14.0	14.0				 Click!
	Dial Air Regulator with Setting Dial	230□-□C  P1 = 0.7 MPa P2 = 0.5 MPa	Standard: 0.05 to 1.08 Low pressure specifications: 0.05 to 0.27		2302-□C		3.0	3.0	3.0	3.0					 Click!	
					2303-□C					10.0	10.0	10.0				
					2304-□C								30.0	30.0		
	Remote Control Dial Air Regulator	230□-□C-R  P1 = 0.7 MPa P2 = 0.5 MPa	0.05 to 1.08		2302-□C-R		3.0	3.0	3.0	3.0						
					2303-□C-R					10.0	10.0	10.0				
					2304-□C-R								30.0	30.0		

Lubricator

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

Type	Features	Series/Appearance	Min. drip rate m³/min (ANR)	Model No.	Connection Port Size									Click here for specifications	
					Rc, NPT									Catalog Name [No.]	WEB
					1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
Separate	Economist Type	3003E  P1 = 0.5 MPa ΔP2 = 0.03 MPa	0.06 *2	3003E-□C					3.5	4.0				 Click!	Air Preparation/Auxiliary Components [RJ-007AA]
		3004E, 3005E  P1 = 0.7 MPa ΔP2 = 0.03 MPa	0.2 *2								20	20			
			0.2 *2										28		
	Automatic Supply Auto-Fill Type, Automatic Supply Type	3003E-□C-V 	-	3003E-□C-V					3.5	4.0					
	Can supply fine oil mist														
	Double plastic structure allows checking of dripping status from any angle														

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

Air Preparation Equipment

Search by Application/Industry

Filter (Antibacterial, Bacterial-removing, Deodorizing)

Filter

SFC, SFS

P. 205

Antibacterial, Bacterial-removing, Deodorizing

Filter

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Features	Series/Appearance	Bacterial-removing	Antibacterial	Deodorizing	Model No.	Connection Port Size								Click here for specifications		Series for Specific Applications
						ø One-touch Fitting			RC, NPT, G					Catalog Name [No.]	WEB	Food Applications
						8	10	12	1/4	3/8	1/2	3/4	1			
Antibacterial Original Antibacterial Filter Thoroughly Suppressed! Non-woven fabric element using a silver-based antibacterial agent Uses silver-based antibacterial agent in non-woven fabric "Silver ions contained in the antibacterial filter adhere to bacterial cells Antibacterial Performance Verifiable data from tests based on JIS L 1902:2015 Standard cloth Antibacterial Filter 24 hours Incubation Antibacterial Activity Value 4 or more Hollow Fiber Membrane The walls of the straw-like fibers of the sterilizing filter have countless special slit-shaped ultrafine pores. "When compressed air passes through these pores Antibacterial Performance Bacterial Removal Performance LRV Value = $\log_{10} \frac{\text{Total bacteria count in source liquid}}{\text{Bacteria count leaked into filtrate}}$ $= \log_{10} \frac{6.6 \times 10^{10}}{1^*} = 10.8$ Bacterial Removal Performance LRV10 or more Source Liquid Bacteria count 6.6×10^{10} Filtrate Bacteria count 0 *Substitute 1 if the number of bacteria leaked into the filtrate is 0. *Testing commissioned to: Japan Microbiological Clinic Co. Test Report Publication No.: CKDK220428K-03 FP Food Process™	Antibacterial/Bacterial-removing Combination	●	●		SFC307				300	300				Air Preparation/Auxiliary Components [RJ-007AA]	 Click!	●
					SFC407				500	500	500					
					SFC807							1100	1100			
	Antibacterial/Bacterial-removing/Deodorizing Combination	●	●	●	SFC309				300	300						
					SFC409				500	500	500					
					SFC809							1100	1100			
	Antibacterial Combination		●		SFC306				360	360						
					SFC406				700	700	700					
					SFC806							2200	2200			
	Antibacterial/Deodorizing Combination		●	●	SFC308				360	360						
					SFC408				700	700	700					
					SFC808							2200	2200			
Antibacterial Prefilter		●			SFC310				360	360						
					SFC410				700	700	700					
					SFC810							2200	2200			
Antibacterial High-Performance Filter		●			SFC320				360	360						
					SFC420				700	700	700					
					SFC820							2200	2200			
Bacterial-removing Single	●				SFC330				300	300						
					SFC430				500	500	500					
					SFC830							1100	1100			
Deodorizing Filter			●		SFC340				360	360						
					SFC440				700	700	700					
					SFC840							2200	2200			
Bacteria removing inline *3		●			SFS10	300 *2	300 *2	400 *2	300 *2	400 *2						

*1: Use the product within the max. processing flow rate. This value is at a primary pressure of 0.7 MPa.
*2: Initial flow rate at primary pressure 0.7 MPa and pressure drop 0.03 MPa.
*3: Stainless steel type does not have push-in fittings. For detailed specifications, please check the catalog or website.

Air Preparation Equipment

Search by Application/Industry

Flame Resistant

Filter Regulator	W□000-G4 W□100-G4	P. 209
Air Filter	F□000-G4	
Regulator	R□000-G4 R□100-G4	

Oil-free

Regulator	RN□000	P. 211
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Medium Pressure

Air Filter	FM□000-W	P. 211
Oil Mist Filter	MM□000-W	
Regulator	RM□000-W	

Copper Ion Restricted (No copper/PTFE Specification)

F.R.L.	C□000-W-TP6	P. 215
Filter Regulator	W□000-W-TP6 W□100-W-TP6	
Air Filter	F□000-W	
Oil Mist Filter	M□000-W□-□	
Regulator	R□000-W-TP6 R□100-W-TP6	
Lubricator	L□000-W	
General-Purpose Pressure Gauge	G□9D-P6	
Residual Pressure Release Valve	V3000-W V□010-W	
Exhaust Cleaner	FA	

Ozone Resistant, Siloxane/Ozone Re-mover

Siloxane/Ozone Remover	SFX	P. 221
Filter Regulator	W□000-W-P11 W□100-W-P11	
Regulator	R□000-W-P11 RB500-P11 B2019-P11 2415-P11	

Precision

Regulator	RJB500 RPE1000 RP1000, RP2000	P. 225
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Clean

Inline Clean Filter Clean Exhaust Filter	FCS500, FCS1000 FAC	P. 227
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For Water

Regulator	WR	P. 227
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Flame Resistant | Flame-resistant type strong against spatter (-G4)

Filter Regulator

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Type	Features	Series/Appearance	Filtration μm	Set pressure range MPa		Model No.	Connection Port Size								Click here for specifications	
							ø		Rc, NPT, G						Catalog Name [No.]	WEB
							4	6	1/8	1/4	3/8	1/2	3/4	1		
							Max. flow rate m³/min (Reference) *1									
Modular	Filter Regulator	W□000-G4  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 5 Option: 0.3	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W3000-G4				2.15	2.43			Air Preparation/Auxiliary Components [RJ-007AA]	 Click!	
	Exterior: Flame-resistant material, metal bowl					W4000-G4				2.5	4.35	4.75				
	Integrated filter and regulator, strong against spatter					W8000-G4					10.0	10.0				
	Reverse Filter/Regulator	W□100-G4  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 5 Option: 0.3	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W3100-G4				2.15	2.43					
	Built-in reverse flow function					W4100-G4				2.5	4.35	4.75				
	Integrated filter and regulator, strong against spatter					W8100-G4							10.0			10.0

*1: Max. processing flow rate at 5 μm. Refer to the detailed catalog for max. processing flow rate when 0.3 μm is used.

Filter

P1 = Primary pressure; ΔP2 = Differential pressure

Type	Features	Series/Appearance	Filtration μm		Model No.	Connection Port Size						Specifications details here	
						Rc, NPT, G						Catalog Name [No.]	WEB
						1/8	1/4	3/8	1/2	3/4	1		
						Max. flow rate m³/min (Reference) *1							
Modular	Filter, Flame Resistant Specification Exterior: Flame-resistant material and metal bowl used	F□000-G4  P1 = 0.7 MPa △P = 0.02 MPa	Standard: 5 Option: 0.3		F3000-G4		1.23	1.5				Air Preparation/ Auxiliary Components [RJ-007AA]	 Click!
							1.32	2.14	3.0				
										6.4	6.8		

*1: Max. processing flow rate at 5 μm. Refer to the detailed catalog for max. processing flow rate when 0.3 μm is used.

Regulator

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

Type	Features	Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size								Click here for specifications		
						Rc, NPT, G								Catalog Name [No.]	WEB	
						1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2			
						Max. flow rate m³/min (Reference)										
Modular	Regulator, Flame Resistant Specification Exterior: Flame-resistant material, panel mounting nut Pressure can be adjusted without tools, strong against spatter	R□000-G4  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		R3000-G4	2.0	2.6							Air Preparation/Auxiliary Components [RJ-007AA]		
	Reverse Regulator, Flame Resistant Specification Pressure can be adjusted without tools, strong against spatter	R□100-G4  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		R4000-G4	2.5	4.4	5.0								
					R8000-G4				14.0	11.0						
					R3100-G4	2.0	2.6									
					R4100-G4	2.5	4.4	5.0								
					R8100-G4					14.0	11.0					

Oil-free | Flow path circuit: Oil-prohibited

Regulator

P1 = Primary pressure; P2 = Secondary pressure; △P2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Type	Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size							Click here for specifications		
					Rc, NPT, G							Catalog Name [No.]	WEB	
					1/8	1/4	3/8	1/2	3/4	1	1 1/4			
					Max. flow rate m³/min (Reference)									
Modular	Oil-free Specification		Standard: 0.05 to 0.7 Option: 0.05 to 0.3		RN3000		1.6	2.6					Air Preparation/Auxiliary Components [RJ-007AA]	 Click!
	RN4000					2.4	3.0	3.0						
	RN8000								4.5	6.0				
						Max. flow rate m³/min (Reference)								

Medium Pressure | Proof pressure 2.4 MPa

Air Filter

P1 = Primary pressure; P2 = Secondary pressure; △P2 = Differential pressure

Type	Series/Appearance	Filtration Rating µm		Model No.	Connection Port Size						Click here for specifications			
					Rc, NPT, G						Catalog Name [No.]	WEB		
					1/8	1/4	3/8	1/2	3/4	1				
					Max. flow rate m³/min (Reference) *1									
Modular	Medium Pressure Specification			Standard: 5 Option: 0.3		FM3000-W		1.6	2.0				Air Preparation/Auxiliary Components [RJ-007AA]	 Click!
	FM□000-W					FM4000-W		1.9	2.8	3.8				
						FM6000-W					6.7	8.1		
						FM8000-W					8.1	9.0		
					Max. flow rate m³/min (Reference) *1									

P1 = 1.3 MPa
△P = 0.02 MPa

*1: Max. processing flow rate at 5 µm. Refer to the detailed catalog for max. processing flow rate when 0.3 µm is used.

Medium Pressure | Max. operating pressure 1.6 MPa, Proof pressure 2.4 MPa

Oil Mist Filter

P1 = Primary pressure; P2 = Secondary pressure; △P2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Type	Series/Appearance	Filtration Rating μm	Secondary side oil concentration mg/m^3 or less		Model No.	Connection Port Size						Click here for specifications	
						Rc, NPT, G						Catalog Name [No.]	WEB
						1/8	1/4	3/8	1/2	3/4	1		
							Max. flow rate m^3/min (Reference) *2						
Modular	Medium Pressure Specification (M-type)	0.01 (Nominal value)	0.01 *1		MM3000-W		0.49	0.49				Air Preparation/Auxiliary Components [RJ-007AA]	 Click!
	MM□000-W					1.13	1.13	1.13					
	P1 = 0.7 MPa △P = 0.01 MPa								1.74	1.74			
									3.56	3.56			
	Medium Pressure Specification (S-type)	0.3	0.5 *1		MM3000-W□-S		0.61	0.61					
	MM□000-W□-S					1.37	1.37	1.37					
	P1 = 0.7 MPa △P = 0.01 MPa								1.92	1.92			
									3.98	3.98			
	Medium Pressure Specification (X-type)	Adsorption by activated carbon	0.003 *2		MM3000-W□-X		0.61	0.61					
	MM□000-W□-X					1.37	1.37	1.37					
	P1 = 0.7 MPa △P = 0.01 MPa								1.92	1.92			
									3.98	3.98			

*1: The outlet oil concentration is the value at an inlet oil concentration of 30 mg/m^3 and an inlet air temperature of 21°C.
*2: When an oil mist filter (M Series M type) is installed on the primary side.

Regulator

P1 = Primary pressure; P2 = Set pressure; △P2 = Differential pressure

Type	Series/Appearance	Set pressure range MPa	Model No.	Port Size						Click here for specifications	
				Rc, NPT, G						Catalog Name [No.]	WEB
				1/8	1/4	3/8	1/2	3/4	1		
Modular	Medium Pressure Specification RM P1 = 1.6 MPa P2 = 0.5 MPa △P2 = 0.1 MPa 	0.05 to 0.85	RM3000-W	2.0	2.0					Air Preparation/Auxiliary Components [RJ-007AA]	 Click!
			RM4000-W	3.0	3.0	3.0					

Copper Ion Restricted (No copper/PTFE Specification)

F.R.L.

P1 = Primary pressure; P2 = Set pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Type	Series/Appearance	Filtration μm	Set pressure MPa	Min. drip rate m³/min (ANR)	Model No.	Port Size						Click here for specifications	
						Rc, NPT, G						Catalog Name [No.]	WEB
						1/8	1/4	3/8	1/2	3/4	1		
						Max. flow rate m³/min (Reference) *1							
Modular	F.R.L. Combination C□□00-TP6 P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa 	Standard: 5 Option: 0.3 *1	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35	0.015	C1000-W-TP6	0.45	0.63				Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!	
				0.03	C2500-W-TP6		1.2	1.7					
				0.03	C3000-W-TP6		1.28	1.75					
				0.065	C4000-W-TP6		1.43	2.4	3.0				
				0.065	C6500-W-TP6				4.5	5.0			
				0.065	C8000-W-TP6				7.0	7.5			

*1: Degree of filtration 5 μm The set pressure is the max. flow rate of standard time.

Filter Regulator

P1 = Primary pressure; P2 = Set pressure; ΔP2 = Differential pressure

Type	Series/Appearance	Filtration μm	Set pressure MPa		Model No.	Connection Port Size						Click here for specifications		
						Rc, NPT, G						Catalog Name [No.]	WEB	
						1/8	1/4	3/8	1/2	3/4	1			
							Max. flow rate m³/min (Reference)							
Modular	Filter Regulator W□000-W-TP6 P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa		Standard: 5	Standard: 0.05 to 0.85		W1000-W-TP6	0.83	1.15					Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!
	Option: 0.3 *1	Low pressure specifications: 0.05 to 0.35		W3000-W-TP6		2.15	2.43	2.43						
				W4000-W-TP6		2.5	4.35	4.75						
				W8000-W-TP6					10.0	10.0				
	Reverse Filter/Regulator W□100-W-TP6 P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa		Standard: 5	Standard: 0.05 to 0.85		W1100-W-TP6	0.83	1.15						
	Option: 0.3 *1	Low pressure specifications: 0.05 to 0.35		W3100-W-TP6		2.15	2.43	2.43						
				W4100-W-TP6		2.5	4.35	4.75						
				W8100-W-TP6					10.0	10.0				

*1: Degree of filtration 5 μm The set pressure is the max. flow rate of standard time.

Air Filter

P1 = Primary pressure; ΔP2 = Differential pressure

Type	Series/Appearance	Filtration μm		Model No.	Connection Port Size						Click here for specifications	
					Rc, NPT, G						Catalog Name [No.]	WEB
					1/8	1/4	3/8	1/2	3/4	1		
						Max. flow rate m³/min (Reference)						
Modular	Filter F□000-W * Copper ion restricted as standard  P1 = 0.7 MPa △P2 = 0.1 MPa	Standard: 5	Option: 0.3 *1	F1000-W	0.46	0.61					Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!
				F2000-W		1.3	1.7					
				F3000-W		1.23	1.5					
				F4000-W		1.32	2.14	3.0				
				F6000-W					5.6	6.2		
				F8000-W					6.4	6.8		

*1: Max. processing flow rate at 5 μm. Refer to the detailed catalog for max. processing flow rate when 0.3 μm is used.

Copper Ion Restricted (No copper/PTFE Specification)

Oil Mist Filter

P1 = Primary pressure; ΔP2 = Differential pressure

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, please refer to P. 451.

Type	Series/Appearance	Filtration Rating μm	Secondary side oil concentration mg/m³ or less	Model No.		Connection Port Size						Click here for specifications		Series for Specific Applications		
						Rc, NPT, G						Catalog Name [No.]	WEB	Rechargeable Battery	Food	Clean
						1/8	1/4	3/8	1/2	3/4	1			P4	FP	P7
							Max. flow rate m³/min (Reference)									
Modular	M□000-W * Copper ion restricted as standard 	0.01	0.01 *1	M1000-W	0.15	0.15					Air Preparation/Auxiliary Components [Ru-007AA]	 Click!	●	●	●	
				M2000-W			0.25	0.25								
				M3000-W			0.36	0.36								
				M4000-W			0.825	0.825	0.825							
				M6000-W					1.27	1.27						
				M8000-W					2.6	2.6						
	M□000-W□-S * Copper ion restricted as standard 	0.3	0.5 *1	M1000-W□-S	0.15	0.15							●	●	●	
				M2000-W□-S			0.31	0.31								
				M3000-W□-S			0.45	0.45								
				M4000-W□-S			1.0	1.0	1.0							
				M6000-W□-S					1.4	1.4						
				M8000-W□-S					2.9	2.9						
	M□000-W□-X * Copper ion restricted as standard 	Adsorption by activated carbon	0.003 *2	M1000-W□-X	0.15	0.15							●	●	●	
				M2000-W□-X			0.36	0.36								
				M3000-W□-X			0.45	0.45								
				M4000-W□-X			1.0	1.0	1.0							
				M6000-W□-X					1.4	1.4						
				M8000-W□-X					2.9	2.9						

*1: The outlet oil concentration is the value at an inlet oil concentration of 30 mg/m³ and an inlet air temperature of 21°C.
*2: When an oil mist filter (M Series M type) is installed on the primary side.

Copper Ion Restricted (No copper/PTFE Specification)

Regulator

P1 = Primary pressure; P2 = Set pressure; △P2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size						Click here for specifications		
				Rc, NPT, G						Catalog Name [No.]	WEB	
				1/8	1/4	3/8	1/2	3/4	1			
					Max. flow rate m³/min (Reference)							
Regulator R□000-W-TP6 P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa 	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		R1000-W-TP6	0.77	1.35					Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!	
R2000-W-TP6					1.75	2.5						
R3000-W-TP6						2.0	2.6					
R4000-W-TP6						2.5	4.4	5.0				
R6000-W-TP6									7.0			7.7
R8000-W-TP6									14.0			11.0
Reverse Regulator R□100-W-TP6 Built-in reverse flow function, secondary pressure to primary side P1 = 0.7 MPa P2 = 0.5 MPa 	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		R1100-W-TP6	0.77	1.35							
R2100-W-TP6						1.75	2.5					
R3100-W-TP6							2.0	2.6				
R4100-W-TP6							2.5	4.4	5.0			
R6100-W-TP6										7.0	7.7	
R8100-W-TP6										14.0	11.0	

Lubricator

P1 = Primary pressure; P2 = Secondary pressure; △P2 = Differential pressure

Series/Appearance	Min. drip rate m³/min (ANR) *1		Model No.	Connection Port Size						Click here for specifications	
				Rc, NPT, G						Catalog Name [No.]	WEB
				1/8	1/4	3/8	1/2	3/4	1		
				Max. flow rate m³/min (Reference)							
Lubricator L□000-W *Copper ion restricted as standard P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa 	0.015		L1000-W	0.55	0.7					Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!
	0.03		L3000-W		1.1	2.25					
	0.065		L4000-W		1.0	1.7	2.7				
	0.065		L8000-W					6.3	10		

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

Pressure Gauge, Residual Pressure Release Valve, Exhaust Cleaner

Series/Appearance		Model No.	Pressure display range MPa				Port Size R		Click here for specifications	
			0 to 0.2	0 to 0.4	0 to 1.0	0 to 2.0	1/8	1/4	Catalog Name [No.]	WEB
General-Purpose Pressure Gauge G□9D-P6 		G49D-P6	●	●	●		●		Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!
		G59D-P6	●	●	●	●		●		

Series/Appearance	Click here for specifications	
	Catalog Name [No.]	WEB
Residual Pressure Release Valve V3000-W, V3010, V6010-W *Copper ion restricted as standard 	Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!

Series/Appearance	Click here for specifications	
	Catalog Name [No.]	WEB
Exhaust Cleaner FA * Copper ion restricted as standard Removes exhaust noise and oil mist 	Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!

Siloxane/Ozone Remover

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Features	Series/Appearance		Substances to be removed	Max. flow rate L/min (ANR) *2	Fluid	Removal function	Click here for specifications	
							Catalog Name [No.]	WEB
Remover specialized in siloxane adsorption and ozone decomposition High removal rate of 99% allows use with high flow rates of compressed air and nitrogen gas in a pressurized state	SFX 		Siloxane	700	Compressed Air Nitrogen gas *1	99% or more	Air Preparation/Auxiliary Components [RJ-007AA]	 Click!
			Ozone *3	500				

*1: Clean class 1:6:1 (ISO8573-1:2010)
*2: Use the product within the max. processing flow rate. This value is at a primary pressure of 0.7 MPa.
*3: When ozone concentration is 0.5 ppm

Ozone Resistant | Fluororubber or hydrogenated nitrile rubber is used for rubber parts.

Filter Regulator

P1 = Primary pressure; P2 = Set pressure; △P2 = Differential pressure

Series/Appearance	Filtration μm	Set pressure MPa		Model No.	Connection Port Size						Click here for specifications	
					Rc, NPT, G						Catalog Name [No.]	WEB
					1/8	1/4	3/8	1/2	3/4	1		
					Max. flow rate m³/min (Reference) *1							
Filter Regulator W□000-W-P11  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 5 Option: 0.3	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		W1000-W-P11	0.83	1.15					Air Preparation/Auxiliary Components [RJ-007 AA]	 Click!
				W3000-W-P11		2.15	2.43	2.43				
				W4000-W-P11		2.5	4.35	4.75				
				W8000-W-P11					10.0	10.0		
W1100-W-P11				0.83	1.15							
W3100-W-P11					2.15	2.43	2.43					
W4100-W-P11					2.5	4.35	4.75					
W8100-W-P11								10.0	10.0			

*1: Degree of filtration 5 μm, set pressure is max. processing flow rate by standard time.

Ozone Resistant | Fluororubber or hydrogenated nitrile rubber is used for rubber parts

Regulator

P1 = Primary pressure; P2 = Set pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Series/Appearance	Set pressure range MPa		Model No.	ø		Connection Port Size Rc, NPT, G							Click here for specifications								
				4	6	1/8	1/4	3/8	1/2	3/4	1	1 1/2	Catalog Name [No.]	WEB							
							Max. flow rate m³/min (Reference)														
Regulator R□000-W-P11  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		R1000-W-P11			0.77	1.35						Air Preparation/Auxiliary Components [R□-007AA]	 Click!							
Reverse Regulator R□100-W-P11  Built-in reverse flow function, secondary pressure to primary side P1 = 0.7 MPa P2 = 0.5 MPa	Standard: 0.05 to 0.85 Low pressure specifications: 0.05 to 0.35		R2000-W-P11				1.75	2.5													
			R3000-W-P11				2.0	2.6													
			R4000-W-P11				2.5	4.4	5.0												
			R6000-W-P11							7.0	7.7										
			R8000-W-P11							14.0	11.0										
			R1100-W-P11			0.77	1.35														
Compact Type RB500-P11  For the manifold type, please check the detailed catalog. P1 = 0.7 MPa P2 = 0.5 MPa	Standard: 0.05 to 0.7 Low pressure specifications: 0.05 to 0.35		RB500-P11	0.1	0.2																
				Regulator B2019-P11  P1 = 0.7 MPa P2 = 0.5 MPa	Standard: 0.04 to 0.83 Low pressure specifications: 0.02 to 0.34		B2019-P11				0.5 (Rc, NPT)	0.5 (Rc, NPT)									
								Reverse Regulator 2415-P11  Built-in check valve, no bypass circuit required P1 = 0.7 MPa P2 = 0.5 MPa	0.07 to 0.83		2415-P11								14 (Rc, NPT)	14 (Rc, NPT)	14 (Rc, NPT)

Precision

Regulator

P1 = Primary pressure; P2 = Secondary pressure; ΔP2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Features	Series/Appearance	Sensitivity	Set pressure range MPa		Model No.	Connection Port Size			Click here for specifications	
						ø			Catalog Name [No.]	WEB
						4	6	8		
						Max. flow rate m³/min (Reference) *1				
Non-grease specification, compact, space-saving compact direct acting precision regulator Manifold type available (MNRJB500A/B) For the manifold type, please check the detailed catalog.	RJB500  P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	0.001 (Lock sensitivity 0.004) *2	Standard: 0.02 to 0.5 Low pressure specifications: 0.01 to 0.2		RJB500				Air Preparation/Auxiliary Components [R-J-007AA]	 Click!
						0.06	0.08			

*1: Max. processing flow rate at standard pressure.
*2: Pressure sensitivity setting for the pressure adjustment 1 block's minimum spacing.

Features	Series/Appearance	Set pressure range MPa	Sensitivity Set Pressure Full scale of range Max.	Repeatability Set Pressure Full scale of range Max.		Model No.	Connection Port Size				Click here for specifications		Series for Specific Applications	
							RC, NPT, G				Catalog Name [No.]	WEB	Rechargeable Battery	Clean
							1/8	1/4	3/8	1/2			P4	P5 P7
							Max. flow rate m³/min (Reference)							
Special structure significantly reduces air consumption Excellent control performance, high precision, and compact size make it suitable for various applications such as precise tension control	RPE1000  P1 = 0.7 MPa P2 = 0.5 MPa	0.01 to 0.7	Within 0.2%	Within ±0.5%		RPE1000					 Click!	●		
High-precision pressure control, stable flow characteristics with small pressure drop, and large relief flow rate despite its compact size	RP1000  P1 = 0.5 MPa, P2 = 0.2 MPa (RP1000-8-02) P1 = 0.7 MPa, P2 = 0.5 MPa (RP1000-8-04, 7)	0.003 to 0.2	Within 0.1%	Within ±0.5%		RP1000-8-02		0.4			Air Preparation/Auxiliary Components [R-J-007AA]	 Click!	●	●
		0.005 to 0.4				RP1000-8-04		0.5						
		0.005 to 0.7				RP1000-8-07		0.4						
	RP2000  P1 = 0.7 MPa P2 = 0.5 MPa	0.03 to 0.85	Within 0.2%	Within ±0.5%		RP2000		2	2.5					

Clean

Air Filter

P1 = Primary pressure; P2 = Secondary pressure; △P2 = Differential pressure

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, please refer to P. 451.

Series/Appearance	Filtration rating μm		Model No.	Connection Port Size											Click here for specifications		Series for Specific Applications	
				ø					Rc, NPT, G						Catalog Name [No.]	WEB	Rechargeable Battery	Clean
				4	6	8	10	12	1/8	1/4	3/8	1/2	3/4	1				
				Max. flow rate L/min (Reference)														
Inline Clean Filter FCS Resin and stainless steel types available P1 = 0.7 MPa, ΔP = 0.03 MPa	0.01 (Removal efficiency 99.99%)		FCS500	50	50	80			50 (R, RC)	80 (R, RC)					Air Preparation/Auxiliary Components [RJ-007AA]	 Click!	●	●
		FCS1000			30	30	40		30 (R, RC)	40 (R, RC)								
Clean Exhaust Filter (Plug Type) FAC10 P1 = 0.7 MPa, ΔP = 0.03 MPa	0.01 (Removal efficiency 99.99%)		FAC10	4	10	20	35									 Click!	●	●
Clean Exhaust Filter (Silencer Type) FAC100, 200 P1 = 0.7 MPa, ΔP = 0.03 MPa			FAC100, FAC200						100	100	200	200						
Clean Exhaust Filter (Modular Type) FAC300 P1 = 0.7 MPa, ΔP = 0.03 MPa			FAC300								600	600						

Clean Regulator

Series/Appearance	Set pressure range MPa		Model No.	Connection Port Size											Click here for specifications		Series for Specific Applications
				ø			Rc								Catalog Name [No.]	WEB	Clean
				4	6	8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	P5 P7			
				Max. flow rate L/min (Reference) *1													
Regulator RC2000 P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa	Standard: 0.05 to 0.7 Low pressure specifications: 0.02 to 0.2		RC2000											Air Preparation/Auxiliary Components [RJ-007AA]	 Click!	●	
Regulator 2619 P1 = 0.7 MPa P2 = 0.5 MPa △P2 = 0.1 MPa																	

*1: Max. processing flow rate at standard set pressure adjusting range pressure.

For Water

Regulator

P1 = Primary pressure; P2 = Secondary pressure; △P2 = Differential pressure

Series/Appearance	Set pressure MPa		Model No.	Connection Port Size						Click here for specifications	
				Rc						Catalog Name [No.]	WEB
				1/8	1/4	3/8	1/2	3/4	1		
				Max. flow rate L/min (Reference)							
Regulator for Water WR With mesh filter P1 = 0.7 MPa P2 = 0.4 MPa △P2 = 0.1 MPa 	Standard: 0.05 to 0.7 Low pressure specifications: 0.02 to 0.35		WR1	8.5	8.5					Air Preparation and Auxiliary Equipment [RJ-007AA]	 Click!
WR2					15	15					

Product Category		Specific Applications	
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Actuators, Electric Actuators	P. 78	For Food Manufacturing Processes FP Series	P. 461
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Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing

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Selection guide from WEB model selection system	Ending 3

Search by Product System

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Gamma System	P. 261
PS, PR□/PL□, PZU, PL□, PL□/PZM PXV, PR□/PX□, PXB-B3, ZB4-B, PXC-M, PXC-K, ZCK Limit Switch, Accessories	
Related Equipment	P. 262
Portable Air Supply Unit	ASU

Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing

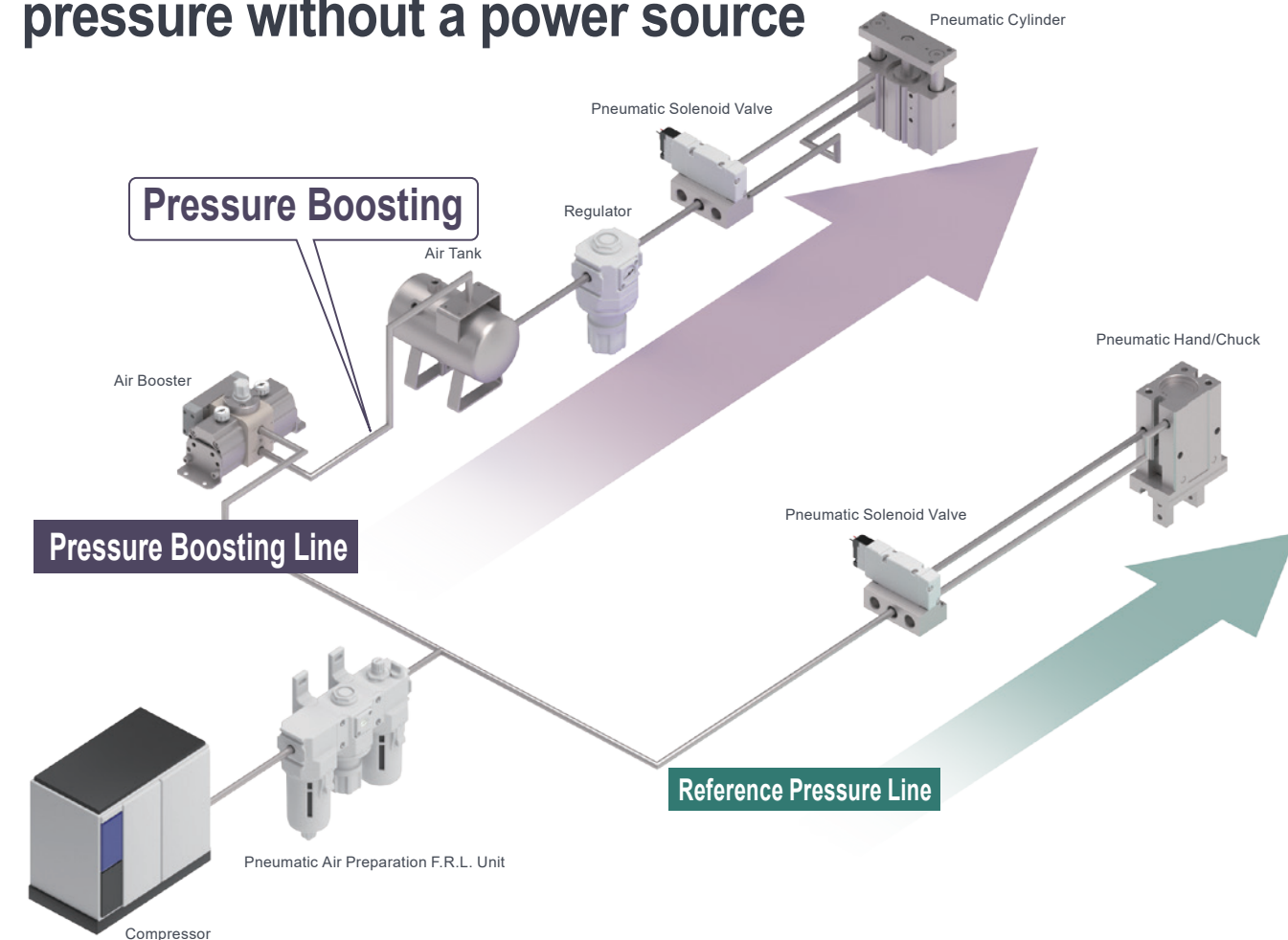
Search by Product System

Air Booster		
Air Booster Air Tank	ABP AT	P. 234
Speed Controller		
Speed Controller	DSC, DVL, SC3W SC3U, SCL2, SCD2 SCL2-N, SC3P SC3R, SC-M3/M5 SCD-M3/M5, SC1 SC, SC1-W	P. 235
Silencer		
Silencer	SMW2, FMS, SMW SL/SLW, SLW-□A-H SLW-□L SLW-6S/8S SLW-20S SLW-H□SLM SL, SL-W	P. 239
Exhaust Cleaner	FA	P. 240

Air Booster

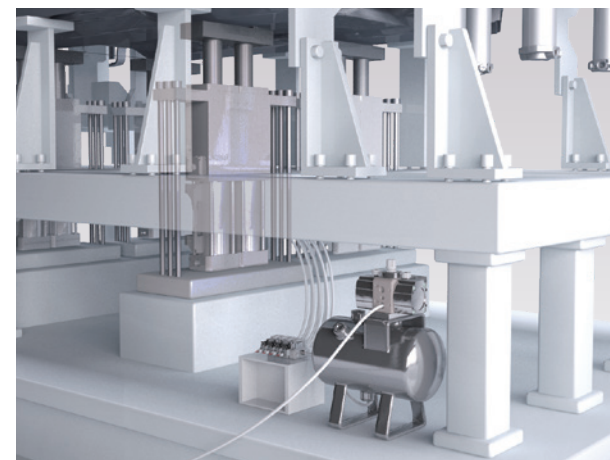
Air Booster, Air Tank

Generates high-pressure air at twice the primary pressure without a power source



Application Examples

- Increased gripping force for robot grippers
- Increased cylinder thrust in narrow spaces



[Click here for detailed specifications](#)

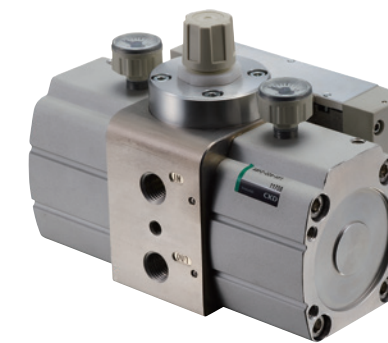
Catalog Name [No]

Air Preparation/Auxiliary Components [RJ-007AA]

Air Booster

ABP2 Series

Generates high-pressure air at twice the primary pressure without a power source. Utilizes existing compressed air equipment to boost pressure only where needed, contributing to factory energy savings. Long-life components reduce the total factory cost.



[Click here for specifications](#)

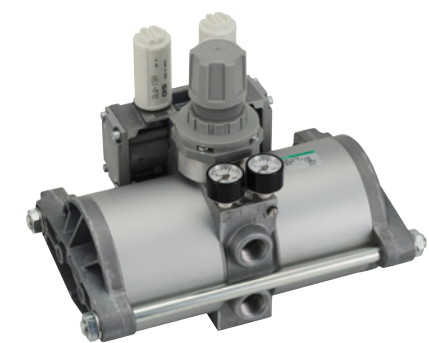


Click!

Air Booster

ABP Series

Enables air boosting by using only air pressure in combination with Air Tanks to raise the primary pressure two-fold (0.99 MPa max.) without the use of electricity. Energy and cost savings will be achieved in total manufacturing lines, since pressure can be increased only at the required points in the factory is possible.



[Click here for specifications](#)



Click!

Air Tank

AT2 Series

Can be directly connected to the ABP2 series

This air tank can be directly connected to the Air Booster ABP2-HP1 series for compact installation.

Internal Volume

5 L, 10 L



[Click here for specifications](#)



Click!

Air Tank

AT Series

Can be directly connected to the ABP-12 series

This air tank can be directly connected to the Air Booster ABP-12 series for compact installation.

Internal Volume

24 L



[Click here for specifications](#)



Click!

Speed Controller

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, please refer to P. 451.

Speed Controller

● Supports cylinders from ø2.5 to ø450

* Values in () are for low speed or low flow rates.

Type	Appearance	Model No.	Connection Port Size					Applicable Tube O.D.					Effective cross-sectional area (mm ²)		Flow rate (L/min (ANR)) Pressure 0.5 MPa		Applicable Cylinder Tube I.D. ø(mm) Reference	Click here for detailed specifications		Series for Specific Applications		
			M3	M5	(Rc, R)			(ø)					Free Flow	Controlled Flow	Free Flow	Controlled Flow		Catalog Name [No]	WEB	Rechargeable Battery	Clean	Food
					1/8	1/4	3/8	1/2	3.2	4	6	8										
Speed Controller with Dial		DSC-C-M5-3	●				●						1.3	0.9 (0.3)	87	60 (20)	6 to 25	Air Preparation/Auxiliary Components [RJ-007AA]	 Click! 	●	●	●
		DSC-C-M5-4	●				●						1.5	0.9 (0.3) *	100	60 (20) *	6 to 25					
		DSC-C-M5-6	●				●						1.5	0.9 (0.3) *	100	60 (20) *	6 to 25					
		DSC-(C)-6-4		●			●						3.2	2.4 (0.9) *	210	160 (60) *	15 to 32					
		DSC-(C)-6-6		●			●						4	3 (0.9) *	270	200 (60) *	15 to 32					
		DSC-(C)-6-8		●			●						4	3 (0.9) *	270	200 (60) *	15 to 32					
		DSC-8-6		●			●						7	5 (2)	470	320 (130)	20 to 50					
		DSC-8-8		●			●						8	6 (2)	530	400 (130)	20 to 50					
		DSC-8-10		●			●						8	6 (2)	530	400 (130)	20 to 50					
		DSC-10-6		●			●						10	6 (4)	670	400 (270)	32 to 75					
		DSC-10-8		●			●						15	10.5 (4)	1000	700 (270)	32 to 75					
		DSC-10-10		●			●						16	12 (4)	1070	800 (270)	32 to 75					
		DSC-10-12		●			●						16	12 (4)	1070	800 (270)	32 to 75					
		DSC-15-10		●			●						22	17 (6)	1470	1120 (400)	40 to 100					
		DSC-15-12		●			●						24	17.5 (6)	1600	1200 (400)	40 to 100					
Inline Controllers with Dials		DSC-S□-06-H44					●					2.5	2.4 (0.9) *	170	160 (60) (13)	15 to 32	Air Preparation/Auxiliary Components [RJ-007AA]	 Click! 	●	●	●	
		DSC-S□-06-H66					●					4.5	3 (0.9)*	300	200 (60) (13)	15 to 32						
		DSC-S□-08-H66					●					6	5 (2)	400	360 (130)	20 to 50						
		DSC-S□-08-H88					●					8	6 (2)	550	400 (130)	20 to 50						
		DSC-S□-10-H88					●					13.5	10.5 (4)	900	710 (270)	32 to 75						
		DSC-S□-10-H1010					●					16.5	12 (4)	1100	780 (270)	32 to 75						
		DSC-S□-10-H1212					●					18	12(4)	1200	780 (270)	32 to 75						
Check Valve Type Needle Valve with Dial		DVL-S-06-H44-020					●					2.5	0.15	170	18	6 to 40	Air Preparation/Auxiliary Components [RJ-007AA]	 Click! 	●			
		DVL-S-06-H66-020					●					4.5	0.15	300	18	6 to 40						
		DVL-S-06-H44-080					●					2.5	1.2	170	80	6 to 40						
		DVL-S-06-H66-080					●					4.5	1.2	300	80	6 to 40						
		DVL-S-06-H66-160					●					4.5	2.5	300	160	6 to 40						
		DVL-S-08-H66-240					●					6	3.6	400	240	20 to 50						
		DVL-S-08-H88-240					●					8	3.6	550	240	20 to 50						
		DVL-S-10-H88-400					●					13.5	6.6	900	440	32 to 75						
		DVL-S-10-H1010-400					●					16.5	6.6	1100	440	32 to 75						
		DVL-S-10-H1212-400					●					18	6.6	1200	440	32 to 75						
Needle Valve with Dial		DVL-N-06-H44-020					●					0.15		18	-	-	Air Preparation/Auxiliary Components [RJ-007AA]	 Click! 				
		DVL-N-06-H66-020					●					0.15		18	-	-						
		DVL-N-06-H44-080					●					1.2		80	-	-						
		DVL-N-06-H66-080					●					1.2		80	-	-						
		DVL-N-06-H66-160					●					2.4		160	-	-						
		DVL-N-08-H66-240					●					3.6		240	-	-						
		DVL-N-08-H88-240					●					3.6		240	-	-						
		DVL-N-10-H88-400					●					6.6		440	-	-						
		DVL-N-10-H1010-400					●					6.6		440	-	-						
		DVL-N-10-H1212-400					●					6.6		440	-	-						

* Fine flow rate specifications are also available. Refer to the catalog for details.

* For details, please refer to "Model No." on the CKD Components product website (https://www.ckd.co.jp/kiki/en/).
* For details on series for specific applications, refer to P. 451.

Values in () indicate the low speed type.																						
Type	Appearance	Model No.	Connection Port Size					Applicable Tube O.D.					Effective cross-sectional area (mm ²)		Flow rate (L/min (ANR)) Pressure 0.5 MPa		Applicable Cylinder Tube I.D. ø(mm) Reference	Click here for detailed specifications		Series for Specific Applications		
			M3	M5	(Rc, R)			(ø)					Free Flow	Controlled Flow	Free Flow	Controlled Flow		Catalog Name [No]	WEB	Rechargeable Battery	Clean	Food
					1/8	1/4	3/8	1/2	3.2	4	6	8										
Elbow Type with One-touch Fitting		SC3W-M3-3	●					●					0.4 (0.3)	0.3 (0.08)	27 (20)	20 (5.9)	4 to 8	Air Preparation/Auxiliary Components [RJ-007AA]		●	●	●
		SC3W-M3-4	●						●				0.4 (0.3)	0.3 (0.08)	27 (20)	20 (5.9)	4 to 8					
		SC3W-M5-3	●	●				●					1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	6 to 25					
		SC3W-M5-4		●					●				1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	6 to 25					
		SC3W-M5-6		●						●			1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	6 to 25					
		SC3W-6-4			●				●				3.2 (3.2)	2.8 (0.2)	210 (210)	190 (13)	15 to 32					
		SC3W-6-6			●					●			4.0 (4.0)	3.6 (0.2)	270 (270)	240 (13)	15 to 32					
		SC3W-6-8			●						●		4	3.6	270	240	15 to 32					
		SC3W-8-6				●				●			7	6.5	470	430	20 to 50					
		SC3W-8-8				●					●		7.5	7	500	470	20 to 50					
		SC3W-8-10				●						●	8	7	530	470	20 to 50					
		SC3W-10-6					●				●		10	10	650	650	32 to 75					
		SC3W-10-8						●				●	15	14	1000	930	32 to 75					
		SC3W-10-10							●			●	16	15	1100	1000	32 to 75					
		SC3W-10-12								●			16	15	1100	1000	32 to 75					
		SC3W-15-10								●			22	22	1500	1500	40 to 100					
		SC3W-15-12									●		24	24	1600	1600	40 to 100					
		Universal Type with One-touch Fitting		SC3U-M3-3	●					●					0.45 (0.35)	0.5 (0.08)	31 (24)					
SC3U-M3-4	●								●				0.45 (0.35)	0.5 (0.08)	31 (24)	34 (5.4)	4 to 8					
SC3U-M5-3				●				●					1.4 (1.4)	1.4 (0.14)	95 (95)	95 (9.5)	6 to 25					
SC3U-M5-4				●					●				1.4 (1.4)	1.4 (0.14)	95 (95)	95 (9.5)	6 to 25					
SC3U-M5-6				●						●			1.6 (1.4)	1.4 (0.14)	105 (95)	95 (9.5)	6 to 25					
SC3U-6-4					●				●				3.2 (3.2)	2.8 (0.25)	215 (215)	190 (17)	15 to 32					
SC3U-6-6						●				●			4 (3.7)	3.8 (0.25)	270 (245)	260 (17)	15 to 32					
SC3U-6-8						●					●		4	3.8	270	260	15 to 32					
SC3U-8-6							●				●		7	6.5	475	440	20 to 50					
SC3U-8-8								●				●	7.5	7	510	475	20 to 50					
SC3U-8-10									●			●	8	7	540	475	20 to 50					
SC3U-10-8										●			14.5	14	985	950	32 to 75					
SC3U-10-10											●		16	17	1090	1150	32 to 75					
SC3U-10-12												●	16	18	1090	1220	32 to 75					
SC3U-15-10											●		22	22	1500	1500	40 to 100					
SC3U-15-12												●	24	24	1630	1630	40 to 100					

Speed Controller

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, please refer to P. 451.

Speed Controller

● Supports cylinders from ø2.5 to ø450

Values in () are for low speed or fine speed.

Type	Appearance	Model No.	Applicable Tube O.D.							Effective cross-sectional area (mm ²)		Flow rate (L/min (ANR)) Pressure 0.5 MPa		Applicable Cylinder Tube I.D. ø(mm) Reference	Click here for detailed specifications		Series for Specific Applications		
			ø1.8	ø3.2	ø4	ø6	ø8	ø10	ø12	Free Flow	Controlled Flow	Free Flow	Controlled Flow		Catalog Name [No]	WEB	Refrigerants Safety	Clean	Food
Line Type with One-touch Fitting		SCL2-04-H22	●							(0.2)	(0.15)	(13)	(10)	4 to 25					
		SCL2-04-H42	●		●					(0.2)	(0.15)	(13)	(10)	4 to 25					
		SCL2-04-H24	●		●					(0.2)	(0.15)	(13)	(10)	4 to 25					
		SCL2-04-H44			●					1.9	1.9 (0.2)	130	130 (13)	4 to 25					
		SCL2-06-H66				●				4.5	4.5 (0.2)	300	130 (13)	6 to 40					
		SCL2-08-H66				●				6	6	400	400	20 to 50					
		SCL2-08-H88					●			8	8	550	550	20 to 50					
		SCL2-10-H88					●			13.5	13.5	900	900	32 to 75					
		SCL2-10-H1010						●		16.5	16.5	1100	1100	32 to 75					
		SCL2-10-H1212						●		18	18	1200	1200	32 to 75					
In-Out/Line Type with One-touch Fitting		SCD2-04-H22	●							-	(0.15)	-	(10)	4 to 25					
		SCD2-04-H42	●		●					-	(0.15)	-	(10)	4 to 25					
		SCD2-04-H44			●					-	1.5 (0.2)	-	100 (13)	4 to 25					
		SCD2-06-H66				●				-	3.7 (0.2)	-	250 (13)	6 to 40					
		SCD2-08-H66				●				-	5	-	330	20 to 50					
		SCD2-08-H88					●			-	6	-	400	20 to 50					
		SCD2-10-H88					●			-	11	-	750	32 to 75					
		SCD2-10-H1010						●		-	12.5	-	850	32 to 75					
		SCD2-10-H1212							●	-	13	-	900	32 to 75					
Needle Valve/With One-touch Fitting		SCL2-N-04-H44-010			●					-	0.2	-	13	-					
		SCL2-N-04-H44-050			●					-	0.7	-	50	-					
		SCL2-N-06-H66-010				●				-	0.2	-	13	-					
		SCL2-N-06-H66-050				●				-	0.7	-	50	-					
		SCL2-N-06-H66-150				●				-	2.2	-	150	-					
		SCL2-N-08-H66-300				●				-	4.5	-	300	-					
		SCL2-N-08-H88-300					●			-	4.5	-	300	-					

Air Preparation/Auxiliary Components [RJ-007AA]



* For details, refer to CKD Component Products site (https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, refer to P. 451.

Values in () are for low speed or fine speed.

Type	Appearance	Model No.	Connection Port Size												Applicable Tube O.D.		Effective cross-sectional area (mm²)		Flow rate (L/min (ANR)) Pressure 0.5 MPa		Applicable Cylinder Tube I.D. ø(mm) Reference	Click here for detailed specifications		Series for Specific Applications		
			(Rc, R)												(ø)		Free Flow	Controlled Flow	Free Flow	Controlled Flow		Catalog Name [No]	WEB	Clean	Food	Outdoor
			M3/M5	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	3	4	6	8								10	12	P7 P8
Stainless Steel Corrosion Resistant Type		SC3P-M5-4	●											●		0.9	1.1	55	70	6 to 25	Air Preparation/Auxiliary Components [RJ-007AA]	 Click! 				
		SC3P-M5-6	●											●		0.9	1.1	55	70	6 to 25						
		SC3P-6-4	●											●		3	2.3	200	150	15 to 32						
		SC3P-6-6	●											●		3	2.3	200	150	15 to 32						
		SC3P-6-8	●											●		3.5	2.3	230	150	15 to 32						
		SC3P-8-6	●											●		5.9	4	390	270	20 to 50						
		SC3P-8-8	●											●		6	4	400	270	20 to 50						
		SC3P-8-10	●											●		6	4	400	270	20 to 50						
		SC3P-10-6	●											●		9	8	600	550	32 to 75						
		SC3P-10-8	●											●		12	12.8	800	850	32 to 75						
		SC3P-10-10	●											●		12	14	800	920	32 to 75						
		SC3P-10-12	●											●		12.5	14	840	920	32 to 75						
		SC3P-15-8	●											●		17	16.5	1140	1100	40 to 100						
		SC3P-15-10	●											●		21	22	1380	1450	40 to 100						
		SC3P-15-12	●											●		21	24	1380	1600	40 to 100						
Direct Port/Elbow Type		SC3R-M5	●												1.2	0.7	80	47	6 to 16		 Click! 					
		SC3R-6	●												4.0	3.6	270	240	15 to 32							
		SC3R-8	●												7.5	7	500	470	20 to 50							
		SC3R-10	●												16	15	1100	1100	32 to 75							
		SC3R-15	●												24	24	1600	1600	40 to 110							
Ultra-compact Speed Controller		SC-M3	●												0.3	0.25	20	16	2.5 to 10		 Click! 					
		SC-M5	●												0.8	0.7 (0.1)	53	47 (6.7)	6 to 25							
Ultra-compact In-Out Speed Controller		SCD-M3	●												0.2		13		4 to 8		 Click! 					
		SCD-M5	●												0.55 (0.1)		37 (6.7)		6 to 25							
Medium Bore Type		SC1-6	●												11	8	730	530	20 to 50		 Click! 					
		SC1-8	●												14	13	930	870	32 to 75							
		SC1-10	●												39	22	2600	1500	50 to 140							
		SC1-15	●												43	36	2900	2400	80 to 160							
Large Bore Type		SC-20A	●												155	125	10300	8300	100 to 200		 Click! 					
		SC-25A	●												260	280	17400	18700	140 to 250							
		SC-32A	●												1000	1000	68000	68000	300 to 450							
		SC-40A	●												1000	1000	68000	68000	300 to 450							
		SC-50A	●												1500	1400	97000	91000	450 to							

Air Preparation/Auxiliary Components [RJ-007AA]



Silencer

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, refer to P. 451.

Silencer

• High noise reduction effect, 2 material types available

Type	Appearance	Model No.	Connection Port Size							Effective Area (mm²)	Flow rate (L/min ANR) At 0.5 MPa	Cylinder bore size ø(mm)	Specifications details here		Series for Specific Applications	
			M3	M5	(R)								Catalog Name [No]	WEB	Food	Rechargeable Battery
					1/8	1/4	3/8	1/2	3/4							
Metering Valve with Silencer		SMW2-6A			●					5.6	370	20 to 50		●	●	
		SMW2-8A				●				9.9	660	32 to 75				
		FMS-M5		●						4	250	6 to 15				
		SMW-10A					●			25	1700	50 to 100				
		SMW-15A							●		39	2600				50 to 100
Small Bore Type		SL-M5		●						5	300	6 to 15				
Resin Body Type		SLW-6A/6N/6G			●					10	650	20 to 80				
		SLW-8A/8N/8G				●				20	1300	32 to 80				
		SLW-10A/10N/10G					●			30	2000	50 to 100				
		SLW-15A/15N/15G						●		75	4850	50 to 100				
Body Type High Noise Reduction/Small Bore/Resin		SLW-8A-H				●				15	1000	32 to 80				
		SLW-10A-H					●			30	2000	50 to 100				
		SLW-15A-H						●		50	3250	50 to 100				
Body Type Large Flow Rate/Small Bore/Resin		SLW-8L				●				30	2000 or more	32 to 80				
		SLW-10L					●			60	4000 or more	50 to 100				
High Noise Reduction/Compact Type		SLW-6S			●					12	800	20 to 80				
		SLW-8S				●				30	1900	32 to 80				
		SLW-20S							●		90	6000			100 to 200	

Air Preparation/Auxiliary Components [RJ-007AA]

* For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Silencer

• High noise reduction effect, 2 material types available

Type	Appearance	Model No.	Connection Port Size												Effective Area (mm ²)	Flow rate (L/min ANR) At 0.5 MPa	Cylinder bore size ø(mm)	Specifications details here		Series for Specific Applications		
			M3	M5	(Rc, R)								(ø)					Catalog Name [No]	WEB	Outdoor		
					1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	6	8						10	12	WP
One-touch Type		SLW-H6									●			7	455	20 to 40						
		SLW-H8										●		8.5	550							
		SLW-H10											●		17.5				1135			
		SLW-H12												●	25.5				1655			
Ultra-compact Type		SLM-M3	●											1	60 or more	6 or less						
		SLM-M5		●											5	350 or more			6 to 15			
Aluminum Body Type		SL-8A			●									36	2400	50 to 100		●				
		SL-10A				●								48	3200	63 to 140						
		SL-15A					●							61	4100	75 to 180						
		SL-20A						●						160	12000	100 to 250						
		SL-25A							●					210	14000	140 to 250						
		SL-32A								●				280	18000	140 to 450						
		SL-40A									●			320	21000	140 to 450						
		SL-50A										●		500	33000	300 to 450						

Air Preparation/Auxiliary Components [RJ-007AA]

Exhaust Cleaner

Series	Appearance	Model No.	Connection Port Size						Effective cross-sectional area (mm²)	Max. processing flow rate (m³/min (ANR))	Specifications details here		Series for Specific Applications
			(Rc)								Catalog Name [No]	WEB	Rechargeable Battery
			3/8	1/2	3/4	1	1 1/2	2					P4
Exhaust Cleaner		FA331	●						16	0.3	Air Preparation/Auxiliary Components [RJ-007AA]	 Click! 	●
		FA431		●					33	0.6			
		FA531			●				55	1			
		FA631				●			165	3			
		FA731					●		330	6			
		FA831						●	550	10			

Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing

Search by Product System

Auxiliary Valve			Tube		
Non-return Valve/ Check Valve, etc.	QEL, QEV2 SHV2, CHL CHV2, FPV, PWS	P. 243	Air Fiber	UP-9□02-F1 EH, UP-SR RG-S2-□ RG-L2-□, RG-P2-B	P. 252
Fittings			Tube	UP-□□-F1, FH/F NU, U, KX, SR2	P. 254
Ultra-compact Joint	F	P. 244	Tube Cutter	AZ	P. 254
New-Joint	GW	P. 245	Air Blow Nozzle		
New-Joint (Mini Type)	GWJ	P. 248	Air Blow Nozzle	BNE, BN, BNB	P. 255
New-Joint (Stainless Steel)	ZW, ZSP	P. 249			
Compression Joint	MJ, JL	P. 251			
Rotary Joint	RJF	P. 251			

Auxiliary Valve

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, refer to P. 451.

Non-return Valve/Check Valve, etc. • Quick exhaust and various circuit switching valves available

Type	Series	Model No.	Applicable Bore Size											Click here for detailed specifications		Series for Specific Applications		
			M5	(ø)		(R or Rc)								Catalog Name [No]	WEB	Rechargeable Battery	Clean	Food
				4	6	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2			P4	P7 P8	FP
Quick Exhaust Valve with One-touch Fitting		QEL-H44	●													●		●
		QEL-44P																
		QEL-H66	●															
		QEL-66P																
Quick Exhaust Valve		QEV2-6			●											●		
		QEV2-8				●												
		QEV2-10					●											
		QEV2-15						●										
		QEV2-20							●									
		QEV2-25								●								
Shuttle Valve		SHV2-6				●										●		
		SHV2-8					●											
		SHV2-10						●										
		SHV2-15							●									
		SHV2-20								●								
		SHV2-25									●							
Compact Check Valve with One-touch Fitting		CHL-M54	●														●	
		CHL-H44		●														
		CHL-H66			●													
Check Valve		CHV2-6				●										●	●	
		CHV2-8-J					●											
		CHV2-8					●											
		CHV2-10-J						●										
		CHV2-10						●										
		CHV2-15							●									
		CHV2-20								●								
		CHV2-25									●							
		CHV2-32										●						
		CHV2-40											●					
Block Valve		FPV-M5	●													●		●
		FPV-6A				●												
		FPV-8A					●											
		FPV-10A						●										
		FPV-15A							●									
Threshold Sensor		PWS-B155	●															
		PWS-B1882				●												
		PWS-B1992					●											

Air Preparation/Auxiliary Components [RJ-007AA]

Fittings

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, refer to P. 451.

Click here for specifications	Catalog Name [No]	Air Preparation and Auxiliary Equipment [RJ- 007AA]	WEB		Series for Specific Applications	
					Clean	Rechargeable Battery
					P8	P4

Ultra-compact Joint • Miniature barbed and clamp for port size M3, M5, bore size ø3.2, ø4, ø6 Fittings

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.			Type	Model No./Appearance	Connection Port Size			
			ø3.2	ø4	ø6			M3	M5	R1/8	R1/4
			▲	▲	▲			●	●		
Barb Fitting	Straight	FTS	M3	▲	▲	Adjustable Socket	Elbow	FAL	●	●	
			M5	▲	▲						
			R1/8	●	●		Tee	FAT	●	●	
	Elbow	FTL	M3	●	●						
			M5	●	●		Cross	FAX		●	
	Tee	FTT	M3	●	●						
			M5	●	●		Unequal Tee	FAY		●	
	Barb Nipple	FTS-O	-	●	●						
	Clamp Fitting	FCS	M5	●	●	Bushing	FBS			●	●
			R1/8	●	●						
Clamp Fitting	Elbow	FCL	M5	●	●	Bulkhead	FWS		●	●	(Rc)
Double-ended Nipple	Straight	FNS	M3	●	●	Plug	FPL	●	●		
			M5	●	●						
	Straight	FSS		●	●	Extension	FLS		●		
	Elbow	FSL			●	Manifold	FMB	Rc1/8	6-M5	●	●
	Tee	FST			●		FMH	8-M5	Rc1/8	●	●
	Gasket	FGS						●	●		

▲ Custom Product

Fittings

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, refer to P. 451.

Click here for specifications

Catalog Name [No]

Air Preparation and Auxiliary Equipment [RJ- 007AA]

WEB


Click!

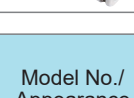
Series for Specific Applications

Clean

P7 / 8

New-Joint

• Port size M3 to 1/2 (Rc or R)

Type	Model No./ Appearance	Connection Port Size	Applicable Tube O.D.						
			ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
Male Straight		M5	●	●					
		R1/8	●	●	●	●			
		R1/4	●	●	●	●	●		
		R3/8		●	●	●	●	●	●
		R1/2					●	●	●
Male Straight (Round)		M3	●	●					
		M5	●	●	●				
		R1/8		●	●	●	●		
		R1/4			●	●	●	●	
		R3/8				●	●	●	●
		R1/2					●	●	
Female Straight		Rc1/8		●	●	●			
		Rc1/4		●	●	●	●	●	
		Rc3/8			●	●	●	●	●
		Rc1/2						●	
Female Bulkhead		Rc1/8		●	●	●			
		Rc1/4		●	●	●	●		
		Rc3/8			●	●	●	●	
		Rc1/2						●	
Bulkhead Union		-		●	●	●	●	●	
Bulkhead for Compression Joint		-		●	●	●	●	●	
Straight		-		●	●	●	●	●	●
		-		●	●	●	●	●	●
Type	Model No./ Appearance	A Side	Applicable Tube O.D.						
			ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
Reducing Straight Union		ø6		●					
		ø8			●				
		ø10				●			
		ø12					●		
Type	Model No./ Appearance	Connecting Joint Dia.	Applicable Tube O.D.						
			ø4	ø8	ø8	ø10			
Plug-in Reducer		ø4		●					
		ø6	●						
		ø8		●					
		ø10			●	●			
		ø12				●	●		

Type	Model No./ Appearance	Connecting Joint Dia.					
			ø4	ø6	ø8	ø10	ø12
Plug-in Connector		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●

Type	Model No./ Appearance	A Side	B Side						
			ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
Reducing Plug-in Connector		ø4			●				
		ø6				●			
		ø8					●		
		ø10						●	

Type	Model No./ Appearance	Connection Port Size	Applicable Tube Dia.						
			ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
Male Elbow		M5		●	●				
		R1/8		●	●	●	●		
		R1/4		●	●	●	●	●	
		R3/8			●	●	●	●	●
		R1/2					●	●	●

Long Elbow		R1/8		●	●	●			
		R1/4		●	●	●	●	●	
		R3/8				●	●	●	●
		R1/2					●	●	●
		-							

Single 45° elbow		M5		●	●				
		R1/8		●	●	●	●		
		R1/4		●	●	●	●	●	
		R3/8			●	●	●	●	●
		R1/2					●	●	

Swivel Elbow		M5		●	●				
		R1/8		●	●	●			
		R1/4		●	●	●	●	●	
		R3/8			●	●	●	●	●
		R1/2					●	●	

Elbow		-		●	●	●	●	●	●
		-		●	●	●	●	●	●
		-		●	●	●	●	●	●
		-		●	●	●	●	●	●
		-		●	●	●	●	●	●

Fittings

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, refer to P. 451.

Click here for specifications

Catalog Name [No]

Air Preparation and Auxiliary Equipment [RJ- 007AA]

WEB


Click!

Series for Specific Applications

Clean

P7/8

New-Joint

• Port size M3 to 1/2 (Rc or R)

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Male Branch Tee		M5	●	●			
		R1/8	●	●	●		
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
D tee		M5	●	●			
		R1/8	●	●	●		
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
Tee		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●

Type	Model No./Appearance	A Side	B Side				
			ø4	ø6	ø8	ø10	ø12
Y tee		ø4	●				
		ø6	●	●			
		ø8		●	●		
		ø10			●	●	
		ø12				●	●

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Double Y tee		M5	●	●			
		R1/8	●	●	●		
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
Cross Type		-			●	●	●
		-			●	●	●
		-			●	●	●
		-			●	●	●
		-			●	●	●

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
2-port turn elbow		M5	●				
		R1/8		●			
		R1/4			●		
		R3/8				●	
		R1/2					●
Tetrapod (with R)		M5	●	●			
		R1/8	●	●	●		
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
FY ~with R~		M5	●	●			
		R1/8	●	●	●		
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●

Double Y (with R)		M3					
		M5	●	●			
		R1/8	●	●			
		R1/4	●	●			
		R3/8		●			

Tetra Type		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●

FY		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●
		-	●	●	●	●	●

Type	Model No./Appearance	A Side	B Side				
			ø4	ø6	ø8	ø10	ø12
Double Y		ø6	●				
		ø8		●			

Fittings

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Click here for specifications	Catalog Name [No]	Air Preparation and Auxiliary Equipment [RJ- 007AA]	WEB	 Click!	Series for Specific Applications	
					Clean	
					P7/8	

New-Joint

• Port size M3 to 1/2 (Rc or R)

Type	Model No./Appearance	Applicable Tube O.D.	Connecting Joint Dia.						
			ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
Blanking Plug	GWP□-B 	-	●	●	●	●	●	●	●
L-plug	GWP□-L 	ø4		●	●	●			
		ø6			●	●	●		
		ø8				●	●	●	
		ø10					●	●	
		ø12						●	
C-plug	GWP□-C 	ø4		●	●	●			
		ø6			●	●	●		
		ø8				●	●	●	
		ø10					●	●	
		ø12						●	
Y-plug	GWP□-Y 	ø4		●	●	●			
		ø6			●	●	●		
		ø8				●	●	●	
		ø10					●	●	
		ø12						●	

Type	Model No./Appearance	Q1	Applicable Tube O.D.				Connection Port Size
			ø6	ø8	ø10	ø12	
(Single/ with R) manifold	GWMF□□ 	ø4	●	●			R1/8, 1/4
		ø6		●	●		R1/4, 3/8
		ø8			●		R3/8
(double/ with R) manifold	GWMF□-□-W 	ø4		●			R1/4, 3/8
		ø6			●		R3/8, 1/2
		ø8				●	R3/8, 1/2
(Single) Manifold	GWMF□-O 	ø4	●	●			-
		ø6		●	●		
		ø8			●		
(Double) Manifold	GWMF□-O-W 	ø4		●			-
		ø6			●		
		ø8				●	

Type	Model No./Appearance	Applicable Tube O.D.
Cap	GWC□ 	ø4, ø6, ø8 ø10, ø12

Model No./ Appearance	Click here for specifications	
	Catalog Name [No]	WEB
Insert Ring (Tube UP-9 for □□□)* 	Air Preparation/ Regulation Equipment/ Auxiliary Components [RJ- 007AA]	 Click!

* Special Order Item

Fittings

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

Click here for specifications	Catalog Name [No]	Air Preparation and Auxiliary Equipment [RJ- 007AA]	WEB	 Click!	Series for Specific Applications	
					Clean	
					P7/8	

New-Joint Mini

• Port size M3 to 1/8 (Rc or R) Versatile and compact one-touch fitting

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.		
			ø3.2	ø4	ø6
Male Straight	GWJS□-□ 	M3	●	●	
		M5	●	●	●
		R1/8	●	●	●
Female Straight	GWJS3-□-M 	M3	●		
		M5	●		
		Rc1/8	●		
Bulkhead Union	GWJS3-O-X 	-	●		

Type	Model No./Appearance	Applicable Tube O.D.
Straight	GWJS3-O 	ø3.2

Type	Model No./Appearance	Applicable Tube O.D.	
		A Side	B Side
Reducing Straight Union	GWJS□-O 	ø4	ø3.2
		ø6	

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.		
			ø3.2	ø4	ø6
Male Elbow	GWJL□-□ 	M3	●	●	
		M5	●	●	●
		R1/8	●	●	●
Long Elbow	GWJL□-□-L 	M3	●		
		M5	●	●	●
		R1/8	●	●	●
Elbow	GWJL3-O 	-	●		
Male Branch Tee	GWJT3-□ 	M3	●		
		M5	●		
		R1/8	●		
D tee	GWJT3-□-D 	M3	●		
		M5	●		
		R1/8	●		
Tee	GWJT3-O 	-	●		

Type	Model No./Appearance	Applicable Tube O.D.	
		A Side	B Side
Y tee	GWJY□-O 	ø3.2	ø3.2
		ø4	ø3.2

Type	Model No./Appearance	Connecting Joint Dia.
Blanking Plug	GWJ□P□-B 	ø3.2, ø4, ø6

Fittings

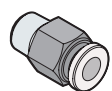
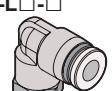
* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."
* For details on series for specific applications, refer to P. 451.

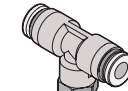
Click here for specifications	Catalog Name [No]	Air Preparation and Auxiliary Equipment [RJ- 007AA]	WEB	 Click!	Series for Specific Applications
					Clean Rechargeable Battery
					P8 P4 (ZW only)

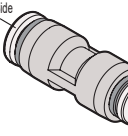
New-Joint (Stainless Steel)

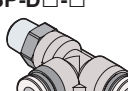
• Port size M5 to R1/2

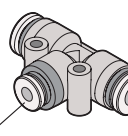
Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Male Straight		M5	●	●			
		R1/8	●	●	●		
		R1/4	●	●	●	●	
		R3/8		●	●	●	●
		R1/2				●	●
Male Elbow		M5	●	●			
		R1/8	●	●	●		
		R1/4	●	●	●	●	
		R3/8		●	●	●	●
		R1/2				●	●
Elbow	ZW-L□-O	-	●	●	●	●	●
Tee	ZW-T□-O	-	●	●	●	●	●
Straight	ZW-S□-O	-	●	●	●	●	●

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Straight		M5	●	●			
		R1/8	●	●	●	●	
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
Union Straight	ZSP-U□	-	●	●	●	●	●
Elbow		M5	●	●			
		R1/8	●	●	●	●	
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
Union Elbow	ZSP-V□	-	●	●	●	●	●

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Tee		M5	●	●			
		R1/8	●	●	●	●	
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
Union Tee	ZSP-E□	-	●	●	●	●	●

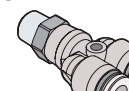
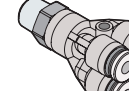
Type	Model No./Appearance	Applicable Tube O.D.	
		A Side	B Side
Reducing Union Straight		ø6	ø4
		ø8	ø6
		ø10	ø8
		ø12	ø10

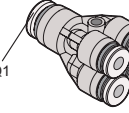
Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Branch Tee		M5	●	●			
		R1/8	●	●	●	●	
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
Tripod Elbow		M5	●	●			
		R1/8	●	●	●	●	
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
Union Y	ZSP-Y□	-	●	●	●	●	●

Type	Model No./Appearance	Applicable Tube O.D.	
		Q1	Q2
Reducing Union Tee		ø6	ø4
		ø8	ø6
		ø10	ø8
		ø12	ø10

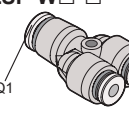
New-Joint (Stainless Steel)

• Port size M5 to R1/2

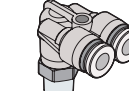
Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Branch Y		M5	●	●			
		R1/8	●	●	●	●	
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●
Branch Double Y		R1/8	●	●			
		R1/4	●				

Type	Model No./Appearance	Applicable Tube O.D.	
		Q1	Q2
Reducing Double Y		ø6	ø4
		ø8	ø6

Type	Model No./Appearance	Applicable Tube O.D.				
		ø4	ø6	ø8	ø10	ø12
Tripod Union	ZSP-VU□	●	●	●	●	●

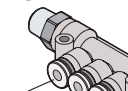
Type	Model No./Appearance	Applicable Tube O.D.	
		Q1	Q2
Reducing Union Y		ø6	ø4
		ø8	ø6
		ø10	ø8
		ø12	ø10

Type	Model No./Appearance	Applicable Tube O.D.				
		ø4	ø6	ø8	ø10	ø12
Union A	ZSP-AU□	●	●	●	●	●

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Branch Elbow		M5	●	●			
		R1/8	●	●	●	●	
		R1/4	●	●	●	●	●
		R3/8		●	●	●	●
		R1/2				●	●

* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Click here for specifications	Catalog Name [No]	Air Preparation and Auxiliary Equipment [RJ- 007AA]	WEB	 Click!
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Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.	
			Q1	Q2
Branch Triple		R1/8	ø6	ø4
		R1/4	ø8	ø4
		R1/4	ø8	ø6
		R3/8	ø10	ø8
Reducing Triple			ø6	ø4
			ø8	ø4
			ø8	ø6
			ø10	ø6
			ø10	ø8

Type	Model No./Appearance	Applicable Tube O.D.				
		ø4	ø6	ø8	ø10	ø12
Cap	ZSP-PF□	●	●	●	●	●
Bulkhead Union	ZSP-M□	●	●	●	●	●

Type	Model No./Appearance	Connecting Joint Dia.	Applicable Tube O.D.				
			ø4	ø6	ø8	ø10	ø12
Reducer		ø4		●			
		ø6	●				
		ø8	●	●			
		ø10	●	●	●		
		ø12		●	●	●	

Fittings

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."

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Catalog Name [No]

Air Preparation and Auxiliary Equipment [RJ- 007AA]

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Compression Joint

Made by Aoi Co., Ltd. • Port size R1/8 to R1/2

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.					
			ø4	ø6	ø8	ø10	ø12	ø15
Male Straight		R1/8	●	●	●			
		R1/4	●	●	●	●	●	
		R3/8		●	●	●	●	●
		R1/2				●	●	●
Straight		-	●	●	●	●	●	●
Female Straight		Rc1/8	●	●	●			
		Rc1/4	●	●	●	●	●	
		Rc3/8		●	●	●	●	●
		Rc1/2				●	●	●
Bulkhead Union		-	●	●	●	●	●	●
Female Bulkhead		Rc1/8	▲					
		Rc1/4		●	●			
		Rc3/8				▲		
Male Elbow		R1/8	●	●	●			
		R1/4	●	●	●	●	●	
		R3/8		●	●	●	●	●
		R1/2				●	●	●
Elbow		-	●	●	●	●	●	●
Female Elbow		Rc1/8	▲	●	▲			
		Rc1/4	▲	●	●	▲	▲	
		Rc3/8		▲	▲	▲	▲	
Swivel Elbow		R1/8	●	●	●			
		R1/4		●	●	●		
		R3/8				●	●	
		R1/2					●	●
Male Branch Tee		R1/8	●	●	●			
		R1/4	●	●	●	●	●	
		R3/8		●	●	●	●	●
		R1/2				●	●	●
		R1/2				●	●	●

▲ Custom Product

Type	Model No./Appearance	Connection Port Size	Applicable Tube O.D.					
			ø4	ø6	ø8	ø10	ø12	ø15
D Tee		R1/8	●	●	●			
		R1/4	●	●	●	●	●	
		R3/8		●	●	●	●	●
		R1/2				●	●	●
Tee		-	●	●	●	●	●	●
Female Tee		Rc1/8	▲	●	▲			
		Rc1/4	▲	●	●	▲	▲	
		Rc3/8		▲	▲	▲	▲	
		Rc3/8		▲	▲	▲	▲	

▲ Custom Product

Type	Model No./Appearance	Applicable Tube O.D.					
		ø4	ø6	ø8	ø10	ø12	ø15
Sleeve		●	●	●	●	●	●
		●	●	●	●	●	●
Insert Ring		●	●	●	●	●	●

Type	Model No./Appearance	Connection Port Size			
		R, Rc1/8	R1/4	R3/8	R1/2
Elbow		●	●	●	●

Rotary Joint

Model No./Appearance	No. of Circuits	Connection Port Size	
		M5	Rc1/8
	4	●	●
	6	●	●
	8	●	●
	12	●	
	16	●	

Tube

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."
* For details on series for specific applications, refer to P. 451.

Click here for specifications

Catalog Name [No]

Air Preparation and Auxiliary Equipment [RJ- 007AA]

WEB


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Series for Specific Applications

Clean

P 8

Air Fiber

*1: Fittings As for the antistatic type, be sure to use each dedicated tool. A different fitting cannot be used. The fiber tube may come off.

Type	Model No./Appearance	Fiber tube diameter O.D. x I.D.	Length per Roll	Air Fiber Color							Dedicated Fitting	
				Black	White	Transparent	Transparent Blue	Transparent Green	Yellow	Red		
Anti-static for Barb Fittings	UP-9102-20-□-F1 	ø1.8 x ø1.0	20m roll	●	●	●	●	●	▲	▲	PTN□2 Series *1	Barb fitting with retaining collar

Type	Model No./Appearance	Applicable Tube O.D.	Connection Port Size			Type	Model No./Appearance	Applicable Tube O.D.
			M3	M5	R1/8			
Straight Barb Fitting		ø1.8	●	●	●	Nipple		ø3.2, ø4, ø6
			●	●				

Type	Model No./Appearance	Fiber tube diameter O.D. x I.D.	Length per Roll	Air Fiber Color							Dedicated Fitting	
				Black	White	Transparent	Transparent Blue	Transparent Green	Yellow	Red		
Anti-static for One-touch Fittings	UP-9402-20-□-F1 	ø1.8 x ø1.2	20m roll	●	●	●	●	●	▲	▲	PG Series	One-touch Fitting

Type	Model No./Appearance	Applicable Tube/Pipe O.D.	Connection Port Size			Type	Model No./Appearance	Applicable Tube/Pipe O.D.
			M3	M5	R1/8			
Male Straight		ø1.8	●	●	●	Tee Type		ø1.8
			●					
Elbow Type		ø1.8	●	●	●	Plug Type		ø1.8
Male Branch Tee			●	●				
		ø1.8	●	●		Straight Bulkhead Union		ø1.8

▲ Custom Product

Tube

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Click here for specifications

Catalog Name [No]

Air Preparation and Auxiliary Equipment [RJ- 007AA]

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Air Fiber

Type	Model No./Appearance	Fiber tube diameter O.D. x I.D.	Length per Roll	Air Fiber Color						Dedicated Fitting		
				Black	White	Transparent	Transparent Blue	Transparent Green	Yellow			Red
Clean Type Air Fiber for One- touch Fittings	EH-5802-20-□	ø1.8 x ø1.0	20m roll	●		●					CG Series	One-touch Fitting
												

Type	Model No./Appearance	Applicable Tube O.D.	Connection Port Size			Type	Model No./Appearance	Applicable Tube/Pipe O.D.
			M3	M5	R1/8			
Male Straight	CG-S2-□ 	ø1.8	●	●	●	Straight	CG-S2-O 	ø1.8
Male Elbow	CG-L2-□ 		●	●	●	Bulkhead Union	CG-S2-O-X 	
Male Branch Tee	CG-T2-□ 		●	●		Tee	CG-T2-O 	

Type	Model No./Appearance	Fiber tube diameter O.D. x I.D.	Length per Roll	Air Fiber Color *1	
				Red	Green
(for push-in fitting) Flame-resistant fiber tube	UP-9102-20-□-SR 	ø1.8 x ø1.0	20m roll	●	●

* When flame retardant is added, the hue will be lighter instead of bright red or green.

Type	Model No./Appearance	Connection Port Size	Type	Model No./Appearance	Connection Port Size
Male Straight	RG-S2-□ 	M5, R1/8	Speed Controller *1	SC3W Low Speed Type Air Fiber One-touch Specification 	M3, M5
Male Elbow	RG-L2-□ 			SCL2 Low Speed Type Air Fiber One-touch Specification 	Applicable Tube O.D. A Side B Side ø1.8 ø1.8 ø4 ø1.8 ø1.8 ø4

*1 Air fiber for barb fittings (UP-9102-F1) cannot be used.
*2 Special Specification Product.

Type	Model No./Appearance
Blanking Plug	RG-P2-B 

Tube

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

* For details on series for specific applications, refer to P. 451.

Click here for specifications

Catalog Name [No]

Air Preparation and Auxiliary Equipment [RJ- 007AA]

WEB



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Series for Specific Applications

Clean

P8

Rechargeable Battery

P4

Tube

Anti-static Tubing		Soft Nylon Tubing	
UP 	O.D. x I.D. (mm)	F-15 Products other than white are made by Aoi Co., Ltd. 	O.D. x I.D. (mm)
	3.2 x 1.9		3.2 x 2.0
	4 x 2.5		3.2 x 2.4
	6 x 4		4 x 2.5
	6 x 5		6 x 4
	10 x 6.5		8 x 6
	12 x 8		10 x 7.5
			12 x 9
			15 x 11.5
			16 x 12

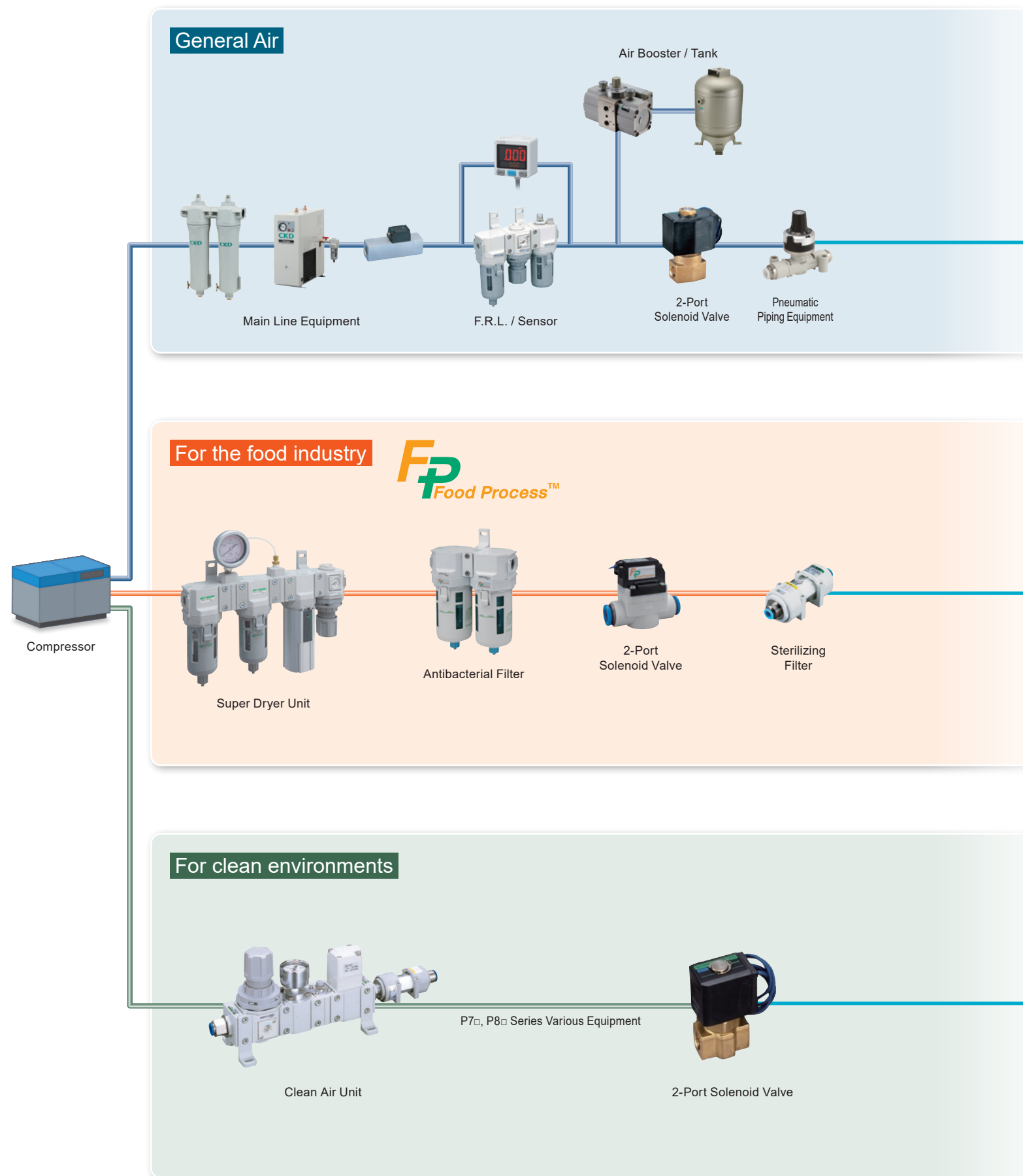
Soft Urethane Tubing		Urethane Tubing	
U-92 	O.D. x I.D. (mm)	U-95 Made by Aoi Co., Ltd. 	O.D. x I.D. (mm)
	4 x 2		3.2 x 1.8
	6 x 3.7		4 x 2
	8 x 5		6 x 4
	10 x 6.5		8 x 5
	12 x 8		10 x 6.5
			12 x 8

New Urethane Tubing		Coiling Tubing	
NU 	O.D. x I.D. (mm)	KX-12 Made by Aoi Co., Ltd. 	O.D. x I.D. (mm)
	4 x 2.5		6 x 4
	6 x 4.5		8 x 6
	8 x 6		10 x 7.5
	10 x 7.5		12 x 9.2
	12 x 9		

Flame Resistant Tubing		Tube Cutter
SR2 Made by Aoi Co., Ltd. 	O.D. x I.D. (mm)	AZ-1200 Made by Aoi Co., Ltd. 
	4 x 2	
	6 x 3.8	
	8 x 5.5	
	10 x 7	
	12 x 8.5	

Air Blow Nozzle

A proposal only CKD can make. A total solution for air



Features	Model No.	Connection Port Size
Energy-saving Type (Flat Type)  Amplified air is jetted widely and uniformly Quiet design that is friendly to the work environment Note) The model will be changed in early 2025. (Metal) Refer to the HP for details.	BNE-F	R1/4
Energy-saving Type (Round Type)  Powerful pinpoint jet from 8 round holes Quiet design that is friendly to the work environment	BNE-R	R1/4
General Type  Pinpoint jet of straight air from a single hole Compact Shape	BN-□	R1/8, 1/4
Blower Specification  High-efficiency nozzle compatible with blower air, advantageous for energy saving	BNB-□	R1/8, 1/4

[Click here for detailed specifications](#)

Catalog Name
[No]

Air Preparation and
Auxiliary Equipment
[RJ-007AA]

WEB



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Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing

Search by Product System

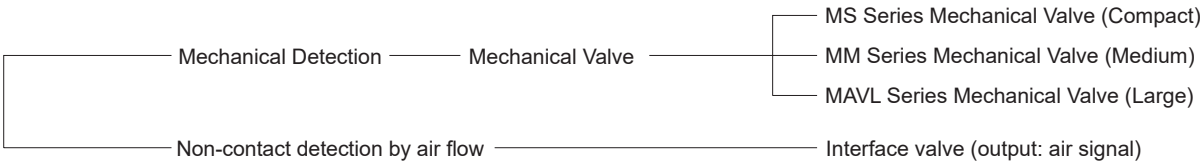
Total Air System		
Detector	MS, MM, MAVL	P. 259
Circuit Diagram	RTD-3A, PE-1 AL-□, SAL-□	P. 260
Gamma System		
PS, PR□/PL□, PZU, PL□, PL□/PZM PXV, PR□/PX□, PXB-B3, ZB4-B, PXC-M PXC-K, ZCK, Limit Switch, Accessories		P. 261
Related Equipment		
Portable Air Supply Unit	ASU	P. 262

Total Air System

Detector

For control, detection devices are used to confirm the cylinder position, presence of material, etc. To detect objects of various shapes and states, TAS offers a wide variety of detection devices, allowing for optimal detection by selecting from these devices.

Types of Detection Devices



Series Name	Features	Main Application
MS Series Mechanical Valve	Equivalent to an electrical micro switch Compact and most commonly used	For position confirmation of cylinders and machines, and for manual operation
MM Series Mechanical Valve	Equivalent to a small, vertical electrical limit switch; high mechanical strength of the actuator part Lineup includes actuators not available in the MS series, such as rod levers and spring rod levers (flow rate is the same as MS type)	Position confirmation for cylinders, machines, and materials
MAVL Series Mechanical Valve	Equivalent to a vertical electrical limit switch Large flow rate allows for direct operation of cylinders up to about ø80	Position confirmation for cylinders, machines, and materials

Detector

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Model No.	Appearance	Valve System	Connection Type	Operation Method												Effective cross-sectional area (mm ²)	Specifications details here	
					Roller Lever Type	One-way Roller Lever Type	Roller Plunger Type	Toggle Switch Type	Pushbutton Valve Type	Mushroom Valve Type	Select Valve (N stations)	Roller Arm Type	Adjustable Roller Lever Type	Rod Lever Type	Wire Lever Type	Spring Lever Type		Catalog Name [No]	WEB
Compact Mechanical Valve (MS)	MS		Normally Closed	Rc1/8	✓	✓	✓	✓	✓	✓	✓	✓					2.5	Air Preparation/Auxiliary Components [RJ-007AA]	
				ø4 One-touch Fitting	✓	✓	✓	✓	✓	✓	✓	✓					1.6		
			Normally Open	Rc1/8	✓	-	-	-	-	-	-	-					2.5		
				ø4 One-touch Fitting	✓	-	-	-	-	-	-	-					1.6		
Medium Mechanical Valve (MM)	MM		Normally Closed	Rc1/8	✓	✓							✓	✓	✓	✓	2.5		
				ø4 One-touch Fitting	✓	✓							✓	✓	✓	✓	1.6		
			Normally Open	Rc1/8	✓	-							-	-	-	-	2.5		
				ø4 One-touch Fitting	✓	-							-	-	-	-	1.6		
Large Mechanical Valve (MAVL)	MAVL		Can be used as Normally Closed or Normally Open depending on piping	Rc1/4	✓	✓							✓	✓	✓	✓	31		

parts cannot be manufactured.
"-" can be ordered, but is not listed in the catalog.

Circuit Devices

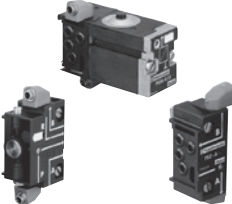
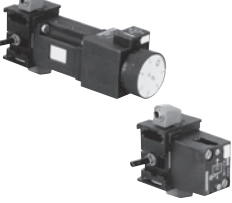
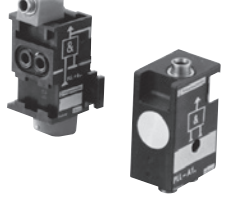
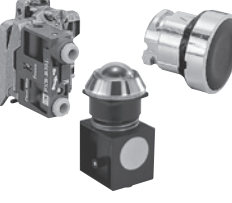
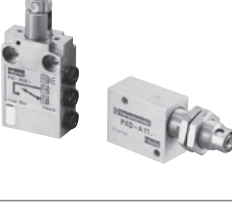
Type	Model No./Appearance	Connection Port Size	Application	Click here for detailed specifications	
				Catalog Name [No]	WEB
Air Timer	RTD-3A	ø4 One-touch Fitting	Can delay pneumatic signal up to 30 seconds	Air Preparation/Auxiliary Components [RJ-007AA]	
Pressure Switch	PE-1	ø4 One-touch Fitting	Switches electrical contacts with a 0.2 to 0.7 MPa air pressure signal		
Air Lamp	AL-R -B -Y	ø4 One-touch Fitting	Confirming residual pressure and displaying operational status (3 display colors are available; red, blue, and yellow)		
Compact Air Lamp	SAL-R -B	ø4	Confirming residual pressure and displaying operational status. (2 display colors are available: red and blue) Simply insert into a ø4 one-touch fitting		

Gamma System

* For details, refer to CKD components product site (https://www.ckd.co.jp/kiki/en/) → "Model No."

What is the Gamma System?

The Gamma system is a total air system ideal for automating devices that use many pneumatic cylinders. Conditions such as manual override and emergency stop interlock are easily added using the step-by-step method modular PLC for designing circuits.

Features	Product Group/ Appearance	Model No.	Click here for detailed specifications	
			Catalog Name [No]	WEB
The modularized PLC Elements is an element which becomes the core of the Gamma system. The memory element is incorporated into the body thereof and the AND and OR elements are incorporated into the sub-base thereof to facilitate the assembly of a pneumatic sequence circuit. ● Main Features Built-in interlock mechanism with cycle display indicator With manual operation button	Sequencer Elements 	PS□	 Click!	
Various control elements to satisfy multi-functional circuit requirements ● Extensive Product Line Timers, YES/NOT/AND/OR elements, threshold elements Pressure switches, solenoid valves, memory elements, boosters, amplifiers, etc. ● Both manifold mounting and single mounting are possible The sub-base can be single or manifold mounted without any particular change in shape	Relay Elements 	PR□, PL□		
Mainly used when the operation signal has several interlocks, and is placed on the input or output side as an auxiliary circuit for the sequencer. Available in integrated and line types AND/OR/NOT Elements (Integrated Type), AND/OR Elements (Line Type) ● Easy circuit modification possible (Integrated type) Both cascade and common connections are possible by rearranging selector parts	Logic Elements 	PL□		
		PZU		
		PL□, PZM		
Operation switches are elements for sending signals such as start and stop The air lamp is an element that indicates the presence or absence of a pneumatic signal ● Extensive Product Line A wide variety of types can be selected to suit the purpose of use ● Main Features Built-in snap-action ø4 tube one-touch fitting for stable operation with small operating force Air counter available for counting pneumatic pulses	Operation Switch and Air Lamp 	PXV		
An element for sending detection signals such as actuator operation confirmation and object presence detection ● Extensive Product Line A wide variety of limit switches and sensors available to support a wide range of applications ● Main Features Built-in snap-action ø4 tube one-touch fitting for stable operation with small operating force	Detection Element 	PR□, PX□ PXB-B3 ZB4-B PXC-M PXC-K ZCK		
● Accessories Used for each logic element and terminal block	Silencer Tip 	PXC-X14		

Air Preparation/Auxiliary Components [RJ-U007AA]



Click!

Related Equipment

Portable Air Supply Unit (Sales limited to Japan)

All-in-one in a small body.

With this one unit, you can easily get compressed air anytime, anywhere.

For event venues

For labs

For conference rooms

Easy to carry

It has a carry case shape, so anyone can easily carry it.



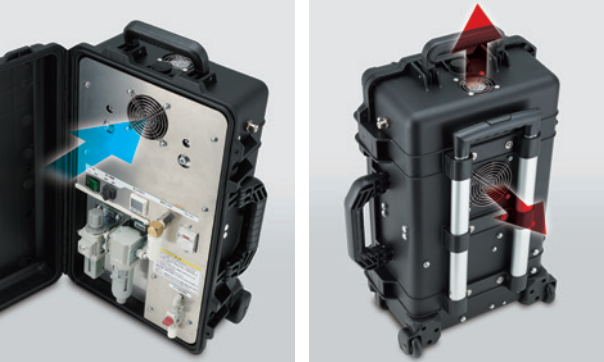
Supplies clean air

Compressed air heated by the pump is cooled by an aftercooler. Supplies clean air by centrifugally separating generated drain and removing foreign matter.



Can be used continuously

Improves heat dissipation around the pump to suppress temperature rise during long-term use.



Pressure Sensor

Tank pressure can be set freely with high accuracy.

Pump Intake Filter

Clogging is easy to see and replacement is simple.



Bowl

The amount of accumulated drain is easy to see, and discharge from the cock or removal of the bowl can be done easily.

* When removing the bowl, be sure to turn off the pump power and discharge the residual pressure in the tank before doing so.

Specifications

Item	ASU-S-C6-1
Rated Pressure	0.4 MPa
Max. Allowable Pressure	0.5 MPa
Air Discharge Volume (50/60Hz)	19/25 L/min (ANR) *1
Rated voltage	Single-phase 100 VAC (50/60 Hz)
Rated Current (50/60 Hz)	3.3/3.5 A
Noise Level	60 dB(A) with lid closed
Pump Motor	4P, Class F, Capacitor induction Auto-reset thermal protector

Item	ASU-S-C6-1
Pump Motor Output	90 W
Ambient Temperature	5 to 35°C
Weight	15 kg
Outline Dimensions	Width 350 x Depth 225 x Height 560 mm
Pump Starting Method	Pressure Switch Type
Pump Warranty Period	1 year or 3000 hours *2

*1: This is the flow rate when released to the atmosphere.

*2: During continuous operation at an ambient temperature of 5 to 35°C and a rated pressure of 0.4 MPa

*3: Measured value according to CKD test conditions. This is not a guaranteed value.

Click here for detailed specifications

Catalog Name
[No]
Portable Air
Supply Unit
ASU-S-C6-1
[CC-1363]

WEB



Click!

Product Category		Specific Applications	
Actuators, Pneumatic Cylinders	P. 3	High Durability Components HP Series	P. 453
Actuators, Electric Actuators	P. 78	For Food Manufacturing Processes FP Series	P. 461
Directional Control Valve	P. 111	For Outdoor Use WP Series	P. 467
Air Preparation Equipment	P. 151	For Rechargeable Battery Manufacturing Processes P4 Series	P. 471
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Model No. List		
Search by Product System		
Pressure Switch		
Electronic Pressure Switch for Air	PPX/PPD3-S/PPD3/PPG-D/PPE PPE-□A/PPEV-□A/PPR	 P. 267
Air Sensor		
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For Coolant	CPE/CPD	 P. 270
Flow Sensor		
For Gas	FSM3/FSM-X/V PFD/FSM-VFM	 P. 271
For Liquid	WFK2 WFC WFK3000	 P. 273
Water Integration Unit	WXU	 P. 275
Compact Flow Controller Rapiflow®		
For Gas	FCM	 P. 277
Multi Monitor		
For Air/Water	MD	 P. 273

Sensors/Controllers

Model No. List	 P. 265
Search by Product System	 P. 267

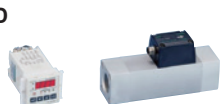
Measuring Sensors

Pressure Switch

Series/Appearance	Features	Pressure Range (kPa)
PPX 	For Gas For Vacuum A digital pressure sensor packed with user-friendliness and high functionality, such as a twin display to check the [current value] and [set value] simultaneously, a 3-color display, setting copy function, and three mode settings.	-100 to 100/1000
PPD3-S 	For Gas For Vacuum Digital display pressure switch (sensor integrated type) with a stainless steel diaphragm in the sensor section.	-100 to 100/300/980
PPD3 	For Gas For Vacuum Digital display pressure switch ideal for pneumatic lines. A wide variety of port structures allows for versatile use such as vacuum and seating confirmation.	-100 to 100/300/980
PPG-D 	For Gas For Vacuum Basic digital pressure sensor suitable for pneumatic and vacuum pressure. Global support with selectable ports and pressure units.	-100 to 100 0 to 101.3/1000
PPE 	For Gas For Vacuum Trimmer setting type semiconductor pressure switch. Compact shape and 3 types of piping connections allow for versatile use.	-101.3 to 0 0 to 100/1000
PPEV-□A 	For Gas For Vacuum Outputs 1 to 5 V (analog output) proportional to the applied pressure. Can be connected to compact equipment such as pneumatic valves for output confirmation, etc.	-100 to 0 0 to 1000
PPR 	For Gas A digital pressure sensor exclusively for mounting on regulators, equipped with a twin display to check the [current value] and [set value] simultaneously, a 3-color display, lock function, and energy-saving mode function.	0 to 1000

For details, see P. 267

Flow Sensor

Series/Appearance	Features	Max. Flow Rate (L/min)
FSM3 	For Gas In addition to conventional high accuracy and high response, this compact gas type is easy to use, with one unit capable of measuring five types of gases and offering a wide variety of fitting variations.	1000
FSM-X/V 	For Gas (FSM-X) Ultra-compact size achieved by separating the sensor head. (FSM-V) Astonishing compact size and 5 ms high-speed response, beyond all reasonable expectations	10
PFD 	For Gas Large flow type for compressed air that can confirm a maximum of 16000 L/min (normal).	16000
WFK2 	For Liquid Karman vortex flow sensor with liquid temperature measurement function as standard equipment. We also offer a fluorine-based fluid compatible model and needle/cock for easy flow rate adjustment	250
WFC 	For Liquid Capacitive electromagnetic flow sensor with a through structure that reduces problems caused by foreign matter. Liquid temperature measurement function is also available as an option.	60
WFK3000 	For Liquid Highly reliable Karman vortex flow sensor. Available in a wide variety of easy-to-design sizes and can be set with simple operations.	60

* Bidirectional type can be selected for FSM3 and FSM-X/V. For details, see P. 271

Controlling Controllers

Electro-Pneumatic Regulator

Series/Appearance	Features	Pressure Control Range (kPa)
EVD 	For Gas High-function type with numerous functions such as an error display function and direct memory function, and equipped with a digital display.	0 to 100/500/900
EVR 	For Gas Adopts feedback control with a semiconductor pressure sensor and electronic control circuit, enabling high-precision control of air pressure with an electrical signal.	5 to 100/200/300/400/500 10 to 600/700/800/900
EV2100V 	For Vacuum Adopts feedback control with a semiconductor pressure sensor and electronic control circuit, enabling high-precision control of air pressure with an electrical signal.	-10.1 to -91.2
EVS2 	For Gas For Vacuum More compact than conventional models, achieving ease of use and space savings.	-5.3 to -91.2 1 to 100 2 to 200 5 to 500 9 to 900
EVL 	For Gas Enables high-precision control of proportional control at 50 kPa or less.	0 to 50
MEVT 	For Gas Manifold type low-profile electro-pneumatic regulator that achieves unprecedented space savings. Network compatible for reduced wiring	0 to 100/500

For details, see P. 183

Flow Controller

Series/Appearance	Features	Full Scale Flow Rate (L/min)
FCM 	For Gas Compact flow controller with numerous functions in a compact body (70 L x 70 W x 30 H). Applicable fluids for models compatible with various fluids and capable of stable, high-speed control: Air, nitrogen, argon, oxygen City gas, methane, propane Hydrogen, helium	0.5/1/2/5 10/20/50/100

For details, see P. 277

Pressure Sensor Equipment

Electronic Pressure Switch for Air

● = Available in lineup * For details, please see "Model No." on the CKD Components product site (https://www.ckd.co.jp/kiki/en/).
- = Not in lineup * For details on series for specific applications, please refer to P. 451.

Features	Model No./ Appearance	Type		Pressure Range (kPa)					Enclosure		Switch Output (Points) *1		IO-Link	Applicable Fluid	Mounting Method							Indicator		Click here for detailed specifications		Series for Specific Applications						
		Sensor/Amplifier Integrated	Sensor/Amplifier Separate	0 to 980 (1000)	0 to 98 (100)	0 to -100 (-101.3)	-100 to 980 (1000)	-100 to 300			-100 to 100	NPN			PNP	Analog	FR mounting	Panel Mounting	Other (Bracket mounting, etc.)	Piping Connection					Digital Display	Output Lamp Only	Catalog Name [No]	WEB	Rechargeable Battery	Clean		
																				Rc1/8	R1/8	One-touch	Plug	M5 female thread							NPT1/8	G 1/8
A digital pressure sensor packed with user-friendliness and high functionality, such as a twin display to check the [current value] and [set value] simultaneously, a 3-color display, setting copy function, and three mode settings.		●	-	-	-	-	● (1000)	-	●	IP40	● (2)	● (2)	-	●	Air Non-corrosive Gas	● Attached	●	●	-	●	-	-	●	●	●	●	-	Sensors/Controllers [RJ-008AA]	 Click!	●		
Digital display pressure switch with a stainless steel diaphragm in the sensor section.		●	-	-	-	-	●	●	●	IP65 equivalent	● (2)	● (2)	-	-	Air/Non-corrosive gas (including drain and oil)	-	●	●	●	-	●	-	-	-	-	●	-			 Click!		●
		-	●						IP65 equivalent (Display is IP40)	● (1)	● (1)	● (1)			Compressed Air	-	●	●	●	-	-	-	-	-	-	●	-					
Digital display pressure switch ideal for pneumatic lines. A wide variety of port structures allows for versatile use such as vacuum and seating confirmation.		-	●	-	-	-	●	●	●	IP65 or equivalent (IP40 or equivalent for display section)	● (2)	● (2)	● (1)	-	Air Non-corrosive Gas	-	●	●	-	●	●	●	-	-	-	●	-					
Basic digital pressure sensor suitable for pneumatic and vacuum pressure. Global support with selectable ports.		●	-	● (1000)	-	● (-101.3)	-	-	●	IP65	● (2)	● (2)	●	-	Air Non-corrosive Gas	-	●	●	●	●	-	-	●	●	●	●	-					
Trimmer setting type semiconductor pressure switch developed for pneumatic and vacuum use. Compact shape and 3 types of piping connections allow for versatile use.		●	-	● (1000)	● (100)	● (-101.3)	-	-	-	IP65 equivalent	● (2-wire) (1)	-	-	-	Air Non-corrosive Gas	-	-	-	-	●	●	●	-	-	-	-	●					
Semiconductor pressure sensor developed for pneumatic and vacuum use. Outputs 1 to 5 V (analog output) proportional to the applied pressure.		●	-	● (1000)	● (100)	●	-	-	-	IP65 equivalent	-	-	● (1)	-	Air Non-corrosive Gas	-	-	-	-	●	●	●	-	-	-	-	● (Energized display only)					
Semiconductor pressure sensor for pneumatic and vacuum pressure. Outputs 1 to 5 V (analog output) proportional to the applied pressure. Can be connected to compact equipment such as pneumatic valves for output confirmation, etc.		●	-	● (1000)		●	-	-	-	Dust-proof	-	-	● (1)	-	Compressed Air	-	-	-	-	-	-	●	●	-	-	-	●					
A Regulators-dedicated Digital Pressure Sensors that allows simultaneous confirmation of the pressure's [present value] and [set value] with dual displays, 3-color display, locking function and energy saving mode function		●	-	● (1000)	-	-	-	-	-	IP40	● (1)	● (1)	-	-	Compressed Air	●	-	-	-	-	-	-	-	-	-	●	-					

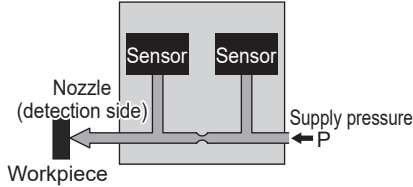
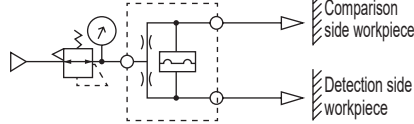
Sensors/Controllers [R4-008AA]

Air Sensor

Classification and Use of Air Sensors

Air sensors consist of a detection nozzle and an air-to-electric converter (or air-to-air converter). The basic principle is to blow detection air onto the workpiece and convert the generated back pressure into an electrical signal with an air-to-electric converter. Since the detection nozzle is an air outlet hole, the nozzle can be formed by drilling, allowing for a compact design. Various air sensors are available, so please use the one that best suits your application.

• Detection Method

Pressure Detection	Bridge Detection
The pressure sensors before and after the orifice are used to convert the value into a clearance value (reference value) for output. 	In this method, the supply air is branched into two circuits, each with a sensor nozzle, and the back pressure difference between the two is compared. Even if the supply pressure fluctuates, the magnitude relationship between the two back pressures remains unchanged. This is an extremely stable detection method. 

For Air

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Features	Model No.	Appearance	Detection Distance (mm)	Detection nozzle (φ)	Detection Mechanism	Output Type		Click here for detailed specifications	
							NPN/PNP	IO-Link	Catalog Name [No]	WEB
Seating Confirmation Switch	• Digital Display • High-precision 2-point output • High maintainability Pressure Method Pressure Detection	Single Unit GPS3-E Unit UGPS3-E Manifold MGPS3-E		0.02 to 0.15	1.5 Standard	Pressure Sensor	●	●	Sensors/Controllers [RJ-008AA]	
		Single Unit GPS3 Unit UGPS3 Manifold MGPS3		0.03 to 0.4		Pressure Sensor	●	●		
		Single Unit GPS2-5 Unit UGPS2-5 Manifold MGPS2-5		0.03 to 0.25		Diaphragm + proximity switch (NPN/PNP)	●			
	• By dial One-touch adjustment (Step setting) (Master gauge not required) Pressure Method Bridge Detection	Single Unit GPS2-7 Unit UGPS2-7 Manifold MGPS2-7		0.03 to 0.4		Diaphragm + proximity switch (NPN/PNP)	●			

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Type	Features	Model No.	Appearance	Detection Distance (mm)	Detection nozzle (φ)	Detection Mechanism	Output Type	Click here for detailed specifications	
								Catalog Name [No]	WEB
Seating Confirmation Switch	• By high-precision needle Stepless adjustment • Extended detection distance by combination with back pressure nozzle Pressure Method Bridge Detection	Single Unit HPS-05 Unit UHPS-05 Manifold MHPS-05		0.01 to 0.2	1.5 Standard (φ1 to 2) back pressure nozzle	Diaphragm + proximity switch (NPN/PNP)	●	Sensors/Controllers [RJ-008AA]	
		Single Unit HPS-07 Unit UHPS-07 Manifold MHPS-07		0.02 to 0.3			●		
		Single Unit HPS-10 Unit UHPS-10 Manifold MHPS-10		0.05 to 0.7			●		
		HPS-05 + Back Pressure Nozzle		0.1 to 3.0			●		
Tool Breakage Detection Switch	• Air sensor that detects drill and tap breakage or loss on metal processing lines non-contact, even during rotation Pressure Method Bridge Detection	Single Unit TLPS Unit UTLPS Manifold MTLPS		Detected tool diameter φ0.3 to 30	Opposed nozzle		●		

For Coolant

Type	Features	Model No./ Appearance	Applicable Fluid				Pressure adjusting range (MPa)	Sensor/ Amplifier	Mounting method	Indicator	Output Type	Click here for detailed specifications	
			Coolant	Non-corrosive Liquid	Air	Gas						Catalog Name [No]	WEB
Pressure Switch	Low/high pressure switch suitable for coolant fluid. The diaphragm structure of the pressure-receiving part ensures excellent safety, and it can be used for checking the coolant pressure of machine tools, as well as the hydraulic pressure of various industrial machines.	CPE 	Separate Type	✓	✓	✓	0.05 to 0.8			●	NPN	Sensors/Controllers [RJ-008AA]	
		CPD 	Integrated Type	✓	✓		0 to 7		1/4 downward outlet	●			

Flow Sensor

For Gas

* For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).
* For details on series for specific applications, refer to P. 451.

Type	Features	Series/Appearance	Applicable Fluid	Body Material		Model No.		Flow Rate Range L/min	Connection Port Size		Operating Pressure Range MPa (Gauge pressure)	Specifications details here		Series for Specific Applications	
				Resin	Stainless Steel				Catalog Name [No]	WEB		Rechargeable Battery	Clean		
								* When flow is bidirectional	ø	Rc, G, NPT					
Compact Flow Controller Rapiflow	In addition to conventional high accuracy and high response, this compact gas type is easy to use, with one unit capable of measuring five types of gases and offering a wide variety of fitting variations.	LCD Type FSM3-L IO-Link Type FSM3-C Bar Display Type FSM3-B Environmentally Resistant Specification (IP65)	Air *1 Nitrogen Gas Carbon Dioxide Gas Argon Mixed gas (Argon + Carbon dioxide gas) Oxygen	●	●	FSM3-L/B/C005		Resin 4/6/1/4	Resin Rc1/8 SUS 1/8 1/4 inch *2	-0.09 to 0.75 *3	Sensors/Controllers [RJ-008AA]		●	●	
						FSM3-L/B/C010									
						FSM3-L/B/C020									
						FSM3-L/B/C050									
						FSM3-L/B/C100									
						FSM3-L/B/C200									
						FSM3-L/B/C500									
						FSM3-L/B/C101									
						FSM3-L/B/C201									
						FSM3-L/B/C501									
						FSM3-L/B/C102									
						Ultra-Compact Flow Switch Rapiflow									Ultra-compact flow switch with limited functions for equipment integration. Recommended for vacuum confirmation of electronic components, etc.
FSM-X-AF010															
FSM-X-AF050															
FSM-X-AF100															
FSM-X-AR005															
FSM-X-AR010															
Ultra-compact flow sensor with a high-speed response of 5 ms. Recommended for vacuum confirmation of electronic components, etc.	FSM-V	Air *1 Nitrogen Gas	●	●	FSM-V-A/N/P□3-R0005			ø1/8/4/4 (L-type) M5	-0.09 to 0.2	●					
					FSM-V-A/N/P□3-R0010										
					FSM-V-A/N/P□3-R0050										
					FSM-V-A/N/P□3-R0100										
					FSM-V-A/N/P□3-R0500										
					FSM-V-A/N/P□3-R1000										

*2: Double ferrule fitting, JXR male fitting *3: SUS body type (Flow rate range: 0.5 L/min to 200 L/min) is -0.09 to 1.0 MPa.

Type	Features	Series/Appearance	Applicable Fluid	Body Material	Model No.		Flow Rate Range L/min (normal)	Port Size (Rc)	Click here for detailed specifications	
									Catalog Name [No]	WEB
Flow Sensor Fleurex	Large flow type for compressed air that can confirm a maximum of 16000 L/min (normal).	PFD	Compressed Air Nitrogen Gas *1	Aluminum alloy	PFD-501		3/8	Sensors/Controllers [RJ-008AA]		
					PFD-102 PFD-202 PFD-402 PFD-802 PFD-163					

*1: Clean air (ISO 8573-1:2010), compressed air (ISO 8573-1:2010) [1:1:1 to 1:6:2]

Ultra-Compact Inline Filter

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Series/Appearance	Applicable Fluid	Applicable Tube Dia.	Recommended flow rate L/min	Click here for specifications
FSM-VFM-□□ FSM / FSM-V Series dedicated filter	Clean Air Compressed Air *1	Ø1.8 (Air Fiber) Ø4 (One-touch) Port size M5	10 *2	

*1: Clean air (ISO 8573-1:2010), compressed air (ISO 8573-1:2010) [1:1:1 to 1:6:2]

*2: If the flow rate exceeds 10 L/min, the pressure loss will increase, so please use at 10 L/min or less.

Multi Monitor

Series/Appearance	Compatible sensor ^{Note}	Specifications details here
MD 	FSM-V 	

^{Note} Compatible sensors are voltage output (1-5 V).

Separate Display Unit

Series/Appearance	Click here for detailed specifications	Series/Appearance	Click here for detailed specifications
FSM2-D 		FSM-V-D 	

Flow Sensor

For Liquid

* For details, please see "Model No." on the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>).

Type	Features	Series/Appearance	Applicable Fluid		Model No.		Flow Rate Range L/min	Port Size Rc/G/NPT	Click here for detailed specifications	
			Water	Liquids that do not corrode wetted parts materials					Catalog Name [No]	WEB
Karman Vortex Flow Sensor Fleurex	Liquid temperature measurement function as standard equipment. Fluorine-based fluid compatible models and cock/needle types that allow for easy flow rate adjustment are also available.	WFK2  Optional Specifications Cock Type  Needle Type 	✓		WFK2-005		0.4 to 5	3/8 1/2 3/4	Sensors/Controllers [RJ-008AA]	 Click!
					WFK2-020		1.6 to 20			
					WFK2-050		4 to 50			
					WFK2-100		8 to 100	1 1 1/4 1 1/2		
					WFK2-250		20 to 250			
Capacitance Type Electromagnetic Flow Sensor	Through structure that reduces problems caused by foreign matter. Liquid temperature measurement function is also available as an option.	WFC 	✓	✓	WFC-150		0.5 to 15	3/8 1/2 3/4		 Click!
					WFC-600		2.0 to 60			
Karman Vortex Flow Sensor for Water Fleurex	Highly reliable Karman vortex type Available in a wide variety of easy-to-design sizes and can be set with simple operations.	WFK3000 	✓		WFK3004S/M/C		0.5 to 4	Rc 3/8 1/2		 Click!
					WFK3012S/M/C		1.5 to 12			
					WFK3032S/M/C		4 to 32			
					WFK3060S/M/C		8.0 to 60	Rc 3/4 1		

Multi Monitor

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Features	Series/Appearance	Compatible sensor *	Specifications details here	
				Catalog Name [No]	WEB
Multi Monitor	A monitor with a 3-color display that allows you to check the displayed value even from a remote location.	MD 	WFK3000 WFC 	Sensors/Controllers [RJ-008AA]	 Click!

* Compatible sensors are voltage output (1-5 V).

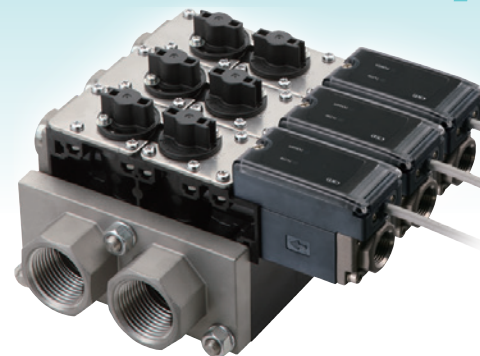
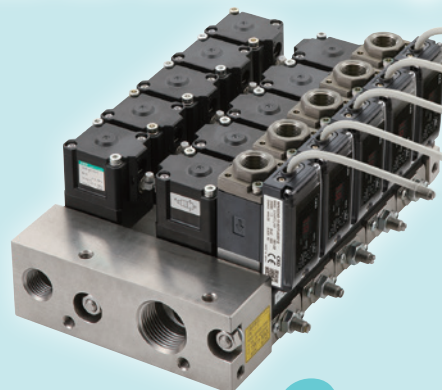
Water Collection Unit

WXU Series

A new era of water control
A wide variety of water control equipment,
all-in-one in a space-saving design.

No piping!
Footprint is
80% less

Compact

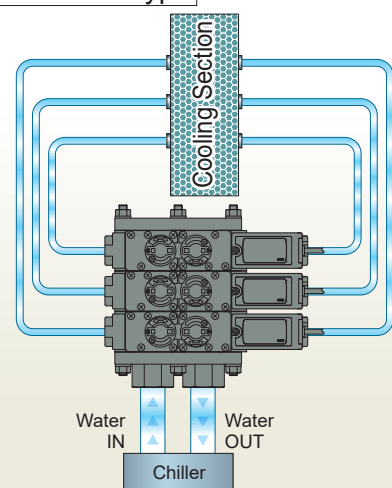


- ▶ No more individual piping work
- ▶ Reduced pipe leakage
- ▶ Minimized design and arrangement work

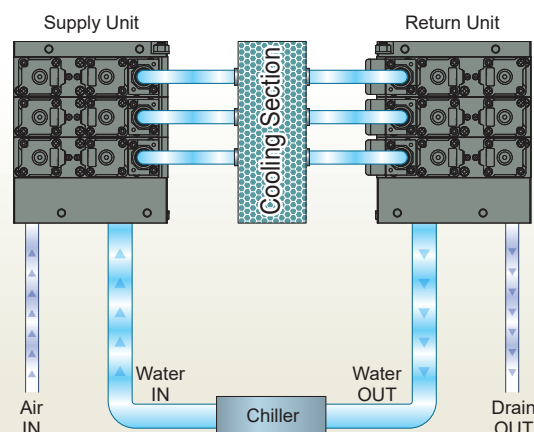
System image

Fluid is branched into individual pipes within the unit.

1-Fluid Control Type



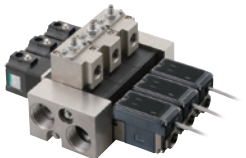
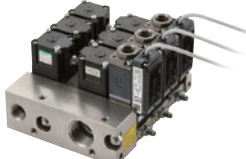
2-Fluid Control Type



Flow Sensor

For Liquid

* For details, refer to CKD components product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Series/Appearance	Applicable Fluid	Flow Rate Range L/min	Click here for detailed specifications	
				Catalog Name [No]	WEB
1- fluid control	WXU-H 	Water, hot water	0.5 to 32	Sensors/Controllers [RJ-008AA]	 Click!
	WXU-HC 	Water, hot water			
	WXU-J 	Water, hot water			
2- fluid control	WXU-P 	Water, hot water, air			

Application

LCD Semiconductor Vacuum Deposition Equipment



WXU-P/H

Spot Welding Equipment



WXU-HC

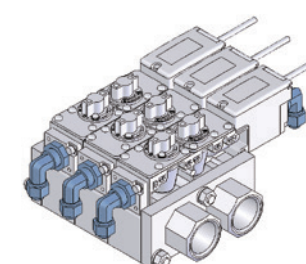
Casting



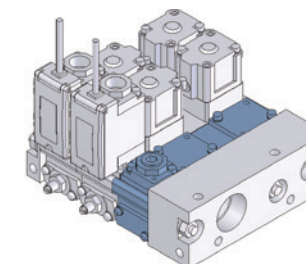
WXU-P/J/H

Customization example

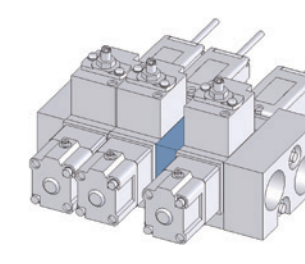
Units can be manufactured to suit your needs.



With fittings



Masking



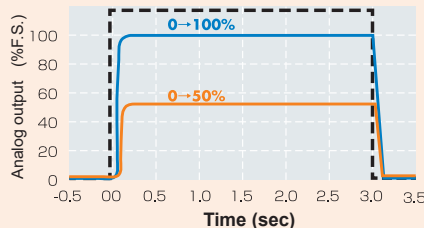
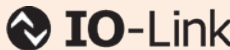
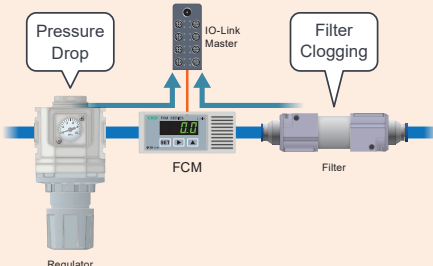
Intermediate block

- Separately installed display [sensor part]
- Analog + SW output [sensor part]
- Branched (WXU-P)
- Without cylinder valve (WXU-J)

Compact Flow Controller Rapiflow®

For Gas

* For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).

Features	Series/Appearance	Applicable Fluid	Model No.	Flow Control Range L/min						Connection Port Size	Click here for detailed specifications	
				0.01	0.1	1	10	100	Catalog Name [No]		WEB	
Equipped with a digital display that shows the control status at a glance. Flow rate value is displayed digitally in 3 digits. In addition to error display, output status (switch output ON-OFF) is displayed. Output Display 3-digit LED Display  0.5 second high-speed control Adoption of a platinum sensor chip using silicon micro-machining enables high-speed control of 0.5 sec. Input Signal  High-reliability flow control Repeatability: ±1% F.S. Accuracy: ±3% F.S. RS-485 communication added Compatible with highly reliable RS-485 for industrial network communication. IO-Link compatible In addition to data collection, remote operation from a host is possible via IO-Link communication.  System Anomaly Detection (Predictive Maintenance) In addition to self-detection that detects deterioration of the sensor and electromagnetic proportional valve, it also detects abnormalities including the peripheral system. Warning signal can be output via IO-Link. 	FCM-□□□□AI Resin  SUS 	Air Nitrogen	FCM-9500AI		0.015 to 0.5				Resin ø 6 Push-in ø8 one-touch SUS Rc1/4 9/16-18 UNF	Sensors/Controllers [RJ-008AA]	 Click!	
FCM-0001AI			0.03 to 1									
FCM-0002AI			0.06 to 2									
FCM-0005AI			0.15 to 5									
FCM-0010AI			0.3 to 10									
FCM-0020AI			0.6 to 20									
FCM-0050AI			1.5 to 50									
FCM-0100AI (Resin type only)			3.0 to 100									
FCM-□□□□AR SUS 	Argon	FCM-9500AR		0.015 to 0.5				SUS Rc1/4 9/16-18 UNF				
FCM-0001AR			0.03 to 1									
FCM-0002AR			0.06 to 2									
FCM-0005AR			0.15 to 5									
FCM-0010AR			0.3 to 10									
FCM-0020AR			0.6 to 20									
FCM-0050AR		1.5 to 50										
FCM-□□□□O2/LN/C1/C3 SUS 	Oxygen City Gas Methane Propane	FCM-9500O2/LN/C1/C3		0.015 to 0.5				SUS Rc1/4 9/16-18 UNF				
FCM-0001O2/LN/C1/C3			0.03 to 1									
FCM-0002O2/LN/C1/C3			0.06 to 2									
FCM-0005O2/LN/C1/C3			0.15 to 5									
FCM-0010O2/LN/C1/C3			0.3 to 10									
FCM-□□□□H2/HE SUS 	Hydrogen Helium	FCM-0002H2/HE		0.06 to 2				SUS Rc1/4 9/16-18 UNF 1/4 inch Double ferrule fitting 1/4 inch JXR Male Fitting				
FCM-0005H2/HE			0.15 to 5									
FCM-0010H2/HE			0.3 to 10									
FCM-0020H2/HE			0.6 to 20									

Product Category		Specific Applications	
Actuators, Pneumatic Cylinders	P. 3	High Durability Components HP Series	P. 453
Actuators, Electric Actuators	P. 78	For Food Manufacturing Processes FP Series	P. 461
Directional Control Valve	P. 111	For Outdoor Use WP Series	P. 467
Air Preparation and Pressure Control Components	P. 151	For Rechargeable Battery Manufacturing Processes P4 Series	P. 471
Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubes	P. 229	For Clean Components P5/P7 Series	P. 477
Sensors/Controllers	P. 263	Other P12/P8/P9/P11/P6 (oil-restricted/ozone-proof/copper ion-proof)	P. 481
Main Line Components/Nitrogen Gas Generators			
Precision Components	P. 311		
Vacuum Components	P. 327		
Fluid Control Valves	P. 343		
Fine System Components (For Pure Water, Chemicals, Process Gas)	P. 427		
Software	P. 443		

Main Line Components Recommended System Configuration P. 281

Search by Product System P. 293

Main Line Components Recommended System Configuration

Main Line Filter Recommended System Configuration P. 281

- Medium Size Main Line Filters
- Large Main Line Filter

Select from Applicable Compressors P. 285

- Refrigerated Air Dryer
- Desiccant Air Dryer (heatless dryer)
- High Polymer Membrane Air Dryer (Super Dryer)

Search by Product System

Gas Generators P. 293

Membrane Nitrogen Generator NSU, NS, PNA

Air Dryers P. 295

- Air Dryer list
- Refrigerated Air Dryer GX/GT
- Desiccant Air Dryer (heatless dryer) HD/SHD
- Manual Air Dryer (desiccant) 4001 / 4002
- High Polymer Membrane Air Dryer (Super Dryer) SU / SD / SDM

Moisture Indicator P. 300

6119

Main Line Filters P. 303

- Main Line Filter list
- Medium Air Filters AF2, AF4000
- Large Air Filters AF3000, AF5000

Drain Ejector P. 309

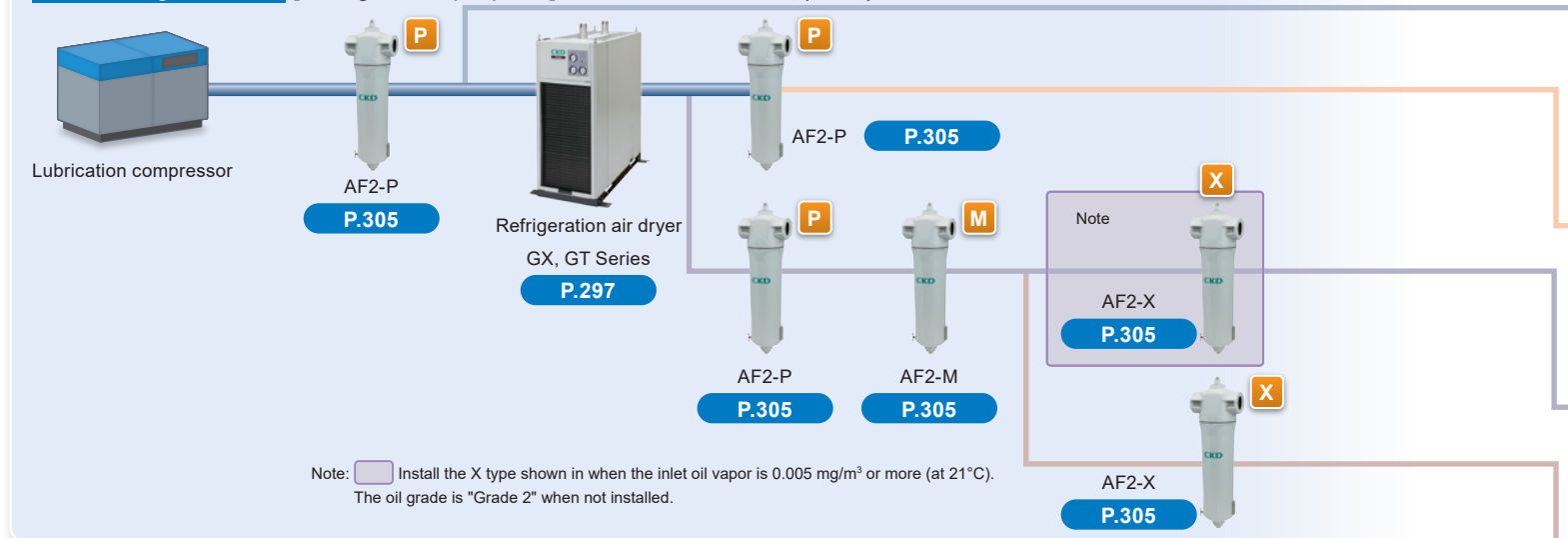
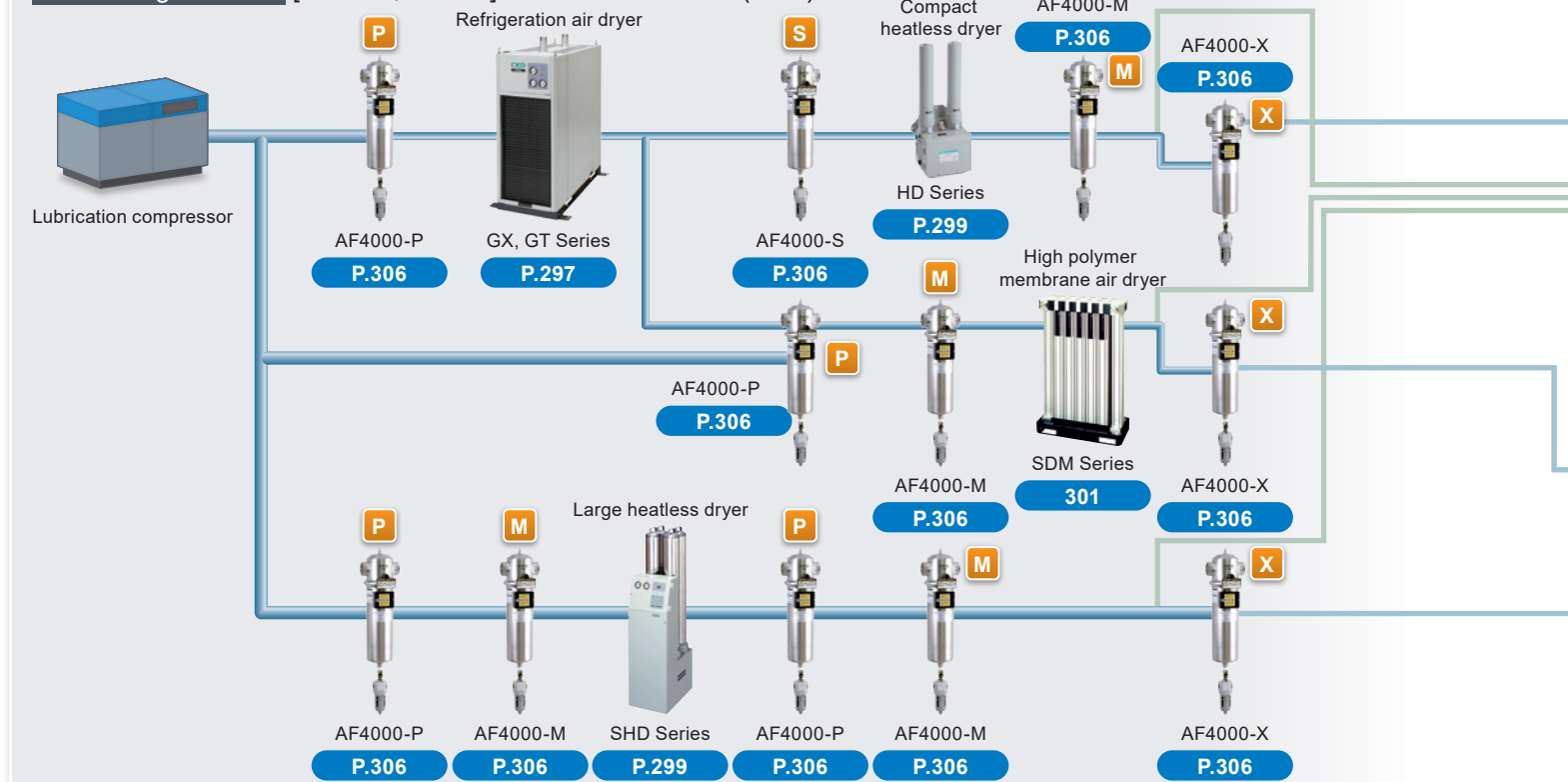
Drain Ejector DT, 5100, DB

Related Components P. 310

Portable Air Supply Unit ASU

Main Line Filter Components Recommended System Configuration

Medium Size Main Line

Processing flow rate [AF2 general purpose] 4.95 to 24.1 m³/min (ANR)Processing flow rate [AF4000, oil-free] 3.70 to 18.8 m³/min (ANR)

AF2 Series variation

Removal of oil mist
Removal of solids

Protects expensive pneumatic components

- Removal of particles 1 µm and larger
- Oil content up to a concentration of 0.3 mg/m³ (21°C) is removed from the oil content on the secondary side



P TYPE

Highly efficient removal of oil mist
Highly efficient removal of solids

For pneumatic circuits which prohibit passage of oil.

- Removal of particles 0.01 µm and larger
- Oil content up to a concentration of 0.03 mg/m³ (21°C) is removed from the oil content on the secondary side



M TYPE

Removal of oil mist
Deodorizer

Protects expensive pneumatic components

- Suction by activated carbon
- Vaporized oil content up to a concentration of 0.003 mg/m³ (21°C) and odor are removed from the secondary oil content



X TYPE

*1: If your conditions are different, refer to the specifications in the catalog in order to select a model.
*2: This example of system selection is based on an air-cooling refrigerated air dryer. When making a selection based on an air-cooling refrigerated air dryer, since the standard processing air flow rate may differ, the model No. of the filter may vary. Contact CKD Sales for details.
*3: Air Filters and oil mist filter are to be used where the inlet air temperature is 60°C or less, and X type where the inlet air temperature is 30°C or less. If air temperature from the secondary side of the refrigeration air dryer is high, keep enough distance from the refrigeration air dryer to maintain a temperature no greater than the inlet air temperature.

AF4000 Series variation

Removal of water drops
Removal of solids

For air dryer pre-filters

- Removal of particles 5 µm and larger
- Water separation efficiency 99%



P TYPE

Filter
Removal of solids

Protects expensive pneumatic components

- Removal of particles 1 µm and larger



S TYPE

Highly efficient removal of oil contents (oil mist)

Highly efficient removal of solids
For pneumatic circuits which prohibit passage of oil

- Removal of particles 0.01 µm and larger
- Oil content up to a concentration of 0.3 mg/m³ (21°C) is removed from the oil content on the secondary side



M TYPE

Removal of oil vapor
Deodorizer

For pneumatic circuits which prohibit passage of oil

- Suction by activated carbon
- Vaporized oil content up to a concentration of 0.003 mg/m³ (21°C) and odors are removed from the secondary oil content



X TYPE

*4: This system cannot be used for high pressure specifications (1 to 1.6 MPa). Contact CKD Sales for details.
*5: Use anti-rust processed materials for piping (zinc plated pipe, lined pipe or stainless steel pipe).
*6: If a processing air flow rate larger than the refrigerated air dryer supplies could be used instantaneously, install a tank to the secondary side of the refrigerated air dryer. Installing a tank supplies stable moisture removed air.
*7: The Air Filters at the secondary side of the refrigeration air dryer can be used as a pre-filter before an oil mist filter.
*8: Depending on working conditions, condensation may form on the inside of the refrigeration air dryer and drip to the floor. To prevent water drops from flowing out, install a drain-pan, etc., before installing the dryer.

Air quality	Applications	Impurities in air			Compressed Air Purity Class according to ISO 8573-1
		Solid Particles	Moisture	Oil content	
Removal of water drops Coarse dust removed air	Air for cleaning (dry air not required)	1 µm	-	-	2: -: -
General dry air	General pneumatic components General pneumatic tools Labor saving components Pneumatic jigs and tools Air chuck	1 µm	Pressure dew point 10°C	0.6 mg/m ³	2.6.3
			Pressure dew point 7°C		2.5.3
Dry air (oil-free)	Instrumentation Measurement Sequence control Painting	0.01 µm	Pressure dew point 10°C	0.01 mg/m ³ (0.003 mg/m ³)	1.6.1
			Pressure dew point 7°C		1.5.1
Dry air (odorless)	Food/pharmaceutical process (stirring/drying blow/package/brewing/ pressure feeding/filling) Cosmetic manufacturing process * If making direct contact with the workpiece, we recommend installing a bacteria- removing filter.	0.01 µm	Pressure dew point 10°C	0.003 mg/m ³	1.6.1
			Pressure dew point 7°C		1.5.1
Ultra dry air (oil-free)	Ozone generator Powder transport Drying of furnace atmosphere gas Drying of insulating gas for high-voltage generators Drying for computer rooms For centralized control instrumentation LCD panel manufacturing Chemical plant Painting	0.01 µm	Pressure dew point -20°C	0.01 mg/m ³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1
Ultra dry air (odorless)	Food/pharmaceutical process (stirring/drying blow/package/brewing/ pressure feeding/filling) Cosmetic manufacturing process * If making direct contact with the workpiece, we recommend installing a bacteria-removing filter.	0.01 µm	Pressure dew point -20°C	0.003 mg/m ³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1

*1: The System No. value is based on the classes in the table below.
X in the table indicates Deodorizer. "-" indicates no specification.

ISO 8573-1: 2010 Compressed air purity grade

Grade	Solid particles			Humidity and water content		Oil	
	Max. number of particles per 1 m³ for particle diameter d (µm)			Mass concentration Cpmg/m³	Pressure dew point °C	Water concentration Cwg/m³	Total oil concentration mg/m³
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0				
0	Conditions stricter than Grade 1 to be specified by user or supplier						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	≤ 0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	≤ 0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	≤ 1
4	-	-	≤ 10,000	-	≤ +3	-	≤ 5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5	-
8	-	-	-	-	-	0.5 < Cw ≤ 5	-
9	-	-	-	-	-	5 < Cw ≤ 10	-
X	-	-	-	Cp > 10	-	Cw > 10	> 5

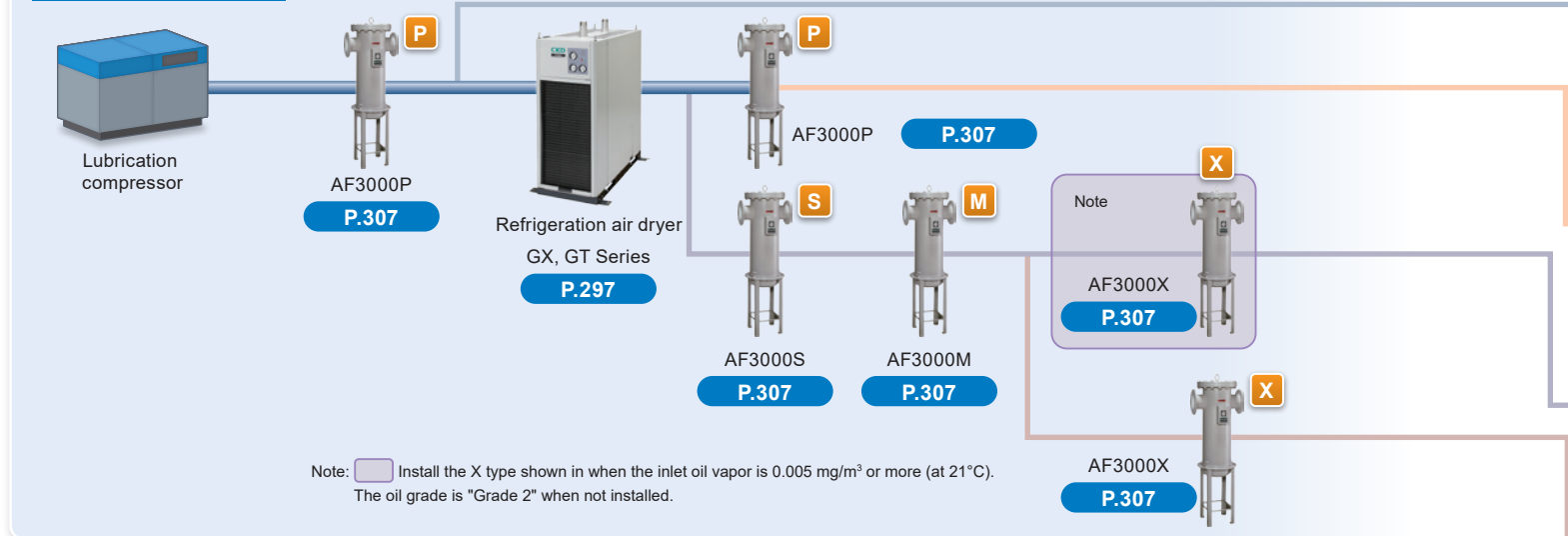
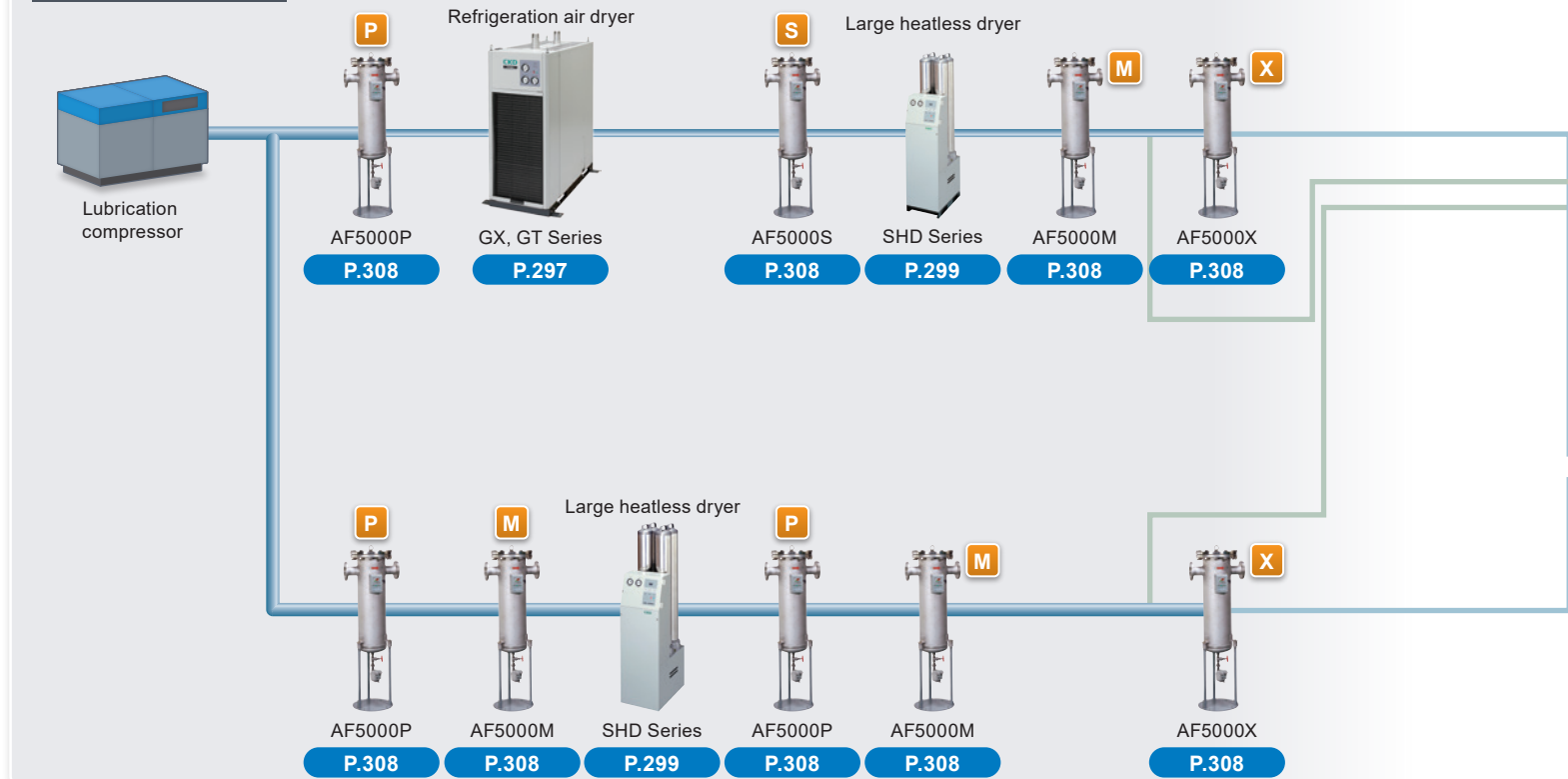
*9: Please feel free to contact our sales representatives when considering an energy-saving system.
*10: Install a filter immediately before the components to be used to remove contaminants existing in the piping.

For example, "Grade 1:2:1" means:

- Solid particles:
0.1 to 0.5 µm are 20,000 particles or less, 0.5 to 1.0 µm are 400 particles or less, and 1.0 to 5.0 µm are 10 particles or less
 - Pressure dew point: -40°C or less
 - Oil concentration: 0.01 mg/m³ or less
- indicates such classes.

Main Line Filter Components Recommended System Configuration

Large Main Line Filter

Processing flow rate [AF3000 general purpose] 16 to 256 m³/min (ANR)Processing flow rate [AF5000 oil-free] 16 to 256 m³/min (ANR)

Main Line Filters

Pre-filter

For air dryer pre-filters

- Removal of particles 3 μm and larger
- Water separation efficiency 95%

**P TYPE**

Oil Mist Filter

Oil removing filter

Protects expensive pneumatic components

- Removal of particles 0.3 μm and larger
- Secondary oil content up to 0.5 mg/m³ is removed (at 21°C)

**S TYPE**

High-performance oil removing filter

For pneumatic circuits which prohibit passage of oil

- Removes contaminants 0.01 μm or larger
- Outlet oil concentration of 0.003 mg/m³ (at 21°C); also removes oil vapor and odors.

**M TYPE**

Activated carbon filter

For pneumatic circuits which prohibit passage of oil

- Suction by activated carbon
- Outlet oil concentration of 0.003 mg/m³ (at 21°C); also removes oil vapor and odors.

**X TYPE**

*1: If your conditions are different, refer to the specifications in the catalog in order to select a model.

*2: This example of system selection is based on an air-cooling refrigerated air dryer. When making a selection based on an air-cooling refrigeration air dryer, since the standard processing air flow rate may differ, the model No. of the filter may vary. Contact CKD Sales for details.

*3: Air Filters and oil mist filter are to be used where the inlet air temperature is 60°C or less, and X type where the inlet air temperature is 30°C or less. If air temperature from the secondary side of the refrigeration air dryer is high, keep enough distance from the refrigeration air dryer to maintain a temperature no greater than the inlet air temperature.

*4: This system cannot be used for high pressure specifications (1 to 1.6 MPa). Contact CKD Sales for details.

*5: Use anti-rust processed materials for piping (zinc plated pipe, lined pipe or stainless steel pipe).

*6: If a processing air flow rate larger than the refrigerated air dryer supplies could be used instantaneously, install a tank to the secondary side of the refrigerated air dryer. Installing a tank supplies stable moisture removed air.

*7: The Air Filters at the secondary side of the refrigeration air dryer can be used as a pre-filter before an oil mist filter.

Air quality	Applications	Impurities in air			Compressed Air Purity Class according to ISO 8573-1
		Solid Particles	Moisture	Oil content	
Removal of water drops Coarse dust removed air	Air for cleaning (dry air not required)	3 μm	-	-	4:-:-
General dry air	General pneumatic components General pneumatic tools Labor saving components Pneumatic jigs and tools Air chuck	3 μm	Pressure dew point 10°C	0.5 mg/m ³	4:6:3
			Pressure dew point 7°C		4:5:3
Dry air (oil-free)	Instrumentation Measurement Sequence control Painting	0.01 μm	Pressure dew point 10°C	0.01 mg/m ³ (0.003 mg/m ³)	1.6.1
			Pressure dew point 7°C		1.5.1
Dry air (odorless)	Food/pharmaceutical process (stirring/drying blow/package/brewing/ pressure feeding/filling) Cosmetic manufacturing process * If making direct contact with the workpiece, we recommend installing a bacteria- removing filter.	0.01 μm	Pressure dew point 10°C	0.003 mg/m ³	1.6.1
			Pressure dew point 7°C		1.5.1
Ultra dry air (oil-free)	Ozone generator Powder transport Drying of furnace atmosphere gas Drying of insulating gas for high- voltage generators Drying for computer rooms For centralized control instrumentation LCD panel manufacturing Chemical plant Painting	0.01 μm	Pressure dew point -20°C	0.01 mg/m ³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1
Ultra dry air (odorless)	Food/pharmaceutical process (stirring/drying blow/package/brewing/ pressure feeding/filling) Cosmetic manufacturing process * If making direct contact with the workpiece, we recommend installing a bacteria-removing filter.	0.01 μm	Pressure dew point -20°C	0.003 mg/m ³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1

*1. The System No. value is based on the classes in the table below.

X in the table indicates Deodorizer. "-" indicates no specification.

ISO 8573-1: 2010 Compressed air purity grade

Grade	Solid particles			Humidity and water content		Oil	
	Max. number of particles per 1 m³ for particle diameter d (µm)			Mass concentration Cprng/m³	Pressure dew point °C	Water concentration Cwg/m³	Total oil concentration mg/m³
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0				
0	Conditions stricter than Grade 1 to be specified by user or supplier						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	≤ 0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	≤ 0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	≤ 1
4	-	-	≤ 10,000	-	≤ +3	-	≤ 5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5	-
8	-	-	-	-	-	0.5 < Cw ≤ 5	-
9	-	-	-	-	-	5 < Cw ≤ 10	-
X	-	-	-	Cp > 10	-	Cw > 10	> 5

*8: Depending on working conditions, condensation may form on the inside of the refrigeration air dryer and drip to the floor. To prevent water drops from flowing out, install a drain-pan, etc., before installing the dryer.

*9: Please feel free to contact our sales representatives when considering an energy-saving system.

*10: Install a filter immediately before the components to be used to remove contaminants existing in the piping.

For example, "Grade 1:2:1" means:

● Solid particles:

0.1 to 0.5 μm are 20,000 particles or less,
0.5 to 1.0 μm are 400 particles or less,
and 1.0 to 5.0 μm are 10 particles or less

● Pressure dew point: -40°C or less

● Oil concentration: 0.01 mg/m³ or less
indicates such classes.

Select from applicable compressors

Refrigerated Air Dryer

Compressor	Standard processing air flow rate m³/min (ANR) 50/60Hz	Refrigerated Air Dryer			Main Line Filters		Micro-coalescer		
		GX Series	GT Series	Water cooling series			S type Oil Mist Removal (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)
		Pressure dew point 10°C							
Up to 0.75 (-1)	0.10/0.11	GX3203D GX5203D	-	-	F2000-10-W-F1 (5 µm)		M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M2000-10-W-X
1.5 (2)	0.20/0.22	GX3203D GX5203D	-	-	F2000-10-W-F1 (5 µm)		M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M2000-10-W-X
2.2 (3)	0.30/0.35	GX3203D GX5203D	-	-	F3000-10-W-F (5 µm)		M3000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M4000-10-W-X
3.7 (5)	0.40/0.52	GX3206D GX5204D	-	-	F3000-10-W-F (5 µm)		M4000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M6000-20-W-X
5.5 (7.5)	0.64/0.72	GX3206D GX5206D	-	-	F4000-15-W-F (5 µm)		M4000-15-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M6000-20-W-X
7.5 (10)	1.22/1.32	GX3208D GX5208D	-	-	F6000-20-W-F (5 µm)		M6000-20-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M8000-20-W-X
11 (15)	1.65/1.82	GX3211D GX5211D	-	-	F8000-25-W-F (5 µm)		M8000-25-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M8000-25-W-X

Compressor	Standard processing air flow rate m³/min (ANR) 50/60Hz	Refrigerated Air Dryer			Main Line Filters	Micro-coalescer		Main Line Filters	Micro-coalescer	Micro-coalescer			
		GX Series	GT Series	Water cooling series	General purpose			Oil-free		General purpose		Oil-free	
					P type Water / Solid removal (Degree of filtration)	S type Oil Mist Re- moval (Degree of filtration)		P type Water / Solid removal (Degree of filtration)	S type Oil Mist Removal (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)
15 (20)	2.40/2.80	GX3215D GX5215D	-	-	AF2-05P25A (1 µm)			AF4004P-25 (5 µm)	AF4004S-25 (1 µm)	AF2-05M25A (0.01 µm)	AF2-05X25A	AF4004M-25 (0.01 µm)	AF4004X-25
22 (30)	3.70/4.20	GX3222D GX5222D	-	-	AF2-08P40A (1 µm)			AF4007P-40 (5 µm)	AF4007S-40 (1 µm)	AF2-08M40A (0.01 µm)	AF2-08X40A	AF4007M-40 (0.01 µm)	AF4007X-40
37 (50)	5.70/6.10	GX3237D GX5237D	-	-	AF2-11P40A (1 µm)			AF4010P-40 (5 µm)	AF4010-S-40 (1 µm)	AF2-08M40A (0.01 µm)	AF2-08X40A	AF4010M-40 (0.01 µm)	AF4010X-40
55 (75)	8.40/9.80	GX3255D GX5255D	-	-	AF2-13P50A (1 µm)			AF4013P-50 (5 µm)	AF4013S-40 (1 µm)	AF2-13M50A (0.01 µm)	AF2-13X50A	AF4013M-50 (0.01 µm)	AF4013X-50
75 (100)	11.4/12.6	GX5275D	GT9075D	GT9075WD	AF2-20P50A (1 µm)			AF4020P-50 (5 µm) AF5016P-50 (3 µm)	AF4020S-50 (1 µm) AF5016P-50 (0.3 µm)	AF2-20M50A AF3016M-50 (0.01 µm)	AF2-20X50A AF3016X-50	AF4020M-50 AF5016M-50 (0.01 µm)	AF4020X-50 AF5016X-50
					AF2-20P50A (1 µm)								
90 (120)	16.3/18.9	-	GT9090D	GT9090WD	AF2-20P50A (1 µm)			AF5032P-80 (3 µm)	AF4020S-50 (1 µm) AF5016P-50 (0.3 µm)	AF2-20M50A (0.01 µm)	AF2-20X50A	AF4020M-50 AF5032M-80 (0.01 µm)	AF4020X-50 AF5032X-80
					AF3032P-80 (3 µm)		AF302S-80 (0.3 µm)						
120 (160)	20.8/23.8	-	GT9120D	GT9120WD	AF2-24P65A (1 µm)			AF5032P-80 (3 µm)	(1 µm)AF5016P-50 (0.3 µm)	AF2-24M65A AF3032M-80 (0.01 µm)	AF2-24X65A AF3032X-80	AF5032M-80 (0.01 µm)	AF5032X-80
					AF3032P-80 (3 µm)		AF3032S-80 (0.3 µm)						
150 (200)	25.9/30.1	-	GT9150D	GT9150WD	AF3032P-80 (3 µm)	AF3032S-80 (0.3 µm)		AF5032P-80 (3 µm)	AF5032S-80 (0.3 µm)	AF3032M-80 (0.01 µm)	AF3032X-80	AF5032M-80 (0.01 µm)	AF5032X-80
190 (250)	32.1/38.1	-	GT9190D	GT9190WD	AF3048P-100 (3 µm)	AF3048S-100 (0.3 µm)		AF5048P-100 (3 µm)	AF5048S-100 (0.3 µm)	AF3048M-100 (0.01 µm)	AF3048X-100	AF5048M-100 (0.01 µm)	AF5048X-100
240 (320)	36.5/43.0	-	GT9240	GT9240W	AF3048P-100 (3 µm)	AF3048S-100 (0.3 µm)		AF5048P-100 (3 µm)	AF5048S-100 (0.3 µm)	AF3048M-100 (0.01 µm)	AF3048X-100	AF5048M-100 (0.01 µm)	AF5048X-100
300 (400)	44.2/52.0	-	GT9300	GT9300W	AF3064P-100 (3 µm)	AF3064S-100 (0.3 µm)		AF5064P-100 (3 µm)	AF5064S-100 (0.3 µm)	AF3064M-100 (0.01 µm)	AF3064X-100	AF5064M-100 (0.01 µm)	AF5064X-100
380 (505)	55.2/65.0	-	GT9380	GT9380W	AF3080P-100 (3 µm)	AF3080S-100 (0.3 µm)		AF5080P-100 (3 µm)	AF5080S-100 (0.3 µm)	AF3080M-100 (0.01 µm)	AF3080X-100	AF5080M-100 (0.01 µm)	AF5080X-100
450 (600)	70.3/82.8	-	GT9450	GT9450W	AF3096P-150 (3 µm)	AF3096S-150 (0.3 µm)		AF5096P-150 (3 µm)	AF5096S-150 (0.3 µm)	AF3096M-150 (0.01 µm)	AF3096X-150	AF5096M-150 (0.01 µm)	AF5096X-150
710 (950)	139.1	-	-	GT9710WV2	AF3160P-200 (3 µm)	AF3160S-200 (0.3 µm)		AF5160P-200 (3 µm)	AF5160S-200 (0.3 µm)	AF3160M-200 (0.01 µm)	AF3160X-200	AF5160M-200 (0.01 µm)	AF5160X-200
960 (1280)	184.2	-	-	GT9960WV2	AF3192P-200 (3 µm)	AF3192S-200 (0.3 µm)		AF5192P-200 (3 µm)	AF5192S-200 (0.3 µm)	AF3192M-200 (0.01 µm)	AF3192X-200	AF5192M-200 (0.01 µm)	AF5192X-200

*1: 1 PS (horsepower) is equivalent to 0.7355 kW, but conventionally expressed as 1 PS = 0.75 kW.
*2: Use this list for a selection guide. Refer to the appropriate catalog for selection, and select a model after checking installation and operating conditions.
*3: AF2 and AF3000 Series use in oil type compressor systems, and AF4000 and AF5000 Series use in oil-free compressor systems.

Select from applicable compressors

Desiccant Air Dryer (heatless dryer)

Compressor	Standard Processed Air Flow Rate m³/ min (ANR) 50/60 Hz	Desiccant Air Dryer					Main Line Filters		Micro-coalescer						
		Compact HD Series			Large SHD Series				S type Oil Mist Removal (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)				
kw (horsepower) *1		Atmospheric dew point -17.5°C	Atmospheric dew point -40°C	Atmospheric dew point -72°C	Pressure dew point -20°C (-40°C)/ *5 -40°C (-57°C)	Pressure dew point -60°C (-74°C) *5	P type Water / Solid removal (Degree of filtration)								
up to 0.4 (0.53)	0.042/0.049	-	-	HD-0.5	-	-	F2000-10-W-F1 (5 μm)		M2000-10-W-F1S (0.3 μm)	M2000-10-W-F1S (0.01 μm)	M2000-10-W-X				
0.75 (-1)	0.10/0.11	HD-0.5	HD-0.5	HD-1	-	-	F2000-10-W-F1 (5 μm)		M2000-10-W-F1S (0.3 μm)	M2000-10-W-F1S (0.01 μm)	M2000-10-W-X				
1.5 (2)	0.20/0.22	HD-1	HD-1	HD-1.5	-	-	F2000-10-W-F1 (5 μm)		M2000-10-W-F1S (0.3 μm)	M2000-10-W-F1S (0.01 μm)	M2000-10-W-X				
2.2 (3)	0.30/0.35	HD-1.5	HD-1.5, -2	HD-2	-	-	F3000-10-W-F (5 μm)		M3000-10-W-F1S (0.3 μm)	M2000-10-W-F1S (0.01 μm)	M4000-10-W-X				
3.7 (5)	0.40/0.52	HD-2	HD-4	HD-4	-	-	F3000-10-W-F (5 μm)		M4000-10-W-F1S (0.3 μm)	M2000-10-W-F1S (0.01 μm)	M6000-20-W-X				
5.5 (7.5)	0.64/0.72	HD-4	-	HD-6	-	-	F4000-15-W-F (5 μm)		M4000-15-W-F1S (0.3 μm)	M6000-20-W-F1 (0.01 μm)	M6000-20-W-X				
7.5 (10)	1.22/1.32	HD-6	HD-6	HD-9	-	-	F6000-20-W-F (5 μm)		M6000-20-W-F1S (0.3 μm)	M2000-10-W-F1S (0.01 μm)	M8000-20-W-X				
11 (15)	1.65/1.82	HD-9	HD-9	-	-	-	F8000-25-W-F (5 μm)		M8000-25-W-F1S (0.3 μm)	M2000-10-W-F1S (0.01 μm)	M8000-25-W-X				
Compressor	Standard Processed Air Flow Rate m³/ min (ANR) 50/60 Hz	Desiccant Air Dryer					Main Line Filters		Micro-coalescer						
		Compact HD Series			Large SHD Series				General purpose	Oil-free		Micro-coalescer			
		Atmospheric dew point -17.5°C	Atmospheric dew point -40°C	Atmospheric dew point -72°C	Pressure dew point -20°C (-40°C)/ *5 -40°C (-57°C)	Pressure dew point -60°C (-74°C) *5				P type Water / Solid removal (Degree of filtration)	S type Oil Mist Removal (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)
15 (20)	2.40/2.80	HD-9	-	-	SHD3025-G/M	SHD3025-M	AF2-05P25A (1 μm)		AF4004P-25 (5 μm)	AF4004S-25 (1 μm)	AF2-05M25A (0.01 μm)	AF2-05X25A	AF4004M-25 (0.01 μm)	AF4004X-25	
22 (30)	3.70/4.20	-	-	-	SHD3045-G/M	SHD3045-M	AF2-08P40A (1 μm)		AF4007P-40 (5 μm)	AF4007S-40 (1 μm)	AF2-08M40A (0.01 μm)	AF2-08X40A	AF4007M-40 (0.01 μm)	AF4007X-40	
37 (50)	5.70/6.10	-	-	-	SHD3075-G/M	SHD3075-M	AF2-11P40A (1 μm)		AF4010P-40 (5 μm)	AF4010-S-40 (1 μm)	AF2-11M40A (0.01 μm)	AF2-11X40A	AF4010M-40 (0.01 μm)	AF4010X-40	
55 (75)	8.40/9.80	-	-	-	SHD3100-G/M	SHD3100-M	AF2-13P50A (1 μm)		AF4010P-40 (5 μm)	AF4010S-40 (1 μm)	AF2-13M50A (0.01 μm)	AF2-13X50A	AF4010M-40 (0.01 μm)	AF4010X-50	
75 (100)	11.4/12.6	-	-	-	SHD3125-G/M SHD3150-G/M	SHD3125-M SHD3150-M	AF2-13P50A AF2-20P50A (1 μm)		AF4013P-50 (5 μm) AF4020S-50 (1 μm)	AF4013S-50 (1 μm) AF4020S-50 (1 μm)	AF2-13M50A AF2-20M50A (0.01 μm)	AF2-13X50A AF2-20X50A	AF4013M-50 AF4020M-50 (0.01 μm)	AF4013X-50 AF4020X-50	
90 (120)	16.3/18.9	-	-	-	SHD3200-G/M	SHD3200-M	AF2-24P65A (1 μm)		AF5032P-80 (3 μm)	AF5016P-50 (0.3 μm)	AF2-24M65A (0.01 μm)	AF2-24X65A	AF5032M-80 (0.01 μm)	AF5032X-80	
120 (160)	20.8/23.8	-	-	-	SHD3240-G/M	SHD3240-M	AF2-24P65A (1 μm)		AF5032P-80 (3 μm)	AF5016P-50 (0.3 μm)	AF2-24M65A AF3032M-80 (0.01 μm)	AF2-24X65A AF3032X-80	AF5032M-80 (0.01 μm)	AF5032X-80	

*1: 1 PS (horsepower) is equivalent to 0.7355 kW, but conventionally expressed as 1 PS = 0.75 kW.
*2: Use this list for a selection guide. Refer to the appropriate catalog for selection, and select a model after checking installation and operating conditions.
*3: AF2 and AF3000 Series use in oil type compressor systems, and AF4000 and AF5000 Series use in oil-free compressor systems.
*4: This table is for "Inlet air pressure: 0.7 MPa, Inlet air temperature: Rates of each series' values are based on the conditions. In cases when the conditions are different, the model will need to be corrected based on multiplier calculations.
*5: The value in () is the atmospheric dew point converted value.

Select from applicable compressors

High Polymer Membrane Air Dryer (Super Dryer)

Compressor	Standard Processed Air Flow Rate m³/min (ANR) 50/60 Hz	Standard dew point		Low dew point					Large flow rate manifold				Main Line Filters	Micro-coalescer			
		Low purge Purge rate 10% Atmospheric dew point -15°C	Large flow rate Purge rate 20% Atmospheric dew point -20°C	Standard dew point Unit type Atmospheric dew point -20°C	Low dew point Unit type Atmospheric dew point -40°C	Standard dew point Unit type Atmospheric dew point -20°C	Low dew point Unit type Atmospheric dew point -40°C	Low dew point Discrete type Atmospheric dew point -60°C	Atmospheric dew point -20°C	Atmospheric dew point -40°C	Atmospheric dew point -60°C		P type Water / Solid removal (Degree of filtration)	S type Oil Mist Removal (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)	
up to 0.2 (0.15)	0.021/0.025	-	-	-	-	-	-	SD3015-C	-	-	-		F2000-10-W-F1 (5 µm)	M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M2000-10-W-X	
0.4 (0.53)	0.042/0.049	SD/SU301E	-	-	SU3015-B	-	SD3015-B	SD3025-C	-	-	-		F2000-10-W-F1 (5 µm)	M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M2000-10-W-X	
0.75 (1)	0.10/0.11	SD/3U302E	SD/SU301D	SU3015-A	SU3025-B	SD3015-A	SD3035-B	SD3050-C	-	-	-		F2000-10-W-F1 (5 µm)	M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M2000-10-W-X	
1.5 (2)	0.20/0.22	-	SD/SU302D	-	SU3050-B	-	SD3050-B	SD3075/4050-C	-	-	-		F2000-10-W-F1 (5 µm)	M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M2000-10-W-X	
2.2 (3)	0.30/0.35	SD/SU401E	-	SU3025-A	-	SD3025-A	SD3075/4050-B	SD4075-C	-	-	-		F3000-10-W-F (5 µm)	M3000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M4000-10-W-X	
3.7 (5)	0.40/0.52	SD/SU402E	SD/SU401D	SU3035-A	-	SD3035/4050-A	SD4075-B	SD4100-C	-	-	SDM4050-2-C		F3000-10-W-F (5 µm)	M4000-10-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M6000-20-W-X	
5.5 (7.5)	0.64/0.72	-	SD/SU402D	SU3050-A	-	SD3050-A	SD4100-B	-	-	SDM4050-2-B	SDM4075-2-C		F4000-15-W-F (5 µm)	M4000-15-W-F1S (0.3 µm)	M6000-20-W-F1 (0.01 µm)	M6000-20-W-X	
7.5 (10)	1.22/1.32	-	-	SU3075-A	-	SD3075/4075-A	-	-	SDN4050-2-A	SDM4075-2-B	SDM4075-3-C		F6000-20-W-F (5 µm)	M6000-20-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M8000-20-W-X	
11 (15)	1.65/1.82	-	-	SU4100-A	-	SD4100-A	-	-	SDM4075-2-A	SDM4075-3-B	SDM4100-3-C		F8000-25-W-F (5 µm)	M8000-25-W-F1S (0.3 µm)	M2000-10-W-F1S (0.01 µm)	M8000-25-W-X	

Compressor	Standard Processed Air Flow Rate m³/min (ANR) 50/60 Hz	Standard dew point		Low dew point					Large flow rate manifold				Main Line Filters	Micro-coalescer	Main Line Filters	Micro-coalescer	Micro-coalescer			
		Low purge Purge rate 10% Atmospheric dew point -15°C	Large flow rate Purge rate 20% Atmospheric dew point -20°C	Standard dew point Unit type Atmospheric dew point -20°C	Low dew point Unit type Atmospheric dew point -40°C	Standard dew point Unit type Atmospheric dew point -20°C	Low dew point Unit type Atmospheric dew point -40°C	Low dew point Discrete type Atmospheric dew point -60°C	Atmospheric dew point -20°C	Atmospheric dew point -40°C	Atmospheric dew point -60°C		General purpose		Oil-free		General purpose		Oil-free	
		Low purge Purge rate 10% Atmospheric dew point -15°C	Large flow rate Purge rate 20% Atmospheric dew point -20°C	Standard dew point Unit type Atmospheric dew point -20°C	Low dew point Unit type Atmospheric dew point -40°C	Standard dew point Unit type Atmospheric dew point -20°C	Low dew point Unit type Atmospheric dew point -40°C	Low dew point Discrete type Atmospheric dew point -60°C	Atmospheric dew point -20°C	Atmospheric dew point -40°C	Atmospheric dew point -60°C		P type Water / Solid removal (Degree of filtration)	S type Oil Mist Removal (Degree of filtration)	P type Water / Solid removal (Degree of filtration)	S type Oil Mist Removal (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)	M type High-performance oil removal (Degree of filtration)	X type Deodorizer (Degree of filtration)
15 (20)	2.40/2.80	-	-	-	-	-	-	-	SDM4075-3-A	SDM4100-3-B	SDM4075-8-C		AF2-05P25A (1 µm)		AF4004P-25 (5 µm)	AF4004S-25 (1 µm)	AF2-05M25A (0.01 µm)	AF2-05X25A	AF4004M-25 (0.01 µm)	AF4004X-25
22 (30)	3.70/4.20	-	-	-	-	-	-	-	SDM4050-6-A	SDM4075-6-B	SDM4075-10-C		AF2-08P40A (1 µm)		AF4007P-40 (5 µm)	AF4007S-40 (1 µm)	AF2-08M40A (0.01 µm)	AF2-08X40A	AF4007M-40 (0.01 µm)	AF4007X-40
37 (50)	5.70/6.10	-	-	-	-	-	-	-	SDM4075-6-A	SDM4075-10-B	-		AF2-11P40A (1 µm)		AF4010P-40 (5 µm)	AF4010S-40 (1 µm)	AF2-08M40A (0.01 µm)	AF2-08X40A	AF4010M-40 (0.01 µm)	AF4010X-40
55 (75)	8.40/9.80	-	-	-	-	-	-	-	SDM4100-6-A	-	-		AF2-13P50A (1 µm)		AF4013P-50 (5 µm)	AF4013S-40 (1 µm)	AF2-13M50A (0.01 µm)	AF2-13X50A	AF4013M-50 (0.01 µm)	AF4013X-50
75 (100)	11.4/12.6	-	-	-	-	-	-	-	SDM4100-8-A	-	-		AF2-20P50A (1 µm)		AF4020P-50 (5 µm) AF5016P-50 (3 µm)	AF4020S-50 (1 µm) AF5016P-50 (0.3 µm)	AF2-20M50A AF3016M-50 (0.01 µm)	AF2-20X50A AF3016X-50	AF4020M-50 AF5016M-50 (0.01 µm)	AF4020X-50 AF5016X-50

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*2: Use this list for a selection guide. Refer to the appropriate catalog for selection, and select a model after checking installation and operating conditions.
*3: AF2 and AF3000 Series use in oil type compressor systems, and AF4000 and AF5000 Series use in oil-free compressor systems.
*4: This table is for "Inlet air pressure: 0.7 MPa, Inlet air temperature: Rates of each series' values are based on the conditions. In cases when the conditions are different, the model will need to be corrected based on multiplier calculations.

Main Line Components/ Nitrogen Gas Generators

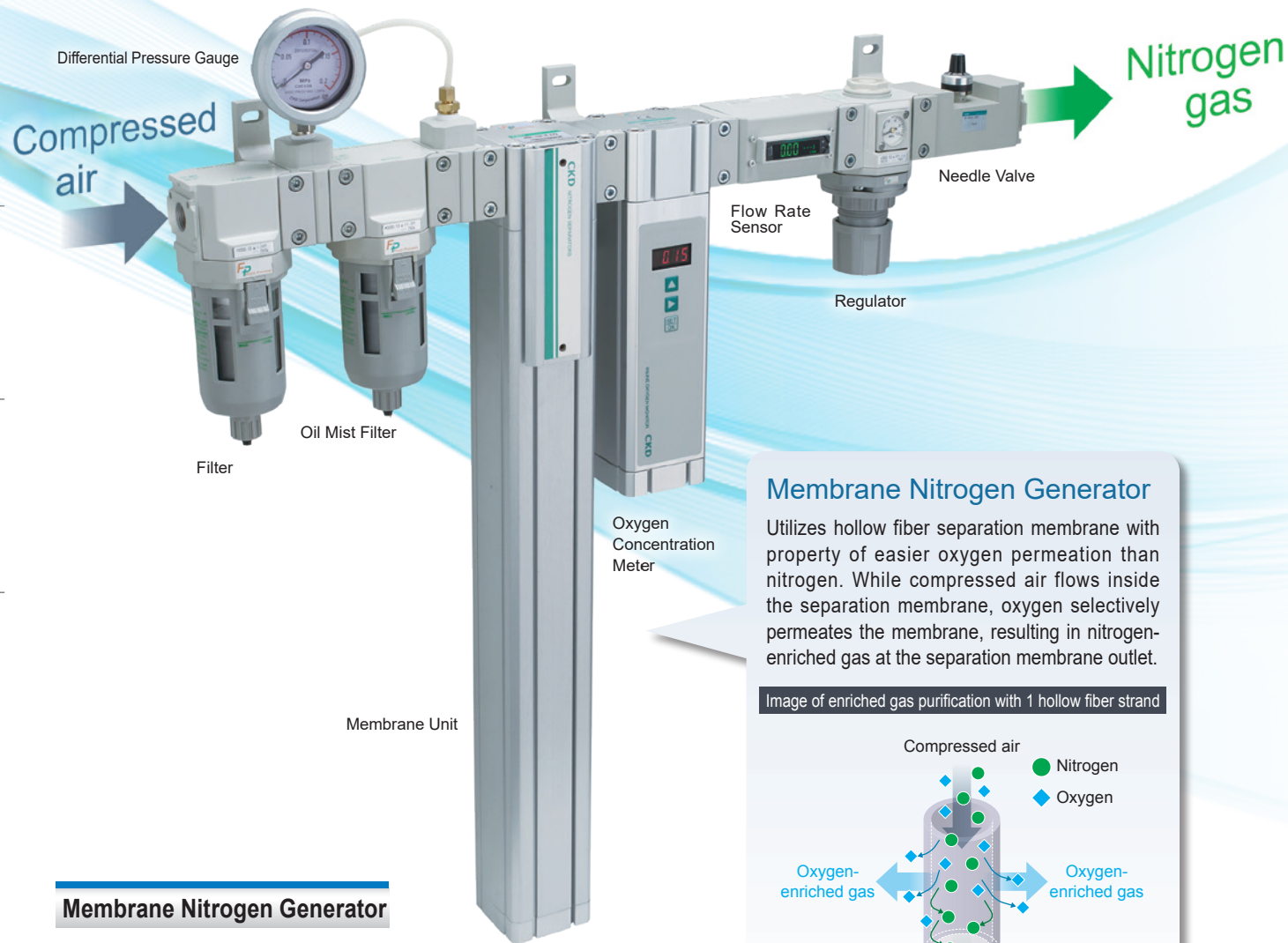
Search by Product System

Gas Generators			Drain Ejector		
Membrane Nitrogen Generator	NSU, NS, PNA	P. 293	Drain discharger list	DT, 5100, DB	P. 309
Air Dryers			Related Components		
Air Dryer list		P. 295	Portable Air Supply Unit	ASU	P. 310
Refrigerated Air Dryer	GX/GT	P. 297			
Desiccant Air Dryer (heatless dryer)	HD/SHD	P. 299			
Manual Air Dryer (desiccant)	4001 / 4002	P. 300			
High Polymer Membrane Air Dryer (Super Dryer)	SU / SD / SDM	P. 301			
Moisture Indicator					
	6119	P. 300			
Main Line Filters					
Main Line Filter list		P. 303			
Medium Air Filters	AF2, AF4000	P. 305			
Large Air Filters	AF3000 AF5000	P. 307			

Nitrogen Gas Generators

Membrane system

Easily extracts nitrogen gas from compressed air



Membrane Nitrogen Generator

NS Series

For Food-Grade Manufacturing Processes FP Series Compatible (Option)

Food-grade (NSF H1) lubricants can be used safely and securely.

NSF H1
grease for
foodstuffs is used

Material compatible
with the Food Sanitation Act.
Fluid passage section
Resin /rubber

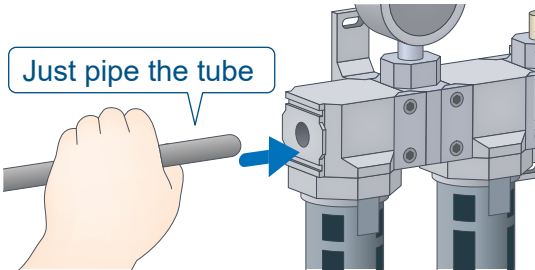


This logo mark expresses our stance that CKD's safe components support food manufacturing processes.

* Refer to P. 451 for details on FP Series.
* For P4 Series compatibility with rechargeable battery applications, please contact us.

Does not require specific installation location

Labor Saving / Piping Saving / Space Saving



Easy Maintenance

Sustained Reliability

- Since there are no movable parts, stable performance can be maintained.
- Parts replacement is possible without disassembling the piping.

High Pressure Gas Safety Act does not apply

- There is no need for notifications or assignment of qualified personnel.



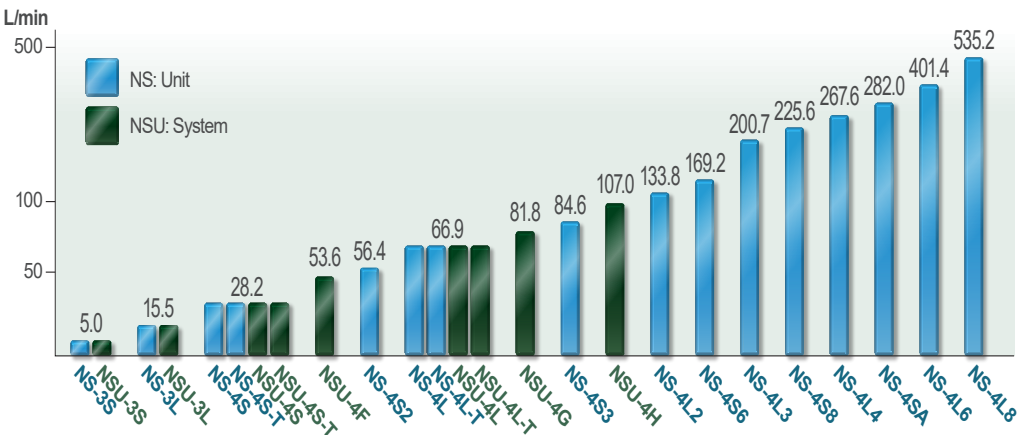
NS Series Configuration

System		Unit	
Single Type	Double Type	Single Cylinder	Multi Cylinder
NSU		NS	
Horizontal placement	Vertical placement	Horizontal placement	Vertical placement

Freedom of Choice

The optimal model can be selected from a lineup of 17 flow rates and 25 options.

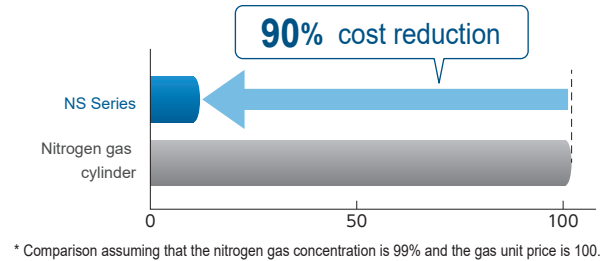
*Nitrogen concentration 99%
Inlet air pressure 0.7 MPa
Inlet air temperature 25°C



Low Cost / Labor Saving

Reduce running costs

Nitrogen gas cylinder and gas unit price



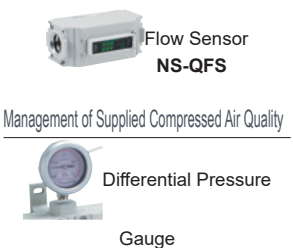
Reduce management man-hours

- Nitrogen volume control is no longer required.
- Oxygen Concentration Meters and flow rate sensor can be installed inline, enabling continuous control.

Management of Oxygen Concentration (Nitrogen Concentration)



Management of Nitrogen Flow Rate



*Necessary component easily connected by modular connection. Please ask a sales representative for details.

[Click here for specification details](#)

Catalog Name [No]

Main Line Components/Gas Generators [RJ-009AA]

WEB



Air Dryers

Air Dryer list

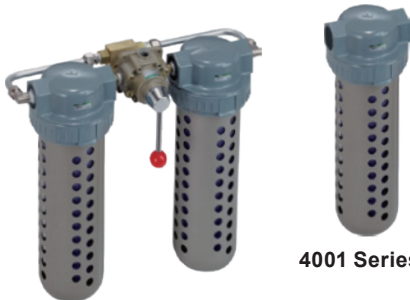
*For details, refer to CKD Components Product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Refrigerated Air Dryer

Atmospheric dew point (°C) down to -17 ■ Features • Most common • Low equipment and operating costs ■ Main Applications - General pneumatic circuits - For pneumatic components - For general factories	 GX Series GT Series 		Specifications details here	
	Catalog Name [No]		Main Line Components/ Gas Generators [RJ-009AA]	
	WEB			
	GX	 Click!		
	GT	 Click!		

*For details, refer to CKD Components Product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Manual Air Dryer (desiccant)

Atmospheric dew point (°C) -43, -72 ■ Features • Disposable type desiccant • Easy to replace desiccant • Power supply unnecessary, low pressure use is possible ■ Main Applications - Medical equipment protection - Analytical instrument protection - Production lines that require ultra-dry air	 4002 Series 4001 Series	Specifications details here	Catalog Name [No]		Main Line Components/ Gas Generators [RJ-009AA]	
		WEB				
		 Click!				

Desiccant Air Dryer (heatless dryer)

Atmospheric dew point (°C) -17.5 to -72 ■ Features • Stably obtains low dew point • Lower equipment cost compared to heater type ■ Main Applications Semiconductor manufacturing process LCD panel production line Food and Pharmaceutical Factories Chemical plant Ozone generator Powder transport Production lines that require ultra-dry air	 HD Series  SHD Series	Specifications details here	Series for Specific Applications	
		Rechargeable Battery		
		Catalog Name [No]		P4
		Main Line Components/Gas Generators [RJ-009AA]		
		WEB		
HD	 Click!	●		
SHD	 Click!			

High Polymer Membrane Air Dryer (Super Dryer)

Atmospheric dew point (°C) -10 to -60 ■ Features • No power supply required • Explosion-proof OK • Purge air required • Non-Freon Dryer ■ Main Applications - Factory End-of-line - Device Built-in - Analytical and inspection instruments	 SD/SU Series  SDM Series	Specifications details here	Series for Specific Applications	
	Catalog Name [No]	P4	Food	
	Main Line Components/ Gas Generators			
	[RJ-009AA]			
	WEB	●	●	
				

*For details on series for specific applications, please refer to P. 451.

*For details on series for specific applications, please refer to P. 451.

Air Dryers

Refrigerated Air Dryer

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Model No.		General purpose			GT9000(D)		GT9000W(D)		GT9000WV2		
Installation Application			End-of-line installation at factory, built-in device type			Direct Compressor Installation					
Features Main Specifications	Applications	General Use		For direct connection to air-cooled compressors			For direct connection of air-cooled air compressor		For direct connection of water-cooled air compressor		
		Ambient Temperature Max 45°C Inlet Air Temperature 35°C (GX3255D is 40°C)		Ambient temperature Max45°C (48°C for GX5255D and GX5275D) Inlet Air Temperature 55°C			Ambient temperature Max40°C (48°C for GT9075D, 9090D, 9120D, 9150D, and 9190D) Inlet Air Temperature 40°C		Inlet Air Temperature 40°C		
Applicable Air Compressor KW											
0.75			●								
1.5			●								
2.2			●								
3.7			●								
5.5			●								
7.5			●								
11			●								
15			●								
22			●								
37			●								
55			●								
75						●		●			
90						●		●			
120						●		●			
150						●		●			
190						●		●			
240						●		●			
300						●		●			
380						●		●			
450						●		●			
710										●	
960										●	
Appearance											
Specifications details here	Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]				Mainline Components/Nitrogen Gas Generators [RJ-009AA]					
	WEB	 Click!				 Click!					

Please use this list as a guide for selection. For official selection, please refer to the relevant page and select the model after confirming the installation conditions.

Air Dryers

*For details, refer to CKD Components Product site (https://www.ckd.co.jp/kiki/en/) → "Model No."
*For details on series for specific applications, please refer to P. 451.

Desiccant Air Dryer (heatless dryer)

		Compact		Large		
Series		HD Series		Super Heatless SHD Series		
Installation Application		End-of-line installation at factory, built-in device type				
Features KW		Inlet Air Temperature 21°C		Inlet Air Temperature 35°C		
		Atmospheric Dew Point -17.5°C	Atmospheric Dew Point -40°C	Atmospheric Dew Point -72°C	Pressure Dew Point -20°C (-40°C) *2	Pressure Dew Point -40°C (-57°C) *2
0.4				● (HD-0.5)		
0.75		● (HD-0.5)	● (HD-0.5)	● (HD-1)		
1.5		● (HD-1)	● (HD-1)	● (HD-1.5)		
2.2		● (HD-1.5)	● (HD-1.5, -2)	● (HD-2)		
3.7		● (HD-2)	● (HD-4)	● (HD-4)		
5.5		● (HD-4)		● (HD-6)		
7.5		● (HD-6)	● (HD-6)	● (HD-9)		
11		● (HD-9)	● (HD-9)			
15		● (HD-9)			● (SHD3025-G/M)	● (SHD3025-G/M) ● (SHD3025-M)
22					● (SHD3045-G/M)	● (SHD3045-G/M) ● (SHD3045-M)
37					● (SHD3075-G/M)	● (SHD3075-G/M) ● (SHD3075-M)
55					● (SHD3100-G/M)	● (SHD3100-G/M) ● (SHD3100-M)
75					● (SHD3125-G/M) ● (SHD3125-G/M)	● (SHD3125-G/M) ● (SHD3125-G/M) ● (SHD3125-M)
95					● (SHD3200-G/M)	● (SHD3200-G/M) ● (SHD3200-M)
120					● (SHD3240-G/M)	● (SHD3240-G/M) ● (SHD3240-M)
150						
200						
250						
300						
400						
480						
710						
960						
1450						
Appearance						
Specifications details here	Catalog Name [No]		Mainline Components/Nitrogen Gas Generators [RJ-009AA]			
	WEB		 Click!		 Click!	
Specific Application Series	Rechargeable Battery	P4			●	

*1: This table has been prepared based on the conditions listed below; correction of models will be necessary depending on multiplier calculations in cases when the conditions are different. Inlet Air Pressure: 0.7 MPa, Inlet air temperature: Varies depending on each series' rating.
*2: The values in () are converted atmospheric dew point values.

*For details, refer to CKD Components Product site (https://www.ckd.co.jp/kiki/en/) → "Model No."

Manual Air Dryer (desiccant)

Max. Flow Rate	280 L/min (ANR) *1 *2		
Series	4001/4002-2C	4001/4002-2C-U	4001/4002-2C-X
Installation Application	End of line device		
Features	General	For low dew point	For Oil Mist Removal
Max. Inlet Air Temperature	32°C		
Atmospheric Dew Point °C	-43°C	-72°C	(Oil removal) 24 PPM w/w
Appearance			
Specifications details here	Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]	
	WEB		

*1: The maximum flow rate is the atmospheric pressure equivalent value at an inlet air pressure of 0.7 MPa.
*2: Only 4002-2C requires a minimum flow rate of 30 L/min (ANR).

Moisture Indicator

Max. Flow Rate	50 L/min (ANR)		
Installation Application	Dew point monitoring of desiccant air dryers		
Series	6119-2C		
Appearance			
Specifications details here	Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]	
	WEB		

Air Dryers

High Polymer Membrane Air Dryer (Super Dryer)

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
*For details on series for specific applications, refer to P. 451.

			Standard dew point			Low dew point						Ultra-low dew point type	Large flow rate manifold		
Series			SD300E/400E-W SU300E/400E-W	SD300D/400D-W SU300D/400D-W	SU3000-A-W SU4000-A-W	SU3000-B-W SU4000-B-W	SD3000-A/4000-A				SD3000-B/4000-B	SD3000-C/4000-C	SDM4000		
Applicable Air Compressor	Features	KW	Low purge Purge Rate 10% Atmospheric Dew Point -15°C	Large flow rate Purge Rate 20% Atmospheric Dew Point -20°C	Standard Dew Point Unit Type Atmo- spheric Dew Point -20°C	Low Dew Point Unit Type Atmospheric Dew Point -40°C	Standard Dew Point Single Unit Type Atmospheric Dew Point -20°C				Low Dew Point Single Unit Type Atmospheric Dew Point -40°C	Ultra Low Dew Point Single Unit Type Atmospheric Dew Point -60°C	Atmospheric Dew Point -20°C	Atmospheric Dew Point -40°C	Atmospheric Dew Point -60°C
		0.2										● (SD3015-C)			
		0.4	● (SD/SU301E)			● (SU3015-B)					● (SD3015-B)	● (SD3025-C)			
		0.75	● (SD/SU302E)	● (SD/SU301D)	● (SU3015-A)	● (SU3025-B)	● (SD3015-A)				● (SD3035-B)	● (SD3050-C)			
		1.5		● (SD/SU302D)		● (SU3050-B)					● (SD3050-B)	● (SD3075/4050-C)			
		2.2	● (SD/SU401E)		● (SU3025-A)		● (SD3025-A)				● (SD3075/4050-B)	● (SD4075-C)			
		3.7	● (SD/SU402E)	● (SD/SU401D)	● (SU3035-A)		● (SD3035/4050-A)				● (SD4075-B)	● (SD4100-C)			● (SDM4050-2-C)
		5.5		● (SD/SU402D)	● (SU3050-A)		● (SD3050-A)				● (SD4100-B)			● (SDM4050-2-B)	● (SDM4075-2-C)
		7.5			● (SU3075-A)		● (SD3075/4075-A)						● (SDM4050-2-A)	● (SDM4075-2-B)	● (SDM4075-3-C)
		11			● (SU4100-A)		● (SD4100-A)						● (SDM4075-2-A)	● (SDM4075-3-B)	● (SDM4100-3-C)
		15											● (SDM4075-3-A)	● (SDM4100-3-B)	● (SDM4075-8-C)
		22											● (SDM4050-6-A)	● (SDM4075-6-B)	● (SDM4075-10-C)
		37											● (SDM4075-6-A)	● (SDM4075-10-B)	
		55											● (SDM4100-6-A)		
		75											● (SDM4100-8-A)		
		95													
		120													
		150													
		200													
		250													
		300													
		400													
		480													
		710													
		960													
		1450													
Appearance															
Specifications details here	Catalog name [No]		Mainline Components/Nitrogen Gas Generators [RJ-009AA]										Mainline Components/Nitrogen Gas Generators [RJ-009AA]		
	WEB		 Click!										 Click!		
For special applications Series	Rechargeable Battery	P4	●												
	Food	FP	●												

*1: Please use this list as a guide for selection. For official selection, please refer to the relevant page and select the model after confirming the installation and operating conditions.

Main Line Filters

Main Line Filter list

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
*For details on series for specific applications, refer to P. 451.

Medium Size Flow rate 3.7 to 24.1 m³/min (ANR) (at 0.7 MPa)	Usage Type	General purpose						Oil-free						
	Series	AF2 Series						AF4000 Series						
	Element Type	P-type	M type		X type			P-type	S-type		M type		X type	
	Specifications	Dust 1 µm or more Secondary oil content 0.3 mg/m³ (At 21°C)	Dust 0.01 µm or more Secondary oil content 0.01 mg/m³ (At 21°C)		Adsorption by activated carbon, Deodorizer Secondary oil content 0.003 mg/m³ (At 21°C)			Dust 5 µm or more Water droplet removal separation rate 99%	Dust 1 µm or more		Dust 0.01 µm or more Secondary oil content 0.01 mg/m³ (At 20°C)		Adsorption by activated carbon, Deodorizer Secondary oil content 0.003 mg/m³ (At 20°C)	
	Applications	Protects pneumatic components	For pneumatic circuits where oil is undesirable		For pneumatic circuits where odor is undesirable			For air dryer pre-filters	Protects pneumatic components		For pneumatic circuits where oil is undesirable		For pneumatic circuits where odor is undesirable	
	Appearance													

Specifications details here	Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]		Specific Applications Suitable Series	Rechargeable Battery	P4	●	Specifications details here		Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]		Specific Application Series	Rechargeable Battery	P4	
	WEB				Food	FP			WEB			Food		FP	●	
					Outdoor	WP						Outdoor		WP		

Large Flow rate 16 to 256 m³/min (ANR) (at 0.7 MPa)	Usage Type	General purpose					Oil-free							
	Series	AF3000 Series					AF5000 Series							
	Element Type	P-type	S-type	M type	X type		P-type	S-type	M type	X type				
	Specifications	Dust 3 μm or more, water droplet separation rate 95%	Dust 0.3 μm or more Oil content 0.5 mg/m³ (At 21°C)	Dust 0.01 μm or more Oil content 0.01 mg/m³ (At 21°C)	Adsorption by activated carbon, Deodorizer Oil content 0.003 mg/m³ (At 21°C)		Dust 3 μm or more Water Droplet Removal Rate 95%	Dust 0.3 μm or more Secondary oil content 0.5 mg/m³ (At 21°C)	Dust 0.01 μm Secondary oil content 0.01 mg/m³ (At 21°C)	Adsorption by activated carbon, Deodorizer 0.003 mg/m³ (At 21°C)				
	Applications	For air dryer pre-filters	Protects pneumatic components	For pneumatic circuits where oil is undesirable	For pneumatic circuits where odor is undesirable		For air dryer pre-filters	Protects pneumatic components	For pneumatic circuits where oil is undesirable	For pneumatic circuits where odor is undesirable				
	Appearance													

Specifications details here	Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]	Specific Application Series	Rechargeable Battery	P4	●	Specifications details here	Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]	Specific Application Series	Rechargeable Battery	P4	●
	WEB			Food	FP			WEB			Food	FP	
				Outdoor	WP	●					Outdoor	WP	●

*1: Please use this list as a guide for selection. For official selection, please refer to the relevant page and select the model after confirming the installation and operating conditions.

Main Line Filters

Medium Air Filters

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
*For details on series for specific applications, refer to P. 451.

Series Specifications Applicable Air Compressor kW (Reference) / Processing flow rate m³/min (ANR)		Medium Size (General Purpose Type)				Medium Size (For Oil-Free)							
		AF2-□P Dust 1 μm or more Secondary oil content 0.3 mg/m³ (At 21°C)	AF2-□M Dust 0.01 μm or more Secondary oil content 0.01 mg/m³ (At 21°C)	AF2-□X Adsorption by activated carbon, Deodorizer Secondary oil content 0.003 mg/m³ (At 21°C)		AF4000P	AF4000S	AF4000M	AF4000X				
						Stainless vessel (container)							
		Dust 5 μm or more Water droplet removal separation rate 99%	Dust 1 μm or more	Dust 0.01 μm or more Secondary oil content 0.01 mg/m³ (At 20°C)	Adsorption by activated carbon, Deodorizer Secondary oil content 0.003 mg/m³ (At 20°C)								
0.75	0.15												
1.5	0.22												
2.2	0.35												
3.7	0.5												
5.5	0.825												
7.5	1.0												
11	1.5												
15	3.7/4.95	● (4.95)	● (4.95)	● (4.95)									
22	3.7/4.95	● (4.95)	● (4.95)	● (4.95)		● (3.7)	● (3.7)	● (3.7)	● (3.7)				
37	6.2/7.93	● (7.93)	● (7.93)	● (7.93)		● (6.2)	● (6.2)	● (6.2)	● (6.2)				
55	10/11.3	● (11.3)	● (11.3)	● (11.3)		● (10)	● (10)	● (10)	● (10)				
75	12.8/13	● (12.8)	● (12.8)	● (12.8)		● (13)	● (13)	● (13)	● (13)				
95	16/18.8/19.8	● (19.8)	● (19.8)	● (19.8)			● (18.8)	● (18.8)	● (18.8)				
120	24.1	●	●	●									
150	32												
200	-												
250	48												
300	64												
400	80												
480	96												
-	128												
710	160												
960	192												
1450	256												
Appearance													
Specifications details here		Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]			Specifications details here	Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]		Specific Application Series	Food	FP	●
		WEB					WEB						

Main Line Filters

Large Air Filters

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
*For details on series for specific applications, refer to P. 451.

		Large Size (Standard Type)						Large Size (For Oil-Free)									
Series		AF3000P	AF3000S	AF3000M	AF3000X			AF5000P	AF5000S	AF5000M	AF5000X						
Applicable Air Compressor kW (Reference)	Specifications	Dust 3 μm or more Water droplet separation rate 95%	Dust 0.3 μm or more Secondary oil content 0.5 mg/m³ (At 21°C)	Dust 0.01 μm or more Secondary oil content 0.01 mg/m³ (At 21°C)	Adsorption by activated carbon, Deodorizer Secondary oil content 0.003 mg/m³ (At 21°C)	Stainless vessel (container)											
	Processing flow rate m³/min (ANR)					Dust 3 μm or more Water Droplet Removal Rate 95%	Dust 0.3 μm or more Secondary oil content 0.5 mg/m³ (At 21°C)	Dust 0.01 μm Secondary oil content 0.01 mg/m³ (At 21°C)	Adsorption by activated carbon, Deodorizer 0.003 mg/m³ (At 21°C)								
0.75	0.15																
1.5	0.22																
2.2	0.35																
3.7	0.5																
5.5	0.825																
7.5	1.0																
11	1.5																
15	3.7/4.95																
22	3.7/4.95																
37	6.2/7.93																
55	10/11.3																
75	12.8/13																
95	16/18.8/18.9	● (16)	● (16)	● (16)	● (16)		● (16)	● (16)	● (16)	● (16)	● (16)						
120	24.1																
150	32	●	●	●	●		●	●	●	●	●						
200	-																
250	48	●	●	●	●		●	●	●	●	●						
300	64	●	●	●	●		●	●	●	●	●						
400	80	●	●	●	●		●	●	●	●	●						
480	96	●	●	●	●		●	●	●	●	●						
-	128	●	●	●	●		●	●	●	●	●						
710	160	●	●	●	●		●	●	●	●	●						
960	192	●	●	●	●		●	●	●	●	●						
1450	256	●	●	●	●		●	●	●	●	●						
Appearance																	
Specifications details here		Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]		Specific Application Series	Rechargeable Battery	P4	●	Specifications details here		Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]		Specific Application Series	Rechargeable Battery	P4	●
		WEB	 Click!			Outdoor	WP	●			WEB	 Click!			Outdoor	WP	●

*1: Please use this list as a guide for selection. For official selection, please refer to the relevant page and select the model after confirming the installation and operating conditions.

Drain Ejector

*For details, refer to CKD Components Product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Drain Separator List

Type	Features	model No./Appearance	Type *1	Drain Discharge Volume	Port Size	Specifications details here	
						Catalog Name [No]	WEB
Float type	A new type of drain separator that is lightweight and compact, and uses a new mechanism to achieve a long life and high reliability.	DT3000-W DT3010-W	NC NO	10 cm³/cycle *2	Rc 3/8 1/2	Mainline Components/Nitrogen Gas Generators [RJ-009AA]	
		DT4000-W DT4010-W	NC NO	30 cm³/cycle *2			
	Ideal for circuits that generate a large amount of drain	5100	NC	170 cm³/cycle	Rc 1/2		

*1: If the compressor used is less than 0.75 kW (discharge flow rate 0.09 m³/min (ANR)), please use the normally closed type.
*2: When inlet pressure is 0.7 MPa.

Type		Super Drain DB Series												Drain Sensor		
		Compressor Nominal Output (kW)		11 15 22 37 55 75 120 150 300 450 900												
		Outlet flow rate m³/min (ANR)		1 5 10 50 100 500 1000												
Electronic	Applicable Compressor	Non-lube Type	DB3003D		DB3006E	DB3024	DB3090D	DB3700					DBS1006			
		Lubricated Type														
			DB1006E	DB1024	DB1090D											
																
Specifications details here	Drain Inlet Port	G1/2		G1/2	G1/2	G3/4	G3/4, 1					G1/2				
	Drain Outlet Port	8 mm hose fitting or G1/4		10 m hose fitting or G3/8	13 m hose fitting or G1/2			G1/2					G1/4 (Drain port)			
	Catalog Name [No]	Mainline Components/Nitrogen Gas Generators [RJ-009AA]														
WEB		 Click!												 Click!		

Related Components

Portable Air Supply Unit (Sales limited to Japan)

A compact, all-in-one body.

With this one unit, you can easily get compressed air anytime, anywhere.

For event venues

For labs

For conference rooms

Easy to carry

It has a carry case shape, so anyone can easily carry it.



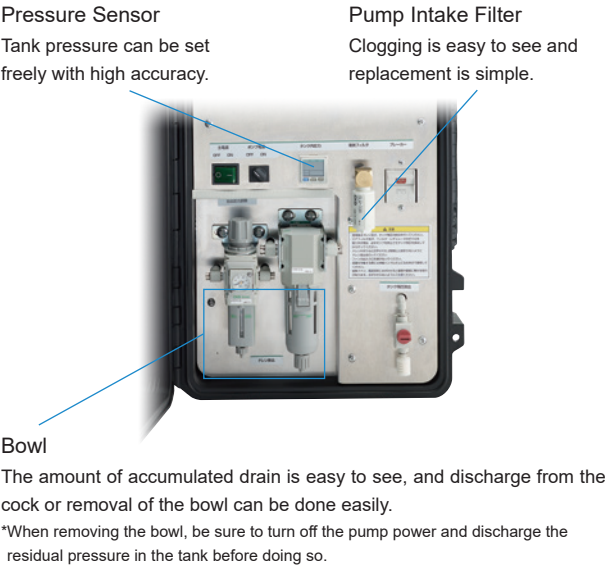
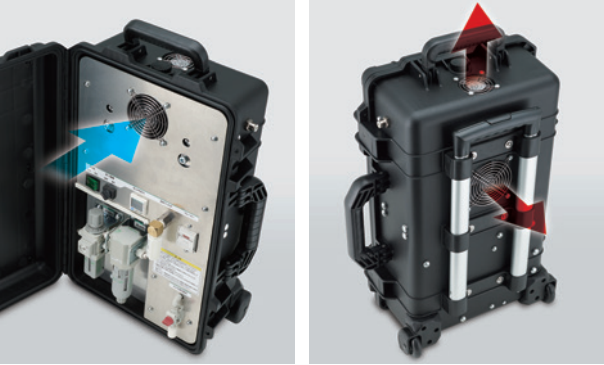
Supplies clean air

Compressed air heated by the pump is cooled by an aftercooler. Supplies clean air by centrifugally separating generated drain and removing foreign matter.



Continuous use possible

Improves heat dissipation around the pump to suppress temperature rise during long-term use.



Specifications

Item	ASU-S-C6-1
Rated Pressure	0.4 MPa
Max. Allowable Pressure	0.5 MPa
Air Discharge Volume (50/60Hz)	19/25 L/min (ANR) *1
Rated voltage	Single-phase 100 VAC (50/60 Hz)
Rated Current (50/60 Hz)	3.3/3.5 A
Noise Level	60 dB(A) with lid closed
Pump Motor	4P, Class F, Capacitor induction Auto-reset thermal protector

Item	ASU-S-C6-1
Pump Motor Output	90 W
Ambient Temperature	5 to 35°C
Weight	15 kg
Outline Dimensions	Width 350 x Depth 225 x Height 560 mm
Pump Starting Method	Pressure Switch Type
Pump Warranty Period	1 year or 3,000 hours *2

*1: This is the flow rate when released to the atmosphere.
*2: During continuous operation at an ambient temperature of 5 to 35°C and a rated pressure of 0.4 MPa
*3: These are measured values under our company's test conditions. This is not a guaranteed value.

Product Category

Actuators - Pneumatic Cylinders	P. 3
Actuators - Electric Actuators	P. 78
Directional Control Valve	P. 111
Air Preparation Equipment	P. 151
Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing	P. 229
Sensors/Controllers	P. 263
Main Line Components/Nitrogen Gas Generators	P. 279
Precision Components	
Vacuum Components	P. 327
Fluid Control Valves	P. 343
Fine System Components (For DI water, chemicals, and process gas)	P. 427
Software	P. 443

Specific Applications

High-Durability Components - HP Series	P. 453
For Food Manufacturing Processes - FP Series	P. 461
For Outdoor Use - WP Series	P. 467
For Rechargeable Battery Manufacturing Processes - P4 Series	P. 471
For Clean Environment Components P5/P7 Series	P. 477
Others P12, P8, P9, P11, P6 (Oil-free, ozone resistant, copper ion restricted)	P. 481

Search by Product System P. 313

Precision Components

Search by Product System

"KIWAMI" Products: Beyond the Boundaries of Pneumatic Components P. 305

Eliminating Friction

Air Bearing Actuator	LBC	P. 315
Air Gyro	LBC-R	P. 317

Using Porous Materials

Float Star	GFM	P. 319
Precision Suction Plate	PVP	P. 321

Using Magnetic Force

Fine Buffer	FBU2	P. 323
Active Fine Buffer	AFB-RB/AFB-P	P. 325

Friction

By eliminating friction...

- ⇒ Even small thrust
- ⇒ Even minute thrust
- ⇒ Without feedback...

Can be controlled

From P. 315



Thrust
LBC Series



Alignment
LBC-R Series

Materials

From P. 319

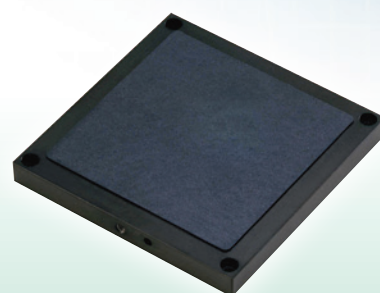
By using porous materials...

- ⇒ With full suction
- ⇒ Float

Transfer is possible



Suction
PVP Series



Suction
PVP-B Series



Floating
GFM Series

Contributing to the innovation of Factory Automation, going beyond the scope of pneumatic equipment.

A relentless focus on perfecting the core technologies.

Magnet

From P. 323

By using magnetic force...

- ⇒ Thrust is constant
- ⇒ Maintenance-free
- ⇒ Extremely low dust generation rate



Buffer
FBU2 Series



Pickup
(Buffer)
AFB-P Series

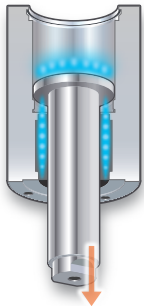
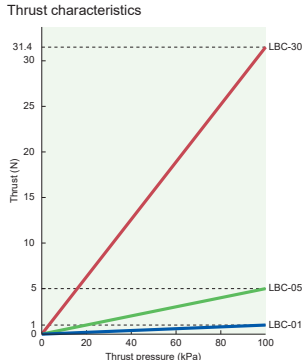
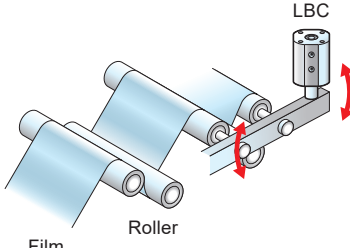
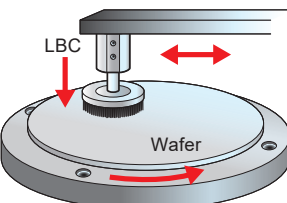
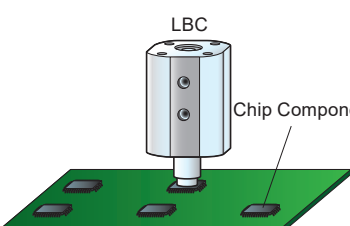
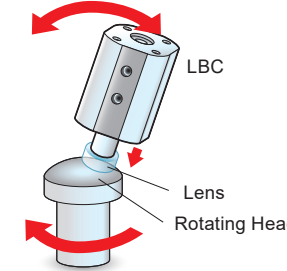
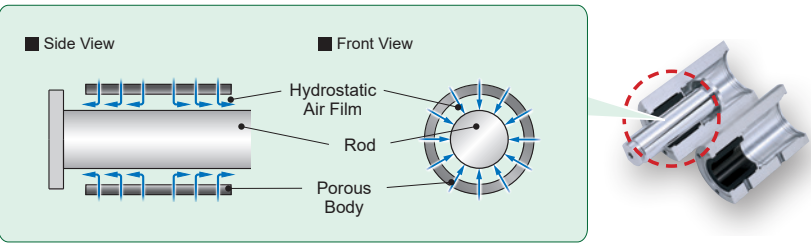


Buffer & Rotational
Alignment
AFB-RB Series

Eliminating Friction

Air Bearing Actuator

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

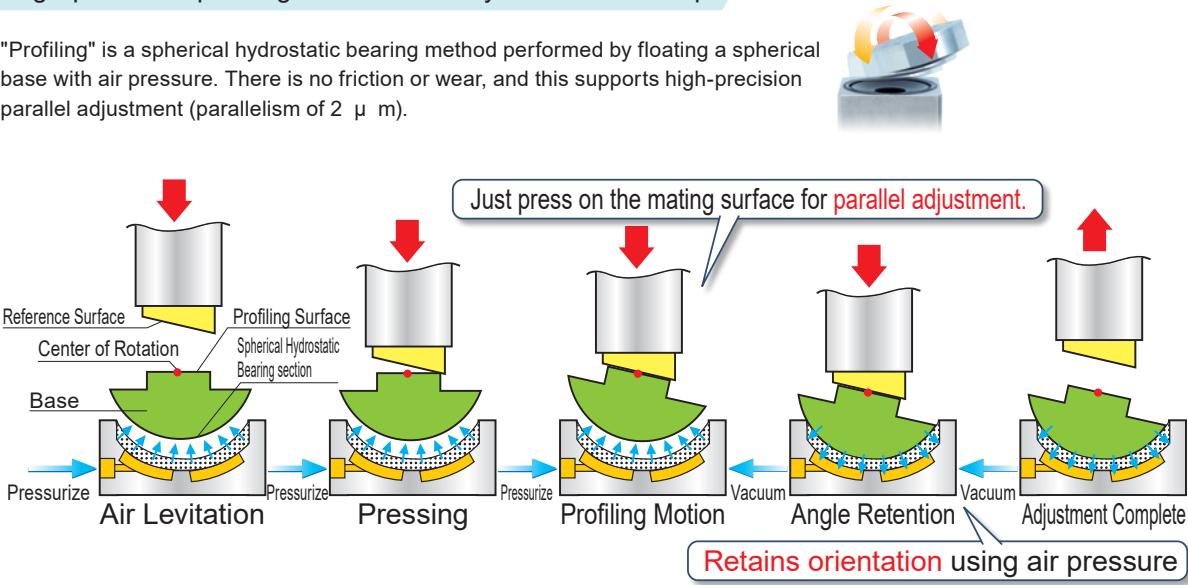
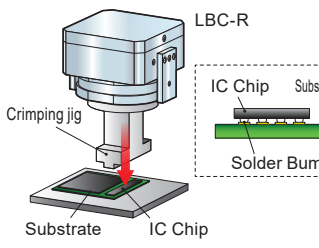
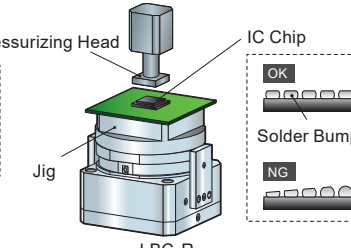
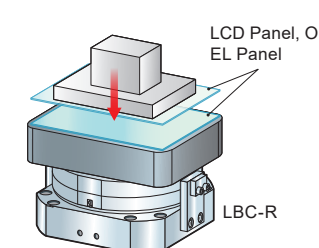
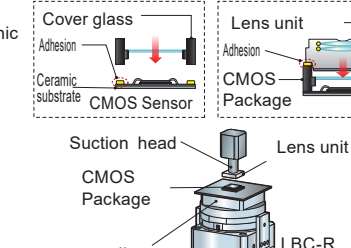
Features	Application Examples		Model No.	Appearance	Thrust Range (N)	Specifications details here		Series for Specific Applications Rechargeable Battery P4
					00.10.51535	Catalog Name [No.]	WEB	
Actuator for Ultra-precision Load Control Sliding resistance of zero achieved with air bearing Suitable for Clean Environments An air-driven system with zero particle generation and no lubrication due to being completely non-contact. Suitable for environments requiring a high degree of cleanliness.  High-Precision Linear Control Since the sliding resistance is zero, the electro pneumatic regulator for LBC enables high precision linear control of the load. 	Film Tension Control  Wafer Cleaning (for Scrubber Cleaning Machines)  Chip Component Mounting (for Bonding Equipment)  Lens Polishing 		LBC-01		0.02 to 1.0	Precision Components/Vacuum Components [RJ-010AA]	 Click!	
Soft touch control from a minute load of 0.01 N Since the load can be controlled from a minute 0.01 N, a soft touch on the target workpiece is possible, preventing impacts and scratches. Excellent Responsiveness The rod material (movable part) is a lightweight aluminum alloy, providing excellent responsiveness. What is an Air Bearing (Hydrostatic Bearing)? A bearing that eliminates frictional resistance by floating the rod on a hydrostatic air film generated on the surface of a porous body 			LBC-05		0.1 to 5.0			
			LBC-30		0.6 to 31.4			

Note: There is no rod return mechanism. When using horizontally or vertically downwards, if a return action is required, please combine it with another cylinder to move the LBC itself back.

Eliminating Friction

Air Gyro

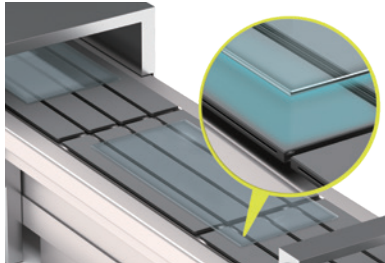
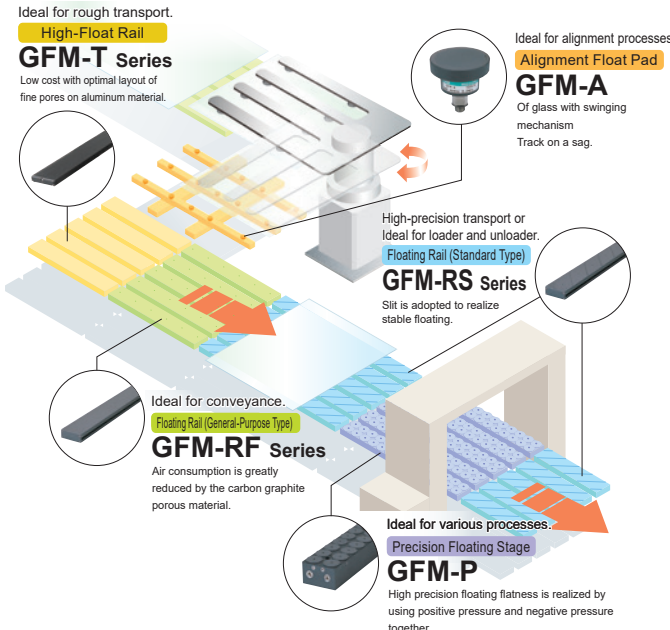
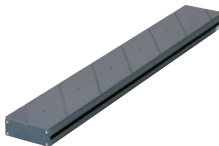
*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features		Application Examples	Model No./ Appearance	Click here for detailed specifications	
				Catalog Name [No.]	WEB
Air Gyro Enabling Parallel Adjustment Demonstrates power in high-precision parallel alignment, adjustment automation, and man-hour reduction Single-step parallel adjustment with "profiling" When the surfaces to be parallel are pressed together, the tracking adjustment is completed in a few seconds, and automation is also possible. (Under CKD test conditions) High-precision "profiling" that doesn't rely on craftsmanship "Profiling" is a spherical hydrostatic bearing method performed by floating a spherical base with air pressure. There is no friction or wear, and this supports high-precision parallel adjustment (parallelism of 2 μ m). 		Flip Chip Bonder Crimping Head Angle Adjustment  Bump Leveler Pressurizing Head Angle Adjustment  Laminator System FPD Panel Lamination  CMOS Package Assembly Camera Module Assembly 	LBC-R		
				[Special Order Item] Please contact us for details	

Using Porous Materials

Float Star

* For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).

Features	Application Examples		Model No./Appearance		Material	Float (μm or more)	Air Consumption L/min (abs) at 0.1 MPa ^{*1}	Click here for detailed specifications	
							0 5 10 15 20 100	Catalog Name [No.]	WEB
High-Precision, High-Quality Floating System Enables non-contact, clean, damage-free transfer of delicate workpieces such as LCD glass and glass substrates 	Variations with Diverse Shapes and Functions Supports optimal systems for all processes, from transfer to various processes and inspections 		Positioning	GFM-A 	Carbon fiber-filled PPS porous material	10 ^{*2}	3 to 10	Precision Components/Vacuum Components [RJ-010AA]	 Click!
Rough Transfer			GFM-T 	Aluminum alloy (micropore processing)	250 ^{*2}	100 or more			
Transfer			GFM-RF 	Carbon graphite porous material	250 ^{*2}	15 to 20			
Loader/Unloader			GFM-RS 		150 ^{*2}	15 to 20			
Various Processes			GFM-P 		30 ^{*3}	2 to 3			
Stable, High-Precision Floating with No Contact The use of porous carbon achieves stable, high-precision floating with no contact.									
Achieves Class 10 level Porous carbon suppresses particles in the floating air. *Equivalent to Class 4 of JIS B 9920 based on CKD's tests of the GFM series. Measured values also include particle diameters of 0.5 μm or more. (Excluding GFM-T)									
Significant Reduction in Air Consumption Adopts optimal air efficiency for glass floating, significantly reducing air consumption and greatly contributing to factory energy savings.									
Ideal for High-Sensitivity Inspections The use of a black body eliminates diffuse reflection and improves workpiece visibility.									
Prevents Static Buildup on Workpieces A new anti-static material suppresses static electricity. (Excluding GFM-T)									

*1: Use this as a guide for air consumption.
*2: Use this as a guide for float height.
*3: The value changes depending on the combination of positive and negative pressure flow rates.

Using Porous Materials

Precision Suction Plate

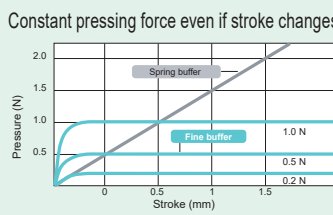
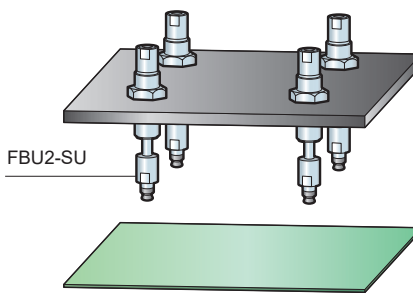
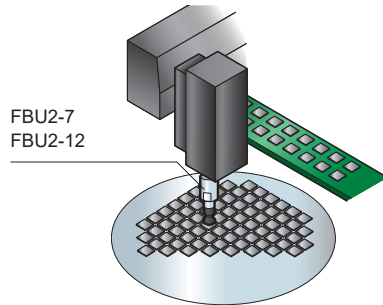
*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features	Application Examples		Workpiece Side	Series Variations	Model No./Shape	Click here for detailed specifications		Series for Specific Applications		
						Catalog Name Catalog Name	WEB	Rechargeable Battery		
								P4		
Precision Resin Porous Plate Adsorbs ultra-thin or soft materials over the entire surface without damaging, distorting, or deforming the workpiece. High-Precision Workpiece Processing Suction Surface Flatness: 2 μm, parallelism: 5 μm. (Specifications for R-36-18, C-50, S-50-50) High workpiece holding accuracy enables high-precision workpiece processing. High Suction Force With a porosity of 40%, high suction force allows for full-surface suction. Even with high suction force, there is no suction deformation of ultra-thin workpieces. Does Not Damage Workpieces The hardness of the suction surface is Shore D60. Soft contact does not damage the workpiece. Lightweight Composed of fluororesin porous material (apparent specific gravity: 1.3) and an aluminum base (specific gravity: 2.7). Being lightweight, the driving force can be reduced. Porous Principle A vacuum is drawn from the vacuum port, and suction is applied from the entire surface of the fluororesin porous material. Variation Black Type A black type that is scratch-resistant and non-reflective is also available. Anti-static An anti-static agent is coated on the fluororesin porous material to suppress static electricity generation and prevent damage to the workpiece.	Film Substrate Transfer Robot Gripper/Wafer Transfer LCD Glass Lamination Process		Disc	Donut Shape	PVP-R	Precision Components/Vacuum Components [RJ-010AA]	 Click!			
			Semiconductor Silicon Wafer	Round Shape	PVP-C					
			Plastic Substrate	Square Shape	PVP-S					
			For Robot Gripper Applications	Shape Special Order Item Type Example				[Special Order Item] Please contact us for details		
			Wafer Shape							
			Multi-point Suction Type							

Using Magnetic Force

Fine Buffer

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features	Application Examples		Model No./ Appearance	Outer Diameter	Bearing Accuracy	Pressing Force (N)			Stroke (mm)			Tailpiece Shape				Headpiece Shape				Click here for detailed specifications		Series for Specific Applications																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Resolves the drawbacks of spring buffers A magnetic spring utilizing the attraction force of magnets is used in the buffer section. The soft and stable pressing force prevents damage to micro-devices and fragile workpieces. Structure of the Magnetic Spring When the magnets incorporated in the movable and fixed shafts are displaced, diagonal magnetic field lines are generated, creating a constant force that attempts to return to the axial direction. Fixed Shaft Movable Shaft Magnet Since the magnetic restoring force in the axial direction is constant, the pressing force is always constant. Comparing the Fine Buffer and the Spring Buffer. What are the benefits of using a Fine Buffer? Clean Fine Buffer Extremely low particle generation due to no metal contact Spring Buffer Abrasion powder generated by metal contact Reduces defect rate due to contamination Long Life Fine Buffer No settling of movable parts due to magnetic thrust Spring Buffer Spring settling occurs with repeated operation Reduces replacement frequency and maintenance costs Constant Pressing Force Fine Buffer Constant pressing force even if stroke changes  Spring Buffer Pressing force changes when stroke changes Reduces suction failure rate for workpieces with unstable heights Reduces pad height adjustment time With Anti-rotation Function Fine Buffer With anti-rotation function by magnetic restoring force N N N N N N N N 4-axis spline-shaped magnetization provides magnetic restoring force (magnetic anti-rotation) in the rotational direction Spring Buffer No anti-rotation function, requires separate installation Reduces design and assembly man-hours Printed Circuit Board/ Flexible Board Transfer FBU2-SU  Electronic Device Suction Transfer FBU2-7 FBU2-12  <table><tr><td>FBU2-7 Lightweight</td><td></td><td>ø7 h7 M8×0.75</td><td>N</td><td>Standard</td><td>●</td><td></td><td></td><td></td><td>●</td><td>●</td><td></td><td>●</td><td>●</td><td></td><td></td><td>●</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>ø7 h7</td><td>H</td><td>High-Precision Type</td><td>●</td><td></td><td></td><td></td><td>●</td><td>●</td><td></td><td>●</td><td>●</td><td></td><td></td><td>●</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td>HV</td><td>Internal flow path high 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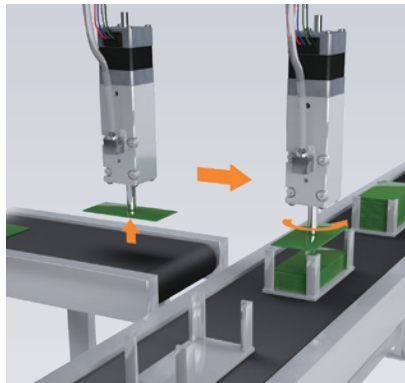
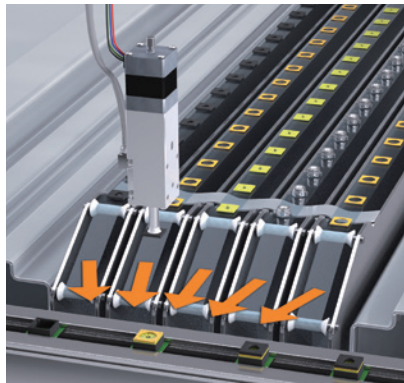
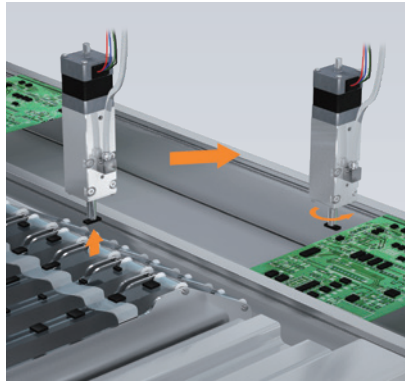
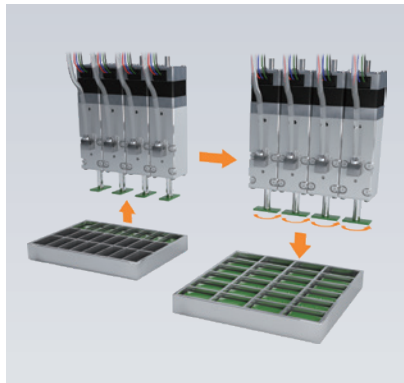


Precision Components/Vacuum Components [FJ-010AA]

Using Magnetic Force

Active Fine Buffer

* For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).

		Click here for specifications						
Features		Model No.	Application Examples					
			Catalog Name [No.]	WEB				
Motor Driven	The motor and fine buffer are integrated to perform rotational and buffer operations. All-in-one design makes multi-head units compact and lightweight.	AFB-RB						
	Soft Touch Using Fine Buffers (magnetic spring cushioning mechanism) enables uniform pressure without relying on stroke.		Laminated Transfer Transfers workpieces with a constant pressing force regardless of the stroke.	Compact Camera/Lens Module Assembly Sequentially inserts multiple parts into a case. Transfers workpieces with a constant pressing force.				
	Low Particle Generation, Long Life, High Performance Lower dust, longer life, and higher performance compared to metal springs.							
	Rotational runout accuracy of 0.01 mm or less Built-in ball shaft achieves rotational runout accuracy of 0.01 mm or less.		Precision Mounting Suppresses shaft runout and achieves high-precision θ alignment.	Rotational Alignment during P & P With a mounting pitch of 20 mm, compact installation is possible.				
	Easy Piping Vacuum piping can be connected from the front of the body for easy handling.							
Pneumatic Cylinder Driven	Space-saving Compact and manifold-capable.	AFB-P						
	Prevents step-out Adopts an anti-rotation mechanism with a bearing & guide groove. Suppresses shaft runout and achieves high return position accuracy.							
	Selectable from various motors Selectable from 2-phase, 5-phase, and with battery-less absolute sensor. *For details, please check the mounting motor specifications.							
	<table><tr><td>Buffer Force (N)</td><td>0.5±0.2, 1.0±0.2 (Selectable)</td></tr><tr><td>Stroke (mm)</td><td>3, 6 (Selectable)</td></tr></table>		Buffer Force (N)	0.5±0.2, 1.0±0.2 (Selectable)	Stroke (mm)	3, 6 (Selectable)		
	Buffer Force (N)		0.5±0.2, 1.0±0.2 (Selectable)					
Stroke (mm)	3, 6 (Selectable)							
Diagram of AFB-RB Motor Driven unit: - Stepping Motor: Selectable 2-phase/5-phase - Guide Pin: Shaft anti-rotation with a mechanism of a small bearing and guide groove - Fine Buffer: (Magnetic Spring Cushioning Mechanism) - Vacuum Port: Port piping on the front of the body - Guide Bushing: Ball guide bushing suppresses shaft runout with high precision - Shaft: Vacuum suction of workpiece at the tip - Shaft tip is D-cut: Easy positioning when mounting attachments								
Pneumatic Cylinder Driven	All-in-one design makes multi-head units compact and lightweight	AFB-P						
	Fine buffer, air cylinder, and cylinder switch are integrated							
	Space-saving and low-profile Enables narrow-pitch manifolding							
	Built-in fine buffer achieves low particle generation, long life, constant pressing force, and soft touch							
	Diagram of AFB-P Pneumatic Cylinder Driven unit: - Cylinder - Slim - Soft - Three-in-One - Fine Buffer - Cylinder Switch							

Product Category

Actuators - Pneumatic Cylinders	P. 3
Actuators - Electric Actuators	P. 78
Directional Control Valve	P. 111
Air Preparation Equipment	P. 151
Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing	P. 229
Sensors/Controllers	P. 263
Main Line Components/Nitrogen Gas Generators	P. 279
Precision Components	P. 311
Vacuum Components	
Fluid Control Valves	P. 343
Fine System Components (For pure water, chemicals, and process gas)	P. 427
Software	P. 443

Specific Applications

High-Durability Components - HP Series	P. 453
For Food Manufacturing Processes - FP Series	P. 461
For Outdoor Use - WP Series	P. 467
For Rechargeable Battery Manufacturing Processes - P4 Series	P. 471
For Clean Environment Components P5/P7 Series	P. 477
Others P12, P8, P9, P11, P6 (Oil-free, Ozone-resistant, Copper Ion-resistant)	P. 481

Vacuum Components

Search by Product System P. 329

Search by Product System

Vacuum Equipment System Configuration..... P. 329

Ejector System P. 331

Single Unit Type	VS VSH/VSU/VS VSC
Unit Type	VSG VSK/VSKM VSJ/V VSJM VSN/V VSNM VSX/V VSXM VSQ VSZM

Vacuum Pump System P. 335

Vacuum Switching Unit	VSJP/V VSJPM VSNP/V VSNPM VSXP/V VSXPM VSQP VSZPM
-----------------------	--

Suction Pads P. 337

Standard Type	VSP-□R□, □A□, □RM□
Sponge Type	VSP-□S□
Bellows Type	VSP-□B□
Multi-stage Bellows Type	VSP-□W□
Oval Type	VSP-□E□
Soft Type	VSP-□L□
Soft Bellows Type	VSP-□LB□
Anti-slip Type	VSP-□K□
For Thin Workpieces Type	VSP-□P□
Flat Type	VSP-□F□

Vacuum Related Equipment..... P. 339

Drop Prevention Valve	VSECV
Compact Vacuum Regulator	VS RVV
Vacuum Break Unit	VSLF
Filter for Vacuum	VSFB/V VSFU/V VSFJ
Inline Filter	FSL
Vacuum Pressure Switch with Digital Display	VSUS
Air Tweezers	VST

Vacuum Filter P. 341

VFA1000/3000/4000

Vacuum Regulator P. 341

VRA2000

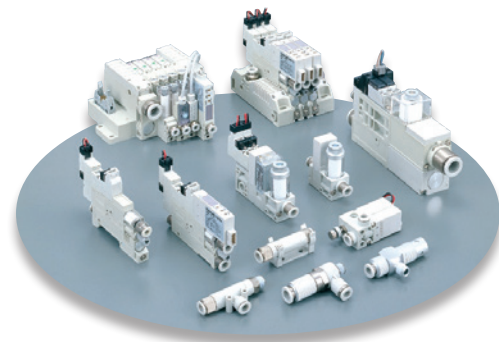
Other Related Equipment..... P. 342

Electro-Pneumatic Regulator	EV2100V
Precision Suction Plate	PVP
Fine Buffer	FBU2
Compact Cylinder with Vacuum Suction	MVC
3D Suction Gripper	FSH
Direct Acting 3-Port Valve	3QB 3QRA/B



Ejector System/Vacuum Pump System

The ejector system and vacuum pump system are the core of the vacuum system. A variety of types are available, from single unit types to unit types that combine various related equipment.



Single Unit Type

VSYS Series

P. 331



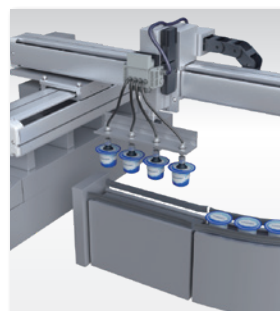
Compact and lightweight with integrated ejector and vacuum burst function.



Unit Type

VSNM Series

P. 335



A vacuum ejector unit designed for high-speed operation.



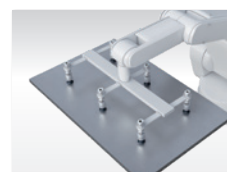
Suction Pads

P. 337

An attachment that directly picks up the workpiece. A wide variety of materials, shapes, and pad diameters are available to match the size, weight, and characteristics of the target workpiece.



Standard Type (General Type)



Ideal for thick, flat workpieces.



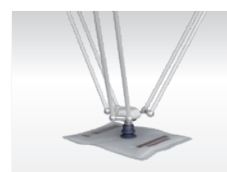
Standard Type (Compact)



Ideal for small workpieces and semiconductor manufacturing equipment.



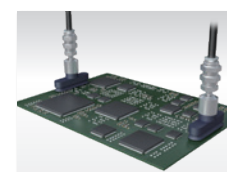
Bellows Type



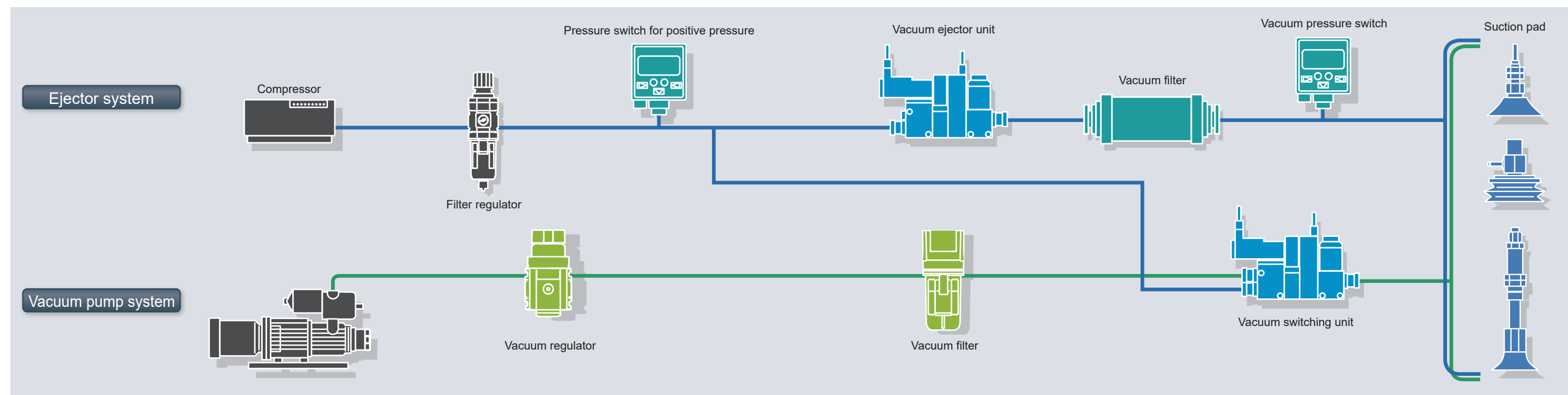
Also has the features of a swivel pad, making it ideal for retort pouches, etc.



Oval Type



Ideal for substrates and semiconductor manufacturing equipment.



Vacuum Related Equipment

P. 339

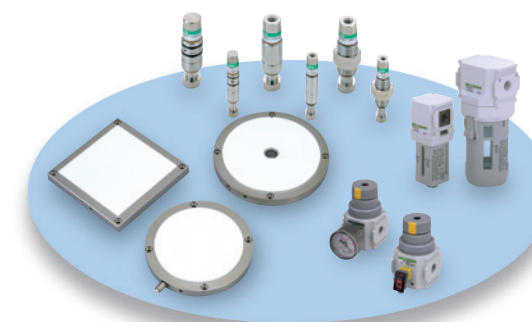
Various related equipment such as vacuum break units, vacuum pressure switches, and vacuum filters are available to match the use of the vacuum system.



Related Components

P. 341

Related equipment suitable for more advanced vacuum systems, such as vacuum filters, vacuum regulators, electro-pneumatic regulators, precision suction plates, and fine buffers, are available.



●: Standard equipment ○: Option

Ejector System

Vacuum Components

Search by product series

Unit Type

* For details, please refer to "Model No." on the CKD Components product website (https://www.ckd.co.jp/kiki/en/). ●: Standard equipment ○: Option

Features/Applications	Model No./Appearance	Single unit / width dimension (mm)	Single unit / weight (g)	Manifold	System Components									Model No. (Nozzle diameter (mm))								Achieved vacuum pressure (-kPa)			Intake flow rate (L/min (ANR))			Consumption flow rate (L/min (ANR))			Click here for detailed specifications	
					With valve		With switch		Analog Output					With vacuum filter	With silencer	Common exhaust	With check valve	04 (0.4)	05 (0.5)	06 (0.6)	07 (0.7)	10 (1.0)	12 (1.2)	15 (1.5)	20 (2.0)	H	L	E	H	L	E	H
					For generation	Vacuum breaking	Mechanical	Switch Output																								
General type with emphasis on basic performance ● Single unit dedicated type ● Valve, vacuum pressure switch, and filter are unitized. Select according to the purpose of use is possible	VSG 	20	47 to 128																90			7	12			11.5			Precision and Vacuum Equipment [RJ-010AA]	 Click!		
A wide variety of variations are available ● Optimal unit selection is possible by modularizing each unit ● Built-in check valve, air timer type vacuum break valve can be selected	VSK/VSKM 	16	69 to 183	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	91	67	91	13	24/26	10.5	23	17				Click!		
																						27	40	21	46	34						
																						38	50	27	70	47						
Prevents workpiece from being blown off by controlling the flow rate and pressure of the break air ● A self-holding type that supports power saving is also available for the vacuum generation valve ● Vacuum break time is shortened by the vacuum break circuit relief function	VSJ/VSJM 	20	156 to 176	○	●	●		○	○	●	○	○		○	○	○	○	90.4	66.5	90.4	13	24/26	10.5	23	17			Click!				
																					27	34/40	21	46	34							
																					32/38		24/27	70		47						
High-speed and stable responsiveness ● Compact and lightweight. Especially compact in height ● Direct acting valve is used for the main valve, ON/OFF responsiveness = 5 msec or less	VSN/VSNM 	10.3	51 to 171	○	●	●		○	○		○	○		○	○	○	○	90.4		90.4			2			6				Click!		
																					7		3	11.5	8							
																					9.5		4.5	16		12						
Lightweight/Compact Type ● Direct mount type and DIN rail type are available for mounting ● A self-holding type that supports power saving is also available for the vacuum generation valve	VSX/VSXM 	10.5	71 to 89	○	●	●		○	○	●	○	○		○	○	○	○	90.4	66.5	90.4	7	12	3	11.5	8.8			Click!				
																					13	22/24	10.5	23	17							
																					20/24	26	19/20	46	34							
Large vacuum unit ideal for controlling large flow rates ● Three types of nozzles are standardized: single, 2-stage, and twin ● A self-holding type that supports power saving is also available for the vacuum generation valve (single nozzle type only)	VSQ 	31.5	367 to 499		●	●		○		●	○	○		○	○	○	○	93	66	92	63	95	42	100	70			Click!				
																					96/97.5	143/160	70	200	150							
																					52			23								
																					75			46								
																					85			70			*2					
																					40 (24)			100 (23)			*2					
																					70 (36)			200 (46)			*2					
Manifold dedicated, reduced wiring (flat cable/D-sub-connector) compatible ● Equipped with an atmospheric pressure release valve, enabling high-flow atmospheric break and shortening vacuum break time ● Valve power consumption 0.55 W, self-holding type also selectable for energy saving	VSZM 	11	Please contact us.	●	●	●		○	○	●	○	○		○	○	○	○	90.4	66.5	90.4	7	12		11.5			Click!					
																					13	23/24	10.5	23	17							
																					24		20	46		34						

Precision and Vacuum Equipment [RJ-010AA]

*1: The supply pressure for H and L types is 0.5 MPa, and the supply pressure for E type is 0.3 MPa.
2: Values in () for the VSQ twin nozzle are for small bore size nozzle.

Vacuum Components

Search by product series

Vacuum Pump System

Vacuum Components

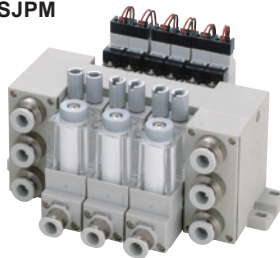
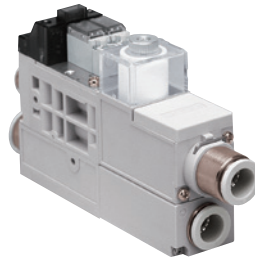
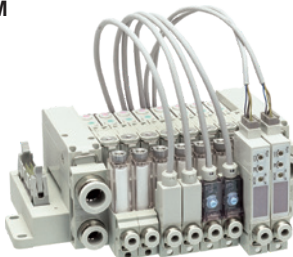
Search by product series

Vacuum Switching Unit

* For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).

●: Standard equipment ○: OptionOption

*For details on series for specific applications, refer to P. 451.

Features/Applications	Model No./Appearance	Single Unit/Width (mm)	Single Unit Weight (g)	Manifold		Configuration Components						Effective cross-sectional area of vacuum valve (mm ²)	Click here for specifications		Application-Specific Series	
						With Valve		With Switch		With Filter	With Silencer		Check Valve	Catalog Name [No]	WEB	Rechargeable Battery
						For Generation	For Break	Output Switch	Analog Output							P8
Prevents workpiece from being blown off by controlling the flow rate and pressure of the break air ● A self-holding type that supports power saving is also available for the vacuum generation valve ● Vacuum break time is shortened by the vacuum break circuit relief function	VSJP/VSJPM 	20	125.5 to 158.5	○		●	●	○	○	●			3.5 (ø4) 5 (ø6)	Precision and Vacuum Equipment [R-010AA]	 Click!	
High-speed and stable responsiveness ● Compact and lightweight. Especially compact in height ● Direct acting valve is used for the main valve, ON/OFF responsiveness = 5 msec or less	VSNP/VSNPM 	10.3	52.5 to 171	○		●	●	○	○ (Also selectable with digital display)				0.4		 Click!	
Lightweight/Compact Type ● Direct mount type and DIN rail type are available for mounting ● The 3-port valve specification significantly shortens the vacuum break time by using a 3-port valve for the vacuum supply valve	VSXP/VSXPM 	10.5	78 to 88	○		●	●	○	○ (Also selectable with digital display)	●		2-Port Valve Specification: 3.5 (ø4) 4.5 (ø6) 3-Port Valve Specification: 3.0 (ø4) 3.6 (ø6)	 Click!		●	
Large vacuum unit ideal for controlling large flow rates ● Normally open and normally closed types are available for the air supply valve	VSQP 	31.5	365 to 436			●	●	○ (With digital display)		●			16.5		 Click!	
Manifold dedicated, reduced wiring (flat cable/D-sub-connector) compatible ● With atmospheric pressure relief valve installed, atmosphere burst at high flow rate is possible, shortening the vacuum burst time ● Valve power consumption 0.55W, self-hold is also selectable, energy saving compatible	VSZPM 	11	Please contact us.	●		●	●	○	○	●			4.5		 Click!	

Vacuum Components

Search by product series

Suction Pads

Suction Pads

* For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).
*For details on series for specific applications, refer to P. 451.

Features/ Applications		Model No./ Appearance	Pad Diameter (mm)					Click here for detailed specifications		Series for Specific Applications	
			0.7	10	50	100	200	Catalog Name [No.]	WEB	P4	Food FP
Standard Type	General Type	Flat workpieces (hard and not flimsy) 	 ø1 to ø200					Precision and Vacuum Equipment [RJ-010AA]	 Click!	●	●
	Deep Shape	Spherical workpieces (apples or balls) 	 ø15 to ø100								
	Compact	Semiconductor Components 	 ø0.7 to ø4								
Sponge Type	Workpieces like exterior wall materials, small stones, or shells 	 ø10 to ø100									
Bellows Type	Bags containing retort pouches, foodstuffs, etc. 	 ø2 to ø100									
	Multi-stage Bellows Type	 ø6 to ø50									
Oval Type	Long workpieces such as substrates, round bars, and semiconductor components 	 2×4 to 8×30 (mm)									

Holder Shape

Code	Standard	VSP-A	VSP-B	VSP-C	VSP-D	VSP-E	VSP-F	VSP-LFC	VSP-LFD
	Compact	VSP-MA	VSP-MB	VSP-MC	VSP-MD	VSP-ME	-	-	-
Shape	Fixed vacuum outlet Vacuum outlet on top	Fixed vacuum Vacuum outlet on side	Buffered Vacuum outlet on top	Buffered Vacuum outlet on side	Direct mounting, Fixed	Direct mounting, Buffered	Low dust generation buffered Vacuum outlet on top	Low dust generation buffered Vacuum outlet on side	
									

* For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).
*For details on series for specific applications, refer to P. 451.

Features/ Applications		Model No./ Appearance	Pad Diameter (mm)			Click here for specifications		Application- Specific Series	
			10	20	50			Rechargeable Battery	Food Products
Soft Type	Extraction of molded products and easily scratched workpieces	 ø4 to ø40	Precision and Vacuum Equipment [RJ-010AA]					P8	FP
	Soft Bellows Type	 ø6 to ø20							
Anti-slip Type	Workpieces with oil adhesion such as press parts	 ø10 to ø50							
	For Thin Workpieces Type	 ø8 to ø20							
Flat Type	Thin workpieces such as sheets and vinyl	 ø10 to ø30							
	Suction Mark Prevention Type	 ø10 to ø30							
LCD Glass Painting Process Semiconductor Manufacturing Equipment, etc.									

Code	Standard	VSP-HC	VSP-HD	VSP-HDW	VSP-HE	VSP-HEW	VSP-AE	VSP-BE
Shape	Lightweight with buffer Vacuum outlet top	Lightweight with buffer Vacuum outlet side	Lightweight with buffer Vacuum outlet both sides	Low back, direct mounting, fixed Vacuum outlet side	Low back, direct mounting, fixed Vacuum outlet both sides	Screw fixing Vacuum outlet top	Screw fixing Vacuum outlet side	
								

Vacuum Related Equipment

Drop Prevention Valve

*For details, refer to CKD Components Product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features/Applications/Appearance	Model No.	Connection Port Size		Click here for detailed specifications	
		Vacuum Generator Side	Workpiece Side	Catalog Name [No.]	WEB
Even if a workpiece detaches, the vacuum is maintained for workpieces on separate circuits Applicable to the Celvac suction pad series 	VSECV-M3	M3		Precision and Vacuum Equipment [RJ-010AA]	 Click!
	VSECV-M4	M4			
	VSECV-M5	M5			
	VSECV-M6	M6			
	VSECV-M10	M10			
	VSECV-6A	R1/8			

Compact Vacuum Regulator

Features/Applications/Appearance	Model No.	Connection Port Size		Fitting Type	Click here for detailed specifications	
		ø6	ø8		Catalog Name [No.]	WEB
Allows control of the source pressure as well as at the terminal end Vacuum pressure switch with digital display or vacuum pressure gauge can also be selected 	VS-RVV-□ZA□	○	○	Elbow (Output: Male Thread)	Precision and Vacuum Equipment [RJ-010AA]	
	VS-RVV-□ZB□	○	○	Elbow (Supply: Male Thread)		
	VS-RVV-□ZU□	○	○	Union Type		

Vacuum Break Unit

Features/Applications/Appearance	Model No.	Connection Port Size		Click here for detailed specifications	
		Vacuum Generator Side	Workpiece Side	Catalog Name [No.]	WEB
Controls vacuum break air while maintaining the vacuum characteristics of the vacuum ejector Vacuum burst circuit relief function realizes shortening of vacuum burst time 	VSLF-44	ø4	ø4	Precision and Vacuum Equipment [RJ-010AA]	
	VSLF-66	ø6	ø6		
	VSLF-46A	ø4	R1/8		
	VSLF-66A	ø6	R1/8		

Filter for Vacuum

* For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).
●: Standard equipment ○: Option

Features/Applications/Appearance	Model No.	Port Size						Filtration Area (cm ²)	Click here for detailed specifications	
		M5	ø4	ø6	ø8	ø10	ø12		Catalog Name [No.]	WEB
Removes dust and water droplets through the cyclone effect and element Dust scattering is prevented because the entire dust case can be detached with one touch 	VSFB-66			●				20	Precision and Vacuum Equipment [RJ-010AA]	
	VSFB-88				●			20		
	VSFB-1010					●		20		
	VSFB-1212						●	20		
No tools required for element replacement or cleaning Inline type that can be easily installed in the middle of piping 	VSFU-1S	○	○	○				2.8		
	VSFU-1L	○	○	○				4.7		
	VSFU-2	○	○	○				7.5		
	VSFU-3			○	○	○		12.5		
Ideal for single ejectors that do not have a built-in vacuum filter 	VSFJ-44		●					0.8		
	VSFJ-66			●				1.1		
Compact, lightweight, space-saving inline type Use either positive or negative pressure 	FSL100		●	●				4.7		
	FSL200		●	●				7.5		
	FSL500			●	●	●		12.7		

Vacuum Pressure Switch

Features/Applications/Appearance	Model No.	Connection Port Size					Output Type	Click here for detailed specifications	
		M5	ø4	ø6	ø8	Direct Mount		Catalog Name [No.]	WEB
Two types are available: 2-point output and analog output Three types of pipe connection are available: push-in fitting, M5 female thread and direct mount 	VSUS-NW	○	○	○	○	○	NPN: 2-point output	Precision and Vacuum Equipment [RJ-010AA]	
	VSUS-NA	○	○	○	○	○	NPN: Analog Output		
	VSUS-PW	○	○	○	○	○	PNP: 2-point output		
	VSUS-PA	○	○	○	○	○	PNP: Analog Output		

Air Tweezers

Features/Applications/Appearance	Model No.	Pad Diameter				Pad Rubber Material	Holder Shape	Click here for detailed specifications	
		ø2	ø4	ø6	ø8			Catalog Name [No.]	WEB
Suction pad and ejector are built into the pen-shaped body Ideal for assembling small parts, etc. Package type also available 	VST-A□N	○	○	○	○	Nitrile Rubber	Valveless Type	Precision and Vacuum Equipment [RJ-010AA]	
	VST-A□S	○	○	○	○	Silicone Rubber	Valveless Type		
	VST-B□N	○	○	○	○	Nitrile Rubber	Built-in Valve Type		
	VST-B□S	○	○	○	○	Silicone Rubber	Built-in Valve Type		

Vacuum Filter

*For details, please refer to "Model No." on the CKD Components product website (<https://www.ckd.co.jp/kiki/en/>).
*For details on series for specific applications, refer to P. 451.

Features/Applications/Appearance	Model No.	Port size				Max. flow rate L/min (ANR) *1	Click here for specifications		Application-Specific Series
		Rc 1/8	Rc 1/4	Rc 3/8	Rc 1/2		Catalog Name [No]	WEB	Rechargeable Battery
									P8
Long Life Dust is removed in two stages: centrifugal separation by the louver and filtration by the element, so the pressure loss of the filter does not increase even after long-term use Removes dust and moisture Over 80% moisture removal is possible due to the centrifugal separation effect of the louver (at recommended flow rate) Element can be used repeatedly The standard element uses a mesh for filtration, so even if dust adheres, it can be used repeatedly with simple cleaning 	VFA1000	●	●			60	Precision and Vacuum Equipment [RJ-010AA]		●
					80				
VFA3000		●	●		100				
					200				
VFA4000			●	●	250				
					400				

*1: Flow rate when initial pressure loss is 3 kPa or less (when using standard element).

Vacuum Regulator

Features / Applications / Appearance	Model No.	Port size		Max. flow rate L/min(ANR) ^{*2}	Click here for specifications		Application-Specific Series
		Rc / NPT / G1/4	Rc / NPT / G3/8		Catalog Name [No]	WEB	Rechargeable Battery
							P8
Locking/Non-locking can be changed By changing the mounting direction of the slide key, it is possible to arbitrarily change from a locking type to a non-locking type Can be modularly connected with a vacuum filter Can be modularly connected with VFA3000 or VFA4000	VRA2000 	●	●	200	Precision and Vacuum Equipment [RJ-010AA]	 Click!	●

*2: The maximum flow rate is the flow rate when the secondary side is fully opened after the secondary side is fully closed, the primary pressure is adjusted to -101.3 kPa, and the secondary pressure is adjusted to -100 kPa.

Other Related Equipment

Features/Applications	Model No./Appearance	Specifications	Page
Electro-Pneumatic Regulator High-precision, high-response electro-pneumatic regulator with feedback control by a semiconductor pressure sensor and electronic control circuit	EV2100V 	Operating Pressure Range: -96 kPa to -101.3 kPa Max. Flow Rate: 150 L/min / 120 L/min	P. 183
Precision Suction Plate Adopts fluororesin sintered porous material with 40% porosity. Eliminates distortion and deformation due to suction without damaging the workpiece, even for ultra-thin or soft materials.	PVP 	Material: PCTFE resin Porosity: 40±5% Shore D Hardness: 60±5 degrees	P. 321
Fine Buffer A buffer mechanism that uses a cushioning mechanism using magnets (magnetic spring) to achieve constant pressing force, long life, and maintenance-free operation	FBU2 	Buffer Pressing Force (N): 0.1 to 0.2/0.4 to 0.6/0.9 to 1.1 Payload: 30 g or less/80 g or less	P. 323
Compact Cylinder with Vacuum Suction A cylinder with a suction pad attached to the tip of a small cylinder Since the vacuum suction port is attached to the main body, the piping does not move when the cylinder operates	MVC 	Tube Inner Diameter (mm): ø6, ø10 Stroke (mm): 5, 10, 15, 20, 25, 30	P. 41
3D Suction Gripper Holds the pad at any desired profiling position	FSH 	Holding Force (N): 10/50	Please contact us for details.
Direct Acting 3-Port Valve High-speed response of 5 ms or less enables high-speed switching between positive pressure and low vacuum, achieving high-speed operation such as mounting electronic components	3QB 3QRA/B 	Lightweight: 12.5 g (3QB) Long Life: 100 million cycles High-speed Response: 5 ms or less	P. 125

Product Category

Actuators, Pneumatic Cylinders	P. 3
Actuators, Electric Actuators	P. 78
Directional Control Valve	P. 111
Air Preparation Equipment	P. 151
Auxiliary Equipment/Speed Controllers/ Silencers/Fittings/Tubes	P. 229
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Precision Components	P. 311
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Fine System Components (Pure water/chemical liquids/process gas)	P. 427
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Specific Applications

High Durability Components HP Series	P. 453
For Food Manufacturing Processes FP Series	P. 461
For Outdoor Use WP Series	P. 467
For Rechargeable Battery Manufacturing Processes P4 Series	P. 471
For Clean Components P5/P7 Series	P. 477
Others P12, P8, P9, P11, P6 (Oil-free, ozone resistant, copper ion restricted)	P. 481

Fluid Control Valves

Search by Product System	P. 348
Search by Fluid	P. 374
Search by Industry/Application	P. 404
Select from WEB Model Selection System	Ending 30

Fluid Control Valves - Types and Features P. 345

Product group specialized for specific industries and applications P. 346

Search by Product System

Solenoid Valve P. 349

Compact 2, 3-port valve Multi-fluid control 2, 3-port valve dedicated pilot valve for each fluid	HNB, HNG, USB, USG FFB, FFG, AB, AG HB, EMB SP, EXA, GEXA, FWD AP, AD, APK, ADK, SPK
Explosion-proof	□EX4, □EX2, □E4, □E2
For high vacuum	HVB, HVL12

Air Operated 2, 3-Port Valve P. 363

Cylinder Valve	SAB, SVB, NAB, GNAB
Diaphragm Cylinder Valve	LAD, NAD, GNAD
Coolant valve	CVE, CVSE, GCVE, GCVSE

Search by Fluid

Compressed Air	P. 375
Dry Air	P. 376
Low vacuum/medium vacuum/high vacuum	P. 377
Inert Gas	P. 379
Process Gas	P. 380
Fuel Gas	P. 381
Water	P. 383

Fluid/Material Compatibility Checklist	P. 393
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Search by Industry/Application

For Dust Collectors P. 405

Dust collection valve controller	PD3, PDV3, PD2, PDV2, PDVE4 PJVB/OMC2
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Gas Combustion System P. 407

Gas Combination Valves/solenoid valve Medium Pressure Gas Safety Shutoff Control System Safety shut-off valve, Hydraulic valve	GHV, GRV, DSG, VNA, VLA VNR, TAC-25, VNM, VLM, C25N-B VNM-25-K, HK1, HS
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Automatic Watering Control Equipment P. 415

Solenoid valves/Controllers/Rain sensors	RSV, GSV, RSC, RS-6
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Life Science Equipment P. 417

Solenoid Valve	MR10R, MR16, MKB3 MAB, MAG, MYB, MYG MEB2, MEG2, MJB3, EMB HMTB, HMTG, USB, USG UMB, UMG, HB, HYN
Fine Pinch Valve	HYN

Ball Valve P. 367

Air Operated	CHB, CHG
Electric	MXB, MXG

Pinch Valve P. 369

Rubber sleeve	NPV2
Fine Pinch Valve	HYN, HYA

Other fluid control components P. 371

Check Valve	CCH, CCN
Strainer	YS
Flow Sensor	WFK2, WFC, WXU
Regulator	WR

Hot Water	P. 385
Steam	P. 386
Oil/Kerosene	P. 387
Coolant/solvent-based	P. 389
Sludge/Powder/Chemicals	P. 391
Chemical liquid/pure water	P. 392

Pharmaceutical Manufacturing Process Equipment P. 421

Weir Type Diaphragm Valve	SWD, MWD
Poppet Type Diaphragm Valve	SPD
Fine Pinch Valve	HYA, HYN

Products for Outdoor Use P. 423

WP Series	
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Rechargeable Battery Compatible Equipment P. 424

P4 Series	
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Equipment for Food Manufacturing Processes P. 425

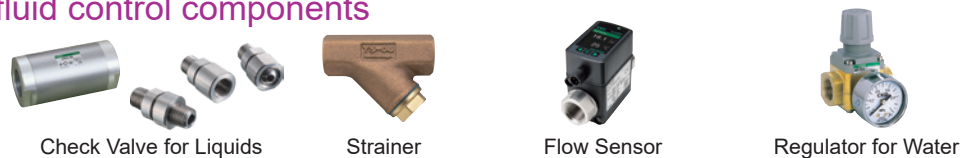
FP Series	
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Types and features of fluid control valves

Type	Features / Applications	Responsivity *2	Flow rate *2	Water hammer	Example page
Solenoid valve	Direct acting  - Activated by only the suction force of the electromagnet (solenoid) - Simple structure and reliable operation in general - Operation is possible even at zero differential pressure - For compact equipment and high frequency of operation	High speed	Small		FFB FFG P. 349
	Pilot operated  - Activated by the suction force and fluid pressure of the electromagnet (solenoid) - Complex structure compared with direct acting - The min. working pressure differential is required for operation, and the valve does not operate at zero pressure differential. - For piping diameter and flow rate that cannot be covered by direct acting valves	Low speed	Medium	be prone to	AP AD P. 351
	Pilot Kick type  - Actuates by suction force and fluid pressure using an electromagnet (solenoid) and kick spring - Operation is possible even at zero differential pressure by using the kick spring				APK ADK P. 351
Air operated 2, 3-port valve	 - Operated by driving the cylinder with external pilot air - Very strong seal for reliable operation - Supports control of special fluids such as high viscosity fluids, powder mixed fluids, chemical liquids, and low vacuum raw material gas	Medium speed	Medium	be less likely to occur *1	SAB CVE2 P. 363
Ball valve	Air operated  - Actuated by rotating the spherical valve body with pilot air from outside - Enables larger flow rate than solenoid valves	Medium speed	Large	be prone to	CHB CHG P. 367
	Motorized  - Actuates by rotating a spherical valving element with the rotational force of an electric motor (motor) - Enables larger flow rate than solenoid valves - Operation speed is slow, so "water hammer" can be prevented when controlling liquids such as water	Low speed		be less likely to occur	MXB1 MXG1 P. 367
Pinch valve	Air operated  - The flow path is opened and closed by sandwiching the rubber sleeve with pilot air from the outside - Flow path is a rubber sleeve, with low fluid resistance - Capable of controlling fluids containing solids as well as gases, liquids and oil	Low speed	Large		NPV2 P. 369
	Solenoid Air operated  - The tube is pressed by the suction force of pilot air and electromagnets (solenoids) from outside to open/close the flow path - Only the tubing is wetted, making it ideal for controlling pure water, saline solutions, reagents, cleaning solutions, etc.	Medium speed	Medium	be less likely to occur	HYN HYA P. 369

*1: Water hammer does not occur easily, while steam generates easily. *2: Differs depending on the bore size.

Other fluid control components



P. 371

Product group specialized for specific industries and applications

Features/Applications	Page
For Dust Collectors For dust removal of bag filter type dust collectors A large volume of air is injected instantly. Large port size dust collector valve and Controllers for high speed opening/closing and low air blow-off are available.	P. 405
Gas Combustion System (hydrogen compatible) Enables safer and more optimized gas utilization system. Use of city gas, natural gas, LPG, and hydrogen gas	P. 407
Automatic Watering Control Equipment Watering system components by CKD widely in use for watering of urban greenery, greenery on rooftops and within buildings, grounds, parks, greenbelts, etc.	P. 415
Life Science Equipment A wide variety of components products are available to meet the needs of medical devices. Products that can be used in biochemical/immunoanalysis equipment, oxygen concentrators, dialysis monitoring equipment, dental units, ventilators, and high-pressure steam sterilizers, etc.	P. 417
Pharmaceutical Manufacturing Process Equipment Proposing diversified pharmaceutical modalities through FA solutions. Pioneering the future of new pharmaceutical manufacturing process control, such as single use and continuous production	P. 421
Outdoors WP Series Durable and long-lasting product that meets the needs of facilities for plants and outdoor use. Weather-resistant parts used, demonstrating durability for outdoor use. Safe in harsh outdoor environments.	P. 423
P4 Series for Rechargeable battery manufacturing processes Responding to components demands for rechargeable and next-generation batteries P4: Material restrictions (Restrictions on copper, zinc, nickel-based, electrolytic nickel plating) Dry environment (atmospheric dew point -70°C or less) P40: Material restrictions (Restrictions on copper, zinc, nickel-based, zinc plating, and electrolytic nickel plating) Dry environment (atmospheric dew point -70°C or less)	P. 424
FP Series for food manufacturing processes Products that can be used safely and securely in food manufacturing processes FP1 Series: Food-grade (NSF H1) lubricants are used for flow paths and sliding parts. FP2 Series: In addition to FP1, the flow path parts are made of materials that comply with the Food Sanitation Act (resin and rubber materials)	P. 425

Fluid Control Valves

Search by Product System

Solenoid Valve

Compact 2, 3-port valve	HNB, HNG USB, USG FFB, FFBM FFG, FFGM AB, GAB AG, GAG AB, GAB -Z AG, GAG -Z HB, EMB	P. 349
	2, 3-Port Valves for Multi-Fluid Control	
	Pilot valve by dedicated fluid	
	A2-5201, A2-5202 A2-5800, A2-3400	
Explosion-proof	KZV3 PVS, PKA PKW, PKS	P. 355
	□EX4, □EX2 □E4, □E2	P. 357
For high vacuum	HVB, HVL12 AVB, MVB	P. 361

Air Operated 2, 3-Port Valve

Cylinder Valve	SAB, SVB NAB, GNAB	P. 363
Diaphragm Cylinder Valve	LAD NAD, GNAD	
Coolant valve	CVE2, CVSE2 GCVE2, GCVSE2 CV3E, CVS3E CVE3, CVSE3	

Ball Valve

Air Operated	CHB, CHG	P. 367
Electric	MXB, MXG, MSB MXBC2, MXGC2 MHB4, MHG4	

Pinch Valve

Rubber sleeve	NPV2	P. 369
Fine Pinch Valve	HYN, HYA	

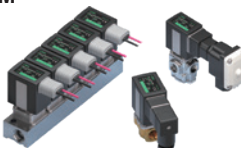
Other, fluid control components

Check Valve	CCH, CCN	P. 371
Strainer	YS	
Flow Sensor	WFK2, WFC, WXU	
Regulator	WR	

Solenoid Valve

Compact 2, 3-port valve/2, 3-port valve for multi-fluid control

*For details, refer to CKD Component Products site (https://www.ckd.co.jp/kiki/en/) → "Model No."
*For details on series for specific applications, refer to P. 451.

Type	Features / Applications	Model No. / Appearance	No. of Ports	Configuration	Working fluid									Working pressure (MPa) *1	Port size *1											Click here for specifications		For special applicationsSeries				
					Compressed air	Water *2	Dry air	Low vacuum *3	Medium vacuum	Oil	Steam	Rc / G / NPT						Rc/flange					Food Products	Rechargeable Battery	Outdoors							
												1/8			1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2				2 1/2	3					
												6			8	10	15	20	25	32	40	50				65	80					
												Orifice size ø(mm)																				
Direct Acting	Compact direct acting	HNB1, HNG1 	2 / 3	Single Unit	✓	✓	✓	✓						0 to 0.7	M5 Orifice size ø1.0											Fluid Control Valves [R-013AA]	 Click!					
	Compact direct acting	USB/USG 	2, 3	Single Unit	✓	✓	✓	✓						0 to 0.9	M5, Rc1/8 (Resin body) M6, barbed fitting, 1/4-28UNF Orifice size ø1 to 3.2												 Click!	●				
	NEW standard Standard support for dry air High durability of 20 million cycles Energy saving Improved corrosion resistance of wetted parts Low-noise Construction	FFB/FFBM FFG/FFGM 	2 / 3	Single Unit Manifold	✓	✓	✓	✓	✓	✓				0 to 1.4	1.5 to 10													 Click!				
	Wide variety of materials, orifice diameters, and coil options	AB/GAB AG/GAG 	2 / 3	Single Unit Manifold	✓	✓		✓		✓	✓			0 to 5 *4	1.5 to 18													 Click!	●		●	
	Supports dry air to inert gas	AB/GAB-Z AG/GAG-Z 	2 / 3	Single Unit Manifold	✓		✓	✓						0 to 4 *4	1.5 to 10													 Click!		●		
	High corrosion resistance stainless steel body Compatible with pure water	HB 	2	Single Unit	Water/ultrapure water/chemicals (Liquids that do not corrode wetted part materials)									0 to 0.7	1 to 7													 Click!	●			
	For chemical liquids using PTFE for the body	EMB 	2	Single Unit	Water/ultrapure water/chemicals (Liquids that do not corrode wetted part materials)									-0.05 to 0.3	3 to 15													 Click!				

A wide range of components products that meet the needs of medical devices refer to P. 417.

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please refer to the product specifications for temperature.
*3: 1.33×10⁵ Pa (abs)
*4: Represents the operating pressure differential range. For details on operating pressure, please refer to the product specifications.

Solenoid Valve

Compact 2, 3-port valve / multi-fluid control 2, 3-port valve / pilot valve for each dedicated fluid

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

*For details on series for specific applications, refer to P. 451.

Type	Features / Applications	Model No. / Appearance	No. of Ports	Configuration	Working fluid								Working pressure (MPa)*1	Port size *1											Click here for specifications		Application Specific Series				
					Compressed air	Water *2	Dry air	Low vacuum *3	Medium vacuum	Oil	Steam			Rc / G / NPT						Rc / flange							Food Products	Rechargeable Battery	Outdoors		
														1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3							
														6	8	10	15	20	25	32	40	50	65	80	Orifice size ø(mm)					Catalog name [No]	WEB
Pilot Operated	Low profile, large flow rate thanks to a proprietary "swivel flow path structure (patented)"	SP 	2	Single Unit	✓									0.02 to 0.2	Push-in fitting ø6											Fluid Control Valves [RJ-013AA]	 Click!				
	For Compressed Air Compact and lightweight with resin body High-flow air blow, etc.	EXA GEXA 	2	Single Unit Manifold	✓									0.01 to 0.7	(Resin body) Push-in fitting ø6, ø8, ø10, ø12 (Aluminum Body) Rc1/4, 3/8												 Click!	●	●		
	For Water Compact, lightweight, and high flow with specially shaped diaphragm	FWD 	2	Single Unit		✓								0.02 to 0.7			15		22								 Click!	●			
	Piston Driven	AP 	2	Single Unit	✓	✓					✓	✓		0.05 to 1.2 *4					10 to 25			35 to 53					 Click!				
	Diaphragm Driven	AD 	2	Single Unit	✓	✓						✓		0.02 to 1 *4					10 to 25			35 to 53					 Click!				
	Automatic Watering Control Components Agricultural, industrial water, river water spraying, irrigation, liquid fertilizer applications.	RSV-K GSV/GSV2 RSV-W (certified by JWWA)	Automatic Watering Control Components: refer to P. 415.																												
Pilot Kick Operated	Piston Driven	APK 	2	Single Unit	✓	✓		✓			✓	✓		0 to 1 *4					12 to 28			35 to 53				Fluid Control Valves [RJ-013AA]	 Click!	●			
	Diaphragm Driven	ADK 	2	Single Unit	✓	✓		✓			✓			0 to 1 *4					12 to 28			35 to 53					 Click!			●	
	Diaphragm Driven Supports dry air to inert gas	ADK-Z 	2	Single Unit	✓		✓	✓						0 to 0.7 *4					12 to 28								 Click!	●	●		
	For steam Proprietary piston structure and foreign matter proof special seal structure reduce external leakage risk in high temperature steam	SPK 	2	Single Unit								✓		0 to 1 *4					16 to 28								 Click!	●			

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please refer to the product specifications for temperature.
*3: 1.33×10² Pa (abs) or 1.33×10³ Pa (abs)
*4: Represents the operating pressure differential range. For details on operating pressure, please refer to the product specifications.

Solenoid Valve

2, 3-Port Valves for Multi-Fluid Control

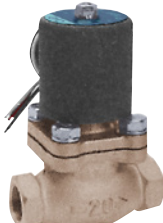
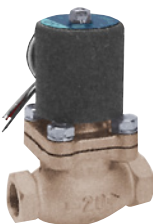
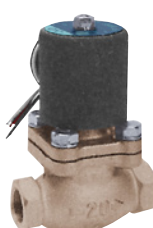
Type	Features/Applications	Model No./Appearance	Number of ports	Configuration		Fluid	Operating Pressure (MPa) *1	Connection Port Size Orifice size (mm) *1	Click here for detailed specifications	
									Catalog name [No]	WEB
Direct Acting	For high frequency open/close control Excellent response stability, durability 10 or more times higher than conventional CKD products [Special Order Item]	A2-5201 	2	Single Unit		Compressed Air Dry Air Inert Gas	0 to 0.7 0 to 0.5	Rc1/8, Rc1/4 ø3, ø4	Fluid Control Valves [R-013AA]	—
Pilot Operated		A2-5202 	2	Single Unit			0.02 to 0.7	Rc1/4, Rc3/8 ø7		
Direct Acting	Usable even with ultra-low temperature fluids such as liquid nitrogen (-196°C) The coil is a molded coil which is resistant to condensation [Special Order Item]	A2-5800 	2	Single Unit		Liquid nitrogen inert liquid	0 to 1.0 0 to 0.4	Rc1/4 ø3, ø5		
Pilot Kick Operated		A2-3400 	2	Single Unit			0 to 0.8	Rc3/8 ø12		

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.

Solenoid Valve

Compact, multi-fluid control

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

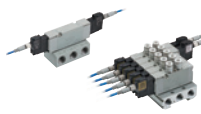
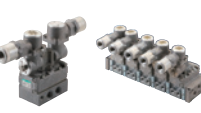
Type	Features / Applications	Model No. / Appearance	No. of Ports	Configuration	Working fluid								Operating Pressure (MPa) *1	Connection Port Size											Click here for detailed specifications		
					Compressed air	Water *2	Dry air	Low vacuum	Medium vacuum	Oil	Steam			Rc						Rc, Flange							
														1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3			
														6	8	10	15	20	25	32	40	50	65	80			
															Orifice size ø(mm)											Catalog name Catalog Name	WEB
Pilot Operated	100/200 VAC common Contributes to the standardization of inventory for building and pipe materials	KZV3 	2	Single Unit		✓					✓	✓														Fluid Control Valves [RJ-013AA]	 Click!
	General purpose solenoid valves	PVS 	2	Single Unit	✓	✓						✓															 Click!
Pilot Kick Operated	For Compressed Air	PKA 	2	Single Unit	✓																						 Click!
	For Water	PKW 	2	Single Unit		✓																					 Click!
	For steam	PKS 	2	Single Unit								✓														 Click!	

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please refer to the product specifications for temperature.
*3: Represents the operating pressure differential range. For details on operating pressure, please refer to the product specifications.

Solenoid Valve

Explosion-proof

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Explosion-proof performance		Model No.	Appearance	Certification Region						No. of Ports		Configuration	Working pressure (MPa)*1	Working fluid								Port size*1								Click here for specifications						
					Japan	Europe	international	China	South Korea	Taiwan					Compressed air	Water	Dry air	Low vacuum	Medium vacuum	Oil	Steam	Rc				Rc/flange											
																						1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	8	10	15	20	25	32	40	50
																						Orifice size ø (mm)															
Direct acting	International explosion-proof guidelines (compliant with TEC international standards)	Pressure and explosion proof structure ExdIIBT4	AB EX4 AG EX4		✓				✓		2, 3		Single unit	0 to 5 *4	✓	✓		✓		✓		1.5 to 7.0									Fluid Control Valves [RJ-013AA]	 Click!					
Pilot Operated			AP EX4		✓				✓		2			0.05 to 1.2 *4	✓	✓			✓					15 to 25			35 to 53										
			AD EX4		✓				✓		2			0.02 to 1 *4	✓	✓			✓					15 to 25			35 to 53										
			Pilot kick	ADK EX4		✓				✓		2			0 to 1 *4	✓	✓		✓					16 to 28													
Direct acting	Pilot operated	Pressure and explosion proof structure ExdIIBT2	AB EX2		✓				✓		2		Single unit	0 to 4 *4	✓	✓			✓	✓		1.5 to 7.0									 Click!						
AP EX2				✓				✓		2		0.05 to 0.6 *4		✓	✓			✓	✓				15 to 25			35 to 53											
Direct acting	Structural standards (Japanese-specific standards)	Pressure and explosion proof structure d2G4	AB E4 AG E4		✓				✓		2, 3		Single unit	0 to 5 *4	✓	✓		✓		✓		1.5 to 7.0									Fluid Control Valves [RJ-013AA]	 Click!					
Pilot Operated			AB E4-Z AG E4-Z		✓				✓		2, 3			0 to 4 *4	✓		✓	✓						1.5 to 7.0													
			AP E4		✓				✓		2			0.05 to 1.2 *4	✓	✓			✓					15 to 25			35 to 53										
			AD E4		✓				✓		2			0.02 to 1 *4	✓	✓			✓					15 to 25			35 to 53										
			Pilot kick	ADK E4		✓				✓		2			0 to 1 *4	✓	✓		✓					15 to 25													
Direct acting	Pilot operated	Pressure and explosion proof structure d2G2	AB E2		✓				✓		2		Single unit	0 to 5 *4	✓	✓			✓	✓		1.5 to 7.0									 Click!						
AP E2				✓				✓		2		0.05 to 1.2 *4		✓	✓			✓	✓				15 to 25			35 to 53											
Pilot operated soft spool valve	International Explosion-Proof Guidelines	Intrinsic safety explosion-proof Ex id IIC T4 Gb	3GD/E□0EJ□ 4GD/E□0EJ□ M3GD/E□0EJ□ M4GD/E□0EJ□		✓	✓	✓	✓	✓	✓	3, 5		Discrete manifold	0.2 to 0.7	✓							Refer to the product specifications for details.								Directional control valve [RJ-012AA]	 Click!						
		Pressure and explosion proof structure Exd IIBT4	4F□□0EX M4F□□0EX		✓				✓	✓	✓	5		Single unit Manifold	0.1 to 1.0	✓															 Click!						
		Pressure and explosion proof structure d2G4	4F□□0E M4F□□0E		✓				✓			5		Discrete manifold	0.1 to 1.0	✓															 Click!						

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please refer to the product specifications for temperature.
*3: 1.33×10² Pa (abs) or 1.33×10³ Pa (abs)
*4: Represents the operating pressure differential range. For details on operating pressure, please refer to the product specifications.

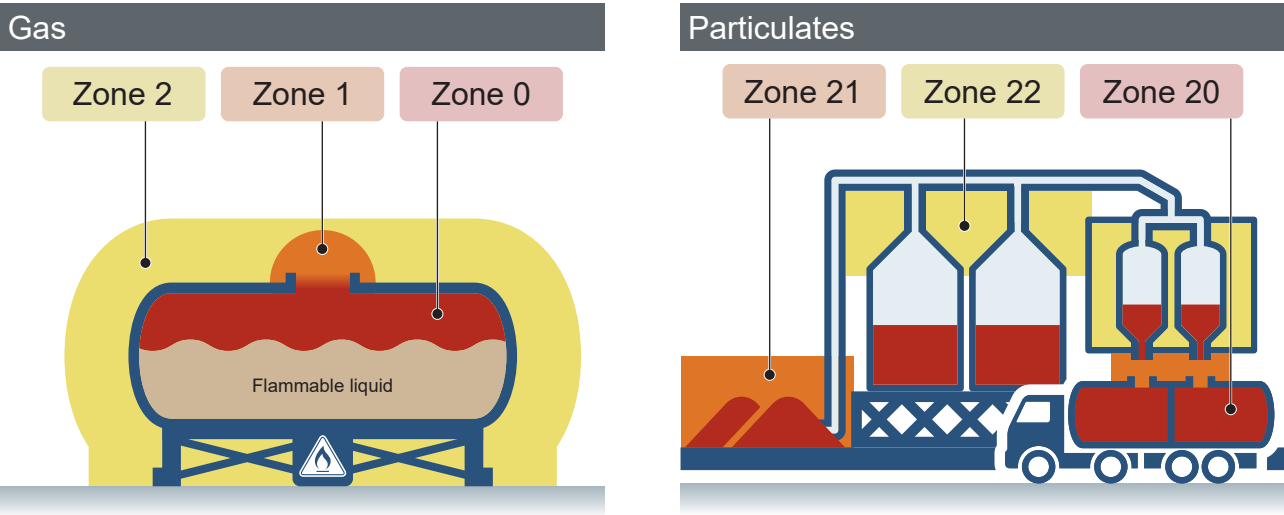
Solenoid Valve

Explosion-proof

Explosion-proof

This concept is to prevent explosions of gas vapors due to sparks and high temperatures generated by electrical components in dangerous zones where explosive gas atmospheres may be generated, and to ensure the safe use of electrical equipment. An explosion-proof standard that has been used for a long time in Japan (Alias: International explosion-proof guidelines (notified by the Ministry of Health, Labor and Welfare) compliant with international standards (IEC standards) added to the new explosion-proof standards (Alias: technical guidelines).

Examples of Dangerous Zones



Components Category	Dangerous zone (Gas)	Dangerous zone (Particulates)	Explanation of Dangerous Zones
1	Zone 0 Class 0 zone	Zone 20	Zones where explosive atmospheres are present continuously or for long periods. (Over 1000 hours/year. *1)
2	Zone 1 Class 1 zone	Zone 21	Zones where explosive atmospheres may be generated during normal operation of the plant, etc. (10 to 1000 hours/year. *1)
3	Zone 2 Class 2 zone	Zone 22	Zones where explosive atmospheres are not likely to be generated during normal operation of a plant or the like and are only present for a short time even if generated. (10 to 1 hours/year. *1)

*1: Time to generate explosive atmosphere

Explosion-proof performance display example

Intrinsic safety explosion-proof [ATEX]

II

2G

Ex ib

II C T4

Gb

A

B

C

D

E

Explosion-proof certification [JPEX, IECEx, GB]

Ex ib

II C T4

Gb

C

D

E

Pressure and explosion proof

Ex d

II B T4

C

D

A Category		
Code	Applications	Atmosphere
I	Mines	Methane
II	Plant	Gas/steam
III	Dust	Powder

B Component category			
Code	Component category	Protection level	Zones (Gas/Dust)
1	Category 1	Very high	Zone 0/20
2	Category 2	High	Zone 1/21
3	Category 3	Normal	Zone 2/22

G: Gas (Gas) D: Dust

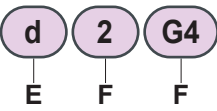
C Explosion proof structure			
Technical standard type and symbol	Zone 0	Zone 1	Zone 2
Pressure and explosion proof structure Ex d	×	○	○
Intrinsic safety explosion-proof structure Ex ia, Ex ib	×	○	○

D Typical explosive gas group and temperature class					
Group temperature class	T1	T2	T3	T4	T5
II A	Acetone ammonia Carbon monoxide Ethyl acetate Toluene propane Benzene methanol Methanethane Acetic acid	Ethanol Butane Isoamyl acetate Acetic anhydride	Gasoline Hexane	Acetaldehyde	
II B	City gas	Ethylene Ethylene oxide		Ethyl ether	
II C	Hydrogen	Acetylene			Carbon disulfide

E Protection level	
Ga	Components with extremely high level of protection, usable in Class 0 Dangerous Zones
Gb	Components with a high level of protection, usable in Class 1 Dangerous Zones
Gc	Components with an enhanced protection level, usable in Class 2 Dangerous Zones

Example of explosion-proof construction labeling (Structural standard)

Categories of explosion-proof structures and explosive gases



EEExplosion proof structure			
Type and code	Class 0 zone	Type 1 locations	Type 2 locations
Pressure and explosion proof structure d	×	○	○

FFlame-proof grade and ignitability of typical explosive gases					
Flame-proof grade	Ignitability				
	G1	G2	G3	G4	G5
1	Acetone ammonia Carbon monoxide ethane Ethyl acetate Toluene propane Benzene methanol Methane	Ethanol Isopentyl acetate 1-butanol Butane Acetic anhydride	Gasoline Hexane	Acetaldehyde Ethyl ether	
2	Coal gas	Ethylene Ethylene oxide	Isoprene		
3	Water gas Hydrogen	Acetylene			Carbon disulfide

Solenoid valve/air operated valve/manual valve

For high vacuum

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
*For details on series for specific applications, refer to P. 451.

Type	Features / Applications	Model No.	Appearance	No. of Ports	Configuration		Working fluid	Working pressure Pa (abs) *1 *2	Orifice size (mm)	Port size *1	Click here for specifications		For special applications Series	
											Catalog name [No]	WEB	Food Products FP	Rechargeable Battery P4
Solenoid valve	Direct acting	HVB ² ₁₂ ⁵		2	Single unit		Compressed air/vacuum/ inert gas *3	1.0 x 10 ⁻⁶ to 1.0 x 10 ⁶	1 to 6	JXR male fitting (1/4" / 3/8") Double barbed fitting (1/4" / 3/8") NPT (1/8 / 1/4 / 3/8) Rc (1/8 / 1/4 / 3/8)	Fluid Control Valves [RJ-013AA]	 Click!		●
		HVB112						1.3 x 10 ⁻⁶ to 3 x 10 ⁵	1.6	NPT (1/8) JXA female fitting (1/4)				
		HVB612 HVB712						1.3 x 10 ⁻⁶ to 3.0 x 10 ⁵	8 to 15	Flange (ø48 / ø52)				●
	OFF delay function	HVL12		2	Single unit		Compressed air/nitrogen *3	1.3 x 10 ⁻⁶ to 2.0 x 10 ⁵	1.2	Double barbed fitting (1/4") Rc (1/8) Vacuum clamp fitting (NW10 / NW16)		 Click!		
Air operated	Molded bellows	AVB		2	Single unit		Vacuum and inert gas	1.3 x 10 ⁻⁶ to 1 x 10 ⁵	5 to 372	Vacuum clamp fitting (NW16 / 25 / 40 / 50 / 63 / 80 / 100)	Refer to page 441 for details			●
		MVB		2	Single unit				17 to 48	Vacuum clamp fitting (NW16 / 25 / 40 / 50)				

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: The working pressure vacuum does not guarantee the vacuum attainment time or that the vacuum will not change.
*3: The number of cycles may be significantly reduced depending on the degree of dryness.

Air Operated 2-Port Valve

Cylinder Valve

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
*For details on series for specific applications, refer to P. 451.

Features / Applications		Model No.	Appearance	Configuration		Working fluid	Working pressure (MPa)*1	Port size *1										Click here for specifications		Application Specific Series	
								Rc					Rc/flange		Flange					Food Products	Rechargeable Battery
								1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	-	-	-				
								8	10	15	20	25	32	40	50	65	80				
								Orifice size ø(mm)										Catalog name [No]	WEB	FP	P4
Reliable operation Cylinder operation by external pilot Accurate and resistant against foreign matter, it is a highly reliable product Can be used with various fluids It can be used with water, hot water, compressed air, inert gas, low vacuum and steam, and can be used in a wide range of applications and fields	Wide range of sizes Models with solenoid valves also available	SAB□W SVB□W		Single Unit		Water Non-corrosive liquid	0 to 1	10 to 79										Fluid Control Valves [RJ-013AA]		●	●
		SAB□A SVB□A				Compressed air/ gas	0 to 1	10 to 79													
		SAB□V SVB□V				Low Vacuum (Compressed air/water)	1.3×10 ² to 7×10 ⁵ Pa (abs)	10 to 42													
		SAB□S SVB□S				Steam/water/compressed air Non-corrosive liquid	0 to 1	10 to 42													
	Compact Lightweight by selecting a resin type cylinder cover, space-saving by using a manifold	NAB□ GNAB□		Single Unit Manifold		Compressed air/water Gas	0 to 0.7	7									●				
		NAB□V GNAB□V				Low Vacuum (Compressed air, water)	1.3×10 ² to 7×10 ⁵ Pa (abs)	7													
	For control of high pressure air Confidentiality of hydraulic components / For aeration of pressure-resistant inspection media [Special-order product]	NAB-4SX1450 NAB-4SX1451		Single Unit		Compressed Air	0 to 20	Fittings: 1/4", Double barbed Orifice size 3 mm													
	Medium pressure cylinder valve [Special-order product]	NAB-6X2191 NAB-6X2192		Single Unit		Compressed Air	0 to 1.5	Rc1/8 Orifice size 3 mm													
	Color change valve paint, thinner, air, etc.[Special-order product]	NAB-X2267 NAB-X2268		Single Unit		Paint/thinner Compressed Air	0 to 1.0	Main side G1/4" Orifice size 3 mm													

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.

Diaphragm Cylinder Valve

Features / Applications		Model No.	Appearance	Configuration		Working fluid	Material	Working pressure MPa*1	Port size *1				Click here for specifications		Application Specific Series		
									Rc						Food Products	Rechargeable Battery	
									3/8	1/2	3/4	1	Catalog name [No]	WEB	FP	P4	
									10	15	20	25					
									Orifice size ø(mm)								
Grease-free specifications Completely separable flow path and sliding part Structure separated by diaphragm Prevents the entry of oil or foreign matter	Variety of bore sizes Easy flow rate adjustment to 250 L/min (Option)	LAD□		Single Unit		Water/ultrapure water/ compressed air/nitrogen Non-corrosive/non-absorbable fluid	Diaphragm material EPDM/PTFE Body Material PPS, SCS13	0 to 0.5					Fluid Control Valves [RJ-013AA]	 Click!	●	●	
	Compact With manifold Space-saving	NAD□ GNAD□		Single Unit Manifold		Compressed air / inert gas / water Non-corrosive/non-absorbable fluid	Diaphragm Material EPDM Body material Discrete SCS13	0 to 0.5 (Secondary pressure 0.4 or less)	7						 Click!	●	●
		NAD□V GNAD□V				Low vacuum (compressed air/water)	Manifold SUS303, PP Sub-plate SUS303, A6063	1.3 × 10 ² to 5 × 10 ⁵ Pa (abs) (Secondary pressure 4×10 ⁵ Pa (abs) or less)									

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.

Air Operated 2, 3-Port Valve

Coolant valve

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features/Applications		Model No.	Appearance	Configuration		Operating Pressure (MPa) *1			Operating fluid	Port Size *1									Click here for detailed specifications	
						Rc				Rc, Flange				Flange						
						3/8	1/2	3/4		1	1 1/4	1 1/2	2	-	-					
						10	15	20		25	32	40	50	65	80	Catalog name Catalog Name	WEB			
Orifice size ø(mm)																				
Reliable operation External pilot air operated cylinder guarantees reliable actuation Reliability Adopting a cast iron body and metal seal structure of valve seat stainless steel (excluding 10A) reduces the friction damage of the sealing part and the structure that is resistant to foreign matter	2-port Discrete	CVE2 CVSE2		Single Unit		0.5			Coolant or other non-corrosive fluids *2	10 to 79									Fluid Control Valves [RJ-013AA]	 Click!
						1.0				7 to 57										
						1.6				10.5 to 18.5										
						3.0				8 to 18.5										
						7.0				6.5 to 13										
	2-port Manifold	GCVE2 GCVSE2		Manifold		0.5				14 to 40										
						1.0				10 to 29										
						1.6				7 to 13										
	2-Port Single Unit High Pressure 10 MPa [Special Order Item]	CVSE2-15AX039 CVSE2-20AX040 CVSE2-25AX041		Single Unit		10				6.5 to 10										
	3-port Discrete	CV3E CVS3E		Single Unit		0.3				22.8 or equivalent, 29.3 or equivalent										
						3.5				NC side: 5.8 or equiv. to 28.5 or equiv., NO side: 4.5 to 26										
						7.0				NC side: 5.8 or equiv. to 10.7 or equiv., NO side: 4.5 to 9										

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Liquid that does not affect cast iron (nickel plating), stainless steel, nitrile rubber or fluoro rubber

Other coolant components

	Features/Applications	Model No.	Appearance		Page
Pressure Switch	Pressure Switch for Coolants IP65 equivalent	CPE			P. 270
		CPD			P. 270
Check Valve	Check valve with flow path structure resistant to foreign matter Prevents dripping of coolant, cleaning fluid, cooling water, etc., and achieves smooth transition to the next process	CCH			P. 371
		CCN			P. 371

Ball Valve

Air Operated

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
*For details on series for specific applications, refer to P. 451.

Features / Applications			Model No.	Appearance	No. of Ports	Bore shape		Working pressure (MPa) *1	Working fluid				Body material		Port size (Rc) *1							Click here for specifications		For special applications Series			
									Compressed air	Water *3	Oil	Steam	Bronze	Stainless steel	3/8	1/2	3/4	1	1 1/4	1 1/2	2			Food Products	Rechargeable Battery	Outdoors	
															10	15	20	25	32	40	50	Catalog name [No.]	WEB	FP	P4	WP	
															Orifice size ø(mm)												
Structure for guaranteed actuation rack-and-pinion Air operated double piston system adopted Highly reliable valve that ensures Resistant to foreign material and scale Forward and reverse rotation Foreign matter can be easily removed even if it enters	Air operated type with solenoid valve	Water/hot water/ Compressed air/ oil, etc. General control	CHB		2	Standard bore	0 to 1.0	✓	✓	✓	●	●							Fluid Control Valves [R1-013AA]		●	●	●				
						Full bore																					
			CHG		3	Standard bore																					
Suitable for explosive atmosphere Structure and material resistant to water and hot water deposits With its completely air operated structure Suitable for explosive atmospheres It can also be used outdoors (Excluding models with switching solenoid valves)	Air operated	For steam/water	CSB		2	Standard bore	0 to 0.6	✓		✓	●	●*2											●				
						Full bore																					

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: For bore shape standard bore, body is not stainless steel
*3: Refer to the product specifications for temperature.

Electric

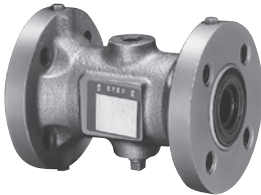
Features / Applications		Model No.	Appearance	No. of Ports	Bore shape		Working pressure (MPa) *1	Working fluid				Body material		Port size (Rc) *1							Click here for specifications		For special applications Series						
								Compressed air	Water *2	Oil	Steam	Bronze	Stainless steel	3/8	1/2	3/4	1	1 1/4	1 1/2	2			Food Products	Rechargeable Battery	Outdoors				
														10	15	20	25	32	40	50	Catalog name [No.]	WEB				FP	P4	WP	
														Orifice size ø(mm)															
No burn damage even if motor is locked	Water/hot water/ compressed air/ Oil, etc. General control	MXB		2	Standard bore		0 to 1.0	✓	✓	✓	●	●	10 to 40							Fluid Control Valves [R1-013AA]		●							
The ball locks without burning the motor (Impedance protection and thermal protection) *Be sure to observe the specified frequency of use.				Full bore	15 to 40																								
Forward and reverse rotation		MXG		3	Standard bore								10 to 38																
*MH4 Series is excluded.	For pure water, washing Oil-prohibited specifications			2	Standard bore	0 to 1.0	✓	✓		●	10 to 40																		
Signal output device		MXG1-N		3	Standard bore						10 to 38																		
Manual override equipped	For steam/water	MSB1		2	Standard bore	0 to 0.6	✓			✓	●		10 to 40																
High Sealing Performance					Full bore								0 to 0.6	15 to 40															
By adopting a backup O-ring High seal performance	Proportional control for highly accurate flow adjustment	MXBC2		2	Standard bore	0 to 1.0		✓			●	●	10 to 20																
		MXGC2		3									0 to 1.0	10 to 19															
Compact miniature		MHB4		2	Reduced bore	0 to 0.5	✓	✓	✓	●			8 to 10																
		MHG4		3																									

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please refer to the product specifications for temperature.

Pinch Valve

Rubber sleeve

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features/Applications		Model No./Appearance	Operating fluid		Operating Pressure (MPa)	Port size (flange)						Click here for detailed specifications	
						25	40	50	65	80	100	Catalog name [No]	WEB
Air Operated	Since the flow path is a rubber sleeve, it has low fluid resistance and can control not only gas, liquid, oil but also fluids containing solids, etc.	NPV2 	Gas, water, sludge powder, non-corrosive liquid		0.05 to 0.4							Fluid Control Valves [RJ-013AA]	 Click!
	The flow path is opened and closed by sandwiching the rubber sleeve with pilot air from the outside												

Fine Pinch Valve

Features/Applications		Model No.	Appearance	Recommended Tubing		Operating Pressure (MPa)	Tube size (O.D.) × (I.D.)	Click here for detailed specifications	
								Catalog name [No]	WEB
Solenoid Type	Tube is opened and closed by solenoid Ideal for control of pure water, normal saline, reagent, washing solution, etc., with a structure in which only the tube is wetted	HYN-3		HYN-3-1-5000		0 to 0.05	ø3×ø1	Components for Life Science [CC-1055AA]	 Click!
		HYN-5		HYN-5-3-5000			ø5×ø3		
		HYN-8		HYN-8-6-5000		0 to 0.02	ø8 x ø6		
Air Operated	Tube is opened and closed by compressed air Ideal for environments requiring sterilization, such as single use processes for pharmaceutical manufacturing Since there is no heat generation due to energization without a coil, thermal effect on controlling fluid and ambient environment can be avoided	HYA-□1□		Silicone tube "Hardness (Shore A) 50 to 64 (guideline)" PharMed BPT Tubing TYGON 3350 Tubing *2		0 to 0.1 *1	1/8" to 7/32" (ø3 to ø6)	Pharmaceutical Manufacturing Process Components [CC-1637AA]	 Click!
		HYA-□2□					1/4" to 3/8" (ø6 to ø10)		
		HYA-□3□					7/16" to 9/16" (ø10 to ø15)		

*1: The maximum working pressure varies by tube, so confirm the specifications of the tube in use.
*2: Be careful of tubing sticking when using a silicone tube.

Other fluid control components

Check Valve for Liquids

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."
*For details on series for specific applications, refer to P. 451.

Features / Applications	Model No. / Appearance	Working fluid		Max. working pressure (MPa)	Port size		Click here for specifications		Application Specific Series
					IN	OUT	Catalog name [No]	WEB	Food Products
									FP
Check valve with flow path structure resistant to foreign matter For coolant, cleaning fluid, cooling water, etc.	CCH 	Coolant/water Other non-corrosive fluids		7	Rc / G / NPT: (3/8 / 1/2 / 3/4)		Fluid Control Valves [R-013AA]	 Click!	
Integrated check valve and nozzle Prevents dripping, making smooth transition to the next process possible, contributing to increased tact time	CCN 			1.0	R / G / NPT:(1/4 / 3/8)	Nozzle: ø4, ø5, ø6 Rc / G / NPT:(1/4)		 Click!	●

Strainer

Features / Applications	Model No. / Appearance		Port size (Rc)								Click here for specifications	
											Catalog name [No]	WEB
Foreign matter in water piping is removed to protect components	YS 		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	Fluid Control Valves [R-013AA]	 Click!
			8	10	15	20	25	32	40	50		

Flow rate sensor/Regulators (for liquids)

Features/Applications		Model No./Appearance		Page
Flow Sensor	Covers 0.4 to 250 L/min Karman Vortex Flow Rate Sensor It is equipped as standard with a fluid temperature measuring function to monitor various cooling water.	WFK2 		P. 273
Flow Sensor	Capacitive Electromagnetic Flow Sensors of Flo-Thru structure No clogging of foreign matter or detection error For spot welding machines, various machine tools, induction hardening devices	WFC 		P. 273
Integrated Unit (Flow Sensor + Valve)	Integrated unit that integrates the flow sensor and valve in cooling water circulation circuits For system space saving	WXU 		P. 275
Regulator	Compact Regulators for Water	WR 		P. 227

Fluid Control Valves

Search by Fluid

 Compressed AirP. 375	 Hot WaterP. 385
 Dry AirP. 376	 SteamP. 386
 Low Vacuum	 Oil/KeroseneP. 387
 Medium VacuumP. 377	 CoolantP. 389
 High Vacuum	 Solvents
 Inert GasP. 379	 Sludge/Powder/ChemicalsP. 391
 Process GasP. 380	 ChemicalsP. 392
 Fuel GasP. 381	 Ultrapure Water
 WaterP. 383	
Fluid/Material Compatibility ChecklistP. 393	



Compressed Air

*For details on series for specific applications, refer to P. 451.

Type		Features/Applications	Model No.	No. of Ports	Configuration	Operating Pressure (MPa) *1	Port Size *1											Page	Series for Specific Applications			
							Rc, G, NPT						Rc, Flange				Flange		Food	Rechargeable Battery	Outdoor	
							1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	-					
							-	-	10	15	20	25	32	40	50	65	80	100				
Solenoid Valve	Direct Acting	Compact For equipment mounting, etc.	HNB HNG	2 / 3	Single Unit	0 to 0.7	M5											P.349				
			USB USG	2 / 3	Single Unit	0 to 0.9	M5, Rc1/8 (Metal Body)													●		
		NEW standard High durability 20 million cycles Power-saving, low-noise construction	FFB/FFBM/FFG/FFGM	2 / 3	Single Unit Manifold	0 to 1.4																
		Wide variety of options for bore size, coil, etc.	AB/GAB/AG/GAG	2 / 3	Single Unit Manifold	0 to 5 *2														●	●	
	Pilot Operated	With resin body Compact, lightweight, high flow For air blow, etc.	EXA GEXA	2	Single Unit Manifold	0.01 to 0.7	(EXA: Resin Body) One-touch ø6, ø8, ø10, ø12 (EXA-A: Aluminum Body) Rc1/4, 3/8											P.351	●	●		
		Swirl flow path structure enables low-profile, high flow	SP	2	Single Unit	0.02 to 0.2	Push-in ø6															
		Piston Driven	AP	2	Single Unit	0.05 to 1.2 *2																
		Diaphragm Driven	AD	2	Single Unit	0.02 to 1.0 *2																
		Wide range of bore sizes from Rc1/2 to 80 flange	PVS	2	Single Unit	0.05 to 1 *2												P.355				
		Pilot Kick Operated	Piston Driven	APK	2	Single Unit	0 to 1.0 *2												P.351			
			Diaphragm Driven	ADK	2	Single Unit	0 to 1.0 *2															●
			For Compressed Air	PKA	2	Single Unit	0 to 0.7 *2												P.355			
Solenoid Valve (Explosion-proof)	Direct Acting	International Explosion-proof Standards Flameproof Enclosure Exd IIBT4	AB EX4 AG EX4	2 / 3	Single Unit	0 to 5 *2												P.357				
	Pilot Operated		AP EX4	2	Single Unit	0.05 to 1.2 *2																
			AD EX4	2	Single Unit	0.02 to 1 *2																
			Pilot Kick Operated	ADK EX4	2	Single Unit	0 to 1 *2															
	Direct Acting	International Explosion-proof Standards Flameproof Enclosure Exd IIBT2	AB EX2	2	Single Unit	0 to 4 *2												P.357				
	Pilot Operated	AP EX2	2	Single Unit	0.05 to 0.6 *2																	
	Direct Acting	Construction Standards (Standards unique to Japan) Flameproof Enclosure d2G4	AB E4 AG E4	2 / 3	Single Unit	0 to 5 *2																
	Pilot Operated		AP E4	2	Single Unit	0.05 to 1.2																
			AD E4	2	Single Unit	0.02 to 1 *2																
			Pilot Kick Operated	ADK E4	2	Single Unit	0 to 1 *2															
	Pilot Operated (Dust Collector Equipment)		PDVE4	2	Single Unit	0.1 to 0.7																
	Direct Acting	Construction Standards (Standards unique to Japan)	AB E2	2	Single Unit	0 to 5 *2																
	Pilot Operated	Flameproof Enclosure d2G2	AP E2	2	Single Unit	0.05 to 1.2 *2																

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Indicates the operating pressure differential range. For details on operating pressure, please refer to the product specifications.

Compressed air	Dry air	Low vacuum	Medium vacuum	High vacuum	Inert gas	Process Gas	Fuel gas	Water	Hot water	Steam	Oil, kerosene	Coolant	Solvent-based	Sludge/powder/chemicals	Chemical liquid	Pure water
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Compressed air

*Refer to page 451 for details on application-specific series.

Type	Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa)*1	Port size *1											Listed page	Application-Specific Series			
						Rc / G / NPT						Rc/flange				Flange		Food Products	Rechargeable Battery	Outdoors	
						1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3					
						6	8	10	15	20	25	32	40	50	65	80					100
Air operated 2-port valve	Accurate and resistant to foreign matter	SAB SVB	2	Single unit	0 to 1													P. 363	●	●	
		NAB GNAB	2	Single unitManifold	0 to 0.7															●	
	Diaphragm	Cylinder and flow path are completely separated Flow path is grease-free	LAD	2	Single unit	0 to 0.5													●	●	
			NAD GNAD	2	Single unitManifold	0 to 0.5														●	●
Ball valve	Air operated		CHB CHG		Single unit	0 to 1.0											P. 367	●	●	●	
	Motorized	General control	MXB1 MXG1	2/3	Single unit	0 to 1.0												●			
		Miniature	MHB4 MHG4		Single unit	0 to 0.5															
Pinch valve	Air operated		NPV2	2	Single unit	0.05 to 0.4												P. 369			

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.



Dry air (Atmospheric dew point -60°C or less)

Type		Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa) *1	Port size *1						Listed page	Application-Specific Series		
							Rc / G / NPT							Food Products	Rechargeable Battery	Outdoors
							1/8	1/4	3/8	1/2	3/4	1				
							6	8	10	15	20	25				
Solenoid valve	Direct acting	NEW Standard High durability of 20 million cycles Energy saving / Silent structure	FFB / FFBM FFG / FFGM	2/3	Single unit Manifold	0 to 1.4							P. 349			
		A variety of options including bore sizes and coils Atmospheric dew point -70°C and over for P4 Series	AB / GAB AG / GAG-Z	2/3	Single unit Manifold	0 to 4 *2										●
	Pilot kick	Diaphragm	ADK-Z	2	Single unit	0 to 0.7 *2							P. 351	●	●	
Solenoid valve (explosion-proof)	Direct acting	Structural standards (Japanese-specific standards) Pressure and explosion proof structure d2G4	AB E4 AG E4-Z	2/3	Single unit	0 to 4 *2							P. 357			
Air operated 2-port valve	Diaphragm	Cylinder and flow path are completely separated Flow path is grease-free	LAD	2	Single unit	0 to 0.5							P. 363	●	●	
			NAD GNAD	2	Single unit Manifold	0 to 0.5									●	●

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.
*2: Indicates the working pressure differential range. Refer to the product specifications for details on working pressure.

Vacuum

Low vacuum (1.33x10² Pa (abs), 1.33x10³ Pa (abs))

*Refer to page 451 for details on application-specific series.

Type		Features / Applications	Model No.	No. of Ports	Configuration	Working pressure Pa (abs)*1	Port size *1										Listed page	Application-Specific Series			
							Rc / G / NPT					Rc/flange						Food Products	Rechargeable Battery	Outdoors	
							1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½					3
							6	8	10	15	20	25	32	40	50	65					80
Solenoid valve	Direct acting	Compact	USB USG	2/3	Single unit	1.33 x 10 ² to 9 x 10 ⁵	M5 / Rc1/8										P. 349	●			
		NEW Standard Energy saving / Silent structure	FFG FFGM	3	Single unit Manifold	1.3 x 10 ⁻² to 1.1 x 10 ⁶															
		A wide variety of bore sizes/coils options	AB / AG GAB / GAG	2/3	Single unit Manifold	1.33 x 10 ² to 5 x 10 ⁶												●		●	
	Pilot kick	Piston	APK	2	Single unit	1.33 x 10 ³ to 1 x 10 ⁶															
		Diaphragm	ADK	2	Single unit	1.33 x 10 ³ to 1 x 10 ⁶												●	●		
Solenoid valve (pressure and explosion proof)	Direct acting	International Explosion-Proof Guidelines Pressure and explosion proof structure Exd IIBT4	AB EX4AG EX4	2/3	Single unit	1.33 x 10 ² to 5 x 10 ⁶															
	Direct acting	Structural standards (Japanese-specific standards)	AB E4 AG E4	2/3	Single unit	1.33 x 10 ² to 5 x 10 ⁶															
	Pilot kick	Pressure and explosion proof structure d2G4	ADK E4	2	Single unit	1.33 x 10 ³ to 1 x 10 ⁶															
Air operated 2, 3-port valve		Accurate and resistant to foreign matter	SAB SVB	2	Single unit	1.3 x 10 ² to 7 x 10 ⁵												●			
		Also suitable for explosive atmospheres (Excluding SVB)	NAB GNAB	2	Single unit Manifold	1.3 x 10 ² to 7 x 10 ⁵												●			
	Diaphragm	Cylinder and flow path are completely separated Flow path is grease-free	NAD GNAD	2	Single unit Manifold	1.3 x 10 ² to 5 x 10 ⁵												●	●		

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.

Medium vacuum (1.3x10⁻² Pa (abs))

*Refer to page 451 for details on application-specific series.

Type		Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (Pa (abs)) *1	Port size *1										Listed page	Application-Specific Series			
							Rc / G / NPT						Rc/flange					Food Products	Rechargeable Battery	Outdoors	
							1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2					3
							6	8	10	15	20	25	32	40	50	65					80
Solenoid valve	Direct acting	NEW Standard Energy saving / Silent structure	FFB / FFBM	2	Single unit Manifold	1.3 x 10 ⁻² to 1.4 x 10 ⁶											P. 349				

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.

Compressed air	Dry air	Low vacuum	Medium vacuum	High vacuum	Inert gas	Process Gas	Fuel gas	Water	Hot water	Steam	Oil, kerosene	Coolant	Solvent-based	Sludge/powder/chemicals	Chemical liquid	Pure water
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High vacuum (1.0 x 10⁻⁶ Pa (abs))

*Refer to page 451 for details on application-specific series.

Type	Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (Pa (abs)) *1	Port size *1	Listed page	Application-Specific Series		
								Food Products	Rechargeable Battery	Outdoors
								FP	P4	WP
Solenoid valve	Direct acting	High vacuum retention High durability	HVB	2	Single unit	1.0 x 10 ⁻⁶ to 3 x 10 ⁵	P. 361			●
	OFF delay function	Additional components is attached to allow a several-second delay during valve opening	HVL12	2	Single unit	1.3 x 10 ⁻⁶ to 2.0 x 10 ⁵				
Air operated	Molded bellows	Long service life and high durability with proprietary special structure	AVB7	2	Single unit	1.3 x 10 ⁻⁶ to 1 x 10 ⁵	P. 361			
			MVB7	2	Single unit	1.3 x 10 ⁻⁶ to 1 x 10 ⁵				
Manual										

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.

Vacuum unit and class

Category	Absolute pressure			Gauge pressure		
	Pa (abs)	Torr (=mmHg)	kgf/cm ² (abs)	PaG	mmHg	Kgf/cm ² G
Atmospheric pressure	1 x 10 ⁵	760	1.033	0	0	0
Low vacuum		600	0.8	-1.96 x 10 ⁴	-160	-0.2
		400	0.5	-4.90 x 10 ⁴	-360	-0.5
		200	0.3	-6.86 x 10 ⁴	-560	-0.7
		100	0.1	-8.83 x 10 ⁴	-660	-0.9
Medium vacuum	1.3 x 10 ²	1	10 ⁻³	-9.80 x 10 ⁴	-759	-0.999
	1.3 x 10 ⁻¹	10 ⁻³	10 ⁻⁶			
High vacuum						
Ultra-high vacuum	1.3 x 10 ⁻⁵	10 ⁻⁷				
Absolute vacuum	0	0	0	-1.00 x 10 ⁵	-760	-1.033

Fuel gas (city gas/natural gas/LPG) *1

Type		Applications	Model No.	No. of Ports	Configuration	Operating Pressure *1	Port Size *1						Page
							Rc, G, NPT						
							1/8	1/4	3/8	1/2	3/4	1	
							-	-	10	15	20	25	
Solenoid Valve	Direct Acting Valve	Bore size, coil, etc. Wide variety of options	AB	2	Single Unit	[Special Order Item] Please contact our sales office. After confirming the usage methods, the compatibility will be evaluated.							
[Gas Combustion System] Gas Combination Valve/Solenoid Valve/ Hydraulic Valve		Boiler Industrial Furnace Chiller/Heater Burner	GHV/GRV DSG VNA VLA VNR TAC VNM/VLM C25N-B HK1/HS	2	Single Unit Combination valve with built-in governor, etc.	0 to 0.4 (MPa)	15 A to 200 A					P. 407	
Flow Controller		Flow sensor, proportional control, and valve functions integrated into a single unit	FCM	-		50 to 350 (kPa)	One-touch Fitting (ø6, ø8) Stainless Steel Body (Rc1/4) (9/16-18UNF)					P. 277	

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.

Fuel Gas (Hydrogen)

Type	Features/Applications	Model No.	No. of Ports	Configuration	Operating Pressure *1	Port Size *1	Page
[Gas Combustion System] Gas Combination Valve Solenoid Valve Hydraulic Valve	Gas Boiler Industrial Furnace Drying Furnace Chiller/Heater Burner Hydrogen-related Equipment	GHV GRV DSG VNA VLA VNR VNM VLM HK1 HS	2	Single Unit Combination valve with built-in governor, etc.	0 to 0.4 (MPa)	15 A to 80 A	P. 407
Flow Controller	Flow Range (L/min) 0-2, 5, 10, 20	FCM	-	Single Unit	-	Rc, UNF Double Ferrule Fitting JXR Male	P. 277
Air Operated Valves	Metal Diaphragm	AGD	2	Single Unit	1.3×10 ⁻⁶ (Pa (abs)) to 0.99 (MPa)	1/4" JXR Male Fitting Female Fitting	P. 437
Manual Valves	Handle shape designed to generate optimal internal sealing force	MGD	2	Single Unit	1.3×10 ⁻⁶ (Pa(abs)) to 0.99 (MPa)	JXR Male Fitting Female Fitting Double Ferrule Fitting	P. 437
		OGD	2	Single Unit			
Regulator	Set Pressure 0.7 MPa	PGM	2	Single Unit	1.3×10 ⁻⁶ (Pa(abs)) to 0.99 (MPa)	JXR Male Fitting Female Fitting	P. 439
Solenoid Valve	High Durability Power-saving Low-noise Construction	FFB/ FFBM FFG/ FFGM	2/3	Single Unit Manifold	[Special Specification Product] Contact CKD sales office. After confirming the usage methods, the compatibility will be evaluated.		
Air Operated 2-Port Valve	Reliable operation and resistant to foreign matter Suitable for explosive atmospheres	SAB	2	Single Unit			
Proportional Solenoid Valve	Stepless flow control proportional to current	A2-6500	2	Single Unit			
Inline Clean Filter	Hollow Fiber Membrane Filtration: 0.01 μm Removal efficiency 99.99%	FCS500	-	Single Unit			

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.

Water

*For details on series for specific applications, refer to P. 451.

Type			Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa) *1	Port size *1												Listed page	Application-Specific Series			
								Rc / G / NPT						Rc/flange							Food Products	Rechargeable Battery	Outdoors	
								1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4					
								6	8	10	15	20	25	32	40	50	65	80	100					FP
Solenoid valve	Direct acting	Resin valve	Compact lever body PPS seal/NBR/FKM/EPDM	HMTB HMTG	2/3	Single unit	-0.05 to 0.3	ø2 barbed fitting												P. 419				
			Miniature/space saving body PEEK seal FKM/EPDM	MR10R	2/3	Single unit	-0.08 to 0.2	M5, M6, 1/4-28UNF																
			Rocker valve with indicatorBody PEEK seal FKM/EPDM	MR16	2/3	Single unit	-0.08 to 0.3	M6 (direct piping) 1/4-28UNF (direct piping)																
			Thin body PPS seal FKM/EPDM	MKB3	2	Single unit	-0.08 to 0.25	M6 (direct piping) 1/4-28UNF (direct piping)																
			Body / Sealant PTFE	MABMAG	2/3	Single unit	-0.05 to 0.3	M6																
			Body PPS seal FKM	MYBMYG	2/3	Single unit	-0.05 to 0.2	M6Rc1/8 / Rc1/4 / Rc3/8																
			Body PPS seal FFKM	MEB2MEG2	2/3	Single unit	-0.05 to 0.2																	
			Body SUS316/PTFE seal PTFE	EMB	2	Single unit	-0.05 to 0.3																	
		High corrosion resistance	Body SUS304 or equivalent seal FKM	UMBUMG	2/3	Single unit	0 to 0.2	Stainless steel pipe with O.D. ø1.26 x I.D. ø0.9												P. 349				
			Body SUS316 seal NBR/FKM/PTFE	HB	2	Single unit	0 to 0.7	M5Rc1/8 / Rc1/4 / Rc3/8													●			
	Direct acting			For compact equipment mounting, etc.	HNBHNG	2/3	Single unit	0 to 0.7	M5												P. 349			
					USB / USG	2/3	Single unit	0 to 0.9	M5Rc1/8													●		
				NEW Standard High durability with 20 million cycles, energy saving/silent structure	FFB / FFBMFFG / FFGM	2/3	Single unit	0 to 1.4																
				A wide variety of bore sizes/coils options	AB / GABAG / GAG	2/3	Single unit	0 to 4.5 ₂											●	●				
		Pilot operated		Special-profile diaphragm with compact, lightweight, and large flow rate	FWD	2	Single unit	0.02 to 0.7												●				
				Piston drive	AP	2	Single unit	0.05 to 1.0 ₂																
				Diaphragm drive	AD	2	Single unit	0.02 to 1.0 ₂																
				Various bore sizes from Rc1/2 to 80 flange	PVS	2	Single unit	0.05 to 1 ₂																
				Metal body for agricultural water	RSV-K	2	Single unit	0.03 to 1																
				Approved by JWWA for water supply control of tap water	RSV-W	2	Single unit	0.02 to 1																
				For liquid fertilizer/solution made of resin for agricultural waterUnion fitting	GSV2	2	Single unit	0.03 to 0.75																
				For liquid fertilizer/solution made of resin for agricultural water	GSV	2	Single unit	0.03 to 0.5																
				Pilot kick	Piston drive	APK	2	Single unit	0 to 1.0 ₂															
					Diaphragm drive	ADK	2	Single unit	0 to 1.0 ₂													●		
					Piston drive	PKW	2	Single unit	0 to 0.7 ₂															

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.
*2: Indicates the working pressure differential range. Refer to the product specifications for details on working pressure.

Water

*For details on series for specific applications, refer to P. 451.

Type		Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa) *1	Port size *1												Listed page	Application-Specific Series							
							Rc / G / NPT						Rc/flange							Food Products	Rechargeable Battery	Outdoors					
							1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4									
							6	8	10	15	20	25	32	40	50	65	80	100									
Solenoid valve (explosion-proof)	Direct acting	International Explosion-Proof Guidelines Pressure and explosion proof structure Exd IIBT4	AB EX4 AG EX4	2/3	Single unit	0 to 4.5 ₂												P. 357									
	Pilot operated		AP EX4	2	Single unit	0.05 to 1.0 ₂																					
			AD EX4	2	Single unit	0.02 to 0.7 ₂																					
			ADK EX4	2	Single unit	0 to 1 ₂																					
	Direct acting	International Explosion-Proof Guidelines	AB EX2	2	Single unit	0 to 2.5 ₂																					
	Pilot operated	Pressure and explosion proof structure Exd IIBT2	AP EX2	2	Single unit	0.05 to 0.6 ₂																					
	Direct acting	Structural standards (Japanese-specific standards) Pressure and explosion proof structure d2G4	AB E4 AG E4	2/3	Single unit	0 to 4.5 ₂																					
	Pilot operated		AP E4	2	Single unit	0.05 to 1.0 ₂																					
			AD E4	2	Single unit	0.02 to 0.7 ₂																					
			ADK E4	2	Single unit	0 to 1 ₂																					
	Direct acting	Structural standards (Japanese-specific standards)	AB E2	2	Single unit	0 to 4.5 ₂																					
	Pilot operated	Pressure and explosion proof structure d2G2	AP E2	2	Single unit	0.05 to 1.0 ₂																					
Air operated 2-port valve		Accurate and resistant to foreign matter	SAB SVB	2	Single unit	0 to 1												P. 363		●							
			NAB GNAB	2	Single unit	0 to 0.7																					
		Diaphragm Expression	Cylinder Completely separates the flow pathRelease Flow path is grease-free	LAD	2	Single unit	0 to 0.5																	●	●		
				NAD GNAD	2	Single unit	0 to 0.5																	●	●		
Ball valve	Air Operated	General control	CHB CHG	2/3	Single unit	0 to 1.0												P. 367		●	●	●					
	Motorized	General control	MXB1 MXG1	2/3	Single unit	0 to 1.0																	●				
		Proportional control	MXBC2 MXGC2	2/3	Single unit	0 to 1.0																					
		Miniature	MHB4 MHG4	2/3	Single unit	0 to 0.5																					
Pinch valve for High Purity Fluids	AirOperated	Rubber sleeve	NPV2	2	Single unit	0.05 to 0.4												P. 369									
		Structure in which only the tube is wetted avoid the thermal effect of energizing	HYA	2	Single unit	0 to 0.1	Compatible tube O.D. (1/8" to 9/16")																				
	Solenoid	Structure in which only the tube is wetted	HYN	2	Single unit	0 to 0.05	Compatible tube (ø3xø1, ø5xø3, ø8xø6)																				
Regulator		Regulator for water	WR	2	Single unit	Up to 1.0												P. 227									
Flow rate sensor	Karman's vortex	Fluid temperature measurement/ easy flow rate adjustment Compatible with flow rates of 0.4 to 250 L/min	WFK2	2	Single unit	Up to 1.0												P. 273									
		Supports compact flow rate 0.5 to 60 L/min	WFK 3000	2	Single unit	Up to 1.0																					
	Capacitance	With a Flo-Thru structure, there is no clogging of foreign matter or detection failure Supports flow rates of 0.5 to 60 L/min	WFC	2	Single unit	0 to 1.0 0 to 2.0																					
Integrated unit (flow rate sensor + valve)		For cooling water circulation circuit, etc.	WXU	-	Unit	-												P. 275									

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.
*2: Indicates the working pressure differential range. Refer to the product specifications for details on working pressure.

Hot water

*Refer to page 451 for details on application-specific series.

Type		Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa) *1	Port size *1										Listed page	For special applications Series			
							Rc / G / NPT					Rc/flange						Food Products	Rechargeable Battery	Outdoors	
							1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2					3
							6	8	10	15	20	25	32	40	50	65					80
Solenoid valve	Direct acting	Bore size, coil, etc. Abundant options available	AB / GAB AG / GAG	2/3	Single unit Manifold	0 to 4.5 *2											P. 349	●			
	Pilot operated	Piston	AP	2	Single unit	0.05 to 1.0 *2											P. 351				
		Diaphragm	AD	2	Single unit	0.02 to 1.0 *2															
	Pilot kick	Piston	APK	2	Single unit	0 to 1.0 *2												●			
		Diaphragm Ideal for hot water	ADK	2	Single unit	0 to 1.0 *2														●	
Solenoid valve (explosion-proof)	Direct acting	International Explosion-Proof Guidelines	AB EX2	2	Single unit	0 to 2.5 *2												P. 357			
	Pilot operated	Pressure and explosion proof structure Exd IIBT2	AP EX2	2	Single unit	0.05 to 0.6 *2															
	Direct acting	Structural standards (Japanese Standards)	AB E2	2	Single unit	0 to 4.5 *2															
	Pilot operated	Pressure and explosion proof structure d2G2	AP E2	2	Single unit	0.05 to 1.0 *2															
Air operated 2-port valve		Accurate and resistant to foreign matter Also suitable for explosive atmospheres (Excluding SVB)	SAB SVB	2	Single unit	0 to 1											P. 363				
Ball valve	Air Operated	General control	CHB CHG	2/3	Single unit	0 to 1.0											P. 367	●	●	●	
		For steam/water	CSB	2	Single unit	0 to 0.6														●	
	Electric	General control	MXB1 MXG1	2/3	Single unit	0 to 1.0												●			
		For steam/water	MSB	2	Single unit	0 to 0.6															
		Proportional control	MXBC2 MXGC2	2/3	Single unit	0 to 1.0															
		Miniature	MHB4 MHG4	2/3	Single unit	0 to 0.5															
	Flow rate sensor	Karman's vortex	Fluid temperature measurement Easy flow rate adjustment 0.4 to 250 L/min	WFK2	-	Single unit	Up to 1.0											P. 273			
Integrated unit (Flow rate sensor + valve)		Cooling water circulation circuit etc.	WXU	-	Unit	-											P. 275				

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.
*2: Indicates the working pressure differential range. Refer to the product specifications for details on working pressure.

Steam

*Refer to page 451 for details on application-specific series.

Type		Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa) *1	Port size *1										Listed page	Application-Specific Series			
							Rc / G / NPT						Rc/flange					Food Products	Rechargeable Battery	Outdoors	
							1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2					3
							6	8	10	15	20	25	32	40	50	65					80
Solenoid valve	Direct acting	A wide variety of bore sizes/coils options	AB / GAB AG / GAG	2/3	Single unit Manifold	0 to 1.0 *2											P. 349	●			
	Pilot operated	Piston	AP	2	Single unit	0.05 to 1.0 *2											P. 351				
		Rc1/2 to 80 flange Wide range of bore sizes	PVS	2	Single unit	0.05 to 1*2											P. 355				
	Pilot kick	Piston	APK	2	Single unit	0 to 1.0*2											P. 351	●			
		For steam only	SPK	2	Single unit	0 to 1.0*2												●			
		Piston	PKS	2	Single unit	0 to 0.7*2											P. 355				
	Solenoid valve (explosion-proof)	Direct acting	International Explosion-Proof Guidelines	AB EX2	2	Single unit	0 to 0.7*2											P. 357			
Pilot operated		Pressure and explosion proof structure Exd IIBT2	AP EX2	2	Single unit	0.05 to 0.6*2															
Direct acting		Structural standards (Japanese-specific standards)	AB E2	2	Single unit	0 to 1.0*2															
Pilot operated		Pressure and explosion proof structure d2G2	AP E2	2	Single unit	0.05 to 1.0*2															
Air operated 2-port valve		Accurate and resistant to foreign matter Also suitable for explosive atmospheres (excluding SVB)	SAB SVB	2	Single unit	0 to 1											P. 363				
Ball valve	Air operated	For steam/water	CSB	2	Single unit	0 to 0.6											P. 367			●	
	Motorized	For steam/water	MSB	2	Single unit	0 to 0.6															

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.
*2: Indicates the working pressure differential range. Refer to the product specifications for details on working pressure.



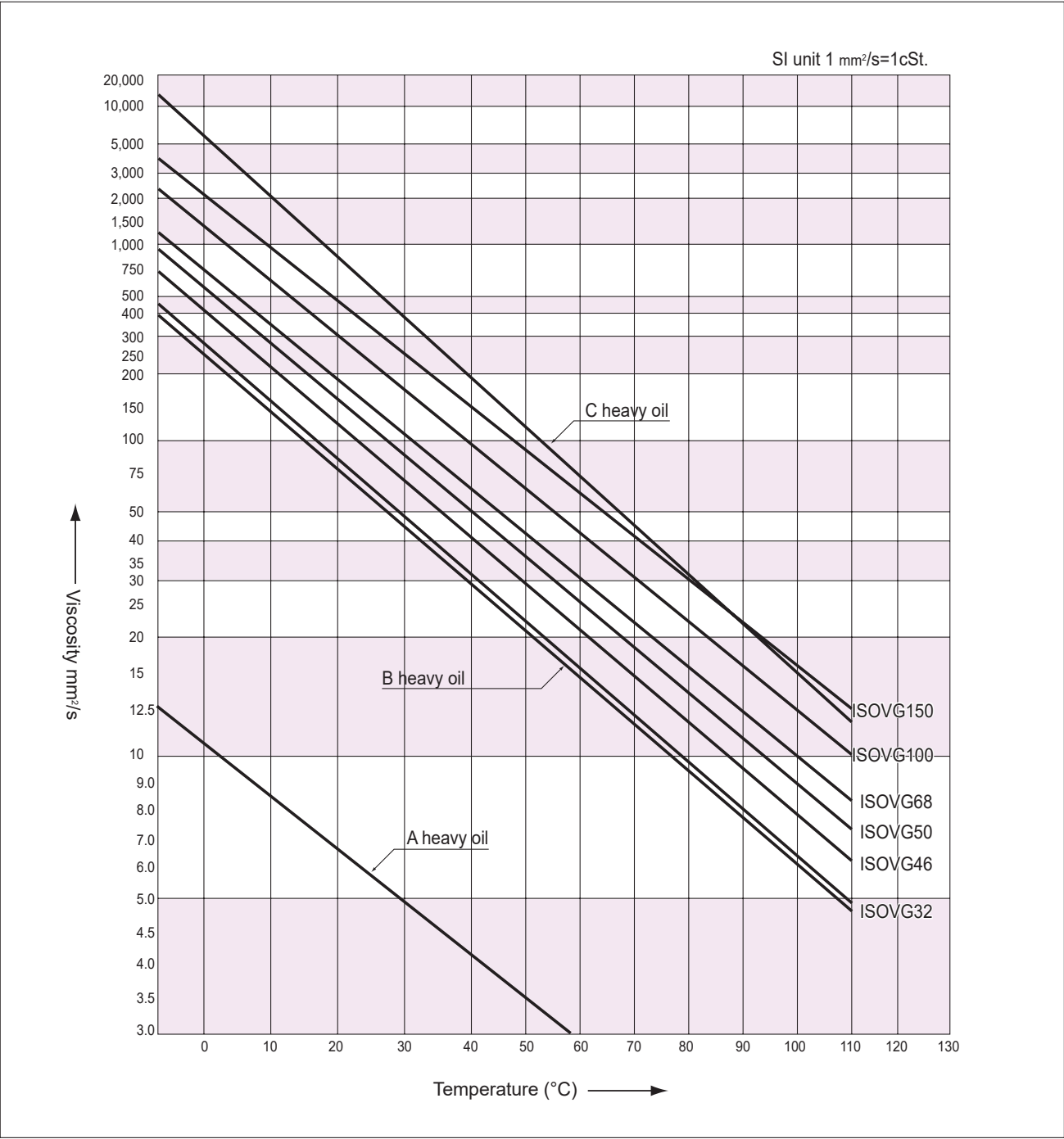
Oil, kerosene

*Refer to page 451 for details on application-specific series.

Type		Features / Applications	Model No.	No. of Ports	Configuration	Oil dynamic viscosity	Working pressure (MPa) *1	Port size *1										Listed page	Application-Specific Series			
								Rc / G / NPT					Rc/flange						Food Products	Rechargeable Battery	Outdoors	
								1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2						
								6	8	10	15	20	25	32	40	50		FP	P4	WP		
Solenoid valve	Direct acting	NEW Standard Energy saving/silent structure	FFB / FFBM FFG / FFGM	2/3	Single unit Manifold	Up to 50 mm²/s (APK/AB71) to 20 mm²/s	0 to 1.4										P. 349					
		A wide variety of bore sizes/coils options	AB / GAB AG / GAG	2/3	Single unit Manifold		0 to 4.0*2												●		●	
	Pilot operated	Piston	AP	2	Single unit		0.05 to 0.9*2											P. 351				
		Diaphragm	AD	2	Single unit		0.02 to 0.7*2															
	Pilot kick	Piston	APK	2	Single unit		0 to 0.7*2															
		Diaphragm	ADK	2	Single unit		0 to 0.7*2															
Solenoid valve (pressure and explosion proof)	Direct acting	International Explosion-Proof Guidelines Pressure and explosion proof structure Exd IIBT2	AB EX4 AG EX4	2/3	Single unit	0 to 4.0*2											P. 357					
	Pilot operated		AP EX4	2	Single unit	0.05 to 0.6*2																
			AD EX4	2	Single unit	0.02 to 0.6*2																
	Pilot kick		ADK EX4	2	Single unit	0 to 0.6*2																
	Direct acting	Structural standards (Japanese-specific standards) Pressure and explosion proof structure d2G2	AB E4 AG E4	2/3	Single unit	0 to 4.0*2																
	Pilot operated		AP E4	2	Single unit	0.05 to 0.6*2																
			AD E4	2	Single unit	0.02 to 0.6*2																
	Pilot kick		ADK E4	2	Single unit	0 to 0.6*2																
	Ball valve	Air operated	Rack&Double piston with pinion	CHB CHG	2/3	Single unit	Up to 500 mm²/s	0 to 1.0										P. 367	●		●	
Motorized		General control	MXB1 MXG1	2/3	Single unit	0 to 1.0													●			
		Miniature type that strives for compactness	MHB4 MHG4	2/3	Single unit	0 to 0.5																

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.
*2: Indicates the working pressure differential range. Refer to the product specifications for details on working pressure.

Heavy oil and turbine oil viscosity characteristics



Coolant

Type	Model No.	No. of Ports	Configuration	Equipped with solenoid valve	Working pressure (MPa)	Port size *1										Listed page
						Rc				Rc/flange			Flange			
						3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3		
						10	15	20	25	32	40	50	65	80		
Air operated 2, 3-port valve	CVE2 CVSE2	2	Single unit	Air operated solenoid valve equipped	Low pressure 0 to 0.5 0 to 1.0											
					Medium pressure 0 to 1.6 0 to 3.0											

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.

Solvent-based

Type		Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa) *1	Port size													Listed page	Application-Specific Series	
							Rc / G / NPT							Rc/flange							Food Products	Outdoors
							1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3					
							6	8	10	15	20	25	32	40	50	65	80					
Solenoid valve	Direct acting	NEW Standard Energy saving / Silent structure	FFB / FFBM FFG / FFGM	2/3	Single unit Manifold	0 to 1.4													P. 349			
		A wide variety of bore sizes/coils options	AB / GAB AG / GAG	2/3	Single unit Manifold	0 to 4.5*2														●	●	
		Piston	AP	2	Single unit	0.05 to 1.0*2													P. 351			
		Diaphragm	AD	2	Single unit	0.02 to 1.0*2													P. 351			
		Rc1/2 to 80to flangeWide range of bore sizes	PVS	2	Single unit	0.05 to 1.0*2													P. 355			
	Pilot kick	Piston	APK	2	Single unit	0 to 1.0*2													P. 351			

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.
*2: Indicates the working pressure differential range. Refer to the product specifications for details on working pressure.

Solvent-based

Type		Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa) *1	Port size *1										Listed page
							Rc / G / NPT						Rc/flange				
							1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
							6	8	10	15	20	25	32	40	50		
Solenoid valve	Pilot kick	Diaphragm	ADK	2	Single unit	0 to 1.0*2											P. 351
	Solenoid valve (explosion-proof)	Direct acting	International Explosion-Proof Guidelines Pressure and explosion proof structure Exd IIBT4	AB EX4 AG EX4	2/3	Single unit	0 to 4.5*2										
Pilot operated		AP EX4		2	Single unit	0.05 to 1.0*2											
		AD EX4		2	Single unit	0.02 to 0.7*2											
		Pilot kick		ADK EX4	2	Single unit	0 to 1*2										
Direct acting		International Explosion-Proof Guidelines	AB EX2	2	Single unit	0 to 2.5*2											
Pilot operated		Pressure and explosion proof structure Exd IIBT2	AP EX2	2	Single unit	0.05 to 0.6*2											
Direct acting		Structural standards (Japanese-specific standards) Pressure and explosion proof structure d2G2	AB E4 AG E4	2/3	Single unit	0 to 4.5*2											
Pilot operated			AP E4	2	Single unit	0.05 to 1.0*2											
			AD E4	2	Single unit	0.02 to 0.7*2											
			Pilot kick	ADK E4	2	Single unit	0 to 1.0*2										
Direct acting	Structural standards (Japanese-specific standards)	AB E2	2	Single unit	0 to 4.5*2												
Pilot operated	Pressure and explosion proof structure d2G2	AP E2	2	Single unit	0.05 to 1.0*2												
Air operated 2-port valve		Accurate and resistant to foreign matter Also suitable for explosive atmospheres (excluding SVB)	SAB SVB	2	Single unit	0 to 1											P. 363
Diaphragm	Cylinder and flow path are completely separated by the diaphragm Flow path is grease-free	LAD	2	Single unit	0 to 0.5												
		NAD GNAD	2	Single unit Manifold	0 to 0.5												

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.
*2: Indicates the working pressure differential range. Refer to the product specifications for details on working pressure.

Sludge/Powder/Chemicals

Type	Features/Applications	Model No.	No. of Ports	Configuration	Operating Pressure (MPa)	Port Size (Flange) *1							Page
Pinch Valve	Rubber sleeve type that opens and closes with compressed air	NPV2	2	Single Unit	0.05 to 0.4	25	32	40	50	65	80	100	P. 369

Compressed air	Dry air	Low vacuum	Medium vacuum	High vacuum	Inert gas	Process Gas	Fuel gas	Water	Hot water	Steam	Oil, kerosene	Coolant	Solvent-based	Sludge/powder/chemicals	Chemical liquid	Pure water
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Chemical liquidPure water

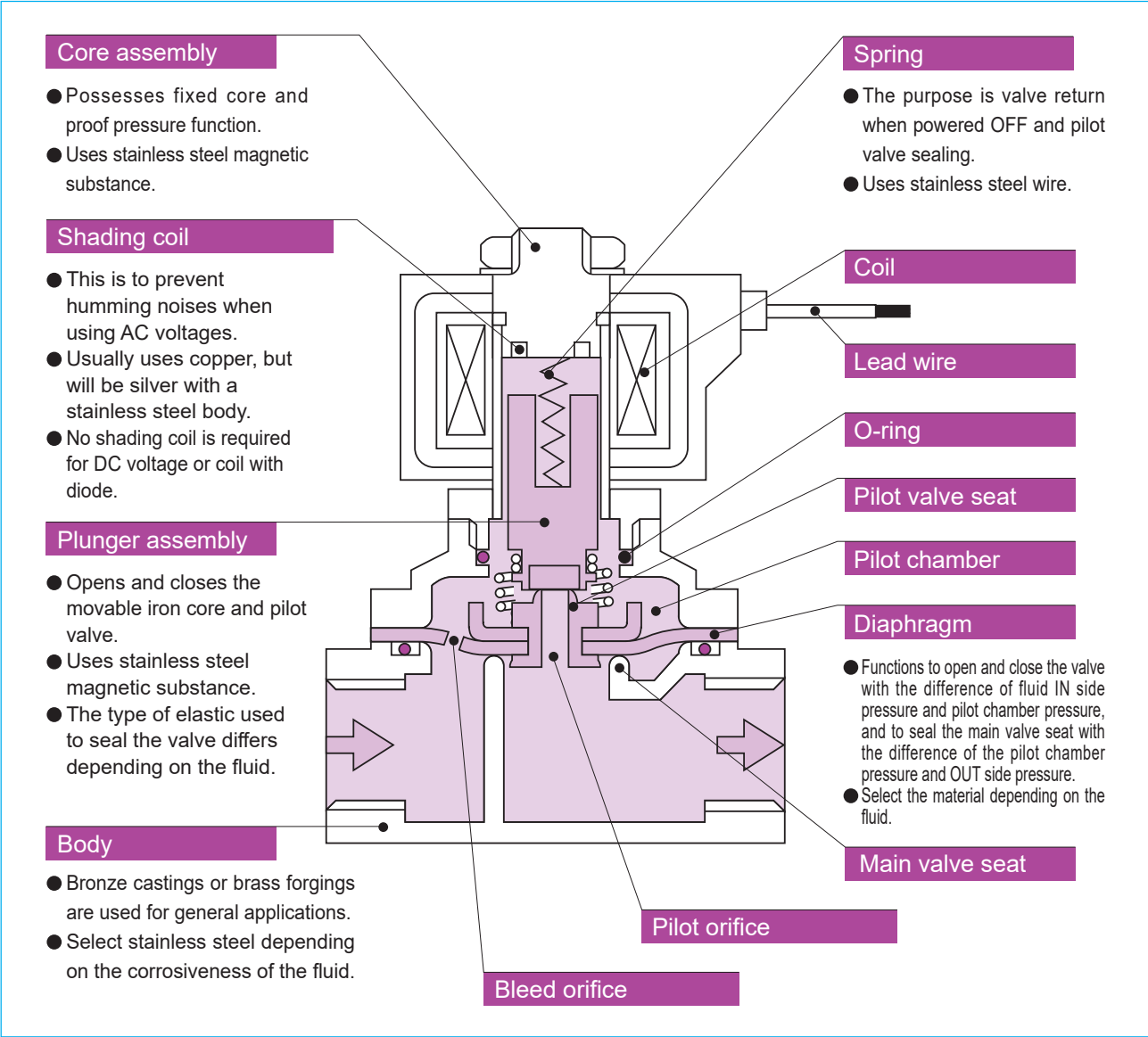
*Refer to page 451 for details on application-specific series.

Type			Features / Applications	Model No.	No. of Ports	Configuration	Working pressure (MPa)*1	Material		Port size, etc. *1	Listed page	Application-Specific Series	
								Seal	Body			Food Products	Rechargeable Battery
Solenoid valve	Metal-free	Diaphragm	Miniature/space saving	MR10R	2/3	Single unit	-0.08 to 0.2	FKM	PEEK	M5 / M6 / 1/4-28UNF	P. 419		
			Rocker valve with indicator	MR16	2/3	Single unit	-0.08 to 0.3	FKM EPDM	PEEK	M6 1/4-28UNF (Direct piping)			
			Chemical liquid resistant PTFE used and excellent for silence	MAB MAG	2/3	Single unit	-0.05 to 0.3	PTFE	PTFE	M6			
			Ample variations	MYB MYG	2/3	Single unit	-0.05 to 0.2	FKM	PPS	M6 Rc1/8 / Rc1/4 / Rc3/8			
			Excellent silence and long service life Small liquid accumulation	MEB2 MEG2	2/3	Single unit	-0.05 to 0.2	FFKM	PPS	Rc1/8			
			Tube connection Fluids up to 90°C can be used	MJB3	2	Single unit	-0.06 to 0.15	FKM	PPS PSU	Tube connection porting O.D. x I.D. = ø8 x ø4			
			Max. orifice as solenoid valve for chemical liquid/pure water	EMB	2	Single unit	-0.05 to 0.3	PTFE	SUS316 PTFE	Rc1/4 / Rc3/8 / Rc1/2			
		Lever type	Compact lever	HMTB HMTG	2/3	Single unit	-0.05 to 0.3	NBR FKM EPDM	PPS	ø2 barbed fitting			
	High corrosion resistance	Poppet	Miniature solenoid valve	UMB UMG	2/3	Single unit	0 to 0.2	FKM	SUS304 or equivalent	Stainless steel pipe with O.D. ø1.26 x I.D. ø0.9			
			Integrated fitting is also available.	USB / USG (resin body)	2/3	Single unit	0 to 0.9	NBR (FKM)	PPS	1/4-28UNF M6 barbed fitting			
			High corrosion-resistant stainless steel body	HB	2	Single unit	0 to 0.7	NBR FKM PTFE	SUS316	M5 Rc1/8 / Rc1/4 / Rc3/8			
Air operated 2, 3-port valve	Diaphragm	Cylinder and flow path are completely separated by the diaphragm Flow path is grease-free	LAD	2	Single unit	0 to 0.5	EPDM PTFE	PPS SCS13	Rc3/8 / Rc1/2 / Rc3/4 / Rc1	P. 363	●	●	
			NAD GNAD	2	Single unit Manifold	0 to 0.5	EPDM	SCS13	Rc3/8		●	●	
		Gas contact fluororesin For semiconductor manufacturing processes, etc.	AMD MMD	2/3	Single unit Manifold	0 to 0.5	PTFE	PTFE PFA, etc.	P. 431				
Pinch Valve for High Purity Fluids	Solenoid	Structure in which only the tube is wetted	HYN	2	Single unit	0 to 0.5	P. 369						
	Air operated	Structure in which only the tube is wetted avoid the thermal effect of energizing	HYA	2	Single unit	0 to 0.1							
Regulator	Air operated	Pilot air enables remote pressure and flow rate control	PMP	-	Single unit	Up to 0.5	PTFE	PTFE PFA	P. 435				
	Manual	Stainless steel body	PYM	-	Single unit	Up to 0.99	PTFE	SUS316					
		Fluoro resin body	PMM	-	Single unit	Up to 0.5	PTFE	PTFE PFA					
Needle valve	Motorized	Remotely adjust the set flow rate with high precision	MNV	2	Single unit	0 to 0.2	PTFE	PTFE					
Level switch			Detects the liquid level and outputs electric signals	KML	-	Single unit	-	-	-				

*1: The working pressure and port size indicate the representative model. Refer to the product specifications for details.

Check list of material combination by working fluid

The CKD fluid control valves can be used with many different gases and liquids; the fluid wetted parts are shown below. The effect of these fluids on the material must be carefully considered when selecting the model. Refer to the working fluid check list for each valve.



Working fluid check list	Listed page
● Solenoid valve Multi-fluid control 2, 3-port solenoid valve FFB, FFG, AB, AG, AP, AD, APK, ADK, explosion-proof	P. 394
● Air operated 2-port valve (cylinder valve) SAB / SVB / NAB / GNAB	P. 400
● Ball valve air operated CHB / CHG	P. 400
● Ball valve motorized MXB / MXG / MHB4 / MHG4	P. 400
● Pinch valve NPV2	P. 401

*The above figure shows the pilot kick diaphragm drive NC 2-port valve (ADK11 Series) .

Working fluid check list ①

For multi-fluid control 2, 3-port solenoid valves

CAUTION

This check list displays guidelines for typical corrosion resistance, and does not guarantee the solenoid valve performance. During actual use, there are unpredictable elements. Thus, there may be cases when general specifications do not apply. Therefore, before use, check the compatibility as needed and take the necessary safety measures on the equipment side.

[Indicates the compatibility of sealant material, body material and working fluid.]										
Acrylic/nitriles to		Ethyl ether		●: Usable ▲: Usable with conditions x: Unusable						
Fluid name	Fluid properties (Indicates the state of the raw material even if the fluid indicates water solubility)	Material combination								Note on model No. selection
		[Body material]				[Body material]				
		Brass/Bronze				Stainless steel				
		[Sealant material]				[Sealant material]				
		Nitrile Rubber	Fluoro rubber	Ethylene propylene	Tetrafluoroethylene resin	Nitrile Rubber	Fluoro rubber	Ethylene propylene	Tetrafluoroethylene resin	
Acrylic/nitriles	Liquid	x	x	x	x	x	x	●	●	Highly flammable liquid. Toxic substance.
Acetylene	Gas	x	x	x	x	▲	▲	x	▲	Highly explosive gas. Contact CKD during model selection. If explosion proof (d3G2) is specified, CKD solenoid valves cannot be used. Instead use an air operated type.
Acetaldehyde	Liquid	x	x	x	●	x	x	x	●	Flammable liquid. If explosion-proof types are specified by the surrounding environment, select explosion-proof (d2G4).
Acetone	Liquid	x	x	●	●	x	x	●	●	Flammable liquid. If explosion-proof types are specified by the surrounding environment, select explosion-proof (d2G4).
Aniline	Liquid	x	x	x	x	x	●	●	●	Organic solvents used in paints or dyes.
Linseed oil		x	x	x	x	●	●	x	●	Take note of viscosity. For direct acting 2-port valves, use it at viscosity 50 mm²/s or less. Pilot operated solenoid valves cannot be used.
Amyl alcohols	Liquid	x	●	●	●	x	●	●	●	Ethylene propylene rubber is more suitable than fluoro rubber.
Argon	Gas	●	●	●	●	●	●	●	●	This is an inert gas so there is no corrosion. Specify oil-prohibited specifications. Select Multi-fit valve FFB.
Ammonia	Gas	x	x	x	x	x	x	▲	▲	Specify a coil with a diode or the DC voltage model. (*1)
Aqueous ammonia	Liquid	x	x	x	x	x	x	▲	▲	Same as above. AKA: Ammonium hydroxide.
Isopropyl alcohol	Liquid	●	●	●	●	●	●	●	●	AKA: IPA. Used in semiconductor washers.
Ethyl alcohol (pure)	Liquid	x	●	●	●	x	●	●	●	AKA: Ethanol. If explosion-proof types are specified by the surrounding environment, select explosion-proof (d2G2) or (d2G4).
Ethyl alcohol (industrial)	Liquid	x	x	●	●	x	x	●	●	
Ethyl ether	Liquid	x	x	x	●	x	x	x	●	In general, these are known as ethers.

*1: AG, AB42, AP12, AP22, AD12, AD22, Explosion-proof types (excluding ADK) and PVS cannot be used even with a coil with diode or DC voltage.

Working fluid check list 1

For 2, 3-Port Solenoid Valves for Multi-Fluid Control

[Indicates the compatibility of sealant material, body material and working fluid.]

Ethylene oxide gas to Gasoline ●: Usable ▲: Usable with conditions x: Unusable

Fluid name		Fluid properties (Indicates the state of the raw material even if the fluid indicates water solubility)	Material combination								Note on model No. selection
			[Body material]				[Body material]				
			Brass/Bronze				Stainless steel				
			[Sealant material]				[Sealant material]				
			Nitrile Rubber	Fluoro rubber	Ethylene propylene	Tetrafluoroethylene resin	Nitrile Rubber	Fluoro rubber	Ethylene propylene	Tetrafluoroethylene resin	
Ethylene oxide gas	Gas	x	x	x	x	x	x	x	x	AKA: E.O.G. Boils into gas at 10.4°C. Explosive gas.	
Ethylene glycol	Liquid	●	●	●	●	●	●	●	●	Used as anti-freeze.	
Aqueous ammonium chloride	(Crystal)	x	x	x	x	x	x	x	x	Solenoid valves not suitable. Select a completely resin air operated valve.	
Ethylene chloride	Gas	x	x	x	x	x	x	x	●	AKA: Ethyl chloride. Requires dry conditions. Select a CKD air operated valve for chemical liquids if moisture is present. Flammable gas.	
Methyl chloride	Gas	x	x	x	x	x	x	x	●	AKA: Chloromethane. Boils into gas at -23°C. Requires dry conditions. Select a CKD air operated valve for chemical liquids if moisture is present.	
Methylene chloride	Liquid	x	x	x	x	x	x	x	●	AKA: Dichloromethane.	
Aqueous potassium chloride	(Crystal)	x	x	x	x	x	x	x	x	Cannot be used with metal.	
Aqueous magnesium chloride	(Crystal)	x	x	x	x	x	x	x	x	Cannot be used with metal.	
AE solvent	Liquid (powder)	x	x	x	x	x	x	x	x	Cement hardener.	
Ozone (several ppm or less)	Gas	x	x	x	x	x	▲	▲	▲	Specify a coil with a diode or the DC voltage model. (*1)	
Sodium perchlorate	Liquid	x	x	x	x	x	x	x	●	AKA: Perchlorate soda. Cannot be used with rubber.	
Hydrogen peroxide solution	Liquid	x	x	x	x	x	x	x	▲	Oxidant. Used in disinfectants and sterilization agents. Usually 30 to 50% water soluble. Specify a coil with a diode or the DC voltage model. (*1)	
Caustic soda	(Solid)	x	x	x	x	●	x	●	●	Take care when using as crystals may form when fluid dries out. (Crystals may adhere to the OUT side of the valve, causing it to lock)	
Aqueous potassium permanganate	(Crystal)	x	x	x	x	x	x	x	●	Used for analysis. Strong oxidant. Take care when using as crystals may form as it dries out.	
Gasoline	Liquid	x	▲	x	●	x	▲	x	●	Fluoro rubber may not always be usable.	

*1: AG, AB42, AP12, AP22, AD12, AD22, explosion-proof types (excluding ADK) and PVS have a shading coil and cannot be used even with a coil with diode or DC voltage.

CAUTION

This check list displays guidelines for typical corrosion resistance, and does not guarantee the solenoid valve performance. During actual use, there are unpredictable elements. Thus, there may be cases when general specifications do not apply. Therefore, before use, check the compatibility as needed and take the necessary safety measures on the equipment side.

[Indicates the compatibility of sealant material, body material and working fluid.]

Glycerin to Heavy oil A ●: Usable ▲: Usable with conditions x: Unusable

Fluid name		Fluid properties (Indicates the state of the raw material even if the fluid indicates water solubility)	Material combination								Note on model No. selection
			[Body material]				[Body material]				
			Brass/Bronze				Stainless steel				
			[Sealant material]				[Sealant material]				
			Nitrile Rubber	Fluoro rubber	Ethylene propylene	Tetrafluoroethylene resin	Nitrile Rubber	Fluoro rubber	Ethylene propylene	Tetrafluoroethylene resin	
	Glycerin	Liquid	●	●	●	●	●	●	●	●	Take note of viscosity. For direct acting 2-port valves, use it at viscosity 50 mm²/s or less. Pilot operated solenoid valves cannot be used.
	Cresol	Solid (liquid)	x	x	x	x	x	●	x	●	Disinfectant. AKA: Methyl phenol.
	Chloroform	Liquid	x	x	x	●	x	x	x	●	AKA: Trichloromethane. Acute toxic substance.
	Light oil	Liquid	●	●	x	●	●	●	x	●	–
	Aqueous sodium silicate	(Crystal)	●	●	●	●	●	●	●	●	AKA: waterglass. Used in phosphate-free detergents. Take note of viscosity and concentration. Select stainless steel for high concentrations, as it is classified as an alkaline aqueous solution.
	Isopropyl acetate	Liquid	x	x	x	●	x	x	x	●	Flammable liquid. Acute toxic substance. Paint solvent.
	Ethyl acetate	Liquid	x	x	x	●	x	x	x	●	A solvent for paint. If explosion-proof types are specified by the surrounding environment, select explosion-proof (d2G2) or (d2G4).
	Sodium acetate	(Solid)	●	●	x	●	●	●	x	●	Dye.
	Butyl acetate	Liquid	x	x	x	●	x	x	x	●	Flammable liquid. Acute toxic substance.
	Methyl acetate	Liquid	x	x	x	●	x	x	x	●	Flammable liquid. Acute toxic substance.
	Oxygen	Gas	x	●	●	●	x	●	●	●	Oil-prohibited treatment is required as it may spontaneously ignite when exposed to oil.
	Aqueous potassium cyanide		x	x	x	x	●	●	●	●	AKA: Cyanide potash. A poisonous chemical used in plating solutions.
	Carbon tetrachloride	Liquid	x	x	x	●	x	x	x	●	Flame retardant. A solvent for dry cleaning. Acute toxic substance.
	Aqueous potassium dichromate	(Solid)	x	x	x	x	x	●	●	●	–
	Aqueous sodium bicarbonate	(Solid)	x	x	x	x	●	●	●	●	AKA: baking soda. Used as a food additive.
	Heavy oil A	Liquid	▲	●	x	●	▲	●	x	●	Take care when selecting the sealant if an additive is present. *2

*2: High calorie heavy oil A is increasingly used for small boilers, etc. Nitrile rubber cannot be used with "high-calorie heavy oil A".

Working fluid check list ①

For 2, 3-Port Solenoid Valves for Multi-Fluid Control

Heavy Oil B to Toluene

[Indicates compatibility of seal material, body material, and fluid.]

●: Usable ▲: Usable with conditions ×: Not usable

Fluid Name		Fluid Properties (Even if "aqueous solution" is specified for the fluid, the state of the raw material is indicated.)	Material Combination								Notes on Selection
			(Body Material)				(Body Material)				
			Brass/Bronze				Stainless Steel				
			(Seal Material)				(Seal Material)				
			Nitrile Rubber	Fluororubber	Ethylene Propylene	PTFE	Nitrile Rubber	Fluororubber	Ethylene Propylene	PTFE	
	Heavy Oil B	Liquid	●	●	×	●	●	●	×	●	–
	Heavy Oil C	Liquid	×	●	×	●	×	●	×	●	Note the viscosity. LLO solenoid valve for heavy oil is recommended.
	Nitric Acid 30%	Liquid	×	×	×	×	×	×	×	×	Solenoid valves cannot be used. We recommend our air operated valves for chemicals.
	Vinegar	Liquid	×	×	×	×	×	×	×	×	Alias: Vinegar. Same conditions as for "Acetic Acid."
	Dimethyl Silicone Oil	Liquid	●	●	●	●	●	●	●	●	Generally called silicone oil.
	Vacuum (Medium Vacuum)	–	●	●	×	×	●	●	×	×	Multi-fit Valve (FFB) with medium vacuum option is recommended.
	Vacuum (High Vacuum)	–	×	×	×	×	×	×	×	×	High vacuum valve (HVB) is recommended.
	Silver Nitrate Aqueous Solution	(Solid)	×	×	×	×	▲	▲	▲	▲	Used for analysis and as a photosensitizer in photography. Specify a coil with a diode or the DC voltage model. (*1)
	Calcium Hydroxide Aqueous Solution	(Solid)	×	×	×	×	●	●	●	●	Alias: Slaked lime. Used as a neutralizing agent in wastewater treatment. Note the viscosity. Strong alkali. Since it is not easily soluble in water, solenoid valves are not suitable if it remains in granular form.
	Sodium Hydroxide (less than 30%) (Alias: Caustic Soda)	(Solid)	×	×	×	×	●	×	●	●	Note that crystals will precipitate if the fluid dries out. (Crystals may adhere to the OUT side of the valve, causing it to lock)
	Sodium Hydroxide (30% or more)	(Solid)	×	×	×	×	×	×	●	●	As above. Same conditions.
	Hydrogen	Gas	●	●	●	●	●	●	●	●	Forms an explosive mixture with air. Explosion-proof (d3G1) specification cannot be manufactured.
	Carbon Dioxide Gas	Gas	●	●	●	●	●	●	●	●	–
	Carbonated Water	Liquid	●	●	●	●	●	●	●	●	–
	Tannic Acid	(Powder)	×	×	×	×	●	●	●	●	–
	Nitrogen	Gas	●	●	●	●	●	●	●	●	Inert gas. Not corrosive. Oil-free treatment specification. Multi-fit valve is recommended.
	Turpentine Oil	Liquid	●	●	×	●	●	●	×	●	Pine resin oil. Used as a solvent and in pharmaceuticals. Flash point 35°C.
	Natural Gas	Gas	●	●	×	●	●	●	×	●	Alias: LNG. Specific gravity 0.65. Direct acting valve for gas Catalog No. [CC-1590AA] is recommended. Refer to "Using ⚠ general purpose valves with fuel gas" on page 399 .
	Kerosene	Liquid	●	●	×	●	●	●	×	●	Alias: Kerosene. Called kerosene in jet fuel.
	City Gas	Gas	●	●	×	●	●	●	×	●	Gas fuel system is recommended. Refer to "Using ⚠ general purpose valves with fuel gas" on page 399 .
	Dry Air	Gas	●	●	●	●	●	●	●	●	Multi-fit Valve is recommended
	Trichloroethane	Liquid	×	×	×	▲	×	×	×	●	Corrosiveness increases if moisture is mixed in.
	Trichloroethylene	Liquid	×	×	×	▲	×	×	×	●	Alias : Trichlene. Acutely toxic substance.
	Toluene	Liquid	×	×	×	●	×	×	×	●	If explosion-proof is specified due to the ambient atmosphere, please select an explosion-proof type (d2G2) or (d2G4). Note the temperature due to its volatility. Flammable liquid. Acutely toxic substance.

*1: AG, AB42, AP12, AP22, AD12, AD22, explosion-proof types (excluding ADK) and PVS have a shading coil and cannot be used even with a coil with diode or DC voltage.

Note

This checklist is provided as a guide to general corrosion resistance and does not guarantee the performance of the solenoid valve. Since there may be unpredictable factors in actual use, there may be cases where general specifications do not apply. Therefore, please confirm suitability sufficiently before use and take safety measures on the equipment side.

Naphtha to Freon Gas

[Indicates compatibility of seal material, body material, and fluid.]

●: Usable ▲: Usable with conditions ×: Not usable

Fluid Name		Fluid Properties (Even if "aqueous solution" is specified for the fluid, the state of the raw material is indicated.)	Material Combination								Notes on Selection
			(Body Material)				(Body Material)				
			Brass/Bronze				Stainless Steel				
			(Seal Material)				(Seal Material)				
			Nitrile Rubber	Fluororubber	Ethylene Propylene	PTFE	Nitrile Rubber	Fluororubber	Ethylene Propylene	PTFE	
	Naphtha	Liquid	×	×	×	●	×	×	×	●	–
	Dichlorobenzene	Liquid (Solid)	×	×	×	●	×	×	×	●	Alias: Dichlorobenzene.
	Lactic Acid	Liquid	×	×	×	×	×	●	●	●	Used for brewing or drinking.
	Perchloroethylene	Liquid	×	×	×	×	×	●	×	●	Alias: Ethylene tetrachloride, acute toxic substances, limited to use in environments with well-equipped exhaust equipment. Used as a dry cleaning solvent, is volatile. Please contact us when selecting a model.
	Castor Oil	Non-drying	×	×	×	×	●	●	×	●	Used as a laxative. Vegetable oil.
	Phenol	(Crystal)	×	×	×	×	×	●	×	●	Used as a disinfectant and local anesthetic.
Freon Gas	Butane Gas	Gas	●	●	×	●	●	●	×	●	If explosion-proof is specified due to the ambient atmosphere, please select an explosion-proof type (d2G2) or (d2G4). This is a custom-made product as it generates sticky material. Refer to "Using ⚠ general purpose valves with fuel gas" on page 399 .
	Butyl Alcohol	Liquid	×	●	●	●	×	●	●	●	Alias: Butanol. If explosion-proof is specified due to the ambient atmosphere, If explosion-proof is specified due to the ambient atmosphere, please select an explosion-proof type (d2G2) or (d2G4) . Flammable liquid. Please contact us when selecting a model.
	Brake Fluid	Liquid	×	×	●	●	×	×	●	●	–
	Propyl Alcohol	Liquid	×	●	●	●	×	●	●	●	–
	Propane Gas	Gas	●	●	×	●	●	●	×	●	This is a custom-made product as it generates sticky material. Gas fuel system is recommended. Refer to "Using ⚠ general purpose valves with fuel gas" on page 399 .
	R23	Liquid and Gas	×	×	×	●	×	×	×	●	Alias: HFC23
	R32		×	×	●	●	×	×	●	●	Alias: HFC32
	R125		●	×	●	●	●	×	●	●	Alias: HFC125
	R134a		×	×	×	●	×	×	×	●	Alias: HFC134a
	R143a		●	×	●	●	●	×	●	●	Alias: HFC143a
R404A	×		×	×	●	×	×	×	●	Mixture of HFC125/143a/134a	
R407C	×		×	×	●	×	×	×	●	Mixture of HFC32/125/134a	
R407E	×		×	×	●	×	×	×	●	Mixture of HFC32/125/134a	
R410A	×		×	●	●	×	×	●	●	Mixture of HFC32/125	
R507A	●	×	●	●	●	×	●	●	Mixture of HFC125/143a		

Working fluid check list ①

For 2, 3-Port Solenoid Valves for Multi-Fluid Control

[Indicates the compatibility of sealant material, body material and working fluid.]

Hexanol to

Phosphoric acid

●: Usable ▲: Usable with conditions x: Unusable

Fluid name		Fluid properties (Indicates the state of the raw material even if the fluid indicates water solubility)	Material combination								Note on model No. selection
			[Body material]				[Body material]				
			Brass/Bronze				Stainless steel				
			[Sealant material]				[Sealant material]				
			Nitrile Rubber	Fluoro rubber	Ethylene propylene	Tetrafluoroethylene resin	Nitrile Rubber	Fluoro rubber	Ethylene propylene	Tetrafluoroethylene resin	
Hexanol	Liquid	x	●	●	●	x	●	●	●	AKA: Hexyl alcohol.	
Heptane	Liquid	●	●	x	●	●	●	x	●	Flammable liquid.	
Helium	Gas	●	●	●	●	●	●	●	●	Inert gas Non-corrosive.	
Benzine	Liquid	x	x	x	●	x	x	x	●	Solvent. Volatile. Flammable liquid. This forms an explosive gas when mixed with air.	
Benzol	Liquid	x	x	x	●	x	x	x	●	AKA: Benzene. Flammable liquid. Harmful substance. Limited to use in environments with well-equipped exhaust equipment.	
Sodium borate	(Crystal)	x	x	x	x	●	●	●	●	AKA: Borax.	
Formalin	(Gas)	x	x	x	x	x	x	●	●	AKA: Formaldehyde.	
Methane gas	Gas	●	●	x	●	●	●	x	●	See below "▲Using General purpose valves with fuel gas".	
Methyl alcohol	Liquid	x	x	●	●	x	x	●	●	AKA: Methanol. Flammable liquid. Acute toxic substance.	
Methyl ether	Gas	x	x	x	●	x	x	x	●	–	
Methyl ethyl ketone	Liquid	x	x	●	●	x	x	●	●	AKA: MEK. Highly flammable liquid. Limited to use in environments with well-equipped exhaust equipment.	
Cottonseed oil	Semi-drying	x	●	x	●	x	●	x	●	For food products.	
Lacquer	Liquid	x	x	x	●	x	x	x	●	If explosion-proof types are specified by the surrounding environment, select explosion-proof (d2G2) or (d2G4).	
Hydrogen sulfide solution	Water + gas	x	x	x	x	x	x	x	x	Select a completely resin air operated valve.	
Aqueous ammonium sulfate	(Solid)	x	x	x	x	x	x	x	x	AKA: Ammonium sulfate. Nitrogen fertilizer.	
Aqueous sodium sulfate	(Solid)	x	x	x	x	x	x	x	x	AKA: Aqueous sodium sulfide.	
Aqueous nickel sulfate	(Solid)	x	x	x	x	x	x	x	x	Used as a nickel plating solution.	
Aqueous copper sulfate	(Solid)	x	x	x	x	x	x	x	x	Used in agricultural chemicals, pigments, and copper plating.	
Phosphoric acid	Liquid	x	x	x	x	x	x	x	x	–	

▲Using General purpose valves with fuel gas

When using with fuel gas, install an evaporator or provide drainage measures (raise the piping, install a trap, etc.) so that the liquefied gas does not enter the solenoid valve. Observe the laws and periodic inspections set forth for each gas device. When using city gas or LPG (butane gas, propane gas), standard parts may not be available depending on the gas properties. Contact CKD to select the optimum model.

Controlled Fluid Checklist ②

- Air Operated 2-Port Valve (Cylinder Valve)
- Electric Ball Valve 2-Port Valve
- Air operated 2, 3-port ball valve (compact rotary valve)

Note

This checklist is provided as a guide to general corrosion resistance and does not guarantee the performance of the valve. Since there may be unpredictable factors in actual use, there may be cases where general specifications do not apply. In addition, the type of grease applied to the internal sliding parts for initial lubrication may be limited depending on the fluid and application. Therefore, please confirm suitability sufficiently before use and take safety measures on the equipment side.

●: Usable ▲: Usable with conditions ×: Not usable -: No usage examples
*1: "Usable with conditions" means that the conditions in parentheses at the end of the fluid name must be met.

Material Combination			Sub-plate Material		-								Brass		Stainless Steel		Aluminum										
			Body Material		Brass/Bronze				Stainless Steel				Polypropylene resin		Stainless Steel		Polypropylene resin										
Fluid Name			Seal Material		NBR	FKM	PTFE	EPDM	NBR	FKM	PTFE	EPDM	NBR	FKM	NBR	FKM	NBR	FKM									
Acetylene (If subject to explosion protection, use air-operated type.)			x	x	x	x	●	●	●	x	x	x	●	●	x	x											
Linseed Oil			x	x	x	-	●	●	●	x	x	x	●	●	-	-											
Argon			●	●	●	-	●	●	●	-	●	●	●	●	●	●											
Ethylene Glycol			●	●	●	●	●	●	●	●	●	●	●	●	●	●											
AE Agent			▲	▲	▲	x	●	●	●	x	▲	▲	●	●	x	x											
Ozone (low concentration. Several ppm or less)			x	x	x	x	x	▲	●	▲	x	▲	x	▲	-	-											
Gasoline (Pure gasoline)			x	▲	●	x	x	▲	●	x	x	x	x	▲	x	x											
Glycerin			-	-	-	-	●	●	●	x	●	●	●	●	-	-											
Cresol			-	-	-	-	x	●	●	x	x	●	x	●	x	x											
Diesel Oil			●	●	●	x	●	●	●	x	●	●	●	●	●	●											
Sodium Silicate Aqueous Solution			●	●	●	●	●	●	●	●	●	●	●	●	-	-											
Heavy Oil A (If additives are included, FKM is recommended)			▲	●	●	x	▲	●	●	x	▲	●	▲	●	-	-											
Heavy Oil B			●	●	●	x	●	●	●	x	●	●	●	●	-	-											
Heavy Oil C			x	●	●	x	x	●	●	x	x	●	x	●	-	-											
Ultrapure Water			-	-	-	-	x	●	●	-	-	-	x	●	x	x											
Silicone Oil			x	●	●	-	x	●	●	-	x	●	x	●	x	●											
Sodium Hydroxide			x	x	x	x	▲	x	●	●	x	x	▲	x	x	x											
Hydrogen gas (not for high temperatures. Use an air operated type for explosion proof specifications.)			●	●	●	●	●	●	●	●	●	●	●	●	●	●											
Soapy Water			-	-	-	-	●	●	●	●	-	-	●	●	x	x											
Carbon Dioxide Gas			●	●	●	●	●	●	●	●	●	●	●	●	●	●											
Carbonated Water			-	-	-	-	▲	▲	▲	●	-	-	▲	▲	x	x											
Nitrogen gas			●	●	●	●	●	●	●	●	●	●	●	●	●	●											
Natural Gas			●	●	●	-	●	●	●	-	●	●	●	●	●	●											
Kerosene			●	●	●	x	●	●	●	x	●	●	●	●	-	-											
Propane Gas			●	●	●	x	●	●	●	x	●	●	●	●	●	●											
Availability of Options by Model ☆: Standard ○: Option available			Air Operated 2-Port Valve (Cylinder Valve)	NAB1, 2, 3	☆	○	-	-	○	○	-	-	-	-	-	-	-										
				NAB1V, 2V, 3V	☆	○	-	-	○	○	-	-	-	-	-	-	-	-									
				GNAB1, 2, 3	-	-	-	-	-	-	-	-	☆	○	○	○	○	○									
				GNAB1V, 2V, 3V	-	-	-	-	-	-	-	-	☆	○	○	○	○	○									
				SAB1, 2, 3, SVB1, 2	☆	○	-	○	☆	○	-	○	-	-	-	-	-	-									
				SAB1S, 2S, 3S, SVB1S, 2S	-	-	☆	-	-	-	☆	-	-	-	-	-	-	-									
			Compact Rotary Valve	CHB	-	☆	-	-	-	☆	-	-															
				CHG	-	☆	-	-	-	☆	-	-															
			Electric Ball Valve	MXB1, MSB1	-	☆	-	-	-	☆	-	-															
				MXG1	-	☆	-	-	-	☆	-	-															
				MHB4	-	☆	-	-	-	-	-	-															
				MHG4	-	☆	-	-	-	-	-	-															

Controlled Fluid Checklist ③

Pinch Valve

⚠ Note

This checklist is provided as a guide to general corrosion resistance and does not guarantee the performance of the valve. Since there may be unpredictable factors in actual use, there may be cases where general specifications do not apply. Therefore, please confirm suitability sufficiently before use and take safety measures on the equipment side.

Chemical Resistance of Rubber Sleeve

●: Almost no effect ▲: Slightly affected, but usable depending on conditions
×: Affected, not usable Values in () are for test temperature, 60 = 60 °C RT = room temperature.

Chemical Name	Chemical Formula	Concentration	Rubber Sleeve	Chemical Name	Chemical Formula	Concentration	Rubber Sleeve
			Chloroprene Rubber				Chloroprene Rubber
Asbestos			●	Nitric Acid	HNO ₃	30%	× (RT)
Acetone	CH ₃ COCH ₃		× (RT)	Nitric Acid 15%, Hydrofluoric Acid 6%	HNO ₃ 15%/HF6%		▲ (RT)
Sulfurous Acid	H ₂ SO ₃	10%	× (RT)	Ammonium Nitrate	NH ₄ NO ₂		● (70)
Sulfurous Acid Gas	SO ₂		▲ (RT)	Nitric Acid Raw Material			● (70)
Ammonia Water	NH ₄ OH	30%	● (70)	Magnesium Hydroxide	Mg(OH) ₂		● (65)
Sulfur	N		●	Sodium Cyanide	NaCN	Each concentration	● (70)
Ethanol	C ₂ H ₅ OH		● (RT)	Lime Powder			●
Ethylene Glycol	CH ₂ OHCH ₂ OH		● (RT)	Soap			● (70)
Aluminum Chloride	AlCl ₃	Each concentration	● (70)	Carbolic Acid	C ₆ H ₅ OH		× (RT)
Ammonium Chloride	NH ₄ Cl	27%	● (70)	Cement			●
Sodium Chloride	NaCl		● (70)	Carbonic Acid	H ₂ CO ₃	Each concentration	● (70)
Barium Chloride	BaCl ₂ /2H ₂ O		● (65)	Sodium Carbonate	Na ₂ CO ₃	Each concentration	● (70)
Hydrochloric Acid	HCl	20%	× (70)	Glue			● (RT)
Hydrochloric Acid	HCl	35%	▲ (RT)	Lactic Acid	CH ₃ CH(OH)COOH	25%	● (60)
Potassium Chlorate	KClO ₃	Each concentration	● (70)	Hydroquinone	C ₆ H ₄ (OH) ₂		● (RT)
Olive Oil			▲ (RT)	Pulp			●
Caustic Potash	KOH	25%	● (70)	Picric Acid	HOC ₆ H ₂ (NO ₂) ₃	10%	× (RT)
Caustic Soda	NaOH	50%	● (RT)	Bleaching Liquid (Calcium hypochlorite)	Ca(ClO) ₂		× (RT)
Calcium	Ca		●	Butyl Cellulose			▲ (RT)
Formic Acid	HCOOH		▲ (RT)	Hydrofluoric Acid	HF	10%	● (RT)
Glycerin			● (RT)	Hydrofluoric Acid	HF	40%	× (RT)
Chromic Acid	H ₂ CrO ₄	10%	× (RT)	Alum	K ₂ SO ₄ Al ₂ (SO ₄)	Each concentration	● (70)
Sewage			● (RT)	Methanol	OH ₃ OH		● (RT)
Developer			▲ (65)	Plating Solution			×
Citric Acid	C ₃ H ₄ (OH) ₃ (CO ₂ H) ₃	10%	● (70)	Cottonseed Oil			▲ (60)
Grains			●	Coconut Oil			● (RT)
Acetic Acid	CH ₃ COOH	30%	×	Potassium Sulfide	K ₂ S	Each concentration	● (70)
Fatty Acid			×	Hydrogen Sulfide Water	H ₂ S	Each concentration	× (60)
Oxalic Acid	HO ₂ H/CO ₂ H	20%	▲ (RT)	Sulfuric Acid	H ₂ SO ₄	20%	● (70)
Potassium Dichromate	K ₂ Cr ₂ O ₇	Each concentration	● (RT)	Sulfuric Acid	H ₂ SO ₄	50%	× (RT)
Sodium Dichromate			● (RT)	Zinc Sulfate	ZnSO ₄ /7H ₂ O		● (65)
Sodium Bicarbonate	NaHCO ₃	Each concentration	● (70)	Sodium Sulfate	Na ₂ SO ₄		● (70)
Tartaric Acid	(CHOH/COOH) ₂	50%	× (70)	Malic Acid	HOOCCH ₂ CHOHCOOH		▲ (65)
Nitric Acid	HNO ₃	10%	× (RT)	Phosphoric Acid	H ₃ PO ₄	80%	▲ (70)
Nitric Acid	HNO ₃	20%	× (RT)	Sodium Phosphate	Na ₃ PO ₄	Each concentration	● (70)

The chemical resistance of the pinch valve varies depending on the usage conditions, so it is not possible to definitively determine its suitability. Please use this table as an initial selection guide. Therefore, it may be necessary to make improvements based on field tests in some cases.

Fluid Control Valves

Search by Industry/Application

Dust collection devices

Solenoid valve controller for dust collection	PD3 / PDV3 PD2 / PDV2 PDVE4 PJVB / OMC2	P. 405
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Gas combustion systems

Gas combination valve	GHV / GRV	P. 409
Solenoid valve	DSG / DSG-W VNA / VLA VNA-R/RH, VNR	
Medium pressure gas safety shutoff control system	TAC-25 / VNM VLM / C25N-B	P. 411
Safety residual pressure exhaust valve	VNM-25-K	P. 413
Motorized valve	HK1 / HS	

Automatic watering control systems

Solenoid valve	RSV-K / GSV2 GSV / RSV-W	P. 416
Controller	RSC-S5 / RSC-G RSC-1/2 WP	
Rain sensor	RS-6	

components for Life Science

Solenoid valve	MR10R / MR16 / MKB3 MAB / MAG MYB / MYG MEB2 / MEG2 MJB3 / EMB HMTB / HMTG USB / USG UMB / UMG / HB	P. 419
Pinch Valve for High Purity Fluids	HYN	

Pharmaceutical Manufacturing Process Components

Weir Diaphragm Valve	SWD / MWD	P. 422
Poppet Diaphragm Valve	SPD	
Pinch Valve for High Purity Fluids	HYA / HYN	

Products for Outdoor Use

WP Series	P. 423
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components for rechargeable battery production

P4 Series	P. 424
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Components for food manufacturing processes

FP Series	P. 425
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Equipment for Dust Collectors

*For details, refer to CKD Components Product site (https://www.ckd.co.jp/kiki/en/) → "Model No."

Features / Applications	Model No.	Appearance	Sealant			Working pressure (MPa) *1	Port size *1						Click here for specifications	
			Urethane rubber	Nitrile Rubber	Fluoro rubber		3/4	1	1 1/2	2	2 1/2	3	Catalog Name [No]	WEB
							20	25	40	50	65	80		
Pulse jet valve for dust removal in fabric filter type dust collectors	PD3 PDV3-20A, 25A, 40A		●	●	●	0.1 to 0.7							Fluid Control Valves [RJ-013AA]	
	PD3 PDV3-65A, 80A			●		0.2 to 0.8								
	PD2 / PDV2		●	●		0.1 to 0.7								
For use in explosion-proof environments with d2G4 pressure and explosion-proof structure	PDVE4		●			0.1 to 0.7							Fluid Control Valves [RJ-013AA]	
				●										

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Urethane rubber cannot be selected for 40A.

Features / Applications	Model No.	Appearance	Click here for specifications	
			Catalog Name [No]	WEB
Up to 12 lots in the box shape for PD Series operation	PJVB		Fluid Control Valves [RJ-013AA]	
Controller for controlling multiple dust collector valves	OMC2			

PD / PDV Series

Long service life diaphragm structure

Achieves a longer and more stable service life.

Instantaneous / Large flow rate injection

A large volume of air can be injected instantly. Excellent opening/closing speed and sealing surface.

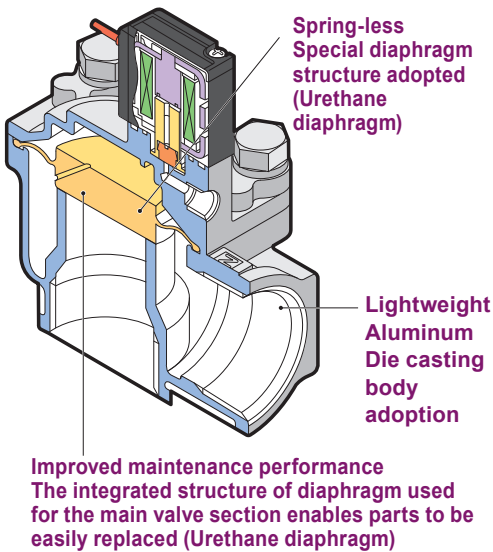
Ideal for controlling various powder and granular materials

It can be widely used for supply, mixing, and removing various powder and granular materials.

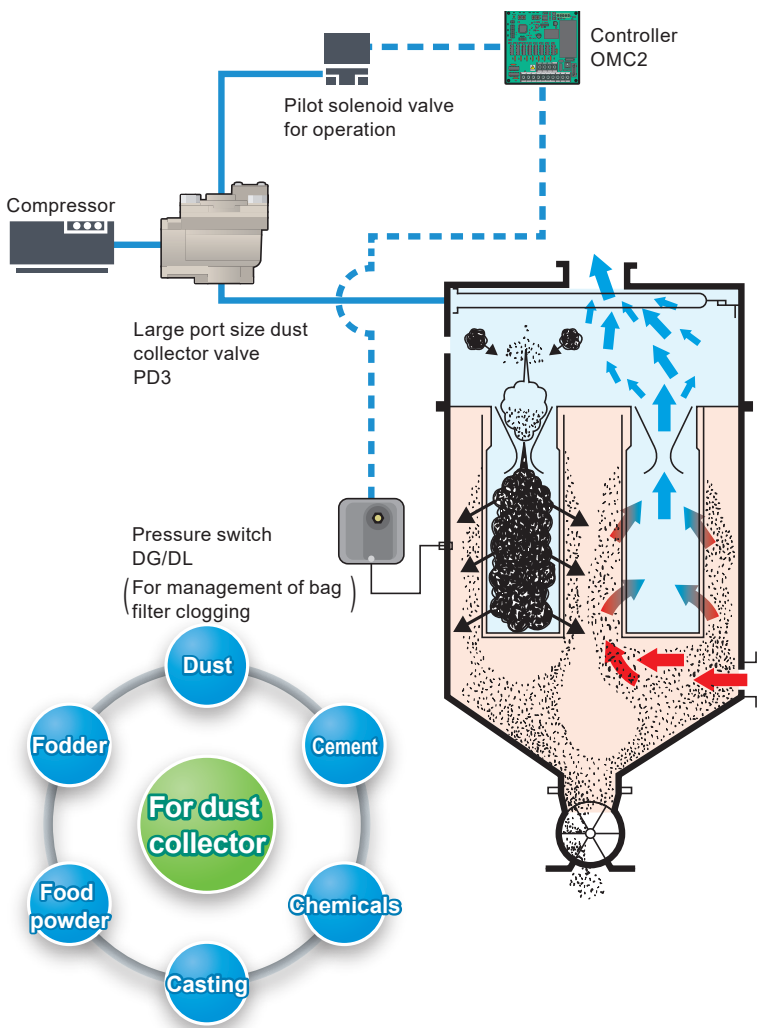
Sealant material can be selected

Depending on the working environment, the sealant material can be selected from urethane rubber, nitrile rubber, and fluoro rubber.

*Option settings differ depending on the model.



Dust collector valve control system example



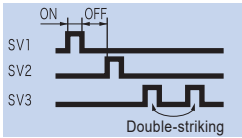
OMC2 Series

Double-striking of the valve and intermission time setting are also possible.

A compact, high-function type equipped with a microcomputer that performs sequential control according to the number of valves (1 to 10).

Double-striking available

The valve can be set to single or double-striking, depending on the application. (Note that double-striking is not possible when intermission time is set.)



Pause time setting

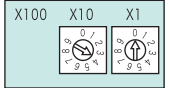
Interval per cycle (pause) 1 to 99 min. (Effective only when single-striking is set).

Can be stopped every cycle

Single/master/device Easy operation setting

Easy to change the number of steps Easily change the number of steps with 10 or 6 expansion steps.

Operation is easy with a single screwdriver



No sequence circuit necessary Since an expansion circuit is not required, a sequence circuit is not required.

Power supply free Voltage range is from 100 V to 220 VAC can be used.



With reliable gas control, we can help create an affluent society

Safety



The structure, function, and material of the system product are closely checked to ensure high safety.

Reliability



We continuously pursue the ideal gas combustion components, and propose highly reliable systems based on safety.

Environment friendly



We contribute to a society that can develop sustainably, adapting to carbon neutrality and clean energy.

Water coolers/Heaters



Building/factory air conditioning, aquarium, etc.

Boilers



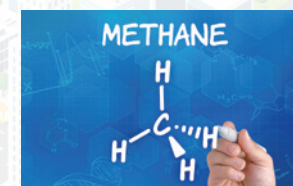
Hospitals, thermal power plants, food plants, etc.

Industrial furnaces



Incinerators, industrial product coaters, dryers, etc.

Methanation



Control of greenhouse gases, decarbonization, etc.

Burners



Industrial components, equipment, agriculture, etc.

Clean energy



Hydrogen extraction, hydrogen combustion, etc.



Intermediate pressure gas combination valve

GHV Series

- Supports up to intermediate pressures (up to 50KPa)
- Supports dual gas cutoff by incorporating two solenoid valves
- Space saving and reduced piping hours are possible by integration of solenoid valve + governor + solenoid valve
- Port size change by replacing the flange is possible



Medium pressure gas combination valve

GRV Series

(Japan only)

- Large flow rate/space saving
- Supports up to medium pressure B (up to 0.3MPa)
- Slow open/quick shut with hydraulic drive
- Wide pressure adjusting range (10kPa to 150kPa)
- With indicator
- Connected delivery eliminates complicated piping work



Gas cutoff valve

VNA/VLA Series

- Hydrogen gas compatible option is added to the working fluid
- Supports up to intermediate pressures
- Supports a wide range of bore sizes (Rp1/2 to 2 1/2)
- Slow open prevents the burner from going out (VLA)



Fluid operated 2-position cutoff valve

HK1 Series

- Supports intermediate pressure to medium pressure gas
- With gas flow rate adjustment function (excluding size 125 to 200A)
- With indicator for checking valve open/close state

Hydrogen option

These options guarantee the use of hydrogen gas in low pressure, intermediate pressure, and medium pressure series.



Gas Combustion System

Gas Combination Valve

* For details, please refer to "Model No." on the CKD Components product website (https://www.ckd.co.jp/kiki/en/).

Features/Standards	Model No./Appearance	Configuration			Working fluid			Working pressure			Opening operation		Port size (Rp/JIS flange) *1																Click here for specifications	
					City gas	LPG	Hydrogen	Low pressure	Intermediate pressure	Medium pressure	Quick	Slow	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4	5	6	8	Catalog Name [No]	WEB		
													8	10	15	20	25	32	40	50	65	80	100	125	150	200				
Supports intermediate pressure (50 kPa) Two solenoid valves compactly integrated, with governor option Complies with JIS B 8415 double shutoff with a single unit Compliant with ISO 23551-1 and ISO 23551-2	GHV 	Solenoid Valve (with built-in governor) + Solenoid Valve	Solenoid Valve + Solenoid Valve		✓	✓	✓	●	●		●	●															Gas combustion systems [CC-1590AA]	 Click!		
Supports medium pressure (0.3 MPa) Pressure loss is greatly reduced by integrating the governor with the secondary side cutoff valve Compared to the conventional product (TAC-25), flow rate is up 300% under the same pressure conditions! [For sale in Japan only]	GRV 	Hydraulic Drive Hydraulic Control	Slow-open, quick-shut by hydraulic drive		✓	✓	✓	●	●	●		●																 Click!		

Solenoid Valve

Features / Standards	Model No. / Appearance	Configuration		Working fluid			Working pressure			Opening operation		Port size (Rp) *1																Click here for specifications	
				City gas	LPG	Hydrogen	Low pressure	Intermediate pressure	Medium pressure	Quick	Slow	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4	5	6	8	Catalog Name [No]	WEB		
												8	10	15	20	25	32	40	50	65	80	100	125	150	200				
Low pressure (5 kPa) compatible Discrete for double cutoff Japan Gas components Inspection Association (JIA) type certified product *Refer to the catalog specifications for applicable models	DSG 	Solenoid valve		✓	✓	✓	●			●																Gas combustion systems [CC-1590AA]	 Click!		
Low pressure (5 kPa) compatible Compact integration of two solenoid valves	DSG-W 	Solenoid valve + solenoid valve		✓	✓	✓	●			●																		 Click!	
Supports up to intermediate pressure (45 kPa) *2 Quick open discrete for double cutoff Japan Gas components Inspection Association (JIA) type certified product *Refer to the catalog specifications for applicable models	VNA 	Solenoid valve		✓	✓	✓	●	●		●																		 Click!	
Supports up to intermediate pressure (45 kPa) *2 Slow open Discrete for double cutoff	VLA 	Solenoid valve		✓	✓	✓	●	●			●																	 Click!	

*1: Port size represents typical models. For details, please refer to the product specifications.
*2: As working pressure differs depending on the port size, refer to the product specifications for details.

Gas Combustion System

Solenoid Valve

* For details, please refer to "Model No." on the CKD Components product website (https://www.ckd.co.jp/kiki/en/).

Features / Standards	Model No. / Appearance	Configuration		Working fluid			Working pressure			Opening operation		Port size (Rp) *1																Click here for specifications	
				City gas	LPG	Hydrogen	Low pressure	Intermediate pressure	Medium pressure	Quick	Slow	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4	5	6	8	Catalog Name [No]	WEB		
												8	10	15	20	25	32	40	50	65	80	100	125	150	200				
Solenoid flow rate switching valve that switches between low and high flow rates Switching between high and low combustion contributes to reducing fuel consumption *Not a residual pressure exhaust valve	VNA-R/RH 	Flow rate switching solenoid valve		✓	✓	✓	●	●	●	●																Gas combustion systems [CC-1590A]	 Click!		
For gas relief line The valve opens at normally open/power cutoff and discharges the gas in the pipe outside to ensure safety	VNR 	Solenoid relief valve		✓	✓	✓	●	●		●																	 Click!		

*1: Port size represents typical models. For details, please refer to the product specifications.

Medium Pressure Gas Safety Shutoff Control System

Features / Standards	Model No. / Appearance	Configuration		Working fluid			Working pressure			Opening operation		Port size (JIS flange) *1																Click here for specifications	
				City gas	LPG	Hydrogen	Low pressure	Intermediate pressure	Medium pressure	Quick	Slow	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4	5	6	8	Catalog Name [No]	WEB		
												8	10	15	20	25	32	40	50	65	80	100	125	150	200				
Medium pressure B (0.3 MPa) supported Dual cutoff function, governor function, pressure gauge, pressure detection port combined system	TAC-25 	Solenoid valve + Solenoid valve + Governor		✓	✓				●	●	●					IN side	OUT side									Gas combustion systems [CC-1590AA]	 Click!		
Medium pressure B (0.3 MPa) supported Quick open Discrete	VNM 	Solenoid valve		✓	✓	✓	●	●	●	●																	 Click!		
Medium pressure B (0.3 MPa) supported Slow open Discrete	VLM 	Solenoid valve		✓	✓	✓	●	●	●		●																 Click!		
Medium pressure B (0.3 MPa) supported Governor Discrete	C25N-B 	Governor		✓	✓				●						IN side	OUT side											 Click!		

*1: Port size represents typical models. For details, please refer to the product specifications.

Gas Combustion System

Safety Shutoff Valve

Features / Standards	Model No. / Appearance	Configuration		Working fluid		Working pressure		Opening operation		Port size (JIS flange)																Click here for specifications	
				City gas	LPG	Hydrogen	Low pressure	Intermediate pressure	Medium pressure	Quick	Slow	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4	5	6	8	Catalog Name [No]	WEB
												8	10	15	20	25	32	40	50	65	80	100	125	150	200		
Time until the start of the initial fire-extinguishing activities in the case of a fire. Fire-safe shutoff valve with increased fire safety to withstand high temperatures Application: "Industrial gas combustion system equipped with automatic startup and operation safety technical guidelines for [Tokyo Gas, Osaka Gas and Toho Gas Co.] gas combustion systems to which CKD Corporation is applied	VNM-25-K 	Solenoid valve (increased fire safety specifications)		✓			●	●	●	●																Gas combustion systems [CC-1590AA]	 Click!

Hydraulic Valve

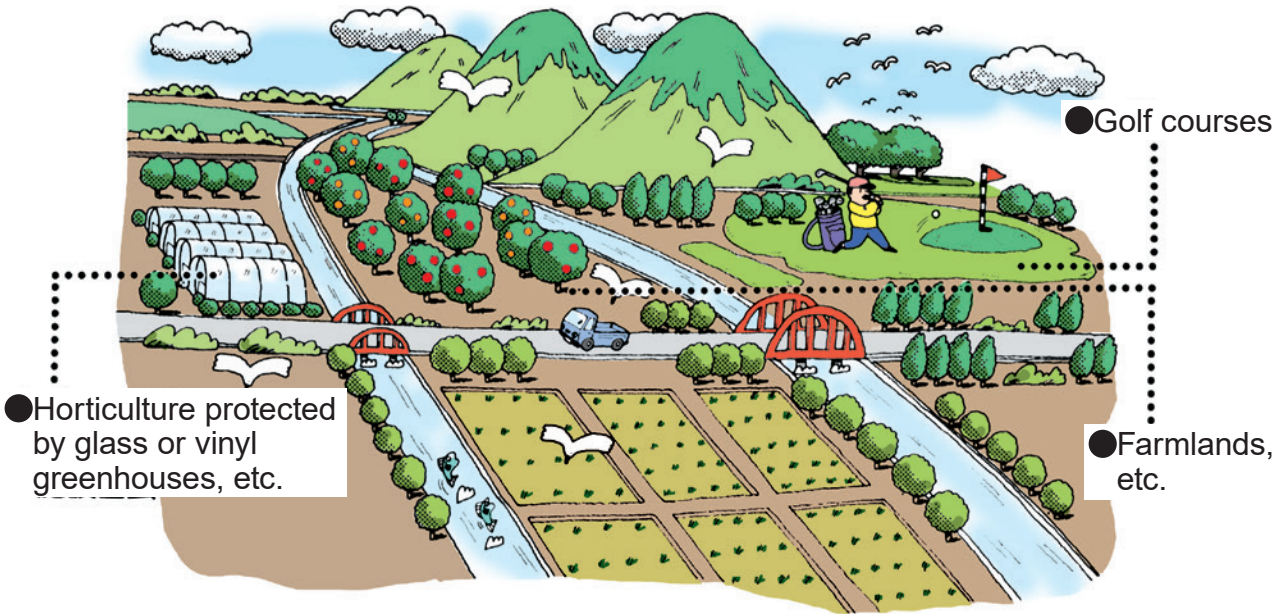
Features / Standards	Model No. / Appearance	Configuration		Working fluid			Working pressure			Opening operation		Port size (Rp/JIS flange/DIN flange) *1																Click here for specifications	
				City gas	LPG	Hydrogen	Low pressure	Intermediate pressure	Medium pressure	Quick	Slow	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4	5	6	8	Catalog Name [No]	WEB		
												8	10	15	20	25	32	40	50	65	80	100	125	150	200				
Wide range of connection sizes for gas shutoff valves operated by motors and hydraulic pumps	HK1 	Fluid operated 2-position cutoff valve		✓	✓	✓	●	●	●		●														Gas combustion systems [CC-1590AA]	 Click!			
Gas shutoff valve for large flow rates, operated by motor and hydraulic pumps	HS 	Fluid operated 2-position cutoff valve		✓	✓	✓	●	●	●		●															 Click!			

*1: Port size represents typical models. For details, please refer to the product specifications.
*2: Fluid: For hydrogen gas, port size is 40A to 80A

Other Related Equipment

Features	Model No./Appearance		Fluid	Page
Flow Controller	FCM 		City Gas Methane Propane Hydrogen Gas	P. 277

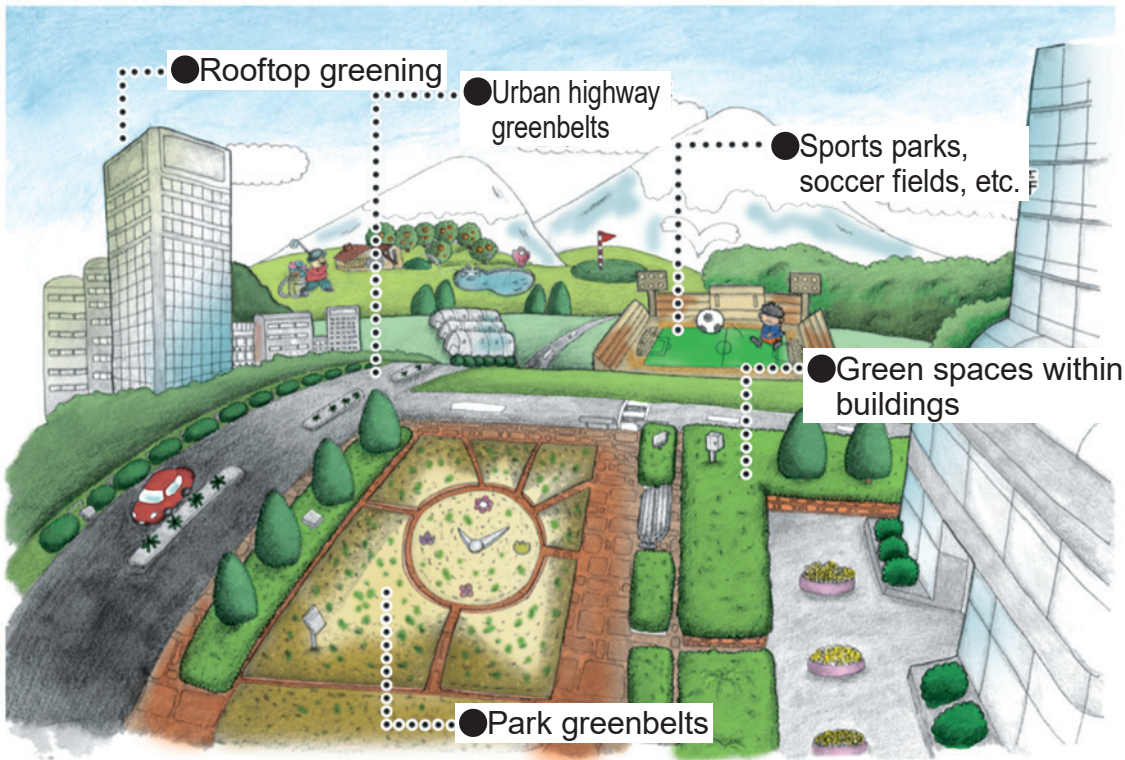
Automatic watering control systems



For economic watering of parks and greenbelts, etc.

CKD components for sprinkler systems, ideal for automating water supply, sprinkling, and irrigation.

CKD's components for watering systems for urban greening, rooftops, building spaces, grounds, parks, green spaces, and other urban spaces. Labor-saving to protect the environment and economical watering of green spaces that matches the energy-saving era.



Solenoid Valve

*For details, refer to CKD Components Product site (https://www.ckd.co.jp/kiki/en/) → "Model No."

Applications	Features	Model No. / Appearance	Type	Connection	Working fluid	Working pressure (MPa) *1	Port size *1										Click here for specifications		
							1/2	3/4	1	1¼	1½	2	2½	3	4	Catalog Name [No]	WEB		
							15	20	25	32	40	50	65	80	100				
Agriculture / Industrial water / River water watering Irrigation / Liquid fertilizer spraying	Solenoid valve for automatic watering using a metal body IP 67 or equiv.	RSV-K 	Continuously energized latch pulse energizing (P-type)	Screw-in Flange	Agricultural water	0.03 to 1											Automatic watering control systems [CC-297AA]	 Click!	
	Resin solenoid valve which can be used for watering for urban greenery as well as liquid fertilizer and nutrient solutions for agriculture Union connection that allows easy piping without tools	GSV2 	Continuously energized latch pulse energizing (P-type)	Union	Water, agricultural water, your company's pesticides/ agricultural chemicals, liquid fertilizers, etc. *2	0.03 to 0.75												 Click!	
	Resin solenoid valve which can be used for watering for urban greenery as well as liquid fertilizer and nutrient solutions for agriculture	GSV 	Continuously energized latch pulse energizing (P-type)	Screw-in		0.03 to 0.5													 Click!
	Approved by JWWA for water supply control of tap water	RSV-W 	Continuously energized Pulse energizing (7L type)	Screw-in	Tap water	0.02 to 1													 Click!

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Limited to fluids that do not corrode or dilute the wetted parts.

Controller

Applications	Features	Model No.	Appearance	Power supply method	Mounting	Watering method	Channel No.	Click here for specifications	
								Catalog Name [No]	WEB
Urban park / Building greenery Farmlands / Watering of gardens	Solenoid valve controller for watering Controls solenoid valve with pulse output, and can be used together with RSV, GSV2, GSV Series	RSC-S5		Solar battery powered	Pole mounted	Day	6CH	Automatic watering control systems [CC-297AA]	
		RSC-G		Commercial power supply method	Wall mounted	Day	6CH		
		RSC-1/2 WP		Alkaline battery method	Pole mounted	Day	1CH 2CH		

Rain Sensor

Applications	Features	Model No. / Appearance	Power supply method	Operating rain volume	Click here for specifications	
					Catalog Name [No]	WEB
Golf course greenery	Can be used together with a sprinkler controller; detects rainfall of 6mm or more and cancels watering/irrigation.	RS-6 	Power supply not required	6 mm	Automatic watering control systems [CC-297AA]	

Life Science Components

Our Fluid control components respond to the requirements of medical care devices

EQUIPMENT FOR MEDICAL TREATMENT & ANALYSIS PROCESSES



Special Website Information

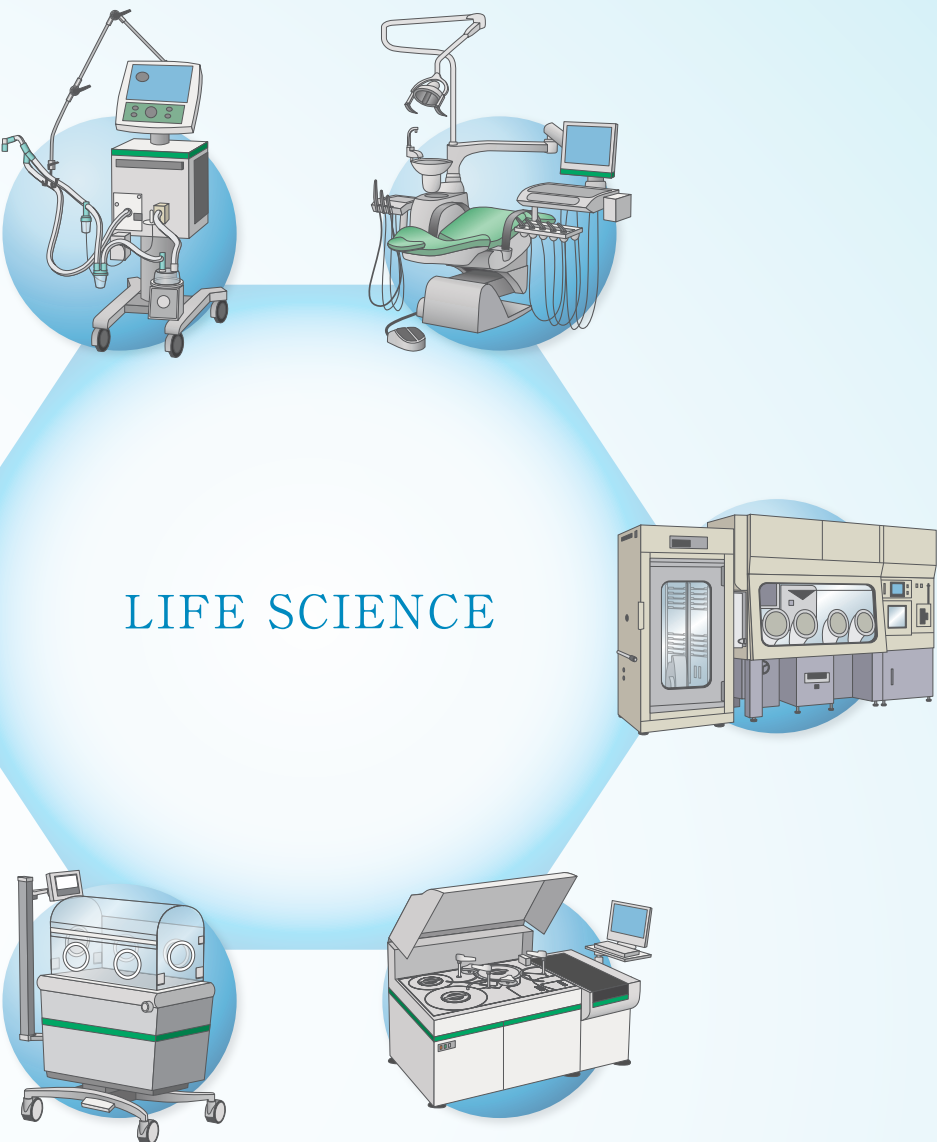
Controls various fluids with high purity, from collection and dispensing to cleaning and disposal. As the medical field becomes more advanced, higher functions, performance, and accuracy are required for various biochemical tests and equipment in clinical medicine. CKD has prepared a wide variety of equipment to meet the needs of such medical devices.



Search for features and functions

Search for working fluids

Search for devices



Life Science Components

Fluid Control Valves

Search by product series

Search by working fluid

Search by industry and application

Web model selection
Select from system

Solenoid Valve

*For details, refer to CKD Components Product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Features / Applications	Model No.	No. of Ports	Material		Fluid					Working pressure (MPa) *1	Port size *1	Click here for specifications	
				Seal	Body	Pure water	Normal saline	Reagent	Waste liquid	Cleaning solution			Catalog Name [No]	WEB
Metal-free Diaphragm	Miniature space saving	MR10R 	2 / 3	FKM	PEEK	✓	✓	✓	✓	✓	-0.08 to 0.2	M5/M6 1/4-28UNF	Components for Life Science [CC-1055AA]	 Click!
	Rocker valve with indicator	MR16 	2 / 3	FKM EPDM	PEEK	✓	✓	✓	✓	✓	-0.08 to 0.3	M6 1/4-28UNF (Direct piping)		 Click!
	Low profile Easy maintenance with one touch	MKB3 	2	FKM EPDM	PPS	✓	✓	✓	✓	✓	-0.08 to 0.25	M6 1/4-28UNF		 Click!
	Chemical liquid resistant PTFE used Excellent in silence	MAB / MAG 	2 / 3	PTFE	PTFE	✓	✓	✓	✓	✓	-0.05 to 0.3	M6		 Click!
	Wide range of choices	MYB / MYG 	2 / 3	FKM	PPS	✓	✓	✓	✓	✓	-0.05 to 0.2	M6 Rc1/8 Rc1/4 Rc3/8		 Click!
	Excellent silence and long service life Fluid accumulation is small	MEB2 / MEG2 	2 / 3	FFKM	PPS	✓	✓	✓	✓	✓	-0.05 to 0.2	Rc1/8		 Click!
	Tube connection Fluids up to 90°C can be used	MJB3 	2	FKM	PPS PSU	✓	✓	✓	✓	✓	-0.06 to 0.15	Tube connection Porting O.D. x I.D. ø8 x ø4		 Click!
	Track record-rich Series max. orifice size	EMB 	2	PTFE	SUS316 PTFE	✓	✓	✓	✓	✓	-0.05 to 0.3	Rc1/4 Rc3/8 Rc1/2		 Click!

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.

Solenoid Valve

*For details, refer to CKD Components Product site
(<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Type	Features / Applications	Model No. / Appearance	No. of Ports	Material		Fluid					Working pressure (MPa) *1	Port size *1	Click here for specifications	
				Seal	Body	Pure water	Normal saline	Reagent	Waste liquid	Cleaning solution			Catalog Name [No]	WEB
Metal-free High corrosion resistance	Lever type Compact lever Connection is with barbed fitting	HMTB1 / HMTG1 	2 / 3	NBR FKM EPDM	PPS	✓	✓	✓	✓	✓	-0.05 to 0.3	ø2 barbed fitting	Components for Life Science [CC-1055AA]	 Click!
		USB / USG 	2 / 3	NBR FKM	PPS	✓					0 to 0.7	1/4-28UNF M6 Barbed fitting		 Click!
	Poppet Miniature solenoid valve	UMB1 / UMG1 	2 / 3	FKM	SUS304 or equivalent	✓					0 to 0.2	Stainless steel pipe with an O.D. of ø0.26 x I.D. of ø0.9		 Click!
		HB 	2	NBR FKM PTFE	SUS316	✓	✓	✓	✓	✓	0 to 0.7	M5 Rc1/8 Rc1/4 Rc3/8		 Click!
	General Purpose General purpose direct acting valve	USB / USG 	2 / 3	NBR (FKM)	C3604 SUS304						0 to 0.9	M5 Rc1/8		 Click!

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.

Fine Pinch Valve

Type	Features / Applications	Model No. / Appearance	No. of Ports	Material		Fluid					Tube used	Click here for specifications	
				Seal	Body	Pure water	Normal saline	Reagent	Waste liquid	Cleaning solution		Catalog Name [No]	WEB
Metal-free	Structure in which only the tube is wetted	HYN 	2 / 3	-	-	✓	✓	✓	✓	✓	Tube ø3 x ø1 ø5 x ø3 ø8 x ø6	Components for Life Science [CC-1055AA]	 Click!

Fluid Control Valves

Search by product series

Search by working fluid

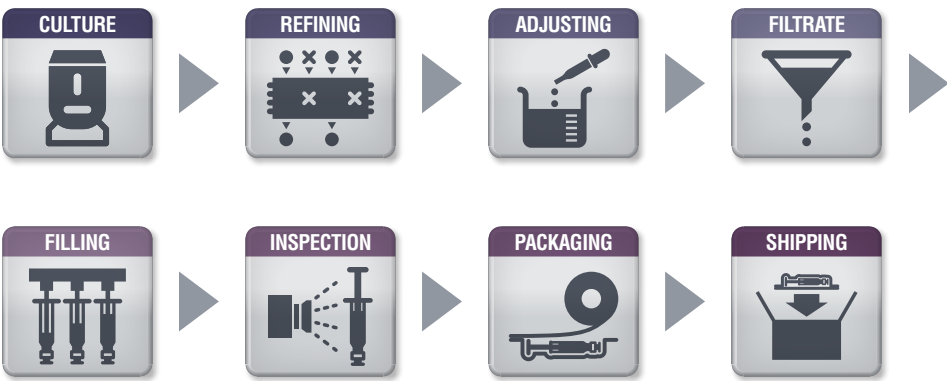
Search by industry and application

Web model selection
Select from system

Contributing to diversifying pharmaceutical modalities with FA solutions



Example of Pharmaceutical Manufacturing Process



Weir Type Diaphragm Valve

*For details, refer to CKD Components Product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Types / Features			Model No. / Appearance	Working pressure (MPa) *1	Clamp fitting *1						Click here for specifications	
					8 A	10A	15A	25 A (1S)	40 A (1.5S)	50 A (2S)	Catalog Name [No]	WEB
Resistant to accumulation of liquids High replaceability Improved maintainability	Air operated		SWD 	0 to 0.6							Pharmaceutical Manufacturing Process Components [CC-1637AA]	 Click!
	Manual		MWD 	0 to 0.6								
	Manual Spring seal	No more diaphragm damage due to overtightening.	MWD-S 	0 to 0.6	Special Order Item							
	Flow rate control + dedicated electro pneumatic regulator	Contributes to the automation of flow rate adjustment that used to be done with a manual valve [Japan only sale]	SWD-T 	0 to 0.6								
	Flow rate control typeSingle unit		SWD-C 	0 to 0.6								
	Dedicated electro pneumatic regulatorSingle unit		SWD-EVD 	0 to 0.6	-	-	-	-	-	-		
											 Click!	

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.

Poppet Type Diaphragm Valve

Type	Features	Model No. / Appearance	Clamp fitting						Click here for specifications	
			8 A	10A	15A	25A	40A	50A	Catalog Name [No]	WEB
Air operated	Adopts a simple poppet structure, and is further lightweight and compact (Japan only sale)	SPD							Pharmaceutical Manufacturing Process Components [CC-1637AA]	 Click!

Fine Pinch Valve

Type	Features	Model No. / Appearance	Listed page	Click here for specifications	
				Catalog Name [No]	WEB
Air operated	Structural energizing in which only the tube is wetted avoids thermal effect	HYA	Page 369	Pharmaceutical Manufacturing Process Components [CC-1637AA]	 Click!
Solenoid	Structure in which only the tube is wetted	HYN			 Click!

Outdoor Products WP Series (Fluid Control Valves)

Compatible with Rechargeable Batteries Components P4 Series (Fluid Control Valves)

P4: Material restrictions (Restrictions on copper, zinc, nickel-based, electrolytic nickel plating)/Dry environment (dew point -70°C or more)
P40: Material restrictions (limited to copper, zinc, nickel-based, zinc plating, electrolytic nickel plating)/Dry environment (dew point: -70°C or more)

Type	Features	Model No.	Appearance	No. of Ports	Working fluid					Working pressure (MPa) *1	Port size *1							
					Compressed air	Water *2	Low vacuum *3	Oil	Steam		Rc/flange							
											1/4	3/8	1/2	3/4	1	1¼	1½	2
											8	10	15	20	25	32	40	50
Solenoid valve	Direct acting solenoid valve	AB41-W AG41-W		2 / 3	✓	✓	✓	✓		0 to 5								
	Pilot kick diaphragm drive	ADK-W		2	✓	✓	✓	✓		0 to 1.0 *4								
Ball valve	Air operated solenoid valve equipped	CHB-W CHG-W		2 / 3	✓	✓		✓		0 to 1.0								
	Air operated for steam	CSB-W CSB-WR		2					✓	0 to 0.6								

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please refer to the product specifications for temperature.
*3: 1.33×10² Pa (abs) or 1.33×10³ Pa (abs)
*4: Represents the operating pressure differential range. For details on operating pressure, please refer to the product specifications.

Type	Special applications	P4 (Standard) is standard P4	P40	Model No.	Appearance	No. of Ports	Configuration	Working fluid							Working pressure (MPa) *1	Port size *1									
								Compressed air	Water	Dry air (dew point -70°C or more)	Low vacuum	Medium vacuum	Inert gas	Oil		Steam	Rc / G / NPT				Rc/flange				
																	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
																	6	8	10	15	20	25	32	40	50
Solenoid valve	Small and lightweight resin body with large flow rate air blow, etc.	Standard	-	EXA		2	Single unit	✓							0.01 to 0.7										
	Direct acting solenoid valve Wide range of material, orifice size and coil options	●	●	AB-ZP4 GAB-ZP4		2	Single unit Manifold			✓	✓		✓		0 to 4 *5										
	Direct acting solenoid valve Wide range of material, orifice size and coil options	●	●	AG-ZP4 GAG-ZP4		3	Single unit Manifold			✓	✓		✓		0 to 1 *5										
	Pilot kick Diaphragm drive Also compatible with dry air	●	●	ADK11-ZP4		2	Single unit			✓	✓		✓		0 to 0.7 *5										
Air operated 2-port valve	Accurate and resistant against foreign matter Also suitable for explosive atmospheres	●	-	SAB-P4		2	Single unit	Compressed air/gas Low vacuum (1.3 x 10 ² to 7 x 10 ⁵ Pa(abs))							0 to 1										
		●	-	NAB-P4 GNAB-P4		2	Single unit Manifold	Compressed air/gas Low vacuum (1.3 x 10 ⁵ to 7 x 10 ⁵ Pa(abs))							0 to 0.7										
	Diaphragm completely separates the cylinder from the channel section, and the channel section is grease-free	●	-	NAD-P4 GNAD-P4		2	Single unit Manifold	Low vacuum (compressed air/ water) 1.3 x 10 ² to 5 x 10 ⁵ Pa (abs) (secondary pressure 4 x 10 ⁵ Pa (abs) or less)							-										
		●	-	LAD		2	Single unit	Pure water, water, compressed air, nitrogen Non-corrosive/non-absorbable fluid *2 Body (PPS/SCS13) Diaphragm (EPDM/PTFE)							0 to 0.3										
Ball valve	Large flow rate resistant to foreign matter	●	-	CHB-P4 CHG-P4		2, 3	Single unit	✓	✓					✓	0 to 1.0										
Solenoid valve (high vacuum)	Stable even at high vacuum	Standard	-	HVB		2	Single unit	Compressed air/inert gas *3 High vacuum (1.0 x 10 ⁻⁵ to 1.0 x 10 ⁵ Pa(abs))							-	NPT(1/8 / 1/4 / 3/8) JXR female fitting (1/4") JXR male fitting (1/4" / 3/8") Double barbed fitting (1/4" / 3/8") Rc(1/8 / 1/4 / 3/8)				Flange ø48 Flange ø52					
Chemical liquid valve	Supports a variety of chemical liquids	Standard	-	AMD3 *3R		2	Single unit	Chemical liquids, pure water, compressed air, nitrogen *2 Body PFA/PTFE Diaphragm PTFE							0 to 0.5	Super 300 Tyler fitting P Series integrated F-LOCK 60 Series									

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please confirm the compatibility of the product's constituent materials with the fluid and ambient atmosphere before use.
*4: The number of cycles may be significantly reduced depending on the degree of dryness.
*5: Represents the operating pressure differential range. For details on operating pressure, please refer to the product specifications.

Equipment for Food Manufacturing Processes FP Series (fluid control valve/check valve)

FP1 Series: Food-grade (NSF H1) lubricants are used for flow paths and sliding parts. FP2 Series: In addition to FP1, this series' flow paths are made of materials compliant with the Food Sanitation Act (resin and rubber materials)

Type		Features / Applications	Model No.	Appearance	No. of Ports	Working fluid							Working pressure (MPa) *1	Port size *1								
						Air	Water *2	Dry air	Low vacuum	Medium vacuum	Oil	Steam		Rc / G / NPT						Rc		
														1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
														6	8	10	15	20	25	32	40	50
FP1	Solenoid valve	Pilot kick piston drive	APK21-FP1		2								0 to 0.7 *3									
	Air operated 2-port valve	Accurate and resistant to foreign matter Also suitable for explosive atmospheres	SAB-FP1		2	✓							0 to 1									
FP2 (Material compatible with the Food Sanitation Act)	Solenoid valve	Compact and lightweight with resin body Large flow rate air blow, etc.	EXA-FP2		2	✓							0.01 to 0.7	Push-in fitting ø6, ø8, ø10, ø12								
		Special-profile diaphragm with compact, lightweight, and large flow rate	FWD-FP2		2		✓						0.02 to 0.7									
		Compact direct acting solenoid valve	USB-FP2 USG-FP2		2 / 3	✓	✓	✓	✓				0 to 0.9	USB: M6, Rc1/8								
		Compact direct acting solenoid valve M6 and barbed fitting are available for resin body	USB-FP2 (resin body)		2	✓	✓	✓	✓			0 to 0.7	USB resin body: barbed fitting ø6 × ø4, M6 USG2: M5, Rc1/8									
		Compatible with various applications through a wide variety of materials, orifice sizes and coil options	AB-FP2 AG-FP2		2 / 3	✓	✓		✓		✓	✓	0 to 5 *3									
		Steam specialization Special seal structure that is resistant to foreign matter Reduced external leakage risk in high-temperature steam	SPK-FP2		2							✓	0 to 1.0 *3									
		Pilot kick diaphragm drive Also compatible with dry air	ADK11-Z-FP2		2	✓		✓	✓				0 to 0.7 *3									
		Metal-free solenoid valve Sealant: FKM Body: PPS	MYB3-FP2		2	Water, pure water, chemical liquids (fluids that do not corrode wetted part materials)							-0.05 to 0.7									
		High corrosion-resistant solenoid valves Sealant: NBR, FKM, PTFE Body: SUS316	HB-FP2		2	Water, pure water, chemical liquids (fluids that do not corrode wetted part materials)							0 to 0.4									

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please refer to the product specifications for temperature.
*3: Represents the operating pressure differential range. For details on operating pressure, please refer to the product specifications.

Type		Features / Applications	Model No.	Appearance	No. of Ports	Working fluid							Working pressure (MPa) *1	Port size *1									
						Air	Water *2	Dry air	Low vacuum	Medium vacuum	Oil	Steam		Rc / G / NPT					Rc				
														1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
																							6
FP2 (Material compatible with the Food Sanitation Act)	Air operated 2-port valve		LAD-FP2		2	Air, water, pure water, nitrogen Non-corrosive, non-absorbable fluids *1							0 to 0.3										
			NAD-FP2 GNAD-FP2		2	NAD/GNAD: Water/air/inert gas/non-corrosive/non-absorbable fluid NAD*V / GNAD*V: (1.3 x 10 ² to 7 x 10 ⁵ Pa(abs)) low vacuum (air, water)							0 to 0.5										
	Ball valve		CHB-FP2 CHG-FP2		2 / 3	✓	✓				✓	0 to 1.0											
			MXB1-FP2 MXG1-FP2		2 / 3	✓	✓				✓	0 to 1.0											
	Check valve		Prevents dripping, enabling smooth transition to the next process Contributes to improved workability and tact time	CCN-FP2		-	Water, oil Other non-corrosive liquids *1							1.0 *3									

*1: Operating pressure and port size represent typical models. For details, please refer to the product specifications.
*2: Please refer to the product specifications for temperature.
*3: Maximum operating pressure

Product Category		Specific Applications	
Actuators - Pneumatic Cylinders	P. 3	High-Durability Components - HP Series	P. 453
Actuators - Electric Actuators	P. 78	For Food Manufacturing Processes - FP Series	P. 461
Directional Control Valve	P. 111	For Outdoor Use - WP Series	P. 467
Air Preparation Equipment	P. 151	For Rechargeable Battery Manufacturing Processes - P4 Series	P. 471
Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing	P. 229	For Clean Environment Components P5/ P7 Series	P. 477
Sensors/Controllers	P. 263	Others P12, P8, P9, P11, P6 (Oil-free, ozone resistant, copper ion restricted)	P. 481
Main Line Components/Nitrogen Gas Generators	P. 279		
Precision Components	P. 311		
Vacuum Components	P. 327		
Fluid Control Valves	P. 343		
Fine System (Pure water/chemical liquids/process gas)			
Software	P. 443		

Ultra High Purity Products

(Pure water/chemical liquids/process gas/high vacuum)

Search by Product System..... P. 429

Search by Product System

Thorough Cleaning and Integrated Quality Control System

Wet Fine (for pure water and chemicals)

Open/Close valve (Air operated / manual)	AMD□□3R, MMD□03RN AMD□□2, MMD□□2 AMD□□ AMD□1H, MMD□0H AMD□1M, MMD□0M LYX-1381, LYX-1380 AMD□1L	 P. 431
Suck valve	AMS, AMDS	
Regulator	PMP, PYM, PMM	 P. 435
Flow Control Valve	MNV, FMD, LYX-0961, LYX-0965	

Dry Fine (for process gas)

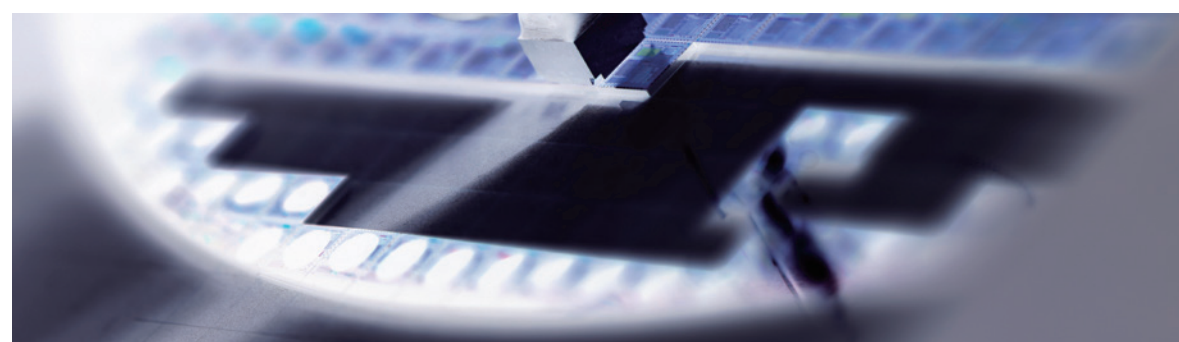
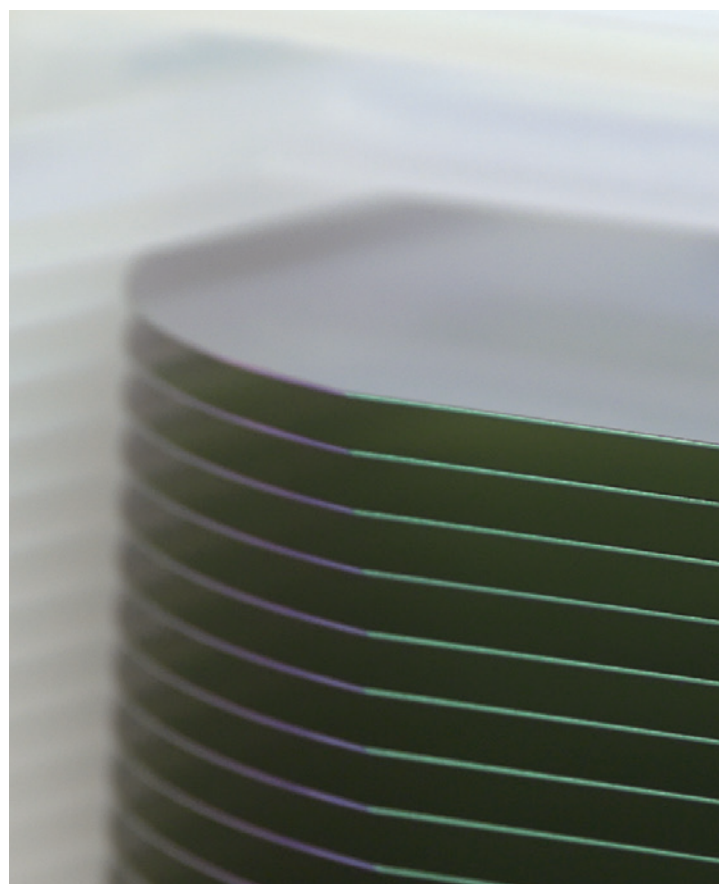
Open/Close valve (Air operated / manual)	AGD0□R AGD1□R, AGD2□R, LGD1, LGD2 AGD□□R-HD, AGD□□R-HDF, AGD21R-A LGD10, LGD20, OGD□0R, MGD□0R	 P. 437
Other valves for process gas (Exhaust Vacuum Generators)	VG	 P. 439
Regulator	PGM	
Integrated Gas Supply System	IAGD5, IAGD4	

High Vacuum Components

Air Operated Valves	AVB□□7, AVB□□3	
Manual Valves	MVB□17, MVB□0	 P. 441
Vacuum Pressure Control Valves	IAVB	

Pioneering the future of process control.

An optimal fine system for semiconductor and LCD manufacturing processes that use pure water, chemicals, process gas, and vacuum.



The products we deliver are developed under a process of thorough purification.

Ultra Fine Concept

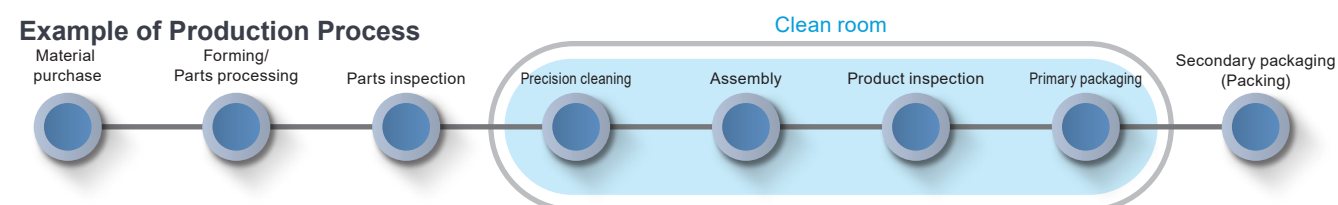
Based on CKD's unique concept of "thorough cleanliness" in all critical factors of product development from design, evaluation, and methodology to manufacturing, we manage the complete cleanliness of our products.

An integrated quality management system, including parts and products, to ensure high cleanliness.

In-house Production System

We have established a complete, integrated quality management system from processing, assembly, and inspection to packaging, covering not only the final product but also the component level. For cleanliness, a critical point of quality, we have established internal standards for quantitative regulations of impurities such as chemical residues, total organic carbon, and specific oils to ensure unwavering quality.

Example of Production Process



Information on the special website

<https://www.ckd.co.jp/semiconductor/en/>

CKD's Fine System Components Supporting the Leading Edge of Semiconductor Processes

We offer total solutions for chemical, gas, vacuum, and pneumatic control, from facilities for semiconductor device manufacturing to production process equipment.



Click!

Providing total solutions for semiconductor manufacturing
Product Introduction by Front-End Process

Variations compatible with high pressure and high concentration
Product introduction for chemical liquid utility equipment

Flexible response to customer demands and stable supply.
Product Introduction for Gas Utility Equipment



Wet Fine (for pure water and chemicals)

Open/Close valve

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Category	Features	Model No. / Appearance	Major application examples (Semiconductor / FPD)			Component materials			Connection size (tube outer diameter)										Connection										Click here for specifications	
			Coater developer	Cleaning	Chemical liquid feed equipment	Wetted parts	Non-wetted		1/8" / 3 mm	1/4" / 6 mm	8 mm	3/8" / 10 mm	1/2" / 12 mm	3/4" / 16 mm Common	1" / 25 mm	1 / 1/4"	1 / 1/2"	Super Type	Super 300 Type	F-LOCK 20	F-LOCK 60	Final Lock	Flaretek	Rc Screws	SUS Tube	double barbed	PFA pipe out for welding	PVDV Union fitting	Catalog name [No]	WEB
						Body *PTFE diaphragm used	Actuator																							
Part3R (N) Series	The flagship model of CKD's chemical liquid valves, which maximizes performance and clean performance New mechanisms such as tightening prevention mechanism, malfunction prevention lock nut, and malfunction prevention cover contribute to the safety of chemical liquid supply lines	AMD□□3R (Air Operated) 	✓	✓	✓	PTFE PFA	PVDF											●		●								Wet Fine System/high purity chemical liquid system [CB-031AA]	 Click!	
		MMD□03RN (Manual) 		✓	✓															●		●								
Part2 Series	Utility model that can operate in a variety of processes and applications with up to 200°C specifications	AMD□□2 (Air Operated) 	✓	✓	✓	PTFE PFA	PPS PP A5056																							 Click!
		MMD□02 (Manual) 		✓	✓		SUS316L	PP A5056											●	●	●	●	●	●	●	●				
Part1 Series	Contributes to space saving with the industry's smallest miniature valve 	AMD□□ (Air Operated)	✓			PTFE PFA	PPS											●	●	●	●	●	●	●					 Click!	

Wet Fine (for pure water and chemicals)

Open/Close valve

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Category	Features	Model No. / Appearance	Major application examples (Semiconductor / FPD)			Component materials			Connection size (tube outer diameter)										Connection												Click here for specifications	
			Developer coater	Cleaning	Chemical liquid feed equipment	Wetted parts	Non-wetted		1/8" / 3 mm	1/4" / 6 mm	8 mm	3/8" / 10 mm	1/2" / 12 mm	3/4" / 16 mm Common	1" / 25 mm	1 / 1/4"	1 / 1/2"	Super Type	Super 300 Type	F-LOCK 20	F-LOCK 60	Final Lock	Flaretek	Rc Screws	SUS Tube	double barbed	PFA pipe out for welding	PVDV Union fitting	Catalog name [No]	WEB		
						Body *PTFE diaphragm used	Actuator																									
High Pressure	High pressure, large flow rate and high corrosion-resistant specifications contribute to stable operation of chemical liquid supply equipment	AMD□1H (Air Operated) 																													 Click!	
		MMD□0H (Manual) 			✓	PFA	PP											●													 Click!	
Metal-free	Saves metal materials to the limit and significantly improves corrosion resistance Safety establishment of strong acid lines for hydrochloric acid, hydrofluoric acid, etc.	AMD□1M (Air Operated) 																													 Click!	
		MMD□0M (Manual) 			✓	PFA	PVDF												●												 Click!	
Large Bore	Large bore size 1.5" specification Assists large flow rate chemical liquid supply	LYX-1380 (Air Operated) 																													 Click!	
		LYX-1381 (Manual) 			✓	PTFE	PP												●												 Click!	
PVC	Contributing to vibration and protection of piping with a structure with reduced water hammer	AMD□1L (Air Operated) 			✓	PVC	PPS											PVC Union													 Click!	

Fine System Components
(Pure water/chemical liquids/process gas)

Search by product series

Fine System Components
(Pure water/chemical liquids/process gas)

Search by product series

Wet Fine (for pure water and chemicals)

Fine System Components
(Pure water/chemical liquids/process gas)

Search by product series

Drip prevention valve

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features	Model No./Appearance	Major application examples (Semiconductor / FPD)			Component materials			Connection size (tube outer diameter)												Connection										Click here for detailed specifications												
		Developer coater	Cleaning	Chemical liquid feed equipment	Wetted parts	Non-wetted														PVDV Union fitting	PFA pipe for welding	PCV Union	double barbed	SUS Tube	Rc Screws	Flaretek	Final Lock	F-LOCK 60	F-LOCK 20	Super 300 Type	Super Type	1 / 1/2"	1 / 1/4"	1" / 25 mm	3/4" / 16 mm Common	1/2" / 12 mm	3/8" / 10 mm	8 mm	1/4" / 6 mm	1/8" / 3 mm	Catalog Name [No]	WEB
					Body *PTFE diaphragm used	Actuator																																				
Realizes critical dispense control such as photoresist at the nozzle tip It can suppress slight disturbance of discharge or dripping when foaming or closing the valve For the drip prevention function, alteration/oxidation of chemical liquid can be minimized by adjusting the nozzle tip.	AMS 	✓	✓		PTFE PFA SUS316	PPS													●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Wet Fine System [CB-031AA]	 Click!			
	AMDS 																																									

Regulator

Features	Model No./Appearance	Major application examples (Semiconductor / FPD)			Component materials			Connection size (tube outer diameter)								Connection										Click here for detailed specifications				
		Developer coater	Cleaning	Chemical liquid feed equipment	Wetted parts	Non-wetted		1/8 " / 3 mm	1/4" / 6 mm	8 mm	3/8 " / 10 mm	1/2" / 12 mm	3/4" / 16 mm Common	1" / 25 mm	1 / 1/4"	1 / 1/2"	Super Type	Super 300 Type	F-LOCK 20	F-LOCK 60	Final Lock	Flaretek	Rc Screws	SUS Tube	double barbed	PCV Union	PFA pipe for welding	PVDV Union fitting	Catalog Name [No]	WEB
					Body *PTFE diaphragm used	Actuator																								
Contributes to stabilizing pump pulsation and other pressure fluctuations, stabilizing flow in branch pipes, enabling remote pressure/flow rate control, and saving space	PMP (Pilot Operated) 	✓	✓		PTFE PFA	PVDF											●		●										Wet Fine System [CB-031AA]	 Click!
	PYM (Manual) 	✓			SUS316	C3604															●									 Click!
	PMM (Manual) 	✓	✓		PTFE PFA	PP										●	●	●	●	●	●						●			
Manual type (PMM/PYM) Pilot type (PMP) A wide variety of variations are available																														

Flow Control Valve

Features	Model No./Appearance	Major application examples (Semiconductor / FPD)			Component materials			Connection size (tube outer diameter)										Connection										Click here for detailed specifications			
		Developer coater	Cleaning	Chemical liquid feed equipment	Wetted parts	Non-wetted			1/8 " / 3 mm	1/4" / 6 mm	8 mm	3/8" / 10 mm	1/2" / 12 mm	3/4" / 16 mm Common	1" / 25 mm	1 / 1/4"	1 / 1/2"	Super Type	Super 300 Type	F-LOCK 20	F-LOCK 60	Final Lock	Flaretek	Rc Screws	SUS Tube	double barbed	PCV Union	PFA pipe for welding	PVDV Union fitting	Catalog Name [No]	WEB
					Body *PTFE diaphragm used	Actuator																									
Orifice is varied and secondary side flow rate is adjusted Arbitrary flow rate control is possible over a wide range Manual type (FMD) Electric Motion type (MNV) Air operated integrated (LYX)	MNV (Electric) 		✓		PTFE	PPS											●												Wet Fine System [CB-031AA]	 Click!	
	FMD (Manual) 		✓		PTFE PFA	PVDF											●													 Click!	
	LYX-0961 LYX-0965 (Manual) 	✓			PTFE	PPS											●	●	●	●			●							 Click!	

Dry Fine (for process gas)

Open/Close valve (air operated/manual)

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features			Model No./Appearance	Main Use Cases (Semiconductor / FPD)			Connection Type			Cv Value							Click here for detailed specifications		
				Dry Etching	Deposition	Gas Facility		JXR Male *1	JXR Female *1								Double ferrule	Catalog Name [No]	WEB
										0	0.1	0.2	0.3	0.4	0.5	0.6	0.7		
Air Operated Valves	Standard	Standard type that incorporates CKD's proprietary high durability design with extensive track record for many years	AGD0□R		✓	✓	✓		1/4"	-	0.1							Dry Fine Components [RJ-016AA]	 Click!
			AGD1□□R AGD2□□R		✓	✓	✓		1/4"	1/4"	0.3								
	3/8"	3/8"							0.65										
	economy	Maintains AGD series specifications for improved versatility	LGD1 LGD2		✓	✓	✓		1/4" *Equivalent	1/4"	0.3								
									-	3/8"	0.65								
									1/2" *Equivalent	3/8"	0.7								
	High Durability	High durability normal temperature gas line achieved High durability of 30 million cycles or more Max. 80°C specifications	AGD□□R-HD		✓	✓			1/4"	-	0.1								
							1/4"	1/4"	0.3										
		Compact, high temperature and high durability specifications High durability of 30 million cycles or more Max. 200°C specifications	AGD□□R-HDF			✓			1/4"	-	0.1								
							1/4"	1/4"	0.3										
The industry's highest level valve High durability of 120 million cycles or more Max. 200°C specifications		AGD21R-A			✓			3/8"	3/8"	0.4									
Others: 2-unit 3-way valve, 3-way valve type								Variation Details ...Body option Flow path direction, NC/NO combination Connection/port shape combination ...with valve opening adjustment mechanism ...for high temperature fluids ...with Proximity Switch								-			
Manual Valves	180° rotation economy	Maintains MGD series specifications for improved versatility	LGD10 LGD20		✓	✓	✓		1/4" *Equivalent	1/4"	0.3							 Click!	
	90° Snap action	90° Snap action	OGD□0R		✓	✓	✓		1/2" *Equivalent	3/8" 1/2"	0.7							 Click!	
									1/4"	1/4"	0.3								
	270° rotation	270° handle type	MGD□0R		✓	✓	✓		3/8"	3/8"	0.65							 Click!	
									1/4"	1/4"	0.3								
									3/8"	3/8"	0.65							 Click!	
Others: With lock mechanism and key								Variation Details ...Body option Connection System, handle color Port Shape Combination ...Safety Specification Options With Locking Mechanism With Double-Action Mechanism								-			

*1: JXR fittings are connectable with VCR fittings.

Dry Fine (for process gas)

Other valves for process gas

*For details, refer to CKD Component Products site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Features		Model No./Appearance	Main Use Cases (Semiconductor / FPD)				Connection Type *1	Supply Fluid Pressure (MPa)	Ultimate Vacuum (kPa (abs))	Click here for detailed specifications	
			Dry Etching	Deposition	Gas Facility					Catalog Name [No]	WEB
For process gas exhaust Vacuum Generator	An energy-saving vacuum exhaust device that can secure a high degree of vacuum while saving N2 consumption flow.	VG 			✓		IN 1/4" JXR male jack VAC. 1/4" JXR male jack VENT 3/8" JXR male jack	0.4 to 0.6	≤13.3	Dry Fine Components [RJ-016AA]	 Click!

*1: JXR fittings are connectable with VCR fittings.

Regulator

Features		Model No./Appearance	Main Use Cases (Semiconductor / FPD)				Connection Type *1	Supply Fluid Pressure (MPa)	Set Pressure Range		Click here for detailed specifications	
			Dry Etching	Deposition	Gas Facility				(MPa)	(psi)	Catalog Name [No]	WEB
With extensive market experience, high reliability, high corrosion resistance, and functionality, it contributes to high-precision control of gas supply pressure.		PGM					1/4" JXR female fitting 1/4" JXR male fitting 1/4" JXR male → female fitting 1/4" JXR female → male fitting	1.0	-0.07 to 0.21 0 to 0.21 0 to 0.35 0 to 0.7	-10 to 30 0 to 30 0 to 50 0 to 100	Dry Fine Components [RJ-016AA]	 Click!
		PGM-H	✓	✓	✓				0 to 0.42 0 to 0.7	0 to 60 0 to 100		
		PGM-2H							-0.07 to 0.21 0 to 0.21 0 to 0.42 0 to 0.7	-10 to 30 0 to 30 0 to 60 0 to 100		

*1: JXR fittings are connectable with VCR fittings.

Integrated Gas Supply System

Features		Model No./Appearance	Main Use Cases (Semiconductor / FPD)				Seal Connection Method	Size	Cv Value				Click here for detailed specifications	
			Dry Etching	Deposition	Gas Facility								Catalog Name [No]	WEB
1.125 inch size	A compact, high-function gas supply line	IAGD5 	✓	✓			W-Seal	1.125"	0.1				Dry Fine Components [RJ-016AA]	 Click!
								0.26						
1.5 inch size	First to commercialize and realize the industry's smallest system	IAGD4 	✓	✓				1.5"	0.1					 Click!
	Customized to meet your needs			✓				0.26						

High Vacuum Components

Fine System Components
(Pure water/chemical liquids/process gas)

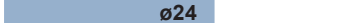
Search by product series

Air Operated Valves		*For details, refer to CKD Component Products site (https://www.ckd.co.jp/kiki/en/) → "Model No."													Click here for detailed specifications				
Features		Model No./Appearance	Connection Size Vacuum Clamp Fitting		Orifice ømm													Catalog Name [No]	WEB
Bellows system Aluminum body	We offer an extensive lineup that inherits the highly durable formed bellows cultivated by CKD over many years.	AVB□□7 	NW16		017													Dry Fine Components [RJ-016AA]	 Click!
			NW25		024														
			NW40		039														
			NW50		048														
			NW63		068														
			NW80		080														
			NW100		100														
			NW160		150														
Bellows system Stainless Steel Body	Stainless steel body type that has accumulated trust and results.	AVB□□3 	1/4" Tube		05													Dry Fine Components [RJ-016AA]	 Click!
			NW25		024														
			NW40		040														
			NW50		050														
			NW80		080														
			NW100		100														

Manual Valves

Features		Model No./Appearance	Connection Size Vacuum Clamp Fitting		Orifice ømm													Click here for detailed specifications	
					0	10	20	30	40	50	60	70	80	90	100	150	Catalog Name [No]	WEB	
Bellows system Aluminum body	We offer a manual type that inherits the highly durable formed bellows cultivated by CKD over many years.	MVB□17 MVB□0 	NW16		ø17													Dry Fine Components [RJ-016AA]	 Click!
			NW25		ø24														
			NW40		ø39														
			NW50		ø48														
Bellows system Stainless Steel Body		NW25		ø24															
		NW40		ø40															
		NW50		ø50															

Vacuum Pressure Control Valves

Features		Model No./Appearance	Connection Size Vacuum Clamp Fitting	Orifice ømm													Click here for detailed specifications	
				0	10	20	30	40	50	60	70	80	90	100	150	Catalog Name [No]	WEB	
Vacuum Pressure Control System	Following the know-how of highly reliable vacuum pressure control valves, we contribute to vacuum pressure control in all fields.	IAVB 	NW16														Dry Fine Components [RJ-016AA]	 Click!
			NW25															
			NW40															
			NW50															
Bellows system Aluminum body																		

Product Category

Actuators - Pneumatic Cylinders	P. 3
Actuators - Electric Actuators	P. 78
Directional Control Valve	P. 111
Air Preparation Equipment	P. 151
Auxiliary Component/Speed Controllers/Silencers/Fittings/Tubes	P. 229
Sensors/Controllers	P. 263
Main Line Components/Nitrogen Gas Generators	P. 279
Precision Components	P. 311
Vacuum Components	P. 327
Fluid Control Valves	P. 343
Fine System Components (Pure water/chemical liquids/process gas)	P. 427

Software

Specific Applications

High-Durability Components - HP Series	P. 453
For Food Manufacturing Processes - FP Series	P. 461
For Outdoor Use - WP Series	P. 467
For Rechargeable Battery Manufacturing Processes - P4 Series	P. 471
For Clean Environment Components P5/P7 Series	P. 477
Other -P12/-P8/-P9/-P11/-P6 (Oil-free, ozone resistant, copper ion restricted)	P. 481

Software
(Image processing/components control)

Search by Product System P. 445

Search by Product System P. 445

Image Processing - Image Processing Visual Programming Tool

Facilea (AES)/Facilea AI (AES-FACILEA-AI) P. 447

Device Control - Device Programming Tool

ExiaStudio (AESM-EXIA)
ExiaStudio Pro (AESM-EXIAPRO) P. 449

Easy Image Processing,
Even for Beginners

Programming with a single PC

Easy Information Gathering +
Device Control with Intuitive
Operation

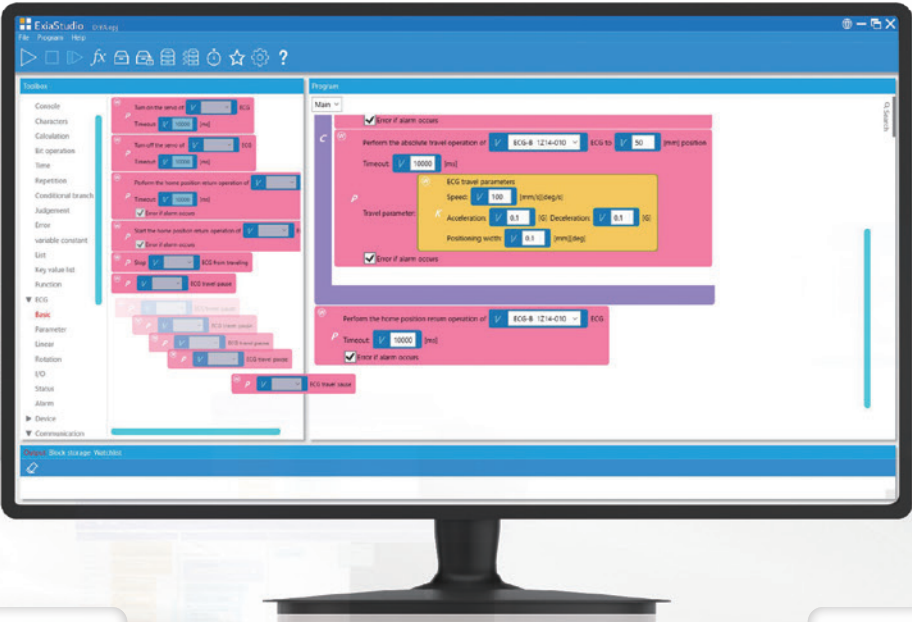


Image Processing AI Tool

Facilea AI

This software learns and evaluates images, and can output model files that can be used with Facilea. (Sold only in Japan)

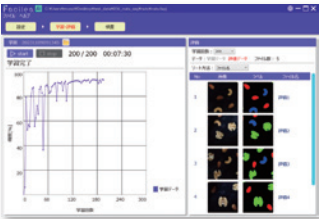
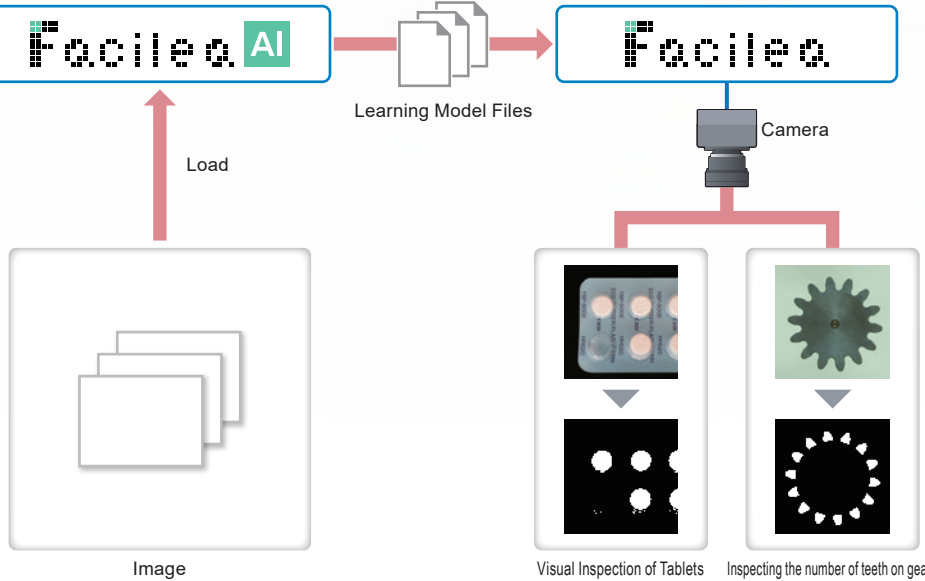
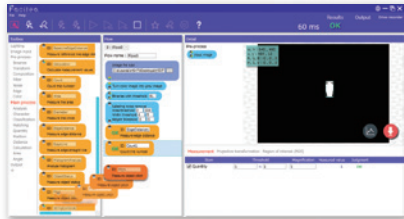


Image Processing Programming Tool

Facilea

This is an image processing software that allows programming with intuitive operations.

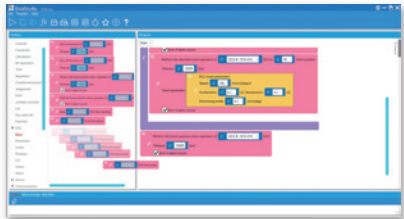


Control & Linkage

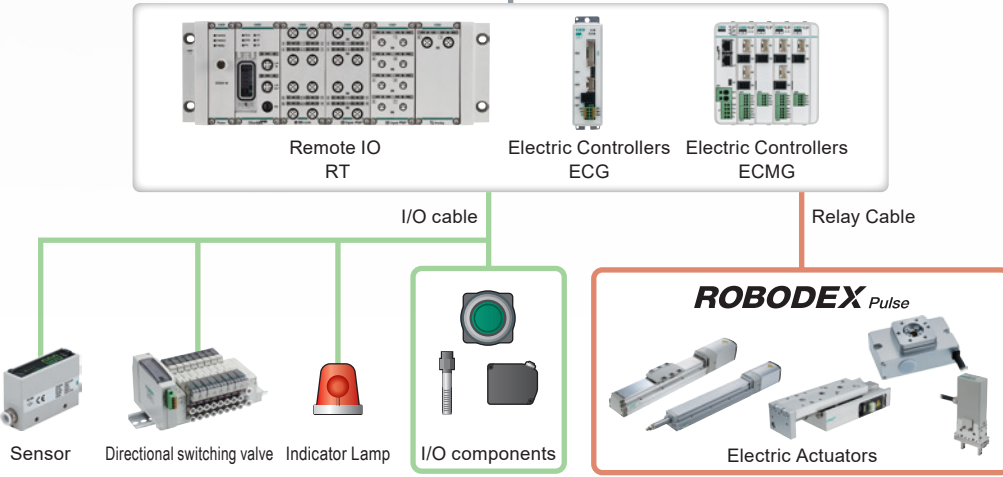
Device Programming Tool

ExiaStudio **ExiaStudio Pro**

Easy to use even for programming beginners! This software enables information gathering and device control program construction with just a PC.



ExiaStudio **ExiaStudio Pro**



For other connectable devices, please see P. 115.

For other electric products, please see P. 78.

Image Processing Programming Tool

Easy Image Processing, Even for Beginners

Intuitive operation with visual programming

STEP1

STEP2

STEP3

Anyone can start right away.

Combination Unrestricted

Multiple Camera Connection

Simple Automated Integration

3 Easy steps

STEP 1

Drag & Drop Program Blocks

STEP 2

Input simple parameter settings.

STEP 3

Start image processing!!

Case Studies

Click!



Image Processing AI Tool

Equipped with AI functions

AI × Visual Programming
Handles inspections that were difficult to judge with Facilea (rule-based).

Case Studies

Click!

* For details, refer to CKD components product site (<https://www.ckd.co.jp/kiki/jp/>) → "Model No."

Image Processing

Click here for detailed specifications

Catalog Name [No.]

Image Processing Visual Programming Tool Facilea [CC-1548AA]
Image Processing AI Tool Facilea AI [CC-1623AA]

WEB

Click!

Image Processing Visual Programming Tool

Function example

Binarization

In addition to simple binarization, binarization that considers features is also possible.

Color Extraction

Extraction from HSV/RGB color spaces and histogram correction are also possible.

1D/2D

It can read barcodes, QR codes*, DataMatrix codes, etc.

Distance

Can also extract length measurements, line inclination, and object position/angle.

Blur

Also equipped with various filters such as edge extraction and noise removal functions.

Invert

Also equipped with vertical/horizontal inversion, various transformations, and image composition/masking functions.

OCR

Supports alphanumeric characters, hiragana, katakana, kanji, and multiple languages.

Count

Can also count the number of objects and the number of matches to a template image.

Series		Model No.	Manufacturer's Suggested Retail Price
Facilea	Main unit	AES-FACILEA-1	98,000 yen (tax excluded)
	Renewal License	AES-FACILEA-2	30,000 yen (tax excluded)

Image Processing AI Tool

[Sales limited to Japan]

Function example

Label each segmentation area

Detects defects

Identifies part types

Part label classification

Scratch appearance classification

Learns by coloring foreign matter, scratches, and dents. Detects abnormalities by type.

Learns by coloring each part differently to identify the type.

Learns images of multiple products and classifies which product an image is. Since it only requires learning images, adding new product types is easy.

Learns and classifies OK and NG images of part surfaces.

Series		Model No.	Manufacturer's Suggested Retail Price
Facilea AI	Main unit	AES-FACILEA-AI	690,000 yen (tax excluded)

Paid Support

Pre-purchase Paid Support

Segmentation

Within 30 sheets (Within 3 labels)

or

Classification

Within 30 sheets (5 sheets or more per type)

Reporting

CKD will make a judgment whether the image provided can be inspected for purpose with Facilea AI.
* Report The image is an image.

Report Creation Steps
① I will be hearing about the inspection while viewing the image.
② Ask CKD to provide you with the image and confirm that it can be inspected by CKD.
③ The contents of the judgment are summarized in a report.

Post-purchase Segmentation Support

Color Fill

We will help you create color-filled images.
* Learning after coloring is not included.

Per 1 pc
5,000 yen (excluding tax)

Series		Model No.	Manufacturer's Suggested Retail Price
Paid support (Facilea AI only)	Please inquire		98,000 yen (tax excluded)
			5,000 yen/sheet (tax excluded)

Software

Search by product series

447

CKD

CKD

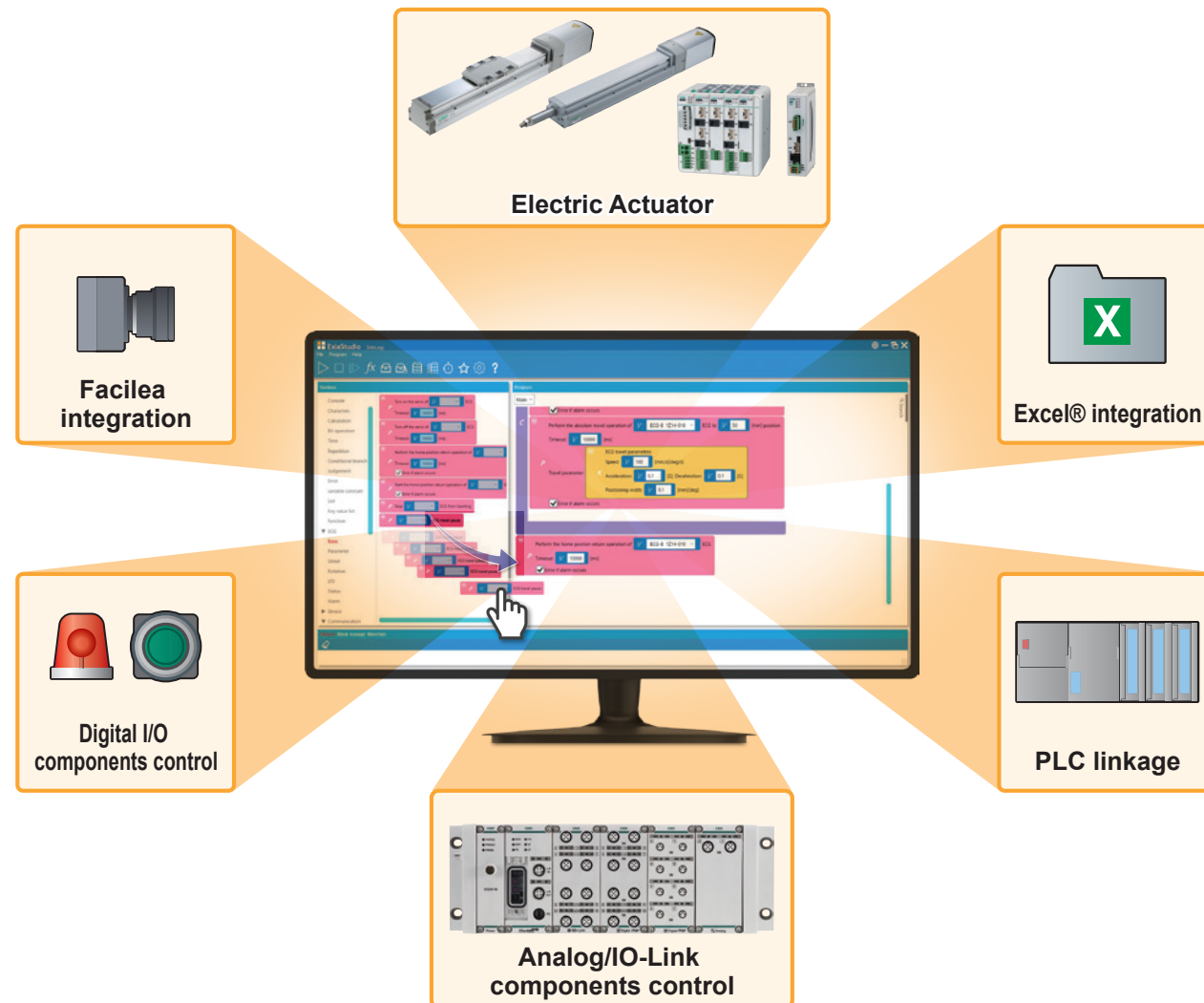
448

Device Programming Tool

ExiaStudio

No specialized knowledge required

Easily automate equipment information gathering and device control



Anyone can easily control the components by simply dragging and dropping various blocks!

Intuitive operation and easy programming

Case Studies



*For details, refer to CKD Components Product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No."

Device Control

Click here for detailed specifications

Catalog Name [No.]

Device Visual Programming Tool ExiaStudio [CC-1579AA]

WEB

Click!

Device Programming Tool

ExiaStudio

■ Standard Model

- Easy control with a single PC components control

Recommended for these applications!

- When editing programs on site, such as in a test machine
- When the budget for capital investment should be kept low

Series		Model No.	Manufacturer's Suggested Retail Price
ExiaStudio	Main unit	AESM-EXIA-1	98,000 yen (tax excluded)
	Renewal License	AESM-EXIA-2	30,000 yen (tax excluded)

ExiaStudio Pro

■ Professional models

Recommended for these applications!

- For repeat production of equipment with the same device configuration
- When the frequency of equipment production is high and you want to reduce the cost per unit

An executable file for a program created in ExiaStudio Pro. Do not have a software dongle key on the PC that installed ExiaRuntime? Program execution is possible. The program can be edited only on ExiaStudio Pro.

ExiaRuntime

Series		Model No.	Manufacturer's Suggested Retail Price
ExiaStudio Pro	Main unit	AESM-EXIAPRO-1	450,000 yen (tax excluded)
	Renewal License	AESM-EXIAPRO-2	200,000 yen (tax excluded)

Product Category

Actuators - Pneumatic Cylinders	P. 3
Actuators - Electric Actuators	P. 78
Directional Control Valve	P. 111
Air Preparation Equipment	P. 151
Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing	P. 229
Sensors/Controllers	P. 263
Main Line Components/Gas Generators	P. 279
Precision Components	P. 311
Vacuum Components	P. 327
Fluid Control Valves	P. 343
Fine System Components (For DI water, chemicals, and process gas)	P. 427
Software	P. 443

Specific Applications

High-Durability Components - HP Series
For Food Manufacturing Processes - FP Series
For Outdoor Use - WP Series
For Rechargeable Battery Manufacturing Processes - P4 Series
For Clean Environment Components P5/P7 Series
Others P12, P8, P9, P11, P6 (Oil-free, ozone resistant, copper ion restricted)

Search for specific applications

High-Durability Components - HP Series P. 453

Long service life cylinder	-HP1
Environment-resistant cylinder	G-HP1
Length Measurement Gripper	LSHM-HP2
Air booster	ABP2-HP1
Model list	

For Food Manufacturing Processes - FP Series P. 461

Eliminates concerns over lubricant contamination	-FP1
Uses materials compliant with the Food Sanitation Act	-FP2
Model list	

For Outdoor Use - WP Series P. 467

Pursuing the Requirements for Outdoor components	-WP
Model list	

P4 Series for rechargeable battery manufacturing processes P. 471

Supports material restrictions and dry environments	
Material limitations for the flow path part/sliding part	-P 4
Material limitations for all parts	-P 40
1/5 or less dust generation rate achieved	-P 42
Representative model list	

For clean components P5/P7 P8/P9 Series P. 477

Satisfies the various levels of clean room cleanliness in a wide range of industries	-P5, -P7
Series System Table	-P5, -P7 -P8, -P9
Model list	

Other series P. 481

Oil-prohibited	-P12, -P8, -P9
Ozone specifications	-P 11
Copper ion compatible (Copper and PTFE free specifications)	-P 6

High-Durability Components - HP Series

Carbon neutrality comes from reducing

CO₂ emissions with long service life products

What "HIGH PRODUCTIVITY" means to CKD

Lower productivity will result in loss. In addition, parts requiring maintenance will be wasted. We believe that achieving high productivity without maintenance leads to carbon neutrality. HP Series emphasizes that type of manufacturing, one that originates from the perspective of components. To improve productivity in places with high usage frequency and high-stress environments, the series serves to create a "production facility that never stops" and "achieves stable operation" with products that have an unprecedented long service life.



Industry-specific series available

P4-HP1 Series	Refer to catalog CC-1421AA
FP1 - G-HP1 Series	P. 466



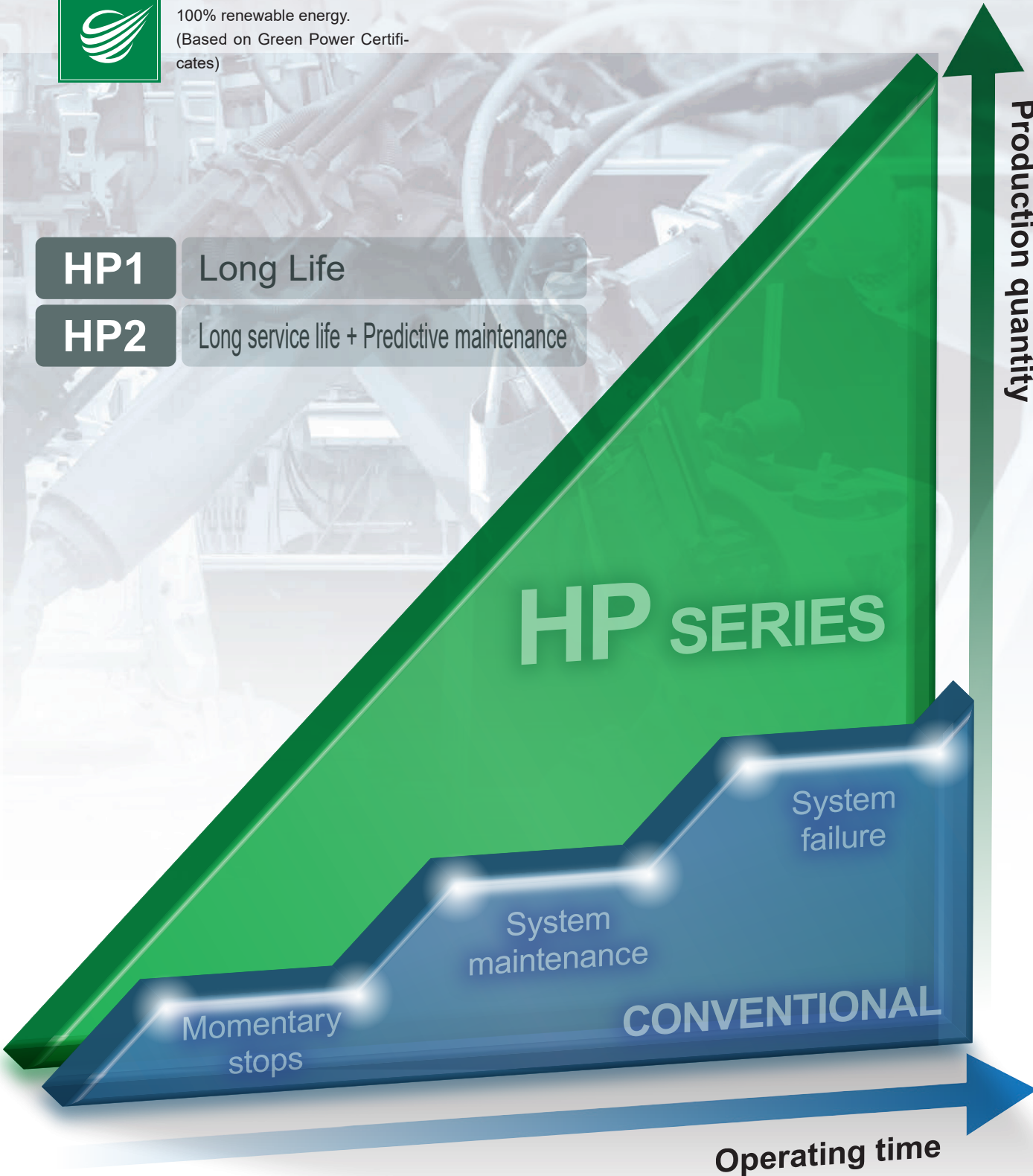
Green Energy
The HP Series is made from 100% renewable energy. (Based on Green Power Certificates)

HP1

Long Life

HP2

Long service life + Predictive maintenance



Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited zone / Copper Ion Restricted (No copper / PFC Specification)

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited zone / Copper Ion Restricted (No copper / PFC Specification)

High-Durability Components - HP Series

Optimized sliding parts
Does not break even with high frequency usage

Long service life cylinder

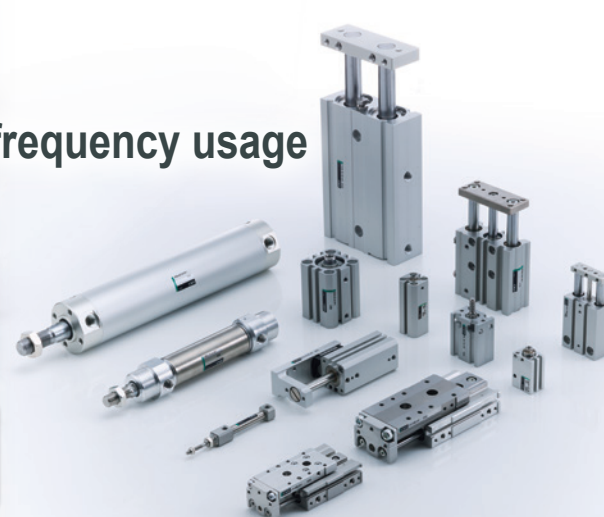
HP1 Series

Significant reduction in minor stoppages

Significant reduction in replacement frequency

Durability count over 20 million times

Subject to CKD prescribed conditions



Improved environmental resistance
Does not break even in dusty environments

Environment resistance cylinder

G-HP1 Series

Significant reduction in minor stoppages

Significant reduction in replacement frequency

Improved environmental resistance

Durability count over 5 million cycles

Subject to CKD prescribed conditions



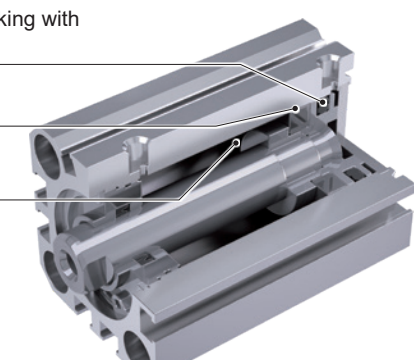
Long Life

By optimizing packing design, seal functionality, and adopting grease designed for high frequency use, a long service life is achieved while maintaining the same dimensions as the conventional product.

Abrasion-resistant packing with special formulation

Adoption of grease for high frequency

Optimization of seal function



Operational cycle

HP1 series

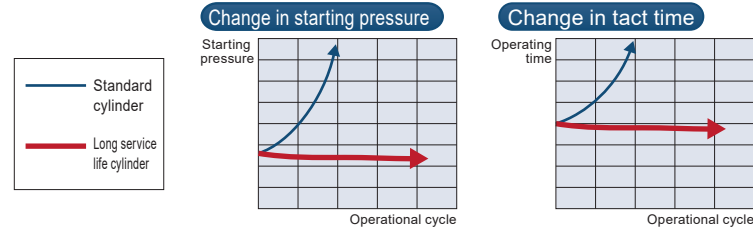
Our conventional product

Compared to conventional 4 times or more

* HP Series durability is the service life under our specified conditions. As it differs under working conditions or ambient conditions, it is not guaranteed to be more than 4 times the durability under all conditions.

Stable operation

The optimum structure of the sliding parts prevents the starting pressure from rising even in repeated operational cycles. As the starting pressure is constant, the operating time is also constant. Provides stable operation without unexplained stoppages.



Flexible lead wire switch selectable

We offer switches that use bending-resistant lead wires that do not easily break even when used in moving parts. (Switch model No. T2HR3, T2VR3, F switches)



Industry-specific series available

P4-HP1 Series

Compatible with rechargeable batteries × long service life

Long service life even in harsh environments

Equipped with a heavy duty scraper and lube keeper to prevent intrusion of dust and to maintain lubrication. Durability in dusty environment has been greatly improved.

Fiber assemblage (lube keeper)

Heavy-duty Scraper

Powder / foreign matter

LCR guide

Seal structure and lubrication mechanism have been added to improve guide durability.

Scraper

Lubrication holding mechanism

STG, STS/L guide

Countermeasures for dust also be applied to the guide rod section to contribute to long-term stable operation.

Heavy-duty Scraper

Lube keeper

Operational cycle

G-HP1 series

Our conventional product

Compared to conventional 4 times or more

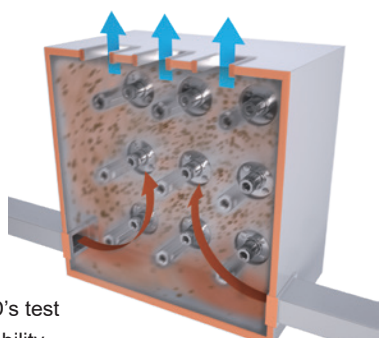
* HP Series durability is the service life under our specified conditions. As it differs under working conditions or ambient conditions, it is not guaranteed to be more than 4 times the durability under all conditions.

Stable operation even in harsh environments

Tests are carried out in recreated dust environments. Durability has been confirmed through rigorous testing.

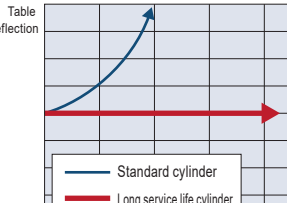
[Test Conditions]

Operating Pressure	0.5 MPa
Dust type	5 to 75 μm
Dust quantity	Twice a day with 1.5g/1
Number of dustings	2 cycles/day
Load	None



* CKD's test durability

Change in LCR table deflection



Standard cylinder

Long service life cylinder

Industry-specific series available

FP1 - G-HP1 Series

For food manufacturing processes × environment conditions



High-Durability Components - HP Series

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited/Copper Ion Restricted (No copper/PE Specification)

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited/Copper Ion Restricted (No copper/PE Specification)

Grips and measures simultaneously
Replacements before breakdown

Measuring hand
LSHM-HP2 Series

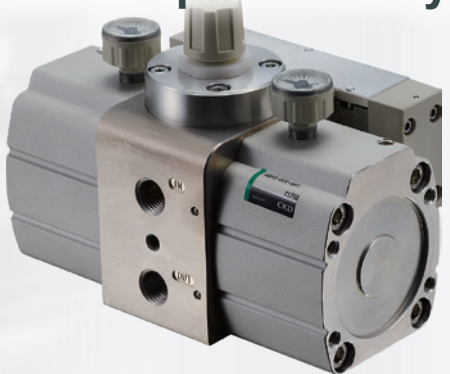
- Significant reduction in minor stoppages
 - Significant reduction in replacement frequency
 - Predictive maintenance possible
 - Durability count over 20 million times
- Subject to CKD prescribed conditions



Rethinking compressed air
Increased components service life and productivity

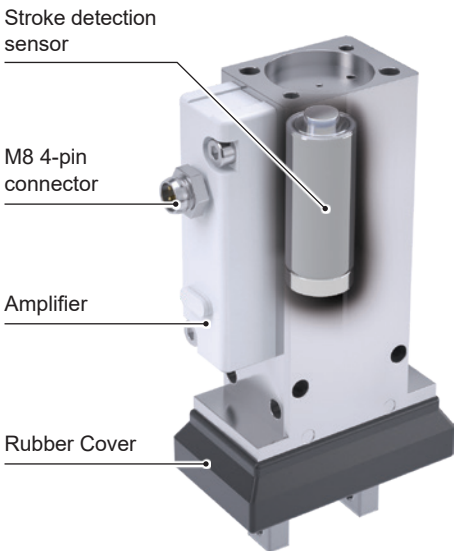
Air booster
ABP2-HP1 Series

- unexplained Significant reduction
 - the number of replacements Significant reduction
 - Durability count 10 million cycles or higher
- Subject to CKD prescribed conditions



Integrated Structure

Finger positioning with high precision analog output. The hand body has a built-in stroke detection sensor and amplifier. The integrated structure achieves high-precision.



Repeatability ± 0.02 mm

An LVDT sensor with excellent vibration and shock resistance and integrated structure has been adopted to achieve unprecedented high repeatability.

Environment Resistant

IP65 equivalent amplifier and rubber cover prevent internal intrusion of chips and water droplets.



Linearity correction adapter

Linearity F.S. $\pm 0.5\%$

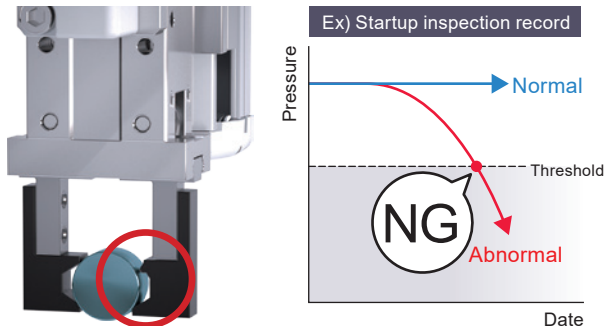
With Correction Adapter: F.S. $\pm 0.5\%$

Without correction adapter: F.S. $\pm 3\%$

Adoption of the correction adapter has improved linearity accuracy.

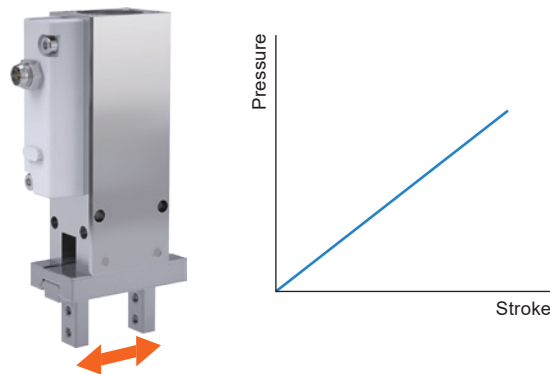
Predictive maintenance

By monitoring abnormal wear or deformation of gripping fingers or jigs from changes in output, damage to equipment and robots can be prevented.



Elimination of human error

The entire stroke is output in detail, eliminating adjustment defects due to manual work that occurred with conventional switches.

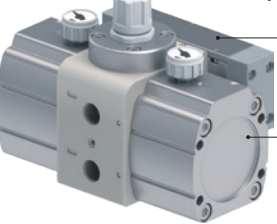


Long Life

The design of the packing part of the cylinder has been optimized, and the long-life 4G Series valve has been adopted, achieving more than twice the durability of conventional products.

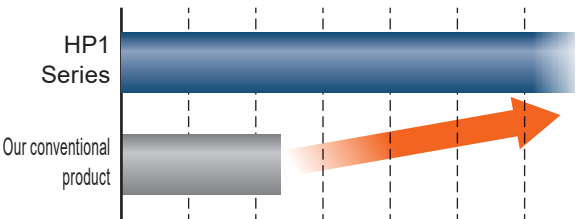
Compared to conventional
2 times or more

Valve: 4G4 master valve



- Cylinder part: HP Series Technology
- Abrasion-resistant packing with special formulation
 - Long service life grease
 - Optimization of seal function

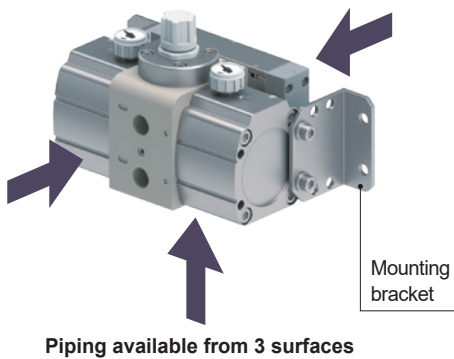
Number of Operations



Flexible mounting in any direction

Installation according to the layout is possible using brackets. Select from 3 directions for pipe leadout.

Piping leadout
3-direction
Selectable

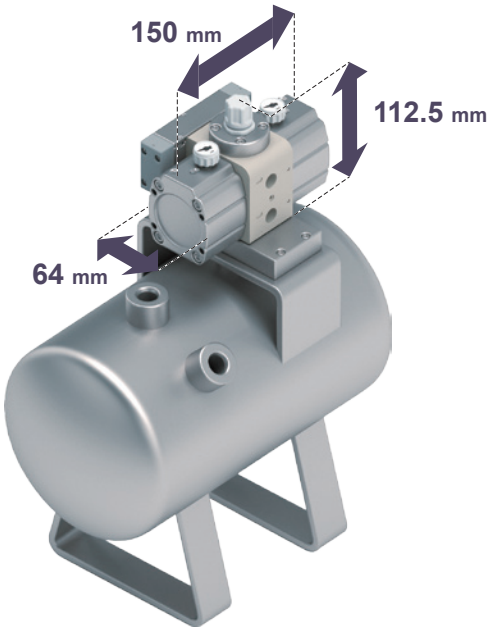


Piping available from 3 surfaces

Air Tank

Can be compactly mounted with air tank. The air tank can be selected from 2 sizes, 5 L and 10 L.

Air Tank
2 sizes
Available



High Reliability

Stable operation has been achieved by adopting the proprietary technology of our conventional ABP-12 product.

Low noise

By eliminating metal collisions, we have realized a 10dB reduction compared to conventional products.

*Subject to CKD measurement conditions.

Compared to conventional
10 dB
Down

High durability components HP Series model list

[Click here for detailed specifications](#)

Catalog Name
[No.]

High-Durability Components - HP Series
[CC-1421AA]

WEB


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Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited zone / Copper Ion Restricted (No copper) PFC Specification

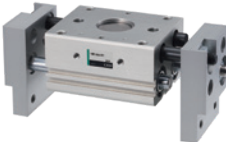
Long service life cylinder

HP1

Pencil Cylinder	Super Micro Cylinder	Tight Cylinder	Super Compact Cylinder
SCPD3	SCM	CMK2	SSD2
			

Small Direct Cylinder	Compact Cylinder	Small guided compact cylinder	Super Mount Cylinder	Linear Slide Cylinder
MDC2	MSD	MSDG-L	SMG	LCR
				

Linear Slide Cylinder	Guided Cylinder	Guided Cylinder	Super Twin Rod Cylinder	Linear Slide Gripper
LCG	STM	STG	STR2	LSH-HP1
				

Thin Long Stroke Gripper	Wide Parallel Gripper	3-Jaw Chuck	Air booster	3, 5-port pilot operated valve, plug-in block manifold
LST-HP1	HMC-HP1	CKW-HP1	ABP2-HP1	TVG
				

Long service life + Length measurement

HP2

Linear Slide Gripper with Length Measuring Function	Thin Long Stroke Gripper with Length Measurement Function
LSHM-HP2	LSTM-HP2
	

Environment-resistant cylinder

G-HP1

Pencil Cylinder	Tight Cylinder	Super Micro Cylinder	Tie Rod Cylinder
SCPD3	CMK2	SCM	SCG
			

Super Compact Cylinder	Linear Slide Cylinder	Super Mount Cylinder	Guided Cylinder	Guided Cylinder
SSD2	LCR	SMG	STG	STS/STL
				

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited zone / Copper Ion Restricted (No copper) PFC Specification



A broad **standard lineup** ranging from air filters to actuators that can be used safely and securely in food manufacturing processes

Total support for food manufacturing with **total engineering** capacity in packaging machines as well as pneumatic, fluid control, and electric-driven products

FP1 Series

Eliminates concerns over lubricant contamination!

Lubricant

FP2 Series

Uses safe materials!

Lubricant Materials Environment

FP3 Series

Pursuing further safety and security!

Lubricant Materials Structure Environment Shape

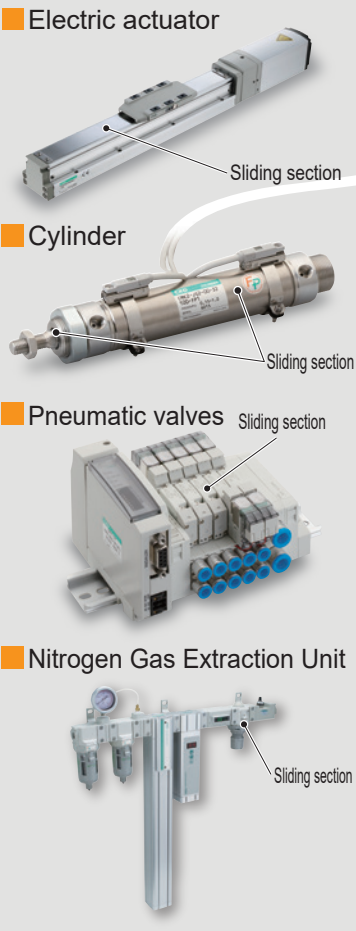


This logo represents our commitment to support food manufacturing processes with safe CKD products.

FP1 Series

Food-grade (NSF H1) lubricants are used for flow paths and sliding parts.

* Materials and dimensions are the same as the standard products.



FP2 Series

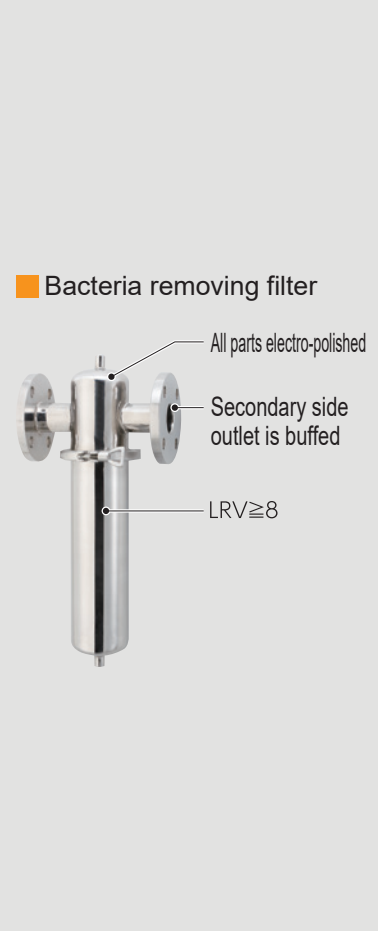
In addition to FP1, the flow path uses compliant materials (resin, rubber) compliant with the Food Sanitation Act.

* Materials (excluding the flow path) and dimensions are the same as the standard products.



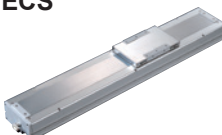
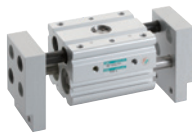
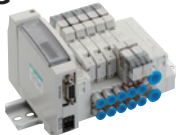
FP3 Series

In addition to FP2, the component takes account lubrication, materials, shape, etc., in food manufacturing processes.



List of FP Series models for food manufacturing processes

Prevents food contamination by lubricants. Food-grade (NSF H1) lubricants are used.

Specific Applications	FP1				
	Electric Actuator Slider Type	Electric Actuator Slider Type	Electric Actuator Guided Rod Type	Electric actuator (motorless) Slider	
	EJSG	EBS-M	EBR-M	EBS-L	
					
	Electric actuator (motorless) Rod with built-in guide	Electric actuator (motorless) Slider	Electric actuator (motorless) Low dust generation	Electric actuator (motorless) Belt type	Electric actuator (motorless) Belt/low dust generation
High-durability components HP	EBR-L	ETS	ECS	ETV	ECV
					
	Electric actuator (motorless) Fast tact / high rigidity	Pencil Cylinder	Tight Cylinder	Small bore size cylinder, stainless steel variation	Super Micro Cylinder
	EKS-L	SCPD3	CMK2	CMK2-J	SCM
					
Food manufacturing process FP	Tie rod air cylinders	Selex Cylinder	Selex Cylinder	Super Compact Cylinder	Guided Cylinder
	SCG	SCA2	SCS2	SSD2	STG
					
	Super Rodless Cylinder	Free Joint	Feather Gripper (Mini Parallel Gripper)	Compact Cross Roller Parallel Gripper	Compact Crab-shaped Parallel Gripper
	SRL3	FJ	FH100	BHA/BHG	HMF
Outdoors WP					
	Feather Gripper (Mini Fulcrum Gripper)	3-way finger bearing chuck	Powerful Chuck	Powerful Chuck with Rubber Cover	Pilot operated 3, 4, 5-port valve
	FH500	CKG	CKL2	CKLG2	4 G
					
	Pilot Operated 3, 5-Port Valve	Filter/regulator combination	Filter Regulator	Air Filter	Oil Mist Filter
Rechargeable battery manufacturing process P4	W4G□2	C□020/ C□030/ C□040/ C□050/ C□060/	W1□00 to W8□00	F1000~ F8000	M(X)1000~ M(X)8000
					
	Regulator	Drain Separator	Reed switch compact pressure switch	Residual Pressure Release Valve	Digital Electro-Pneumatic Regulator
	R1□00 - R8□00	FX	P1100~ P 8100	V1000/ V3000/ V3010/ V6010	EVD
					
Clean components P5 / P7	Oil-prohibited zone / Copper Ion Restricted (No copper/FrE Specification)				

[Click here for detailed specifications](#)

Catalog Name [No.]

Products for Food Manufacturing Processes FP Series [CC-1271AA]

WEB

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New-Joint	Fittings (stainless steel)	Speed controller Elbow with push-in fitting	Speed Controller with Dial	Speed controller line-type with push-in fitting
GW	ZW	SC3W	DSC	SCL2
				
Needle Valve with Dial	Speed Controller	Speed Controller	Metering Valve with Silencer	Block Valve
DVL-S	SC-M5	SC1	SMW/SMW2	FPV
				
Quick Valve	Single ejectors	Super dryer (High polymer membrane air dryer)	Nitrogen Gas Generator Unit	Medium Size Main Line Filter
2QV/3QV	VSH/VSC	SU/SD	NSU	AF
				
Pilot kick 2-port solenoid valve	Air Operated 2-Port Valve	Air Operated 3-Port Valve	Powerful Arm	
APK	SAB	NAP	PAW	
				

Materials compatible with Food Sanitation Act are used

FP2				
Nitrogen Gas Generator Unit	Oxygen Analyzer	Antibacterial/Sterilizing Filter	Suction Pads	
NS	PNA	SFC/SFS	VSP	
				
Pilot Operated 2-Port Solenoid Valve for Compressed Air	Compact Pilot Operated Solenoid Valve for Water	Compact direct acting 2, 3-port solenoid valves	Direct Acting 2-Port Solenoid Valve	Direct Acting 3-Port Solenoid Valve
EXA	FWD	USB/G	AB31/41	AG31/41/33/43/34/44
				
Pilot Operated 2-Port Solenoid Valves Dry air tube	Diaphragm Cylinder Valve	Diaphragm Cylinder Valve	Diaphragm Cylinder Valve Manifold	Compact Rotary Valve
ADK11-Z	LAD	NAD	GNAD	CHB/CHG
				
Oil-free motorized 2-port ball valve	Pilot Kick Operated 2-Port Solenoid Valve for Steam	Metal-free solenoid valves	High corrosion resistant direct acting 2-port solenoid valve	Check valve (nozzle)
MXB/MXG	SPK	MYB3	HB	CCN
				

List of FP Series models for food manufacturing processes

Models below are standard types and they are FP * specifications equiv.

Compact flow rate sensor (oil-prohibited P80 Series)
FSM3



Compact flow rate Controllers (stainless steel body)
FCM



Pressure Switch
PPX



Fine Buffer
FBU2-SU



Plug-in Connector
GWP□-0



Blanking Plug
GWP□-B



Silencer
SL/SLW/SLM



Pressure Gauge



Thin Pressure Gauge	Pressure gauge with safety marker	Pressure Gauge with Limit Mark
G401	G40D	G45D
General-Purpose Pressure Gauge	Panel Mount Pressure Gauge	Pressure Gauge with Switch
G49D, G59D	G53D	G52D
Ultra-Compact Pressure Gauge	Compact round pressure gauge	Differential Pressure Gauge
G29D	G39D	GA400

FP2 specifications equiv.
Poppet Type Diaphragm Valve
SPD



FP3 specifications equiv.
Sterilizing Filter
AF7000A
*Special Order Item



Environment-resistant cylinder List of models for food manufacturing processes

Long service life even in harsh environments

FP1-G-HP1



Pencil Cylinder
SCPD3



Tight Cylinder
CMK2



Super Micro Cylinder
SCM



Tie Rod Cylinder
SCG



Super Compact Cylinder
SSD2



Guided Cylinder
STGM/STGB



For Outdoor Use - WP Series



Pursued the requirements of outdoor components, and expanded range and variations of use.

Proven durability for outdoor use

- Cleared a 960 hour combined cycle test (JIS H8502: 1999)
Durability related to coating on metal parts
- Accelerated durability (sunshine weather meter test) cleared 1,000 hours
Durability of resin parts
- Cleared a 400 hour test for ozone exposure (JIS D0205: 1987).
Durability for rubber and gasket

Accelerated weather resistance Test	Combined cycle Test	Ozone exposure Test
3-year Acceleration equivalent	7-year Acceleration equivalent	400 Hours

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



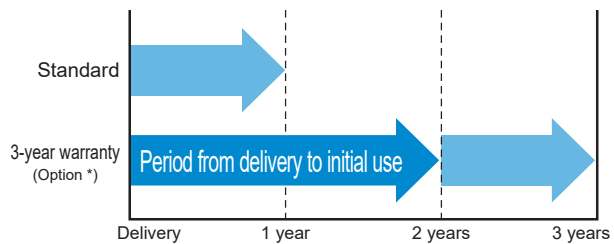
Expanded range for equipment use in harsh environments

Each product has a maximum warranty of 3 years

Long-term peace of mind (option)

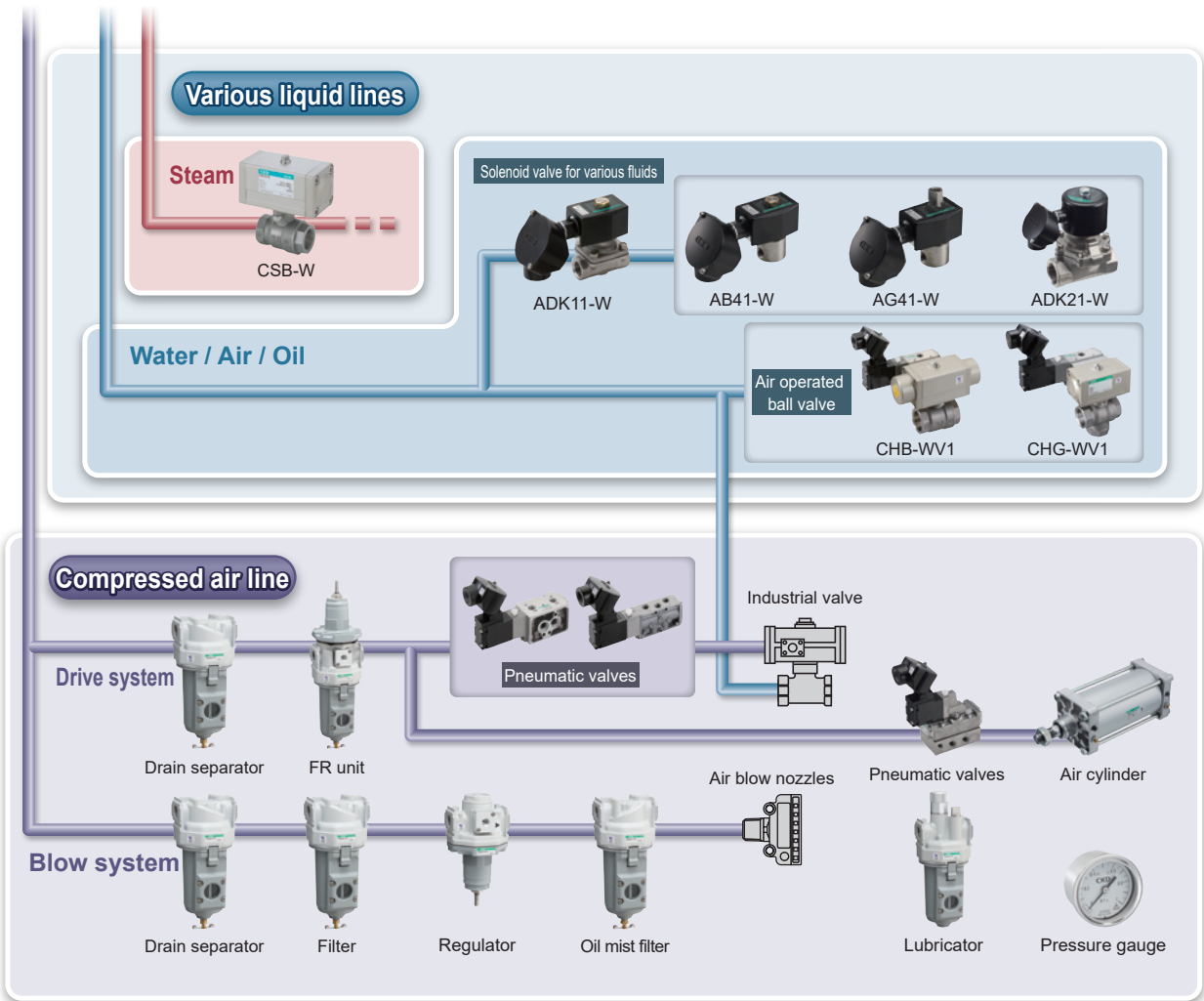
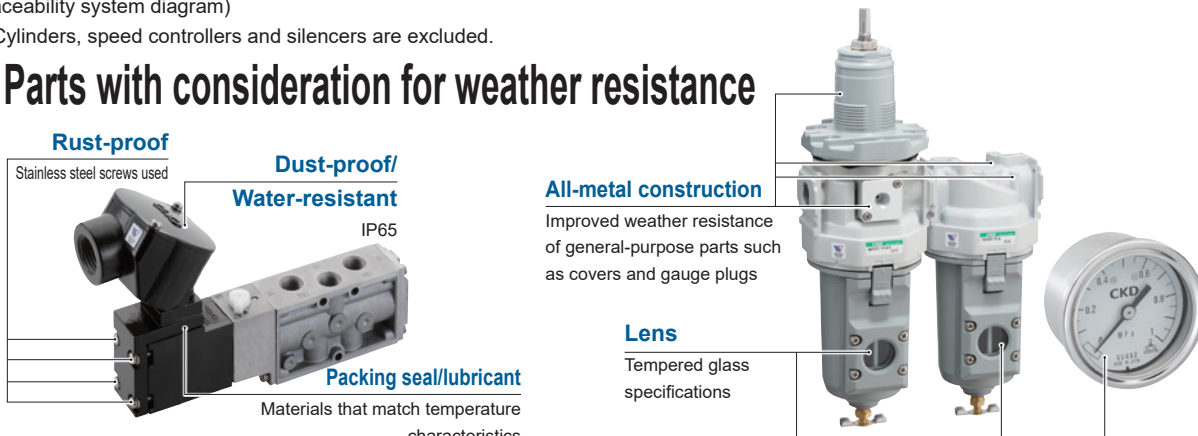
In order to support plants and overseas, a warranty of up to two years after delivery to the start of use + up to three years after the start of use for one year. (with inspection certificate, inspection guidelines, drawings, traceability system diagram)

* Cylinders, speed controllers and silencers are excluded.

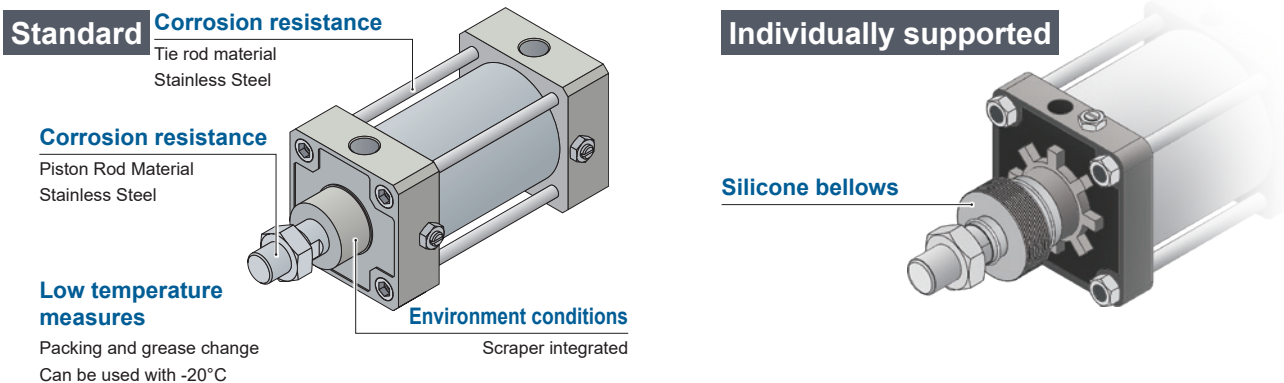


*A statement of specifications is exchanged to clarify the warranty period.

Parts with consideration for weather resistance



Outdoor series also available for air cylinders (ø40 to 250)



For Outdoor Use - WP Series
Model list

[Click here for detailed specifications](#)

Catalog name
Catalog Name

Outdoor Products WP Series
[CC-1276]

WEB


Click!



Compressed air line

Drain Separator FXW	Air Filter FW	Regulator RW	Oil Mist Filter MW	Filter Regulator WW
				
Filter Regulator BW7019	Lubricator LW	Pressure Gauge GW49D	Pilot operated 5-port pneumatic valve 4F-W 4F NAMUR-W	
			 	
Silencer: Metal body SL-W	Speed controller Medium bore size SC1-W			
				

Various fluid lines

For controlling compressed air, low vacuum, water, kerosene, steam, etc.

Direct Acting 2-Port Solenoid Valve	Direct Acting 3-Port Solenoid Valve	Pilot kick 2-port solenoid valve	
AB41-W	AG41-W	ADK11-W	ADK21-W
			
Air operated ball valve	Air operated ball valve		
CHB/CHG -W, WV, WX	CSB-W WR		
			

Actuators - Pneumatic Cylinders

Selex Cylinder (ø40 to 100) SCA2-□-W	Selex Cylinder (ø125 to 250) SCS2-□-W
	

P4 Series for rechargeable battery manufacturing processes

Contributes to "Stable operation" and "Long service life components" for equipment that never stops.

With the progress of rechargeable and next-generation battery development, we have responded to the demand for components with improved dry environmental performance. Our products are compatible with the production stability of the manufacturing process and consistently meet the needs of rechargeable battery manufacturing, from electrode production to packaging.

Make Progress!!

P4 Series

P4



DEW POINT
-70°C



System failure

System maintenance

Momentary stops

CONVENTIONAL

Series Zoning

Compatible models are available in 2 grades (P4 Series, P40 Series) according to the atmosphere and installation location of the device.

B ZONE

Zone above but removed from the workpiece

>> -P4 Series

C ZONE

Zone below the workpiece

>> -P4 Series

A ZONE

Zone immediately above and close to the workpiece

>> -P40 Series

>> -P42 Series

Places used with high frequency or where high durability is required

>> Refer to HP Series General Catalog (catalog No.CC-1421A)

HP

Material restrictions



Restrict materials for component parts.

Restricts the use of materials and surface treatments inappropriate for the rechargeable battery manufacturing process.



Limited copper material



Limited zinc material



Limited nickel-based material



Limited zinc plating



Limited electrolytic nickel plating

Dry environment

DEW POINT
-70°C

Long service life even in -70°C dew point environments

Adopted grease compatible with ultra-dry environments. Retains the smooth operation of the sliding part for long periods, even in dry environments.

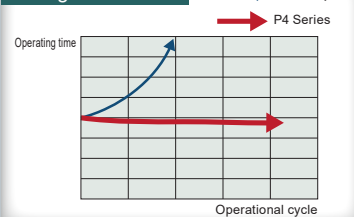
Stable operation



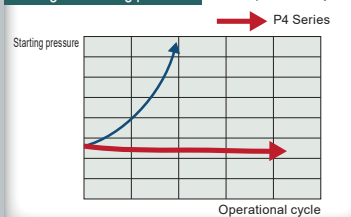
Contributing to a system that never stops

Uses a special grease that supports low dew points and high frequency use. Contributes to stable operation of equipment.

Change in tact time



Change in starting pressure



Fights dust and its generation



Suppresses dust generation of metal wear powder

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

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited zone / Copper Ion Restricted (No copper / PFC Specification)

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited zone / Copper Ion Restricted (No copper / PFC Specification)

P4 Series for rechargeable battery manufacturing processes

Contributes to all the needs of rechargeable batteries and next-generation battery manufacturing processes.

Material limitations for the flow path part/sliding part

-P4 Series

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

* Trace amounts present in the alloy are excluded.

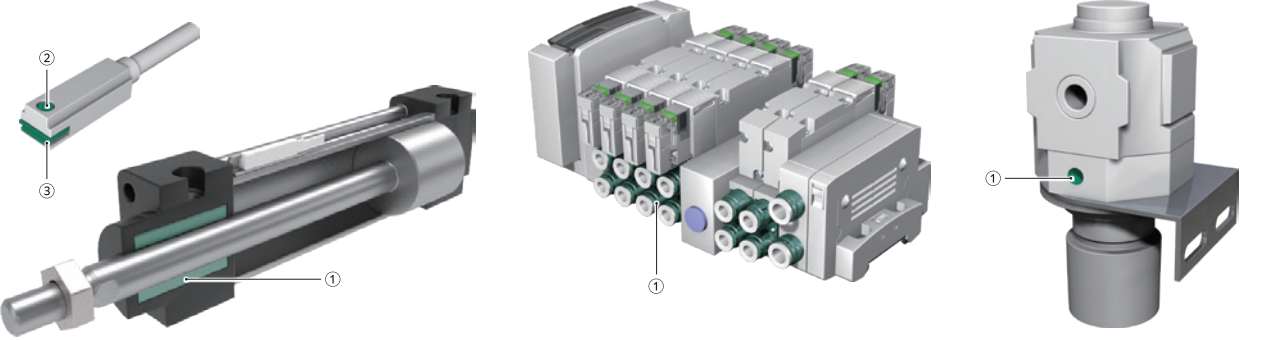
Same mounting size as standard

- Cylinder**

(1) Copper-based bearing → Cast iron-based bearing
(2) SUS screw
(3) SUS plate
- Directional Control Valve**

(1) SUS Fitting
- Regulator**

(1) Exhaust port



Electric Actuators

We offer a wide range of motor equipped (stepping motor) and motorless (servo motor/stepping motor) variations.

Same mounting size as standard

Electrolyte-proof specifications

Improved environmental resistance with raydent-equivalent processing.

(1)Standard (2)Anti-rust treated

● **Motorless specifications**

Low contamination specifications

(1)Countermeasures for dust generation

● **Motorless specifications**

Class 100 or equivalent with vacuum treatment port.

● **Motor specifications**

● **Motor specifications**

Material limitations for all parts

-P40 Series

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

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

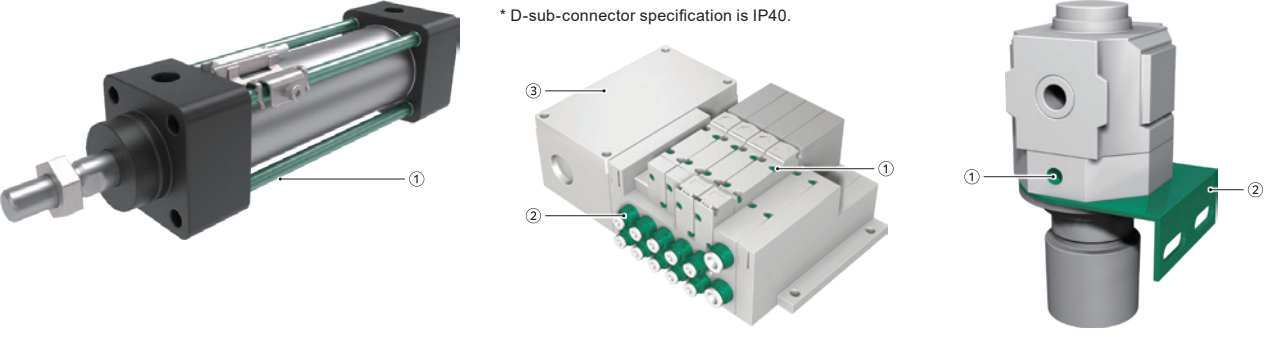
Same mounting size as standard

- Cylinder**

(1) Electroless Ni plating
- Directional Control Valve**

(1) SUS screw
(2) SUS Fitting
(3) Electric circuit unit IP65 *
- Regulator**

(1) Exhaust port
(2) Electroless Ni plating



1/5 or less dust generation rate achieved

-P42 Series

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

* Our standard cylinder comparison

Cylinder

(1) Vacuum treatment

* Dimensions differ from the standard.

Test method

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

Test conditions

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

List of representative models of P4 Series for rechargeable battery manufacturing processes

[Click here for detailed specifications](#)

Catalog Name [No.]

Compatible with rechargeable batteries components P4* Series [CC-1226]

WEB


Click!

Super Compact Cylinder
SSD2

Guided Cylinder
STG

Super Rodless Cylinder
SRL3

Super Mount Cylinder
SMG

Super Twin Rod Cylinder
STR2

Linear Slide Cylinder
LCR

Table Type Rotary Actuator
GRC

Linear Slide Gripper
LSH

Parallel Gripper
LHAG

Compact Crab-shaped Parallel Gripper
HMF

Ultra Thin Parallel Gripper
HLD

Cylinder Switch

Precision Suction Plate
PVP

Fine Buffer
FBU2

Air Bearing Actuator
LBC

Pilot Operated 3, 5-Port Valve
4 G

Direct Acting 3-Port Valve
3QR

3, 5-port pilot operated valve, plug-in block manifold
TVG

Electric Actuators
EJSG/EBS-G / L/EBR-G / L/FLCR/ETS/ECS/EKS-L
* EBS-G/EBR-G is only available when a Controllers of ECG-A is connected.

Suction Pads
VSP

Vacuum Ejector
VSX/VSXM

Vacuum Filter
VSFU

Vacuum Regulator
VRA2000

Super heatless dryer
SHD

Polymer Membrane Air Dryer
SU

Super dryer (High polymer membrane air dryer)
SD

Nitrogen Gas Generator Unit
NS

Medium Size Main Line Filter
AF2

Air Filter
F 3000

Precision Regulator
RP/RPE

Electro-Pneumatic Regulator
EVD/EVR

Pressure Gauge
G40D/G41D/G49D/G50D

Digital Pressure Sensor
PPX

Compact flow rate sensor
FSM3

Residual Pressure Release Valve with Spool Position Detection Function
SNS

Speed Controller with Dial
DSC

Speed controller, elbow
SC3F

Fittings Tubal, tube

2, 3-port solenoid valve for dry air
AB/ADK-Z

Air Operated Valve for High Vacuum
AVB

Air Operated Valve for Chemicals
AMD Part 3R

Diaphragm Cylinder Valve
LAD

Air operated ball valve
CHB/CHG

Diaphragm Cylinder Valve
NAD

Compatible with more than 100 models
A line-up that can contribute to the evolving rechargeable battery manufacturing processes

The photos on this page are standard products. Appearance may differ from the actual P4 specification products. Long-life Compatible with rechargeable batteries cylinders P4-HP1 Series are also available. Refer to catalog CC-1421AA for details.

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited zone / Copper Ion Restricted (No copper/Pb Specification)

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited zone / Copper Ion Restricted (No copper/Pb Specification)

P5/P7 Series for clean components

Satisfies the various levels of clean room cleanliness in a wide range of fields.

Air-driven components system selection guide
When selecting the air drive components, which is the main product of the CKD clean components system, the model changes based on the cleanliness of the clean room and the location of the product within the clean room. Follow the selection guide to select the ideal model.
General Type Cylinder

Exhaust port
P7 Series **P5 Series**
Double rod packing is incorporated. Dust is discharged outside the clean room from the pipe discharged from the relief port in the middle section.

Vacuum treatment
P71 Series **P51 Series**
A relief port is provided on the sliding section of the piston rod on the outside of the rod packing. Dust is forcibly suction-discharged from this port with vacuum.

Guided Cylinder

Low particle generation exhaust port
P72 Series **P52 Series**
In the same way as the standard cylinder, in addition to the functions of the P7 and P5 Series, low-dust generating grease is used for the sliding parts (piston rod, guide rod, linear guide). The countermeasures for dust generation from the guide are grease-only.

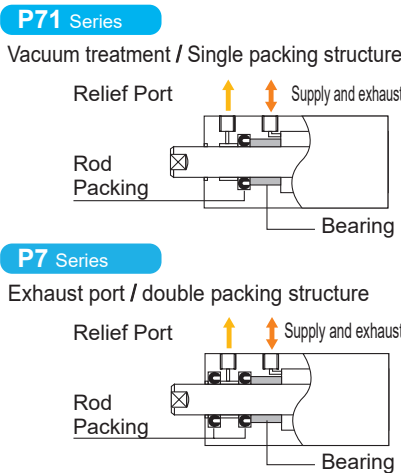
Low particle generation vacuum treatment
P73 Series **P53 Series**
In the same way as the standard cylinder, in addition to the functions of the P71 and P51 Series, low-dust grease is used for the sliding parts (piston rod, guide rod, linear guide). The countermeasures for dust generation from the guide are grease-only.

● Selection guide based on the relation between clean room cleanliness and installation zone
Refer to the table below for selection of a clean series based on the required class of workpiece surface, air flow around the workpiece and arrangement of the cylinders.

Model that slides only at the rod / Standard cylinder (P□/P□1 Series)

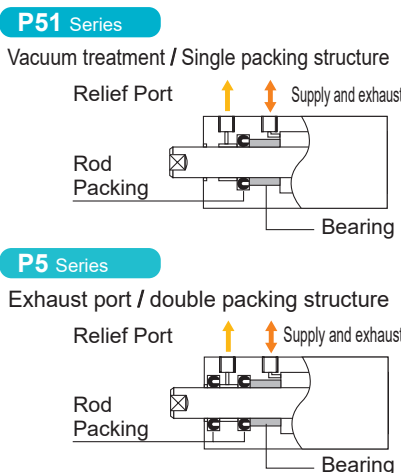
Pneumatic cylinder series that suppresses dust generation in clean rooms (P7 Series)

		A zone B zone C zone		
Workpiece surface demand class				
ISO standards		FED standards		
ISO4	10	P71 Series		
ISO5	10 ²	P7 Series		
ISO6	10 ³	Standard		
ISO7	10 ⁴			

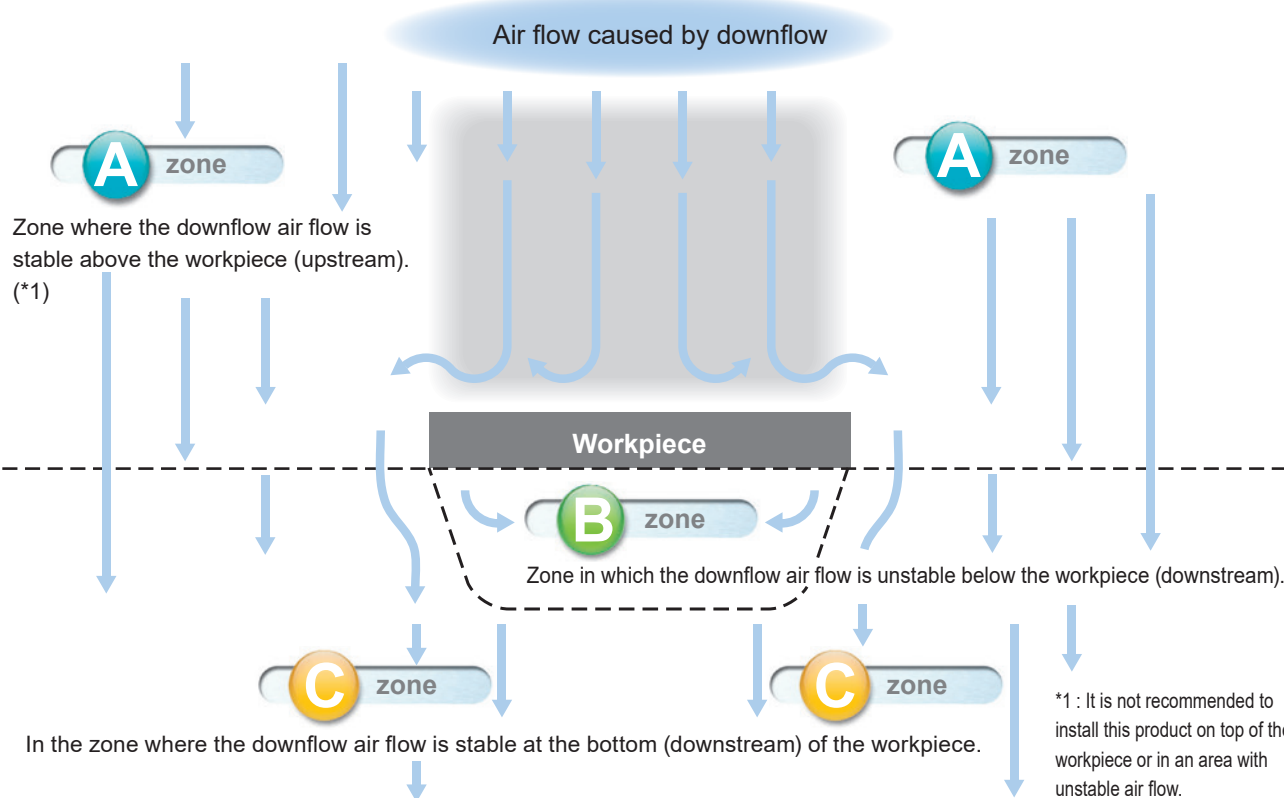


Pneumatic cylinder series (P5 Series) which suppresses dust generation in clean rooms and does not use copper-based, silicon-based, or halogen-based materials
Made-to-order product

		A zone B zone C zone		
Workpiece surface demand class				
ISO standards		FED standards		
ISO4	10	P51 Series		
ISO5	10 ²	P5 Series		
ISO6	10 ³	Option		
ISO7	10 ⁴			

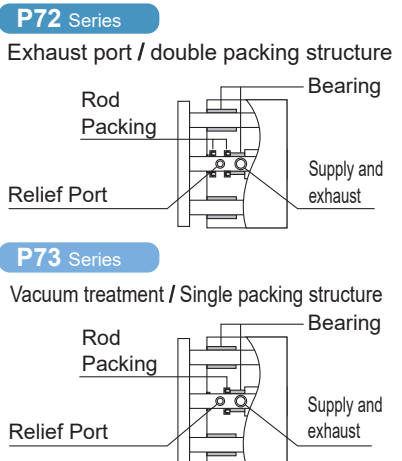


Influence of dust generation at the installation zone of the clean room



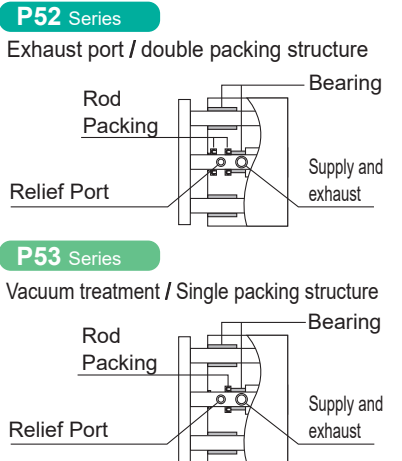
Pneumatic cylinder series that suppresses dust generation in clean rooms (P7 Series)

		A zone B zone C zone		
Workpiece surface demand class				
ISO standards		FED standards		
ISO4	10	P72 Series		
ISO5	10 ²	P73 Series		
ISO6	10 ³	Standard		
ISO7	10 ⁴			



Pneumatic cylinder series (P5 Series) that suppresses dust generation in clean rooms and does not use copper-based, silicon-based, or halogen-based materials
Made-to-order product

		A zone B zone C zone		
Workpiece surface demand class				
ISO standards		FED standards		
ISO4	10	P52 Series		
ISO5	10 ²	P53 Series		
ISO6	10 ³	Option		
ISO7	10 ⁴			



Zone A is not recommended because, with external sliding, the particle diameter of only the rod section tends to be larger than that of sliding.

Clean Components System Table

Major applications	Code	Basic Specifications		Applicable models and Remarks					
		Material Restrictions	Structure	Cylinder	Directional Control Valve	Control valve	Electronic/sensor	Filter Regulator	Fittings Tube, tube, and auxiliary device
Semiconductor/liquid crystal	P7	Fluorine grease used	Exhaust port Clean packaging	○	—	—	—	—	—
	P70	(Anti-dust generation)		—	Exhaust Treatment Clean packaging	—	Oil-prohibited	Fluorine grease used Exhaust Treatment Clean packaging	Fluorine grease or equivalent Without sealant Clean packaging
	P71	Fluorine grease used	Vacuum treatment Clean packaging	○	—	—	—	—	—
	P72	Fluorine grease used	Exhaust Treatment Low dust treatment of guide section Clean packaging (*1)	○	—	—	—	—	—
	P73	Fluorine grease used	Vacuum treatment Low dust treatment of guide section Clean packaging	○	—	—	—	—	—
	P80	Oil-prohibited	Clean packaging	—	—	—	○	Exhaust Treatment	Without sealant
	P90	Stainless steel Oil-prohibited	Clean packaging	—	—	Low dust treatment	—	Exhaust Treatment	Copper-based materials not available (all parts) without sealant
Clean + Material regulation	P5	Copper-based materials not available (sliding/flow path) Silicon-based materials not available Halogen-based materials not available	Exhaust Treatment Clean packaging	○	—	—	—	—	—
	P51	Copper-based materials not available (sliding/flow path) Silicon-based materials not available Halogen-based materials not available	Vacuum treatment Clean packaging	○	—	—	—	—	—
	P52	Copper-based materials not available (sliding/flow path) Silicon-based materials not available Halogen-based materials not available	Exhaust Treatment Low dust treatment of guide section Clean packaging	○	—	—	—	—	—
	P53	Copper-based materials not available (sliding/flow path) Silicon-based materials not available Halogen-based materials not available	Vacuum treatment Low dust treatment of guide section Clean packaging	○	—	—	—	—	—
	P74	Copper-based materials not available Silicon-based materials not available Halogen-based materials not available	Clean packaging	—	Exhaust Treatment	—	Copper-based materials not available (sliding/flow path) Oil-prohibited	Iron-based materials not available PTFE (Fluorine resin) not available Fluorine grease used Exhaust Treatment	Fluorine grease is not available Without sealant
	P84	Copper-based materials not available Silicon-based materials not available Halogen-based materials not available Oil-prohibited	Clean packaging	—	—	—	Copper-based materials not available (Sliding/flow path)	Fluorine grease used Exhaust Treatment	Fluorine grease is not available Without sealant
	P94	Copper-based materials not available Stainless steel Silicon-based materials not available Halogen-based materials not available Oil-prohibited	Clean packaging	—	—	—	○	Fluorine grease used Exhaust Treatment	—

*1:MRL2 Series has low dust generation at the sliding part

List of models of P5□/P7□ Series for Clean Components

Click here for detailed specifications

Catalog Name [No.]

components for clean room specifications [CB-033SAA]

WEB


Click!

Pencil Cylinder
SCPD3

Super Micro Cylinder
SCM

Super Compact Cylinder
SSD2

Small Direct Cylinder
MDC2

Super Mount Cylinder
SMG

Linear Slide Cylinder
LCM/LCR/LCG

Thin Linear Slide Cylinder
LCX

Guided Cylinder
STM/STG

Super Twin Rod Cylinder
STR2

Magnet Type Rodless Cylinder
MRL2

Table Type Rotary Actuator
GRC

Pilot Operated 3, 4-Port Valve
MN3E, MN4E

Pilot Operated 3, 5-Port Valve
4GA /4GB

Filter/Regulators/oil mist filter
W□000/W□100
F□000
M□000/MX□000
R□000/R□100

Inline Clean Filter
FCS500
FCS1000

Clean Exhaust Filter
FAC

Clean Regulator
RC2000

Precision Regulator
RP?000

Pressure gauge differential pressure gauge
G49D, G59D

Pressure gauge differential pressure gauge
GA400-8A

Parect Electro-Pneumatic Regulator
EV2100V

Low-profile Electro-Pneumatic Regulator
MEVT

Speed controller/needle valve
DSC/SC3R/SC3W/SC1
SCL2/SCD2/SCL2-N

Check Valve
CHL/CHV2

Quick Valve
2QV

Fittings/Tubing

Clean Air Unit
CAU30

Electronic pressure switch
PPE/PPD3-S

Compact Flow Sensor Rapiflow
FSM3

Pilot kick 2-port valve
ADK-Z

Specific Applications

High-durability components HP

Food manufacturing process FP

Outdoors WP

Rechargeable battery manufacturing process P4

Clean components P5 / P7

Oil-prohibited/Copper Ion Restricted (No copper/PTFE specification)

Oil-prohibited Components
(-P12 / RN□000 Series / -P80 / -P9□ / oil-prohibited specifications, oil-prohibited options)

Support by Category

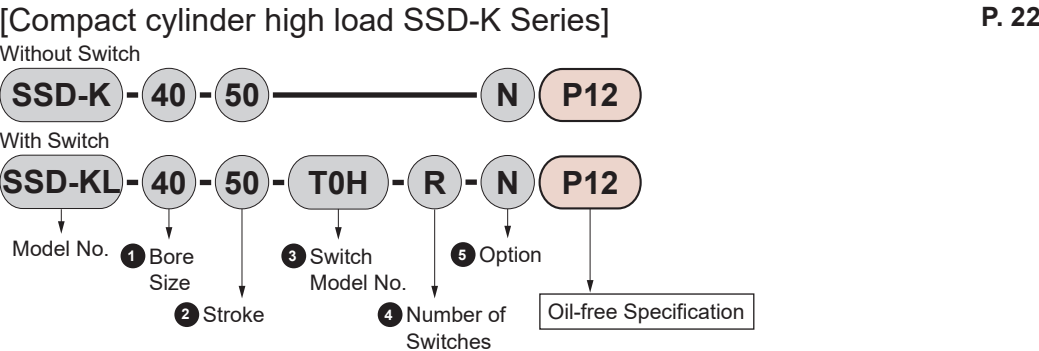
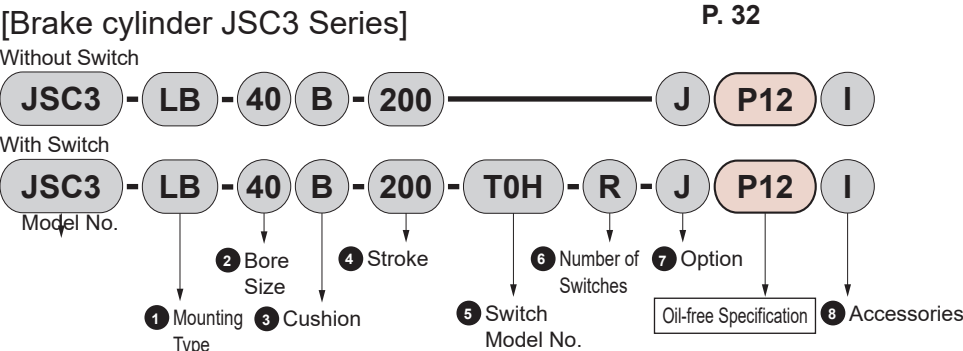
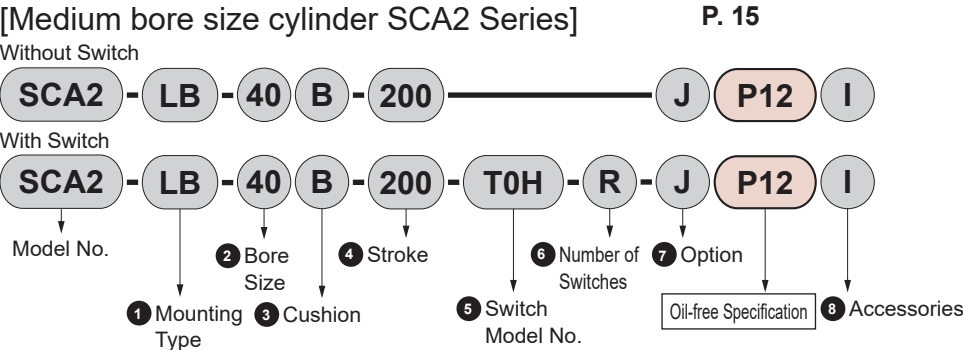
Pneumatic Cylinder

Oil-prohibited cylinder

Table with 2 columns: Features, Applications. Features include: Uses medicated white Vaseline. Non-polluting medicated white Vaseline is used. Uses solid lubricant bearing. Instead of typical oil-impregnated bearings, solid lubricant bearings that do not contain oil are used. Applications include: Oil-prohibited cylinder is suitable for use in painting lines where oil could cause painting faults, such as uneven colors, or in environments such as food manufacturing lines where splattered grease could cause problems.

Table with 9 columns: Model No., Actuation Method, Bore size mm, Standard stroke mm, Mounting Type, Cushion, Port Size Rc, Max. Operating Pressure MPa, Min. Operating Pressure (MPa). Rows include SCA2-P12, JSC3-P12, and SSD-K-P12 with various specifications for bore size, stroke, and pressure.

[Model No. Notation]



Oil-prohibited Components
(-P12 / RN□000 Series / -P80 / -P9□/ oil-prohibited specifications, oil-prohibited options)

Air Preparation Unit (F.R., pressure gauge, tube, Fittings , auxiliary components)

Degreased Regulator

Features/Applications	Model No.	Fluid	Click here for details
● All parts in the fluid passage area are degreased and washed, and use no grease. ● For liquid crystal, semiconductors, foodstuffs, electronic parts, etc.	RN3000 RN4000 RN8000 	Compressed Air	P. 211

Clean components Series Oil-prohibited

Features/Applications	Category	Fluid	Click here for details
* P80/P9 Clean components oil-prohibited processing	Filter/Regulators Fittings tube/comb/ auxiliary components	Compressed air nitrogen (part)	P. 227

Sensors/Controllers

Digital pressure sensor oil-prohibited type

Features/Applications	Model No.	Applicable Fluid	Click here for details
● All parts in the fluid passage area are degreased and washed, and use no grease. ● For liquid crystal, semiconductors, foodstuffs, electronic parts, etc.	PPX-P12 	Compressed air Non-corrosive gas	P. 267

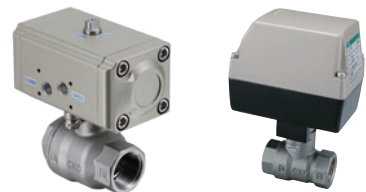
Clean components Series Oil-prohibited

Features/Applications	Model No.	Applicable Fluid	Click here for details
P80 clean components oil-prohibited	PPD3-P8□/P9□ 	Compressed air Non-corrosive gas Compressed air (including water and drain)	P. 267
	PPE-P80 	Compressed air Non-corrosive gas	P. 267
	FSM3-P80 	Compressed air, nitrogen carbon dioxide, argon mixed gas (argon + carbon dioxide) oxygen *1	P. 271

*1: Stainless steel body only

Fluid Control Valves

Solenoid valve/ball valve (air operated/motorized) oil-prohibited option

Features/Applications	Model No.	Fluid	Click here for details
Oil-prohibited option available	Solenoid Valve [EXA/USB/USG/FFB/FFG] [AB/AG/AP/AD/APK/ADK/SPK] 	Compressed air Dry air/low vacuum water/hot water/ steam kerosene/oil *2	P. 335
	Ball Valve [CHB/CHG/MXB/MXG] 		

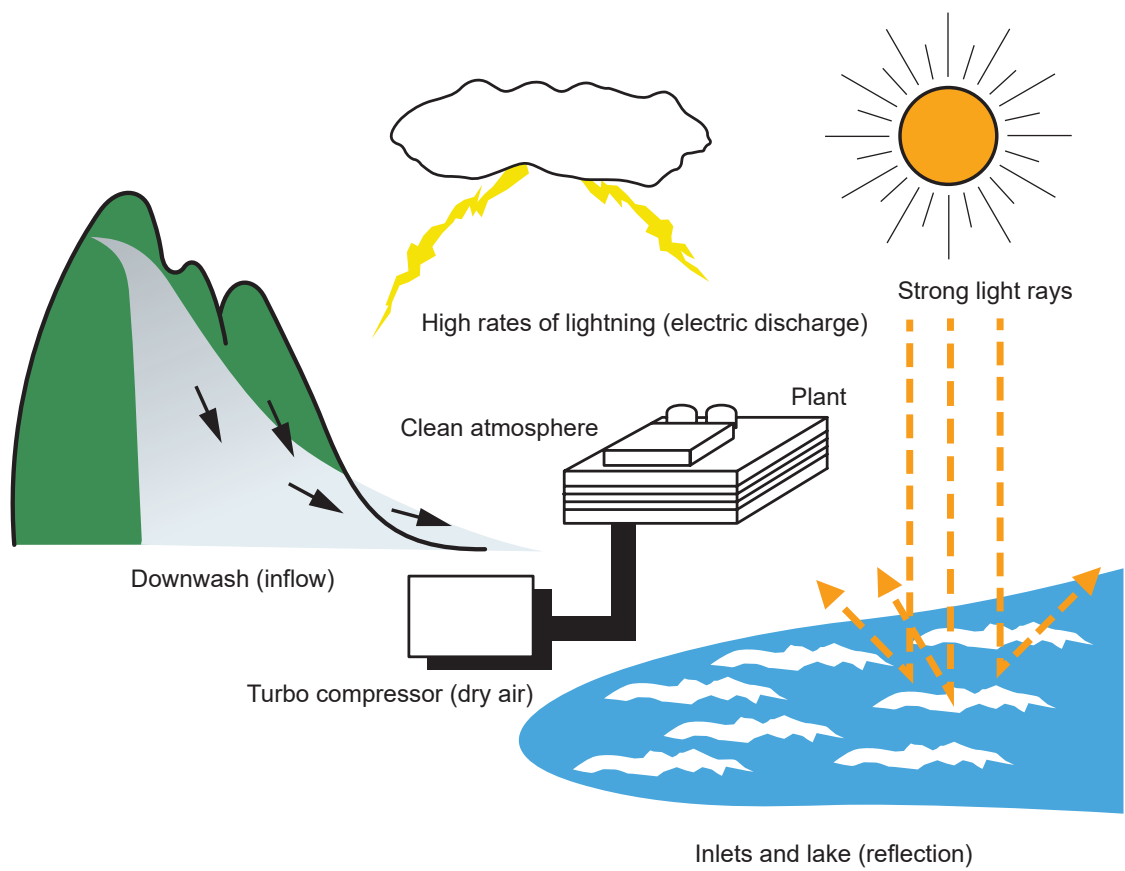
Air operated valve flow path grease-free

Features/Applications	Model No.	Fluid	Click here for details
Flow path grease-free	Diaphragm Cylinder Valve [LAD/NAD] 	Water/pure water Compressed air/ nitrogen Non-corrosive/ non-absorbable fluid *3	P. 335

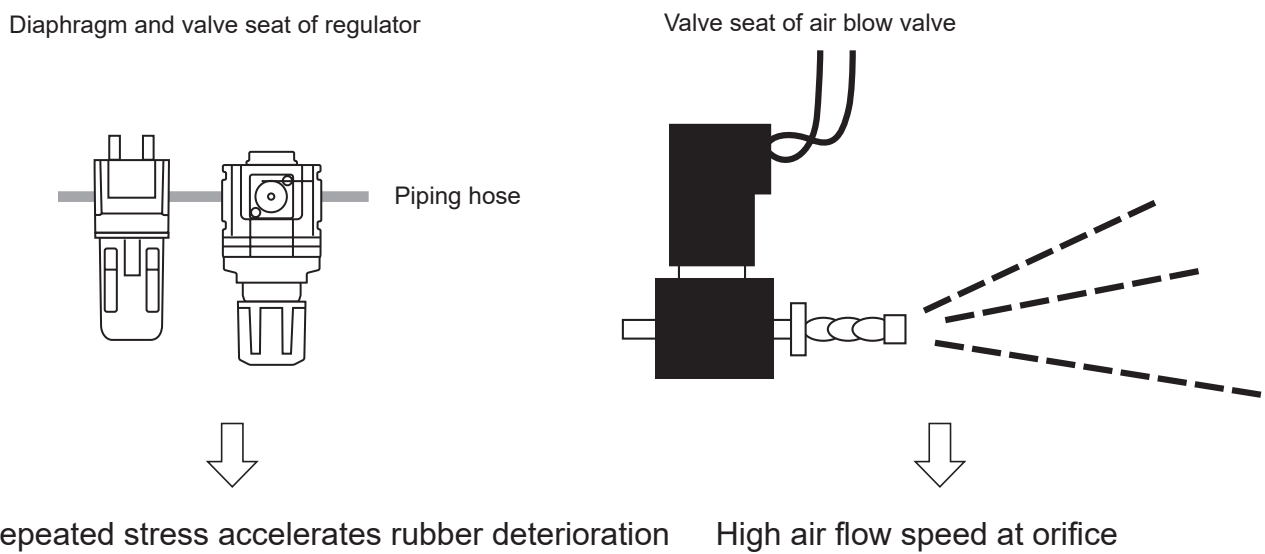
*2: Differs depending on the model No. and options.
*3: Check the compatibility of product structural materials, working fluids and atmosphere. Strong acids and highly absorbable fluids cannot be used.

Ozone-proof (-P11)

Plant environments easily affected by ozone



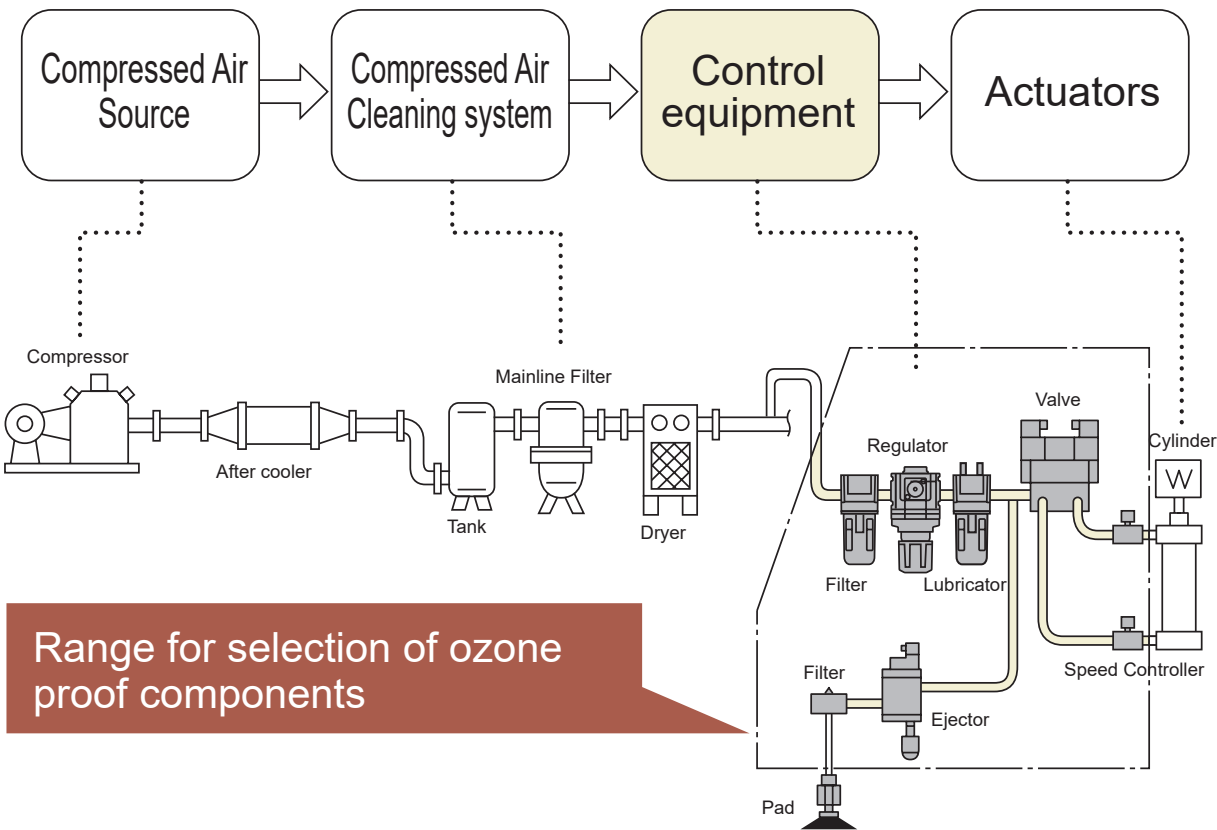
Pneumatic components affected by ozone



Ozone proof component selection range

A typical pneumatic component system consists of the following devices.

Devices in require ozone countermeasures.



Range for selection of ozone proof components

Notes on Use

Ozone-proof components use fluoro rubber or hydrogenated nitrile rubber for rubber parts. Therefore, special working environments and conditions that differ from the Standard Product must be considered when evaluating performance and service life.

Air Preparation Unit (Siloxane/Ozone Removers)

Model No./Appearance	Details
SFX	P. 221

Ozone countermeasures

A remover specialized for the adsorption of siloxane and the ozone decomposition. With a high removal ratio of 99%, it can be used at high flow rates with compressed air and nitrogen gas pressurized.

Ozone-proof (-P11)

Support by Category

Pneumatic Cylinder

Available as standard specifications.

Directional Control Valve

A directional control valve is available as follows:

- Option
Ozone-proof specifications are available as an option.
- -P11 compatible
By attaching -P11 at the end of the model number, it corresponds to the specifications compatible with ozone. (Custom product)

Ozone countermeasures

The material of the rubber parts differs from Standard Products.
(Dimensions are the same as for Standard Products.)

Option applicable model

Series		Model No.	Model number indication method
4G Series	4, 5-Port Valve	4G□ ^A _B	Selectable with option code A. Example) Single unit [Model No.] [Switching position class] - [Port size] - [Electrical connections] [Option] A - [Rated voltage]
		M4G ^A _B □	
	3-port valve	MN4G ^A _B □	
		3G ^A _B □	
W4G2 Series	4, 5-Port Valve	M3G ^A _B □	Example) Manifold [Model No.] [Switching position class] - [Port size] - [Electrical connections] [Option] A - [Station No.] - [Rated voltage]
		MN3G ^A _B □	
	3-port valve	W4GB2□	
		MW4G ^A ₂ □	
MN4E0 Series	4-Port Valve	MW3GA2□	
	3-port valve	MN4E0□	
	3-port valve	MN3E0□	

-P11 compatible model

Series		Model No.	Model number indication method
4S0 Series	5-Port Valve	4S ^A ₀ □ M4S ^A ₀ □	Available by adding -P11 at the end of the model No. (Custom product) Example) Discrete [Model No.] [Switching position class] - [Port size] - [Manual override] [Electrical connections] [Option] - [Rated voltage] -P11
4K Series	4, 5-Port Valve	4K ^A _B □	
		M4K ^A _B □	
	3-port valve	MN4KB □	
3M Series	3-port valve	3KA□	Example) Manifold [Model No.] [Switching position class] - [Port size] - [Manual override] [Electrical connections] [Option] - [Station No.] - [Rated voltage] - P11
		M3KA□	
	3-port valve	3M 0 ^A _B □	
3P Series	3-Port	M3M ^A ₀ □	
		3P ^A _B □	
	3-Port	M3P ^A _B □	

Air Preparation Unit (F.R.L.)

Refer to the "How to order" of each model (page 221).

Fittings Auxiliary components (speed controller, kai)

Pneumatic auxiliary components are available as follows:

- Option
Ozone-proof specifications are available as an option.
- -P11 compatible
By attaching -P11 at the end of the model number, it corresponds to the specifications compatible with ozone. (Custom product)

Ozone countermeasures

The material of the rubber parts differs from Standard Products.
(Dimensions are the same as for Standard Products.)

Option applicable model

Series	Model No.	Model number indication method
Speed controller Medium bore size	SC1	Selectable with option code "X1" SC1-[Piping port size]-X 1

-P11 compatible model

Series	Model No.	Model number indication method
Speed controller direct piping/elbow	SC3R	SC3R - [Piping port size] - [Option] P11
Speed controller, elbow with push-in fitting	SC3W	SC3W - [Piping size] - [Compatible tube O.D.] - [Option] P11
Ultra-compact Joint	F	F[Shape] [Flow path shape] [Compatible tube] - [Piping size] - P11
New-Joint	GW	GW [Shape] [Compatible tube] - [Piping size] - [Other combination] - P11
New Joint Stainless Steel Type	ZW	ZW-[Shape][Compatible tube O.D.]-[Piping size]-P11

* The following models are available as standard.
Silencer SLM/SLW Series, stainless steel tightening fitting ZJ Series, tube F.U.KX

Sensor

* The following models are available as standard.
• Mechanical Pressure Switches (reed switch compact pressure switch) P□100 Series
• Pressure switch P4000 Series
• PPD3-S-□P70/P80/P90

Copper ion compatible (copper and PTFE free) (-P6)

Copper and PTFE free

memo

Features/Applications	Product Category
-P6 Copper ion prevention treatment pneumatic components for liquid crystal equipment, etc.	Pneumatic cylinder/directional control valve F.R.L/pressure gauge Fittings /speed controller Silencer/tube

Specific Applications

High-durability
components HP

Food manufacturing
process FP

Outdoors WP

Rechargeable battery
manufacturing process P4

Clean components
P5 / P7

Oil-prohibited zone / Copper Ion
Restricted (No copper/PTFE Specification)

Specific Applications

High-durability
components HP

Food manufacturing
process FP

Outdoors WP

Rechargeable battery
manufacturing process P4

Clean components
P5 / P7

Oil-prohibited zone / Copper Ion
Restricted (No copper/PTFE Specification)

Product Category

Actuators, Pneumatic Cylinders	
Actuators - Electric Actuators	
Directional Control Valve	
Air Preparation Equipment	
Auxiliary Components, Speed Controllers, Silencers, Fittings, Tubing	
Sensors/Controllers	P. 263
Main Line Components/Nitrogen Gas Generators	P. 279
Precision Components	P. 311
Vacuum Components	P. 327
Fluid Control Valves	P. 343
Fine System Components (For pure water, chemicals, process gas)	P. 427
Software (Image Processing/Equipment Control)	P. 463

Specific Applications

High Durability Components HP Series	P. 453
For Food Manufacturing Processes - FP Series	P. 461
For Outdoor Use - WP Series	P. 467
For Rechargeable Battery Manufacturing Processes - P4 Series	P. 471
For Clean Environment Components P5/P7 Series	P. 477
Others P12, P8, P9, P11, P6 (Oil-free, ozone resistant, copper ion restricted)	P. 481

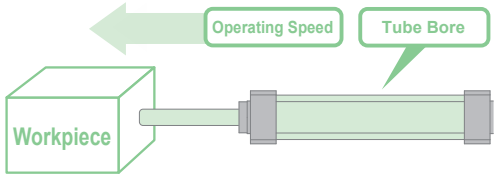
Select Tube Inner Diameter and Peripheral Pneumatic Components from the Table

Easy selection even for beginners! Overview of 2 selections

1

After determining the cylinder tube inner diameter and operating speed, select the peripheral pneumatic equipment.

Ending 3



Method for selecting based on cylinder tube inner diameter and operating speed

Ending 3

STEP 1: Confirm conditions□Select theoretical reference speed

STEP 2: Select control equipment

STEP 3: Select F.R.L. from required flow rate

Supplementary Material: Explanation of Technical Terms

Ending 13

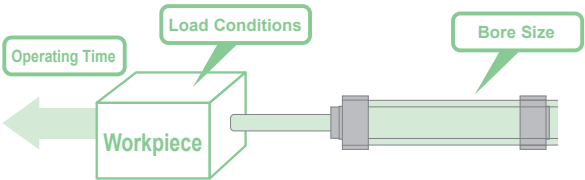
Supplementary Material: Standard system combination of directional control valve and cylinder (Example)

Ending 15

2

Determine the tube inner diameter and select peripheral pneumatic equipment based on the load on the cylinder and operating time.

Ending 17



Method for selecting from load value and operating time

Ending 17

STEP 2: Select cylinder inner diameter

STEP 3: Select theoretical reference speed

STEP 4: Select appropriate system

STEP 5: Select appropriate equipment

Supplementary Material: Effective cross-sectional area of steel pipes/nylon tubes and recommended maximum flow rate table for gas pipes

Ending 25

1

After determining the cylinder tube inner diameter and operating speed, select the peripheral pneumatic equipment.

Confirmation Flow

STEP 1 Confirm Conditions

STEP 2 Select appropriate control equipment and required flow rate

STEP 3 Select FRL or FR unit from the required flow rate

Confirmation of method for selecting based on cylinder tube inner diameter and operating speed

STEP 1

Confirm Conditions

Bore Size

Theoretical Reference Speed

Table-1

Degree of cylinder speed	Low Speed	Medium Speed	High Speed	Ultra High Speed
Theoretical Reference Speed (mm/s)	250	500	750	1,000

As conditions, assume that the cylinder tube inner diameter to be used and whether to operate the cylinder at a relatively high speed or a relatively low speed are determined. Use Table-1 as a guide to select the theoretical reference speed value for the cylinder.

- ① [Bore Size]
Tube inner diameter is determined
- ② [Theoretical Reference Speed]
Whether to operate at a relatively high speed or a low speed is determined

STEP 2

Select appropriate control equipment and required flow rate

Required Flow Rate

Appropriate Control Equipment

Refer to Table 2 and select the cylinder bore size corresponding to the theoretical reference speed. Read the appropriate control components (directional control valve, speed controller, silencer, piping) and [required flow rate] value.

Table-2		②	③	④										See Table-2 for details → Go to Ending 5	
Tube Inner Diameter (mm)	Theoretical Reference Speed (mm/s)	Required Flow Rate (L/min) (ANR)	Required Synthesis Effective Area (mm²)	Appropriate Control Equipment								Pneumatic Aux.	Tubing (mm)		
				Directional Control Valve		Double Solenoid		Speed Controller		Pneumatic Aux.					
				Single solenoid						Speed Controller					
ø6	500	-	0.1	MN4E010 4SA010/4SB010		MN4E020 4SA020/4SB020		SC3W-M5-4		SLM-M5, SLM-M3		ø4 × ø2.5 nylon tube			
	500	14	0.2	MN4E010 4SA010/4SB010		MN4E020 4SA020/4SB020		SC3W-M5-4		SLM-M5, SLM-M3		ø4 × ø2.5 nylon tube			
	500	36	0.5	MN4E010 4SA010/4SB010		MN4E020 4SA020/4SB020		SC3W-M5-4		SLM-M5, SLM-M3		ø4 × ø2.5 nylon tube			
	250	29	0.5	4KA110/4KB110 4GA110R/4GB110R		4KA120/4KB120 4GA120R/4GB120R		SC3W-6-6 SCL2-06-H66		SLM-M5, SLW-6A		ø6 × ø4 nylon tube			
ø20	500	56	0.9	4KA110/4KB110		4KA120/4KB120		SC3W-6-6		SLM-M5, SLW-6A		ø6 × ø4 nylon tube			
	750	84	1.4	4GA110R/4GB110R		4GA120R/4GB120R		SC3W-6-6		SLM-M5, SLW-6A		ø6 × ø4 nylon tube			
	1,000	112	1.8					SCL2-06-H66							
ø25	250	44	0.8	4KA110/4KB110		4KA120/4KB120		SC3W-6-6							
	500	88	1.4	4GA110R/4GB110R		4GA120R/4GB120R		SCL2-06-H66		SLM-M5, SLW-6A		ø6 × ø4 nylon tube			
	750	132	2.1	4KB110/4GB110R		4KB120/4GB120R		SC1-6		SLW-6A, SLM-M5		ø8 × ø5.7 nylon tube			
	1,000	175	2.8	4KB210/4GB210R		4KB220/4GB220R		SCL2-08-H88		SLW-6S, SLW-6A		ø8 × ø5.7 nylon tube			
ø32	250	73	1.3	4KA110/4KB110 4GA110R/4GB110R		4KA120/4KB120 4GA120R/4GB120R		SC3W-6-6 SCL2-06-H66		SLM-M5, SLW-6A		ø6 × ø4 nylon tube			
	500	143	2.9	4KA210/4KB210		4KA220/4KB220									
	750	215	3.5	4GA210R/4GB210R		4GA220R/4GB220R		SC1-6		SLW-6S, SLW-6A		ø8 × ø5.7 nylon tube			
	1,000	285	4.6							SCL2-08-H88					

- ③ [Required Flow Rate]
Read the required flow rate value
- ④ [Appropriate Control Equipment]
Select directional control valve, speed controller, silencer, piping

STEP 3

Select F.R.L. or FR unit from the required flow rate

F.R.L./FR

Max. Flow Rate

Table-3

F.R.L. Kit					
Model No.	Connection Port Size	Max. Flow Rate (l/min)	Model No.	Connection Port Size	Max. Flow Rate (l/min)
C1000-6-W	Rc1/8	450	W1000-6-W	Rc1/8	800
C1000-8-W	Rc1/4	630	W1000-8-W	Rc1/4	1,150
C2000-8-W	Rc1/4	1,200	W2000-8-W	Rc1/4	1,500
C2000-10-W	Rc3/8	1,700	W2000-10-W	Rc3/8	2,000
C2500-8-W	Rc1/4	1,200	W3000-8-W	Rc1/4	2,150
C2500-10-W	Rc3/8	1,700	W3000-10-W	Rc3/8	2,430
C3000-8-W	Rc1/4	1,280	W4000-8-W	Rc1/4	2,500
C3000-10-W	Rc3/8	1,750	W4000-10-W	Rc3/8	4,350
C4000-8-W	Rc1/4	1,430	W4000-15-W	Rc1/2	4,750
C4000-10-W	Rc3/8	2,400	W8000-20-W	Rc 3/4	10,000
C4000-15-W	Rc1/2	3,000	W8000-25-W	Rc 1	10,000
C6500-20-W	Rc 3/4	4,500	B7019-1C	Rc1/8	500
C6500-25-W	Rc 1	5,000	B7019-2C	Rc1/4	900
C8000-20-W	Rc 3/4	7,000			
C8000-25-W	Rc 1	7,500			

According to Table-3, select equipment where the [Maximum Flow Rate] is greater than or equal to the [Required Flow Rate]. When controlling multiple cylinders with one set of F.R.L., select an F.R.L. where the [Maximum Flow Rate] is greater than or equal to the [Total Required Flow Rate].

* The relationship between the cylinder bore size and speed of the directional control valve (4G Series/4K Series) is shown in the graph. Standard System Combination of Directional Control Valve and Cylinder (Example) (POO)

- ⑤ [F.R.L.][FR]
Select F.R.L./FR model number from the maximum flow rate value
- ⑥ [Max. Flow Rate]
The value of [Maximum Flow Rate] confirmed in STEP 2
Confirm that it is greater than or equal to the total [Required Flow Rate]

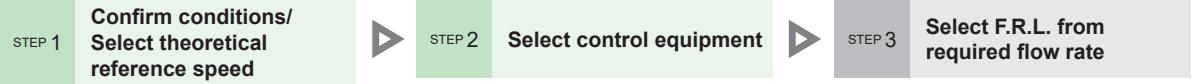
Supplementary Notes

- 1 The average speed of the cylinder can be determined by the combination of the directional control valve and piping system. It is expressed as the piston speed of the cylinder, which is calculated by dividing the stroke by the time from when the piston rod starts moving until it moves, with the cylinder rod mounted upwards. At a load factor of 50%, it should be approximately cylinder piston speed × 0.5. (Refer to page Ending 21 for the relationship between load factor and theoretical reference speed.)
- 2 The theoretical reference speed of a cylinder is the value when a single cylinder is operated independently.
- 3 The effective cross-sectional area of the valve used in the calculation in Table-2 is the value for 2 positions.
- 4 This selection guide is a guideline. It does not guarantee operation.

1

After determining the cylinder tube inner diameter and operating speed, select the peripheral pneumatic equipment.

Confirmation Flow



STEP 1

Confirm conditions/Select theoretical reference speed

Assume that the cylinder tube inner diameter to be used and whether to operate the cylinder at a relatively high speed or a relatively low speed are determined.

Table-1

Degree of cylinder speed	Low Speed	Medium Speed	High Speed	Ultra High Speed
Theoretical Reference Speed (mm/s)	250	500	750	1,000

STEP 2

Select control equipment

Read the appropriate control equipment (valve, speed controller, silencer, piping) and [Required Flow Rate] for the theoretical reference speed based on the tube inner diameter and Table-1.

Table-2

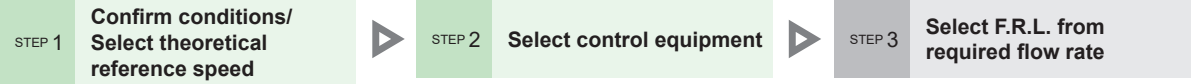
Note 1: For piping specifications, refer to Ending 25.

Tube Inner Diameter (mm)	Theoretical Reference Speed (mm/s) Note)	Required Flow Rate (L/min) (ANR)	Required composite effective sectional area (mm ²)	Appropriate Control Equipment					
				Directional Control Valve		Pneumatic Auxiliary Component			Piping ^{*1}
				Single solenoid		Double Solenoid	Speed Controller	Silencer	Piping (between valve and cylinder)
ø6	500	-	0.1	MN4E010 4SA010 / 4SB010		MN4E020 4SA020 / 4SB020	SC3W-M5-4	SLM-M5, SLM-M3	ø4 × ø2.5 nylon tube
ø10	500	14	0.2	MN4E010 4SA010 / 4SB010		MN4E020 4SA020 / 4SB020	SC3W-M5-4	SLM-M5, SLM-M3	ø4 × ø2.5 nylon tube
ø16	500	36	0.5	MN4E010 4SA010 / 4SB010		MN4E020 4SA020 / 4SB020	SC3W-M5-4	SLM-M5, SLM-M3	ø4 × ø2.5 nylon tube
ø20	250	29	0.5						
	500	56	0.9	TVG1-1B00XX3-HP1 4GA110R / 4GB110R		TVG1-2B00XX3-HP1 4GA120R / 4GB120R	SC3W-6-6 SCL2-06-H66	SLM-M5, SLW-6A	ø6 × ø4 nylon tube
	750	84	1.4						
	1,000	112	1.8						
ø25	250	44	0.8	TVG1-1B00XX3-HP1 4GA110R / 4GB110R		TVG1-2B00XX3-HP1 4GA120R / 4GB120R	SC3W-6-6	SLM-M5, SLW-6A	ø6 × ø4 nylon tube
	500	88	1.4				SCL2-06-H66		
	750	132	2.1	TVG1-1B00XX3-HP1 4GB110R		TVG1-2B00XX3-HP1 4GB120R	SC1-6	SLW-6A, SL-M5	ø8 × ø5.7 nylon tube
	1,000	175	2.8	TVG1-2B00XX3-HP1 4GB210R		TVG2-2B00XX3-HP1 4GB220R	SCL2-08-H88	SLW-6S, SLW-6A	ø8 × ø5.7 nylon tube
ø32	250	73	1.3	TVG1-1B00XX3-HP1 4GA110R / 4GB110R		TVG1-2B00XX3-HP1 4GA120R / 4GB120R	SC3W-6-6 SCL2-06-H66	SLM-M5, SLW-6A	ø6 × ø4 nylon tube
	500	143	2.9						
	750	215	3.5	TVG2-1B00XX3 - HP1 4GA210R / 4GB210R		TVG2-2B00XX3-HP1 220R / 4GB220R	SC1-6	SLW-6S, SLW-6A	ø8 × ø5.7 nylon tube
	1,000	286	4.6				SCL2-08-H88		

*1: The table above shows the theoretical reference speed for cylinder inner diameters. For the usable piston speed range of each product, refer to the individual specifications for each model.
*2: The conversion between effective cross-sectional area S and sonic conductance C is $S \approx 5.0 \times C$.

After determining the cylinder tube inner diameter and operating speed, select the peripheral pneumatic equipment.

Confirmation Flow



STEP 1 Confirm conditions/Select theoretical reference speed

Assume that the cylinder tube inner diameter to be used and whether to operate the cylinder at a relatively high speed or a relatively low speed are determined.

Table-1

Degree of cylinder speed	Low Speed	Medium Speed	High Speed	Ultra High Speed
Theoretical Reference Speed (mm/s)	250	500	750	1,000

STEP 2 Select control equipment

Read the appropriate control equipment (valve, speed controller, silencer, piping) and [Required Flow Rate] for the theoretical reference speed based on the tube inner diameter and Table-1.

Table-2

Note 1: For piping specifications, refer to Ending 25.

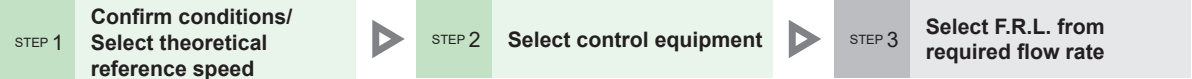
Tube Inner Diameter (mm)	Theoretical Reference Speed (mm/s) Note)	Required Flow Rate (L/min) (ANR)	Required composite effective sectional area (mm ²)	Appropriate Control Equipment					
				Directional Control Valve			Pneumatic Auxiliary Component		Piping Note 1
				Single solenoid		Double Solenoid	Speed Controller	Silencer	Piping (between valve and cylinder)
ø40	250	110	1.7				SC3W-6-6 SCL2-06-H66	SLM-M5, SLW-6A	ø6xø4 Nylon Tube
	500	230	3.3	TVG2-1B00XX3 - HP1		TVG2-2B00XX3-HP1	SC1-6 SCL2-08-H88	SLW-6S, SLW-6A	ø8xø5.7 Nylon Tube
	750	340	5.0	4GA210R / 4GB210R		4GA220R / 4GB220R	SC1-8	SLW-8A, SLW-6A	ø10xø7.2 Nylon Tube
	1,000	450	6.6				SC1-8	SLW-8A, SLW-8S	ø10xø7.2 Nylon Tube
ø50	250	180	2.6	TVG2-1B00XX3 - HP1		TVG2-2B00XX3-HP1	SC1-6 SCL2-08-H88	SLW-6A, SLW-6S	ø8xø5.7 Nylon Tube
	500	350	5.2	4GA210R / 4GB210R		4GA220R / 4GB220R	SC1-8	SLW-8A, SLW-6A	ø10xø7.2 Nylon Tube
	750	530	7.7	4GA310R / 4GB310R		4GA320R / 4GB320R	SCL2-10-H1010	SLW-8A, SLW-8S	ø10xø7.2 Nylon Tube
	1,000	710	10.4	4GA310R / 4GB310R 4F310 / 4F410		4GA320R / 4GB320R 4F320 / 4F420	SC1-10	SLW-10A	ø15xø11.5 Nylon Tube or Rc3/8 Steel Pipe
ø63	250	280	4.1	4GA310R / 4GB310R		4GA320R / 4GB320R	SC1-6 SCL2-08-H88	SLW-6S, SLW-6A	ø8xø5.7 Nylon Tube
	500	560	8.2				SC1-8 SCL2-10-H1010	SLW-8A, SLW-8S	ø10xø7.2 Nylon Tube
	750	840	12.3	4F310 / 4F410		4F320 / 4F420	SC1-10	SLW-10A	ø15xø11.5 Nylon Tube or Rc3/8 Steel Pipe
	1,000	1,100	16.4	4F510		4F520	SC1-15	SLW-15A	Rc1/2 Steel Pipe
ø80	250	450	6.6	4F210-08		4F220-08	SC1-8 SCL2-10-H1010	SLW-8A, SLW-8S	ø10xø7.2 Nylon Tube
	500	910	13.2	4F410-10 / 4F310-10		4F420-10 / 4F320-10	SC1-10	SLW-10A	ø15xø11.5 Nylon Tube or Rc3/8 Steel Pipe
	750	1,400	19.8	4F510-15		4F520-15	SC1-15	SLW-15A	Rc1/2 Steel Pipe
	1,000	1,800	26.4				SC-20A	SLW-15A	Rc1/2 Steel Pipe
ø100	250	710	10.3	4GA410-10 / 4GB410-10 4F410-10 / 4F310-10		4GA420-10 / 4GB420-10 4F420-10 / 4F320-10	SC1-10	SLW-10A	ø15xø11.5 Nylon Tube or Rc3/8 Steel Pipe
	500	1,400	20.6	4GB410-15		4GB420-15	SC1-15	SLW-15A	Rc1/2 Steel Pipe
	750	2,100	30.9	4F510-15		4F520-15	SC-20A	SLW-15A	Rc1/2 Steel Pipe
	1,000	2,800	41.2	4F610-20		4F620-20	SC-20A	SL-20A, SLW-20S	Rc3/4 Steel Pipe

*1: The table above shows the theoretical reference speed for cylinder inner diameters. For the usable piston speed range of each product, refer to the individual specifications for each model.
*2: The conversion between effective cross-sectional area S and sonic conductance C is $S \approx 5.0 \times C$.

1

After determining the cylinder tube inner diameter and operating speed, select the peripheral pneumatic equipment.

Confirmation Flow



STEP 1

Confirm conditions/Select theoretical reference speed

Assume that the cylinder tube inner diameter to be used and whether to operate the cylinder at a relatively high speed or a relatively low speed are determined.

Table-1

Degree of cylinder speed	Low Speed	Medium Speed	High Speed	Ultra High Speed
Theoretical Reference Speed (mm/s)	250	500	750	1,000

STEP 2

Select control equipment

Read the appropriate control equipment (valve, speed controller, silencer, piping) and [Required Flow Rate] for the theoretical reference speed based on the tube inner diameter and Table-1.

Table-2

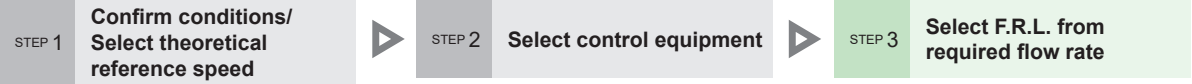
Note 1: For piping specifications, refer to Ending 25.

Tube Inner Diameter (mm)	Theoretical Reference Speed (mm/s) Note)	Required Flow Rate (L/min) (ANR)	Required composite effective sectional area (mm²)	Appropriate Control Equipment					
				Directional Control Valve		Pneumatic Auxiliary Component			Piping *1
				Single solenoid		Double Solenoid	Speed Controller	Silencer	Piping (between valve and cylinder)
ø125	250	1,100	16.1	4GB410-15 4KB410-15 / 4F510-15		4GB420-15 4KB420-15 / 4F520-15	SC1-15	SLW-15A	Rc1/2 Steel Pipe
	500	2,200	32.2				SC-20A	SLW-15A	Rc1/2 Steel Pipe
	750	3,300	48.2	4F610-20		4F620-20	SC-20A	SL-20A, SLW-20S	Rc3/4 Steel Pipe
	1,000	4,400	64.4				SC-20A	SL-20A	Rc3/4 Steel Pipe
ø140	250	1,400	20.2	4GB410-15 4KB410-15 / 4F510-15		4GB420-15 4KB420-15 / 4F520-15	SC1-15	SLW-15A	Rc1/2 Steel Pipe
	500	2,800	40.4					SL-20A, SLW-20S	Rc3/4 Steel Pipe
	750	4,200	60.5	4F610-20		4F620-20	SC-20A	SL-20A	Rc3/4 Steel Pipe
	1,000	5,500	80.8	4F710-25		4F720-25	SC-20A	SL-25A	Rc1 Steel Pipe
ø160	250	1,800	26.3	4GB410-15 4KB410-15 / 4F510-15		4GB420-15 4KB420-15 / 4F520-15	SC-20A	SLW-15A	Rc1/2 Steel Pipe
	500	3,600	52.6	4F610-20		4F620-20	SC-20A	SL-20A	Rc3/4 Steel Pipe
	750	5,400	79.0	4F710-20		4F720-20	SC-20A	SL-20A	Rc3/4 Steel Pipe
	1,000	7,200	104.7	-		-	-	-	-
ø180	250	2,300	33.3	4KB410-15 4F510-15		4KB420-15 4F520-15	SC-20A	SLW-15A	Rc1/2 Steel Pipe
	500	4,600	66.6	4F710-20		4F720-20	SC-20A	SL-20A	Rc3/4 Steel Pipe
	750	6,900	100.0	4F710-25		4F720-25	SC-25A	SL-25A	Rc1 Steel Pipe
	1,000	9,200	132.5	-		-	-	-	-
ø200	250	2,800	41.2	4F610-20		4F620-20	SC-20A	SL-20A, SLW-20S	Rc3/4 Steel Pipe
	500	5,600	82.4	4F710-25		4F720-25	SC-25A	SL-25A	Rc1 Steel Pipe
	750	8,400	122.7	-		-	-	-	-
	1,000	11,200	163.6	-		-	-	-	-
ø250	250	4,400	64.3	4F710-20		4F720-20	SC-20A	SL-20A	Rc3/4 Steel Pipe
	400	7,000	103.0	4F710-25		4F720-25	SC-25A	SL-25A	Rc1 Steel Pipe
	750	13,200	191.7	-		-	-	-	-
	1,000	17,600	255.6	-		-	-	-	-

*1: The table above shows the theoretical reference speed for cylinder inner diameters. For the usable piston speed range of each product, refer to the individual specifications for each model.
*2: The conversion between effective cross-sectional area S and sonic conductance C is $S \approx 5.0 \times C$.

After determining the cylinder tube inner diameter and operating speed, select the peripheral pneumatic equipment.

Confirmation Flow



STEP 3 Select F.R.L. from required flow rate

Select equipment where the maximum flow rate is greater than or equal to the [Required Flow Rate] in Table-2.
When controlling multiple cylinders with one set of clean air system equipment, select equipment where the [Required Flow Rate Total] is greater than or equal to the total required flow rate.

Table-3

F.R.L. Kit			F/R Unit		
Model No.	Connection Port Size	Max. Flow Rate L/min Atmospheric pressure conversion	Model No.	Connection Port Size	Max. Flow Rate L/min Atmospheric pressure conversion
C1000-6-W	Rc1/8	450	W1000-6-W	Rc1/8	800
C1000-8-W	Rc1/4	630	W1000-8-W	Rc1/4	1,150
C2000-8-W	Rc1/4	1,200	W2000-8-W	Rc1/4	1,500
C2000-10-W	Rc3/8	1,700	W2000-10-W	Rc3/8	2,000
C2500-8-W	Rc1/4	1,200	W3000-8-W	Rc1/4	2,150
C2500-10-W	Rc3/8	1,700	W3000-10-W	Rc3/8	2,430
C3000-8-W	Rc1/4	1,280	W3000-15-W	Rc1/2	2,430
C3000-10-W	Rc3/8	1,750	W4000-8-W	Rc1/4	2,500
C4000-8-W	Rc1/4	1,430	W4000-10-W	Rc3/8	4,350
C4000-10-W	Rc3/8	2,400	W4000-15-W	Rc1/2	3,430
C4000-15-W	Rc1/2	3,000	W8000-20-W	Rc 3/4	10,000
C6500-20-W	Rc 3/4	4,500	W8000-25-W	Rc 1	10,000
C6500-25-W	Rc 1	5,000	B7019-1C	Rc1/8	500
C8000-20-W	Rc 3/4	7,000	B7019-2C	Rc1/4	900
C8000-25-W	Rc 1	7,500			
K60570-1C-GB	Rc1/8	200			
K60570-2C-GB	Rc1/4	300			

■ F.R.L. Kit, Unit, Regulator

Primary pressure / 0.7 MPa, Set pressure / 0.5 MPa, Pressure Drop/0.1 MPa

■ Air Filter

Primary Pressure/0.7 MPa, Pressure Drop/0.02 MPa

■ Lubricator

Primary Pressure/0.5 MPa Pressure Drop/0.03 MPa

Air Filter (F)			Regulator (R)			Lubricator (L)		
Model No.	Connection Port Size	Max. Flow Rate L/min Atmospheric pressure conversion	Model No.	Connection Port Size	Max. Flow Rate L/min Atmospheric pressure conversion	Model No.	Connection Port Size	Max. Flow Rate L/min Atmospheric pressure conversion
F1000-6-W	Rc1/8	460	R1000-6-W	Rc1/8	770	L1000-6-W	Rc1/8	550
F1000-8-W	Rc1/4	610	R1000-8-W	Rc1/4	1,350	L1000-8-W	Rc1/4	700
F2000-8-W	Rc1/4	1,300	R2000-8-W	Rc1/4	1,750	L3000-8-W	Rc1/4	1,100
F2000-10-W	Rc3/8	1,700	R2000-10-W	Rc3/8	2,500	L3000-10-W	Rc3/8	2,250
F3000-8-W	Rc1/4	1,230	R3000-8-W	Rc1/4	2,000	L4000-8-W	Rc1/4	1,000
F3000-10-W	Rc3/8	1,500	R3000-10-W	Rc3/8	2,600	L4000-10-W	Rc3/8	1,700
F4000-8-W	Rc1/4	1,320	R4000-8-W	Rc1/4	2,500	L4000-15-W	Rc1/2	2,700
F4000-10-W	Rc3/8	2,140	R4000-10-W	Rc3/8	4,400	L8000-20-W	Rc 3/4	6,300
F4000-15-W	Rc1/2	3,000	R4000-15-W	Rc1/2	5,000	L8000-25-W	Rc 1	10,000
F6000-20-W	Rc 3/4	5,600	R6000-20-W	Rc 3/4	7,000	A3019-1C	Rc1/8	100
F6000-25-W	Rc 1	6,200	R6000-25-W	Rc 1	7,700	A3019-2C	Rc1/4	400
F8000-20-W	Rc 3/4	6,400	R8000-20-W	Rc 3/4	14,000	3003E-6C	Rc 3/4	3,500
F8000-25-W	Rc 1	6,800	R8000-25-W	Rc 1	11,000	3003E-8C	Rc 1	4,000
A1019-1C	Rc1/8	550	B2019-1C	Rc1/8	500			
A1019-2C	Rc1/4	700	B2019-2C	Rc1/4	500			
1138-6C-E	Rc3/8	5,500	2215-6C	Rc 3/4	14,000			
1138-8C-E	Rc 1	7,000	2215-8C	Rc 1	14,000			
			2215-10C	Rc1 1/4	14,000			

After determining the cylinder tube inner diameter and operating speed, select the peripheral pneumatic equipment.

Supplementary Material: Explanation of Technical Terms

Explanation of Technical Terms

What is **[Theoretical reference speed]** : Indicates the degree of cylinder speed, expressed as the following formula.
(This value is almost consistent with the no-load speed. Speed decreases considerably when a load is applied.)

$$VO = 1920 \frac{S}{A} \times = 2445 \times \frac{S}{D^2} \quad (1)$$

VO: Theoretical reference speed (mm/s)

A: Cylinder sectional area (cm²)

S: Composite effective cross-sectional area of circuit (exhaust side) (mm²)

D: Cylinder bore size (cm)

When shown on a graph, the theoretical reference speed is the speed within the constant velocity operating range.

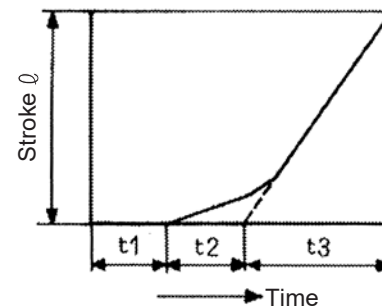
$$VO = \frac{\varnothing}{t3} \text{ (mm/s)}$$

t1: Time until movement starts

t2: First-order lag time

t3: Constant velocity operating time

∅: Stroke



*Note: t1 and t2 differ depending on the load. No effect even if ignored under no-load conditions.

What is **[Required flow rate]**?: Instantaneous flow rate for operating a cylinder with velocity VO, expressed with the following formula.
The table shows values when P = 0.5 MPa. Required flow rate is the value necessary for selecting clean air system equipment.

$$Q \approx \frac{Avo (P+0.101) \times 60}{0.101 \times 10^4} \quad (2)$$

Q: Required flow rate (∅/min) (ANR)

P: Supply Pressure (MPa)

What is **[Required effective sectional area]**: Composite effective cross-sectional area for the exhaust circuit required for moving the cylinder at speed VO. (Combined effective cross-sectional area of valve, speed controller, silencer, and piping)

What is **[Proper standard system]**: [Appropriate Standard System]: The most appropriate combination of valve, speed controller, silencer, and piping diameter for operating the cylinder at speed VO. The combinations in the table are for a piping length of about 1 m.

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

After determining the cylinder tube inner diameter and operating speed, select the peripheral pneumatic equipment.

Supplementary Material: Standard system combination of directional control valve and cylinder (Example)

- ①The average speed of the cylinder can be determined by the combination of the valve and piping system. It is expressed as the piston speed of the cylinder, which is calculated by dividing the stroke by the time from when the piston rod starts moving until it moves, with the cylinder rod mounted upwards. When the load factor is 50%, the average speed should be approximately the cylinder's piston speed multiplied by 0.5. (Refer to Ending 21 for the relationship between load factor and theoretical reference speed.)
- ②The average speed of a cylinder is the value when a single cylinder is operated independently.
- ③The effective cross-sectional area of the solenoid valve used in the calculation in the table below is the value for 2 positions.
- ④This selection guide is a guideline. Please check with the sizing program under actual usage conditions.
- ⑤A graph for the Valve 4G/4K Series (2-position single, base piping) is shown as an example. [INFO] Data Cleaning: The source text contained non-standard characters, which are typically placeholders from a copy/paste or OCR error and do not represent tags or scripts. These have been removed to process the text correctly.

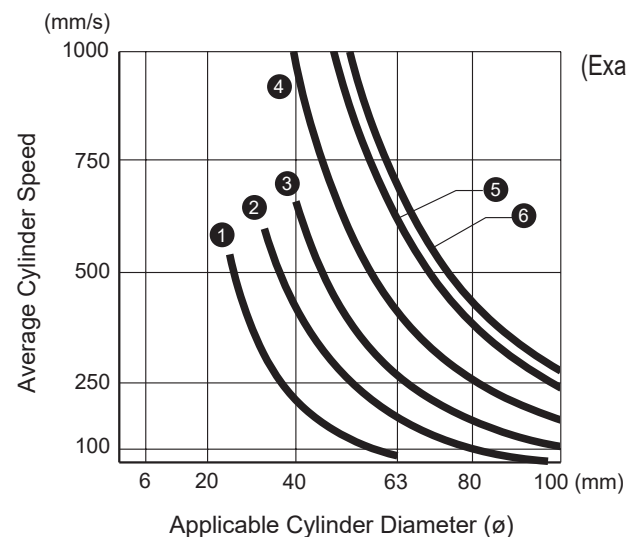
4G Series

(When exhaust malfunction prevention valve is built-in)

(Example) The system No. of the connection components for the 4G1 with port size C6 is ②.

Series	Base Piping Type						System No.
	Model No.	Solenoid Valve Connection Port Diameter	Speed Controller	Silencer	Piping (1 m)	Composite effective Cross-sectional area (mm ²) Pipe length (1 m)	
4G1	M4GB110R	C4	SC3W-6-4	SLW-6S	ø4xø2.5	1.4	①
	M4GB110R	C6	SC1-6	SLW-6S	ø6 × ø4	2.8	②
4G2	M4GB210R	C6	SC1-8	SLW-8S	ø6 × ø4	4.5	③
	M4GB210R	C8	SC1-10	SLW-8S	ø8 × ø5.7	6.7	④
4G3	M4GB310R	C10	SC1-10	SLW-10L	ø10 × ø7.2	10.1	⑤
	M4GB310R	C10	SC1-15	SLW-10L	ø12 × ø8.9	11.5	⑥

* System No. is displayed in the graph below



(Example) When this system ② is used with a cylinder bore of ø40, the cylinder's average speed will be approximately 450 mm/s. (However, it varies depending on usage conditions.)

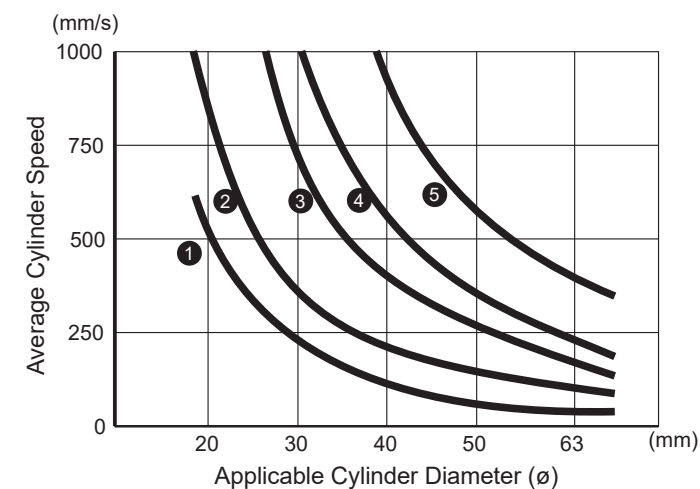
MN4G Series

(When exhaust malfunction prevention valve is built-in)

Series	Solenoid Valve Connection Port Diameter	Speed Controller	Piping (1 m)	Centralized Exhaust Piping	Composite effective sectional area (mm ²)	System No.
MN4G1	C4	SC3W-M5-4	ø4xø2.5	ø6xø4x3 m	0.9	①
	C4	SC3W-6-4	ø4xø2.5	ø6xø4x3 m	1.4	②
	C6	SC1-6	ø6 × ø4	ø8xø5.7x3 m	2.8	③
MN4G2	C6	SC1-6	ø6 × ø4	ø8xø5.7x3 m	3.8	④
	C8	SC1-8	ø8 × ø5.7	ø10xø7.2x3 m	6.0	⑤

* System No. is displayed in the graph below.

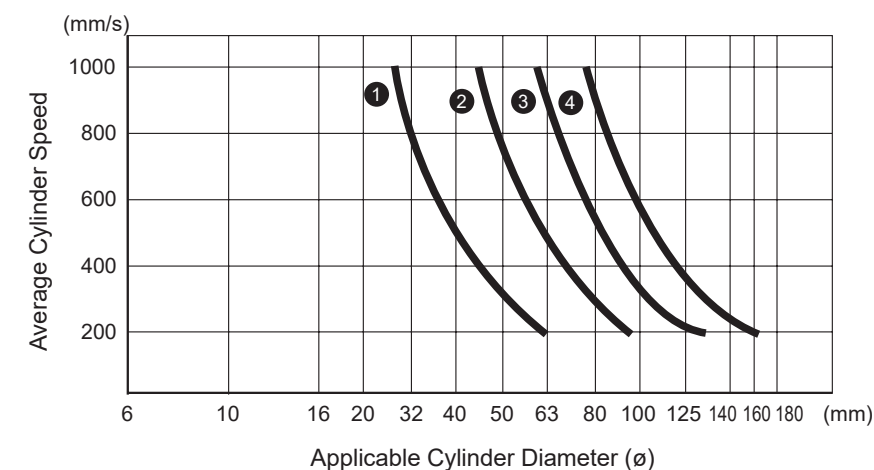
* This is a graph for the centralized exhaust type.



4K Series

Series	Solenoid Valve Connection Port Diameter	Speed Controller	Silencer	Piping (1 m)	Composite effective sectional area (mm ²)	System No.
4KB110	C6	SC1-6	SLW-6S	ø6 × ø4	3.2	①
4KB210	C8	SC1-8	SLW-8S	ø8 × ø5.7	7.7	②
4KB310	C10	SC1-10	SLW-10L	ø10 × ø7.2	14.1	③
4KB410	C15	SC1-15	SLW-15A	ø12 × ø8.9	23.6	④

* System No. is displayed in the graph below.



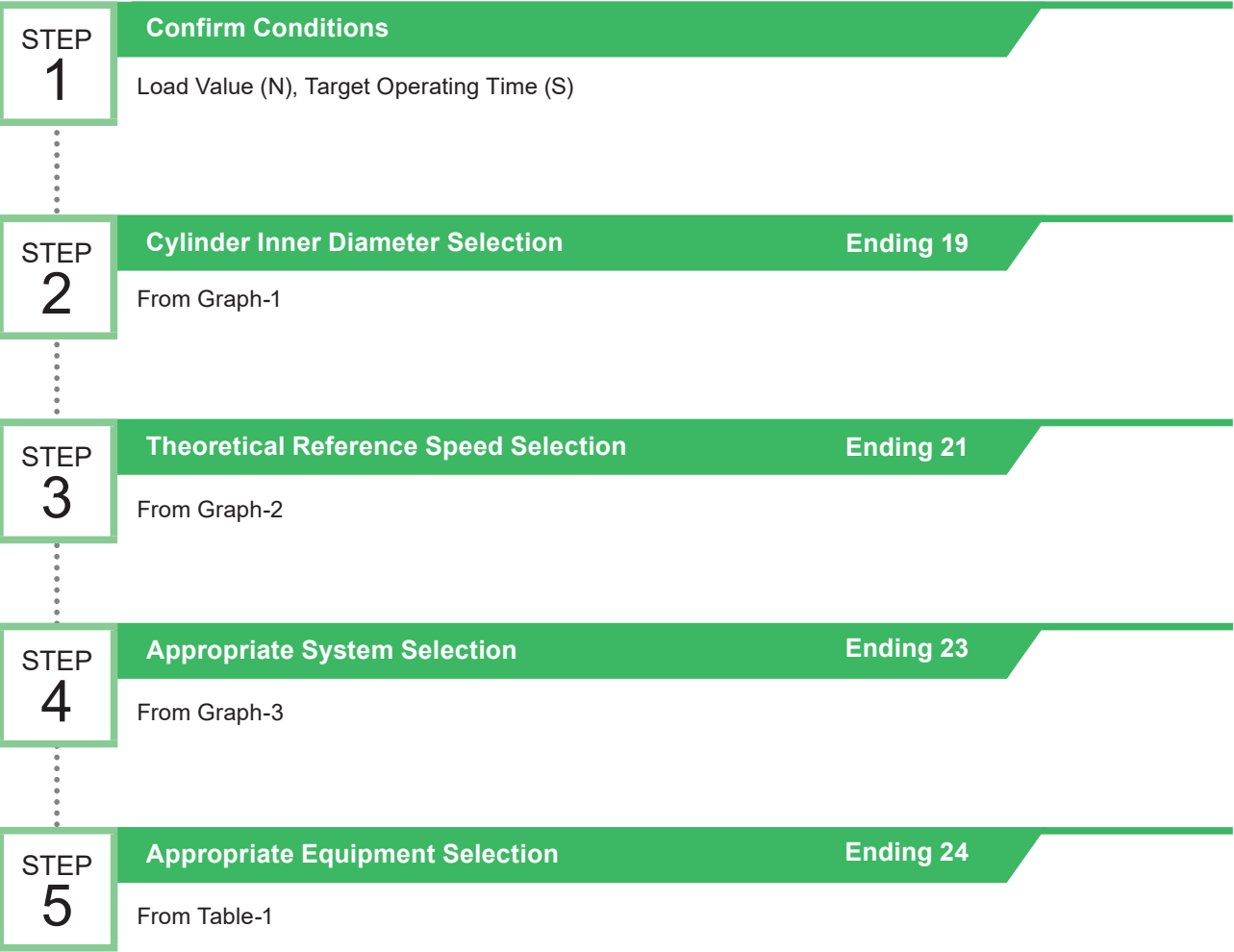
Determine the tube inner diameter and select peripheral pneumatic equipment based on the load on the cylinder and operating time.

Confirmation Flow



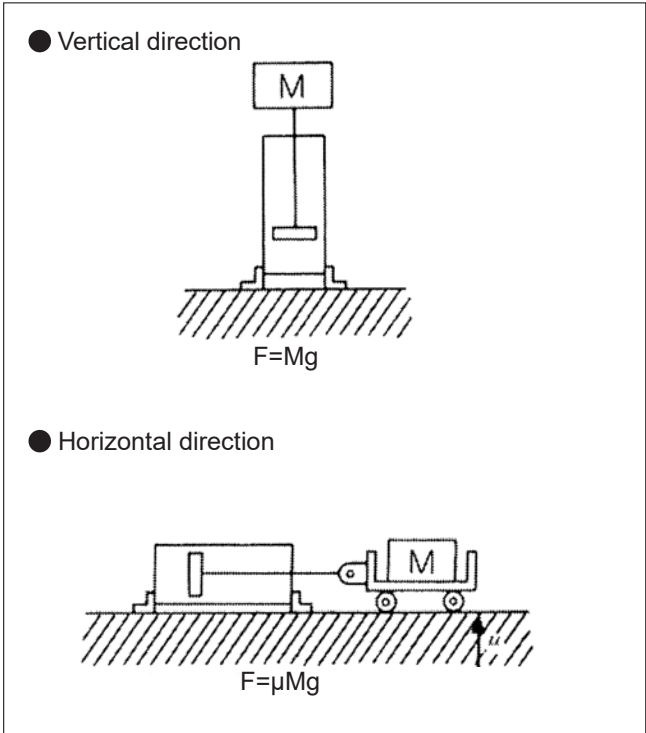
Confirmation of method for selecting from load value and operating time

Used to select the optimal model when the load value (N) and target cylinder operating time (S) are specifically indicated. Follow the steps below.



STEP 1 Confirm Conditions

- (1)Load $F = \square$ (N)
 - (2)Required operation time $t = \square$ (s)
 - (3)Stroke $L = \square$ (mm)
 - (4)Pressure $P = \square$ (MPa)
- M: Weight of body (kg)
 μ : Precision coefficient (usually $\mu \approx 0.3$)
F: Load (N)
 $g: 9.8 \text{ m/s}^2$



2

Determine the tube inner diameter and select peripheral pneumatic equipment based on the load on the cylinder and operating time.

Confirmation Flow



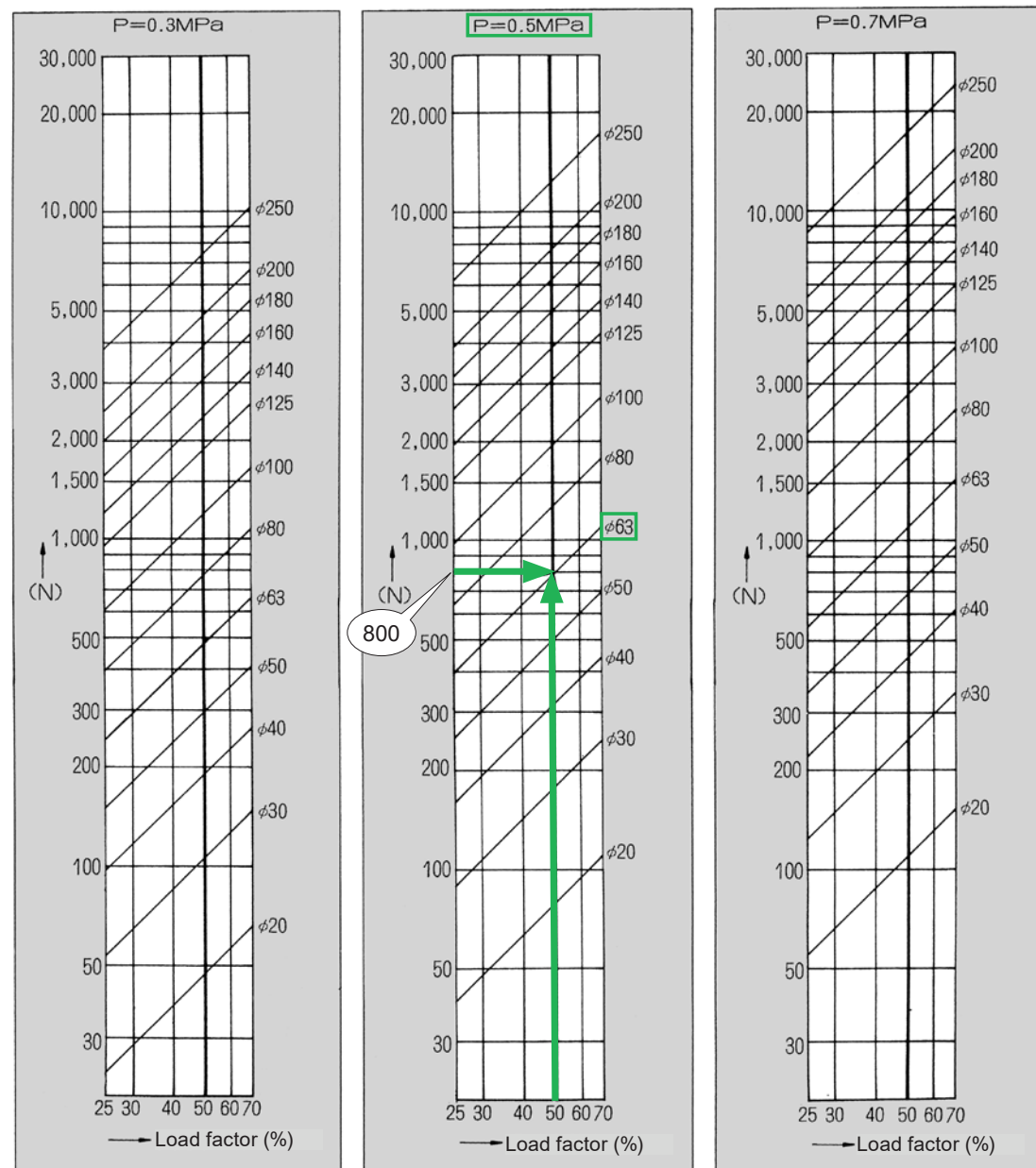
STEP 2 Cylinder Inner Diameter Selection

Select the cylinder inner diameter using the nomogram for cylinder inner diameter, and simultaneously read the load factor at that time. (Normally, for value F of "Step 1 Confirming conditions", read the cylinder bore size whose load factor is close to 50%)

Cylinder inner diameter $D=\phi$

(Example) When $F = 800 \text{ N}$, $P = 0.5 \text{ MPa}$, Load factor 50% cylinder bore size is $\phi 63$.

Graph-1 Nomogram for determining cylinder inner diameter



2

Determine the tube inner diameter and select peripheral pneumatic equipment based on the load on the cylinder and operating time.

Confirmation Flow



STEP 3 Theoretical Reference Speed Selection

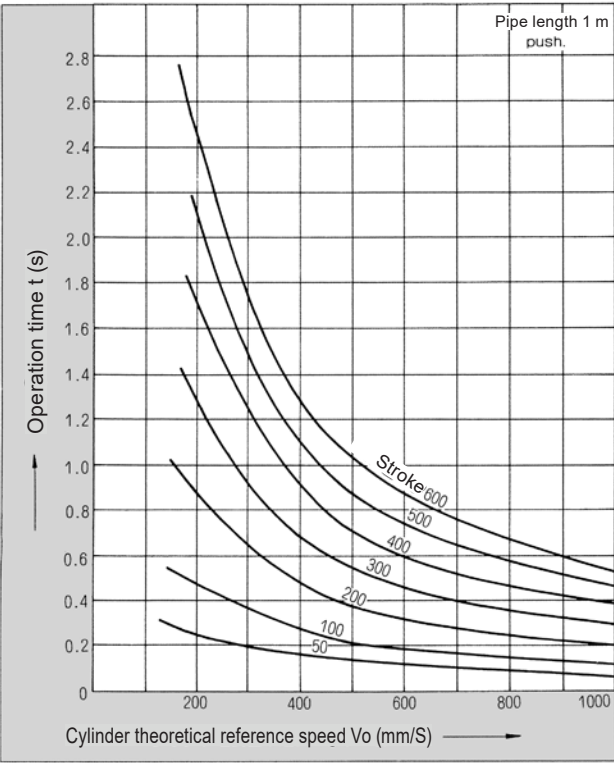
According to t-vo graph, read vo value to obtain the required operation time t (sec).

vo =

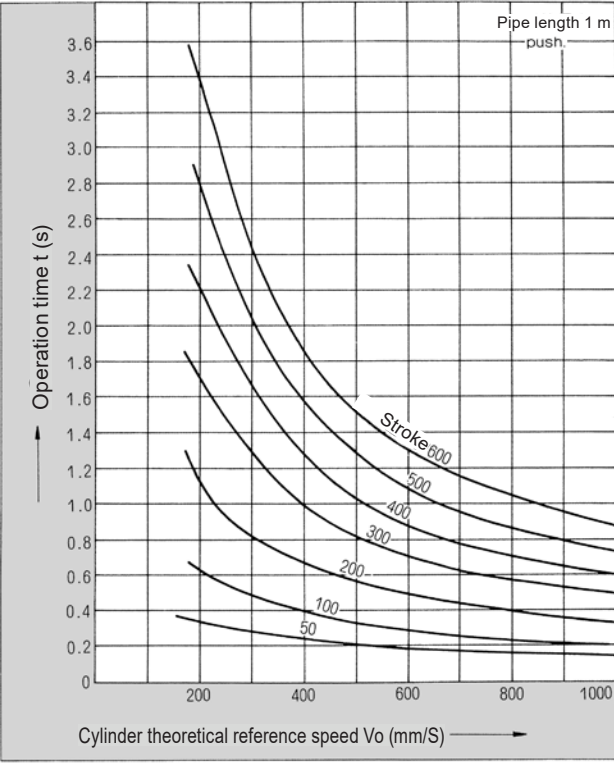
(Example) The theoretical reference speed when operating a cylinder with at is.

Graph-2 t-vo graph

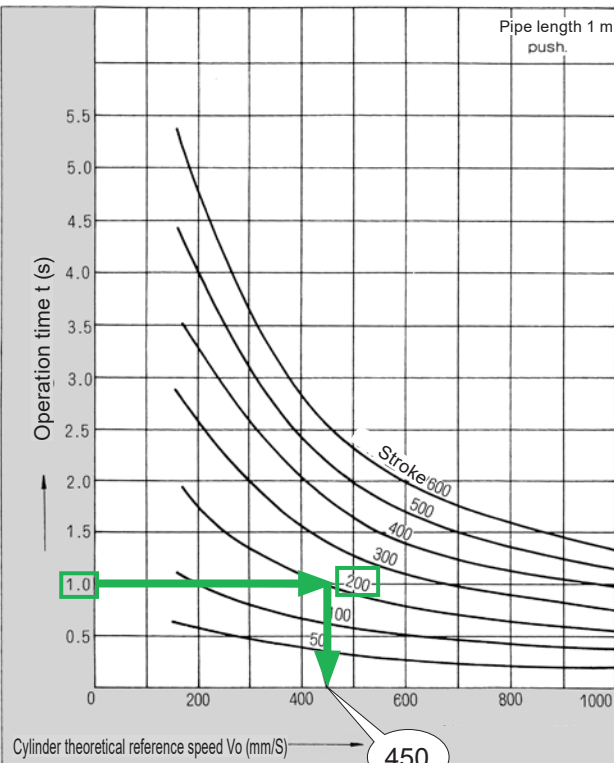
Load Factor 0%



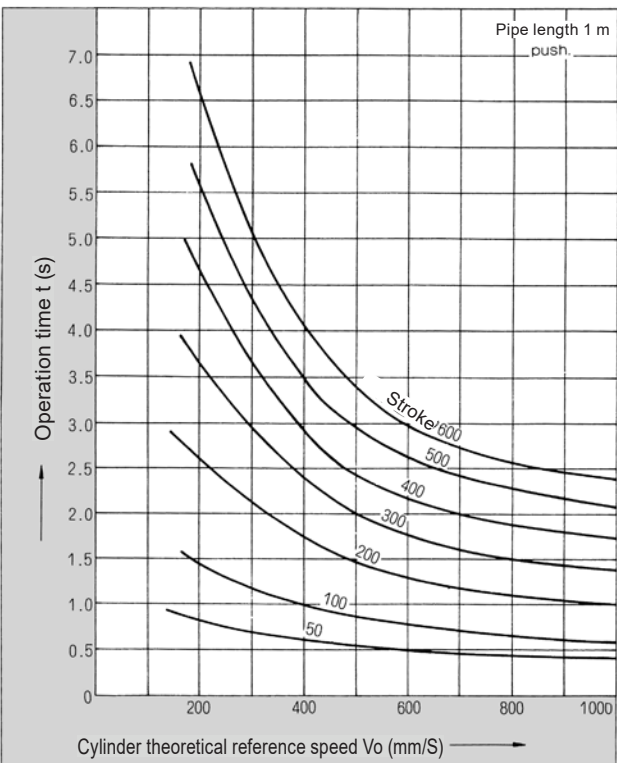
Load Factor 25%



Load factor 50%

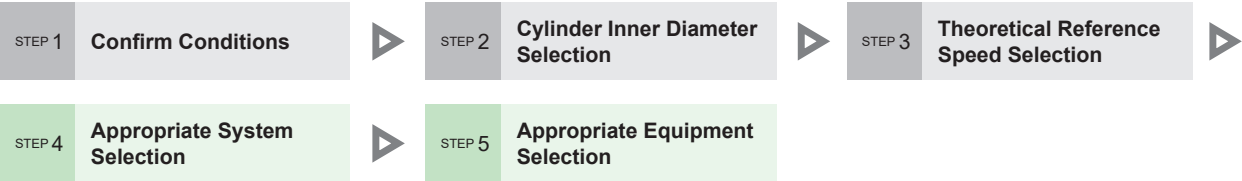


Load Factor 70%



Determine the tube inner diameter and select peripheral pneumatic equipment based on the load on the cylinder and operating time.

Confirmation Flow

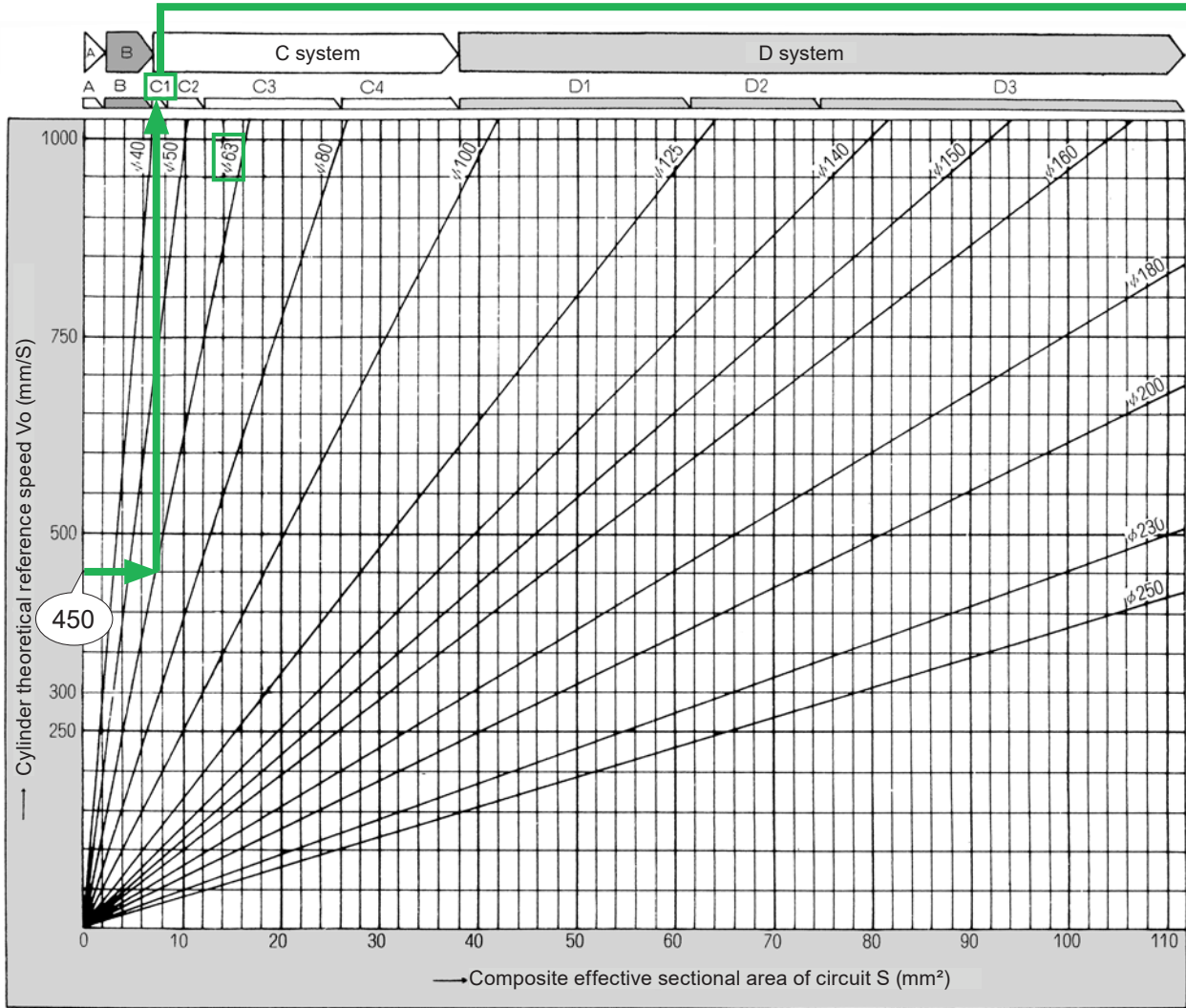


STEP 4 Appropriate System Selection

Using the appropriate system selection quick reference table, trace vertically upwards from the intersection of the vo value obtained in "STEP 3 Theoretical Reference Speed Selection" and the øD obtained in "STEP 2 Cylinder Inner Diameter Selection" to read the system symbol.

System Symbol ☐
(Example) To operate ø63 cylinder at the theoretical reference speed 450 mm/s, C1 system is optimal.

Graph-3 Appropriate System Selection Quick Reference Table



STEP 5 Appropriate Equipment Selection

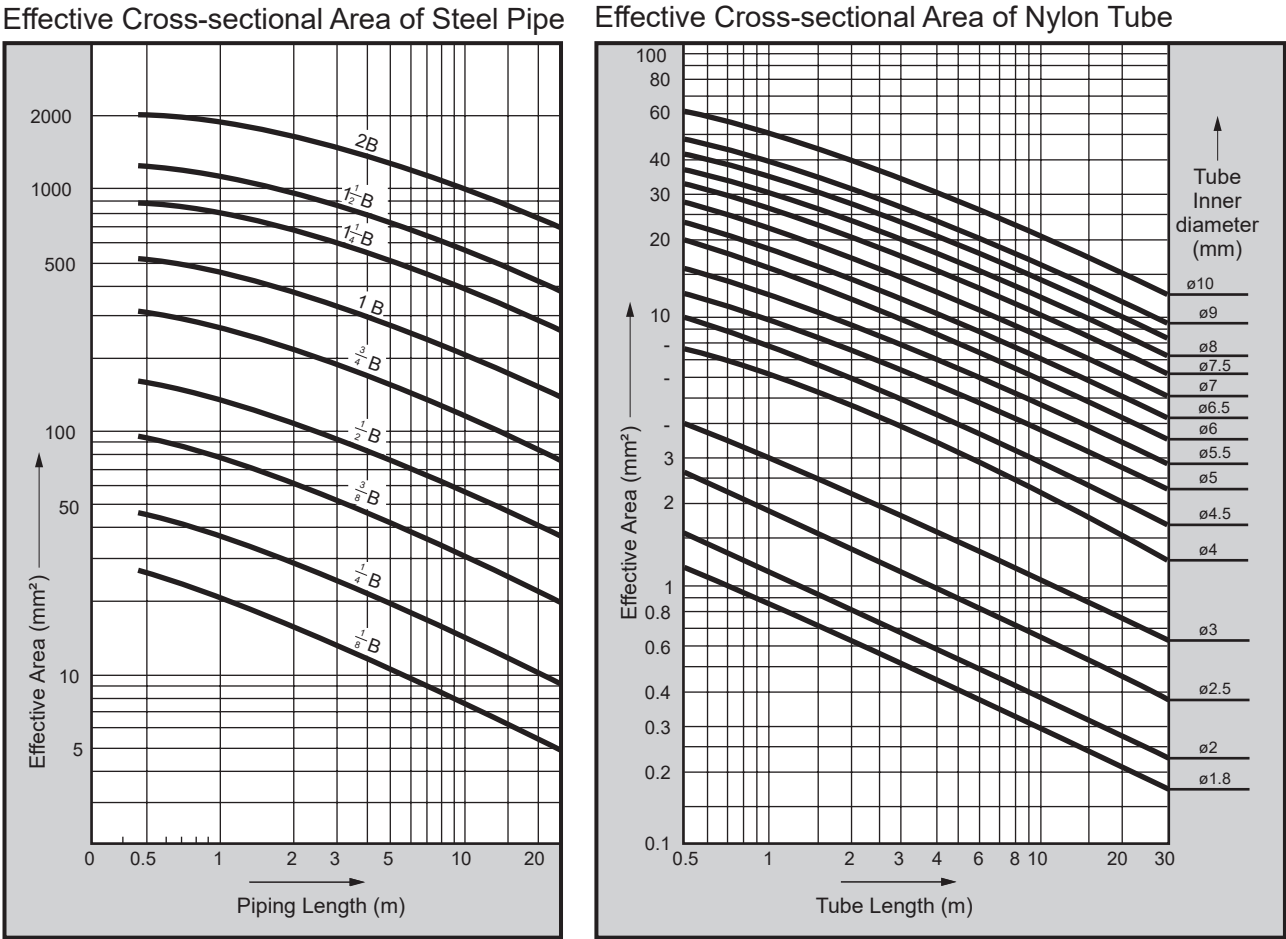
Using the standard system table, confirm the model names of the components of the appropriate system for the symbol obtained in "STEP 4 Appropriate System Selection."

(Example) C1 system	
Valve ☐	Valve: Single 4KB210-08 or 4GB310R -08
	Double 4KB220-08 or 4GB320R-08
Speed controller ☐	speed controller: SC1-8
Silencer ☐	silencer: SLW-8A
Piping ☐	piping: ø10×ø7.2 nylon tube 1 m

Table-1 Standard System Table

Standard System No.	Valve		Speed Controller	Silencer	Piping	Composite effective sectional area (mm²) Pipe length 1 m
	Single solenoid	Double Solenoid				
A	4SB010-M5 4KA110-GS4	4SB020-M5 4KA120-GS4	SC3W-M5-4 (SC-M5)	SLM-M5	ø 4 × ø 2.5 Nylon Tubing	0.9
B1	4KA110-GS6 4KB110-06	4KA120-GS6 4KB120-06	SC3W-6-6 SCL2-06-H66	SLM-M5 SLW-6A	ø6 × ø4 Nylon Tubing	2.0
B2	4KB110-06 4GB110R-06	4KB120-06	SC1-6 SCL2-08-H88	SL-M5 SLW-6A	ø8xø5.7 Nylon Tubing	3.0
B3	4GB210 R -06 4KB210-06	4KB220-06	SC1-6 SCL2-08-H88	SLW-6A SLW-6S	ø8xø5.7 Nylon Tubing	5.2
B4	4GB210R-08 4KB210-08	4GB220R-08 4KB220-08	SC1-8 SCL2-10-H1010	SLW-6A SLW-8A	ø10 × ø7.2 Nylon Tubing	6.4
C1	4GB210R-08 4KB210-08 4F210-08	4GB220R-08 4KB220-08 4F220-08	SC1-8 SCL2-10-H1010	SLW-8A SLW-8S	ø10 × ø7.2 Nylon Tubing	7.8
C2	4GB310R-10 4F310-10 4KB310-10	4GB320R-10 4F320-10 4KB320-10	SC1-10	SLW-10A	ø10 × ø7.2 Nylon tube or Rc3/8 steel pipe	12
C3	4 GB410-15 4F510-15 4KB410-15	4GB420-15 4F520-15 4KB420-15	SC1-15	SLW-15A	Rc1/2 steel pipe	27
C4	4 GB410-15 4F510-15 4KB410-15	4GB420-15 4F520-15 4KB420-15	SC-20A	SLW-15A	Rc1/2 steel pipe	38
D1	4F610-20	4F620-20	SC-20A	SL-20A	Rc3/4 steel pipe	64
D2	4F710-20	4F720-20	SC-20A	SL-20A	Rc3/4 steel pipe	80
D3	4F710-25	4F720-25	SC-25A	SL-25A	Rc1 steel pipe	112

Effective Cross-sectional Area of Steel Pipes/Nylon Tubes and Recommended Maximum Flow Rate Table for Gas Pipes



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

Recommended Max. Flow Rate Table for Gas Pipes

Nominal Dimension	1/8B	1/4B	3/8B	1/2B	3/4B	1B	1 1/4B	1 1/2B
Pressure Drop MPa (*1)	0.124	0.0707	0.0576	0.0425	0.0276	0.0209	0.0133	0.0105
Inlet Pressure MPa	Recommended max. flow rate (t/min)							
0.05	127	244	518	838	1,465	2,460	3,870	5,150
0.1	146	282	598	965	1,690	2,828	4,460	5,950
0.15	163	314	668	1,076	1,885	3,150	4,960	6,630
0.2	179	344	730	1,180	2,060	3,450	5,430	7,280
0.3	206	395	840	1,360	2,375	3,900	6,300	8,400
0.4	230	442	940	1,520	2,660	4,450	7,000	9,360
0.5	252	485	1,030	1,660	2,920	4,875	7,700	10,250
0.6	272	523	1,110	1,800	3,140	5,250	8,300	11,050
0.7	292	558	1,185	1,920	3,350	5,620	8,870	11,800
0.8	308	592	1,260	2,035	3,560	5,970	9,430	12,570
0.9	324	623	1,325	2,140	3,745	6,290	9,900	13,220
1.0	340	654	1,395	2,250	3,930	6,600	10,400	13,880
1.2	370	717	1,510	2,450	4,280	7,150	11,250	15,040
1.4	398	763	1,625	2,624	4,590	7,700	12,100	16,200
1.5	410	790	1,680	2,710	4,740	7,930	12,550	16,780

(*1: Inlet Pressure = 0.5 MPa
Gas Pipe Length: 10 m)

(Remarks)
For main lines where the piping distance is long, it is necessary to consider the degree of pressure drop that occurs at the end of the main line when air flows. Recommended maximum flow rate means the maximum flow rate that can be recommended within a range where the pressure drop relative to the piping length is acceptable, judged from practical use. Therefore, it does not mean that no more flow can pass, but that flowing more will result in a larger pressure drop.

Flow Characteristics Display Method

1. Display of Flow Characteristics

The flow rate display in the specifications section of the catalog is shown as follows.

Target Components	Indicator	Code	Standard
Pneumatic Components	Display compliant with JIS	C, b	ISO 6358:1989 " Pneumatic fluid power - components for compressible fluids - test of flow characteristics" JIS B 8390:2000 (ISO 6358 translation)
	Conventional Display	S	JIS B 8379:1995 "Pneumatic silencers"
		Cv	ANSI(NFPA)T3. 21. 3 R1-2008

2. Explanation

The flow characteristics of the pneumatic components were conventionally indicated with the effective cross-sectional area S. , but JIS was revised (JIS B 8390:2000), and these are now indicated with the sonic conductance C and critical pressure ratio b.

- Sonic Conductance C:

Value obtained by dividing the Weight flow rate passing through the equipment in a choked flow state by the product of the upper limit absolute pressure and the density in the standard state. (sonic conductance)
- Critical pressure ratio b:

S≈5.0C (C enables sizing as before.)
Pressure ratio (downstream pressure / upstream pressure) at which flow becomes choked when smaller than this value (critical pressure ratio)
- Effective cross-sectional area S (mm²):

Value of the cross-sectional area of an ideal throttle without friction or contraction, derived by calculation from the pressure change in the air tank when discharged from equipment included to the air tank in a choked flow state.

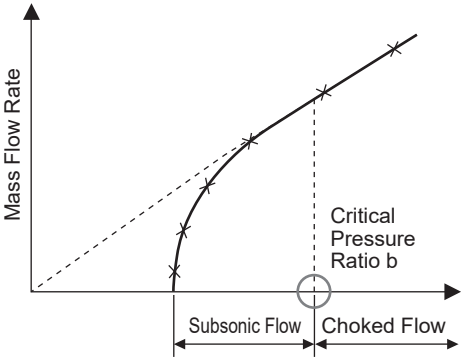


Fig. 1 Mass flow rate characteristics with respect to upstream pressure

*Choked flow: Flow where the upstream pressure is high relative to the downstream pressure, and the speed reaches the speed of sound in a certain part of the equipment. The mass flow rate of gas is proportional to the upstream pressure and does not depend on the downstream pressure. (Choked flow)

*Note: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

Flow Rate Calculation Formula

It is expressed as follows in practical units.

• $\frac{P_2}{P_1} \leq b$, choked flow

$$Q = 600 \times C \times P_1 \times \sqrt{\frac{293}{273 + T}} \dots\dots\dots(1)$$

• $\frac{P_2}{P_1} > b$, subsonic flow

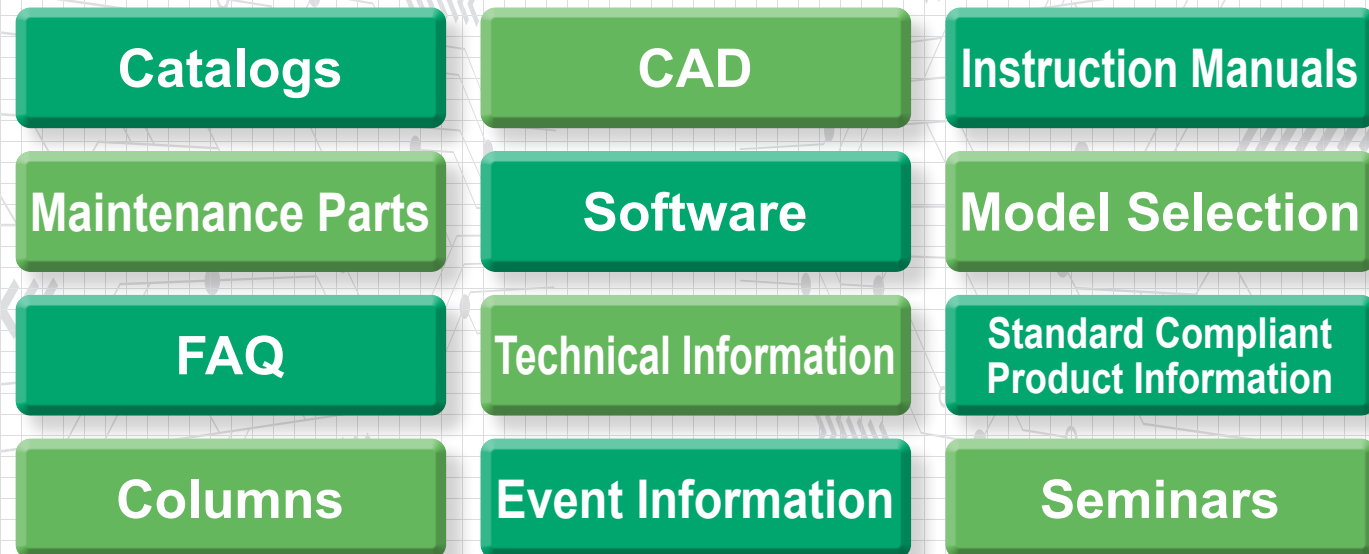
$$Q = 600 \times C \times P_1 \times \sqrt{1 - \left[\frac{\frac{P_2}{P_1} - b}{1 - b} \right]^2} \times \sqrt{\frac{293}{273 + T}} \dots\dots\dots(2)$$

- Q : Flow rate L/min (ANR) in standard condition
- C : Sonic conductance [dm³/(s·bar)]
- b : Critical pressure ratio
- S : Effective cross-sectional area mm²
- P₁ : Primary side absolute pressure MPa (abs)
- P₂ : Secondary side absolute pressure MPa (abs)
- T : Air temperature °C

When calculating using the effective area S, substitute the value C obtained from C = S/5 into the above formula.
For subsonic flow, substitute b = 0.5 into formula (2).

Website Guide

Various information is provided on our website.
Please make use of it.

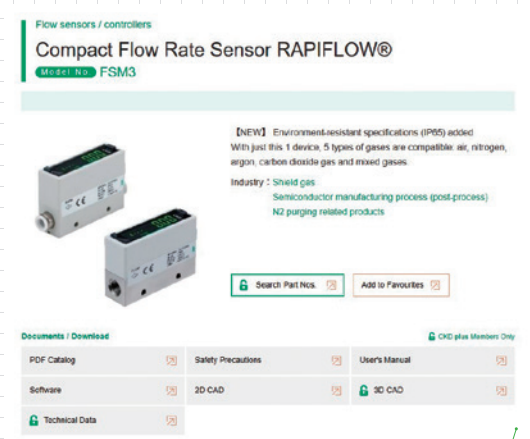


You can find the information you need here.

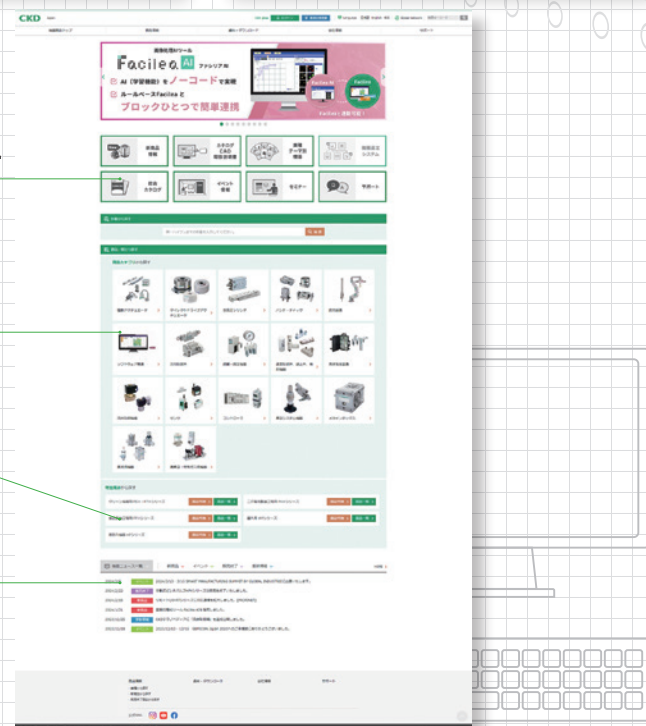
You can search for desired products.

You can find suitable products by application.

You can check the latest news.



Each product page provides various information.



Various information is published by product axis and application.

Model Selection System Guide

About Using the Model Selection System

We provide a system that supports the selection of the following items. Please use it when selecting models and designing.

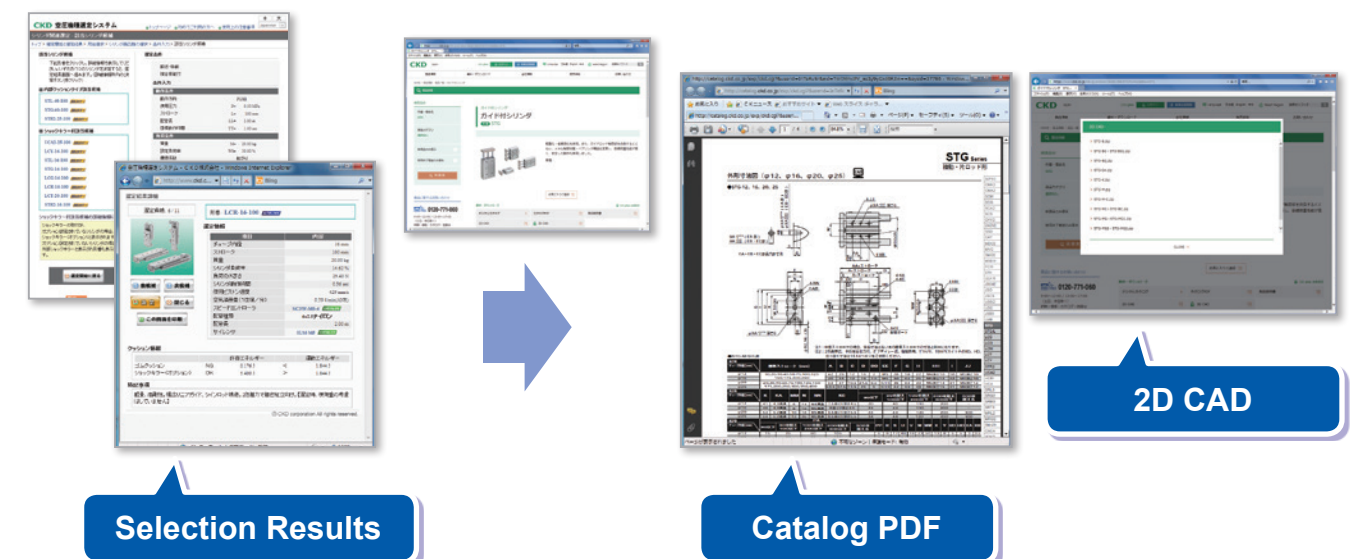
Published on our website

This system is for selecting products according to your application and operating conditions.



*Downloadable software may not be able to be downloaded due to your company's security policy. In that case, please contact us.

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Pneumatic valve manifold specifications and CAD data are easily available on the Web.

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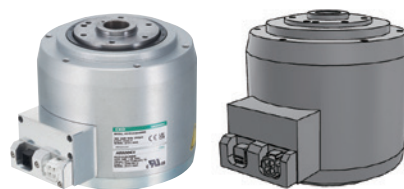


Japanese, English, Chinese (Simplified and Traditional), and Korean are supported.

Simultaneous with new product launch

NEW Model No. **AX1R**

ABSODEX



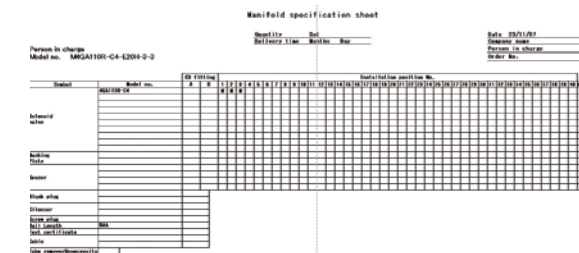
Supports various data formats

- + PDF 3D 7.01 (3D)
- + PDF Datasheet (2D)
- + PRO-Desktop (3D)
- + SAT 7.0 (3D)
- + Solid Edge 2019 (3D)
- + Solid Edge 2020 (3D)
- + Solid Edge 2021 (3D)
- + Solid Edge 2022 (3D)
- + SolidWorks (Macro) >2001+ (3D)
- + SolidWorks >2015 (3D)
- + STEP AP203 (3D)
- + STEP AP214 (3D)
- + STL (3D)
- + SVG (2D)
- + TIFF (2D View) (2D)
- + Trimble Sketchup 2017 (3D)

More than **25 types** of 2D and more than **35 types** of 3D
Supports PDF and JPEG formats!

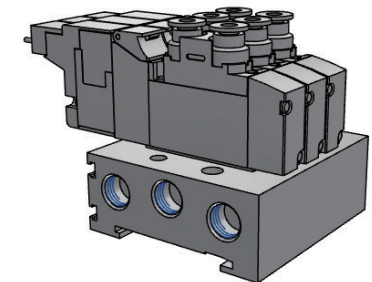
*To use 3D CAD, you must register as a CKD plus member.

Specifications are available



Manifold specifications for pneumatic valves can be prepared and shipped assembled to the customer.

Get CAD data



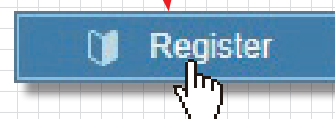
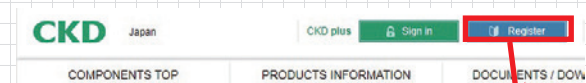
2D and 3D CAD data available for pneumatic valve manifold assemblies

Specifications and download method of CAD data

CKD plus How to register as a member

STEP 1

From the CKD components product top page, click "New member registration"



STEP 2

Enter your name, company name, contact information, and email address

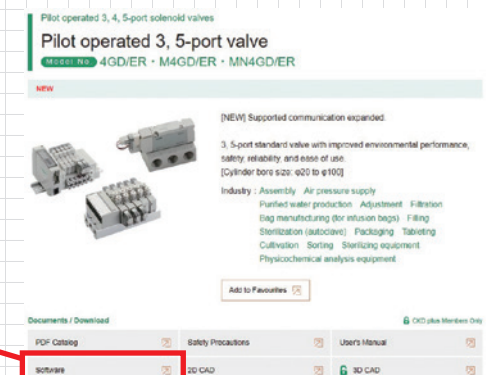
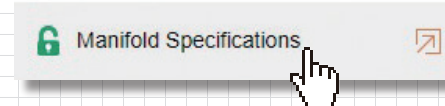
Easy registration in 2 STEPS

Registration complete!



STEP 1

CKD components product TOP page > Product details page > Click "Manifold specifications sheet"

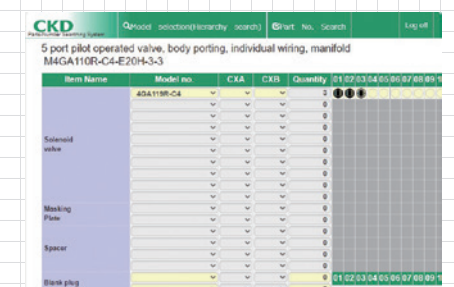
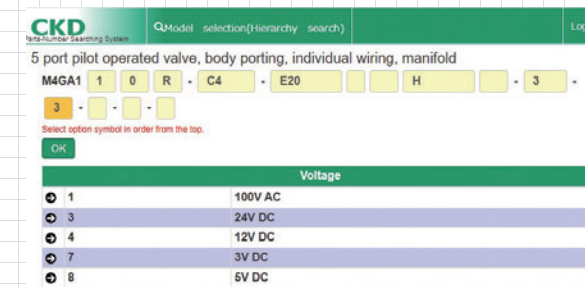


STEP 2

Select model No.

STEP 3

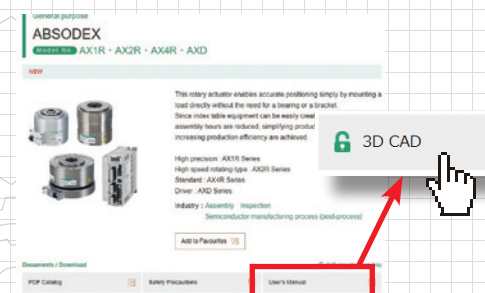
Create specifications sheet



How to download CAD

STEP 1

Click on "3D CAD" from the product detail page



STEP 2

Select model No.

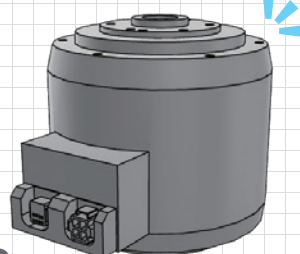
STEP 3

1 Specify CAD format



2 Generate CAD data

Download CAD



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STEP 4

Download complete!

- For specifications output, **specification output** Click
- If downloading CAD data **2D/3D CAD** Click



Significantly reduces work time

Model No. Model Name Catalog No./Page

HS Fluid Actuated Valve for Gas Combustion System 1024

HSV (SV) Manual Valve/Standard RJ-012AA

Listed Page

This is the specification/model number page for models listed in this catalog.

Listed Catalog No.

RJ-002AA ... Pneumatic Cylinder ①

RJ-003AA ... Pneumatic Cylinder ②

RJ-004AA ... Pneumatic Cylinder ③

RJ-005AA ... Pneumatic Cylinder ④

RJ-006AA ... Pneumatic Cylinder ⑤

RJ-007AA ... Air Preparation, Pressure Control, and Auxiliary Components

RJ-008AA ... Sensors/Controllers

RJ-009AA ... Main Line Equipment/Gas Generators

Others list the single item catalog No. for each series.

RJ-010AA ... Precision Components/Vacuum Components

RJ-011AA ... Directional Control Valve ①

RJ-012AA ... Directional Control Valve ②

RJ-013AA ... Fluid Control Valve

RJ-014AA ... Electric Actuator ROBODEX Pluse

RJ-015AA ... Electric Actuator ROBODEX Std.

RJ-016AA ... Dry Fine Equipment

CB-019SAA... Indexman General

CB-031AA... Wet Fine Equipment General

CB-054AA... ABSODEX General

CB-055AA... Electric Actuator Motorless General

CC-1055AA... Life Science Equipment

CC-1276AA... Outdoor Products WP Series

CC-1590AA... Gas Combustion System

CC-1637AA... Pharmaceutical Manufacturing Process Equipment

CC-297AA... Automatic Watering Control Equipment

Symbols

(SV) ...Single Valve

(WR) ...Wiring Reduced Manifolds

(IM) ...Individual Manifold

(MX) ...Mixed Manifold

(BM) ...Block Manifolds

(MN) ...Manifold

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MN3E00	Pilot Operated 3, 4-Port Valve	123
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MN3GA1/2	Pilot Operated 3-Port Valve/Direct Piping	123
MN3GAX12	Pilot Operated 3-Port Valve/Direct Piping	123
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MN3GD1/2	Pilot Operated 3-Port Valve/Direct Piping	123
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MN4GD1/2	Pilot Operated 5-Port Valve/Direct Piping	123
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MN4GE1/2	Pilot Operated 5-Port Valve/Base Piping	123
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MNRB500-P11	Block Manifold Regulator/ Ozone Resistant	485
MNRJB500	Block Manifold Compact Direct Acting Precision Regulator	225
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MR16	Metal-free Compact 2, 3-Port Solenoid Valve	419
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MSD	Compact Cylinder/Double Acting, Single Rod Type	19
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MTLPS	Tool Breakage Detection Switch/Manifold	270
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MV3QRB	3QR Negative Pressure Switching Unit Sub-plate Piping	125
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MW3GA2	Pilot Operated 3-Port Valve/Direct Piping	121
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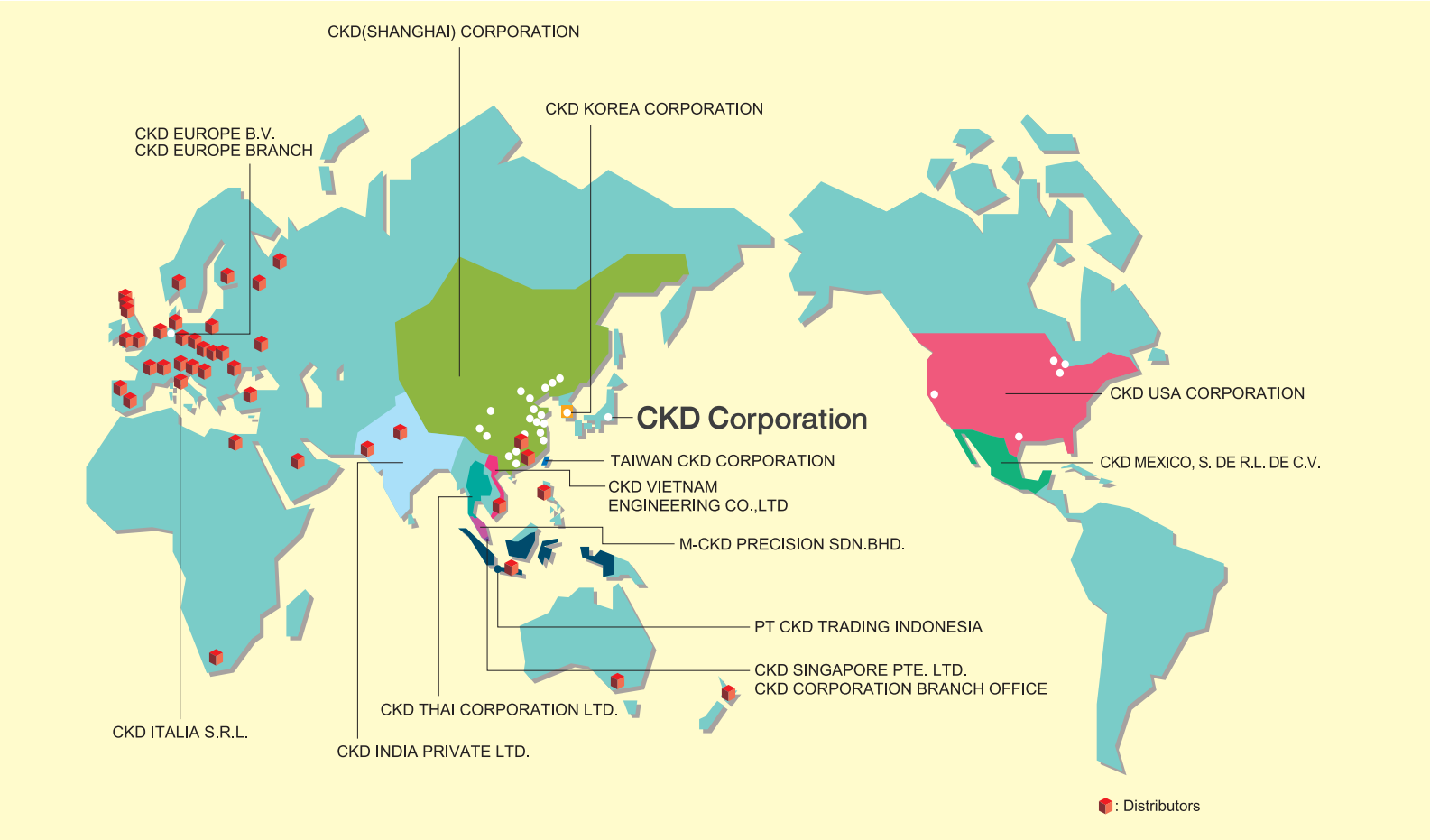
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