CKD

Solid products that securely support outdoor facilities in harsh environments

WP Series for Outdoors

WEATHER PROOF

WEATHER PROOF

CKD Corporation

CC-1276A 5

Pursuit of outdoor equipment requirements,

Proven durability for outdoor use

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

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

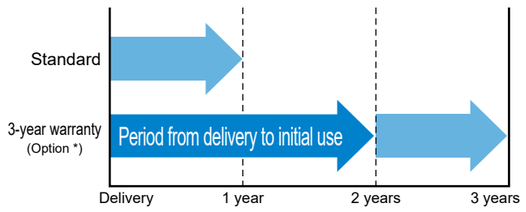
Lineup of products compatible with min. ambient temp. of -20°C

Expanded range for equipment use in harsh environments

Each product has a maximum warranty of 3 years

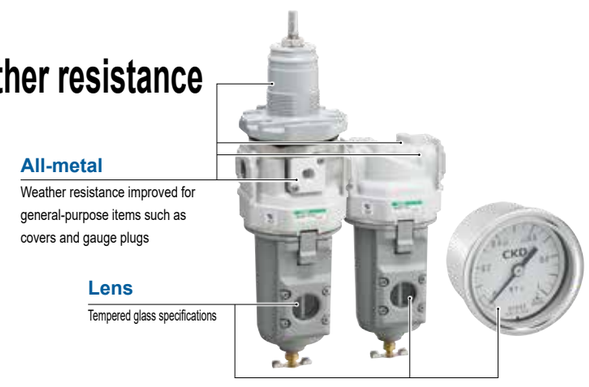
Long-term peace of mind (option)

A guarantee for a period of three years after delivery or one year after the start of use in overseas plants and companies.
(with inspection certificate, inspection guidelines, drawings, traceability system diagram)
* Cylinders, speed controllers and silencers are excluded.

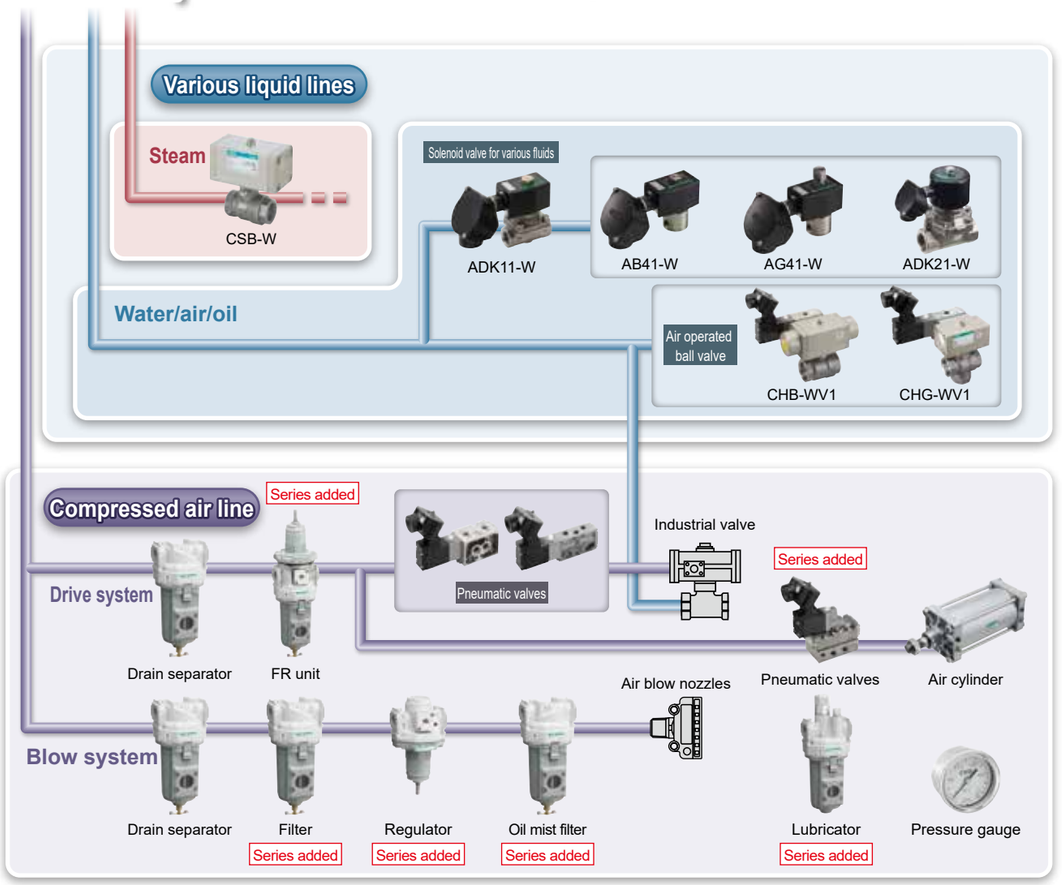


* The specifications are exchanged to clarify the warranty period.

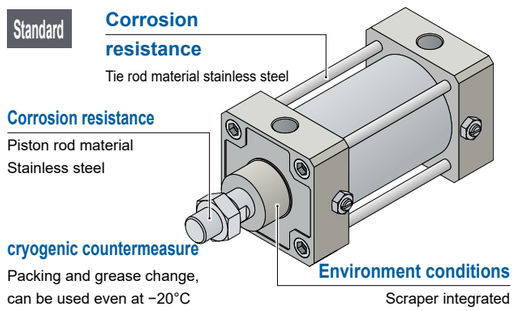
Parts with consideration for weather resistance

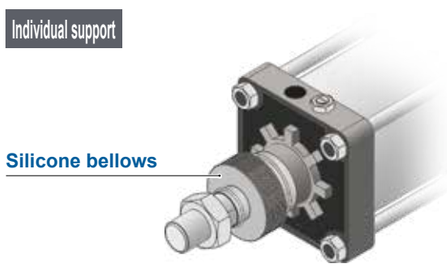


and expanded area of use and variations.



Outdoor series even for air cylinders (ø40 to ø250)





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WEATHER PROOF

Compressed air line

Drain separator/F.R.L. unit

Drain separator FXW Series P.1

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

Air filter FW Series P.5

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

Regulator RW Series P.9

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

Oil mist filter MW Series P.17

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

F.R. unit WW Series P.21

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

F.R. unit BW7019 P.25

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

Lubricator LW Series P.13

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

General-use pressure gauge GW49D Series P.28

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

Pneumatic valves

4F Series P.31, P.39

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

4F NAMUR Series P.35

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

Pneumatic auxiliary components

SL-W Series P.29

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

SC1-W Series P.30

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

Various fluid lines

Fluid control valves

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

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

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

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

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

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

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

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

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

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

Air operated ball valve CSB-W Series P.79

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

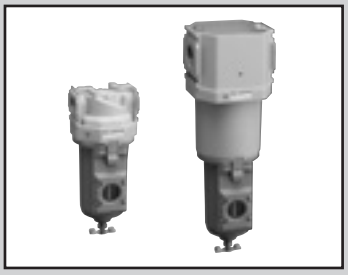
Drive components

Pneumatic cylinders

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

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

● is standard and ▲ is made to order.



Drain separator Outdoor series

FXW-W Series

Lightweight compact drain separator Compatible compressor 0.75kW to 37kW

● Port size: 1/4 to 1

JIS symbol

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Specifications

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

*1: At inlet pressure 0.7 MPa.
*2: Water separation efficiency during max. processing flow rate. (Evaporated water droplets(water vapor cannot be separated)
*3: In the case of "F" with auto-drain, the min. working pressure of auto-drain is 0.1MPa.Air is purged with initial drain until pressure reaches 0.1 MPa.
*4: In the case of "F1" with auto-drain, the min. working pressure of auto-drain is 0.15MPa.
*5: When "F""F1" with auto-drain is selected, be careful of freezing the drain.

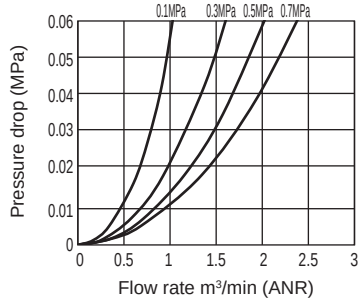
Option weight

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

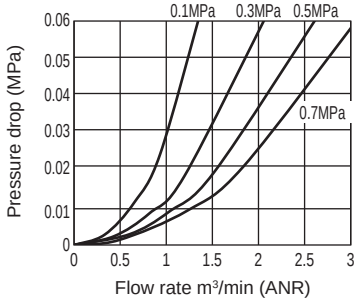
Code	Drain discharge			Attachment
	C	F	F1	BW
FXW1004	0	0.02	0.02	0.17
FXW1011	0	0.02	0.02	0.21
FXW1037	0	0.02	0.02	0.36

Flow characteristics

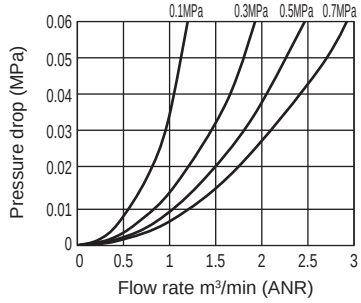
● FXW1004-8-W



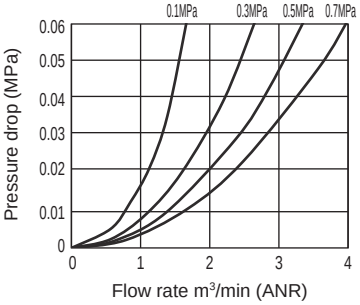
● FXW1004-10-W



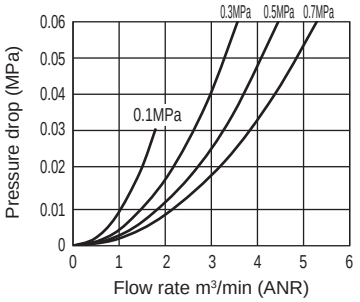
● FXW1011-8-W



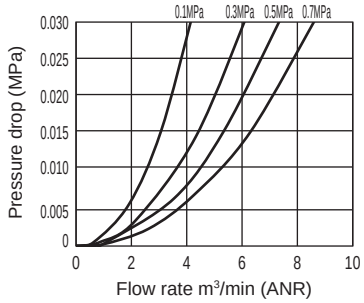
● FXW1011-10-W



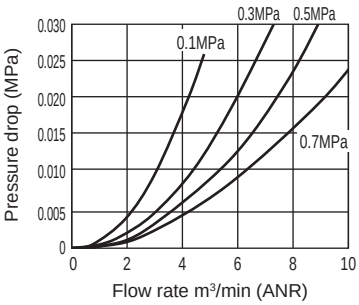
● FXW1011-15-W



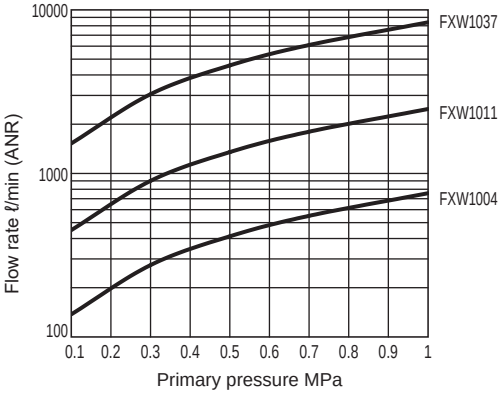
● FXW1037-20-W



● FXW1037-25-W



Max. processing flow rate



How to order

FXW1011 - 10 ( ) - W - F - ( )

Ⓐ Model No.
Ⓑ Port size
Ⓒ Port thread
Ⓓ Option
Ⓔ Attachment

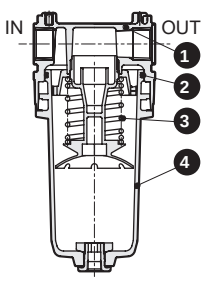
Code	Description	Ⓐ Model No. FXW1004	FXW1011	FXW1037
Ⓑ Port size				
8	1/4	●	●	
10	3/8	●	●	
15	1/2		●	
20	3/4			●
25	1			●
Ⓒ Port thread				*1, *3
Blank	Rc thread (pressure unit: MPa temperature unit indicated: °C)	●	●	●
N	NPT thread (pressure unit: psi temperature unit indicated: °F)	●	●	●
G	G thread (pressure unit: bar temperature display unit: °C)	●	●	●
Ⓓ Option				*4
Drain discharge *5 — **Blank**	Drain outlet Rc1/8 *2	●	●	●
Drain discharge *5 — **C**	With manual cock	●	●	●
Drain discharge *5 — **F**	Auto-drain with manual override (NO: Exhaust when not pressurized)	●	●	●
Drain discharge *5 — **F1**	Auto-drain with manual override (NC: No exhaust w/o pressurization)	●	●	●
guarantee period — **Blank**	1 year after delivery	●	●	●
guarantee period — **G**	3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *6, *7	●	●	●
Flow Direction — **Blank**	Standard flow (left → right)	●	●	●
Flow Direction — **X1**	Reverse flow (right → left)	●	●	●
Ⓔ Attachment				
Blank	Not included	●	●	●
BW	C-bracket	●	●	●

⚠ Precautions for model No. selection

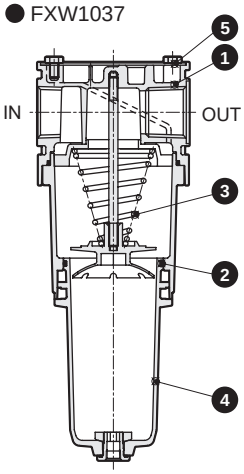
*1: G and NPT threads are available for IN, OUT and drain outlet of auto-drain.
*2: When the optional drain discharge is "blank", "N" or "G" piping thread cannot be selected.
*3: In compliance with the Measurement Act, the psi display cannot be used in Japan.
*4: Select options for the drainage, warranty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

Internal structure diagram and parts list

● FXW1004/FXW1011



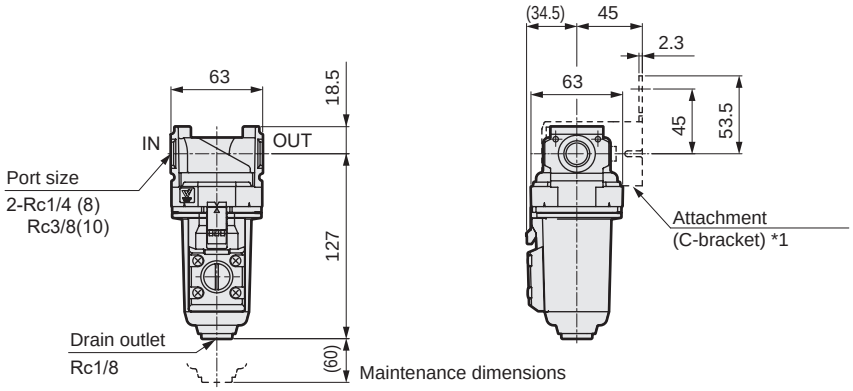
● FXW1037



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

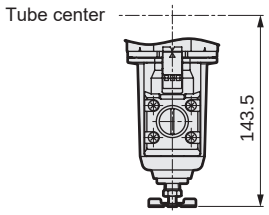
Dimensions

● FXW1004-W

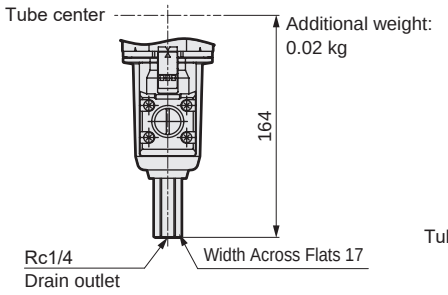


*1:The bracket is an option that will be included.

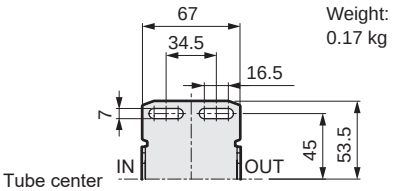
・Optional dimensions
Manual drain cock (C)



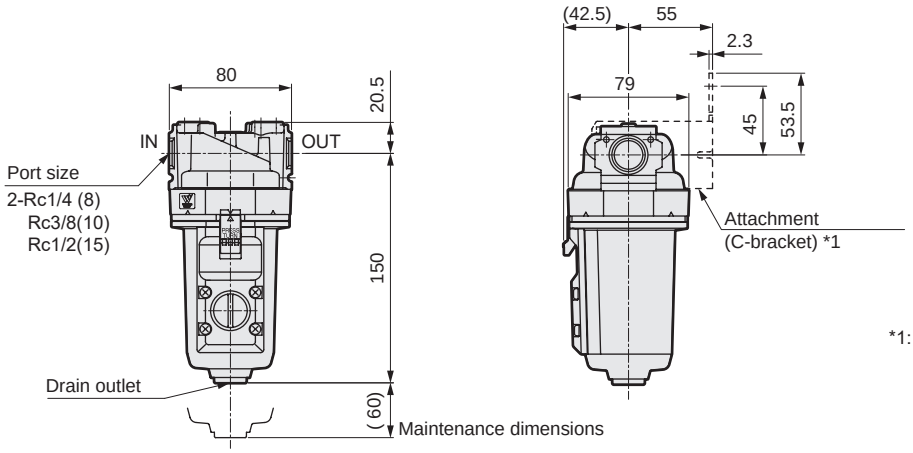
・Optional dimensions
With auto-drain (F, F1)



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

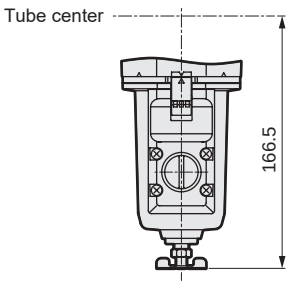


● FXW1011-W

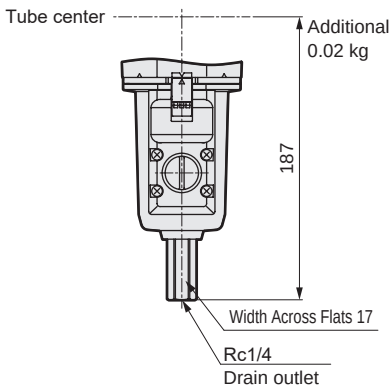


*1: The bracket is an option that will be included.

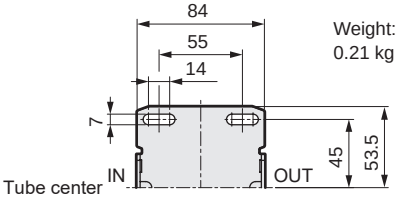
・Optional dimensions
Manual drain cock (C)



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

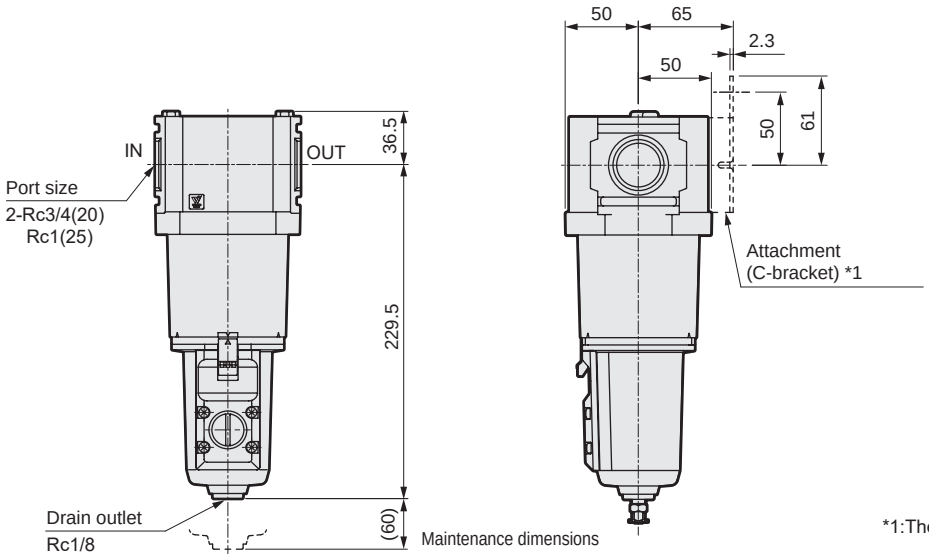


・Attachment
C-bracket (-BW)
Part model No.: B420



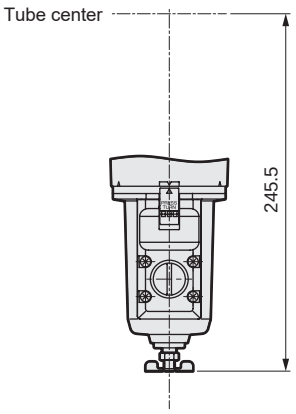
Dimensions

● FXW1037-W

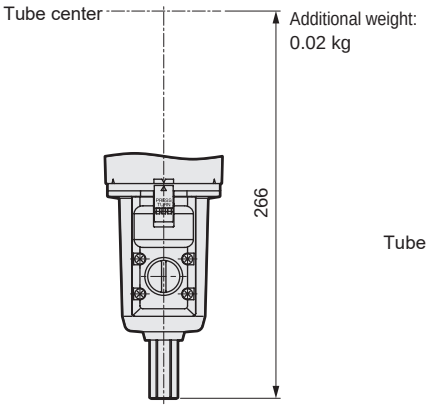


*1:The bracket is an option that will be included.

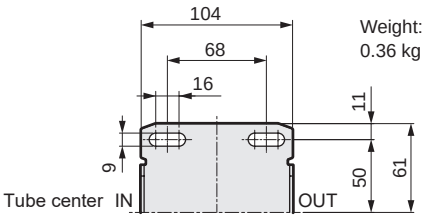
· Optional dimensions
Manual drain cock (C)

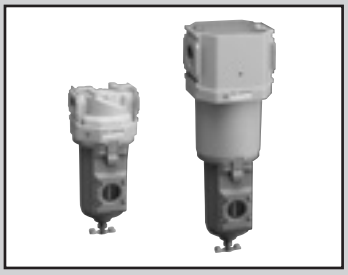


· Optional dimensions
With auto-drain (F, F1)



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



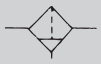


Air filter Outdoor series

FW3000/FW4000/FW8000-W Series

A series of outdoor specification products.

● Port size: 1/4 to 1

JIS symbol 

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Specifications

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

*1: In the case of "F" with auto-drain, the min. working pressure of auto-drain is 0.1MPa. Air is purged with initial drain until pressure reaches 0.1 MPa.
*2: In the case of "F1" with auto-drain, the min. working pressure of auto-drain is 0.15 MPa.
*3: When "F", "F1" with auto-drain is selected, be careful of drain freezing.
*4: Up to 170cm^3 is stored with the manual cock only.

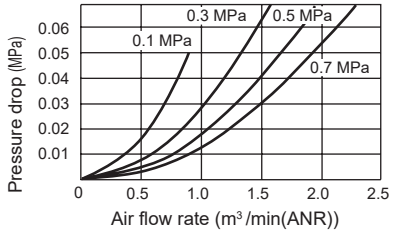
Option weight

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

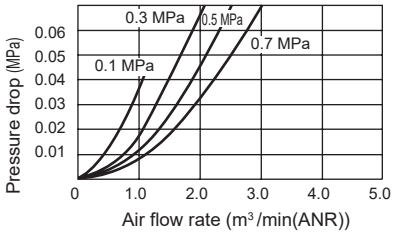
Code	Drain discharge		Attachment
	F	F1	BW
FW3000	0.02	0.02	0.17
FW4000	0.02	0.02	0.21
FW8000	0.02	0.02	0.36

Flow characteristics

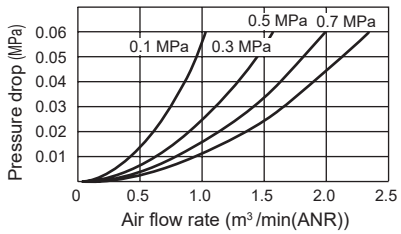
● FW3000-8-W



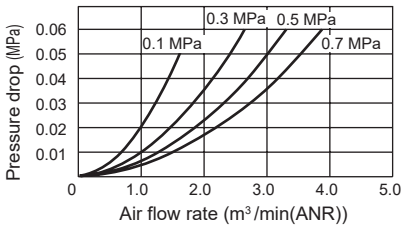
● FW3000-10-W



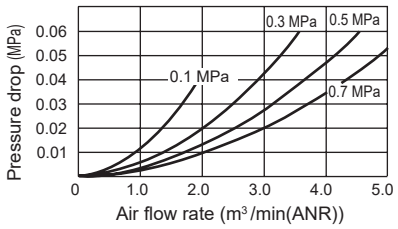
● FW4000-8-W



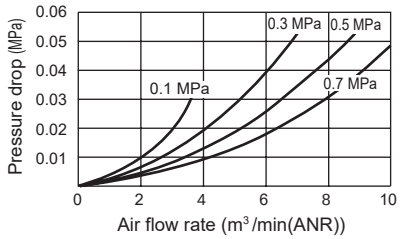
● FW4000-10-W



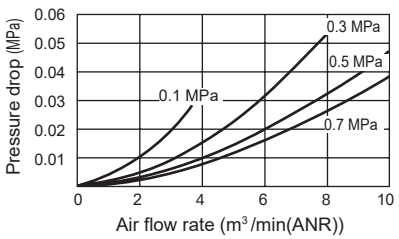
● FW4000-15-W



● FW8000-20-W

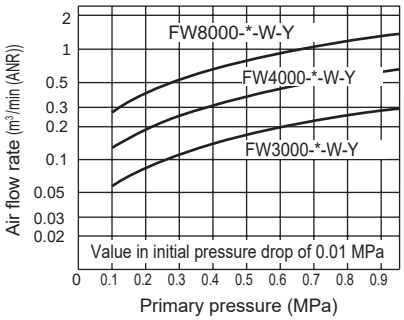


● FW8000-25-W



● FW3000
● FW4000 -*-W-Y (0.3 μm element)
● FW8000

(Max. processing flow rate)



How to order

FW3000 - 8 ○ - W - F - ○

- Ⓐ Model No.
- Ⓑ Port size
- Ⓒ Port thread
- Ⓓ Option
- Ⓔ Other attachments

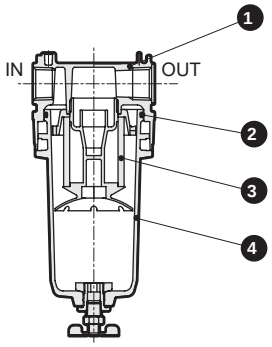
Code		Description	Ⓐ Model No. FW3000	FW4000	FW8000
Ⓑ Port size					
8		1/4	●	●	
10		3/8	●	●	
15		1/2		●	
20		3/4			●
25		1			●
Ⓒ Port thread					*1, *2
Blank		Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N		NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G		G thread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

⚠ Precautions for model No. selection

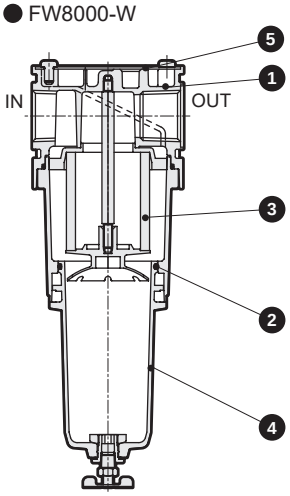
*1: G and NPT threads are available for IN, OUT and drain outlet of auto-drain.
*2: In compliance with the Measurement Act, the psi display cannot be used in Japan.
*3: Select options for the drainage, element, warranty period and flow direction Items. When selecting options for several items, list options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

Internal structure and parts list

● FW3000-W/FW4000-W



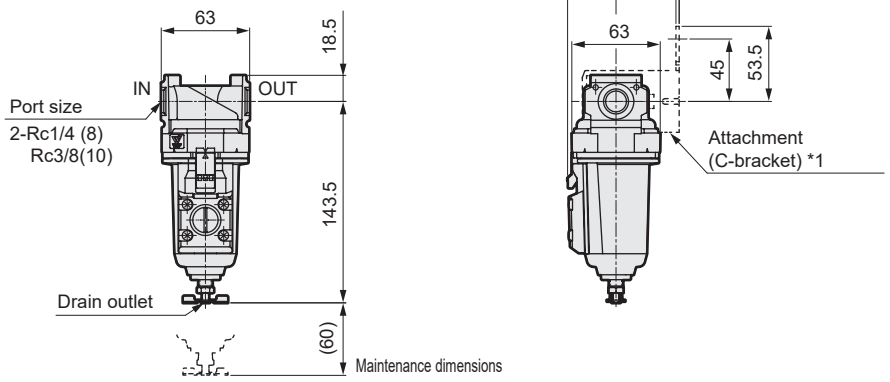
● FW8000-W



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

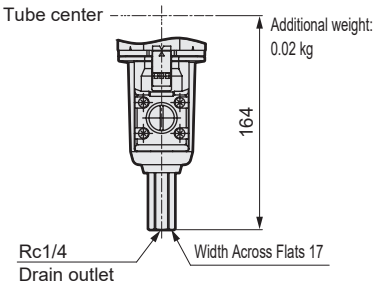
Dimensions

● FW3000-W

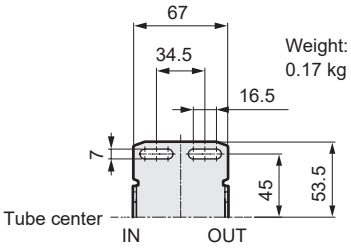


*1:The bracket is an option that will be included.

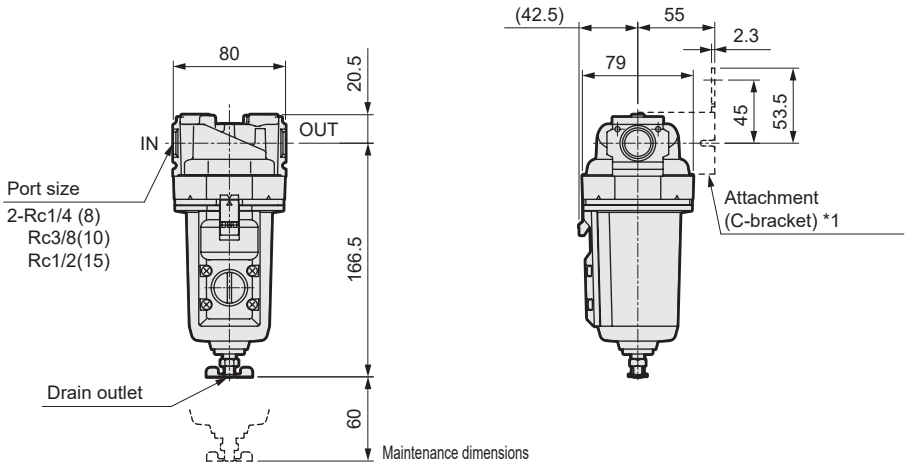
· Optional dimensions
With auto-drain (F, F1)



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

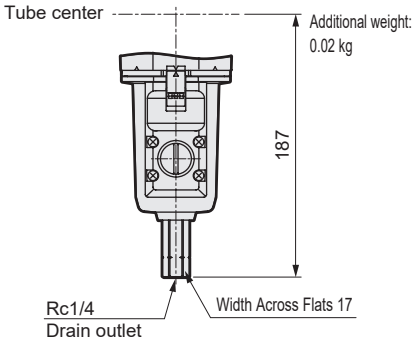


● FW4000-W

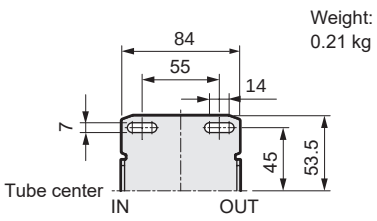


*1: The bracket is an option that will be included.

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

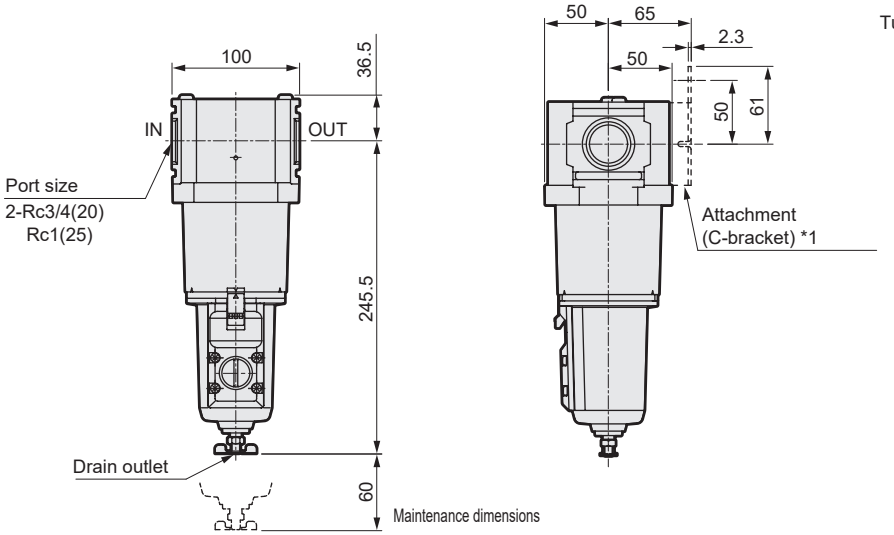


· Attachment
C-bracket (-BW)
Part model No.: B420



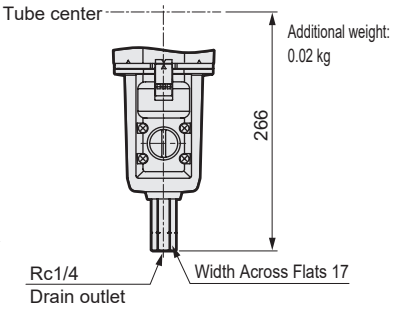
Dimensions

● FW8000-W

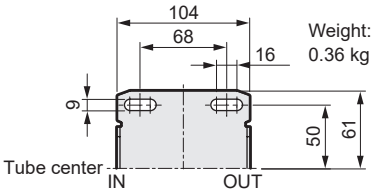


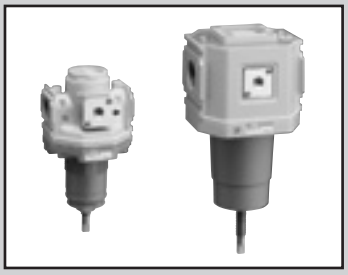
*1:The bracket is an option that will be included.

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



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





Regulator Outdoor series

RW3000/RW4000/RW8000-W Series

A series of outdoor specification products.

● Port size: 1/4 to 1

JIS symbol 

WEATHER PROOF RoHS CAD

Specifications

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

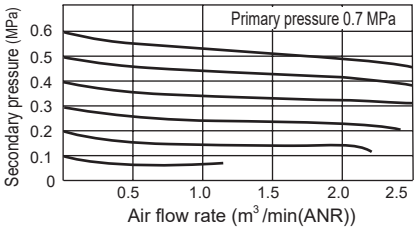
Option weight

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

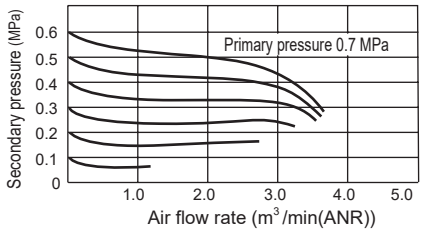
Code	Knob	Attachment
	K	BW
RW3000	0.1	0.17
RW4000	0.1	0.21
RW8000	0.1	0.36

Flow characteristics

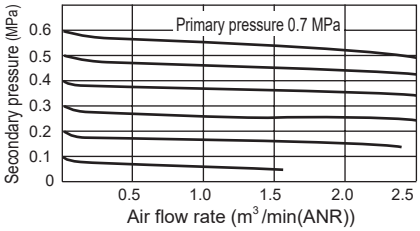
● RW3000-8-W



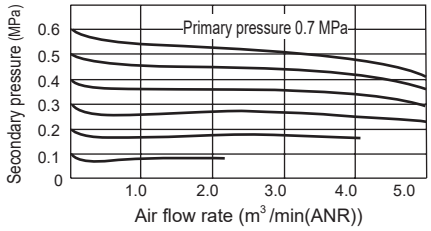
● RW3000-10-W



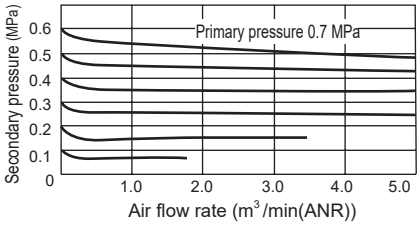
● RW4000-8-W



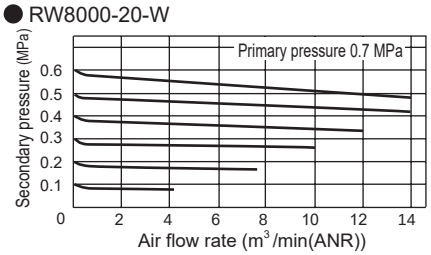
● RW4000-10-W



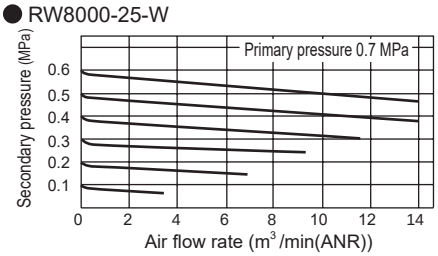
● RW4000-15-W



● RW8000-20-W

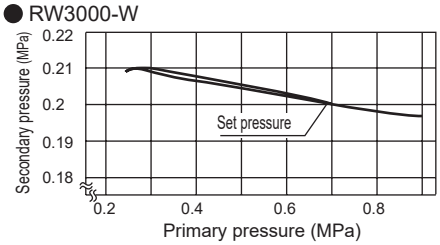


● RW8000-25-W

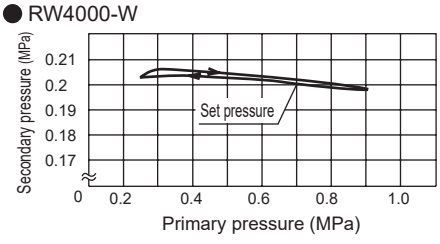


Pressure characteristics

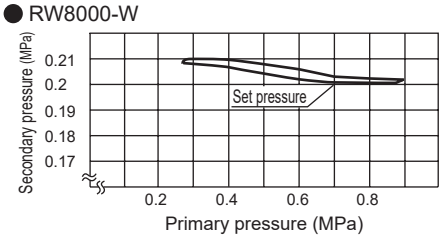
● RW3000-W



● RW4000-W



● RW8000-W



How to order

RW3000 - 8 ( ) - W - K - ( )

Ⓐ Model No.
Ⓑ Port size
Ⓒ Port thread
Ⓓ Option
Ⓔ Attachment (included)

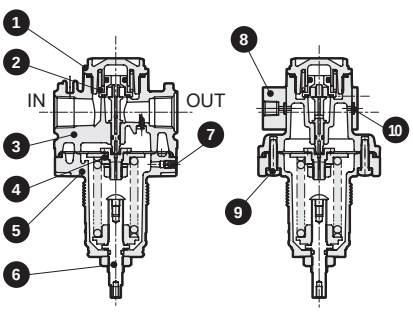
Code		Description	Ⓐ Model No. RW3000	RW4000	RW8000
Ⓑ Port size					
8		1/4	●	●	
10		3/8	●	●	
15		1/2		●	
20		3/4			●
25		1			●
Ⓒ Port thread					*1, *2
Blank		Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N		NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G		G thread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

⚠ Precautions for model No. selection

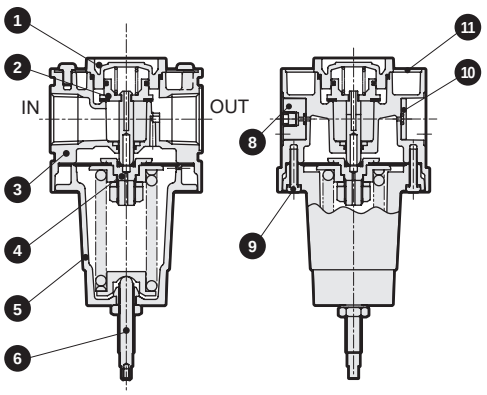
*1: G and NPT threads are available for IN, OUT and gauge ports.
*2: In compliance with the Measurement Act, the psi display cannot be used in Japan.
*3: Select options for the knob, warranty period and flow direction Items. When selecting options for several items, list options in order from the top.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

Internal structure and parts list

● RW3000-W/RW4000-W



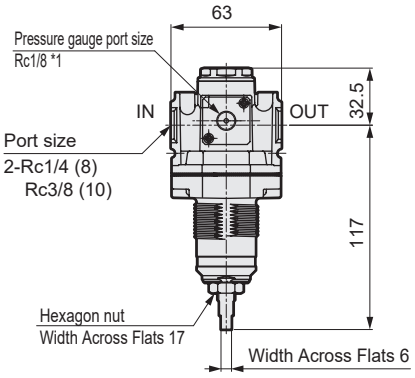
● RW8000-W

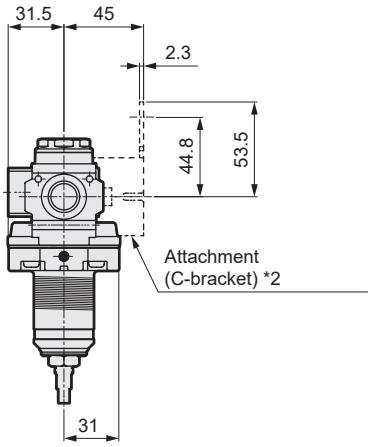


No.	Part name	Material
1	Bottom plug	Aluminum alloy die-casting
2	Valve assembly	Brass, hydrogenated nitrile rubber (polyacetal resin: RW3000 and RW4000)
3	Body	Aluminum alloy die-casting
4	Diaphragm assembly	Stainless steel, nitrile rubber, aluminum
5	Cover	Aluminum alloy die-casting
6	Adjusting screw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

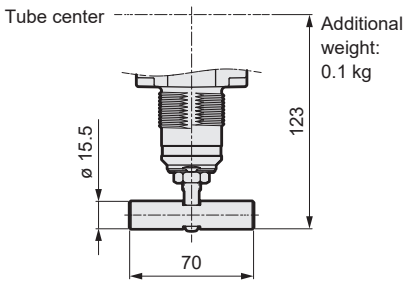
Dimensions

● RW3000-W



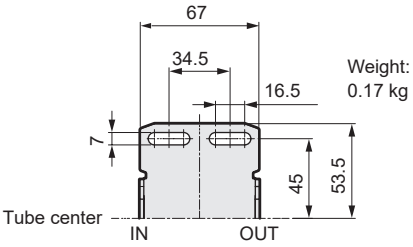


・Optional dimensions
With knob (K)

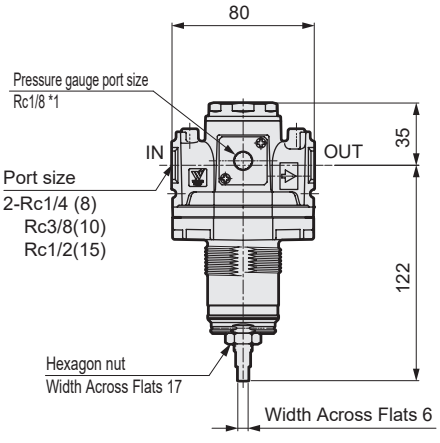


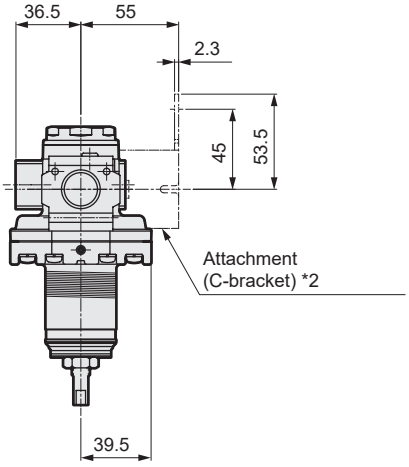
・Attachment
C-bracket (-BW)
Part model No.: B320
・Material:Steel Zinc plated

*1: Pressure gauge port is left open. Use the included pipe plug when sealing.
*2: The bracket is an option that will be included.
*3: Dimensions at the setting pressure of 0 MPa

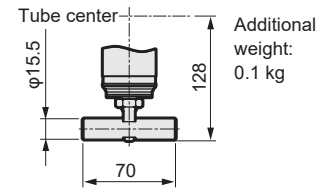


●RW4000-W

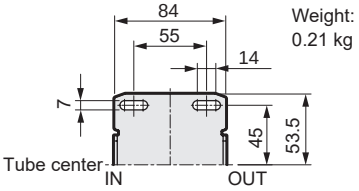




・Optional dimensions
With knob (K)



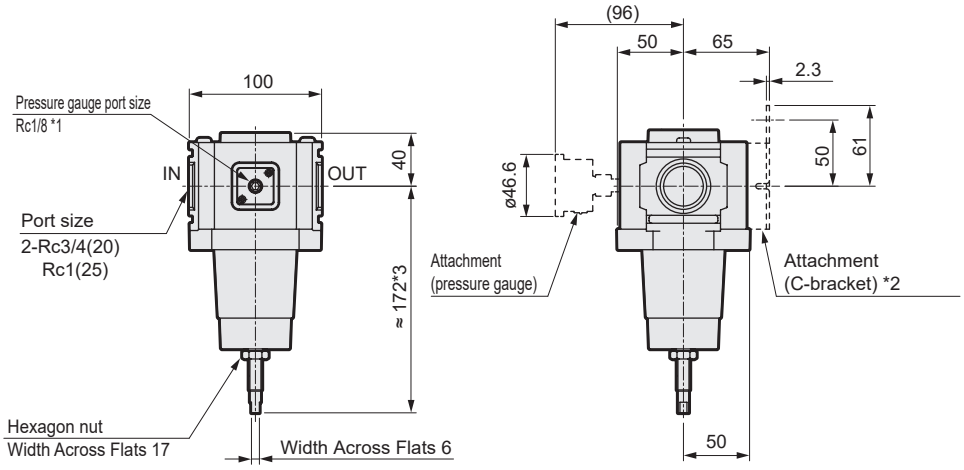
・Attachment
C-bracket (-BW)
Part model No.: B420



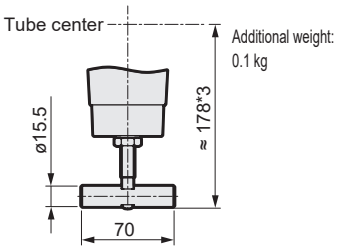
*1: Pressure gauge port is left open. Use the included pipe plug when sealing.
*2: The bracket is an option that will be included.
*3: Dimensions at the setting pressure of 0 MPa

Dimensions

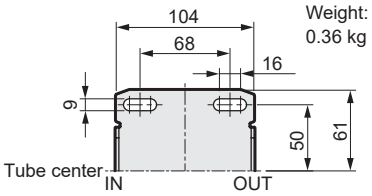
● RW8000-W



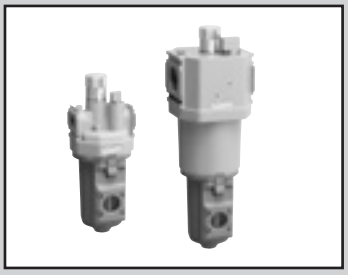
· Optional dimensions
With knob (K)



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



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



Lubricator Outdoor Series

LW3000/LW4000/LW8000-W Series

Supplies fine oil mist.

● Port size: 1/4 to 1

JIS symbol 

WEATHER PROOF RoHS CAD

Specifications

Item	LW3000-W	LW4000-W	LW8000-W
Working fluid	Compressed air		
Max. working pressure MPa	1.0		
Proof pressure MPa	1.5		
Fluid temperature °C	5 to 60 (no freezing)		
Ambient temperature °C	−10 to 60		
Min. drip flow rate *1 m^3/min(ANR)	0.03	0.065	
Oil storage capacity cm^3	85	170	170 (MAX360) *2
Oil used	Turbine oil Class 1 ISO VG32 (spindle oil cannot be used)		
Port size Rc, NPT, G	1/4, 3/8	1/4, 3/8, 1/2 (3/4 uses an adaptor)	3/4, 1 (1 1/4 uses an adaptor)
Weight kg	0.38	0.55	1.5

Option weight

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

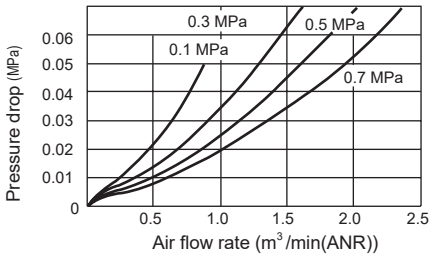
Code	Drain discharge	Attachment
	C	BW
LW3000	0	0.17
LW4000	0	0.21
LW8000	0	0.36

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

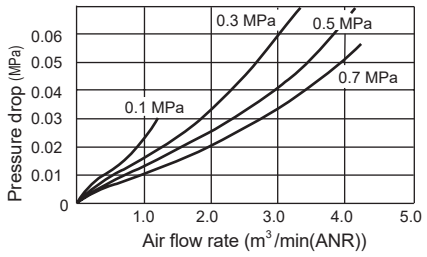
*2: When lubricating from the filling plug, set 300cm^3 or less below the top of the cup window.

Flow Rate Characteristics

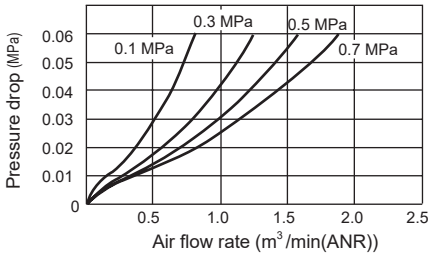
● LW3000-8-W



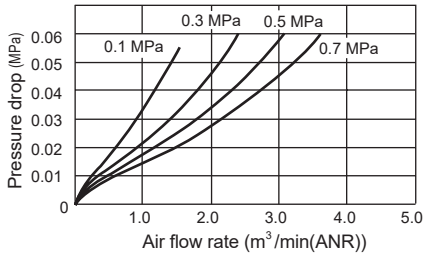
● LW3000-10-W



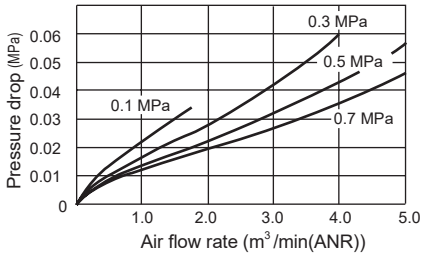
● LW4000-8-W



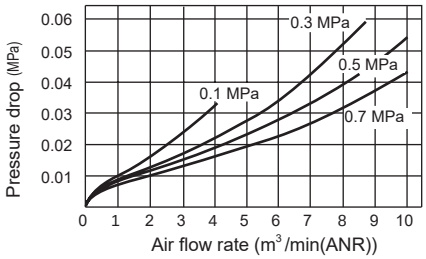
● LW4000-10-W



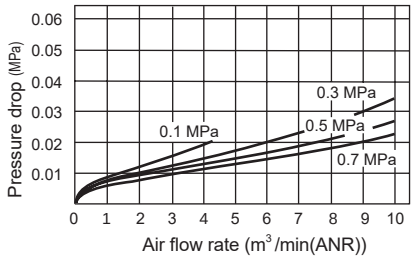
● LW4000-15-W



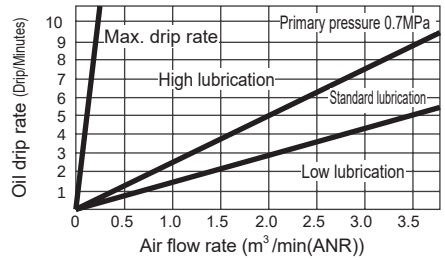
● LW8000-20-W



● LW8000-25-W



Oil drip rate



How to order

LW3000 - 8 ○ - W - C - ○

Ⓐ Model No.
Ⓑ Port size
Ⓒ Port thread
Ⓓ Option
Ⓔ Bracket (Included)

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

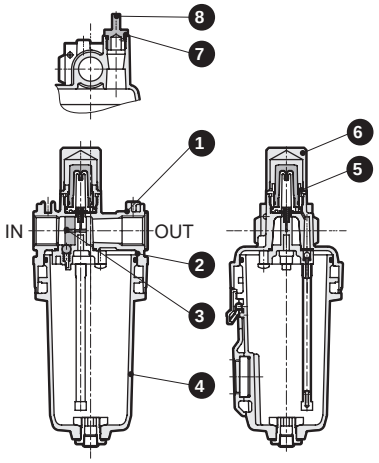
Code		Description	ⒶModel No. LW3000	LW4000	LW8000
Ⓑ Port size					
8		1/4	●	●	
10		3/8	●	●	
15		1/2		●	
20		3/4			●
25		1			●
Ⓒ Port thread					*1, *3
Blank		Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N		NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G		G thread (pressure unit: bar temperature display unit: °C)	●	●	●
Ⓓ Option					*2
Drain Discharge	**Blank**	Without manual cock	●	●	●
	C	With manual cock	●	●	●
guarantee period	**Blank**	1 year after delivery	●	●	●
	G	3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *4, *5	●	●	●
Flow Direction	**Blank**	Standard flow (left → right)	●	●	●
	X1	Reverse flow (right → left)	●	●	●
Ⓔ Bracket (included)					
Blank		Not included	●	●	●
BW		C-bracket	●	●	●

⚠ Precautions for model No. selection

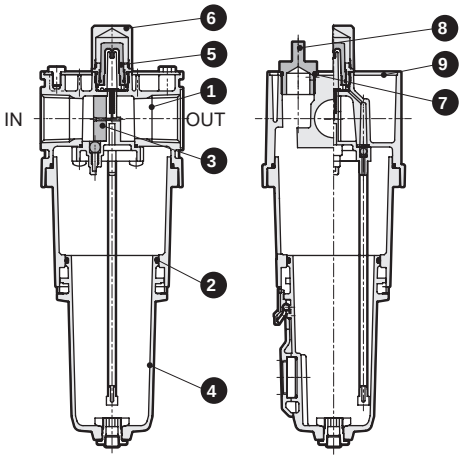
*1: G and NPT threads are available for IN and OUT.
*2: When selecting options for several items, list options in order from the top.
*3: In compliance with the Measurement Act, the psi display cannot be used in Japan.
*4: The warranty period of option G is 3 years from the date of delivery or 1 year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

Internal structure and parts list

● LW3000-W/LW4000-W



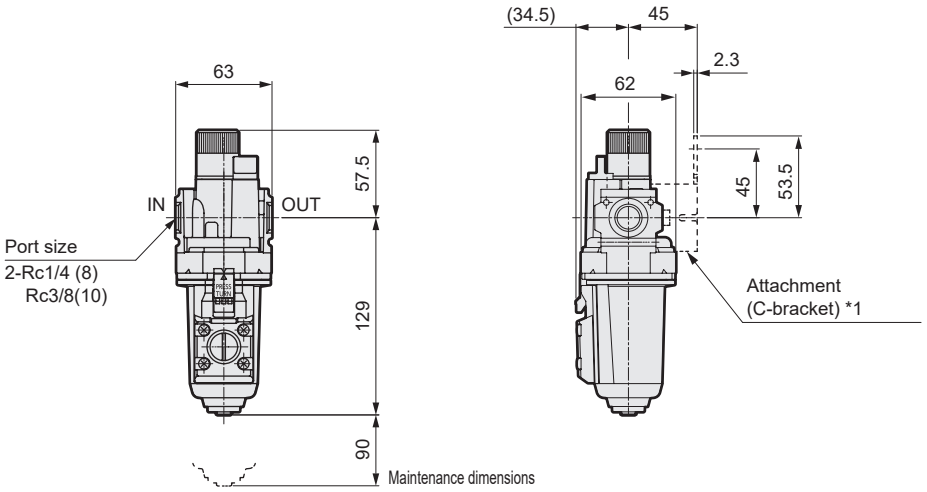
● LW8000-W



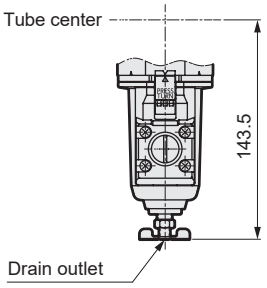
No.	Part name	Material
1	Body	Aluminum alloy die-casting
2	O-ring	Special nitrile rubber
3	Flow guide	Nitrile rubber
4	Metal bowl assembly	Aluminum alloy die-casting, Zinc alloy die-casting, stainless steel
5	Adjusting domeAssembly	Stainless steel, nitrile rubber,Polycarbonate resin
6	Dome cover	Aluminum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

Dimensions

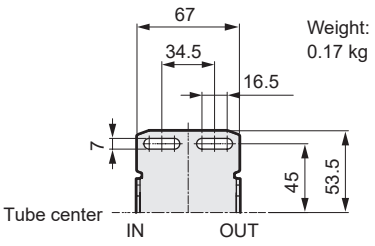
● LW3000-W



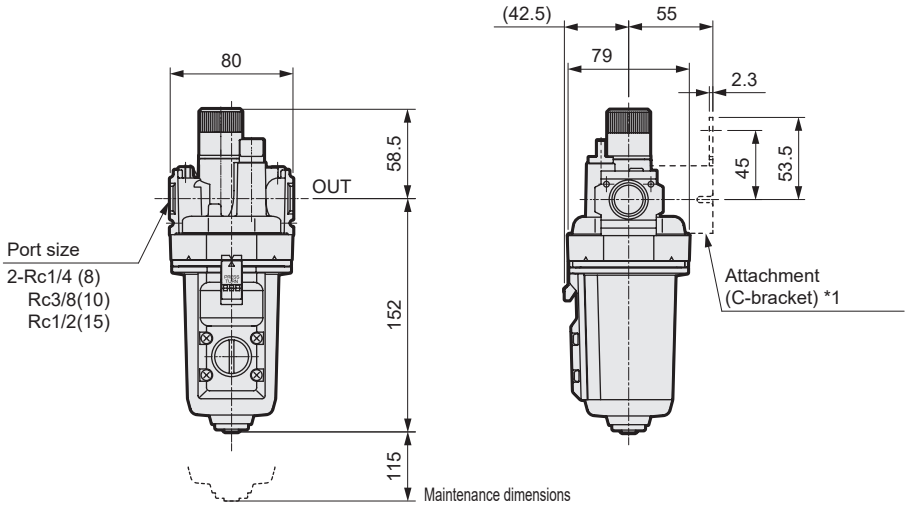
・Optional dimensions
With manual petcock (C)



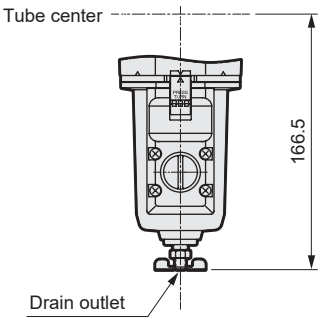
・Attachment
C-bracket (-BW)
Part model No.: B320
・Material:Steel Zinc plated



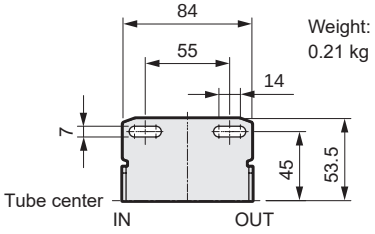
● LW4000-W



・Optional dimensions
With manual petcock (C)

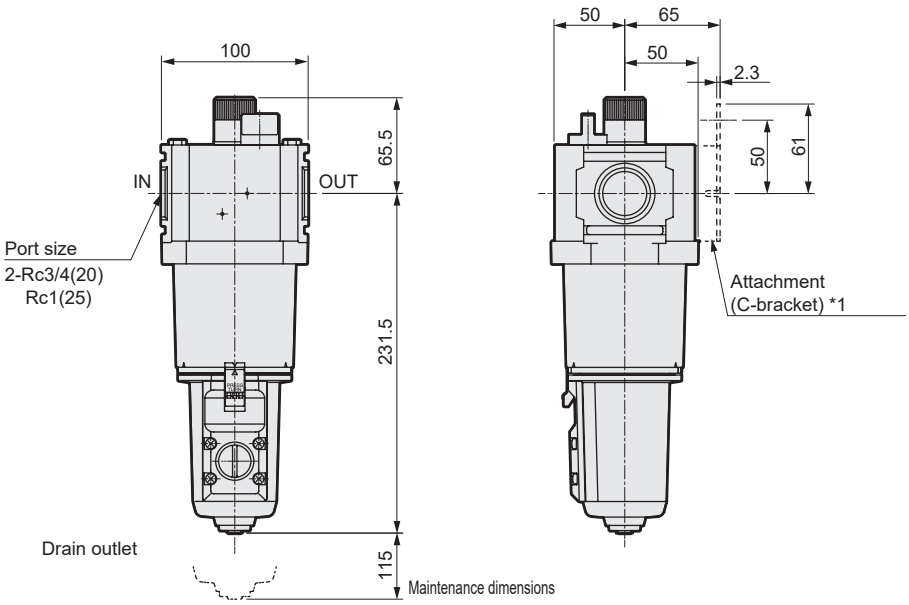


・Attachment
C-bracket (-BW)
Part model No.: B420



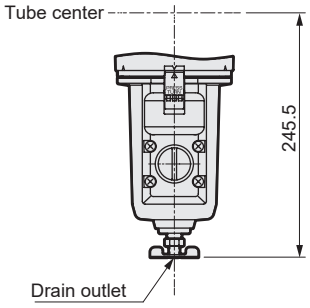
Dimensions

● LW8000-W

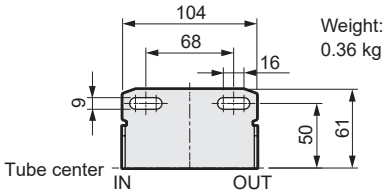


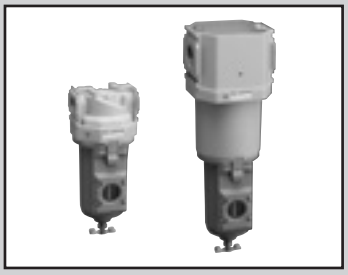
*1:The bracket is an option that will be included.

· Optional dimensions
With manual petcock (C)



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





Oil mist filter Outdoor series

MW3000/MW4000/MW8000-W Series

A series of outdoor specification products.

● Port size: 1/4 to 1

JIS symbol 

WEATHER PROOF RoHS CAD

Specifications

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

Option weight

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

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

Mantle option name		Blank (M type)	S (S type)
Max. processing flow rate ℓ/min (ANR) Primary pressure 0.7 MPaHour *1	MW3000-□-W	360	450
	MW4000-□-W	825	1000
	MW8000-□-W	2600	2900
Fluid temperature	°C	−20 to 60(no freezing)	
Ambient temperature	°C	−20 to 60	
Filtration rating	μm	0.01 (nominal)	0.3
Secondary side oil concentration	mg/m^3	0.01 or less (0.1 or less after oil saturation) *3, *4	0.5 or less *3
Mantle (element) change		1 year (6000 hours) or pressure drop 0.1 MPa	

*1: Use within the max. processing flow rate. If the max. processing flow rate is exceeded temporarily, or if the filter is installed at a location with high levels of pulsation, the mantle could be damaged or oil or drainage, etc., could splatter to the secondary side and result in a terminal malfunction.

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

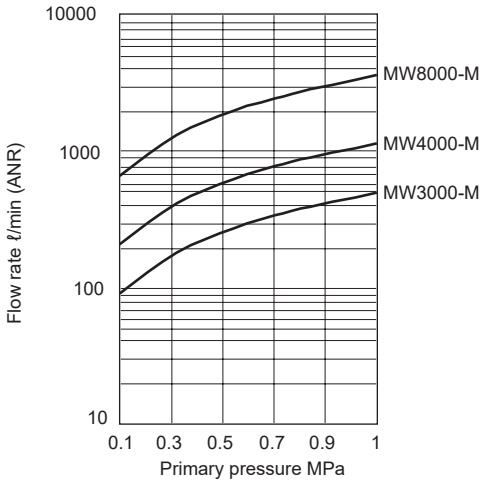
*3: The secondary oil concentration is the value when the primary oil concentration is 30 mg/m^3 and inlet air temperature is 21°C.

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

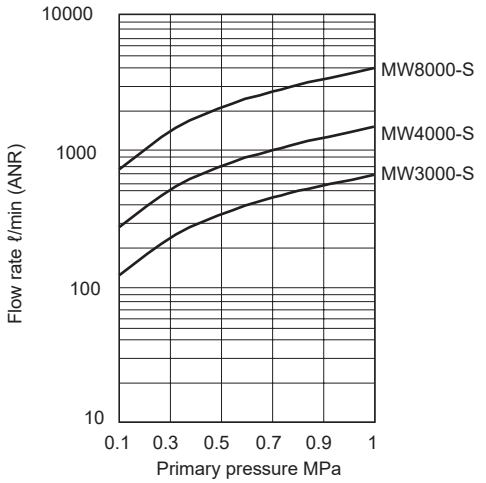
*5: In the case of "F1" with auto-drain, be careful of freezing the drain.

Flow characteristics (max. processing flow rate)

● MW*000-W-M



● MW*000-W-S



How to order

MW3000 - 8 ○ - W - S - ○

- Ⓐ Model No.
- Ⓑ Port size
- Ⓒ Port thread
- Ⓓ Option
- Ⓔ Other attachments

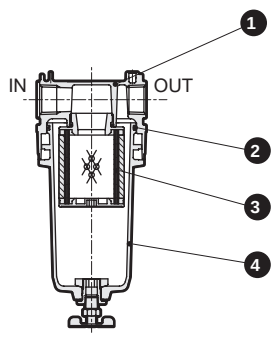
Code	Description	Ⓐ Model No. MW3000	MW4000	MW8000
Ⓑ Port size				
8	1/ 4	●	●	
10	3 / 8	●	●	
15	1/ 2		●	
20	3 / 4			●
25	1			●
Ⓒ Port thread				*1, *2
Blank	Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N	NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G	G thread (pressure unit: bar temperature display unit: °C)	●	●	●
Ⓓ Option				*3
Drain discharge *4 *5 — **Blank**	With manual cock	●	●	●
Drain discharge *4 *5 — **F1**	Auto-drain with manual override (NC: No exhaust w/o pressurization))	●	●	●
Mantle (Element) — **Blank**	M type (nominal 0.01 µm; remaining oil 0.01mg/m^3)	●	●	●
Mantle (Element) — **S**	S type (nominal 0.3 µm; remaining oil 0.5mg/m^3)	●	●	●
guarantee period — **Blank**	1 year after delivery	●	●	●
guarantee period — **G**	3 years after delivery (with inspection certificate, inspection guidelines, traceability system diagram) *6, *7	●	●	●
Flow Direction — **Blank**	Standard flow (left → right)	●	●	●
Flow Direction — **X1**	Reverse flow (right → left)	●	●	●
Ⓔ Other attachments				
Blank	Not included	●	●	●
BW	C-bracket	●	●	●

⚠ Precautions for model No. selection

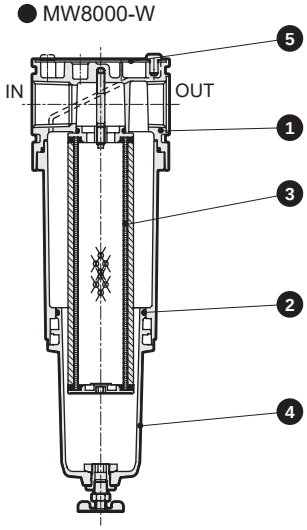
*1: G and NPT threads are available for IN, OUT and drain outlet of auto-drain.
*2: In compliance with the Measurement Act, the psi display cannot be used in Japan.
*3: Select options for the drainage, mantle, warranty period and flow direction. When selecting options for several items, list options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

Internal structure and parts list

● MW3000-W/MW4000-W



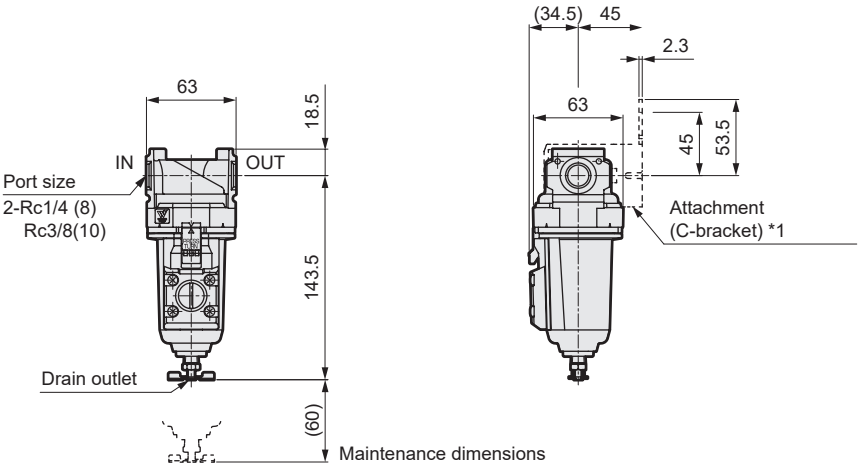
● MW8000-W



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

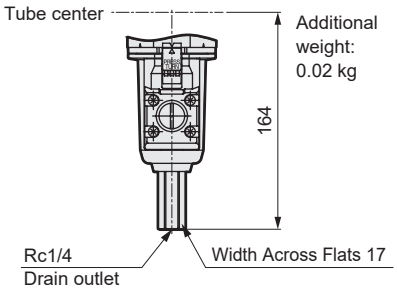
Dimensions

● MW3000-W

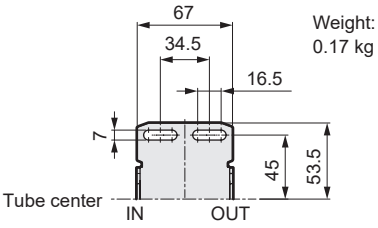


*1:The bracket is an option that will be included.

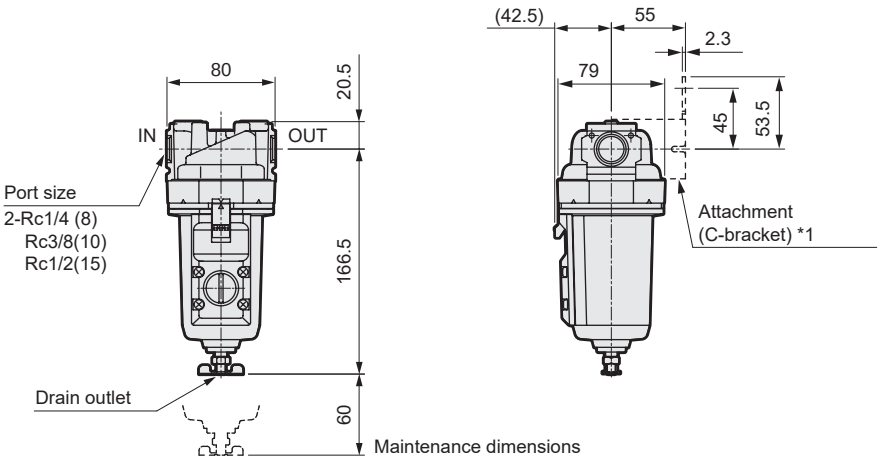
・Optional dimensions
With auto-drain (F1)



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

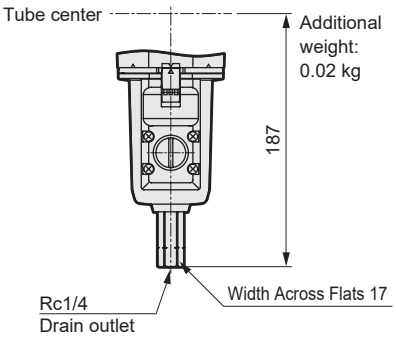


● MW4000-W

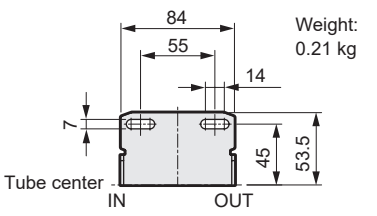


*1:The bracket is an option that will be included.

・Optional dimensions
With auto-drain (F1)

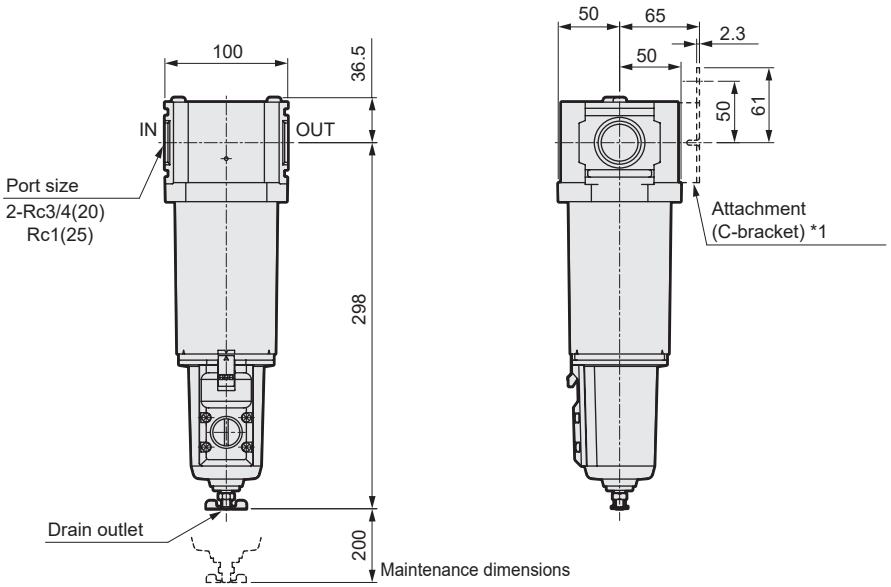


・Attachment
C-bracket (-BW)
Part model No.: B420



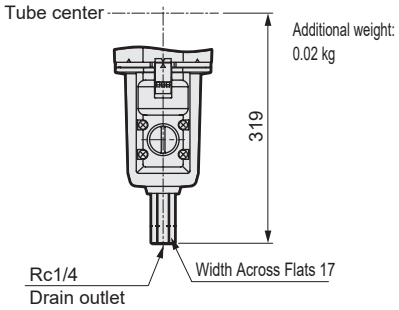
Dimensions

● MW8000-W

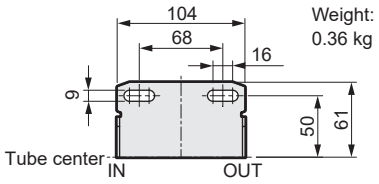


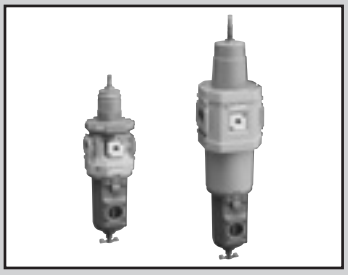
*1:The bracket is an option that will be included.

· Optional dimensions
With auto-drain (F1)



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





Filter/regulator Outdoor series

WW3000/WW4000/WW8000-W Series

A series of outdoor specification products.

● Port size: 1/4 to 1

JIS symbol 

WEATHER PROOF RoHS CAD

Specifications

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

Option weight

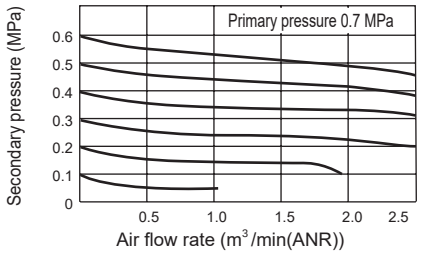
* Add to the weight of the standard accessories. Unit: kg

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

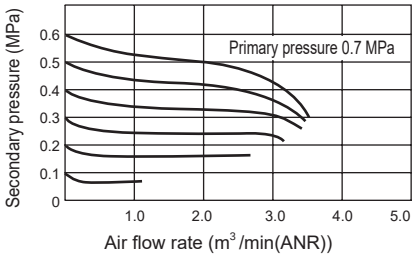
*1: In the case of "F" with auto-drain, the min. working pressure of auto-drain is 0.1 MPa. Air is purged with initial drainage until pressure reaches 0.1 MPa.
*2: In the case of "F1" with auto-drain, the min. working pressure of auto-drain is 0.15MPa.
*3: Up to 170cm^3 is stored with the manual cock only.
*4: When "F" or "F1" with auto-drain is selected, be careful of drain freezing.

Flow characteristics

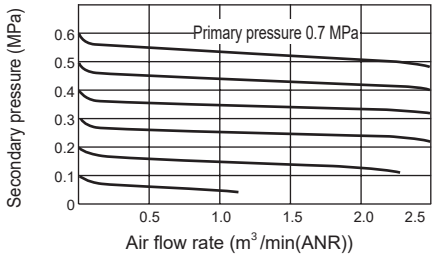
● WW3000-8-W



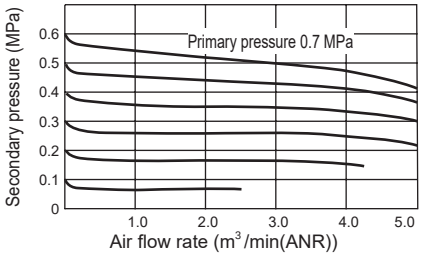
● WW3000-10-W/WW3000-15-W



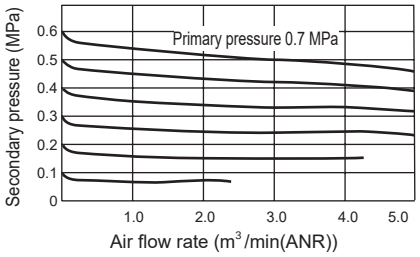
● WW4000-8-W



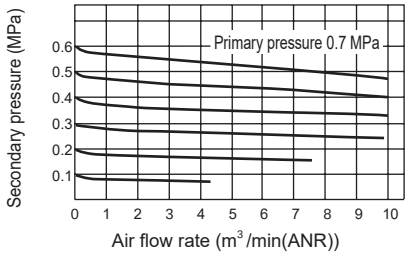
● WW4000-10-W



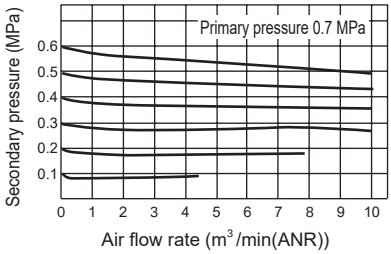
● WW4000-15-W



● WW8000-20-W

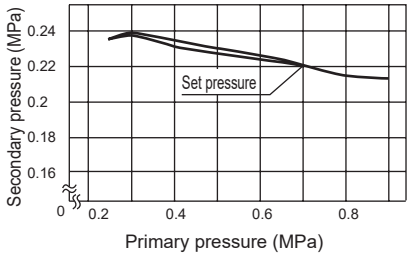


● WW8000-25-W

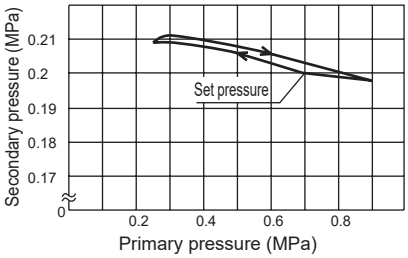


Pressure characteristics

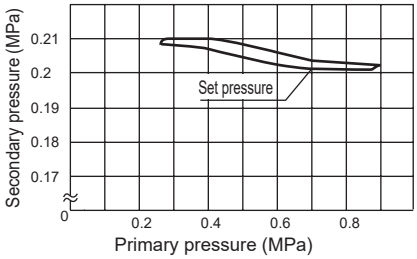
● WW3000-W



● WW4000-W



● WW8000-W



How to order

WW3000 - 8 ○ - W - F - ○

- Ⓐ Model No.
- Ⓑ Port size
- Ⓒ Port thread
- Ⓓ Option
- Ⓔ Other attachments

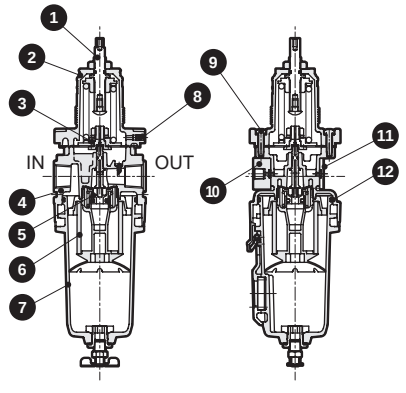
Code		Description	Ⓐ Model No. WW3000	WW4000	WW8000
Ⓑ Port size					
8		1/4	●	●	
10		3/8	●	●	
15		1/2	●	●	
20		3/4			●
25		1			●
Ⓒ Port thread					*1, *2
Blank		Rc thread (pressure unit: MPa temperature display unit: °C)	●	●	●
N		NPT thread (pressure unit: psi temperature display unit: °F)	●	●	●
G		G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

⚠ Precautions for model No. selection

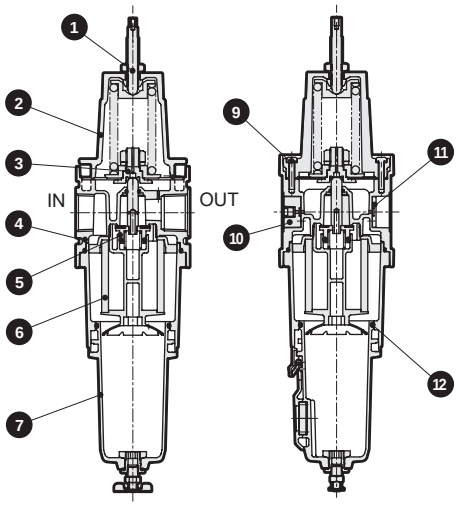
*1: G and NPT threads are available for IN, OUT, gauge port and drain outlet of auto-drain.
*2: In compliance with the Measurement Act, the psi display cannot be used in Japan.
*3: Select options for the drainage, element, knob, warranty period and flow direction Items. When selecting options for several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

Internal structure diagram and parts list

● WW3000-W/WW4000-W



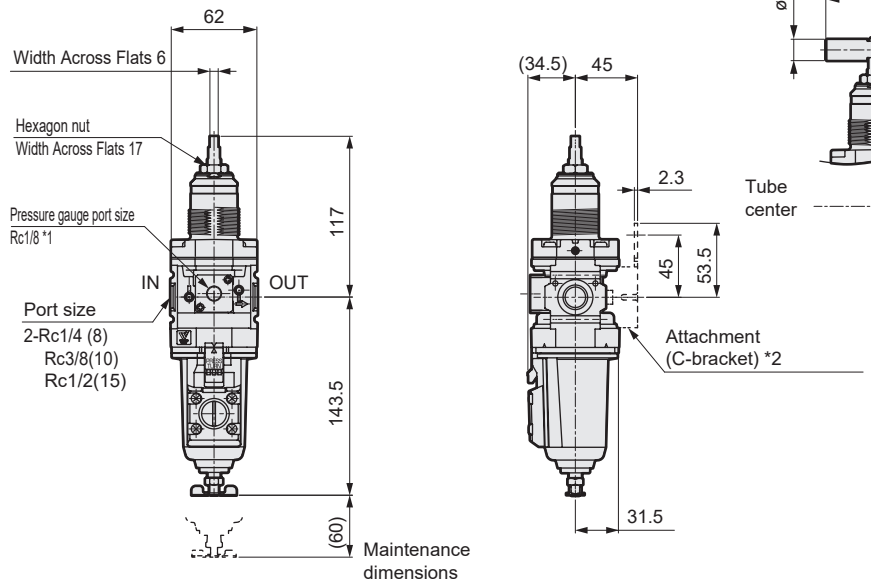
● WW8000-W



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

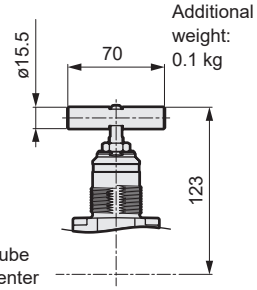
Dimensions

● WW3000-W

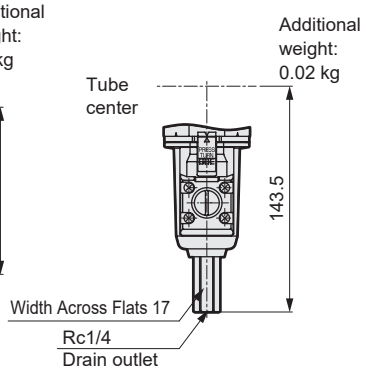


• Optional dimensions

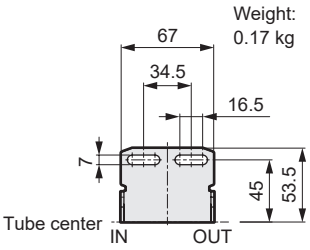
With knob (K)



With auto-drain (F, F1)

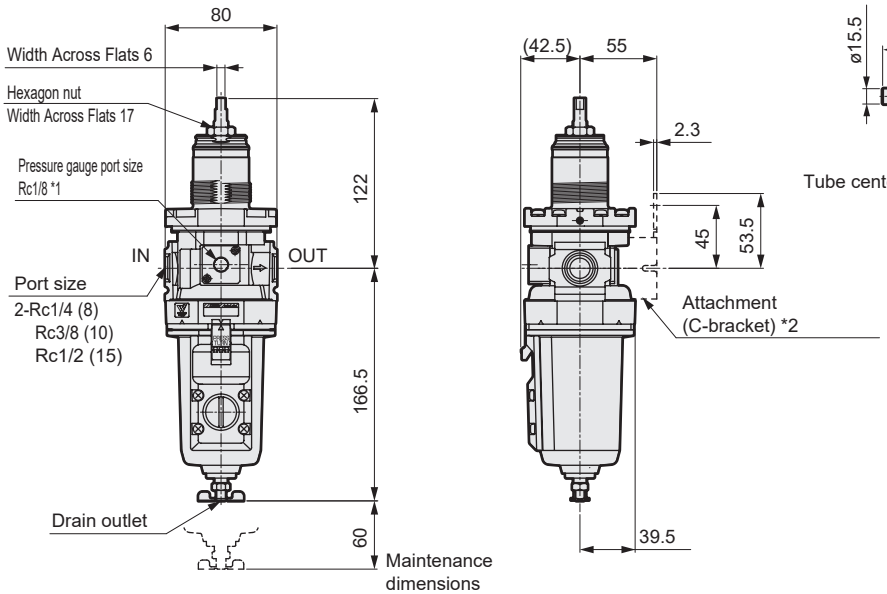


• Attachment
C-bracket (-BW)
Part model No.: B320
• Material:Steel Zinc plated



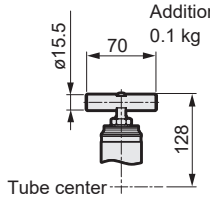
*1: Pressure gage port is left open. Use the included pipe plug when sealing.
*2: The bracket is an option that will be included.
*3: Dimensions at the setting pressure of 0 MPa

● WW4000-W

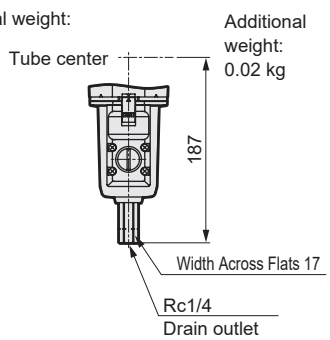


• Optional dimensions

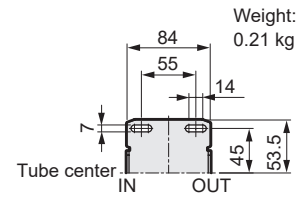
With knob (K)



With auto-drain (F, F1)



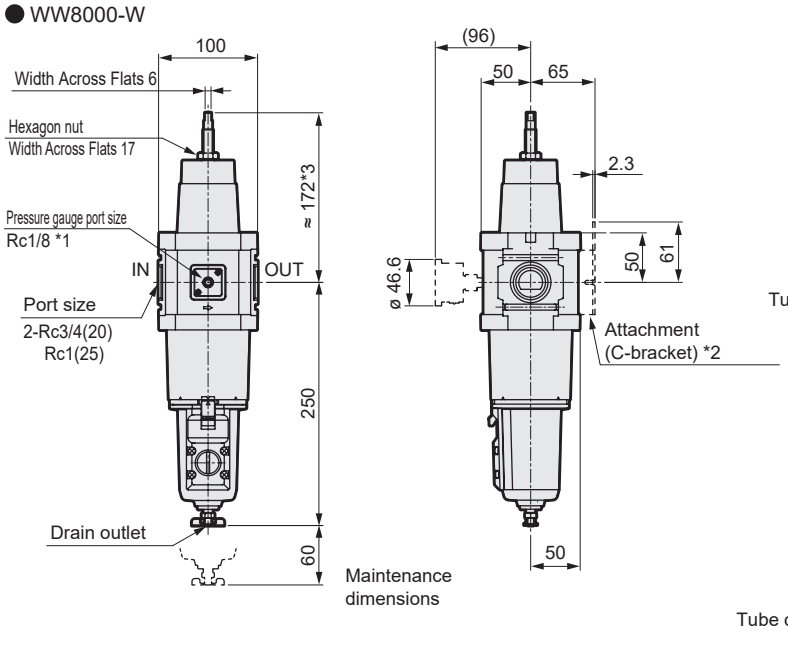
• Attachment
C-bracket (-BW)
Part model No.: B420

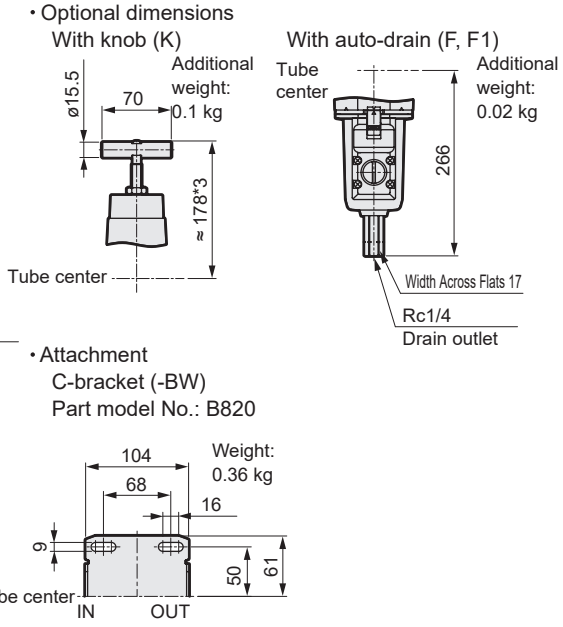


*1: Pressure gage port is left open. Use the included pipe plug when sealing.
*2: The bracket is an option that will be included.
*3: Dimensions at the setting pressure of 0 MPa

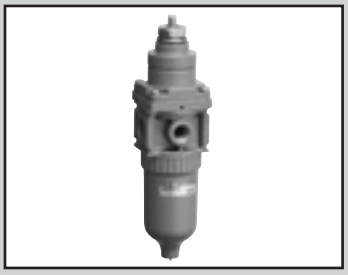
Dimensions

● WW8000-W





*1: Pressure gage port is left open. Use the included pipe plug when sealing.
*2: The bracket is an option that will be included.
*3: Dimensions at the setting pressure of 0 MPa



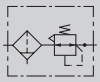
Filter/Regulator Outdoor series

BW7019 Series

Air filter/regulator integrated.

● Port size: Rc1/4

JIS



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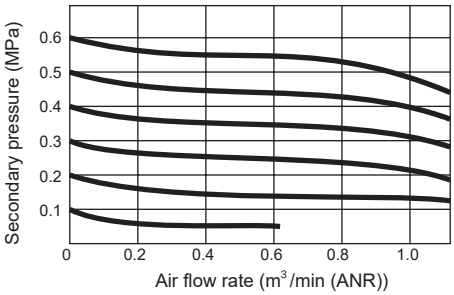
Specifications

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

*1: When a piston drain "D" is used, min. working pressure is 0.1MPa. Do not use this device on equipment that experiences impacts.
*2: When using the piston drain "D", be careful of freezing the drain.

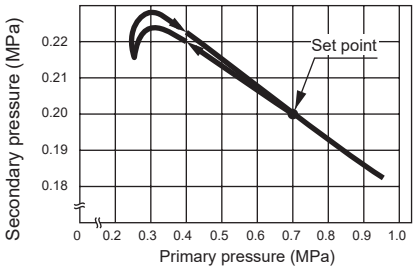
Flow Rate Characteristics

● BW7019 Rc1/4



Pressure characteristics

● BW7019



How to order

BW7019 - 2C - ○ - ○

Ⓐ Port size
Ⓑ Option
Ⓒ Other attachments

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

⚠ Precautions for model No. selection

*1: The warranty period of option G is 3 years from the date of delivery or 1 year from initial use, whichever comes first.
*2: For option G, the specifications and drawings must be agreed upon.

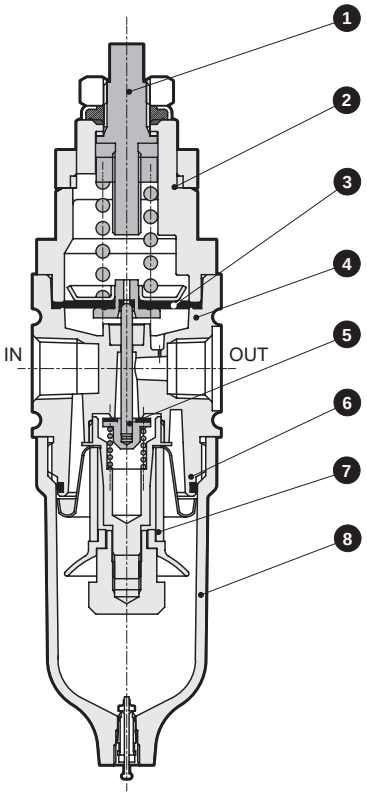
Option weight

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

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

Internal structure and parts list

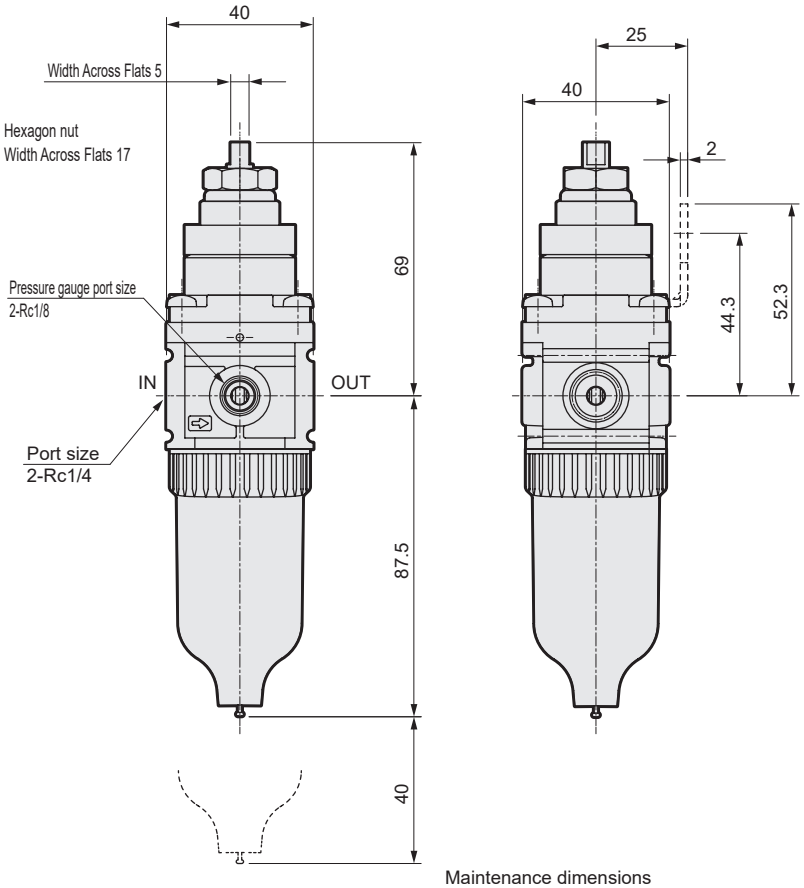
● BW7019



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

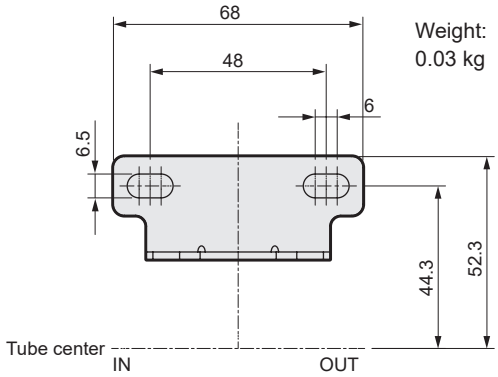
Dimensions CAD

● BW7019

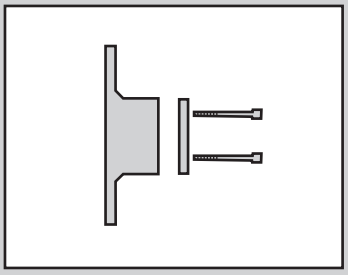


Maintenance dimensions

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



Weight:
0.03 kg



Included component

Bracket Outdoor Series

BW Series

Joiner Outdoor Series

JW Series

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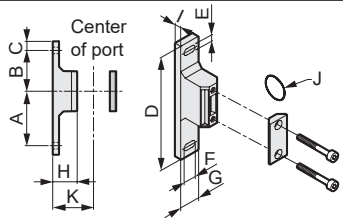
Dimensions

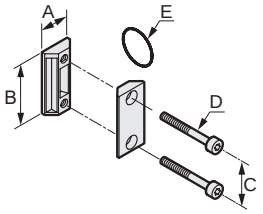
T-bracket set



Material: Aluminum die-casting
Stainless steel mounting screws used

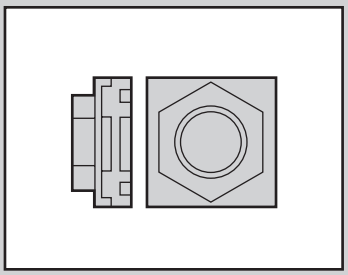
Model No.	Compatibility	A	B	C	D	E	F	G	H	I	J	K	Weight (kg)
BW310-W	3000 Series FXW1004 Series	60	45	10	125	7	14	22	27	7	JIS B2401-P21	45	0.086
BW410-W	4000 Series FXW1011 Series	60	45	10	125	7	14	22	37	7	JIS B2401-P21	55	0.094
BW810-W	8000 Series FXW1037 Series	70	50	15	150	9	14	27	37	8	AS568-127	65	0.169

Joiner set



Material: Aluminum die-casting
Stainless steel mounting screws used

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



Pipe adaptor Outdoor Series

AW400/AW800 Series

Port size: Rc1/4 to Rc11/4

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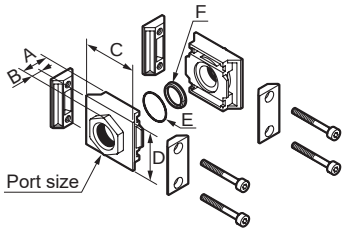
Dimensions

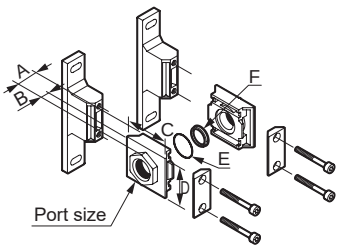
Pipe adaptor set



Material: Aluminum die-casting
Stainless steel mounting screws used

Model No.	Port size	Compatibility	A	B	C	D	E (O-ring)	F (gasket)	Other
AW400-8-W	Rc1/4	3000 Series 4000 Series FXW1004 Series FXW1011 Series	20 (25) [34]	6 (11) [20]	50	45	JISB2401 P21 1 pc.	1 pc.	Values in ( ) are for Rc3/4 Values in [ ] are for the Rc1
AW400-10-W	Rc3/8								
AW400-15-W	Rc1/2								
AW400-20-W	Rc3/4								
AW400-25-W	Rc1								
AW800-20-W	Rc3/4	8000 Series FXW1037 Series	35 (38)	15 (18)	81	66	AS568-127 1 pc.	1 pc.	Values in ( ) are for Rc1 1/4
AW800-25-W	Rc1/								
AW800-32-W	Rc1 1/4								

Pipe adaptor set



Material: Aluminum die-casting
Stainless steel mounting screws used

Model No.	Port size	Compatibility	A	B	C	D	E (O-ring)	F (gasket)	Other
AW400-8-W-B31W	Rc1/4	3000 Series FXW1004 Series	20	6	50	45	JISB2401 P21 1 pc.	1 pc.	-
AW400-10-W-B31W	Rc3/8								
AW400-15-W-B31W	Rc1/2								
AW400-8-W-B41W	Rc1/4	3000 Series 4000 Series FXW1004 Series FXW1011 Series	20 (25) [34]	6 (11) [20]	50	45	JISB2401 P21 1 pc.	1 pc.	Values in ( ) are for Rc3/4 Values in [ ] are for the Rc1
AW400-10-W-B41W	Rc3/8								
AW400-15-W-B41W	Rc1/2								
AW400-20-W-B41W	Rc3/4								
AW400-25-W-B41W	Rc1								
AW800-20-W-B81W	Rc3/4	8000 Series FXW1037 Series	35 (38)	15 (18)	81	66	AS568-127 1 pc.	1 pc.	Values in ( ) are for Rc1 1/4
AW800-25-W-B81W	Rc1								
AW800-32-W-B81W	Rc1 1/4								

Pressure Gauge Outdoor Series

GW49D Series

● Port size: R1/8, R1/4

JIS symbol 

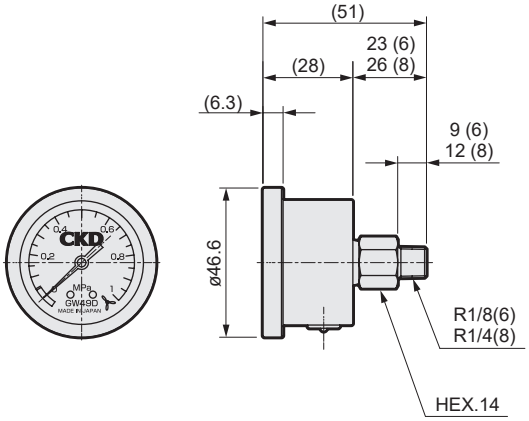
WEATHER PROOF RoHS CAD

Specifications

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

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

Dimensions



How to order

GW49D - 6 - P10

- A Model No.
- B Port size
- C Pressure display

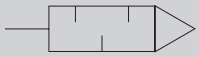
Code	Description
A Model No.	
GW49D	
B Port size	
6	$R^1/_8$
8	$R^1/_4$
C Pressure display [MPa] *1	
P10	0 to 1.0 MPa

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

Silencer Metal body Outdoor Series

SL-W Series

● Port size: R1/4 to R1/2

JIS symbol 

WEATHER PROOF RoHS CAD

Specifications

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

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

How to order

SL - 8A - W

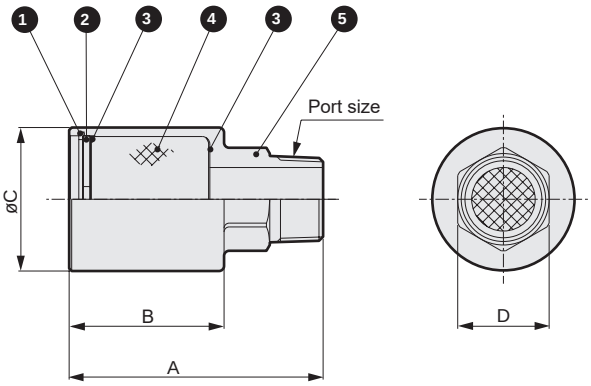
● Replacement element

SL - 8A - EL

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

Dimensions/Internal structure and main parts list

● SL-8A to 15A-W



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

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

⚠Safety precautions

● Use appropriate torque to tighten the pipes when connecting them.

● Noise reduction effect values are based on JIS standards. Silencing could vary with the type of circuit and pressure used.

[Recommended tightening torque]

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

Speed controller Medium bore size Outdoor Series

SC1-W Series

● Port size: Rc1/4 to Rc1/2

JIS symbol 

WEATHER PROOF RoHS CAD

Specifications

Item Item		SC1-8-W	SC1-10-W	SC1-15-W
Working fluid		Compressed air		
Max. working pressure MPa		1.0		
Min. working pressure MPa		0.05		
Proof pressure MPa		1.5		
Fluid temperature °C		5 to 60		
Ambient temperature °C		−10 to 60 (no freezing)		
Port size Rc		1/4	3/8	1/2
Weight g		95	205	195
Dial value (needle position)		10	10	10
Free flow	Flow rate ℓ/min (ANR)	930	2600	2900
	Effective cross-sectional area mm²	14	39	43
Controlled flow	Flow rate ℓ/min (ANR)	870	1500	2400
	Effective cross-sectional area mm²	13	22	36

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

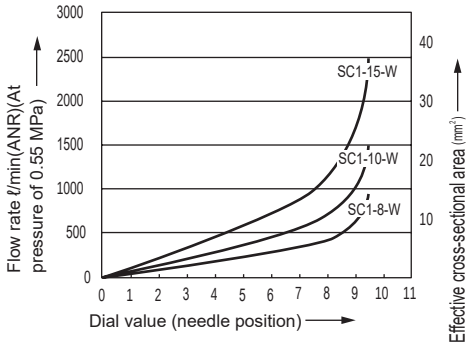
How to order

SC1 - 8 - W

Ⓐ Port size

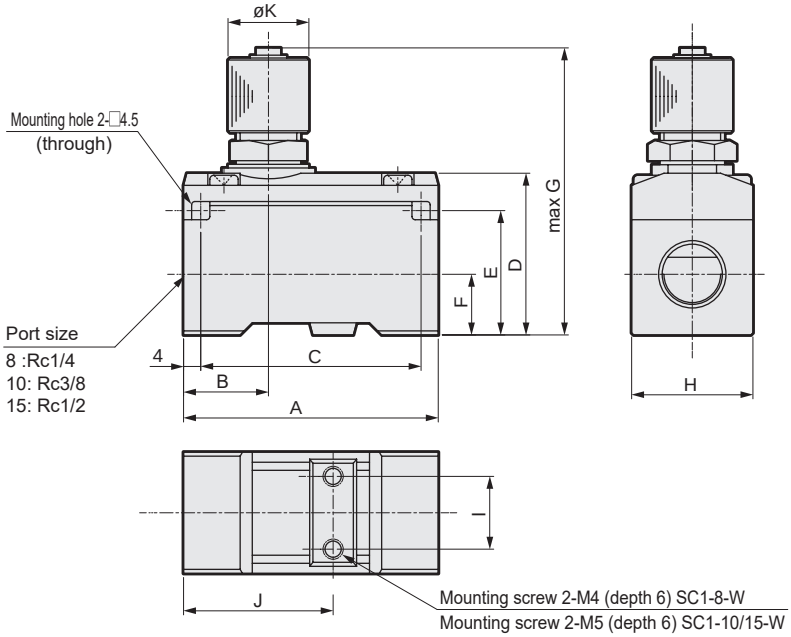
Code	Description
Ⓐ Port size	
8	Rc1/4
10	Rc3/8
15	Rc1/2

Flow characteristics



Dimensions

● SC1-W

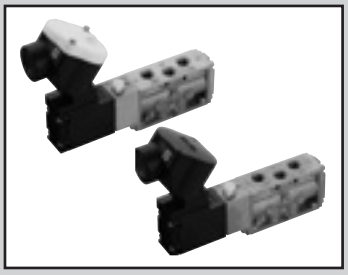


Model No.	A	B	C	D	E	F
SC1-8-W	50	20	42	31	23	11
SC1-10/15-W	63	21	55	40	31	15

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

⚠Safety precautions

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



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

4F2/3-W Series

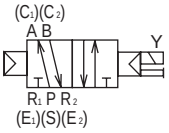
● Cylinder bore size: ø40 to ø100

WEATHER PROOF RoHS CAD

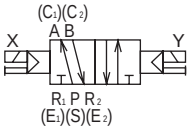
JIS symbol

● 5-port valve

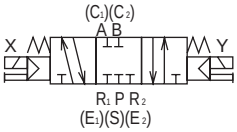
2 position single



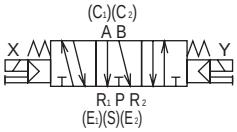
2-position double



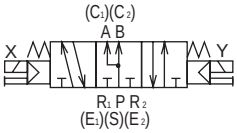
3-position
All ports closed



3-position A/B/R connection



3-position P/A/B connection



Common specifications

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

*1: The ambient temperature indicates the temperature for storage and upon installation, which will differ from the fluid temperature during operation.
*2: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Electrical specifications

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

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

Individual specifications

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

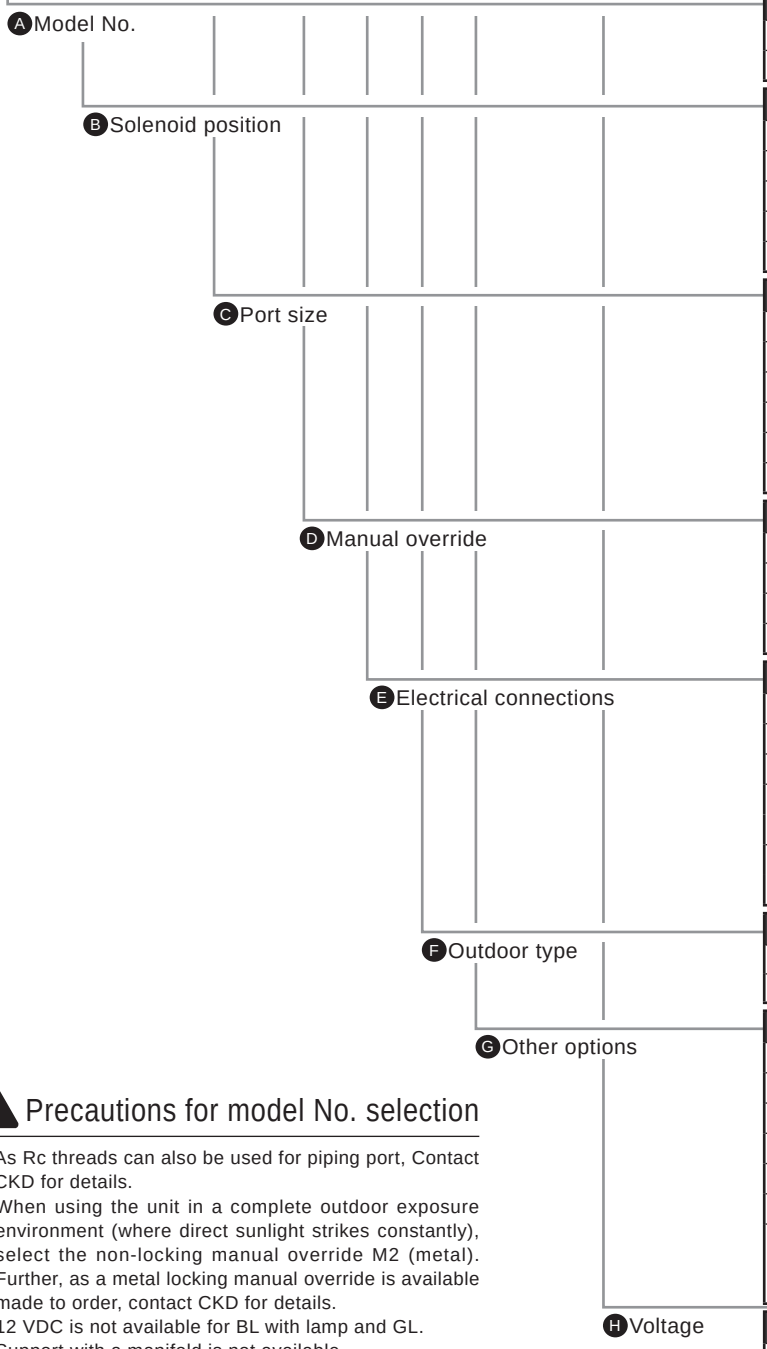
Flow Rate Characteristics

Model No.	Solenoid position		Port size	Sonic conductance C[dm^3/(s/bar)]	Critical pressure ratio b
4F2	2-position	Single	Rp1/4 NPT1/4 G1/4	3.0	0.33
		Double			
	3-position	All ports closed		2.5	0.43
		A/B/R connection			
4F3	2-position	Single	Rp1/4 NPT1/4 G1/4	3.9	0.42
		Double			
	3-position	All ports closed		4.0	0.35
		A/B/R connection		4.5	0.42
		P/A/B connection		4.0	0.35
	2-position	Single	Rp3/8 NPT3/8 G3/8	5.8	0.42
		Double			
	3-position	All ports closed		4.4	0.42
		A/B/R connection		5.1	0.46
		P/A/B connection		4.4	0.42

*4: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

How to order

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



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

Precautions for model No. selection

*1: As Rc threads can also be used for piping port, Contact CKD for details.
*2: When using the unit in a complete outdoor exposure environment (where direct sunlight strikes constantly), select the non-locking manual override M2 (metal). Further, as a metal locking manual override is available made to order, contact CKD for details.
*3: 12 VDC is not available for BL with lamp and GL.
*4: Support with a manifold is not available.
*5: For option G, the specifications and drawings must be agreed upon. Refer to page 101 for details.

[Model No. example]

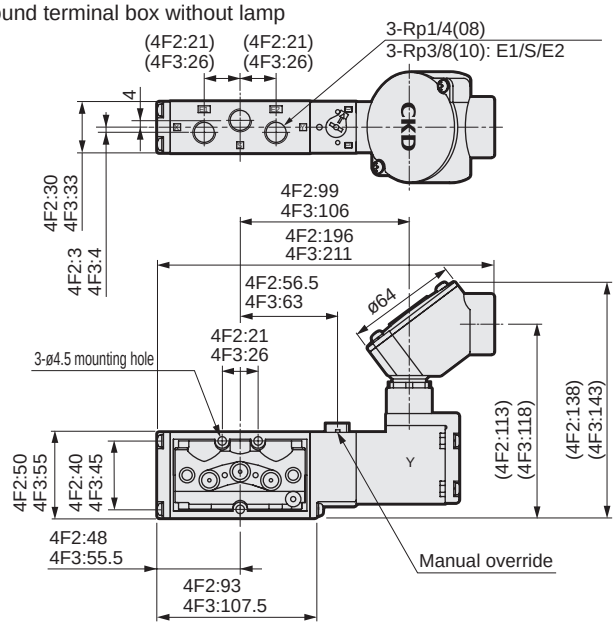
4F210-08-M2BW-AC100V

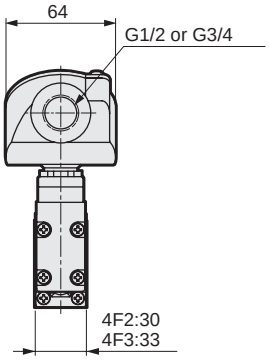
Ⓐ Model : 4F2
Ⓑ Solenoid position : 2-position single
Ⓒ Port size : Rp1/4
Ⓓ Manual override : Non-locking
Ⓔ Electrical connections : Round terminal box(G1/2)
Ⓕ Outdoor type : Outdoors(General environment)
Ⓖ Other options : No option
Ⓗ Voltage : 100 VAC

Dimensions

4F210/4F310

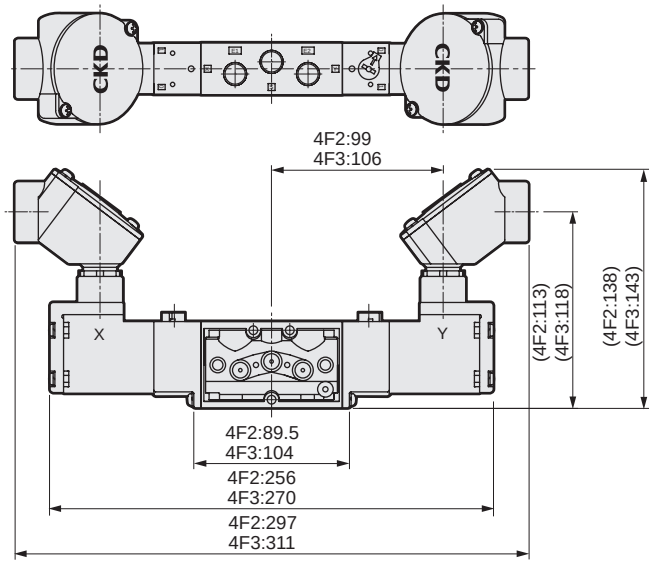
● 2-position single: round terminal box without lamp

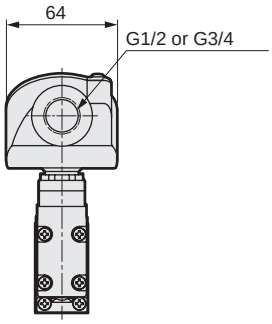




4F220/4F320

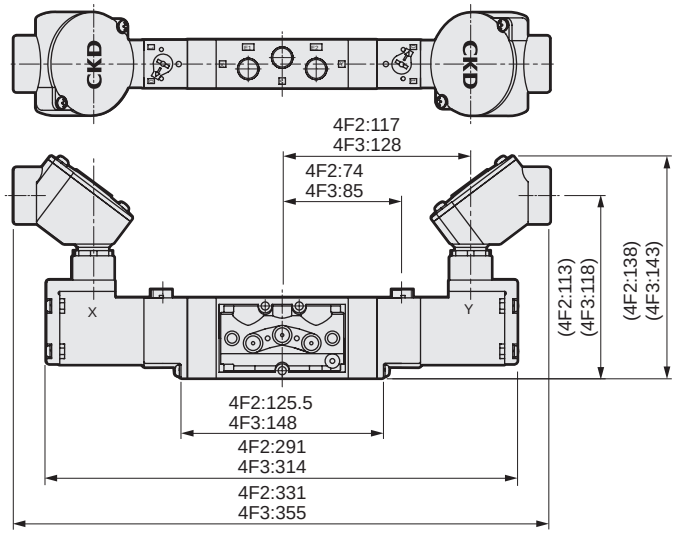
● 2-position double solenoid: round terminal box without lamp

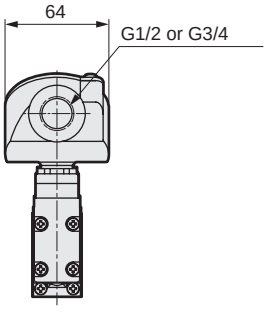




4F2$^{3}_{4}$0/4F3$^{3}_{5}$0

● 3-position: round terminal box without lamp

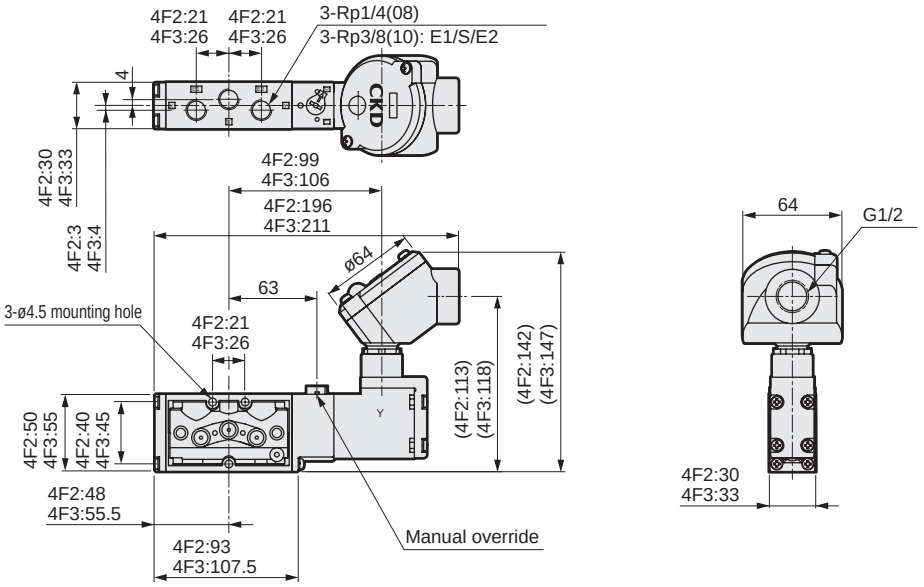




Dimensions

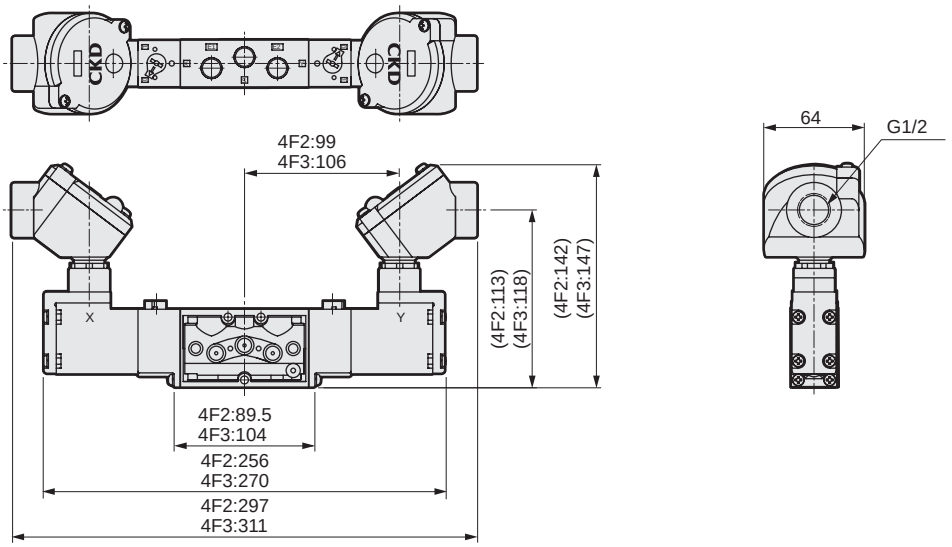
4F210/4F310

● 2-position single: round terminal box with lamp



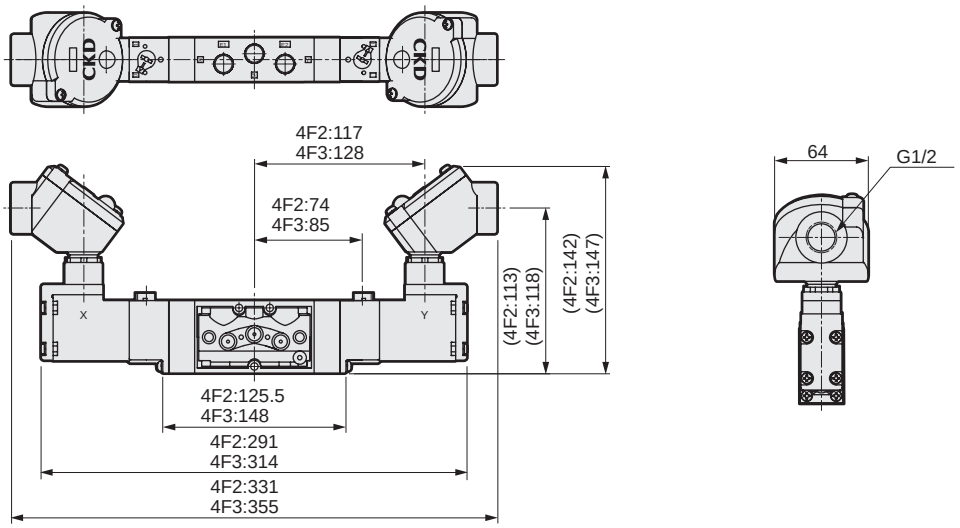
4F220/4F320

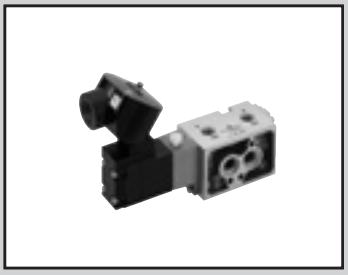
● 2-position double solenoid: round terminal box with lamp



4F2$^{3}_{4}$0/4F3$^{3}_{4}$0

● 3-position: round terminal box with lamp





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

4F1/3-NM Series

NAMUR standards option

WEATHER PROOF RoHS CAD

Common specifications

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

*1: The ambient temperature indicates the temperature for storage and upon installation, which will differ from the fluid temperature during operation.
*2: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Electrical specifications

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

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

Flow Rate Characteristics

Model No.	Solenoid position		Port size	Sonic conductance C[$dm^3/(s \cdot bar)$]
4F1	2-position	Single	Rc1/4 (S,E1,E2)	1.6
		Double		
4F3	2-position	Single		3.1
		Double		

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

How to order

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

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

⚠ Precautions for model No. selection

***1: With 4F1, the body repair parts, etc. are 4F1 standard products. 4F3 products are used in coil assembly.**

***2: For 4F3, note that the repair parts of the body are dedicated parts.**

*3: The only piping port is Rc1/4. The C1/C2 ports on the NAMUR surface have not been threaded.

*4: Complete outdoor exposure environment (When using the product in a place where it is exposed to continuous direct sunlight, select the manual override of non-locking M2 (metal). Further, as a metal locking manual override is available made to order, contact CKD for details.

*5: 12 VDC models are not available for BL with lamp and GL.

*6: 4F1-NM series WC outdoor specifications (low temperature environments) can be made to order supported. Contact CKD for details.

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

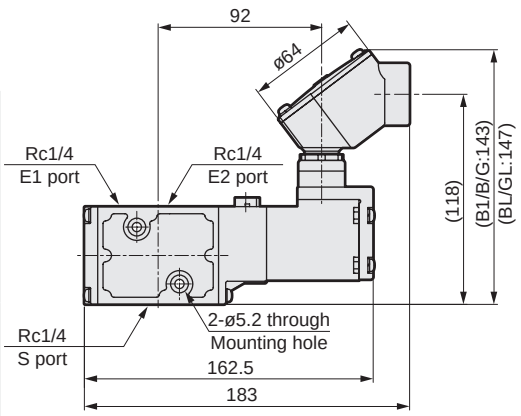
[Model No. example]

4F310-NM-M2BW-AC100V

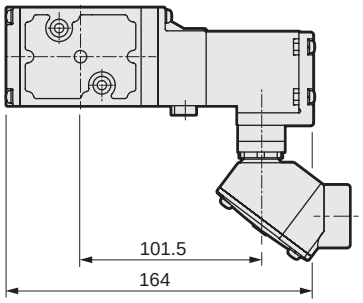
Ⓐ Model : 4F3
Ⓑ Solenoid position : 2-position single
Ⓒ Port size : Rc1/4
Ⓓ Manual override : Non-locking
Ⓔ Electrical connections : Round terminal box (G1/2)
Ⓕ Outdoor type : Outdoors (General environment)
Ⓖ Other options : None
Ⓗ Voltage : 100 VAC

Dimensions

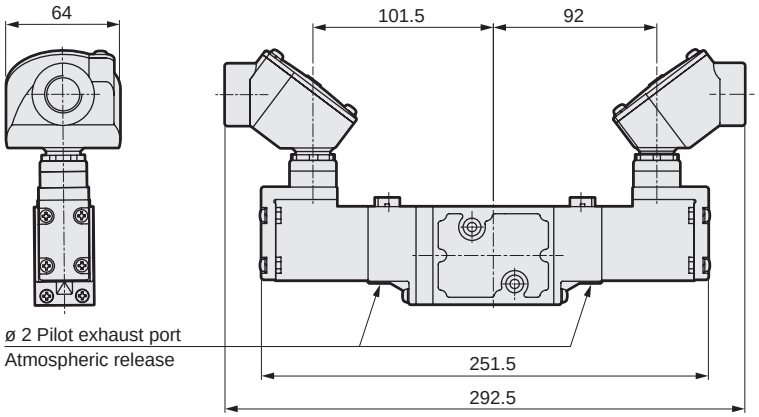
● 4F110-NM
• 2 position single
Round terminal box: (B1/B/BL/G/GL)

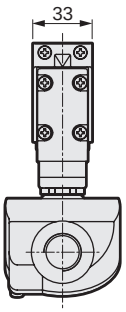


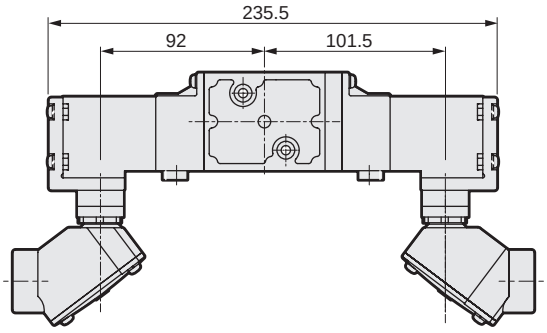
Position change of manual override: (R)



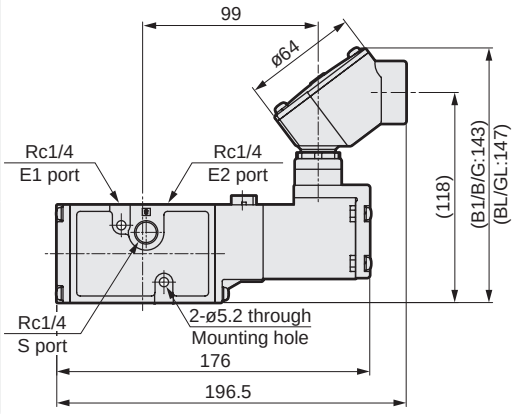
● 4F120-NM
• 2-position double



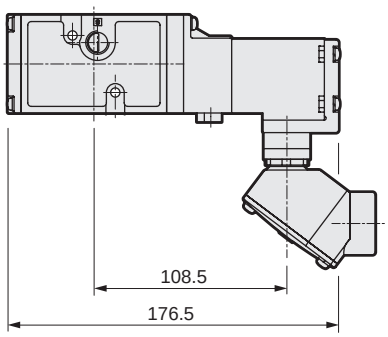




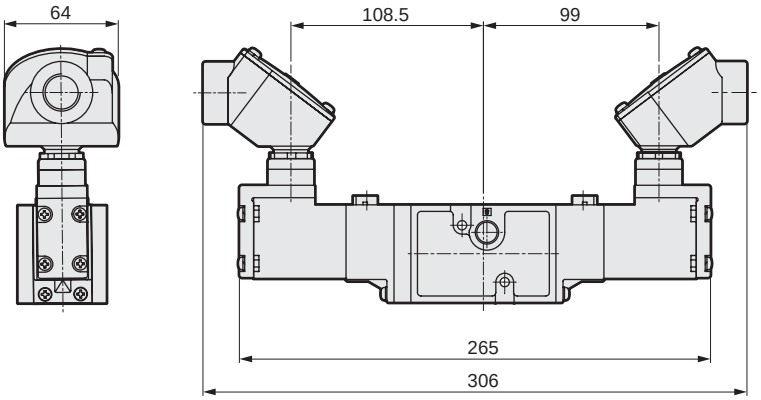
● 4F310-NM
• 2 position single
Round terminal box: (B1/B/BL/G/GL)

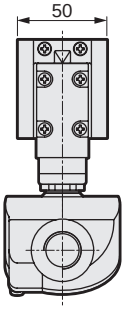


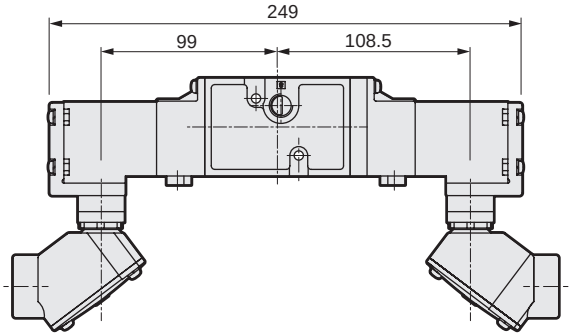
Position change of manual override: (R)



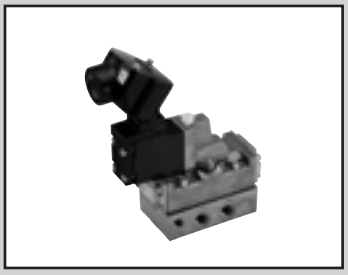
● 4F320-NM
• 2-position double







MEMO



Single valve/sub-plate piping
Pilot operated 5-port pneumatic valve

4F4/5/6/7-W Series

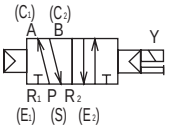
● Cylinder bore size: ø63 to ø250

WEATHER PROOF CE RoHS CAD

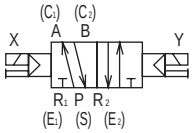
JIS symbol

● 5-port valve

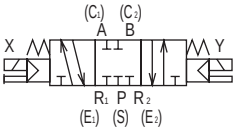
2 position single



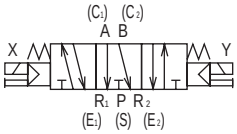
2-position double



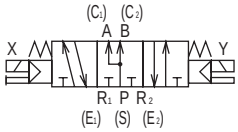
3-position
All ports closed



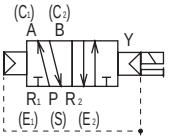
3-position A/B/R connection



3-position P/A/B connection



● External pilot



(Code indicates 2-position single)

Common specifications

Item	Description
Valve and operation	Pilot operated soft spool valve
Working fluid	Compressed air
Max. working pressure MPa	1.0
Min. working pressure MPa (*2)	Refer to Individual specifications listed below
Proof pressure MPa	1.5
Ambient temperature °C (*1)	-10 to 60 (no freezing)
Fluid temperature °C	5 to 60
Lubrication	Not required (turbine oil ISO VG32 if necessary for lubrication)
Degree of protection	Dust-proof
Vibration resistance m/s²	50 or less
Shock resistance m/s²	300 or less
Atmosphere	Cannot be used in corrosive gas environment.

*1: The ambient temperature indicates the temperature for storage and upon installation, which will differ from the fluid temperature during operation.
*2: The working pressure range is 0 to 1.0MPa when the external pilot (option code: K) is selected. Set the external pilot pressure between 0.15 and 1.0 MPa.

Electrical specifications

Item			4F4 to 7
Rated voltage V	AC		100, 200, 110, 220(50/60Hz)
	DC		12,24
Voltage fluctuation range			±10%
Starting current A	AC	100V	0.170/0.140
		200V	0.090/0.070
		110V	0.15/0.13
		220V	0.08/0.06
	DC	12V	0.500
		24V	0.250
Holding current A	AC	100V	0.100/0.080
		200V	0.050/0.040
		110V	0.09/0.07
		220V	0.05/0.04
	DC	12V	0.500
		24V	0.250
Power consumption W	AC	100V	5.0/4.0
		200V	5.0/4.0
		110V	5.0/4.0
		220V	5.0/4.0
	DC	12V	6.0
		24V	6.0
Thermal class			B (molded coil)

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

Individual specifications

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

Performance/characteristics by model

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

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

Weight

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

Flow characteristics

Model No.		Solenoid position	Port size	C[dm³/(s•bar)]	b	S(mm²)
4F4	2-position	Single	Rc1/4, Rc3/8 NPT1/4, NPT3/8 G1/4, G3/8	5.0	0.21	-
		Double				
	3-position	All ports closed		4.7	0.24	
		A/B/R connection		5.3	0.29	
		P/A/B connection		5.3	0.29	
4F5	2-position	Single	Rc3/8, Rc1/2 NPT3/8, NPT1/2 G3/8, G1/2	10.0	0.32	-
		Double				
	3-position	All ports closed		9.7	0.28	
		A/B/R connection		9.8	0.25	
		P/A/B connection				
4F6	2-position	Single	Rc1/2, Rc3/4 NPT1/2, NPT3/4 G1/2, G3/4	18.0	0.31	-
		Double				
	3-position	All ports closed		15.0	0.23	
		A/B/R connection				
		P/A/B connection				
4F7	2-position	Single	Rc3/4, Rc1 NPT3/4, NPT1 G3/4, G1	-	-	160
		Double				
	3-position	All ports closed				
		A/B/R connection				
		P/A/B connection				

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

How to order single valve/sub-plate piping

4F4 1 0 - 08 - M2 B W ○ - AC100V

● Discrete solenoid valve Discrete

4F4 1 9 - 00 - M2 B W ○ - AC100V (4F4.5.6.7)

Ⓐ Model No. Ⓑ Solenoid position Ⓒ Port size Ⓓ Manual override Ⓔ Electrical connections Ⓕ Other options Ⓖ Voltage

Code	Description	Ⓐ Model No. 4F4	4F5	4F6	4F7
Ⓑ Solenoid position					
1	2 position single	●	●	●	●
2	2-position double	●	●	●	●
3	3-position all ports closed	●	●	●	●
4	3-position A/B/R connection	●	●	●	●
5	3-position P/A/B connection	●	●	●	●
Ⓒ Port size					
08	Rc1/4	●			
10	Rc3/8	●	●		
15	Rc1/2		●	●	
20	Rc3/4			●	●
25	Rc1				●
08N	NPT1/4	●			
10N	NPT3/8	●	●		
15N	NPT1/2		●	●	
20N	NPT3/4			●	●
25N	NPT1				●
08G	G1/4	●			
10G	G3/8	●	●		
15G	G1/2		●	●	
20G	G3/4			●	●
25G	G1				●
Ⓓ Manual override					
Blank	Locking	●	●	●	●
M2	Non-locking	●	●	●	●
M3	Locking with manual lever	●	●	●	●
Ⓔ Electrical connections					
B1	Round terminal box(G3/4)	●	●	●	●
B	Round terminal box(G1/2)	●	●	●	●
BL	Round terminal box(G1/2) with / lamp (*2)(*3)	●	●	●	●
G	Round terminal box Gland(A-15a)with	●	●	●	●
GL	Round terminal box (*2)(*3) Gland(A-15a)/ with lamp	●	●	●	●
Ⓕ Other options					
Blank	No option	●	●	●	●
K	External pilot (*1)	●	●	●	●
S	Surge suppressor included	●	●	●	●
H	(Check valve included)(3-position all ports closed only)	●	●	●	●
N	Plug included(for 3-port valve)	●	●	●	●
NC	3-way valve used plug assembly (C1(A).E1(R1)Assembly)	●	●	●	●
NO	3-way valve used plug assembly (C2(B).E2(R2)Assembly)	●	●	●	●
G	3-year warranty after delivery *5 (with inspection certificate, inspection guidelines, traceability system diagram)	●	●	●	●
Ⓖ Voltage					
AC100V	100 VAC 50/60 Hz	●	●	●	●
AC200V	200 VAC 50/60 Hz	●	●	●	●
DC12 V	12 VDC	●	●	●	●
DC24V	24 VDC	●	●	●	●
AC110V	110 VAC 50/60 Hz	●	●	●	●
AC220V	220 VAC 50/60 Hz	●	●	●	●
*** Other made-to-order products**					
48 VDC		●	●	●	●
100 VDC		●	●	●	●
110 VDC		●	●	●	●

⚠ Precautions for model No. selection

*1: Use of vacuum with external pilot (K), cylinder pressurizing and exhaust pressurizingis,Contact CKD separately. NPTand G thread cannot be selected. Manual override M3 cannot be selected.
*2: BL/GL DC12V is not supported.
*3: BL,The DC type of GL has a built-in surge suppressor.
*4: Contact CKD as WC outdoor specifications (low temperature environments) are made to order supported.
*5: For option G, the specifications and drawings must be agreed upon. Refer to page 101 for details.

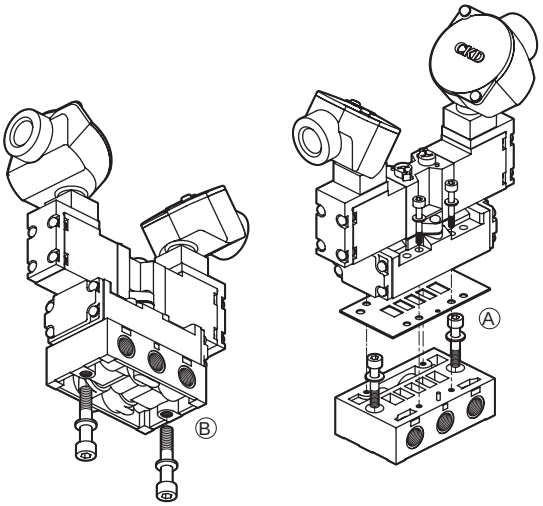
[Model No. example]

4F440-08-M2BW-AC100V

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

4F4 to 7 Discrete installation method

● Mounting

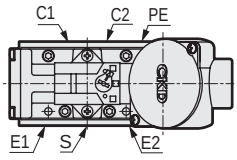


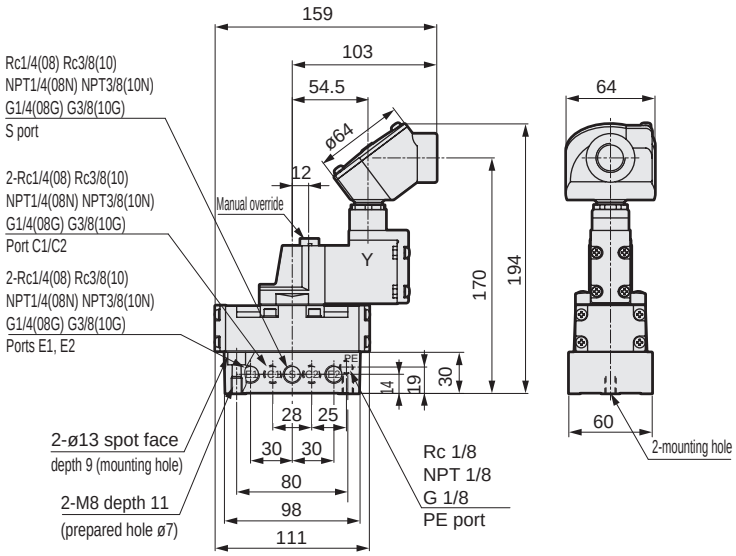
	For B	For A
4F4	M8	M6
4F5	M8	M6
4F6	M10	M8
4F7	M12	M10

Dimensions

4F410

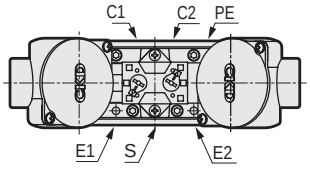
● 2-position single

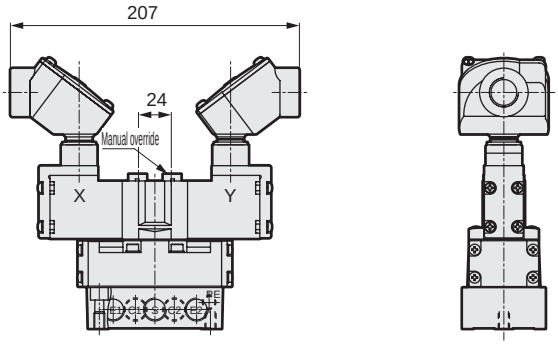




4F420

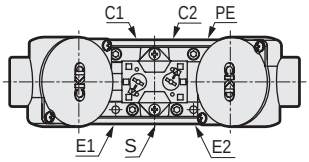
● 2-position double

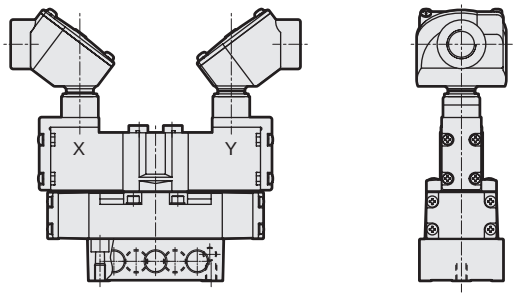




4F4 3/4/5 0

● 3-position

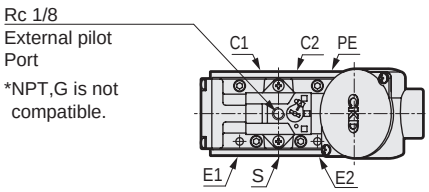




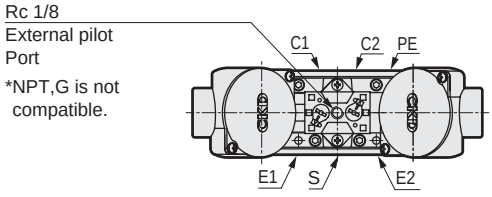
4F4

● External pilot port (K)

・2 position single



・2-position double solenoid/3-position

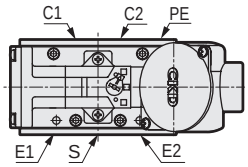


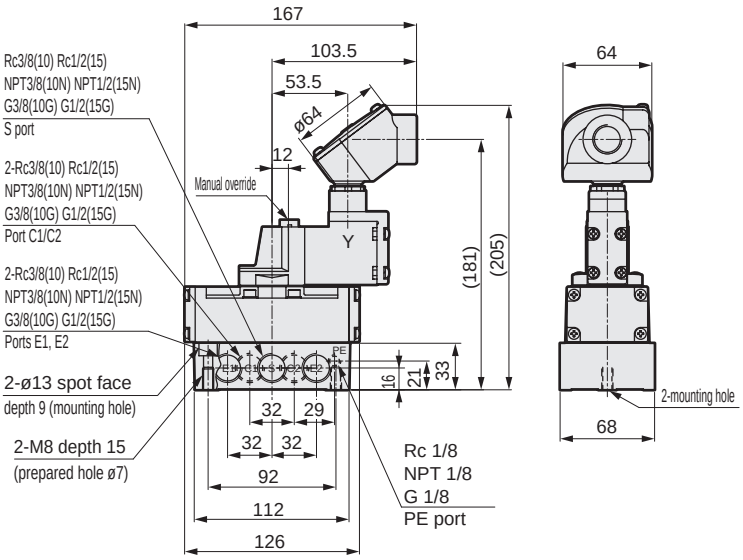
*** Refer to "Pneumatic Valves (Catalog No.CB-023SA)" for check valves.**

Dimensions

4F510

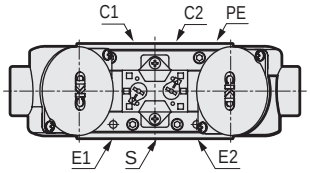
● 2-position single

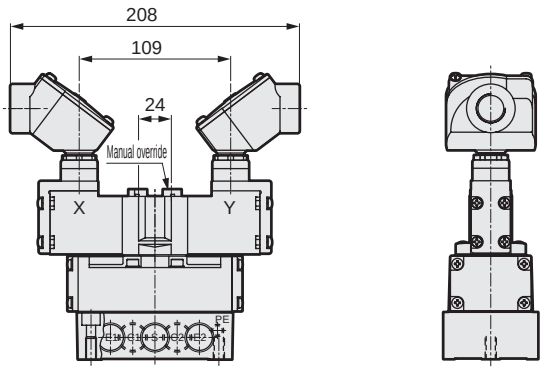




4F520

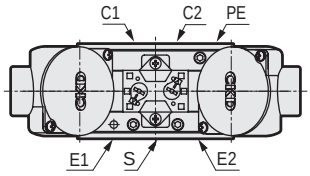
● 2-position double

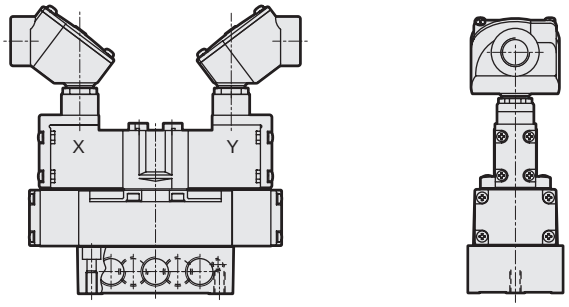




4F5$^{3}_{4}_{5}$0

● 3-position

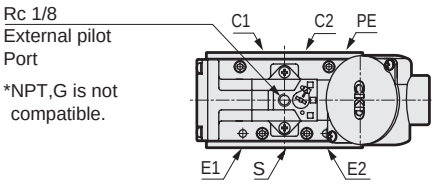




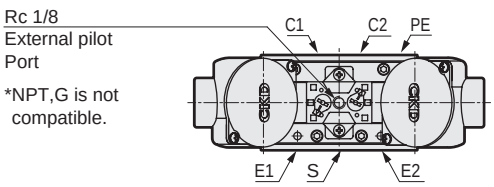
4F5

● External pilot port (K)

・2 position single



・2-position double solenoid/3-position

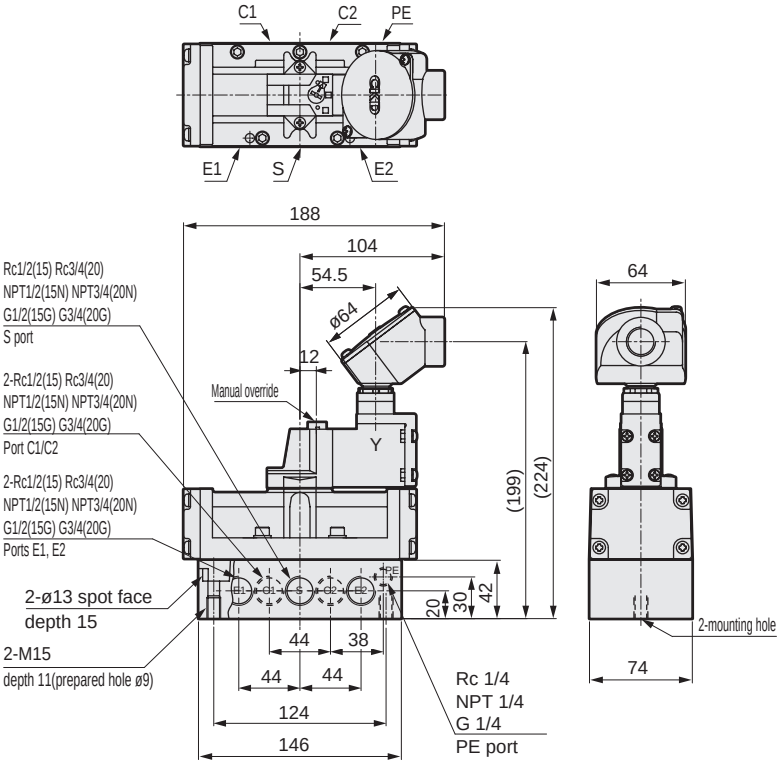


*** Refer to "Pneumatic Valves (Catalog No.CB-023SA)" for check valves.**

Dimensions

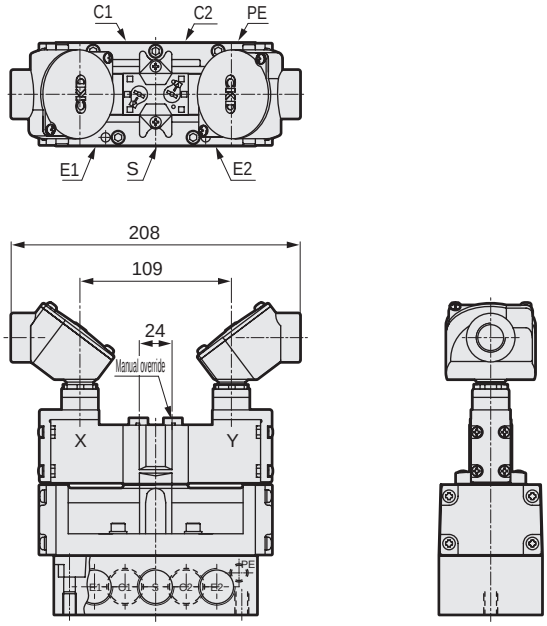
4F610

● 2-position single



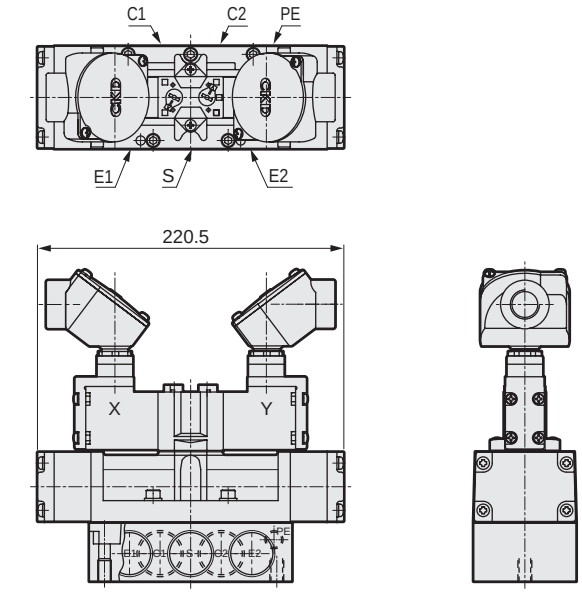
4F620

● 2-position double



4F6$^{3}_{5}$40

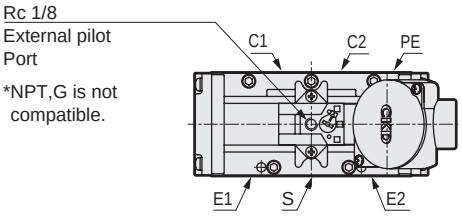
● 3-position



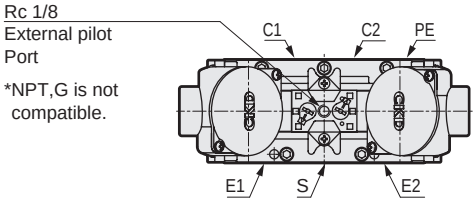
4F6

● External pilot port (K)

・2 position single



・2-position double solenoid/3-position

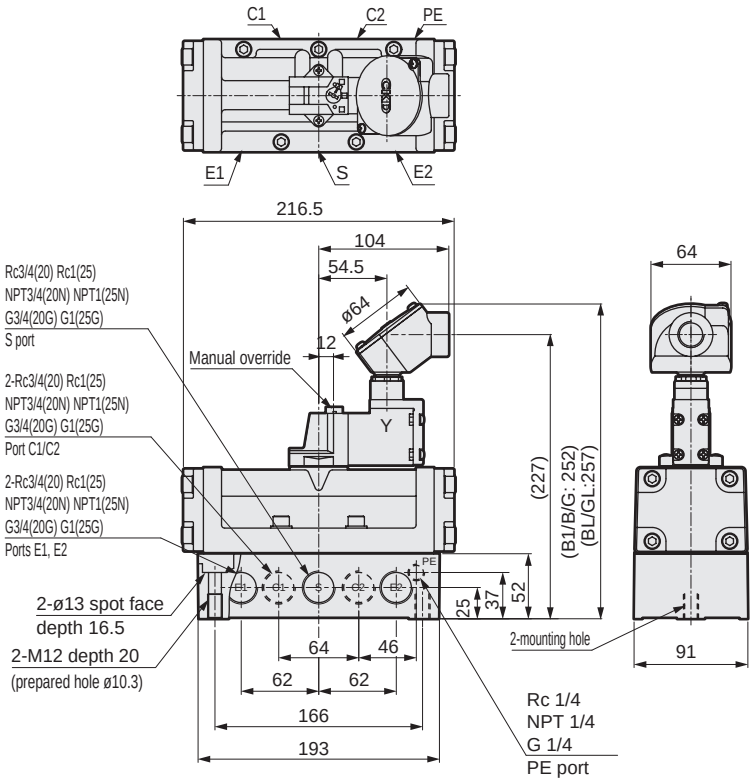


*** Refer to "Pneumatic Valves (Catalog No.CB-023SA)" for check valves.**

Dimensions

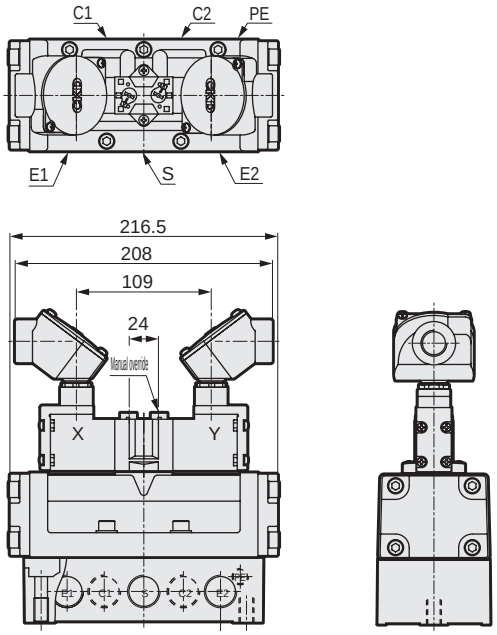
4F710

● 2-position single



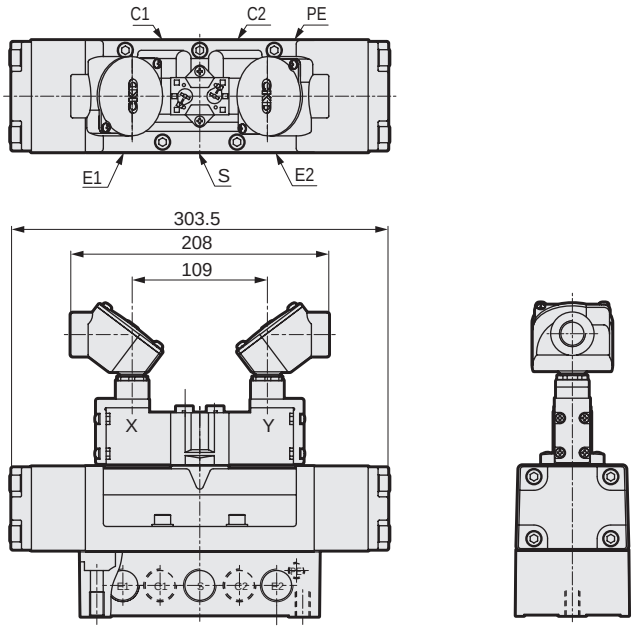
4F720

● 2-position double



4F7$^{3}_{4}_{5}$0

● 3-position



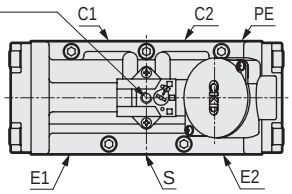
4F7

● External pilot port (K)

・2 position single

Rc 1/8
External pilot
Port

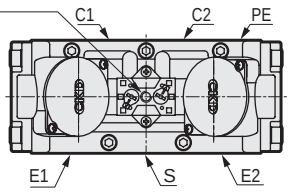
*NPT,G is not compatible.



・2-position double solenoid/3-position

Rc 1/8
External pilot
Port

*NPT,G is not compatible.



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

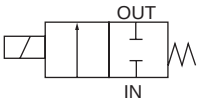
Direct acting 2-port solenoid valve, single unit
General purpose

AB41-W Series

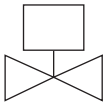
- NC (Open when energized)
- Port size: Rc1/4 to Rc1/2

WEATHER PROOF RoHS CAD

JIS symbol



Mounting orientation



Common specifications

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

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

Individual specifications

Item / Model No.		Port size	Orifice size (mm)	Max. working pressure differential (MPa) Air AC	Water/hot water/kerosene AC	Oil (50mm^2/s) AC	Max. Working pressure (MPa)	Rated voltage	Apparent power(VA) When holding 50Hz	When holding 60Hz	When starting 50Hz	When starting 60Hz	Power consumption(W) AC 50/60Hz	Weight (kg)
NC (open when energized)														
AB41-$^{02}_{03}$	-1	Rc1/4 Rc3/8	1.5	5.0	4.5	4.0	5	100 VAC 50/60Hz *5 200 VAC 50/60Hz *5	18	15	29	24	6.7/5.7	0.8 (Rc1/4) 0.95 (Rc3/8)
	-2		2.0	3.0	2.7	2.5								
	-3		3.0	1.5	1.3	0.9								
	-4		3.5	1.2	0.9	0.6								
	-5		4.0	1.0	0.7	0.5								
	-6		5.0	0.6	0.4	0.25								
	-7		7.0	0.25	0.2	0.15								
AB41-$^{03}_{04}$	-8	Rc3/8 Rc1/2	10.0	0.1	0.1	0.05								1.15

*1: The model numbers above are for the basic port size (Rc) and orifice size. Refer to How to order for other combinations.
*2: The port size model No. is 02 for Rc1/4 (8A), 03 for Rc3/8 (10A) and 04 for Rc1/2 (15A).
*3: The voltage fluctuation range must be within ±10% of the rated voltage.
*4: When using at low vacuum, vacuum the OUT port side.
*5: 100 VAC (50/60 Hz) can also be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) type can be used with 220 VAC (60 Hz).

Flow characteristics

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

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

How to order

● NC (normally closed)

AB41 - 02 - 3 - D 3E B D S W - AC100V

- AB41: Model No.
- A Port size: 02, 03, 04
- B Orifice size: 1, 2, 3, 4, 5, 6, 7, 8
- C Body/sealant combination: D, E
- D Coil housing: 3E
- E Mounting plate: B
- F Other options: D
- G With surge suppressor: S
- H Warranty period: W
- I Rated voltage: AC100V

Code		Model No. AB41	Model No. AB41 Low pressure Large flow rate
A Port size			
02	Rc1/4	●	
03	Rc3/8	●	●
04	Rc1/2		●
B Orifice size			
1	ø1.5	●	
2	ø 2	●	
3	ø 3	●	
4	ø 3.5	●	
5	ø 4	●	
6	ø 5	●	
7	ø 7	●	
8	ø10		●

C Body/sealant combination

	Body	Seal	Remarks		
D	Stainless steel	Nitrile rubber *5	air/water/low vacuum/kerosene/oil	●	●
E		Fluoro rubber *5	air/water/low vacuum/kerosene/oil	●	●

D to I

Refer to the following table for details on the coil housing, other options, voltage, etc.

H Warranty period

W	1 year after delivery
WG	3 years after delivery *3*4 (with inspection certificate, inspection guidelines, traceability system diagram)

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

[Example of model No. 1]
AB41-02-3-E3EWG-AC100V
Model: AB41
A Port size : Rc1/4
B Orifice size : ø3
C Body/sealant combination : Body - stainless steel, sealant - fluoro rubber
D Coil housing : Open frame with round terminal box
E to G : None
H Warranty period : 3 years after delivery
I Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

For Items Ⓓ to Ⓘ , the combinations indicated with codes are available.
However,Ⓔ to ⒼIf an option for Item is not required, this item should be left blank.

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

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

⚠ Precautions for model No. selection

Notes for Items C to H

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

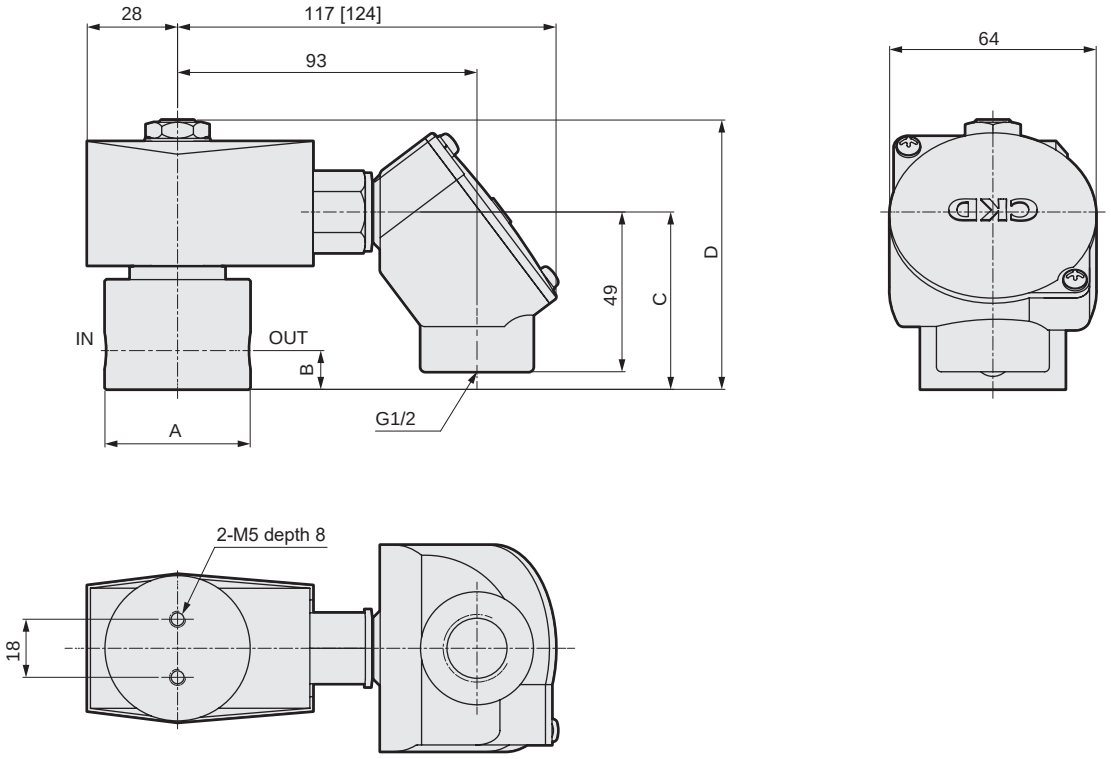
Notes for Item I

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

Dimensions: AB41-W Series

● Open frame + round terminal box
AB41-*-*-* 3E / 3L

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

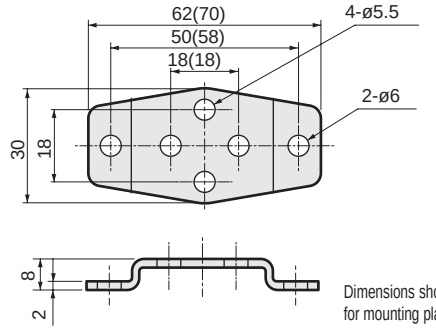


Model No.	A	B	C	D
AB41, 41-02-1to 6	ø37.5	11	52	80.5
AB41, 41-02-7 -03-1 to 7	ø45	12	55	83.5
AB41, 41-03-8 -04-8	50 *1	15	64	93

*1: The max. dimension is ø54.

Option dimensions: AB41-W Series

● Mounting plate
AB41-*-*-* B

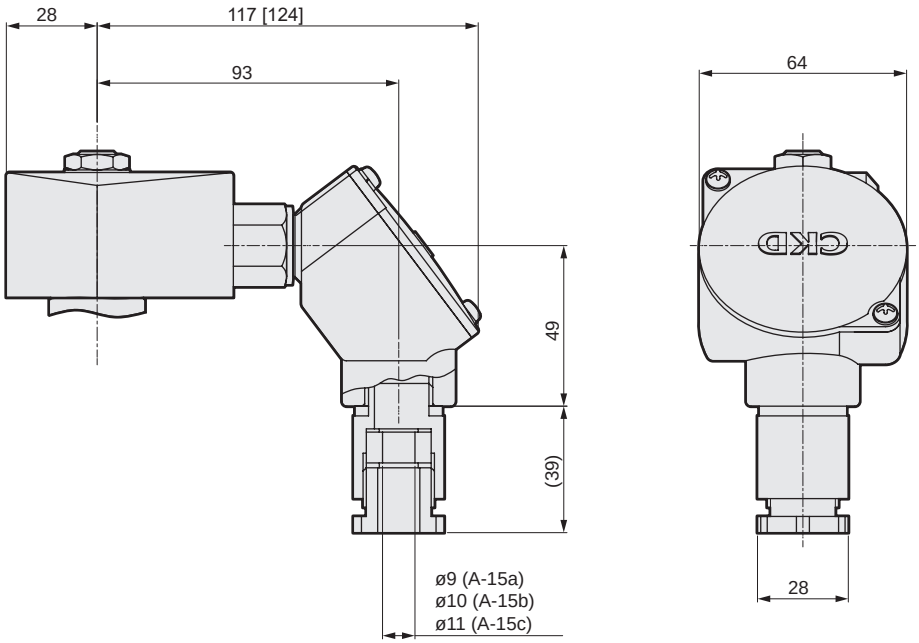


Dimensions shown in ( ) are for mounting plate No.2.

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

● Cable gland
AB41-*-*-* 3E / 3L — D / E / F

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



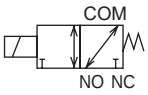
Direct acting 3-port solenoid valve, single unit
General purpose

AG41-W Series

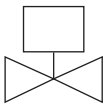
- Universal
- Port size: Rc1/4, Rc3/8

WEATHER PROOF RoHS CAD

JIS symbol



Mounting orientation



Common specifications

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

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

Individual specifications

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

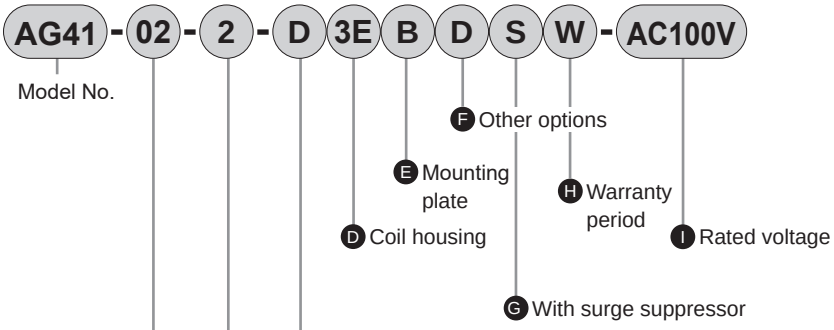
*1: The model numbers above are for the basic port size (Rc) and orifice. Refer to How to order for other combinations.
*2: The voltage fluctuation range must be within ±10% of the rated voltage.
*3: When using in a continuously energized state, use fluoro rubber seal.
*4: 100 VAC (50/60 Hz) can also be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) type can be used with 220 VAC (60 Hz).

Flow characteristics

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

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

How to order



Code	Description
A Port size	
02	Rc1/4
03	Rc3/8

B Orifice size		
	TOP	**BODY**
1	ø2.0	ø2.0
2	ø2.3	ø2.3

C Body/sealant combination				
	Body	**Seal**		**Remarks**
D	Stainless steel	Nitrile rubber	*5	air/water/low vacuum/kerosene/oil
E		Fluoro rubber	*5	air/water/low vacuum/kerosene/oil

D to I

Refer to the following table for details on the coil housing, other options, voltage, etc.

H Warranty period	
W	1 year after delivery
WG	3 years after delivery *3*4 (with inspection certificate, inspection guidelines, traceability system diagram)

[Example of model No.]

AG41-03-2-E3EWG-AC100V

Model: AG41
A Port size : Rc3/8
B Orifice size : TOP-ø2.3, BODY-ø2.3
C Body/sealant combination
: Body - stainless steel, sealant - fluoro rubber
D Coil housing: Open frame with round terminal box
E to G : None
H Warranty period : 3 years after delivery
I Rated voltage : 100 VAC 50/60Hz, 110 VAC 60Hz

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

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

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

⚠ Precautions for model No. selection

Notes for Items C to H

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

Notes for Item I

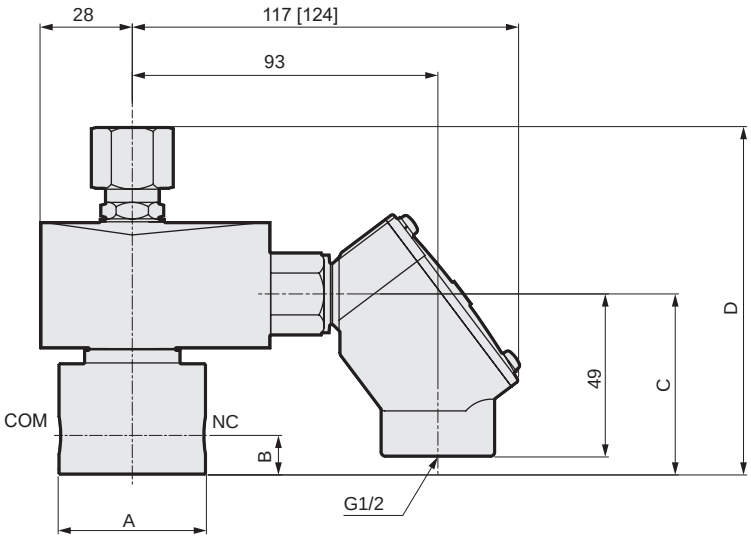
*6: 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz.

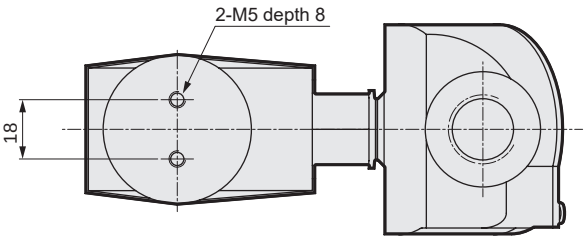
Dimensions: AG41-W Series

● Open frame + round terminal box
AG41-*-*-* 3E
3L

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

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

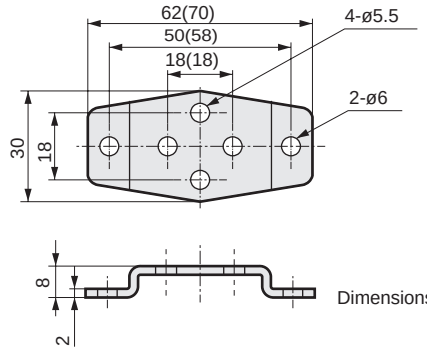




Model No.	A	B	C	D
AG41-02-1 to 2	ø37.5	11	52	99.5
AG41-03-1 to 2	ø45	12	55	106

Option Dimensions: AG41-W Series

● Mounting plate
AG41-*-*-*B

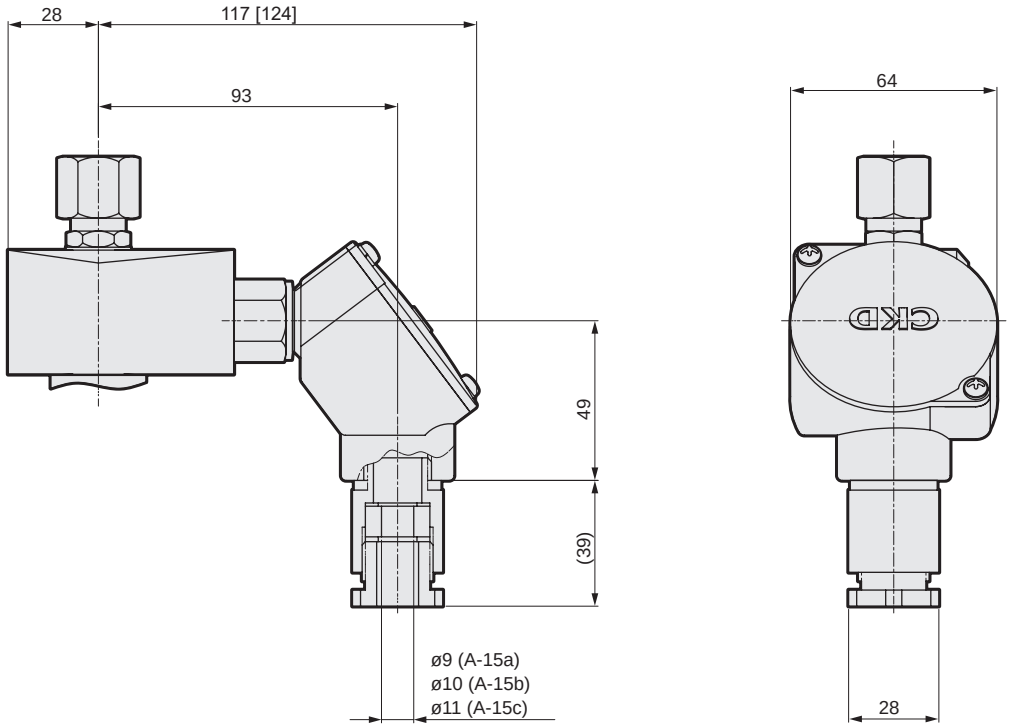


Mounting plate model No.	Compatibility
AG4-W-GE-100106-MOUNT-PLATE-KIT (mounting plate No.1)	AG41-02-1 to 2
AG4-W-GE-100159-MOUNT-PLATE-KIT (mounting plate No.2)	AG41-03-1 to 2

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

● Cable gland
AG41-*-*-* 3E / 3L | D / E / F

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



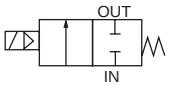
Pilot kick 2-port solenoid valve
(general purpose valve)

ADK11-W Series

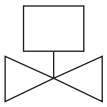
- NC (Normally Closed)
- Port size: Rc1/2 to Rc1
- Diaphragm drive

WEATHER PROOF RoHS CAD

JIS symbol



Mounting orientation



Common specifications

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

*1: Value at pneumatic pressure 0.02 to 1.0MPa. When used at a pressure less than 0.02MPa, the operation or sealant may be unstable. Contact CKD in this case.
*2: Dynamic viscosity varies depending on temperature. Check that the dynamic viscosity is 50mm^2/s or less within the temperature range being used. When exceeding 50 mm^2/s, operation will become unstable.

Individual specifications

Item / Model No.	Port size	Orifice (mm)	Min. working pressure differential (MPa)	Max. working pressure differential (MPa) Air AC	Water/kerosene AC	Oil (50mm^2/s) AC	Rated voltage	Apparent power (VA) When holding 50Hz	When holding 60Hz	When starting 50Hz	When starting 60Hz	Power consumption (W) AC 50/60Hz	Weight (kg)
NC (open when energized)													
ADK11-15A	Rc1/2	16	0	1	1	0.6	100 VAC 50/60Hz 200 VAC 50/60Hz	25	21	84	75	10/8.5	1.2
ADK11-20A	Rc3/4	23											1.3
ADK11-25A	Rc1	28											1.7

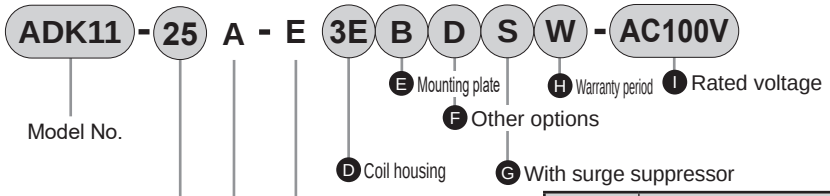
*1: The model numbers above show the basic port size (Rc). Refer to How to order for other combinations.
*2: The voltage fluctuation range must be within ±10% of the rated voltage.
*3: When using at low vacuum, vacuum the OUT port side.

Flow characteristics

Model No.	Port size	Orifice size(mm)	Flow characteristics C[dm^3/(s•bar)]	b	Cv	S(mm^2)
NC (open when energized)						
ADK11-15A	Rc1/2	16	20	0.31	4.5	-
ADK11-20A	Rc3/4	23	-	-	8.6	162
ADK11-25A	Rc1	28	-	-	12.0	231

*1: Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

How to order



Code	Description
Ⓐ Port size	
15	1/2
20	3/4
25	1
Ⓑ Thread	
A	Rc

Ⓒ Body/sealant combination

	Body	Seal	Remarks
D	Stainless steel	Nitrile rubber *5	air/water/low vacuum/kerosene/oil
E		Fluoro rubber *5	air/water/low vacuum/kerosene/oil

Ⓓ to Ⓘ

Refer to the following table for details on the coil housing, other options, voltage, etc.

Ⓗ Warranty period	
W	1 year after delivery
WG	3 years after delivery *3*4 (with inspection certificate, inspection guidelines, traceability system diagram)

[Example of model No. 1]
ADK11-15A-E3EWG-AC100V

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

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

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

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

⚠ Precautions for model No. selection

Notes for Items Ⓒ to Ⓗ

*1: For Item Ⓕ, select an option from D, E and F.
*2: The surge suppressor is mounted in the terminal box.
*3: The warranty period of option WG is 3 years from the date of delivery or 1 year from initial use.
*4: For option WG, the specifications and drawings must be agreed upon. Refer to page 101.
*5: The ambient temperature for option D is −20°C to 60°C.
For option E, the ambient temperature is −10°C to 60°C.

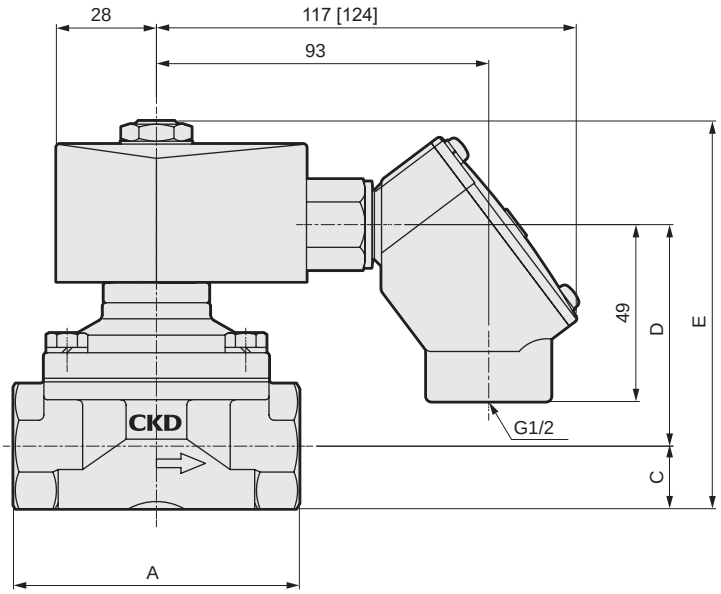
Notes for Item Ⓘ

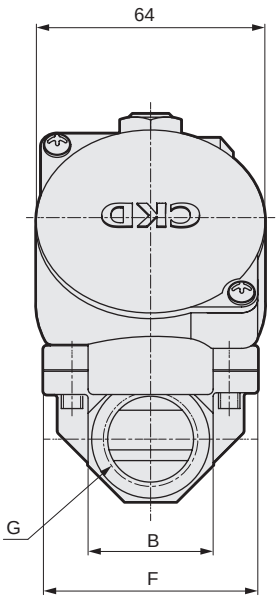
*6: 100 VAC coil can be used at 100 VAC50/60Hz and 110 VAC60Hz, and 200 VAC coil can be used at 200 VAC50/60Hz and 220 VAC60Hz.

Dimensions: ADK11-W Series

● Open frame + round terminal box
ADK11-15A/20A/25A-*[3E / 3L]

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

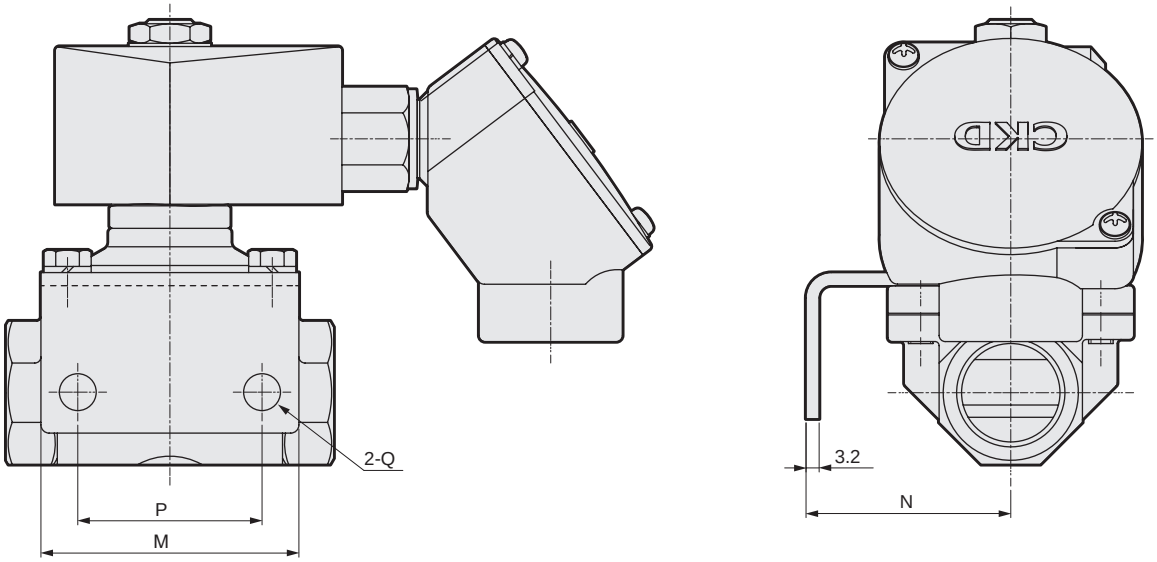




Model No.	A	B	C	D	E	F	G
ADK11-15A-*3E/3L	71	29	14.5	58.5	102	50	Rc1/2
ADK11-20A-*3E/3L	80	35	17.5	62	108.5	60	Rc3/4
ADK11-25A-*3E/3L	90	45	22.5	67.5	119	71	Rc1

Dimensions: ADK11-W Series

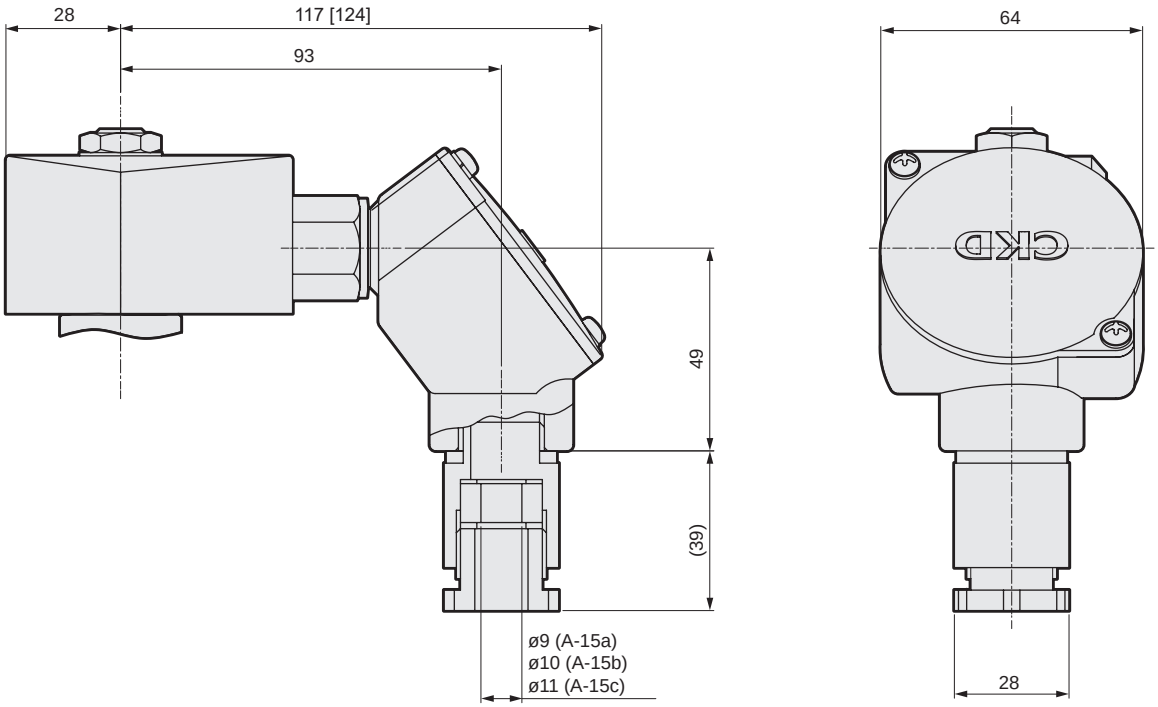
● Mounting plate
ADK11-15A/20A/25A-*B



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

● Open frame + round terminal box + cable gland
ADK11-15A/20A/25A-* [3E / 3L] [D / E / F]

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



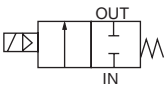
Pilot kick 2-port solenoid valve
General purpose

ADK21-W Series

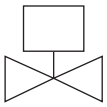
- NC (Normally Closed)
- Port size:Rc1¼ to Rc2, 32 to 50 flange
- Diaphragm drive

WEATHER PROOF RoHS CAD

JIS symbol



Mounting orientation



Common specifications

Item	Standard specifications
Working fluid	Air/low vacuum (1.33 × 10^3 Pa (abs)/water/kerosene/oil (50mm²/s or less *2)
Working pressure differential MPa	0 to 0.7 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	1
Proof pressure (water pressure) MPa	3.2
Fluid temperature °C	Nitrile rubber (D):−20 to 60 (no freezing) Fluoro rubber (E):5 to 60 (no freezing)
Ambient temperature °C	Nitrile rubber (D): −20 to 60, fluoro rubber (E):−10 to 60
Thermal class	Class 130 (B)
Working environment	Indoors/outdoors
Atmosphere	A place free of corrosive gases, liquids, chemicals, and explosive gases
Valve structure	Pilot kick poppet, diaphragm drive
Valve seat leakage (*1) cm³/min (ANR)	1 or less (air)
Mounting orientation	Limited to vertical orientation with the coil on top
Degree of protection	IP65

*1: Value at pneumatic pressure 0.02 to 0.7MPa. When used at a pressure less than 0.02 MPa, the sealant may be unstable. Contact CKD in this case.
*2: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 50mm²/s or less within the temperature range being used. When exceeding 50 mm²/s, operation will become unstable.

Individual specifications

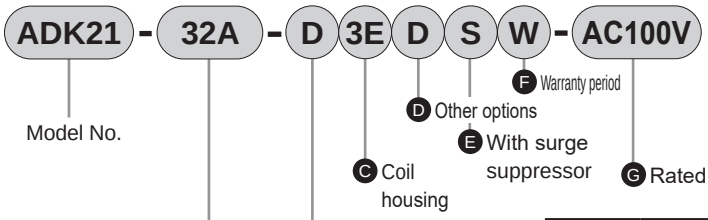
Item / Model No.	Connection Bore size	Orifice size (mm)	Min. working pressure differential (MPa)	Max. working pressure differential (MPa) Air AC	Water/kerosene AC	Oil (50mm²/s) AC	Rated voltage	Apparent power (VA) When holding 50Hz	When holding 60Hz	When starting 50Hz	When starting 60Hz	Power consumption (W) AC 50/60Hz	Weight (kg)
ADK21-32A	Rc1¼	35	0	0.7	0.7	0.5	100 VAC 50/60Hz 200 VAC 50/60Hz	64	69	274	289	44/48	4.5
ADK21-32F	32 flange												7.5
ADK21-40A	Rc1½	43											5.5
ADK21-40F	40 flange												8.5
ADK21-50A	Rc2	53											6.5
ADK21-50F	50 flange												10.5

*1: The model numbers above are for the basic port size. Refer to How to order for other combinations.
*2: The voltage fluctuation range must be within ±10% of the rated voltage.
*3: When using at low vacuum, vacuum the OUT port side.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Cv	Effective cross-sectional area (mm²)
ADK21-32A	Rc1¼	35	25	460
ADK21-32F	32 flange			
ADK21-40A	Rc1½	43	34	625
ADK21-40F	40 flange			
ADK21-50A	Rc2	53	53	975
APK21-50F	50 flange			

How to order



Code	Description
Ⓐ Port size	
32A	Rc1¼
32F	32 flange
40A	Rc1½
40F	40 flange
50A	Rc2
50F	50 flange

Ⓑ Body/sealant combination

	Body	Seal	Remarks
D	Stainless steel	Nitrile rubber *6	air/water/low vacuum/kerosene/oil
E		Fluoro rubber *6	air/water/low vacuum/kerosene/oil

Ⓒ to Ⓖ

Refer to the following table for details on the coil housing, other options, voltage, etc.

Ⓕ Warranty period	
W	1 year after delivery
WG	3 years after delivery *4*5 (with inspection certificate, inspection guidelines, traceability system diagram)

[Example of model No. 1]
ADK21-50F-E3EWG-AC100V
Model: ADK21
Ⓐ Port size : 50 flange
Ⓑ Body/sealant combination
: Body - stainless steel, sealant - fluoro rubber
Ⓒ Coil housing : Open frame with round terminal box
Ⓓ Ⓔ : None
Ⓕ Warranty period : 3 years after delivery
Ⓖ Rated voltage : 100 VAC 50/60Hz

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

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

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

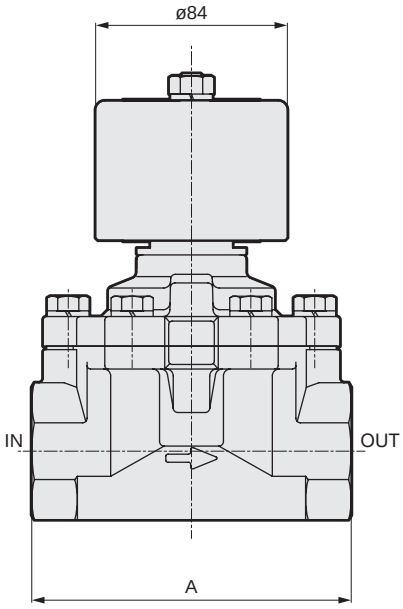
⚠ Precautions for model No. selection

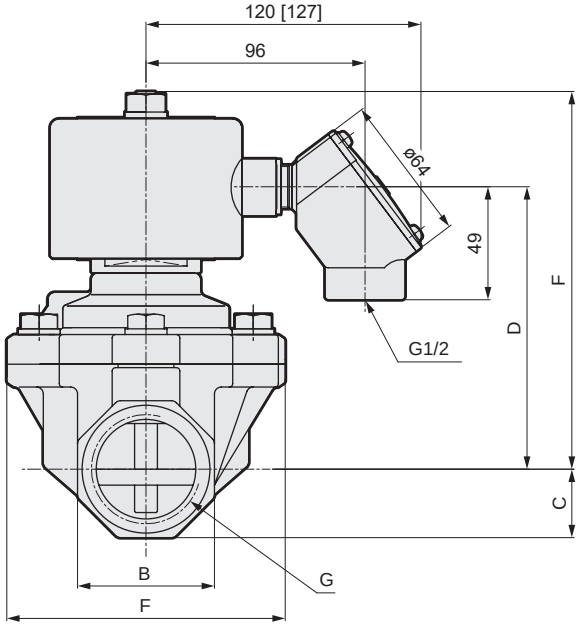
Notes for Items Ⓐ to Ⓕ

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

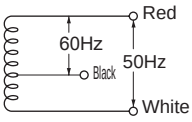
Dimensions CAD

● Open frame + round terminal box (Rc screw-in)
ADK21-32A/40A/50A-* 3E 3L



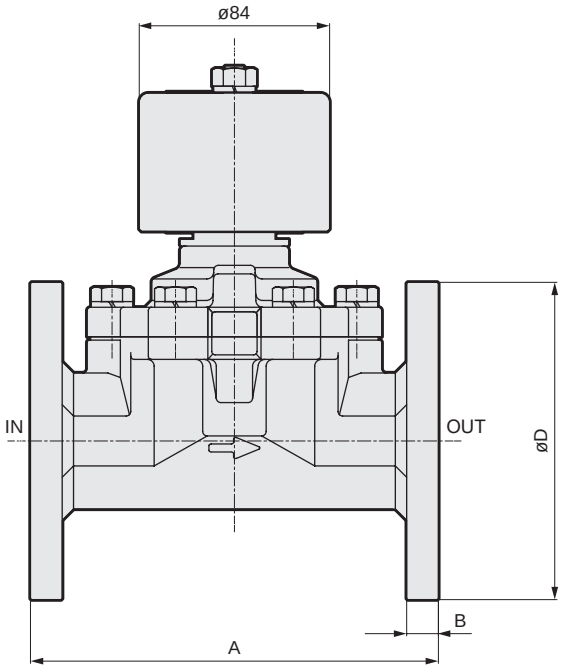


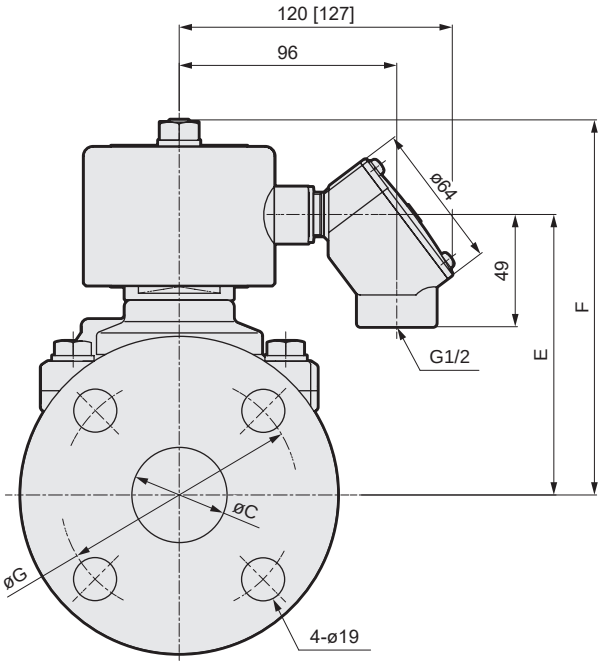
Model No.	A	B	C	D	E	F	G
ADK21-32A	125	54	27	116.5	158.5	112	Rc1 1/4
ADK21-40A	140	60	30	123.5	165.5	122	Rc1 1/2
ADK21-50A	160	74	37	132.5	174.5	132	Rc2



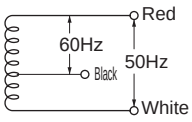
● Conduit size
Thin steel conduit thread
JIS B 0204 CTC19

● Open frame + round terminal box (flange)
ADK21-32F/40F/50F-* 3E 3L





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

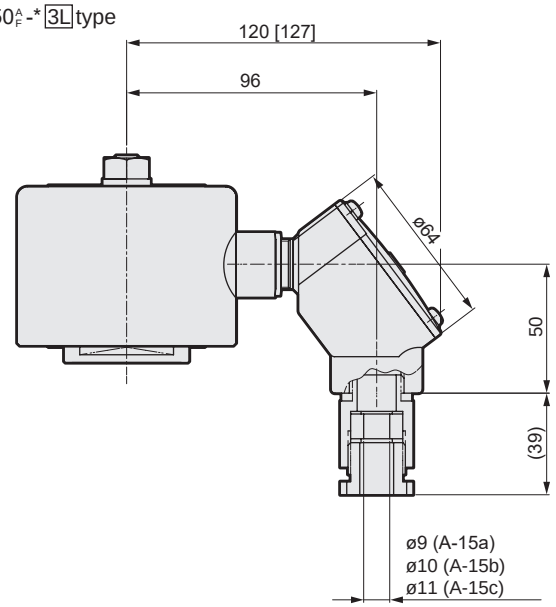


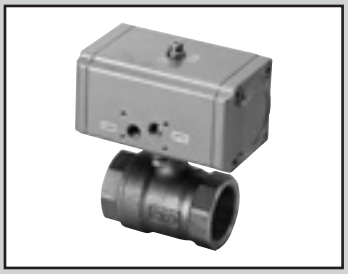
● Conduit size
Thin steel conduit thread
JIS B 0204 CTC19

Optional dimensions

● Open frame + round terminal box + cable gland
ADK21-32A/P to 50A/P-* [3E / 3L] [D / E / F]

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





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

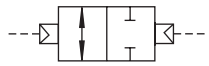
CHB-W/CHB-WR* Series

● Port size: Rc3/8 to Rc2

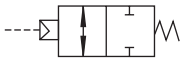
WEATHER PROOF RoHS CAD

JIS symbol

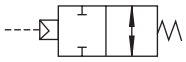
● CHB-W
(double acting)



● CHB-WR1
(Single acting-NC)



● CHB-WR2
(Single acting-NO)



Common specifications

Item		CHB-W	CHB-WR*
Actuation		Air operated: Double acting	Air operated: Single acting
Working fluid		Water/air/oil (500 mm^2/s or less) (*1)	
Working pressure MPa		0 to 1.0	
Proof pressure(water pressure) MPa		2.0	
Fluid temperature °C		Water/oil: 0 to 80 (no freezing) Air: -20 to 80 (no freezing) (*2)	
Ambient temperature°C		Fluoro rubber: -10 to 60, Special fluoro rubber: -20 to 60	
Working environment		Indoors/outdoors	
Valve seat leakage cm^3/min		0 (at initial water pressure 1 MPa)	
Mounting orientation		Unrestricted	
Frequency cycles/min.		1 or less	
Rotary actuator	Pilot fluid	Compressed air	
	Lubrication	Not required (*3)	
	Proof pressure(water pressure) MPa	1.5	
	Working pressureMPa	0.35 to 0.7	0.4 to 0.7
	Fluid temperature°C	5 to 60	
	Port size	Rc1/8	Rc1/8

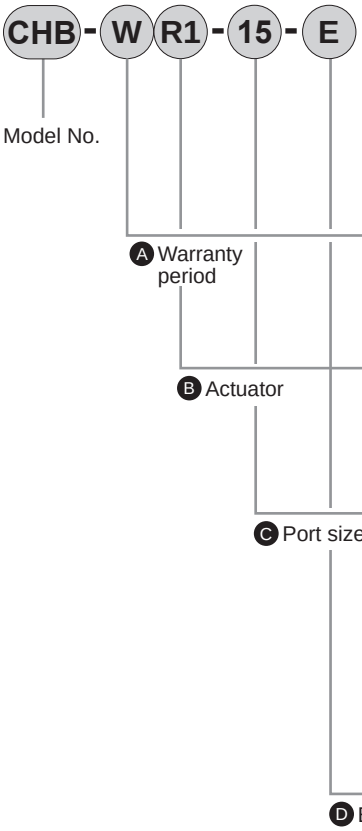
*1: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 500mm^2/s or less within the temperature range being used. When exceeding 500 mm^2/s, operation will become unstable.
*2: When using fluid: air at −20 to 80°C, select the special fluoro rubber (F).
*3: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Individual specifications

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

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

How to order



Code	Description
A Warranty period	
W	1 year after delivery
WG	3 years after delivery *1*2 (with inspection certificate, inspection guidelines, traceability system diagram)
B Actuator	
Blank	Double acting
R1	Single acting NC (Normally closed)
R2	Single acting NO (Normally open)
C Port size	
10	Rc3/8
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1¼
40	Rc1½
50	Rc2

D Body / rubber material		
	Body	**Rubber**
E	Stainless steel	Fluoro rubber *3
F		Special fluoro rubber *3

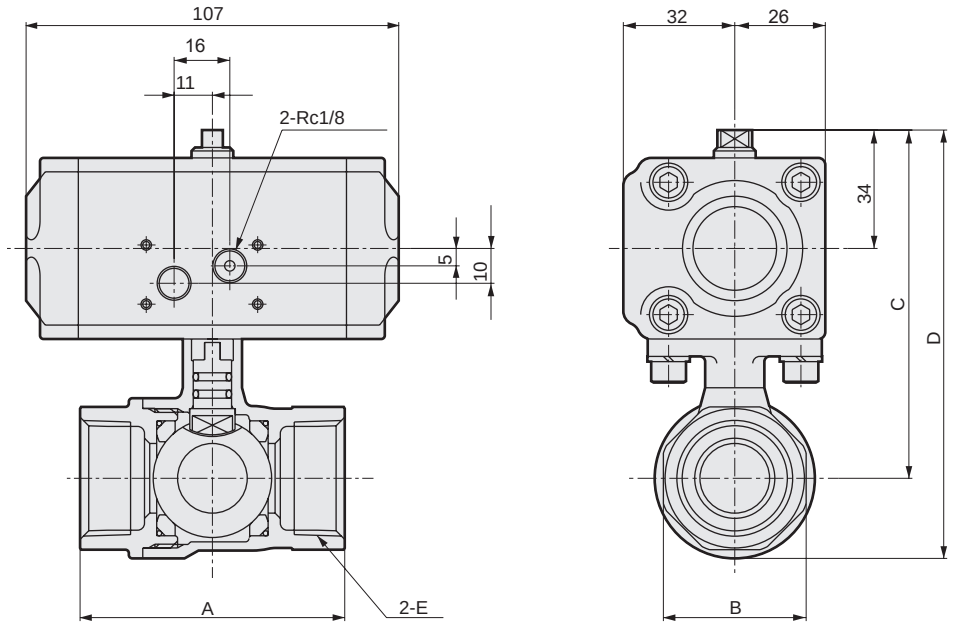
[Example of model No.]
CHB-WR1-15-E
Model No.: CHB (standard bore)
A Warranty period: 1 year after delivery
B Actuator : Single acting NC (Normally closed)
C Port size : Rc1/2
D Body material : Stainless steel

⚠ Precautions for model No. selection

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

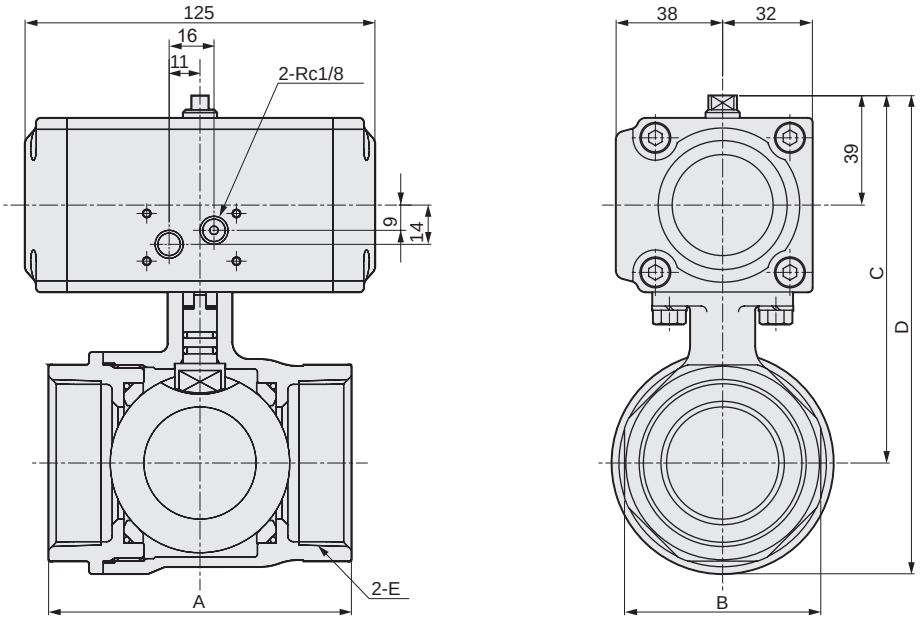
Dimensions: CHB-W Series

● CHB-W-10/15/20/25



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

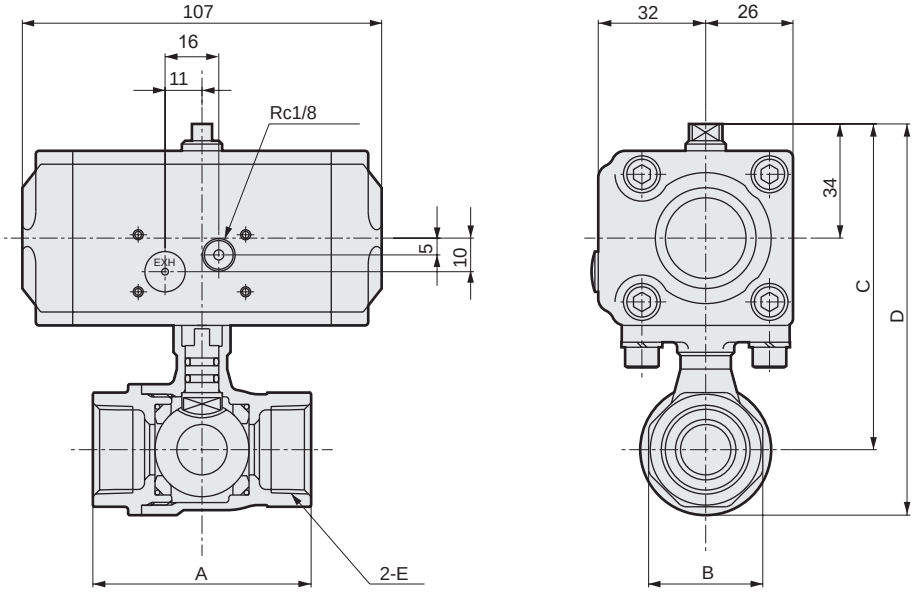
● CHB-W-32/40/50



Model No.	A	B	C	D	E
CHB-W-32	84	50	116	145.5	Rc1¼
CHB-W-40	94	57	122	157.5	Rc1½
CHB-W-50	108	70	131	171.5	Rc2

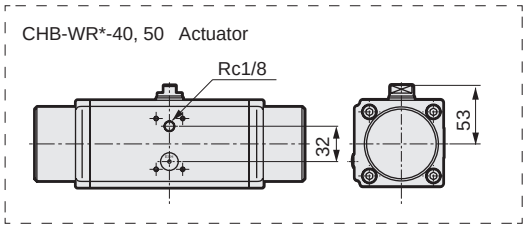
Dimensions: CHB-WR* Series

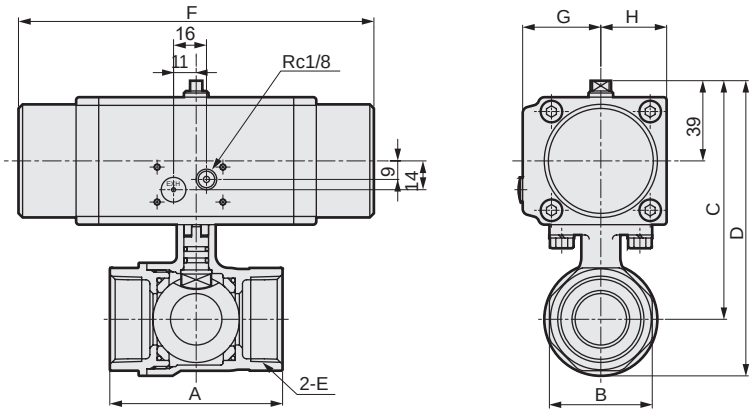
● CHB-WR*-10/15/20



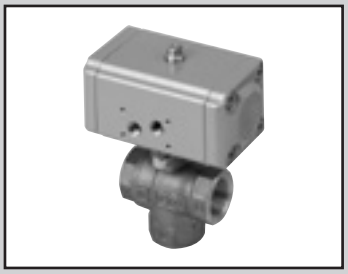
Model No.	A	B	C	D	E
CHB-WR*-10	56	28	91	107	Rc3/8
CHB-WR*-15	56	28	91	107	Rc1/2
CHB-WR*-20	65	34	97	117.5	Rc3/4

● CHB-WR*-25/32/40/50





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



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

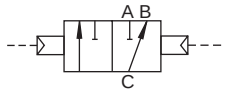
CHG-W/CHG-WR* Series

● Port size: Rc1/2 to Rc2

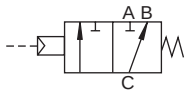
WEATHER PROOF RoHS CAD

JIS symbol

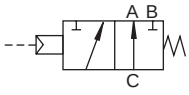
● CHG-W (Double acting)



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



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



Common specifications

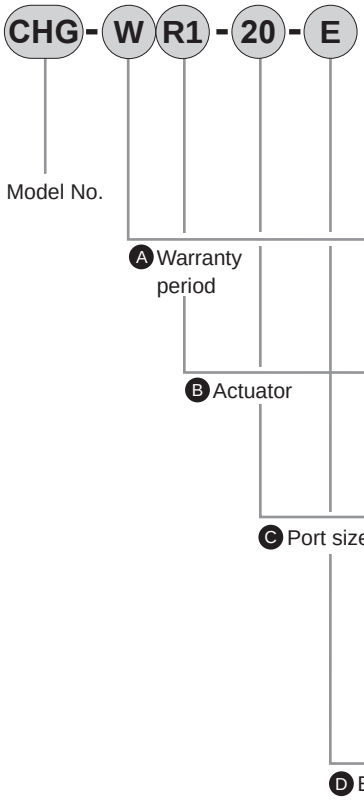
Item		CHG-W	CHG-WR*
Actuation		Air operated: Double acting	Air operated: Single acting
Working fluid		Water/air/oil (500 mm^2/s or less) (*1)	
Working pressure MPa		0 to 1.0	
Proof pressure(water pressure) MPa		2.0	
Fluid temperature °C		Water/oil: 0 to 80 (no freezing) Air: -20 to 80 (no freezing) (*2)	
Ambient temperature°C		Fluoro rubber (E):−10 to 60, special fluoro rubber (F):−20 to 60	
Working environment		Indoors/outdoors	
Valve seat leakage cm^3/min		0 (at initial water pressure 1 MPa)	
Mounting orientation		Unrestricted	
Frequency cycles/min.		1 or less	
Pressurization direction		Port C pressurization only	
Flow path shape		Multi-fluid type (90° Rotation switching method)	
Rotary actuator	Pilot fluid	Compressed air	
	Lubrication	Not required(*3)	
	Proof pressure(water pressure) MPa	1.5	
	Working pressure MPa	0.35 to 0.7	0.4 to 0.7
	Fluid temperature°C	5 to 60	
	Port size	Rc1/8	Rc1/8

*1: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 500mm^2/s or less within the temperature range being used. When exceeding 500 mm^2/s, operation will become unstable.
*2: When using fluid: air at −20 to 80°C, select the special fluoro rubber (F).
*3: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Individual specifications

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

How to order



Code	Description
A Warranty period	
W	1 year after delivery
WG	3 years after delivery *1*2 (with inspection certificate, inspection guidelines, traceability system diagram)
B Actuator	
Blank	Double acting
R1	Single acting, normally B-C path
R2	Single acting, normally A-C path
C Port size	
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1¼
40	Rc1½
50	Rc2

D Body / rubber material			
	Body	**Rubber**	
E	Stainless steel	Fluoro rubber	*3
F		Special fluoro rubber	*3

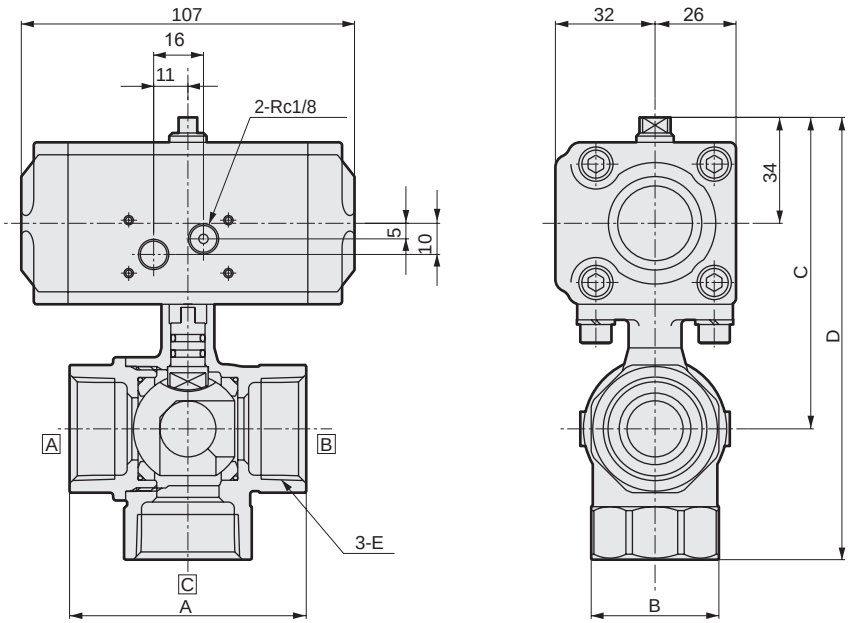
[Example of model No.]
CHG-WR1-20-E
Model: CHG
A Warranty period : 1 year after delivery
B Actuator : Single acting, normally B-C path
C Port size : Rc3/4
D Body material : Stainless steel

⚠ Precautions for model No. selection

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

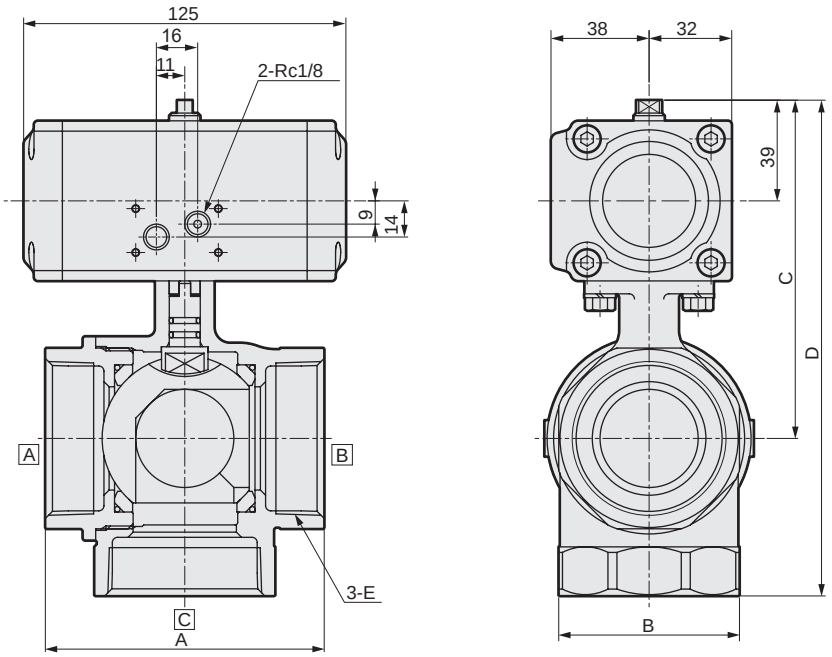
Dimensions: CHG-W Series

● CHG-W-15/20/25



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

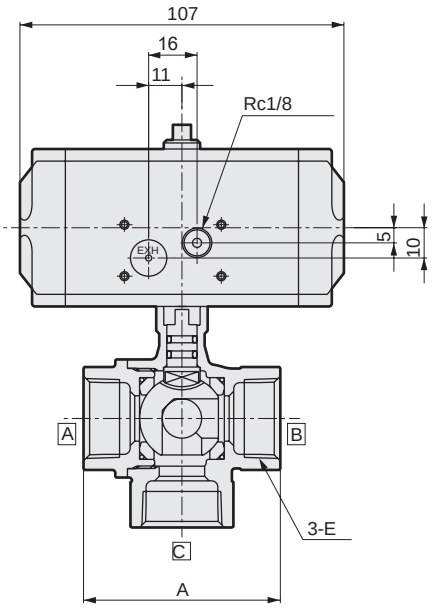
● CHG-W-32/40/50

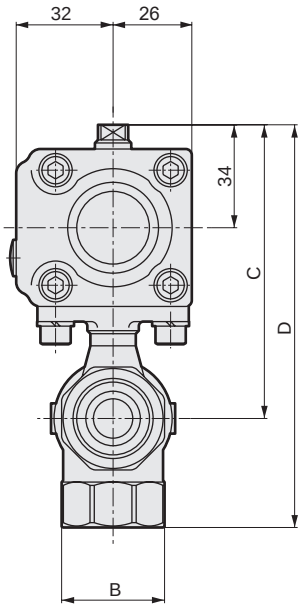


Model No.	A	B	C	D	E
CHG-W-32	84	50	116	163	Rc1¼
CHG-W-40	94	57	122	175	Rc1½
CHG-W-50	108	70	131	192	Rc2

Dimensions: CHG-WR* Series

● CHG-WR*-15/20

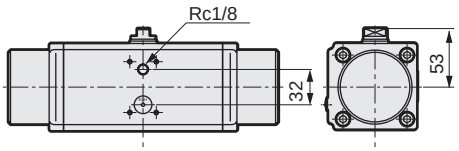


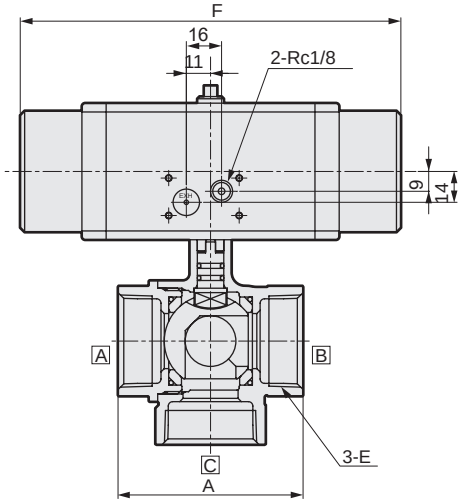


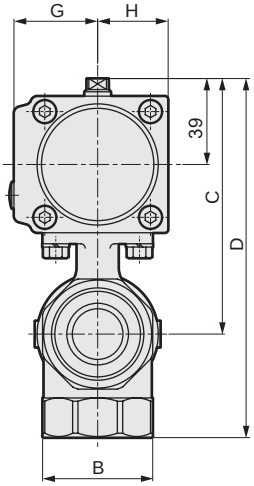
Model No.	A	B	C	D	E
CHG-WR*-15	56	28	91	121	Rc1/2
CHG-WR*-20	65	34	97	133	Rc3/4

● CHG-WR*-25/32/40/50

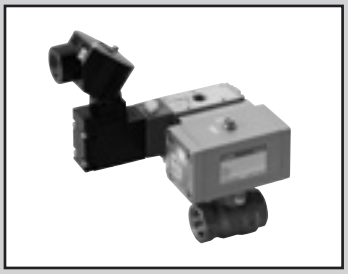
● CHG-WR*-40, 50 Actuator







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



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

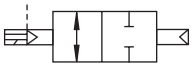
CHB-WV1/CHB-WX1 Series

● Port size: Rc3/8 to Rc2

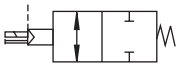
WEATHER PROOF RoHS CAD

JIS symbol

● CHB-WV1
(Double acting-NC)



● CHB-WX1
(Single acting-NC)



Common specifications

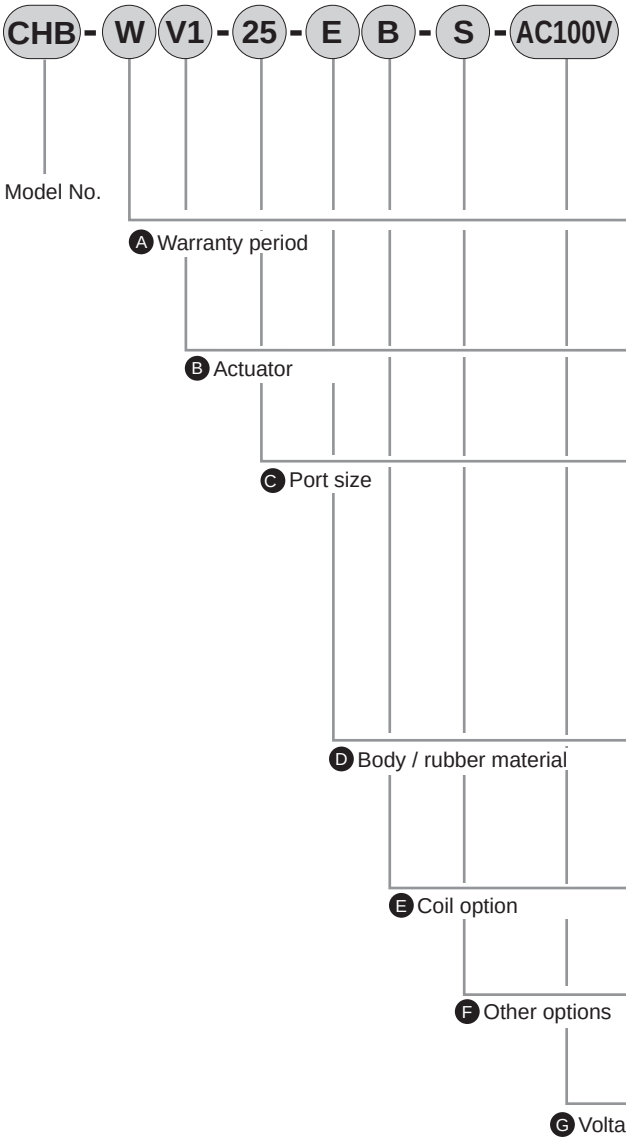
Item			CHB-WV1	CHB-WX1
Actuation			With solenoid valve: Double acting	With solenoid valve: Single acting
Working fluid			Water/air/oil (500 mm²/s or less) (*1)	
Working pressure MPa			0 to 1.0	
Proof pressure(water pressure) MPa			2.0	
Fluid temperature °C			Water/oil: 0 to 80 (no freezing) Air: -20 to 80 (no freezing) (*2)	
Ambient temperature°C			Fluoro rubber (E): -10 to 60, special fluoro rubber (F): -20 to 60	
Working environment			Indoors/outdoors	
Valve seat leakage cm³/min			0 (at initial water pressure 1 MPa)	
Mounting orientation			Vertical direction with the actuator on the top	
Frequency cycles/min.			1 or less	
Rotary actuator	Pilot fluid		Compressed air	
	Lubrication		Not required (*3)	
	Proof pressure(water pressure) MPa		1.5	
	Working pressure MPa		0.35 to 0.7	0.4 to 0.7
	Fluid temperature °C		5 to 60	
	Port size	Ports S, E1, E2	Rc1/4	
		EXH port		Rc1/8
Electrical specifications				
Rated voltage			100 VAC (50/60Hz), 200 VAC (50/60Hz), 24 VDC	
Starting current(A)		100 VAC	0.170/0.140 (50/60Hz)	
		200 VAC	0.090/0.070 (50/60Hz)	
		24 VDC	0.250	
Holding current(A)		100 VAC	0.100/0.080 (50/60Hz)	
		200 VAC	0.050/0.040 (50/60Hz)	
		24 VDC	0.250	
Power consumption(W)		100 VAC	5.0/4.0 (50/60Hz)	
		200 VAC	5.0/4.0 (50/60Hz)	
		24 VDC	6.0	
Thermal class			Class 130 (B)	
Degree of protection			IP65	
Voltage fluctuation range			±10%	

*1: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 500mm²/s or less within the temperature range being used. When exceeding 500 mm²/s, operation will become unstable.
*2: When using fluid: air at −20 to 80°C, select the special fluoro rubber (F).
*3: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Individual specifications

Item / Model No.		Port size	Orifice size(mm)	Cv	Weight (kg)	
					Double acting	Single acting
Standard bore	CHB-WV1/WX1-10-	Rc3/8	10	10	2.1	2.2
	CHB-WV1/WX1-15-	Rc1/2	10	6	2.1	2.2
	CHB-WV1/WX1-20-	Rc3/4	15	16	2.3	2.4
	CHB-WV1/WX1-25-	Rc1	20	29	2.4	3.3
	CHB-WV1/WX1-32-	Rc1¼	25	50	3.4	3.9
	CHB-WV1/WX1-40-	Rc1½	32	98	3.8	6.0
	CHB-WV1/WX1-50-	Rc2	40	125	4.6	6.8

How to order



Code	Description
A Warranty period	
W	1 year after delivery
WG	3 years after delivery *1*2 (with inspection certificate, inspection guidelines, traceability system diagram)
B Actuator	
V1	Double acting NC (Open when energized)
X1	Single acting NC (Open when energized)
C Port size	
10	Rc3/8
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1¼
40	Rc1½
50	Rc2

D Body / rubber material			
	Body	**Rubber**	
E	Stainless steel	Fluoro rubber	*3
F		Special fluoro rubber	*3

E Coil option	
B	Round terminal box (G½)
BL	Round terminal box with lamp (G½)

F Other options	
Blank	No
S	Silencer *4

G Voltage	
AC100V	100 VAC 50/60 Hz, 110 VAC 60 Hz
AC200V	200 VAC 50/60 Hz and 220 VAC 60 Hz
DC24V	24 VDC

[Example of model No.]

CHB-WV1-25-EB-S-AC100V

Model No.: CHB (standard bore)

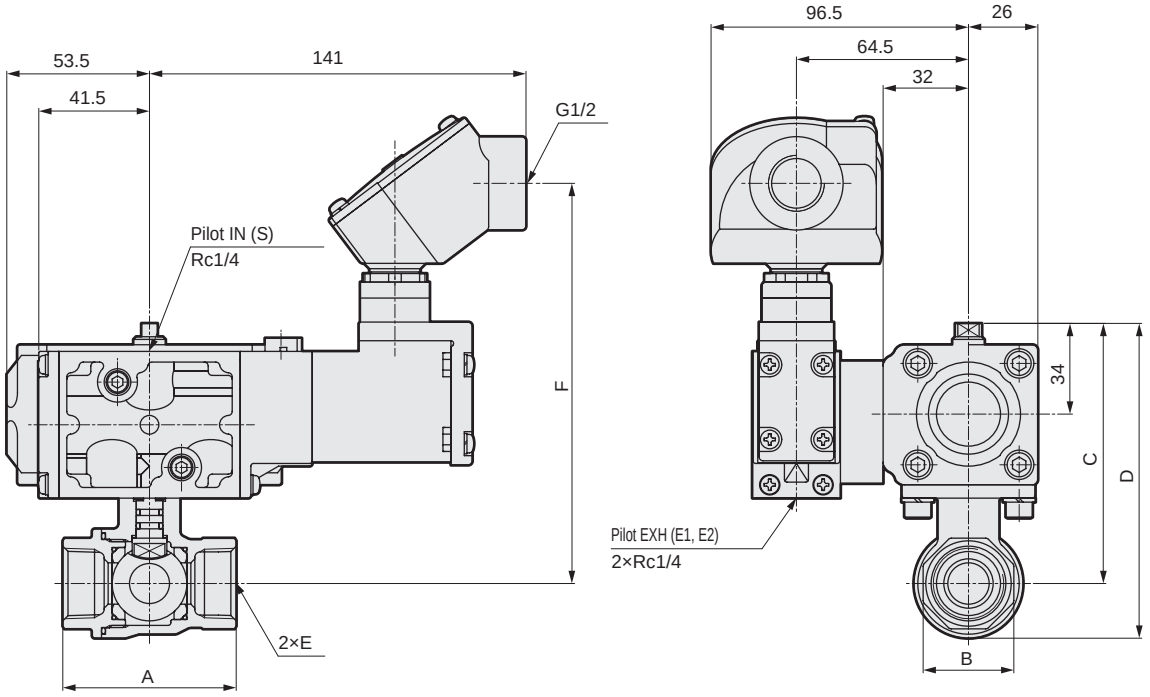
A Warranty period : 1 year after delivery
B Actuator : Double acting NC (Open when energized)
C Port size : Rc1
D Body material : Stainless steel
E Coil option : With round terminal box
F Other options : With 2 silencers
G Voltage : 100 VAC 50/60Hz. 110 VAC 60Hz

⚠ Precautions for model No. selection

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

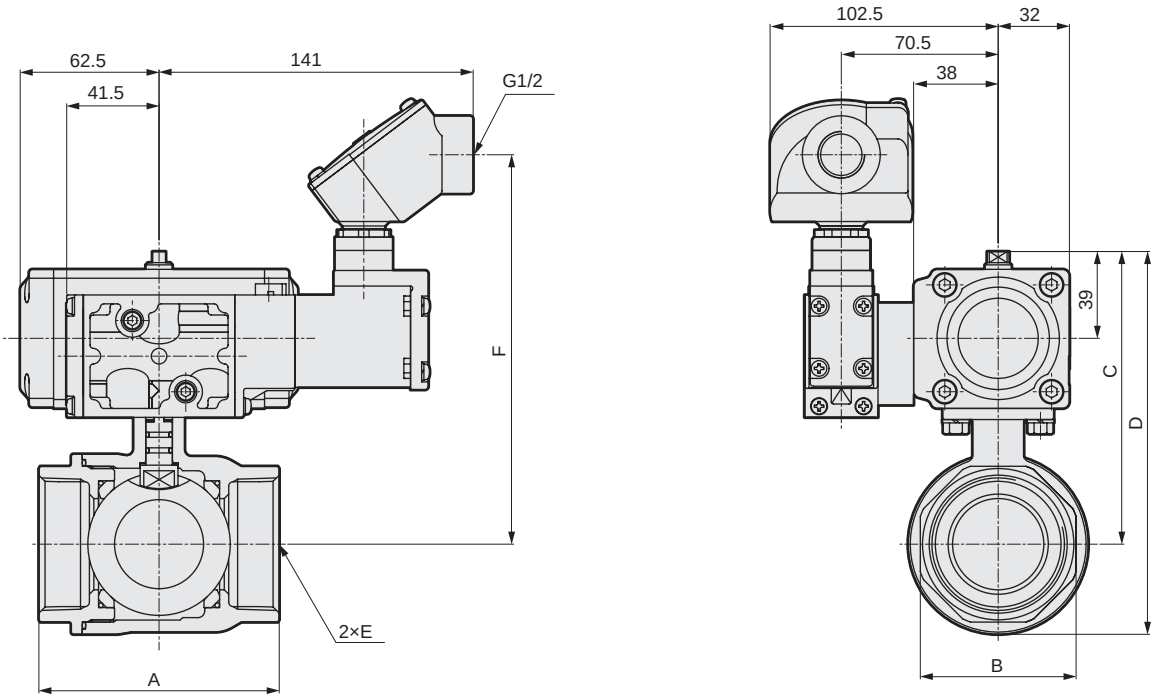
Dimensions CHB-WV1 Series

● CHB-WV1-10/15/20/25



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

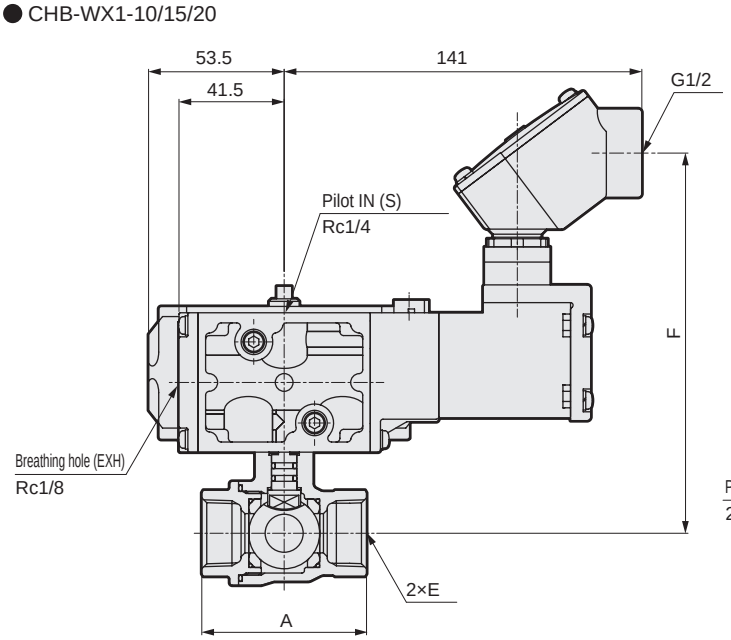
● CHB-WV1-32/40/50

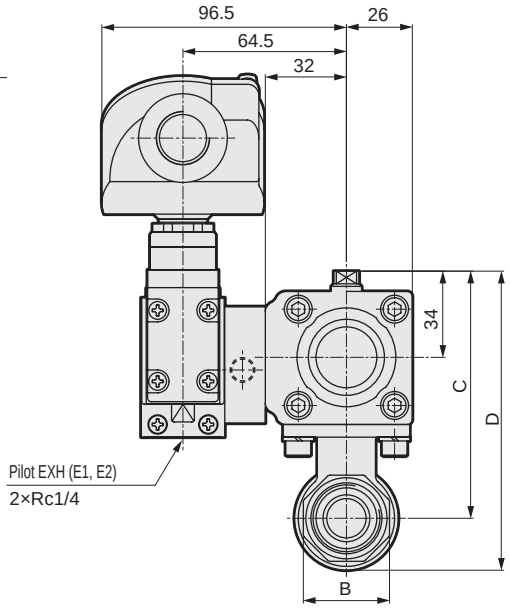


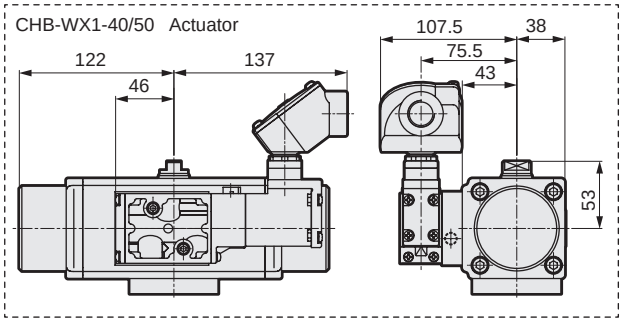
Model No.	A	B	C	D	E	F
CHB-WV1-32	84	50	116	145.5	Rc11/4	160
CHB-WV1-40	94	57	122	157.5	Rc11/2	166
CHB-WV1-50	108	70	131	171.5	Rc2	175

Dimensions CHB-WX1 Series

● CHB-WX1-10/15/20

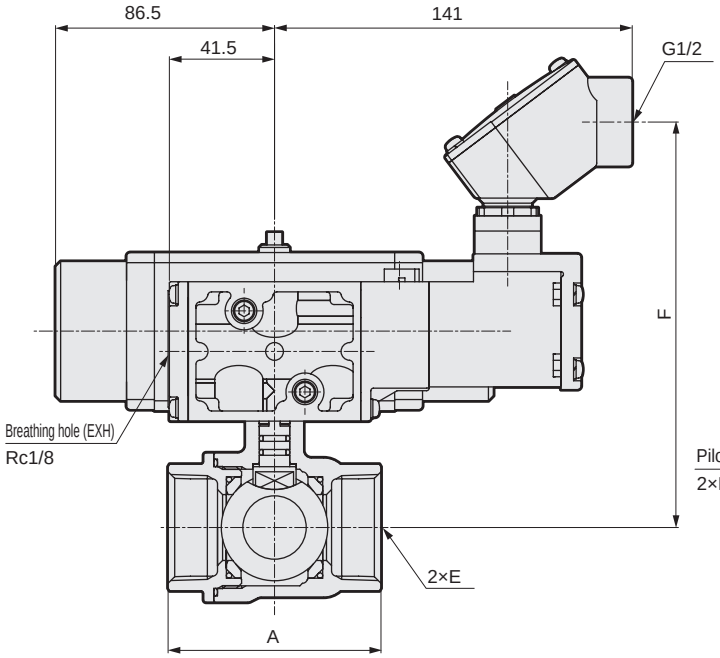


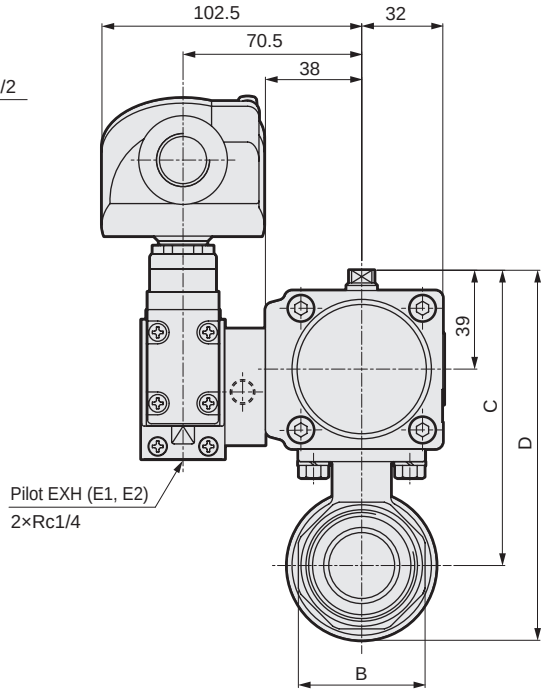




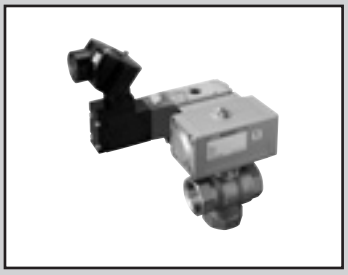
Model No.	A	B	C	D	E	F
CHB-WX1-10	56	28	91	107	Rc3/8	144
CHB-WX1-15	56	28	91	107	Rc1/2	144
CHB-WX1-20	65	34	97	117.5	Rc3/4	150

● CHB-WX1-25/32/40/50





Model No.	A	B	C	D	E	F
CHB-WX1-25	76	41	110	134	Rc1	153
CHB-WX1-32	84	50	116	145.5	Rc11/4	160
CHB-WX1-40	94	57	156.5	192	Rc11/2	194
CHB-WX1-50	108	70	165.5	206	Rc2	203



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

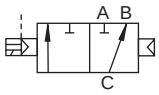
CHG-WV1/CHG-WX1 Series

● Port size: Rc1/2 to Rc2

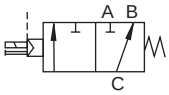
WEATHER PROOF RoHS CAD

JIS symbol

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



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



Common specifications

Item			CHG-WV1	CHG-WX1
Actuation			With solenoid valve: Double acting	With solenoid valve: Single acting
Working fluid			Water/air/oil(500 mm²/s or less) (*1)	
Working pressure MPa			0 to 1.0	
Proof pressure(water pressure) MPa			2.0	
Fluid temperature °C			Water/oil: 0 to 80(no freezing) Air: -20 to 80 (no freezing) (*2)	
Ambient temperature °C			Fluoro rubber (E): -10 to 60, special fluoro rubber (F): -20 to 60	
Working environment			Indoors/outdoors	
Valve seat leakage cm³/min			0 (at initial water pressure 1 MPa)	
Mounting orientation			Vertical direction with the actuator on the top	
Frequency cycles/min.			1 or less	
Pressurization direction			Port C pressurization only	
Flow path shape			Multi-fluid type (90° Rotation switching method)	
Rotary actuator	Pilot fluid		Compressed air	
	Lubrication		Not required (*3)	
	Proof pressure(water pressure) MPa		1.5	
	Working pressure MPa		0.35 to 0.7	0.4 to 0.7
	Fluid temperature °C		5 to 60	
	Port size	Ports S, E1, E2	Rc1/4	
		EXH port		Rc1/8
Electrical specifications				
Rated voltage			100 VAC (50/60Hz), 200 VAC (50/60Hz), 24 VDC	
Starting current(A)		100 VAC	0.170/0.140 (50/60Hz)	
		200 VAC	0.090/0.070 (50/60Hz)	
		24 VDC	0.250	
Holding current(A)		100 VAC	0.100/0.080 (50/60Hz)	
		200 VAC	0.050/0.040 (50/60Hz)	
		24 VDC	0.250	
Power consumption(W)		100 VAC	5.0/4.0 (50/60Hz)	
		200 VAC	5.0/4.0 (50/60Hz)	
		24 VDC	6.0	
Thermal class			Class 130 (B)	
Degree of protection			IP65	
Voltage fluctuation range			±10%	

*1: Dynamic viscosity varies with temperature. Check that the dynamic viscosity is 500mm²/s or less within the temperature range being used. When exceeding 500 mm²/s, operation will become unstable.
*2: When using fluid: air at −20 to 80°C, select the special fluoro rubber (F).
*3: Use turbine oil ISO VG32 for lubrication. Consult with CKD regarding use in low-temperature environments.

Individual specifications

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

How to order

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

Model No.

Ⓐ Warranty period

Ⓑ Actuator

Ⓒ Port size

Ⓓ Body / rubber material

Ⓔ Coil option

Ⓕ Other options

Ⓖ Voltage

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

[Example of model No.]

CHG-WX1-15-EB-S-AC200V

Model: CHG

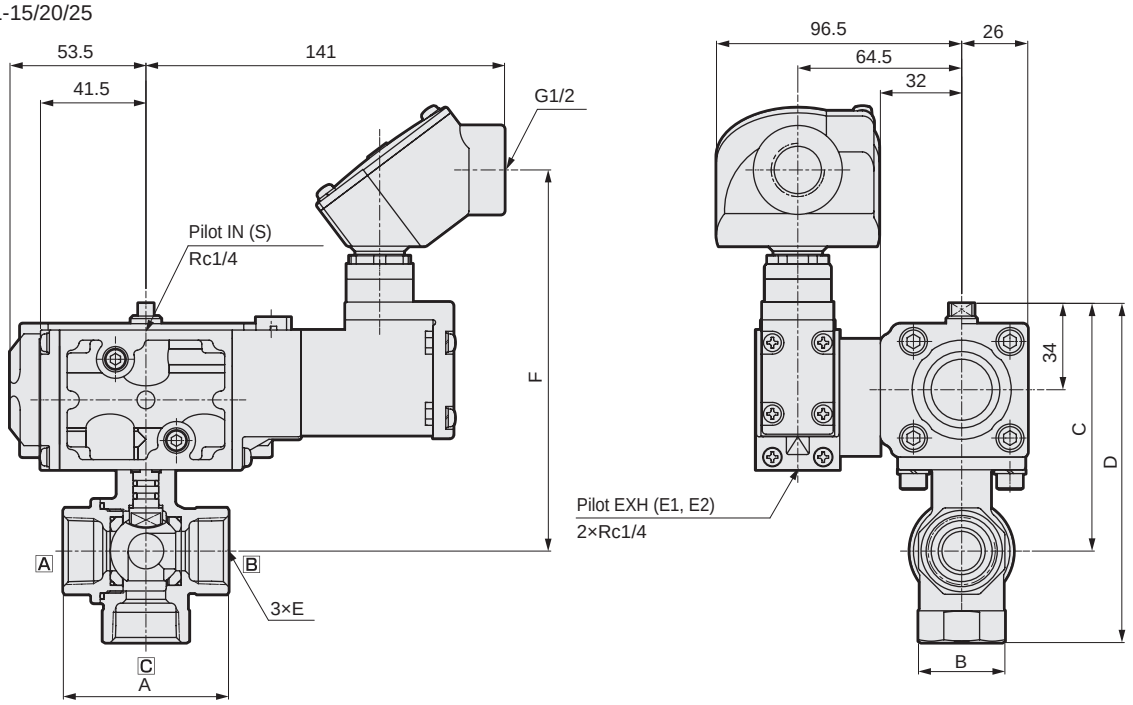
Ⓐ Warranty period : 1 year after delivery
Ⓑ Actuator : Single acting, normally B-C path
Ⓒ Port size : Rc1/2
Ⓓ Body material : Stainless steel
Ⓔ Coil option : With round terminal box
Ⓕ Other options : With 1 silencer
Ⓖ Voltage : 200 VAC 50/60Hz. 220 VAC 60Hz

⚠ Precautions for model No. selection

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

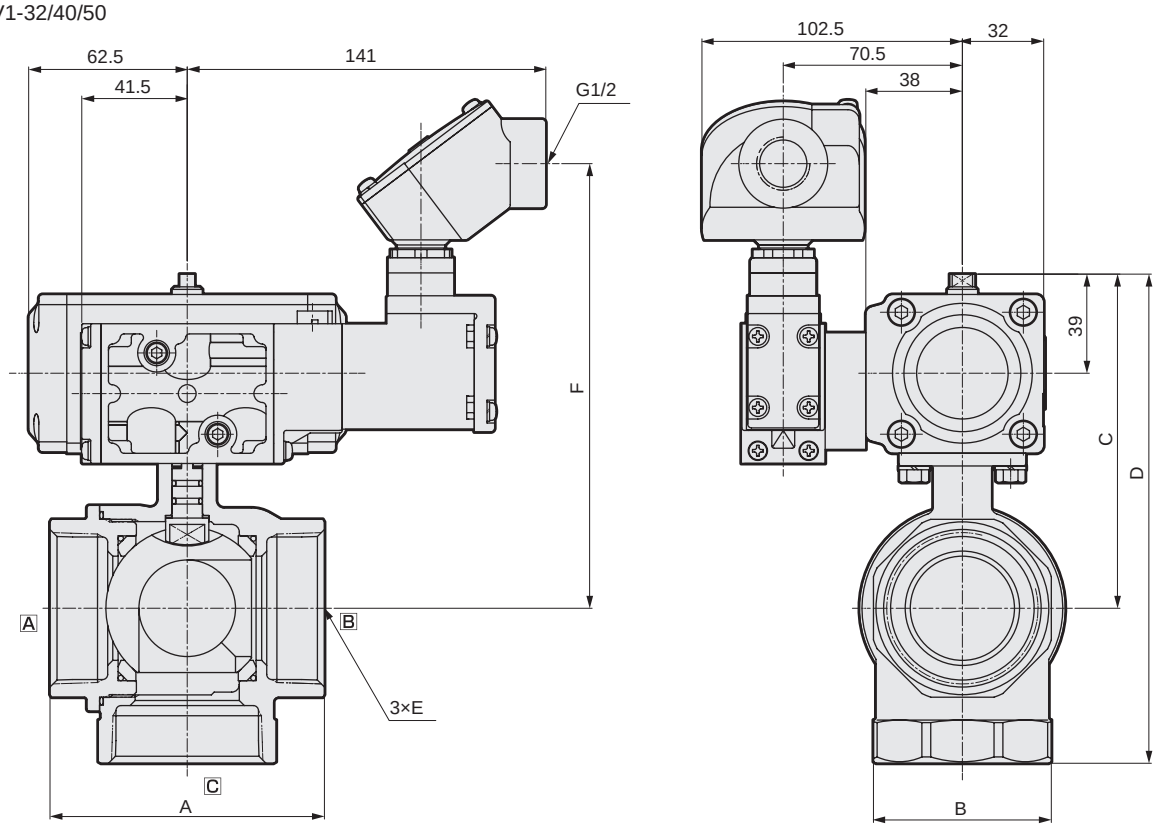
Dimensions: CHG-WV1 Series

● CHG-WV1-15/20/25



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

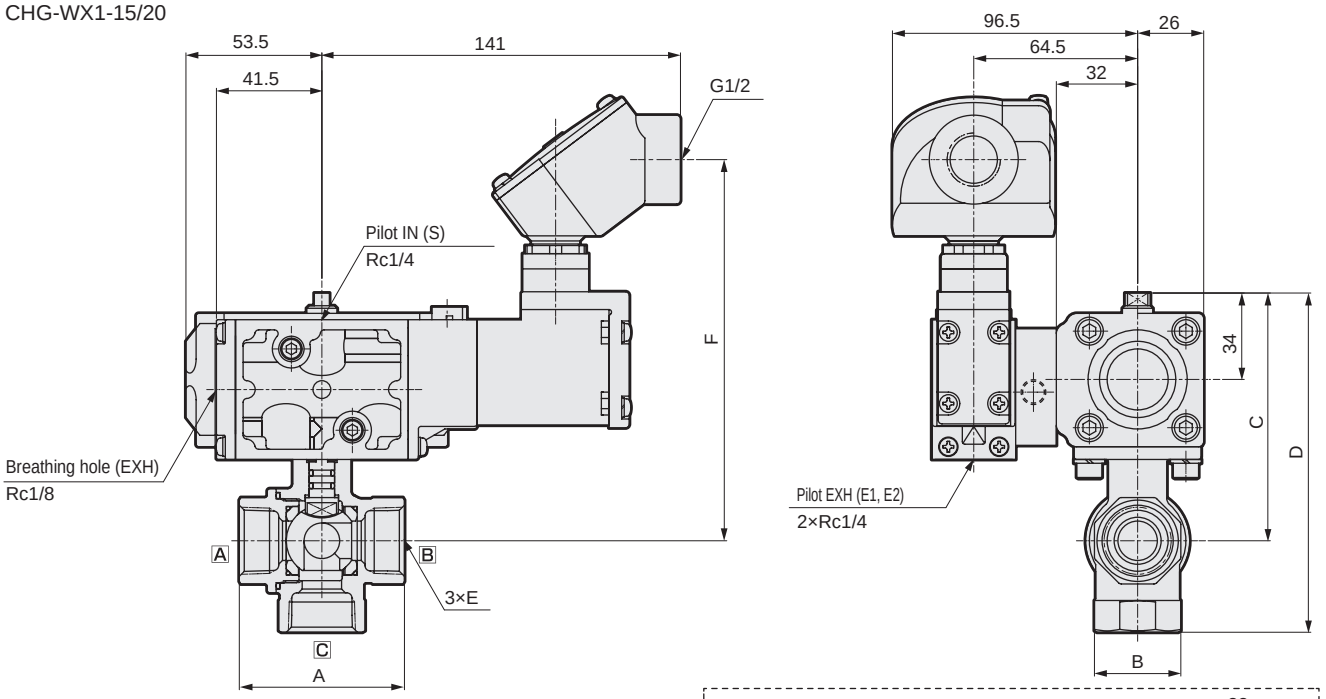
● CHG-WV1-32/40/50



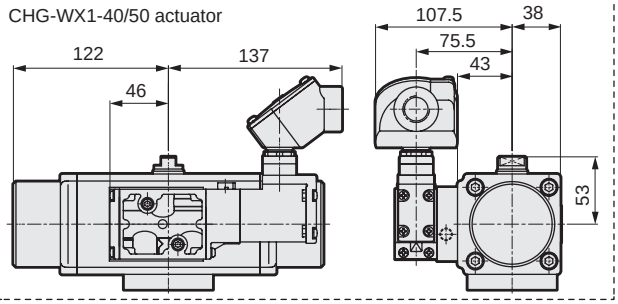
Model No.	A	B	C	D	E	F
CHG-WV1-32	84	50	116	163	Rc1 1/4	160
CHG-WV1-40	94	57	122	175	Rc1 1/2	166
CHG-WV1-50	108	70	131	192	Rc2	175

Dimensions CHG-WX1 Series

● CHG-WX1-15/20

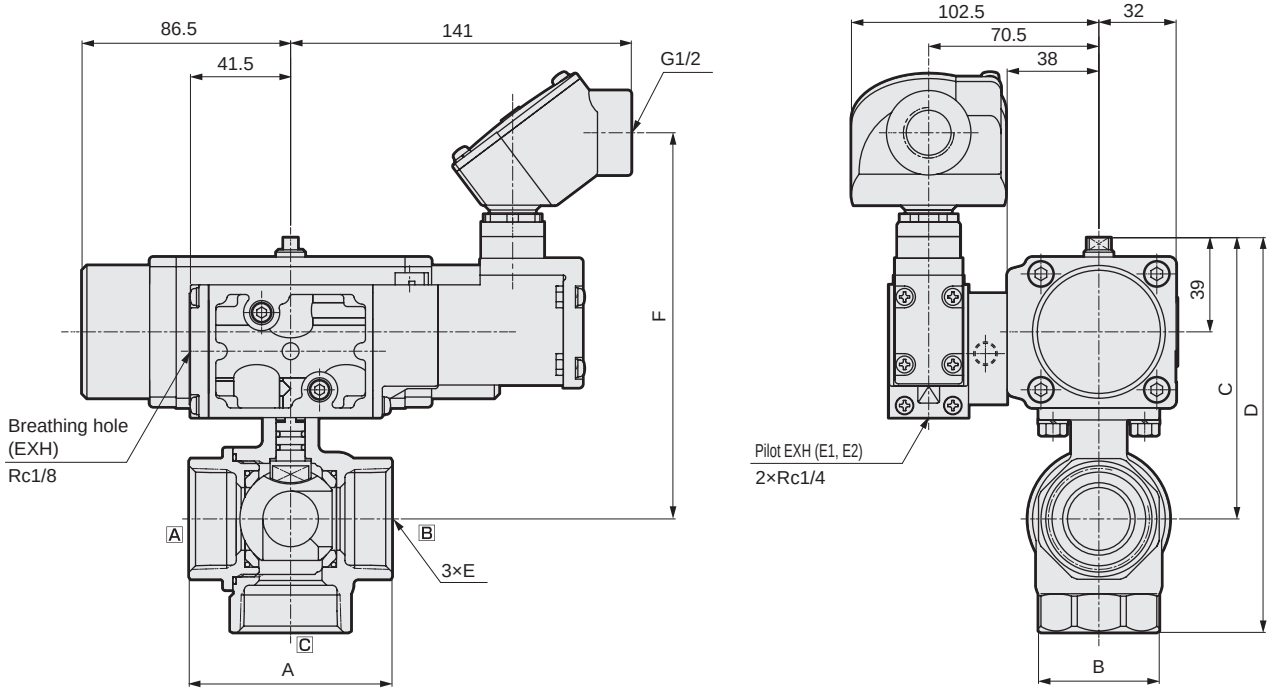


CHG-WX1-40/50 actuator

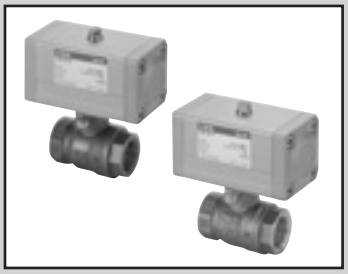


Model No.	A	B	C	D	E	F
CHG-WX1-15	56	28	91	121	Rc1/2	144
CHG-WX1-20	65	34	97	133	Rc3/4	150

● CHG-WX1-25/32/40/50



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



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

CSB-W/CSB-WR* Series

● Port size: Rc3/8 to Rc2

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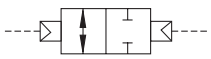
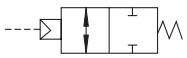
JIS symbol

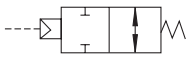
● CSB-W
(Double acting)



● CSB-WR1
(Single acting-NC)



● CSB-WR2
(Single acting-NO)



Common specifications

Item		CSB-W	CSB-WR*
Actuation		Air operated: Double acting	Air operated: Single acting
Working fluid		Steam/hot water	
Working pressure MPa		0 to 0.6	
Proof pressure(water pressure) MPa		2.0	
Fluid temperature °C		0 to 164(no freezing)	
Ambient temperature °C		−10 to 60	
Working environment		Indoors/outdoors	
Valve seat leakage cm^3/min		1 or less (at initial water pressure 0.6 MPa)	
Mounting orientation		Unrestricted	
Frequency cycles/min.		1 or less	
Rotary actuator	Pilot fluid	Compressed air	
	Lubrication	Not required(Use turbine oil class 1 ISO VG32 if necessary for lubrication.)	
	Proof pressure(water pressure) MPa	1.5	
	Working pressure MPa	0.35 to 0.7	0.4 to 0.7
	Fluid temperature °C	5 to 60	
	Port size	Rc1/8	

Individual specifications

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

1: CSB- (WR) -10 is a full bore type.
*2: CSB (- WR *) -40/50 is not supported.

How to order

CSB - W R1 - 15 - W

Model No.
Ⓐ Warranty period
Ⓑ Actuator
Ⓒ Port size *3
Ⓓ Body/seat material

Code	Description
Ⓐ Warranty period	
W	1 year after delivery
WG	3 years after delivery *1*2 (with inspection certificate, inspection guidelines, traceability system diagram)
Ⓑ Actuator	
Blank	Double acting
R1	Single acting NC (normally closed)
R2	Single acting NO (normally open)
Ⓒ Port size	
10	Rc 3/8
15	Rc 1/2
20	Rc 3/4
25	Rc 1
32	Rc 1¼
40	Rc 1½
50	Rc 2
Ⓓ Body/seat material	
W	Stainless steel - reinforced PTFE *3

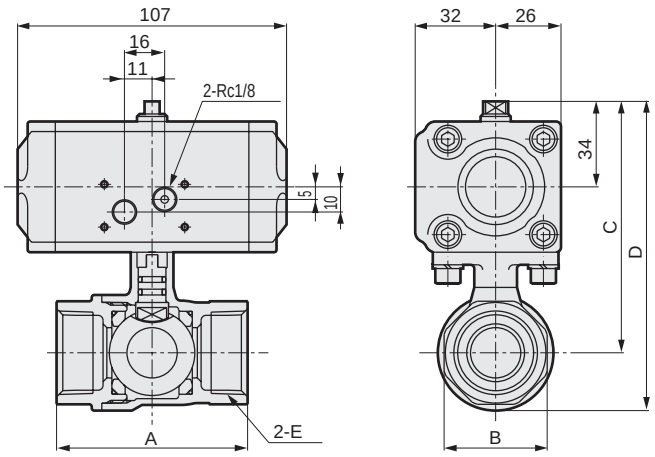
[Example of model No.]
CSB-WR1-15-W
Model: CSB (standard bore)
Ⓐ Warranty period : 1 year after delivery
Ⓑ Actuator : Single acting NC (normally closed)
Ⓒ Port size : Rc 1/2
Ⓓ Body/seat material : stainless steel - reinforced PTFE

⚠ Precautions for model No. selection

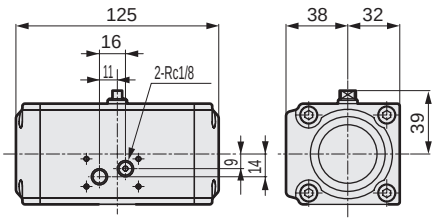
*1: The warranty period of option WG is three years from the date of delivery or one year from initial use, whichever comes first.
*2: For option WG, the specifications and drawings must be agreed upon. Refer to page 101 for details.
3: CSB-WR-40/50 is not supported.

Dimensions: CSB-W Series

● CSB-W-10/15/20/25/32/40/50



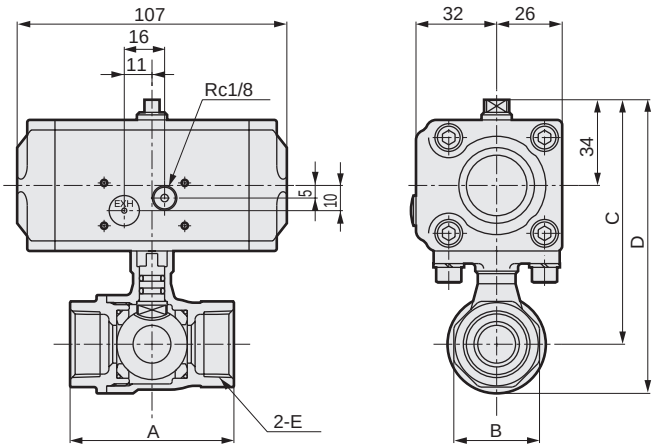
CSB-W-32/40/50 actuator



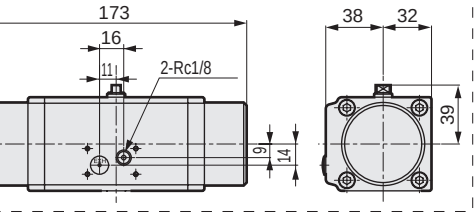
Model No.	A	B	C	D	E
CSB-W-10	56	28	91	107	Rc3/8
CSB-W-15	56	28	91	107	Rc1/2
CSB-W-20	65	34	97	117.5	Rc3/4
CSB-W-25	76	41	100	124	Rc 1
CSB-W-32	84	50	116	145.5	Rc1 1/4
CSB-W-40	94	57	122	157.5	Rc1 1/2
CSB-W-50	108	70	131	171.5	Rc 2

Dimensions: CSB-WR* Series

●CSB-WR*-10/15/20/25/32

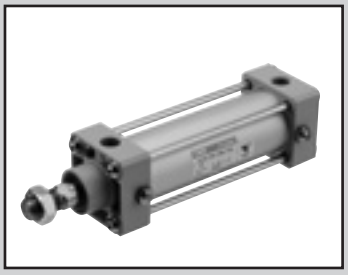


CSB-WR*-25/32 actuator



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

MEMO

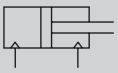


Medium bore size cylinder
Double acting/single rod outdoor type

SCA2 Series

● Bore size: ø40/ø50/ø63/ø80/ø100

JIS symbol



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Specifications

Item		Description				
Bore size mm		ø40	ø50	ø63	ø80	ø100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0				
Min. working pressure MPa		0.05				
Proof pressure MPa		1.6				
Ambient temperature °C		-20 to 60 (no freezing) Note				
Port size		Rc 1/4	Rc 3/8		Rc 1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (up to 360), $^{+1.4}_{0}$ (up to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air cushion length mm		14.6	16.6	16.6	20.6	23.6
Lubrication		Not available				
Allowable absorbed energy J	With cushion Note	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without a cushion, large energy generated by the external load cannot be absorbed. We recommend using an external shock absorber.				

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

Stroke

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

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

Cylinder weight

(Unit: kg)

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

(Example) Product weight of SCA2-LB-50B-200-W

- Product weight for stroke length 0 mm.....1.49 kg
- Additional weight for 200 mm stroke length..... $0.46 \times \frac{200}{100} = 0.92$ kg
- Product weight.....1.49+0.92=2.41kg

Theoretical thrust table

(Unit: N)

Bore size(mm)	Operating direction	Working pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	62.8	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	52.8	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	98.2	1.96×10^2	2.95×10^2	3.93×10^2	5.89×10^2	7.85×10^2	9.82×10^2	1.18×10^3	1.37×10^3	1.57×10^3	1.77×10^3	1.96×10^3
	Pull	82.5	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	1.56×10^2	3.12×10^2	4.68×10^2	6.23×10^2	9.35×10^2	1.25×10^3	1.56×10^3	1.87×10^3	2.18×10^3	2.49×10^3	2.81×10^3	3.12×10^3
	Pull	1.40×10^2	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	2.51×10^2	5.03×10^2	7.54×10^2	1.01×10^3	1.51×10^3	2.01×10^3	2.51×10^3	3.02×10^3	3.52×10^3	4.02×10^3	4.52×10^3	5.03×10^3
	Pull	2.27×10^2	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	3.93×10^2	7.85×10^2	1.18×10^3	1.57×10^3	2.36×10^3	3.14×10^3	3.93×10^3	4.71×10^3	5.50×10^3	6.28×10^3	7.07×10^3	7.85×10^3
	Pull	3.57×10^2	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

How to order

SCA2 - 00 - 40 ( ) B - 50 - L1 - W

Model No. | Outdoors

- A Mounting *1, *2
- B Bore size
- C Port thread
- D Cushion
- E Stroke
- F Option

Code	Description
A Mounting	
00	Basic *3
LB	Axial foot
FA	Rod side flange
FB	Head side flange
B Bore size (mm)	
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100
C Port thread	
Blank	Rc thread
N	NPT thread (made to order)
G	G thread (made-to-order product)
D Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

E Stroke (mm)

Bore size	Stroke	Custom Stroke
ø40 to 63	**1 to 600**	**In 1 mm increments**
ø80	**1 to 700**	
ø100	**1 to 800**	

F Option	
L1	With silicone bellows (external metal ring stainless steel) Max. ambient temperature: 250°C / instantaneous max. temperature: 400°C
Blank	Cushion needle position R (standard)
S	Cushion needle position S
T	Cushion needle position T

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped assembled with the product.
*2: Consult with CKD for mounting type for oscillation.
*3: For 00 mounting, remove the hexagon socket button head bolt and plain washer of the round nut screw hole used for cylinder assembly.

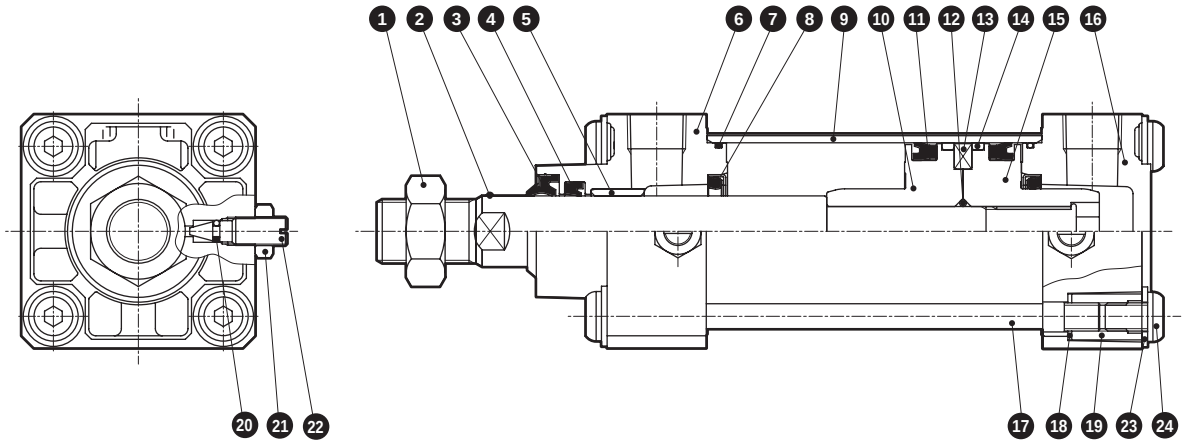
[Example of model No.]

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

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

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

Internal structure and parts list



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

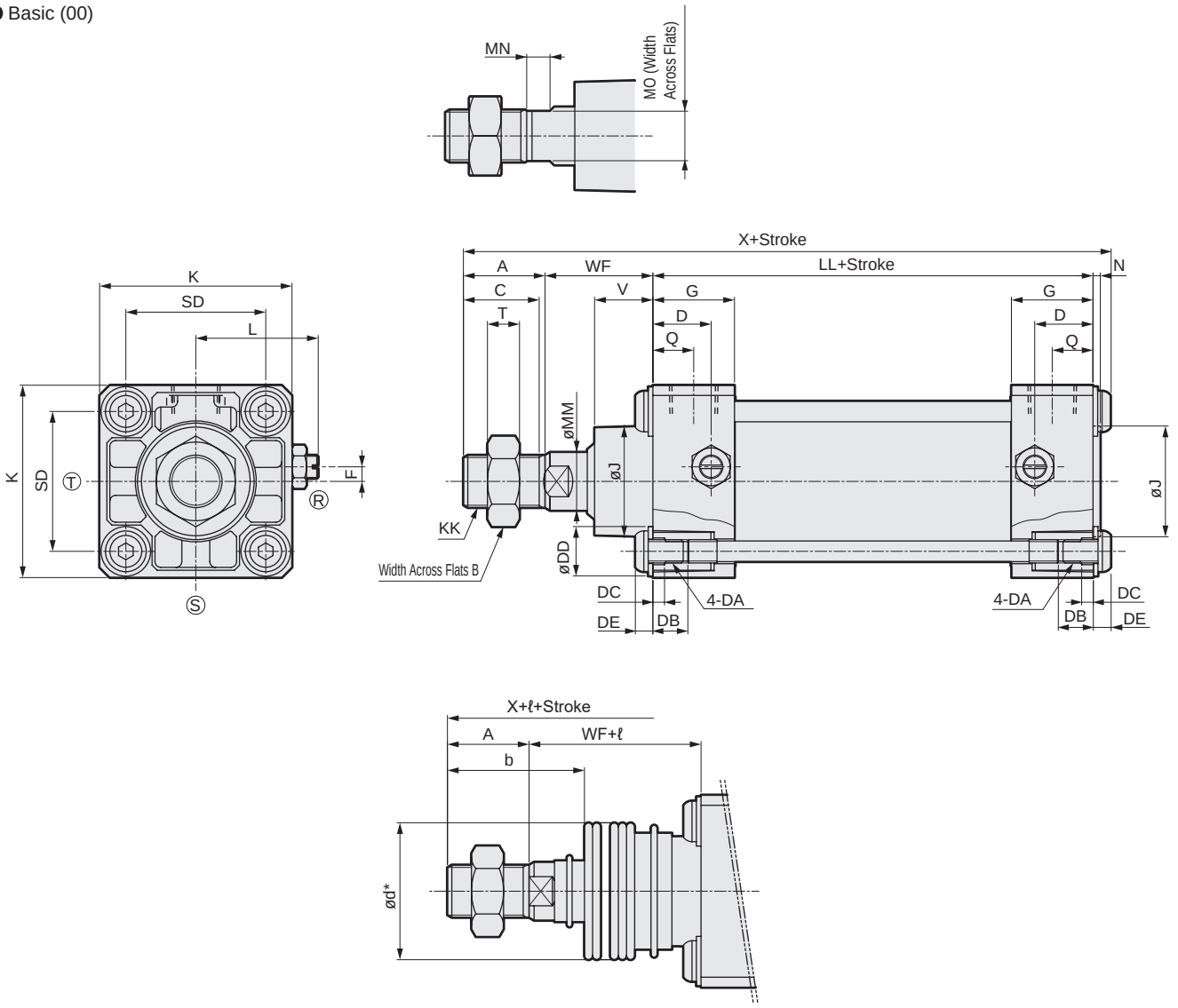
Consumable parts list

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

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

Dimensions CAD

● Basic (00)



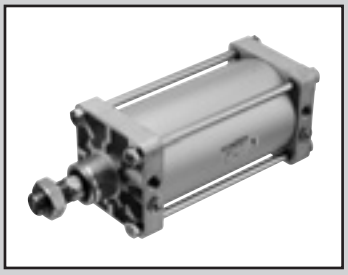
[With bellows]

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

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

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

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

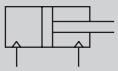


Medium bore size cylinder
Double acting/single rod outdoor type

SCS2 Series

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

JIS symbol



WEATHER PROOF RoHS CAD

Specifications

Item		Description					
Bore size mm		ø125	ø140	ø160	ø180	ø200	ø250
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		1.0					
Min. working pressure MPa		0.05					
Proof pressure MPa		1.6					
Ambient temperature °C		-20 to 60 (However, no freezing) Note					
Port size		Rc 1/2	Rc 3/4				Rc1
Stroke tolerance mm		$^{+1.0}_{0}$ (to 300), $^{+1.4}_{0}$ (to 301)					
Working piston speed mm/s		20 to 1000 (Operate within the absorbed energy.)					
Cushion		Air cushion					
Effective air cushion length mm		21.6	21.6	21.6	21.6	26.6	26.6
Lubrication		Not available					
Allowable absorbed energy J	Cushioned Note	63.5	91.5	116	152	233	362
	Without cushion	0.371	0.386	0.386	0.958	1.08	2.32
		without cushion, Cannot absorb high energy generated by an external load…Uses an external shock absorberthatRecommended.					

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

Stroke

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

*1: For custom stroke lengthThis is available in 1 mm increments.

Cylinder weight

(Unit: kg)

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

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

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

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa											
		0.05	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø125	Push	6.14 x 10^2	1.23 x 10^3	1.84 x 10^3	2.45 x 10^3	3.68 x 10^3	4.91 x 10^3	6.14 x 10^3	7.36 x 10^3	8.59 x 10^3	9.82 x 10^3	1.10 x 10^4	1.23 x 10^4
	Pull	5.73 x 10^2	1.15 x 10^3	1.72 x 10^3	2.29 x 10^3	3.44 x 10^3	4.59 x 10^3	5.73 x 10^3	6.88 x 10^3	8.03 x 10^3	9.17 x 10^3	1.03 x 10^4	1.15 x 10^4
ø140	Push	7.70 x 10^2	1.54 x 10^3	2.31 x 10^3	3.08 x 10^3	4.62 x 10^3	6.16 x 10^3	7.70 x 10^3	9.24 x 10^3	1.08 x 10^4	1.23 x 10^4	1.39 x 10^4	1.54 x 10^4
	Pull	7.29 x 10^2	1.46 x 10^3	2.19 x 10^3	2.92 x 10^3	4.38 x 10^3	5.84 x 10^3	7.29 x 10^3	8.75 x 10^3	1.02 x 10^4	1.17 x 10^4	1.31 x 10^4	1.46 x 10^4
ø160	Push	1.01 x 10^3	2.01 x 10^3	3.02 x 10^3	4.02 x 10^3	6.03 x 10^3	8.04 x 10^3	1.01 x 10^4	1.21 x 10^4	1.41 x 10^4	1.61 x 10^4	1.81 x 10^4	2.01 x 10^4
	Pull	9.42 x 10^2	1.88 x 10^3	2.83 x 10^3	3.77 x 10^3	5.65 x 10^3	7.54 x 10^3	9.42 x 10^3	1.13 x 10^4	1.32 x 10^4	1.51 x 10^4	1.70 x 10^4	1.88 x 10^4
ø180	Push	1.27 x 10^3	2.54 x 10^3	3.82 x 10^3	5.09 x 10^3	7.63 x 10^3	1.02 x 10^4	1.27 x 10^4	1.53 x 10^4	1.78 x 10^4	2.04 x 10^4	2.29 x 10^4	2.54 x 10^4
	Pull	1.19 x 10^3	2.39 x 10^3	3.58 x 10^3	4.77 x 10^3	7.16 x 10^3	9.54 x 10^3	1.19 x 10^4	1.43 x 10^4	1.67 x 10^4	1.91 x 10^4	2.15 x 10^4	2.39 x 10^4
ø200	Push	1.57 x 10^3	3.14 x 10^3	4.71x 10^3	6.28 x 10^3	9.42 x 10^3	1.26 x 10^4	1.57 x 10^4	1.88 x 10^4	2.20 x 10^4	2.51 x 10^4	2.83 x 10^4	3.14 x 10^4
	Pull	1.47 x 10^3	2.95 x 10^3	4.42 x 10^3	5.89 x 10^3	8.84 x 10^3	1.18 x 10^4	1.47 x 10^4	1.77 x 10^4	2.06 x 10^4	2.36 x 10^4	2.65 x 10^4	2.95 x 10^4
ø250	Push	2.45 x 10^3	4.91 x 10^3	7.36 x 10^3	9.82 x 10^3	1.47 x 10^4	1.96 x 10^4	2.45 x 10^4	2.95 x 10^4	3.44 x 10^4	3.93 x 10^4	4.42 x 10^4	4.91 x 10^4
	Pull	2.31 x 10^3	4.63 x 10^3	6.94 x 10^3	9.25 x 10^3	1.39 x 10^4	1.85 x 10^4	2.31 x 10^4	2.78 x 10^4	3.24 x 10^4	3.70 x 10^4	4.16 x 10^4	4.63 x 10^4

How to order

SCS2 - N - 00 - 125 [ ] B - 50 - L1 - W

Model No. | Outdoors

Code	Description
A Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
B Bore size (mm)	
125	ø125
140	ø140
160	ø160
180	ø180
200	ø200
250	ø250
C Port thread	
Blank	Rc thread
N	NPT thread (made to order)
G	G thread (made-to-order product)
D Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion
E Stroke (mm)	

Bore size	Stroke	Custom Stroke
ø125 to ø160	**1 to 800**	**In 1 mm increments**
ø180	**1 to 900**	
ø200	**1 to 945**	
ø250	**1 to 751**	

Code	Description	
F Option		
L1	With silicone bellows (external metal ring stainless steel) Max. ambient temperature: 250°C / instantaneous max. temperature: 400°C	
Blank	Cushion needle position (standard)	Standard T R S
R	Cushion needle position R	
S	Cushion needle position S	
T	Cushion needle position T	

A Mounting *2
B Bore size
C Port thread
D Cushion
E Stroke *3
F Option

⚠ Precautions for model No. selection

*1: Mounting bracket will be shipped assembled with the product.
*2: Consult with CKD for mounting type for oscillation.
*3: Outdoor type does not support class 2 pressure vessel.

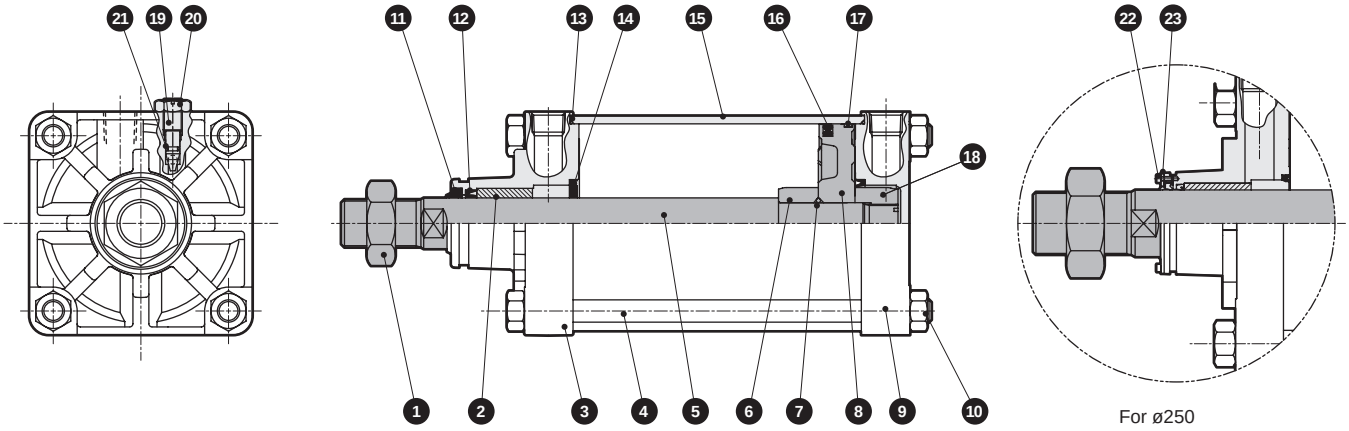
[Example of model No.]

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

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

A Mounting : Axial foot
B Bore size : ø125 mm
C Port thread : Rc thread
D Cushion : Both sides cushioned
E Stroke : 50mm
F Option : With the silicone bellows, Max. ambient temperature: 250 °C

Internal structure and parts list



For ø250

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

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

Consumable parts list

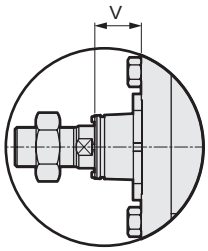
Bore size (mm)	Kit No.	Consumable parts No.
ø125	SCS2-N-125K-W	11 12 13 14 16 17 21
ø140	SCS2-N-140K-W	
ø160	SCS2-N-160K-W	
ø180	SCS2-N-180K-W	
ø200	SCS2-N-200K-W	
ø250	SCS2-N-250K-W	

Dimensions

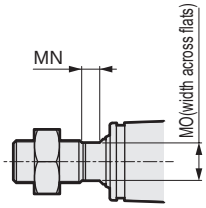
Same as double acting/rubber scraper SCS2-G. Refer to the SCS2-G dimensions in "Pneumatic Cylinders (No. CB-029SA)".

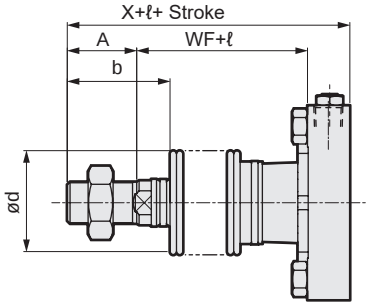
Dimensions

● Basic (00)

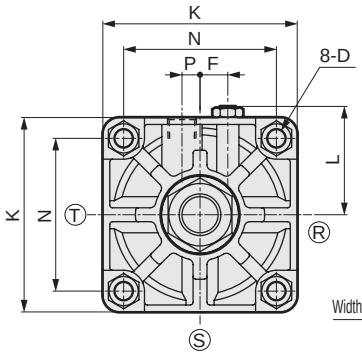


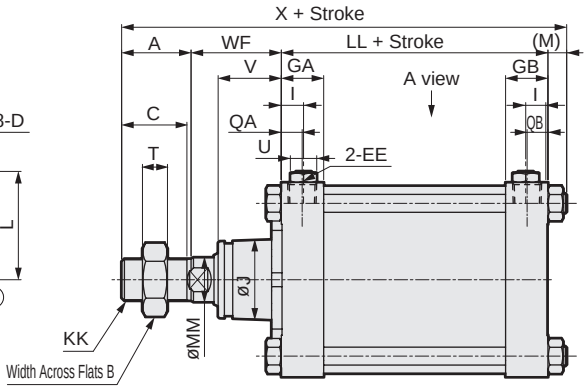
[ø250]

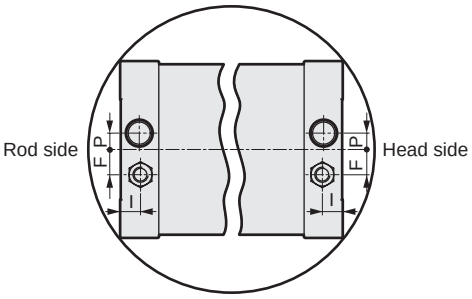




[With bellows]







Port position diagram (A view)

*1: Ⓡ Ⓢ Ⓣ indicate the cushion needle position.
*2: ℓ dimensions below decimal point are rounded up.

Code	Basic (00) Basic dimensions																					
Bore size (mm)	A	B	C	D	EE	GA	GB	F	I	J	K	KK	L	LL	M	MM	MN	MO	N	P	QA	QB
ø125	50	46	47	M 14 x 1.5	Rc1/2	30.5	30.5	20	16	57	140	M 30 x 1.5	78 to 82	92	13.5	32	13	27	110	13	15	15
ø140	50	46	47	M 14 x 1.5	Rc3/4	34.5	34.5	20	20	57	157	M 30 x 1.5	86.5 to 91	103	13.5	32	13	27	124	15	17	17
ø160	56	55	53	M 16 x 1.5	Rc3/4	34.5	34.5	24	20	62	177	M 36 x 1.5	96.5 to 101	106	15.5	40	15	36	142	15	17	17
ø180	63	60	60	M 18 x 1.5	Rc3/4	34.5	34.5	24	20	68	200	M 40 x 1.5	108 to 112	110	17.5	45	17	41	160	15	17	17
ø200	72	70	69	M 20 x 1.5	Rc3/4	37.5	37.5	24	20.5	75	220	M 45 x 1.5	120.5 to 129	123	18.5	50	20	46	175	20	18	18
ø250	88	85	84	M 24 x 1.5	Rc1	42.5	42.5	24	20.5	93	274	M 56 x 2	147.5 to 156	141	21.5	60	22	55	216	22	21	21

Code						With bellows		
Bore size (mm)	T	U	V	WF	X	b	d	ℓ
ø125	18	19	45.5	65	220.5	74	75	(Stroke/4.55) + 11
ø140	18	19	45.5	67	233.5	74	75	(Stroke/4.55) + 9
ø160	21	19	48	71	248.5	82	82	(Stroke/5.15) + 9
ø180	24	19	53	78	268.5	91	91	(Stroke/5.15) + 9
ø200	27	24	60	88	301.5	102	95	(Stroke/5.30) + 9
ø250	34	24	67	94	344.5	120	120	(Stroke/6.40) + 9

Made-to-order product

Main line filter

AF3000 Series Outdoors

Specifications

Item	AF3016 □-50	AF3032 □-80	AF3048 □-100	AF3064 □-100	AF3080 □-150	AF3096 □-150	AF3128 □-150	AF3160 □-200	AF3192 □-200	AF3256 □-200
Processing air flow rate (*2, *3) m^3/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.07 to 1.0									
Proof pressure MPa	1.5									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) Flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350

□ indicates series name.

Item		P type	S type	M type	X type
Ambient temperature		5 to 60			5 to 30
Filtration rating μm		3	0.3	0.01	Suction by activated carbon
Secondary side oil concentration mg/m^3		-	1.0 (inlet air 30°C)	0.1 (inlet air 30°C)	0.03 (inlet air 30°C)
Pressure drop	Initial MPa	Within 0.005	Within 0.01	Within 0.01	Within 0.01
	Normal MPa	0.005 to 0.02	0.01 to 0.03	0.02 to 0.04	-
	Element replacement MPa	0.007	0.07	0.07	-
Differential pressure gauge		Standard (model No.: GA5102-S11)			
Drain discharger		Standard (model No.: 5100-4C-MG)			No

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7MPa and initial pressure drop is 0.005MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

How to order

AF3 | 016 | P | - | 50 | - | LO

Ⓐ Flow rate classification
Ⓑ Element
Ⓒ Bore size
Ⓓ Option

Bore size/flow rate classification table

Ⓒ Bore size

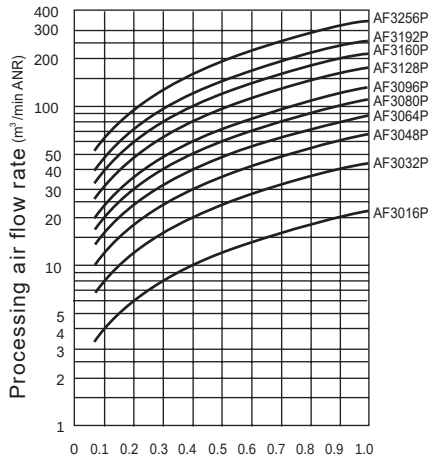
Flow rate classification		016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

Code	Description
Ⓐ Flow rate classification	
016	16m^3/min (ANR)
032	32m^3/min (ANR)
048	48m^3/min (ANR)
064	64m^3/min (ANR)
080	80m^3/min (ANR)
096	96m^3/min (ANR)
128	48m^3/min (ANR)
160	64m^3/min (ANR)
192	19.8m^3/min (ANR)
256	25.8m^3/min (ANR)
Ⓑ Element	
P	PSeries (pre-filter)
S	S Series (oil removing filter)
M	M Series (high-performance oil removing filter)
X	X Series (activated carbon filter)
Ⓒ Bore size	
Refer to the bore size/flow rate classification table on the left.	
Ⓓ Option	
Blank	None
H	English language specifications
K	Companion flange included
L	Foundation bolt/nut included (*2)
L1	Stainless steel foundation bolt/nut included (*2)
O	Outdoors
X1	IN/OUT reverse direction (*1)
Y2	Product photo

Precautions for model No. selection

*1: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port."For "X1", an air inlet is provided on the right port, with an air outlet provided on the left port.
*2: Available for AF3032P to AF3256P.
*3: When ordering several options, indicate the required options in alphabetical order.
*4: Made to order. Contact CKD for details.

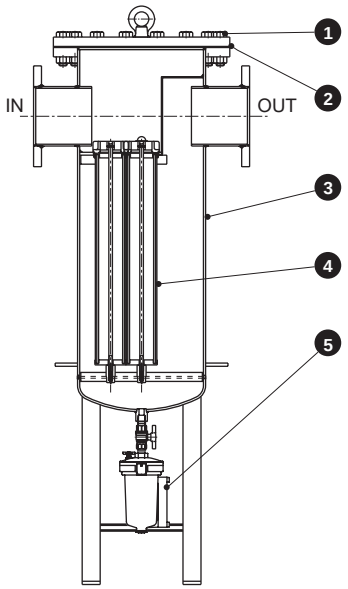
Flow characteristics



Note on selection

1. Never use model numbers found to be below the point of intersection of the selection conditions.
2. When the point of intersection found according to selecting conditions and flow characteristics curves are on the same line, the service life may be shortened, so select a model that is one size larger.
3. Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.

Internal structure and parts list



Parts list * Consumable parts

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

The drain discharger and stop valve are included.

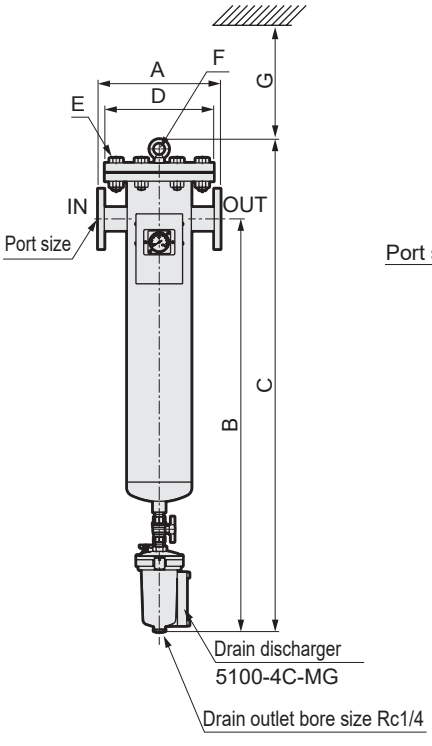
Consumable parts model No.

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

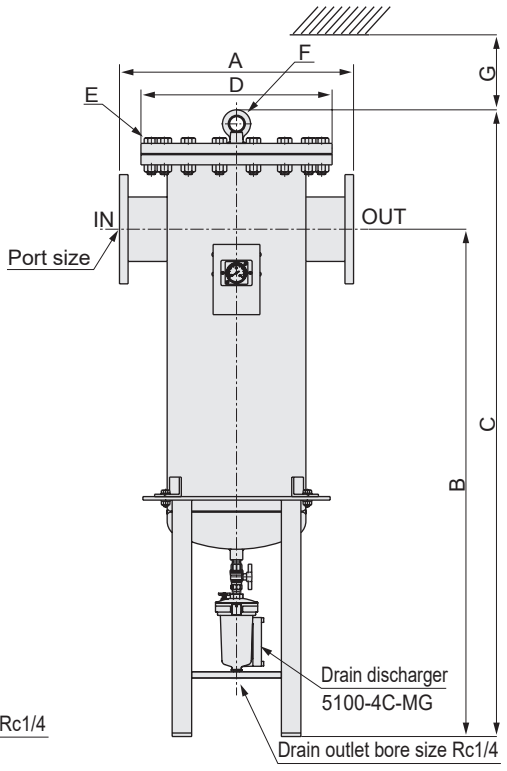
Element quantity is indicated in ( ). □ indicates series name.

Dimensions CAD

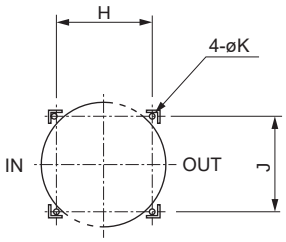
● AF3016□



● AF3032□ to 3256□



● Installation legs foundation bolt hole dimension



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

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

□ indicates series name.

Model No.	H	J	K
AF3032 □-80	210	210	ø15
AF3048 □-100	210	210	ø15
AF3064 □-100	250	250	ø15
AF3080 □-150	280	280	ø15
AF3096 □-150	320	320	ø15
AF3128 □-150	350	350	ø15
AF3160 □-200	350	350	ø15
AF3192 □-200	400	400	ø15
AF3256 □-200	450	450	ø15

Made-to-order product

Main line filter

AF5000 Series Outdoors

Specifications

Item	AF5016 □-50	AF5032 □-80	AF5048 □-100	AF5064 □-100	AF5080 □-150	AF5096 □-150	AF5128 □-150	AF5160 □-200	AF5192 □-200	AF5256 □-200
Processing air flow rate (*2, *3) m^3/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.08 to 1.0									
Proof pressure MPa	1.5									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) Flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350

□ indicates series name.

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

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7MPa and initial pressure drop is 0.005MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

How to order

AF5 | 016 | P | - | 50 | - | X1 | -** *6

Ⓐ Flow rate classification
Ⓑ Element
Ⓒ Bore size
Ⓓ Option

Code	Description
Ⓐ Flow rate classification	
016	16m^3/min (ANR)
032	32m^3/min (ANR)
048	48m^3/min (ANR)
064	64m^3/min (ANR)
080	80m^3/min (ANR)
096	96m^3/min (ANR)
128	48m^3/min (ANR)
160	64m^3/min (ANR)
192	19.8m^3/min (ANR)
256	25.8m^3/min (ANR)
Ⓑ Element	
P	PSeries (pre-filter)
S	S Series (oil removing filter)
M	M Series (high-performance oil removing filter)
X	X Series (activated carbon filter)
Ⓒ Bore size	
Refer to the bore size/flow rate classification table to the lower left.	
Ⓓ Option	
Blank	Standard product
E	Without drain discharger
K	Companion flange included
H	English language specifications
H2	Stainless steel nameplate
L	Foundation bolt/Nut attached (SS400) (*1)
L1	Foundation bolt/Nut attached (SUS304) (*1)
X1	IN/OUT reverse direction(*2)
Y2	Product photo

Bore size/flow rate classification table

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

Flow rate compensation coefficient

Pressure (MPa)	Compensation coefficient
0.1	0.38
0.2	0.53
0.3	0.65
0.4	0.76
0.5	0.85
0.6	0.93
0.7	1.0
0.8	1.07
0.9	1.13
1.0	1.18

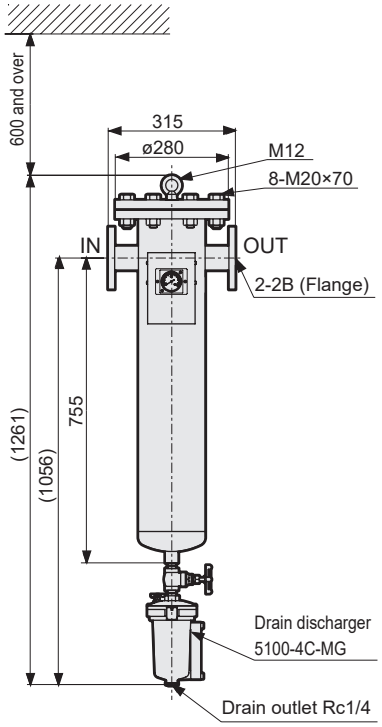
If working pressure is other than 0.7 MPa, multiply processing air flow rate by the above coefficient.

Precautions for model No. selection

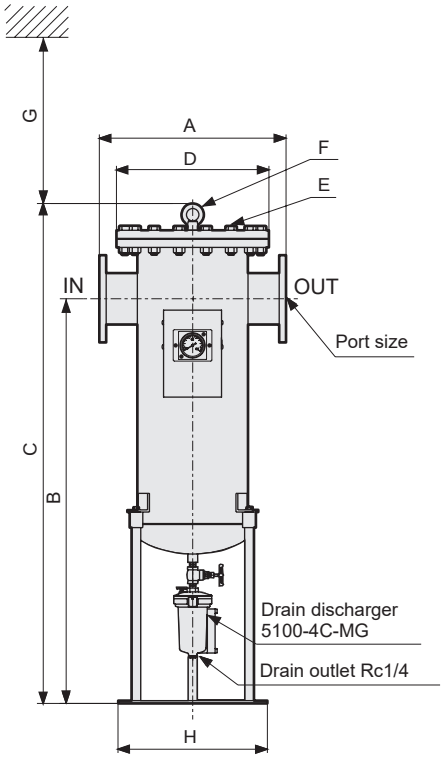
*1: "L""L1" corresponds to AF5032P to AF5256P.
*2: Viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.
*3: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.
*4: When ordering several options, indicate the required options in alphabetical order.
*5: Made-to-order product. Contact CKD Sales for details.
*6: Contact CKD for model Nos.

Dimensions

● AF5016□

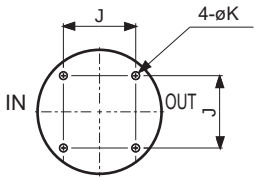


● AF5032□ to AF5256□



The X type does not have a differential pressure gauge.

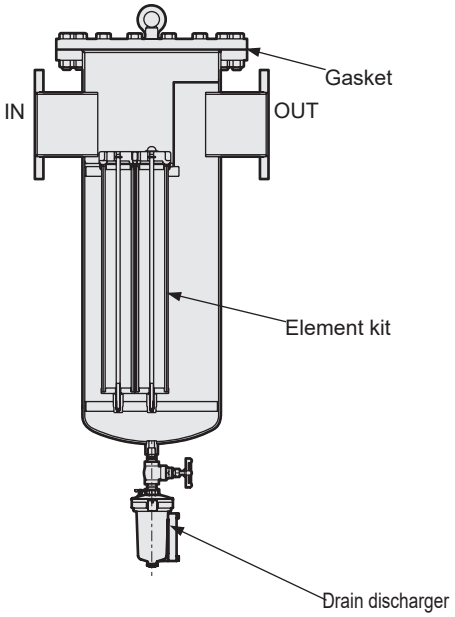
● Foundation bolt hole dimension



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

□ indicates series name.

Consumable parts list



● Ordering method

Flow rate classification m³/min (ANR)	Gasket	Element kit	Drain discharger
16	AF5016P-GASKET	AF5016 □-ELEMENT-KIT	5100-4C-MG
32	AF5032P-GASKET	AF5032 □-ELEMENT-KIT	
48	AF5048P-GASKET	AF5048 □-ELEMENT-KIT	
64	AF5064P-GASKET	AF5064 □-ELEMENT-KIT	
80	AF5080P-GASKET	AF5080 □-ELEMENT-KIT	
96	AF5096P-GASKET	AF5096 □-ELEMENT-KIT	
128	AF5128P-GASKET	AF5128 □-ELEMENT-KIT	
160	AF5160P-GASKET	AF5160 □-ELEMENT-KIT	
192	AF5192P-GASKET	AF5192 □-ELEMENT-KIT	
256	AF5256P-GASKET	AF5256 □-ELEMENT-KIT	

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

Made-to-order product

Xeroaqua GT9000 (D) Series

- Stainless steel heat exchanger compatible with oil-free air
- IP03-equivalent weather resistance
- Compatible with high temperature environments (ambient temperature 48°C) (GT9075D to GT9190D)
- Energy-saving operation with 50% decreased power by limiting the number of refrigerant systems (GT9300(W) to GT9450(W))
- Energy-saving operation with 60% decreased power through inverter control (GT9710WV2, GT9960WV2)
- Easy maintenance
- Universal installation in any area

Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.
It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience.

2 Use this product in accordance with specifications.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

❶ Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.

3 Observe organization standards and regulations, etc., related to the safety of device design and control, etc.

ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility.Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions in the following pages to prevent accidents.

■ The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

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

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

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

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

Warranty

1 Warranty period

The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.

2 Warranty coverage

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

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

WP Series: Warning / precautions

Be sure to read this section before use. Refer to "Pneumatic /, Vacuum / (CB-024SA)", "Pneumatic Components (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

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

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

WARNING

Design/consideration

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

Working environment

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

Precautions for use in cold climates

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

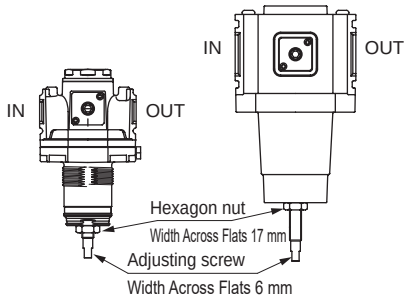
Use/maintenance

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

CAUTION

Use/maintenance

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



Working fluids

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

Safety precautions

WP Series: Warning / precautions

Be sure to read this section before use.
Refer to "Pneumatic /, Vacuum / (CB-024SA)", "Pneumatic Components (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

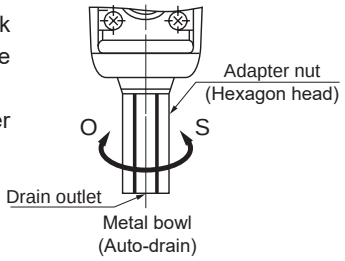
Product-specific cautions: FRL, drain separator, pressure gauge (Outdoor Series)

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

CAUTION

■ Other

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



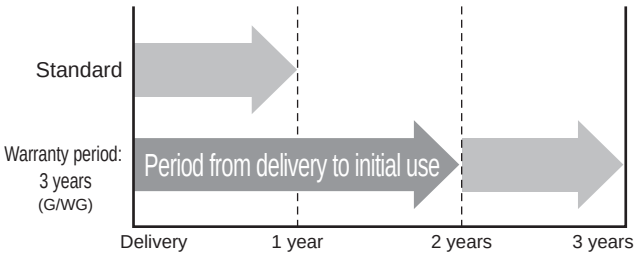
■ 3-year warranty after delivery (Option G)

When requesting the above options, CKD will prepare specifications with the following descriptions.
Please make a note of the planned use date, affix a seal, and return it to CKD.

Expected start date:___/___/___/ Sign:_____

Warranty period: This is the period of three years after shipment or one year shorter than the expected start date.

* Please return it after the description of the scheduled date of use. Note that the 3-year warranty will not apply if there is no description or return.
* With inspection certificate, inspection guidelines, drawings, specifications, traceability system diagram



WP Series: Warning / precautions

Be sure to read this section before use.
Refer to "Pneumatic /, Vacuum / (CB-024SA)", "Pneumatic Components (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

Product-specific cautions: silencer/speed controller (Outdoor Series)

*Precautions other than the following are for individual precautions in "Pneumatic / and Vacuum / Auxiliary Components (No. CB-C24SA)" Silencer / speedCheck the controller.

WARNING

■ Design/consideration

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

■ Working environment

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

■ Precautions for use in cold climates

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

■ Use/maintenance

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

CAUTION

■ Use/maintenance

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

■ Working fluids

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

■ Other

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

Safety precautions

WP Series: Warning / precautions

Be sure to read this section before use.
Refer to "Pneumatic /, Vacuum / (CB-024SA)", "Pneumatic Components (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

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

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

WARNING

Design/consideration

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

Working environment

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

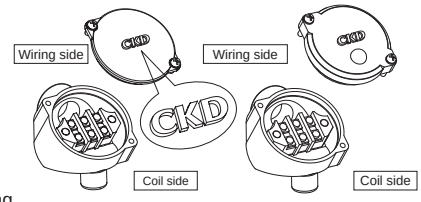
Precautions for use in cold climates

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

CAUTION

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

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



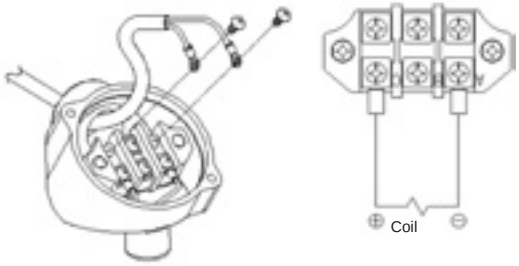
(Cap assembly direction)

Wiring

1) Precautions for disassembly and assembly

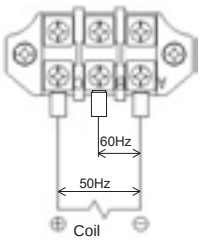
- Precautions for assembly of cap
  The cap must be assembled in a certain direction. When the cap is to be assembled after performing wiring work, etc., make sure to assemble the cap with attention to the assembly direction.
  (In the figure to the right, align with the direction of the CKD logo mark)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

2) Wiring
(1) Fasten crimp terminals to the electrical wiring and process the ends of the wires before installing them.
* Use terminal thread of size M3 and a crimp terminal with an outer diameter of 7 mm or less.
* The crimp terminals used should be sheathed terminals.
(2) Tighten the screws with the following tightening torque.
* Gap mounting screw tightening torque: 0.5 N·m.
* Terminal screw tightening torque: 0.5 N·m.
(3-1) When there are 2 lead wires wired from the terminal block of the coil.
* Terminal box without lamp 3E (AB/G41, ADK11-W Series),B (CHB/G-W Series) terminal box 3L with lamp (AB/A)G41, ADK11-W Series) has no polarity. Wire to the A terminal and C terminal on the terminal block.
* Terminal box with lamp, BL (CHB/G-W Series)/ For DC voltage
If there is polarity, be careful while wiring.
Wire the ⊖ pole to the A terminal and the ⊕ pole to the C terminal on the terminal block.
(The solenoid valve will operate even if the polarity is incorrect, but the lamp will not turn ON.)



(Wiring method (for two lead wires))

(3-2) When there are 3 lead wires wired from the terminal block of the coil. (*1)
* Terminal box 3E, 3L (ADK21-W Series) For, There is no polarity.
If the operating frequency is 50Hz, wire to the A terminal and C terminal on the terminal block.
If the operating frequency is 60Hz, wire to the A terminal and B terminal on the terminal block.
*1: 4F-W Series cannot have 3 wires.
*2: It is recommended that you insert a fuse to the electrical circuit for safety and unit protection.



(Wiring method (for three lead wires))

WP Series: Warning / precautions

Be sure to read this section before use.
Refer to "Pneumatic /, Vacuum / (CB-024SA)", "Pneumatic Components (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

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

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

CAUTION

When using the product

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

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

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

In addition, implement waterproof measures for the electrical wires and piping with the use of cable glands, etc.

Installation environment

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

Installation

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

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

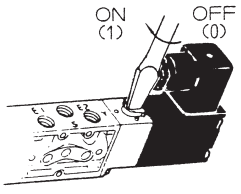
- Use the manual button for confirmation of operation during test operation. When used for long periods in the locked state, the locking mechanism may fail and switch the unit from ON to OFF.
- Manual override

  As this is a pilot solenoid valve, the main valve will not be switched even if the manual override is operated unless air is supplied to the S port.
- Locking manual override

  If the locking manual override is turned clockwise by approximately 45° with a screwdriver, the valve will be in the same state as when energized and locked. Do not force the rotation, as rotating the device further clockwise after the valve has been locked will cause damage. Be sure to release the lock (0 position) of the locking manual override prior to starting normal operation.

Other

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

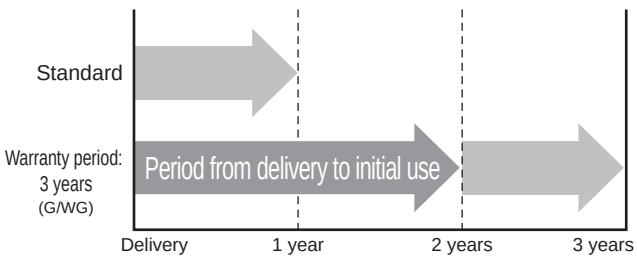


3-year warranty after delivery (Option G, W*G)

When requesting the above options, CKD will prepare specifications with the following descriptions.
Please make a note of the planned use date, affix a seal, and return it to CKD.

Expected start date:____/____/____/ Sign:_____
Warranty period:This is the period of three years after shipment or one year shorter than the expected start date.

* Please return it after the description of the scheduled date of use. Note that the 3-year warranty will not apply if there is no description or return.
* With inspection certificate, inspection guidelines, drawings, specifications, traceability system diagram



Safety precautions

WP Series: Warning / precautions

Be sure to read this section before use.
Refer to "Pneumatic /, Vacuum / (CB-024SA)", "Pneumatic Components (CB-023SA)", "General Purpose Valves (CB-03-1SA)", and "Pneumatic Cylinders (CB-029SA)" for general and product-specific precautions.

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

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

CAUTION

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

[SCA2 Series]
- Cushion packing-Use the one with the 10 to 60°C specification. When using in a low-temperature environment, select the type without cushion and if necessary, use an external shock absorber.

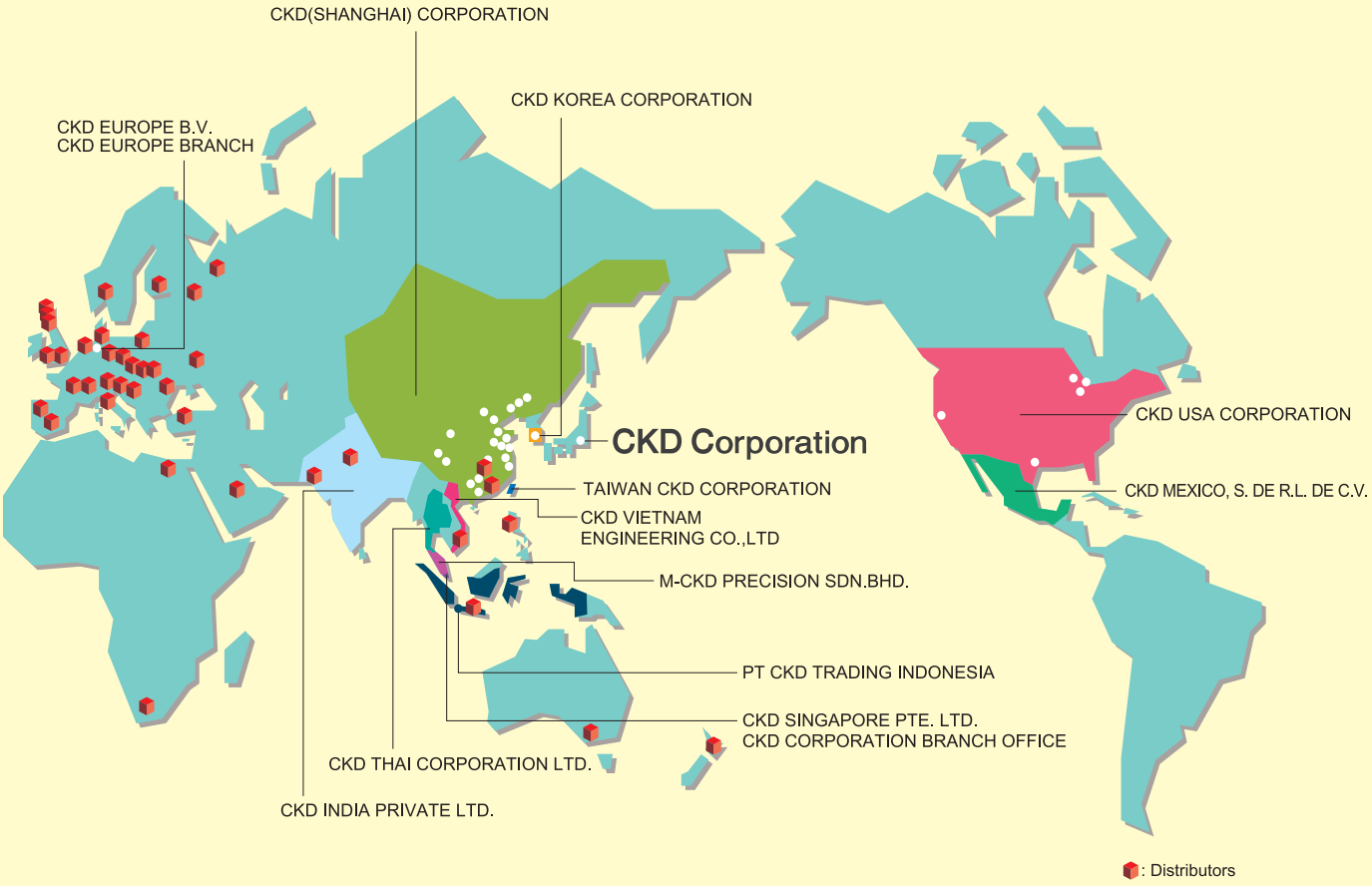
[SCS2 Series]
- Cushion packing-Use the one with the 5 to 60°C specification. When using in a low-temperature environment, select the type without cushion and if necessary, use an external shock absorber.

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

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

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

WORLD-NETWORK



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Revision details
Some Dimensions have been revised and safety precautions added

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