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ISO9001
ISO14001



Clean System Product Drawings

Ver. 4

CLEAN
SYSTEM



Clean System Product Drawings

Ver. 4

C O N T E N T S

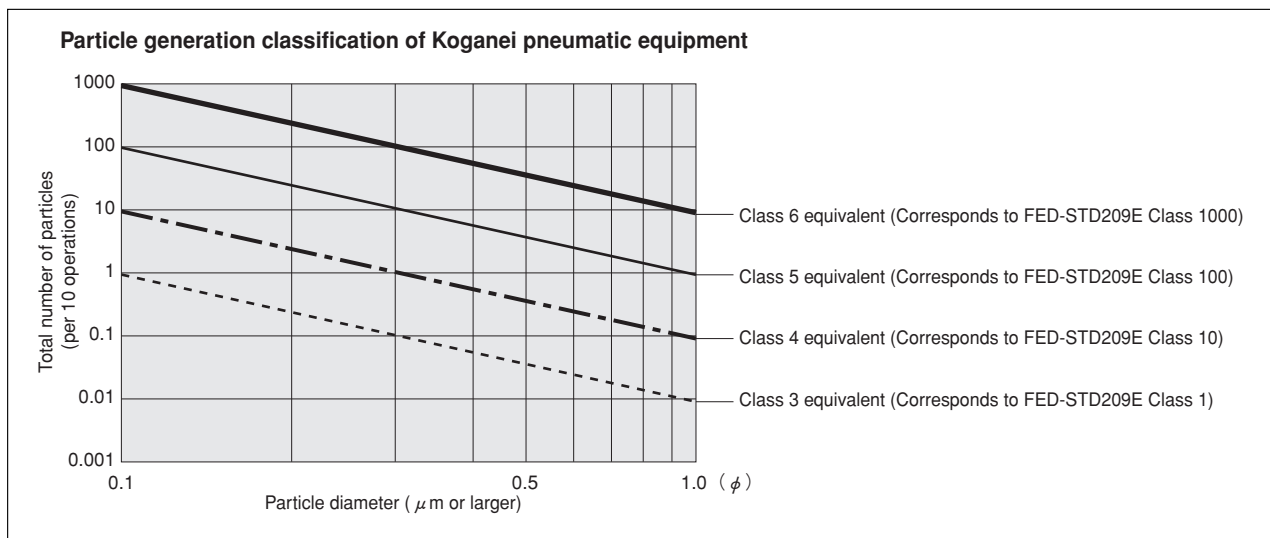
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Koganei Clean System products provide complete support for the maintenance of a clean environment inside the cleanroom.

Koganei Clean System products meet the needs of the ultra-clean production environment. In everything from actuators and valves to air preparation and auxiliary equipment, anti-corrosion materials processing and other Koganei-developed design concepts serve to prevent particle contamination within the cleanroom. These perfectly designed mechanisms, which resolve even the slightest leaks to the outside during operations, have already won a high level of reliability.

Koganei Cleanliness

There is currently no standard in JIS or elsewhere for methods of evaluating cleanliness for pneumatic equipment in the cleanroom specifications. Therefore, to measure the effects of cleanroom contamination by pneumatic equipment, Koganei has decided to use "number of particles generated per 10 operations," rather than particle density. Koganei has also developed classifications for application classes in cleanroom, based on JIS and other upper limit density tables, and on the company's own experience.



- Remarks:
1. In the above table, product performance in terms of the number of particles generated per 10 operations is expressed as the upper limit of particles corresponding to the equivalent JIS or ISO class.
 2. In the above table, values in the JIS, ISO, and FED-STD upper limit density tables are calculated as upper density per liter.
 3. The classes shown are clean levels as classified in JIS and ISO.

From the above definitions, the Koganei clean level classes can be viewed as the level of average contamination per liter of surrounding air over a period of 10 operations in cleanroom. Air ventilation in cleanrooms is usually faster than 1 cycle per minute, and clean volumetric capacity is usually larger than 1 liter, which should provide a sufficient safety margin in practice.

Caution: The above conclusions are based on an ideal situation in which air ventilation is being implemented. For specific cases where air ventilation is not ensured, caution is needed since the clean classes cannot be maintained.

The clean system diagrams shown here are for Class 5 equivalent products.
For Class 4 or Class 3 equivalent products, consult us.

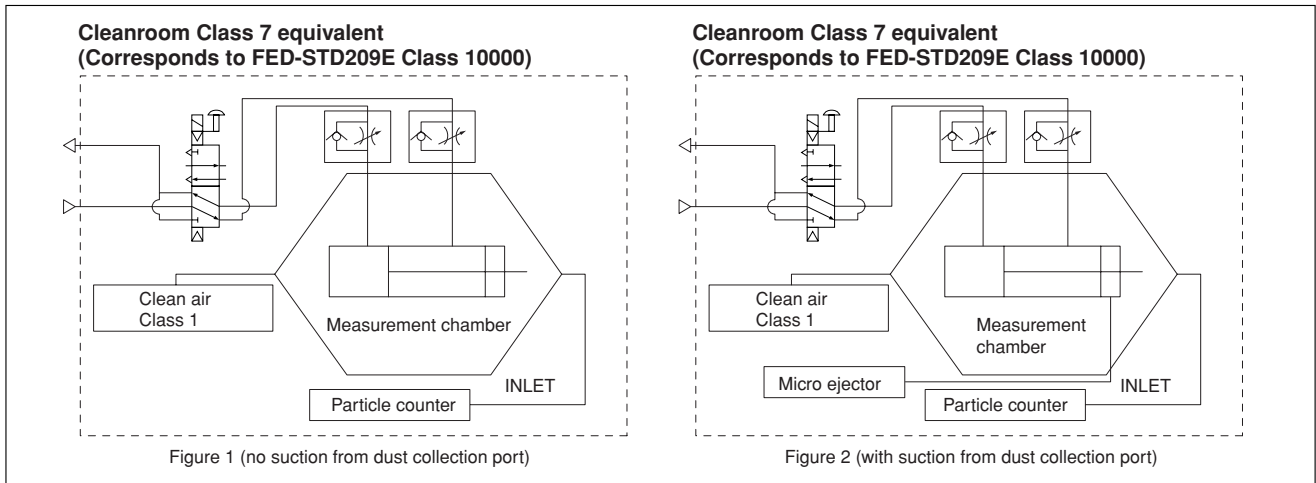
Evaluations of Cleanliness

Koganei has therefore specified its in-house measurement methods, to conduct evaluations on the cleanroom rating.

The number of particles of the Air Cylinder Cleanroom Specification is measured as shown in the method below.

1. Measurement conditions

1-1 Test circuit: Figure 1 (no suction), Figure 2 (with suction)



1-2 Operating conditions of tested cylinder

Operating frequency: 1Hz

Average speed: 500mm/s [20in./sec.]

Applied pressure: 0.5MPa [73psi.]

Suction condition: Microejector ME05, Primary side: 0.5MPa [73psi.] applied, Tube: $\phi 6$ [0.236in.]

Mounting direction: Vertical

Chamber volume: 8.3 ℓ [0.293ft.³]

2. Particle counter

Manufacturer/model: RION/KM20

Suction flow rate: 28.3 ℓ /min [1ft.³/min.]

Particle diameter: 0.1 μm , 0.2 μm , 0.3 μm , 0.5 μm , 0.7 μm , 1.0 μm

3. Measurement method

3-1 Confirmation of number of particles in the measurement system

Under the conditions in the above 1 and 2, using a particle counter to measure the sample for 9 minutes without operating the measurement sample, and confirmed the measured number of particle is 1 piece or less.

3-2 Measurement under operation

Under the conditions in the above 1 and 2, operating the measurement sample for 36 minutes, and measured the total values in the latter half of 18 minutes test.

3-3 Reconfirmation

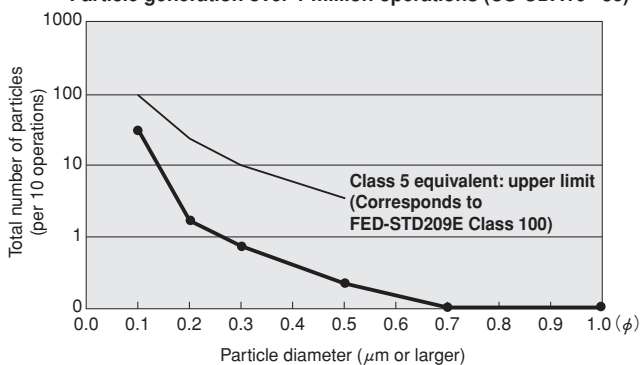
Performed the measurement in 3-1 again, to reconfirm the number of particles in the measurement system.

4. Measurement results

● Cleanroom specification

Jig Cylinder (no suction from dust collection port)

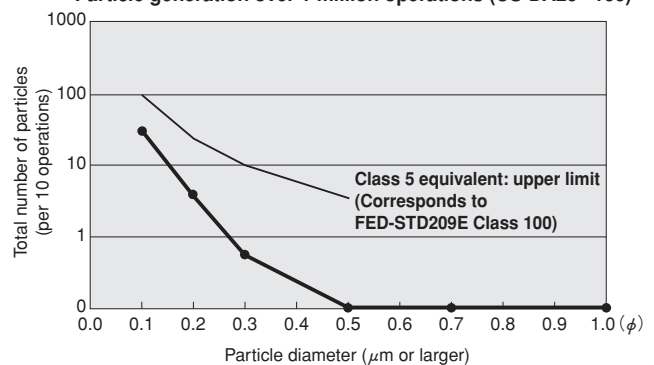
Particle generation over 1 million operations (CS-CDA16 $\times$ 30)



● Cleanroom specification

Slim Cylinder (with suction from dust collection port)

Particle generation over 1 million operations (CS-DA20 $\times$ 100)



For “safety precautions” listed in the Clean System Product Drawings, see the materials below.

- For actuators, see “Safety Precautions” on p. 45 of the Actuators General Catalog .
- For valves, see “Safety Precautions” on p. 31 of the Valves General Catalog.
- For air treatment and auxiliary equipment, see “Safety Precautions” on p.31 of the General Catalog of Air Treatment, Auxiliary, Vacuum.



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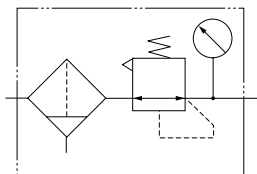
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FILTER REGULATORS

CS-FR150, CS-FR300, CS-FR600



Symbol

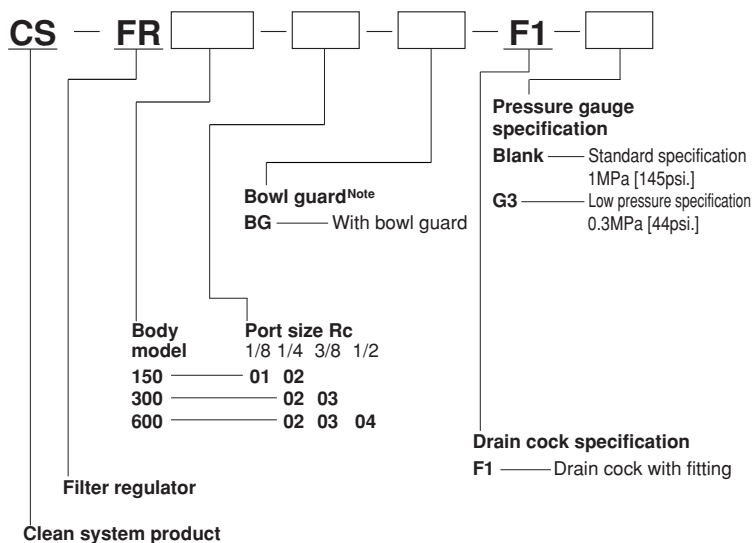


Specifications

Item	Model	CS-FR150	CS-FR300	CS-FR600
Media		Air		
Port size	Rc	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Filtration rating	μm	5		
Pressure setting range	MPa [psi.]	0.05~0.83 [7~120]		
Maximum operating pressure	MPa [psi.]	0.93 [135]		
Proof pressure	MPa [psi.]	1.47 [213]		
Operating temperature range (atmosphere and media)	$^{\circ}\text{C}$ [$^{\circ}\text{F}$]	5~60 [41~140]		
Drain capacity	cc [in. ³]	15 [0.92]	55 [3.36]	90 [5.49]
Mass (with pressure gauge) kg [lb.]	Standard	0.28 [0.62] (0.29 [0.64]) ^{Note}	0.46 [1.01]	0.60 [1.32]
Materials	Body	Aluminum die-casting	Zinc die-casting	Aluminum die-casting
	Bowl	Polycarbonate		
Standard attachments		Bracket, push type drain cock with fitting	Bracket, screw type drain cock with fitting, bowl guard	

Note: Figure in parentheses () shows mass with bowl guard.

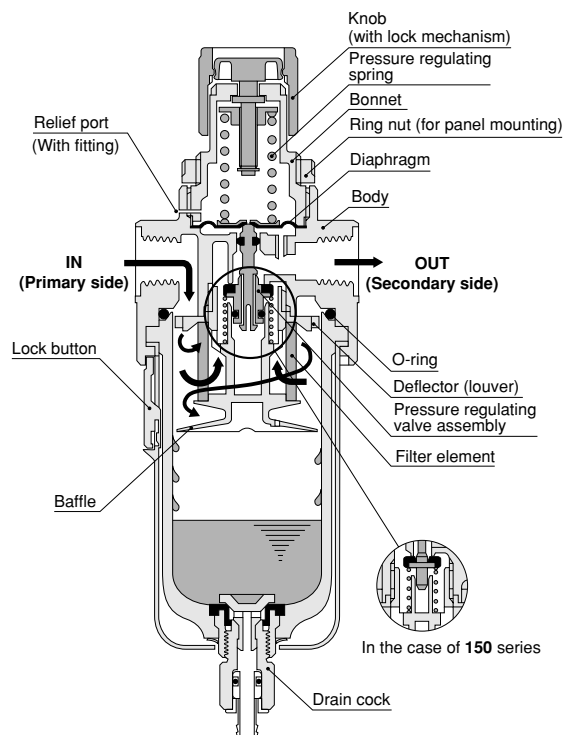
Order Codes



Note: For CS-FR150 only, enter -BG.

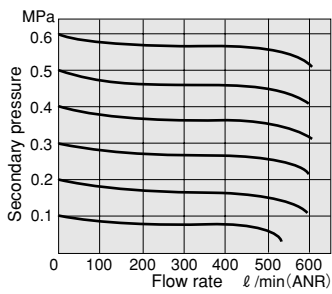
For CS-FR300 and CS-FR600, no entry is needed because the item is standard equipment.

Inner Construction and Major parts

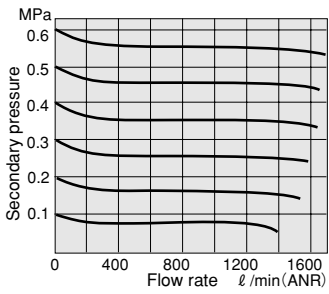


Flow Rate Characteristics

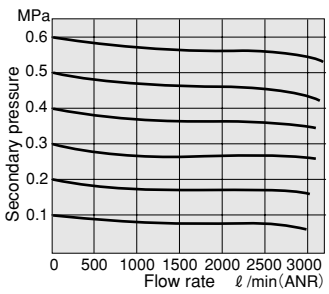
● CS-FR150



● CS-FR300



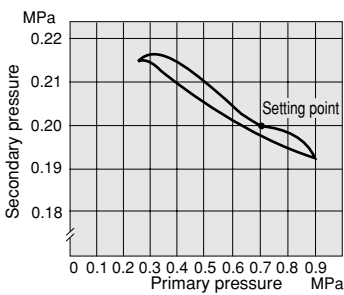
● CS-FR600



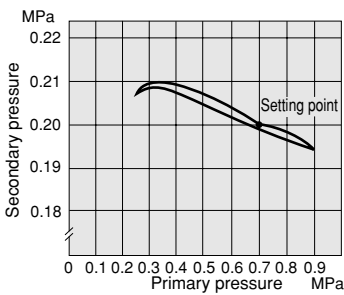
1MPa = 145psi., 1 ℓ/min = 0.0353ft³/min.

Pressure Characteristics

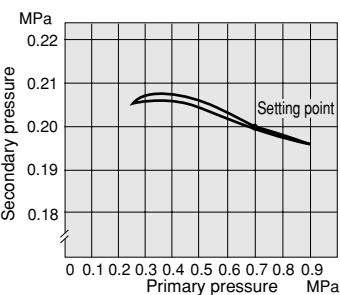
● CS-FR150



● CS-FR300



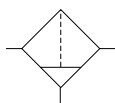
● CS-FR600



1MPa = 145psi.



Symbol

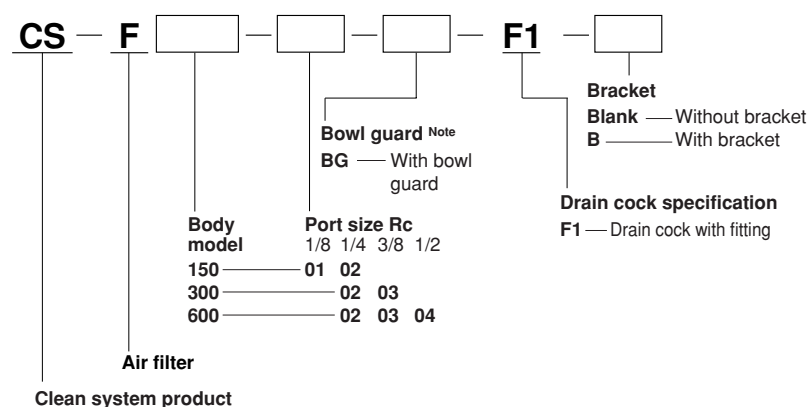


Specifications

Item	Model	CS-F150	CS-F300	CS-F600
Media		Air		
Port size	Rc	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Filtration rating	μm	5		
Maximum operating pressure	MPa [psi.]	0.93 [135]		
Proof pressure	MPa [psi.]	1.47 [213]		
Operating temperature range (atmosphere and media)	$^{\circ}\text{C}$ [$^{\circ}\text{F}$]	5~60 [41~140]		
Drain capacity	cc [in. ³]	15 [0.92]	55 [3.36]	90 [5.49]
Mass	kg [lb.]	0.14 [0.31] (0.15 [0.33]) ^{Note}		
Materials	Standard		0.33 [0.73]	0.38 [0.84]
	Body	Aluminum die-casting	Zinc die-casting	Aluminum die-casting
	Bowl	Polycarbonate		
Standard attachments		Push type drain cock with fitting	Screw type drain cock with fitting, bowl guard	

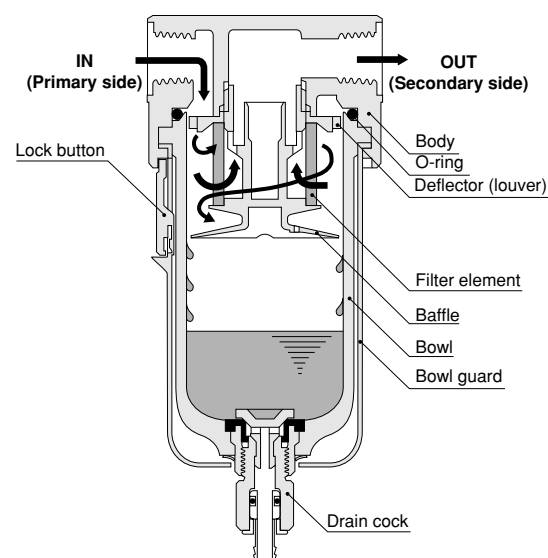
Note: Figure in parentheses () shows mass with bowl guard.

Order Codes



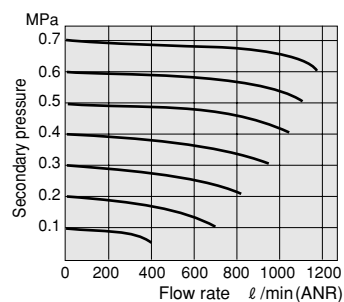
Note: For CS-FR150 only, enter -BG.
For CS-FR300 and CS-FR600, no entry is needed because the item is standard equipment.

Inner Construction and Major parts

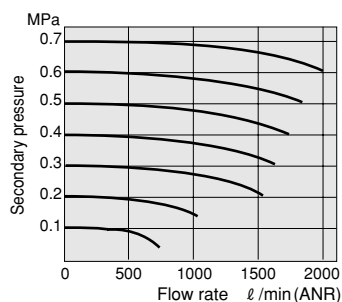


Flow Rate Characteristics

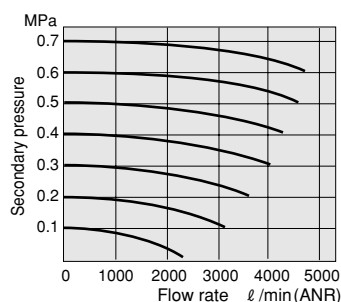
● CS-F150



● CS-F300

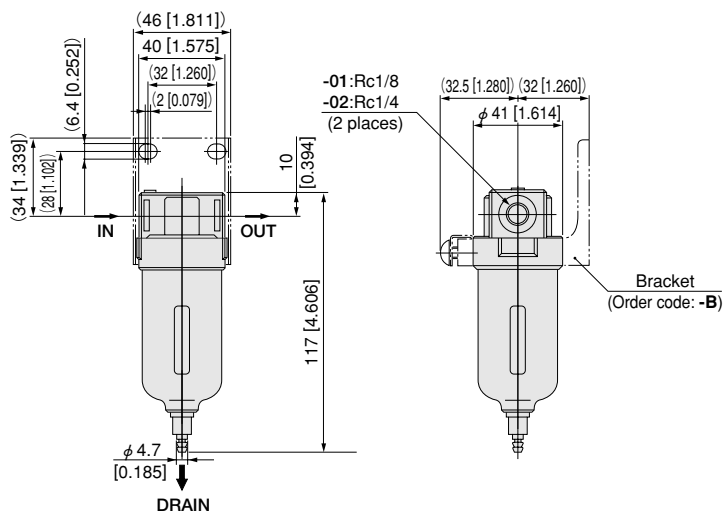


● CS-F600

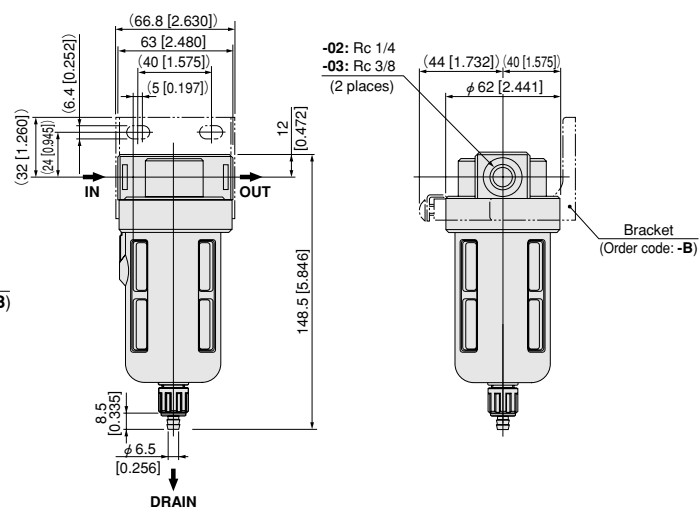


1MPa = 145psi., 1 ℓ/min = 0.0353ft³/min.

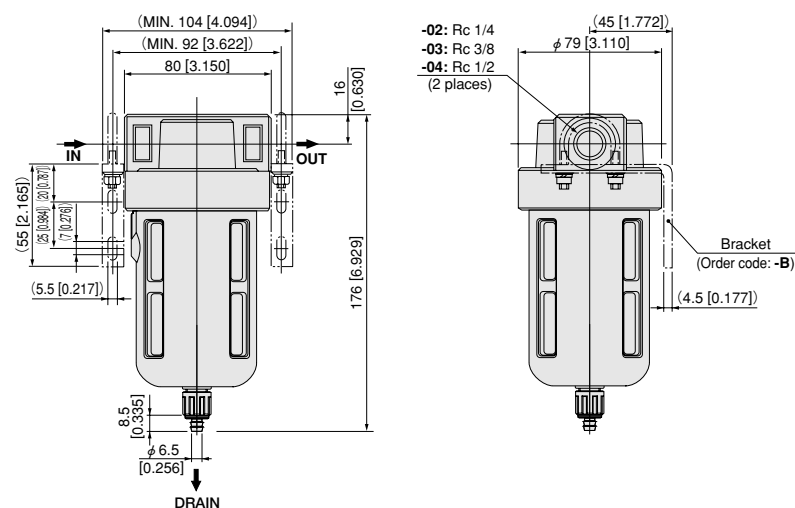
● CS-F150



● CS-F300



● CS-F600

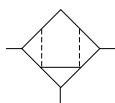


KOGANEI CLEAN SYSTEM MIST FILTERS

CS-MF300, CS-MF400, CS-MF600



Symbol



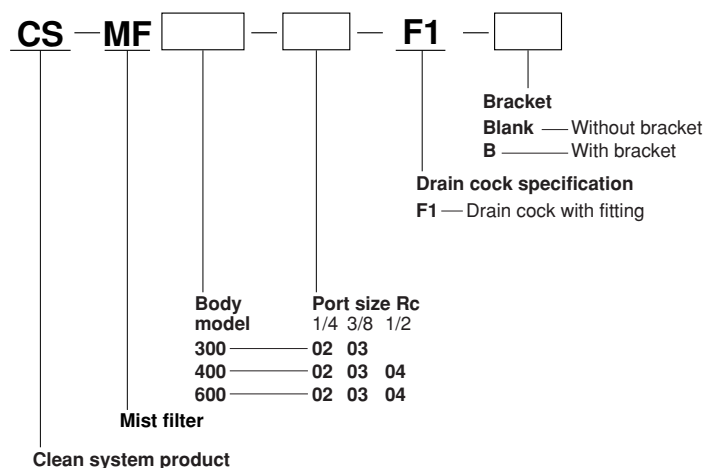
Specifications

Item		Model	CS-MF300	CS-MF400 ^{Note 1}	CS-MF600
Media			Air		
Port size		Rc	1/4, 3/8	1/4, 3/8, 1/2	1/4, 3/8, 1/2
Filtering particle diameter		μm	0.3		
Filtering efficiency		%	99.9		
Volume of processed air ^{Note 2} ℓ/min [ft³/min.] (ANR)			300 [10.6]	750 [26.5]	1500 [53.0]
Maximum operating pressure MPa [psi.]			0.93 [135]		
Proof pressure MPa [psi.]			1.47 [213]		
Operating temperature range (atmosphere and media) °C [°F]			5~60 [41~140]		
Drain capacity cc [in.³]			35 [2.14]	65 [3.97]	90 [5.49]
Mass	kg [lb.]	Standard	0.41 [0.90]	0.45 [0.99]	0.78 [1.72]
Materials		Body	Zinc die-casting	Aluminum die-casting	
		Bowl	Polycarbonate		
		Element type	E-30M	E-40M	E-60M
Standard attachments			Screw type drain cock with fitting, bowl guard		

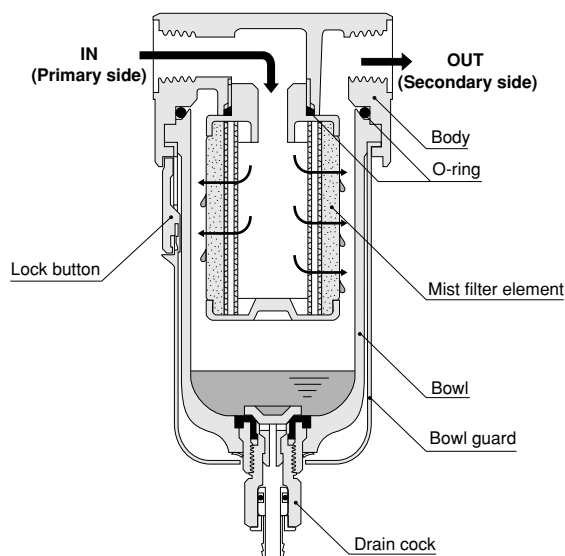
Notes: 1. The CS-MF400 body size is in the 600 series.

2. Values when air pressure is 0.7MPa [102psi.].

Order Codes

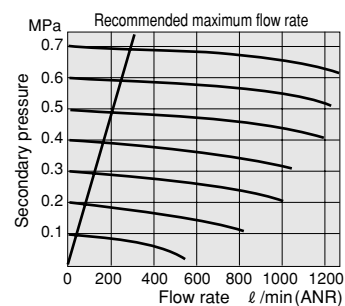


Inner Construction and Major parts

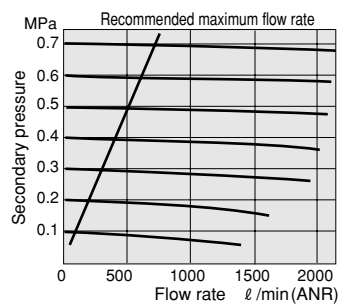


Flow Rate Characteristics

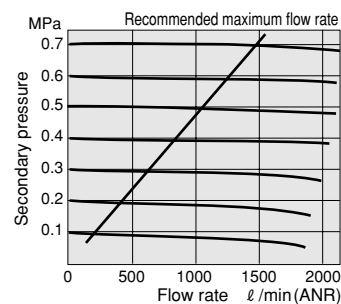
● CS-MF300



● CS-MF400

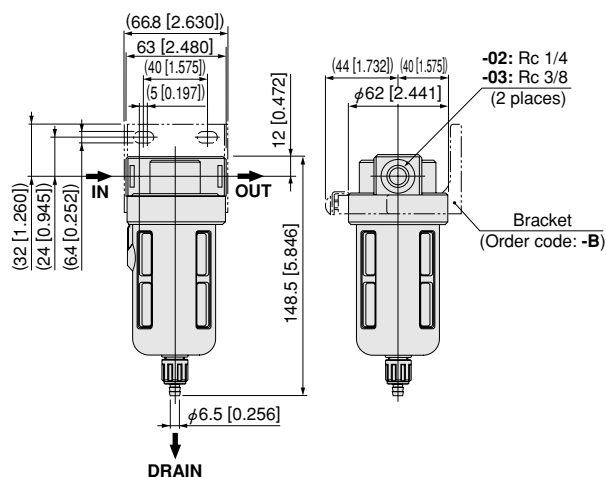


● CS-MF600

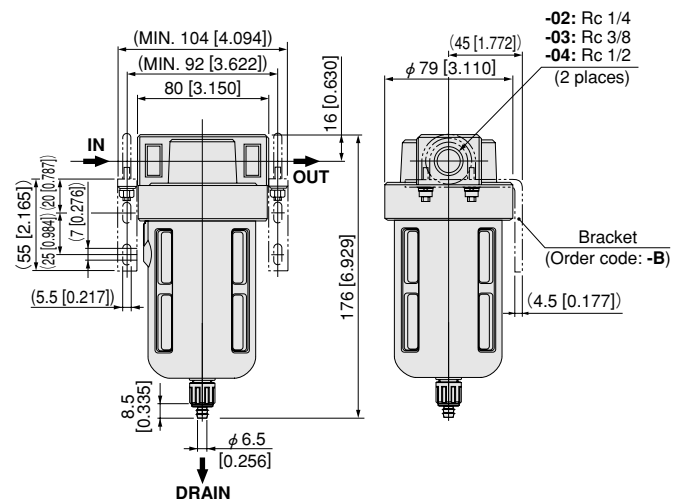


1MPa = 145psi., 1 ℓ/min = 0.0353ft.³/min.

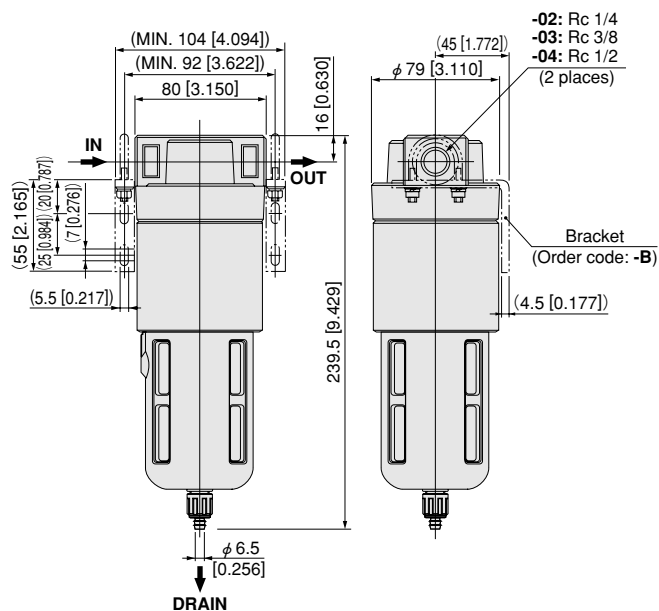
● CS-MF300



● CS-MF400

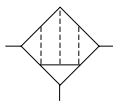


● CS-MF600





Symbol

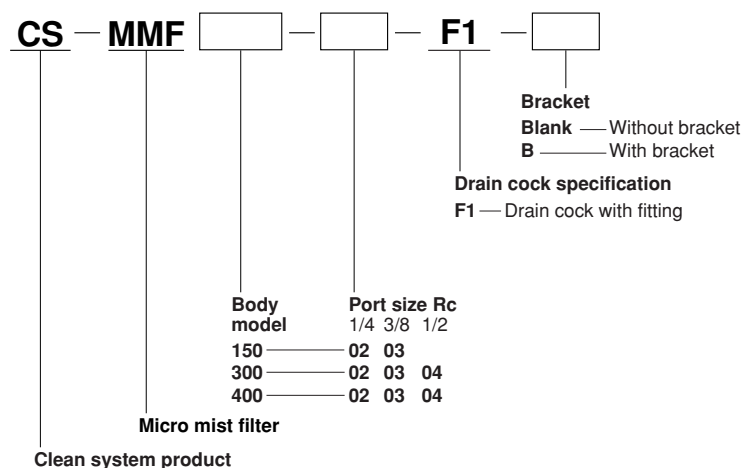


Specifications

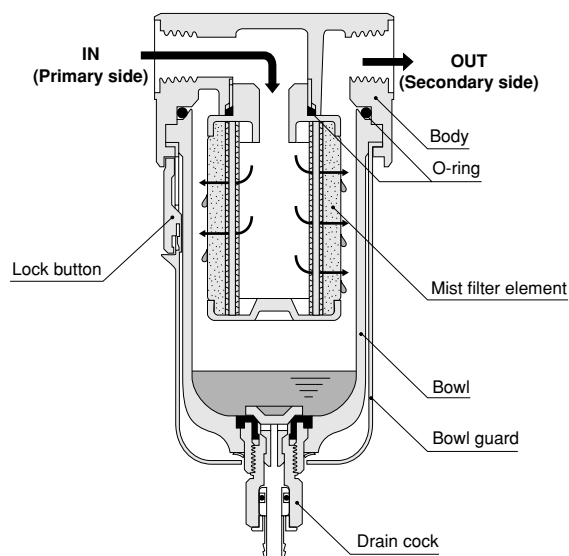
Item		Model	CS-MMF150 ^{Note 1}	CS-MMF300 ^{Note 1}	CS-MMF400 ^{Note 1}
Media			Air		
Port size		Rc	1/4, 3/8	1/4, 3/8, 1/2	1/4, 3/8, 1/2
Filtering particle diameter		μm	0.01		
Filtering efficiency		%	99.9999		
Volume of processed air ^{Note 2} ℓ /min [ft³/min.] (ANR)			150 [5.3]	300 [10.6]	750 [26.5]
Maximum operating pressure MPa [psi.]			0.93 [135]		
Proof pressure MPa [psi.]			1.47 [213]		
Operating temperature range (atmosphere and media) °C [°F]			5~60 [41 ~140]		
Drain capacity cc [in.³]			35 [2.14]	65 [3.97]	90 [5.49]
Mass	kg [lb.]	Standard	0.41 [0.90]	0.45 [0.99]	0.78 [1.72]
Materials		Body	Zinc die-casting	Aluminum die-casting	
		Bowl	Polycarbonate		
		Element type	E-15MM	E-30MM	E-40MM
Standard attachments			Screw type drain cock with fitting, bowl guard		

Notes: 1. The body size of the CS-MMF150 is the same as that of the 300 series, while the body size of the CS-MMF300 and the CSMMF400 is the same as that of the 600 series.
2. Values when air pressure is 0.7MPa [102psi.].

Order Codes

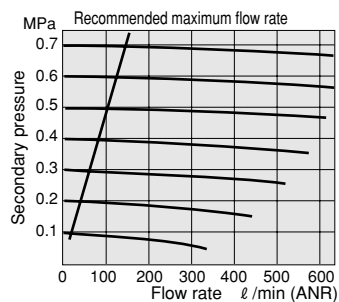


Inner Construction and Major parts

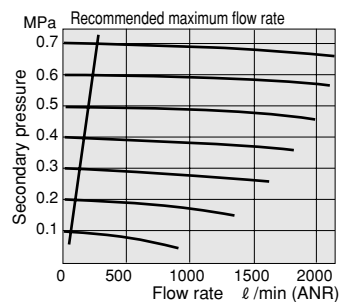


Flow Rate Characteristics

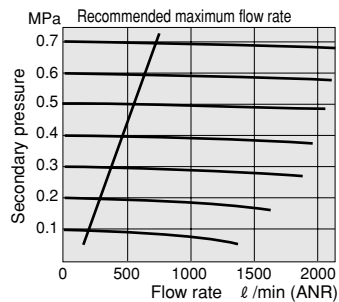
● CS-MMF150



● CS-MMF300

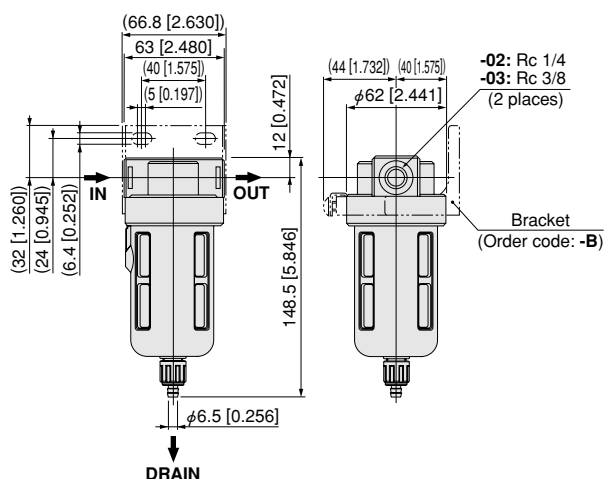


● CS-MMF400

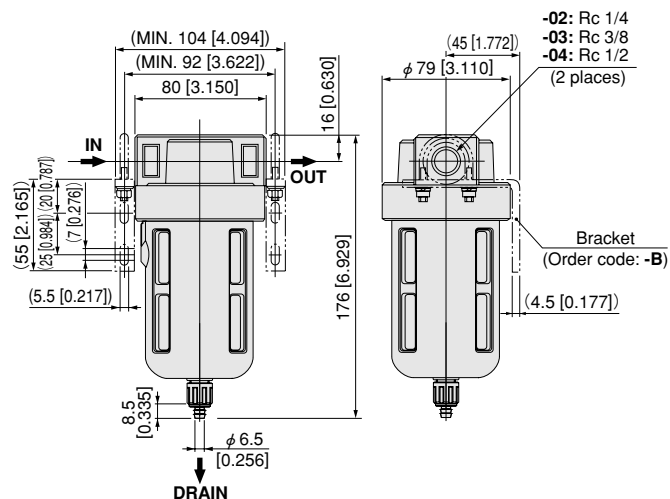


1MPa = 145psi., 1 ℓ/min = 0.0353ft³/min.

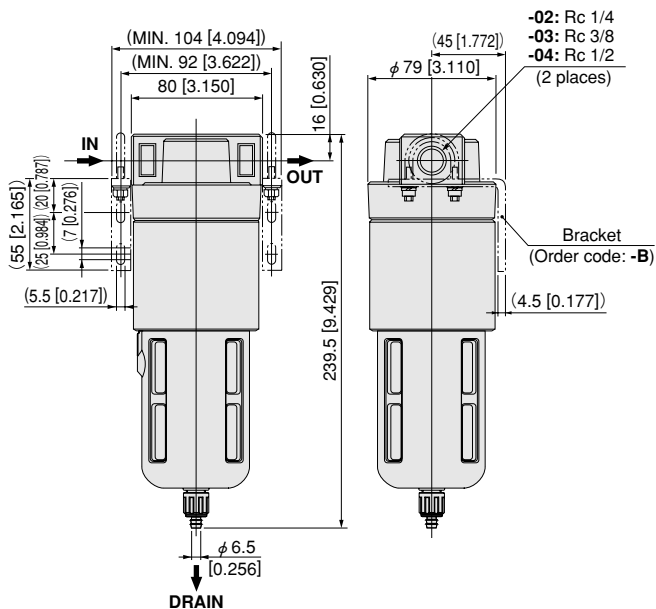
● CS-MMF150



● CS-MMF300



● CS-MMF400

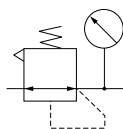


KOGANEI CLEAN SYSTEM REGULATORS

CS-R150, CS-R300, CS-R600



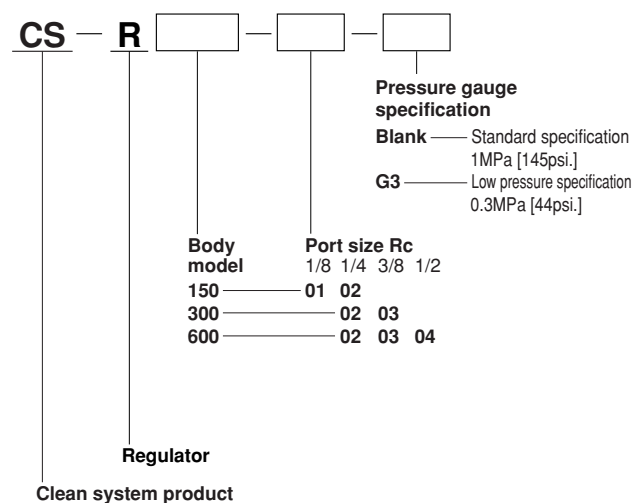
Symbol



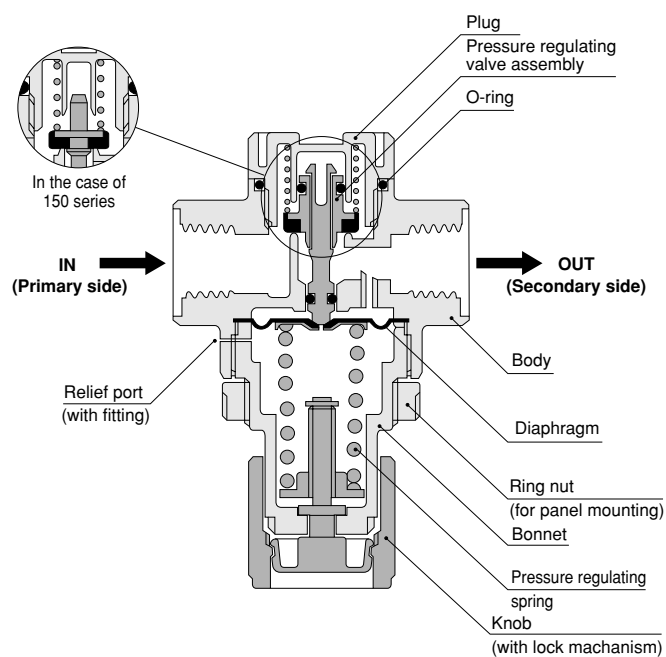
Specifications

Item	Model	CS-R150	CS-R300	CS-R600
Media		Air		
Port size	Rc	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Pressure setting range	MPa [psi.]	0.05 ~ 0.83 [7 ~ 120]		
Maximum operating pressure	MPa [psi.]	0.93 [135]		
Proof pressure	MPa [psi.]	1.47 [213]		
Operating temperature range (atmosphere and media)	°C [°F]	5 ~ 60 [41 ~ 140]		
Lubrication		Not required		
Mass (with pressure gauge)	kg [lb.]	0.20 [0.44]	0.23 [0.51]	0.32 [0.71]
Materials		Aluminum die-casting	Zinc die-casting	Aluminum die-casting
Standard attachments		Bracket and pressure gauge G1-40 (ϕ 40×1MPa [145psi.])	Bracket and pressure gauge G1-50 (ϕ 50×1MPa [145psi.])	

Order Codes

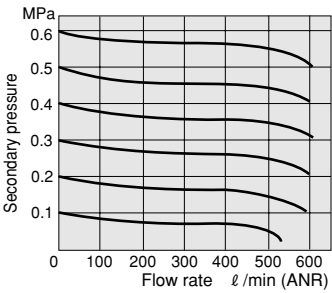


Inner Construction and Major parts

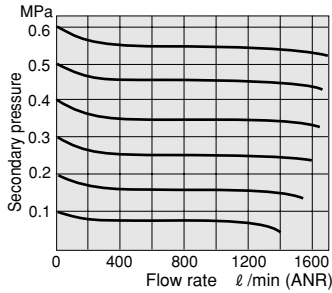


Flow Rate Characteristics

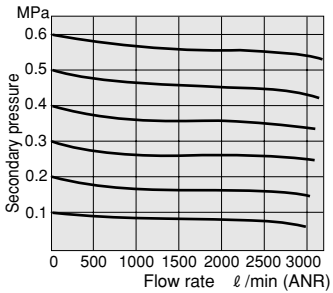
●CS-R150



●CS-R300



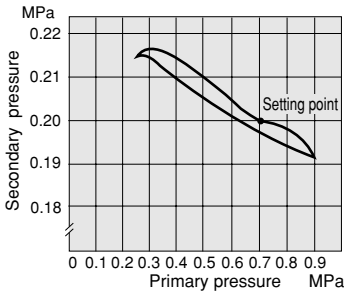
●CS-R600



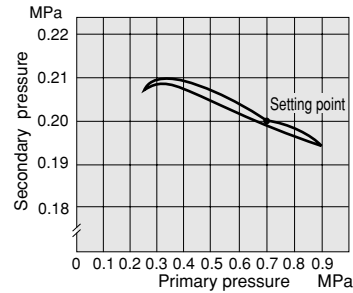
1MPa = 145psi., 1 ℓ/min = 0.0353ft³/min.
Remark: The graphs show flow rate characteristics when the primary pressure is fixed at 0.7MPa [102psi.].

Pressure Characteristics

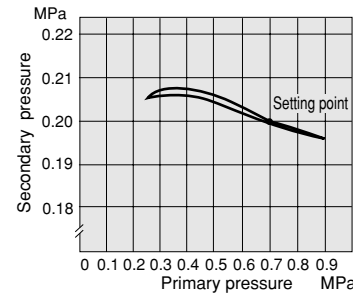
●CS-R150



●CS-R300

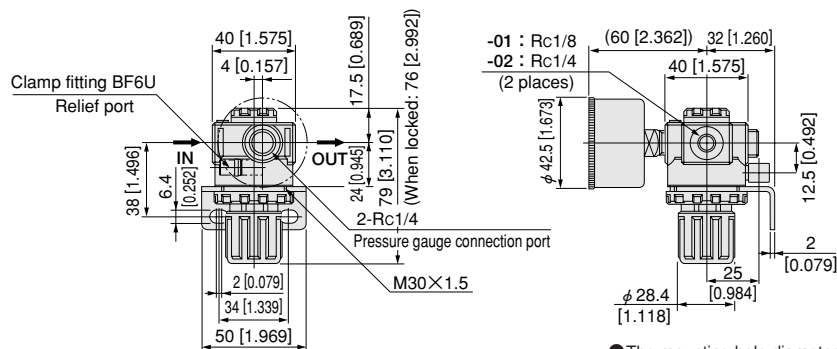


●CS-R600



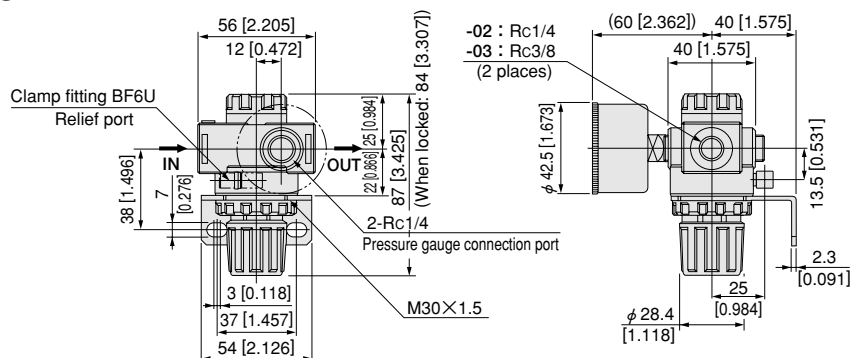
1MPa = 145psi.

● CS-R150



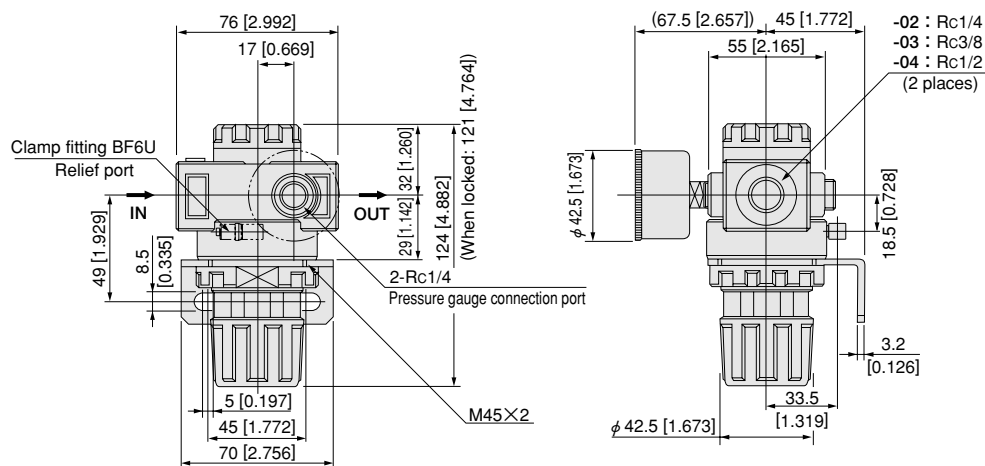
● The mounting hole diameter for mounting the regulator on a panel, etc. should be $\phi 30.5$ [1.201].

● CS-R300



● The mounting hole diameter for mounting the regulator on a panel, etc. should be $\phi 30.5$ [1.201].

● CS-R600



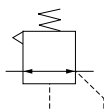
● The mounting hole diameter for mounting the regulator on a panel, etc. should be $\phi 45$ [1.772].

KOGANEI CLEAN SYSTEM PRECISION REGULATOR

CS-PR200



Symbol

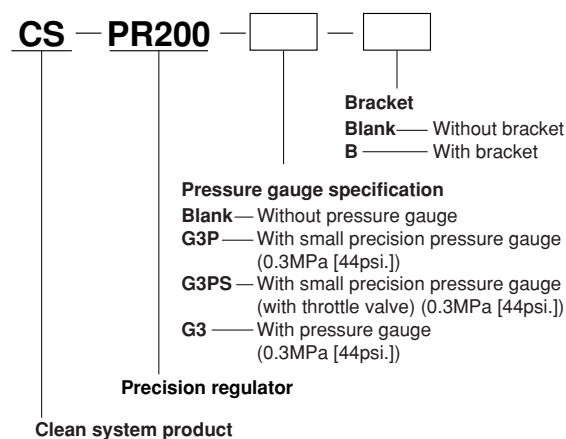


Specifications

Item	Model	PR200
Media		Air
Port size	Rc	1/4
Sensitivity	MPa [psi.]	0.001 [0.15]
Pressure setting range	MPa [psi.]	0.005~0.25 [0.73~36]
Maximum operating pressure	MPa [psi.]	0.73 [106]
Proof pressure	MPa [psi.]	1.03 [149]
Operating temperature range (atmosphere and media)	°C [°F]	5~60 [41~140]
Air consumption ^{Note}	ℓ /min [ft. ³ /min.] (ANR)	5 [0.18]
Lubrication		Not required
Mass	kg [lb.]	0.29 [0.64]
Materials		Aluminum die-casting

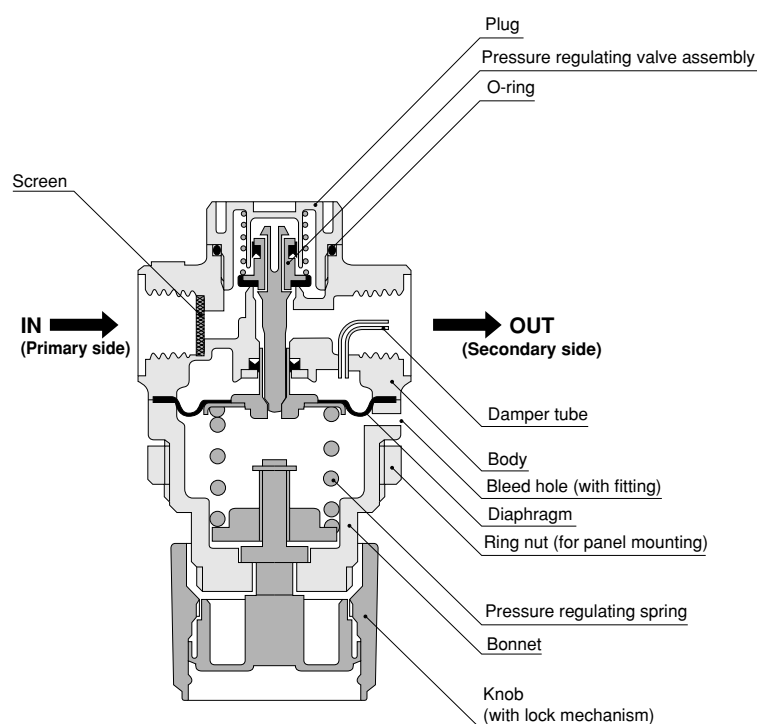
Note: Values when secondary air pressure is 0.25MPa [36psi.].

Order Codes

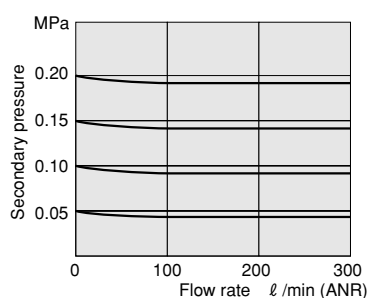


Remark: For details of the **G3** pressure gauge, see **G3-40** of the General Catalog of Air Treatment, Auxiliary, Vacuum.

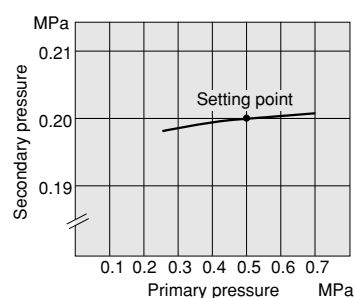
Inner Construction and Major parts



Flow Rate Characteristics

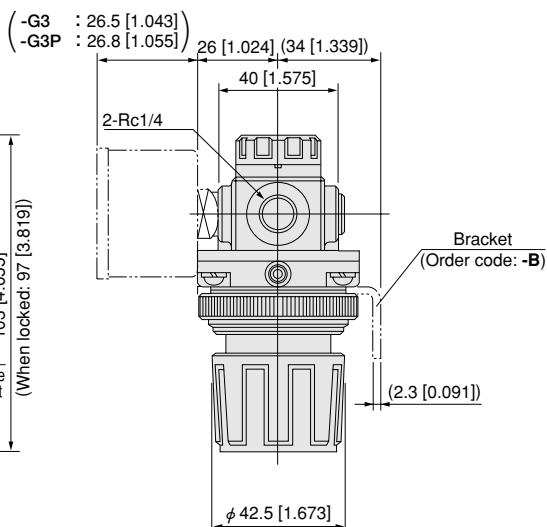
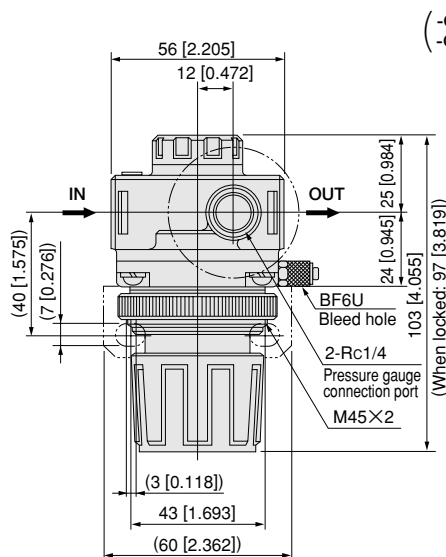


Pressure Characteristics



1MPa = 145psi., 1 ℓ /min = 0.0353ft.³/min.

CS-PR200



Small Precision Pressure Gauge Specifications

Note: The Small Precision Pressure Gauge is not a clean system product.

Item	Model	G3P-40
Media		Air
Operation method		Bourdon tube
Port size		R1/4 (M5×0.8)
Pressure indication range	MPa [psi.]	0~0.3 [0~44]
Maximum operating pressure	MPa [psi.]	0.25 [36]
Operating temperature range	°C [°F]	-5~60 [23~140]
Pressure indication accuracy		F.S.±1% (0.003MPa [±0.44psi.])
Minimum measurement unit		0.005MPa [±0.73psi.]
Guaranteed temperature accuracy range	°C [°F]	25±5 [77±9]
Temperature coefficient		0.05% F.S./°C
Shock resistance	m/s ² [G]	9.8 {1.0} max.
Materials	Body (pressure gauge case)	SPCC
	Case/mounting ring (panel mount assembly)	Plastic (ABS/POM)
Mass	g [oz.]	90 [3.17]

Order Codes of Pressure Gauge Single Unit

G3P - 40 -

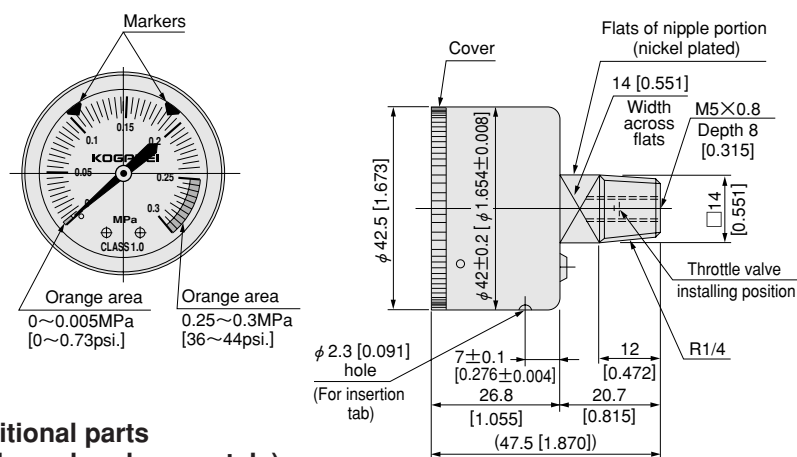
Blank — Without throttle valve
S — With throttle valve^{Note}

Outer diameter
40 — Outer diameter 40mm [1.575in.] (Scale plate)

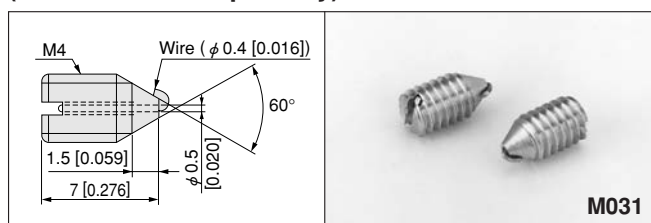
Small precision pressure gauge
Pressure indication range 0.3MPa [44psi.]

Note: The throttle valve can be ordered separately.

Dimensions of Small Precision Pressure Gauge mm [in.]



Additional parts (To be ordered separately)



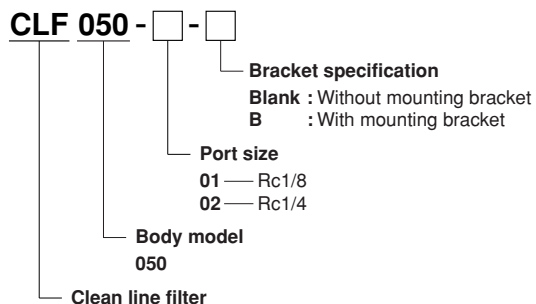
Throttle valve

KOGANEI CLEAN SYSTEM CLEAN LINE FILTERS

CLF050-01, CLF050-02



Order Codes



Additional parts (To be ordered separately)

Replacement element (with O-ring)



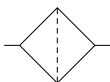
Mounting bracket



Specifications

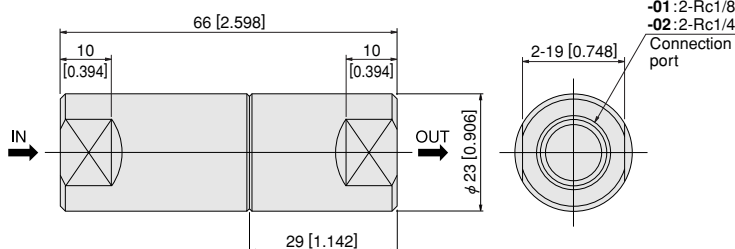
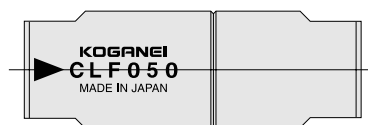
Item	Model	CLF050-01	CLF050-02
Media		Air, N ₂ , Ar, He, O ₂ , CO ₂	
Port size	Rc	1/8	1/4
Maximum operating temperature	°C [°F]	80 [176] (MAX.)	
Filtering efficiency	%	100% (0.01 μm)	
Filtration rating	μm	0.01	
Filtration area	cm ² [in ²]	Min. 10 [1.55]	
Maximum operating pressure	MPa [psi.]	0.97 [141]	
Proof pressure	MPa [psi.]	1.47 [213]	
Element differential pressure resistance	MPa [psi.]	0.5 [73]	
Element reverse differential pressure resistance	MPa [psi.]	0.07 [10]	
Element construction		Dual-layer configuration of PTFE membrane and PTFE non-woven fabric	
Mass	g [oz.]	135 [4.76]	
Production system		Manufactured inside Class 10000 cleanroom	
Major parts and materials	Housing (body)	SUS316 (electro-polishing of outer and inner surface)	
	Element	Housing: PFA, Element: PTFE	
	Seal (O-ring)	FPM	
	Mounting bracket	SUS304	

Symbol

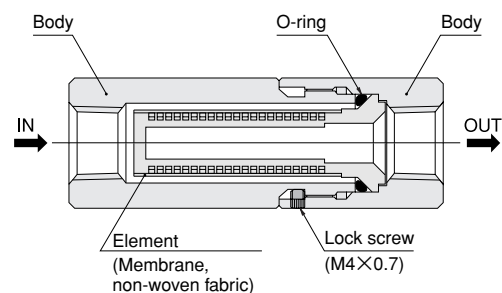


Dimensions mm [in.]

CLF050-□

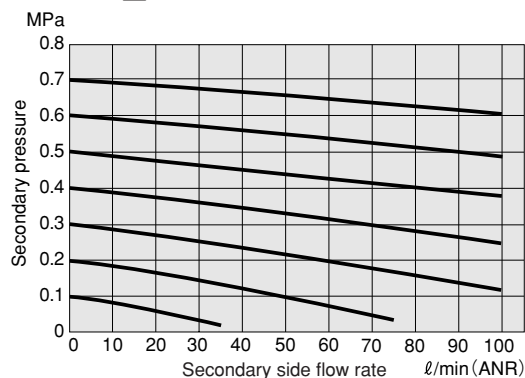


Inner Construction and Major Parts



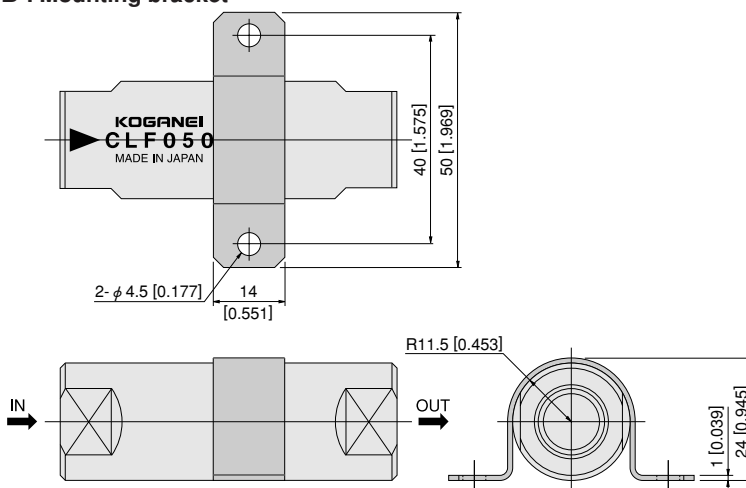
Flow Rate Characteristics

CLF050-□



Option

-B : Mounting bracket



Handling Instructions and Precautions



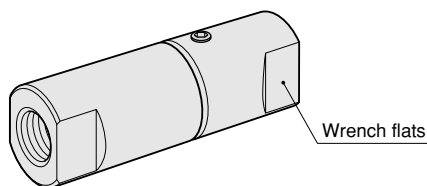
Mounting and piping

Opening/closing the packaging

The filter body and replacement element are packed into a double-layer clean packaging inside the cleanroom. It is recommended that opening or closing the packaging be conducted inside a cleanroom or in a clean atmosphere.

Mounting

For plumbing, apply a wrench to the flats of the body where piping threads are located while restraining body rotation.



Orient the piping so that air flows in the direction of the arrow shown on the body (See below).



Use the optional mounting bracket for installing in place.

Flushing

While this product is cleaned with pure air at time of packaging, the effects of vibration, etc., during transportation may lead to the generation of particulates.

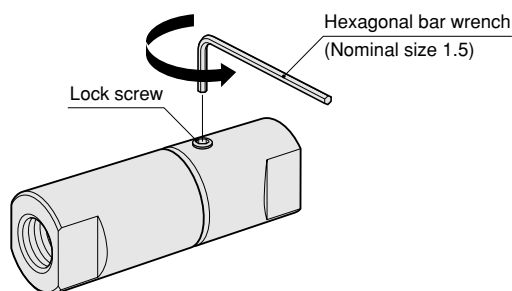
Flush out (blow clean air through) the piping interior before initial use, and replacement of an element.

Element replacement

Before replacing any elements, remove the body from the piping fitting. Because elements come with O-rings, both parts must be replaced together.

When replacing an element, do not touch the element or the interior of the body with bare hands. Use dust-free gloves to replace the element.

The body uses thread to tighten each body part, and a lock screw to fix it in place. Thus, before loosening the body thread, always loosen the lock screw. When reassembling the body, make sure to tighten the lock screw.



Body thread tightening torque: 980N · cm [87in · lbf]

Lock screw tightening torque: 196N · cm [17in · lbf]

Media

General gases are the media targeted for this product. (general gases listed in the specifications).

Be aware that it cannot be used with other gases.

● Usable media

The product can be particularly used for general gases used as carrier gases.

Nitrogen (N₂), argon (Ar), helium (He), oxygen (O₂), carbon dioxide (CO₂)

● Non-usable media

This product cannot be used with special gases used on process lines, listed below.

CVD and epitaxial gases

Monosilane (SiH₄), dichlorosilane (SiH₂Cl₂), phosphine (PH₃), diborane (B₂H₆), ammonia (NH₃), tungsten fluoride (WF₆), hydrogen chloride (HCl)

Ion implantation gases

Arsine (AsH₃), boron trifluoride (BF₃)

Etching gases

Boron trichloride (BCl₃), methane tetrafluoride (CF₄), nitrogen trifluoride (NF₃)



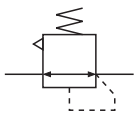
General precautions

1. Use media that lie within the specification ranges. Do not use any other media.
2. Avoid using the product in locations where the ambient temperature exceeds the maximum operating temperature range.
3. Avoid using the product when the specified maximum operating pressure is exceeded.
4. Avoid applying excessive external force on this product.
5. Do not expose this product to ultraviolet rays or the weather.

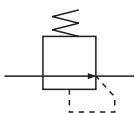


Symbols

● Relief



● Non-relief

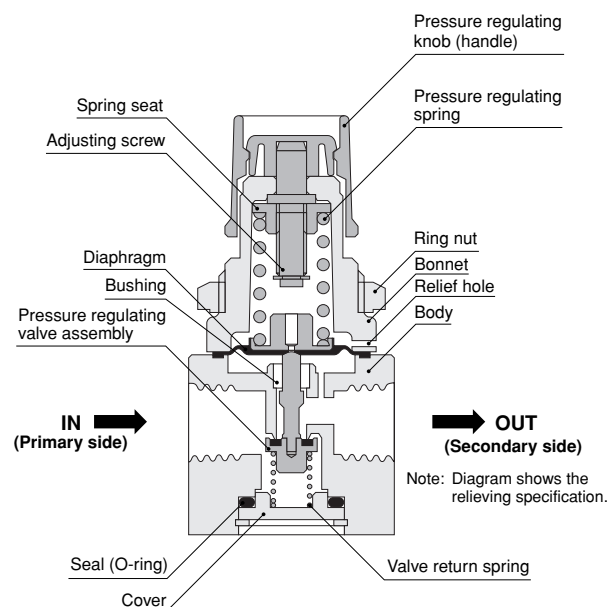


Specifications

Model		RS10□		RS11□	
		RS100	RS101	RS110	RS111
Media		Air, N ₂ , CO ₂ , He, Ar		Air, N ₂ , O ₂ , CO ₂ , He, Ar	
Operation type		Diaphragm type			
Port size		M5×0.8, Rc1/8, Rc1/4			
Pressure setting range	MPa [psi.]	0.05～0.7 [7～102]	0.05～0.25 [7～36]	0.05～0.7 [7～102]	0.05～0.25 [7～36]
Maximum operating pressure	MPa [psi.]	0.9 [131]			
Proof pressure	MPa [psi.]	1.5 [218]			
Operating temperature range		℃ [°F]			
Mass		kg [lb.]			
Optional	Material of valve and diaphragm that contact gas	Fluoro rubber only (FKM)		Fluoro rubber (FKM), or fluoro plastic (PTFE)	
	Pressure gauge	G1: Standard specification (1MPa)	G3: Low-pressure specification (0.3MPa)	G1: Standard specification (1MPa)	G3: Low-pressure specification (0.3MPa)
	Mounting base	Base for mounting (mass: 0.035kg [1.23oz.])			

1MPa = 145psi.

Inner Construction and Major Parts



Major Parts and Materials

Parts	Materials
Body	SUS316
Pressure regulating knob (handle)	Plastic (ABS)
Bonnet	Plastic (PBT)
Diaphragm	Fluoro rubber (FKM), or fluoro rubber (FKM) with fluoro resin (PTFE) lining
Pressure regulating spring	Piano wire (color chromated)
Seal	Fluoro rubber (FKM)
Pressure regulating valve assembly	SUS316 + fluoro rubber (FKM), or SUS316 + fluoro rubber (FKM) with fluoro resin (PTFE) lining
Cover	SUS316
Bushing	Fluoro plastic (PTFE)
Valve return spring	SUS316
Adjusting screw	Brass (nickel plated)
Spring seat	Brass (nickel plated)
Plug (supplied)	SUS316
Ring nut	Mild steel (nickel plated)
Mounting base (optional)	SPCC (nickel plated)

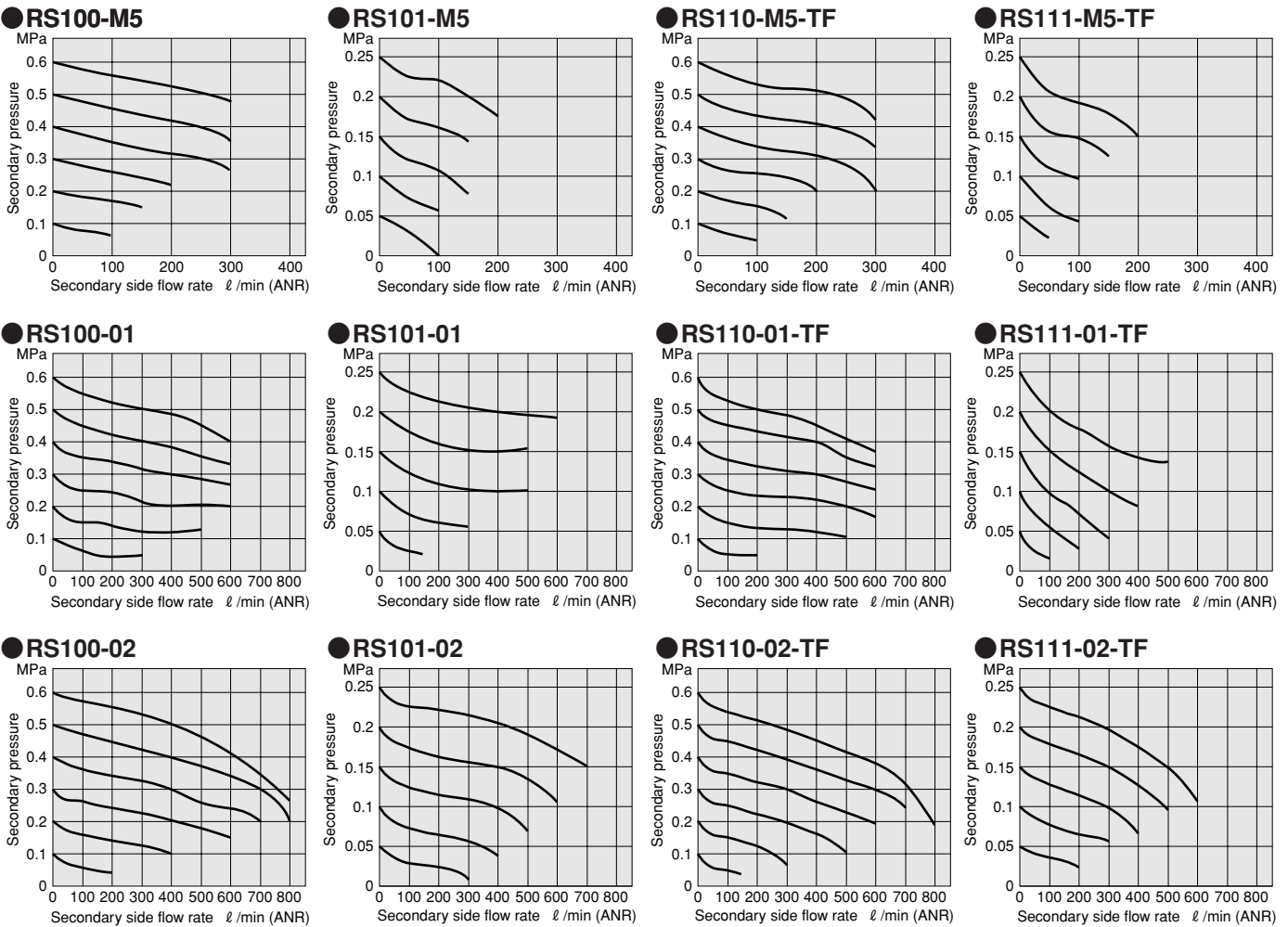
Order Codes

RS1	□	□	-	□	-	□	-	□	-	□
										Mounting base
										Blank : Without mounting base
										B : With mounting base
										Pressure gauge ^{Note 2}
										Blank : Without pressure gauge
										G1 : Standard specification (1MPa [145psi.])
										G3 : Low pressure specification (0.3MPa [44psi.])
										Port size
										M5 : M5×08
										01 : Rc1/8
										02 : Rc1/4
										Material of rubber parts that contact gas
										Blank : Fluoro rubber (FKM)
										TF : Fluoro resin (PTFE) ^{Note 1}
										Pressure setting range
										0 : Standard specification (0.05~0.7MPa [7~102psi.])
										1 : Low pressure specification (0.05~0.25MPa [7~36psi.])
										Relieving, non-relieving specifications
										0 : Relieving type
										1 : Non-relieving type
Stainless regulator										

Notes: 1. -TF is available in non-relieving type only.

2. Select either the standard or low pressure type pressure gauge according to the regulator pressure setting range.

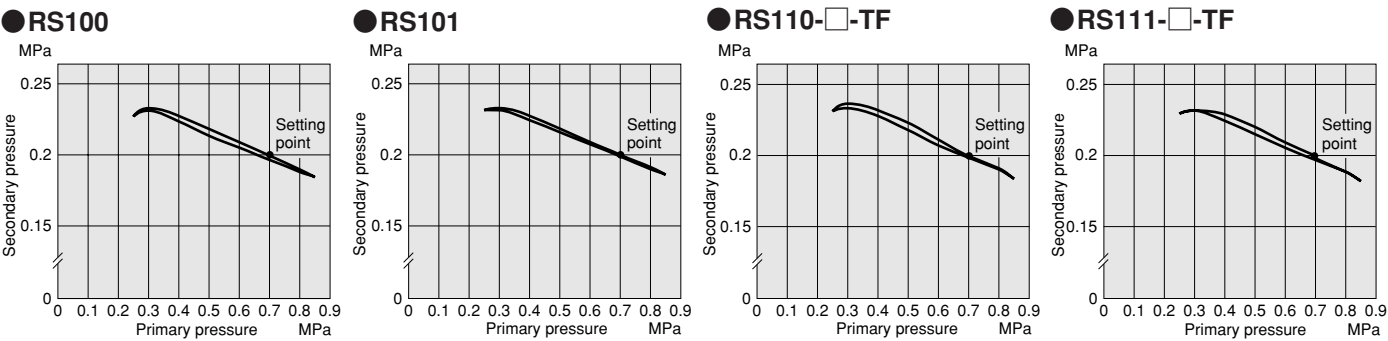
Flow Rate Characteristics



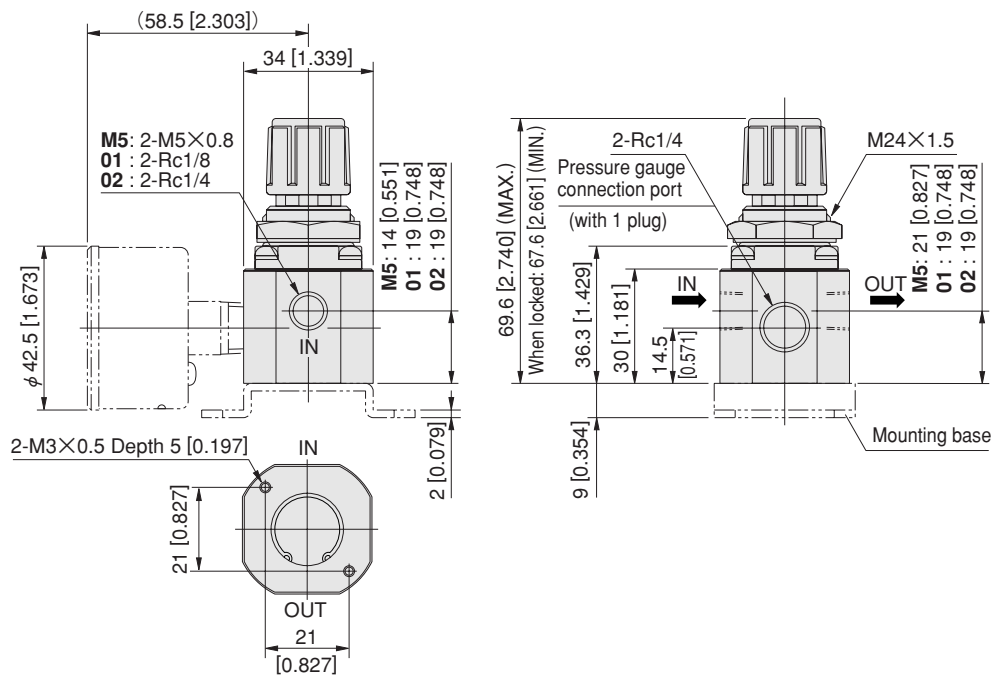
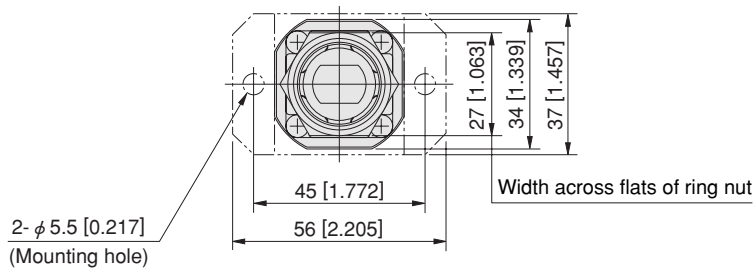
1MPa = 145psi., 1 l /min = 0.0353ft³/min.

Remark: The graphs show flow rate characteristics when the primary pressure is fixed at 0.7MPa [102psi.].

Pressure Characteristics



1MPa = 145psi.



Remark: The mounting hole diameter for mounting the stainless regulator on a panel, etc. should be $\phi 24.5$ [0.965].

Pressure Gauge Specifications

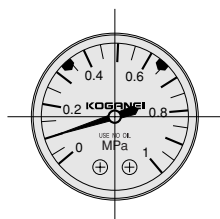


Item	Model	G1S-40	G3S-40
Media		Air, N ₂ , O ₂ , CO ₂ , He, Ar	
Port size	R	1/4	
Pressure indication range	MPa [psi.]	0~1.0 [0~145]	0~0.3 [0~44]
Outer diameter	mm [in.]	42.5 [1.673]	
Maximum operating pressure	MPa [psi.]	0.93 [135]	0.25 [36]
Operating temperature range	°C [°F]	5~60 [41~140]	
Mass	kg [lb.]	0.091 [0.20]	

Dimensions of Pressure Gauge mm [in.]

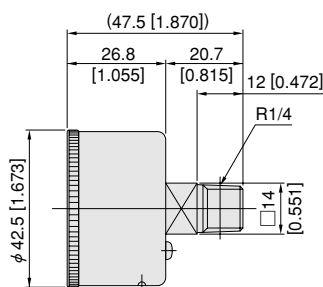
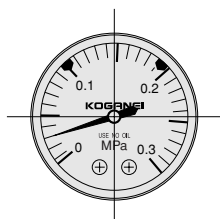
● G1S-40

Standard specification
1 MPa [145psi.]



● G3S-40

Low pressure specification
0.3 MPa [44psi.]



Major Parts and Materials

Parts	Materials
Case	SPCC (Black painting)
Flats of nipple section	Casting stainless steel
Bourdon tube	SUS316
Transparent cover	Plastic (PC)

Order Code of Pressure Gauge Single Unit

G□S-40

Pressure indication range

1 : Standard specification 1 MPa [145psi.]

3 : Low pressure specification 0.3 MPa [44psi.]

Precautions for Use of Stainless Regulators



Caution

Always read these precautions carefully before use.

Pressure regulation

1. Always pull out the knob firmly to regulate pressure. Turning the knob to the right (clockwise) increases the pressure, while turning it to the left (counterclockwise) reduces the pressure.
2. After pressure regulation, push the knob back into the body, and lock it in place.

Mounting and piping

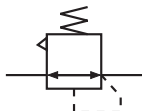
1. For the body's piping connection ports, IN is marked on the inlet port only. Caution should be exercised that the corresponding port on the opposite side of the body is the outlet port.
2. In the case of panel mounting, the panel mounting hole diameter should be $\phi 24.5$ [0.965in.]. Set the tightening torque of the mounting ring to 980.7N·cm [87in·lbf] or less.
3. For the relieving type, relief air (gas) is exhausted to the outside via the plastic bonnet. Note that the air (gas) cannot be retrieved.
4. When mounting a pressure gauge, apply a wrench on the square part of the pressure gauge's piping connection port.

General precautions

1. Avoid installing the valve in the primary side to switch the primary pressure repeatedly.
2. Before connecting the piping for the stainless regulator, always flush out the pipes.
3. Usable media include air, N₂, O₂, CO₂, He, and Ar. Do not use any other media. Moreover, the media used for the relieving specification are limited to air, N₂, O₂, CO₂, He and Ar. Do not use any other media.
4. Do not use the product when the media or the ambient atmosphere contains the following substances: Organic solvents, acids, chlorine, etc.
5. Avoid using the product in locations where the ambient temperature exceeds the specified operating temperature range.
6. Avoid using the product when the specified maximum operating pressure is exceeded.
7. This product is for industrial use. Do not use it in life-support equipment or other equipment critical to human health.
8. Avoid applying excessive external force on this product.
9. Do not disassemble or remodel this product.
10. Do not expose this product to ultraviolet rays or the weather.
11. When disposing of this product, always treat it as industrial waste.



Symbol

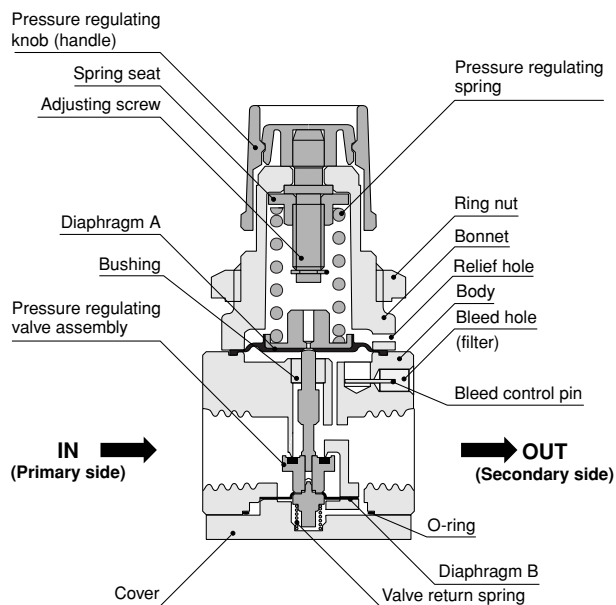


Specifications

Item	Model	PRS100
Media		Air, N ₂ , CO ₂ , He, Ar
Operation method		Diaphragm type
Port size		M5×0.8, Rc1/8, Rc1/4
Sensitivity	MPa [psi.]	0.001 [0.15]
Pressure setting range	MPa [psi.]	0.01~0.25 [1.5~36]
Maximum operating pressure	MPa [psi.]	0.9 [131]
Proof pressure	MP [psi.]	1.5 [218]
Operating temperature range	°C [°F]	5~60 [41~140]
Air consumption ^{Note}	ℓ /min [ft ³ /min.] (ANR)	Max. 2 [0.07]
Mass	kg [lb.]	0.231 [0.509] (including body, plug, and hexagon nut)
Optional	Pressure gauge	G3: Low pressure specification (0.3MPa [44psi.])
	Bracket	L-type mounting bracket (Mass 0.025kg [0.055lb.])

Note: Value when secondary air pressure is set to 0.25MPa [36psi.].

Inner Construction and Major Parts



Major Parts and Materials

Parts	Materials
Body	SUS316
Pressure regulating knob (handle)	Plastic (ABS)
Bonnet	Plastic (PBT)
Diaphragm A, B	Fluoro rubber (FKM)
Pressure regulating spring	Piano wire (color chromated)
O-ring	Fluoro rubber (FKM)
Pressure regulating valve assembly	SUS316 and fluoro rubber (FKM)
Cover	SUS316
Bushing	Fluoro resin (PTFE)
Valve return spring	SUS316
Bleed control pin	SUS316
Filter	Plastic (PVA)
Adjusting screw	Brass (nickel plated)
Spring seat	Brass (nickel plated)
Ring nut	Steel (nickel plated)
Plug (supplied)	SUS316
Bracket (optional)	SPCC (nickel plated)

Order Codes

PRS100 - - -

Port size
M5 : M5×0.8
01 : Rc1/8
02 : Rc1/4

Precision stainless regulator

Bracket^{Note}

Blank : Without bracket
B : With bracket

Pressure gauge

Blank : Without pressure gauge
G3 : Low pressure specification (0.3MPa [44psi.])

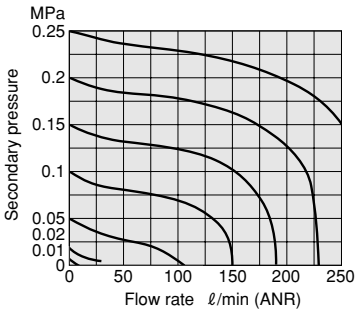
●Note: Order code for bracket only

8 - 10 - N

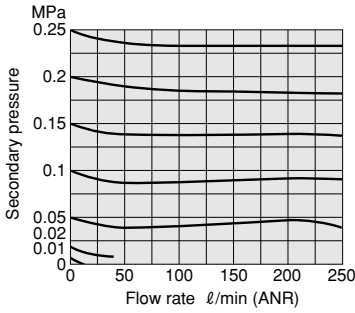
Remark: Shipped in double packaging.

Flow Rate Characteristics

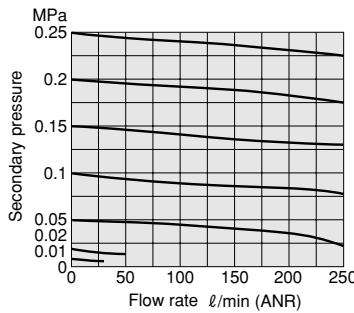
● PRS100-M5



● PRS100-01



● PRS100-02



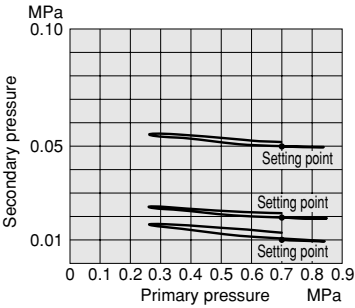
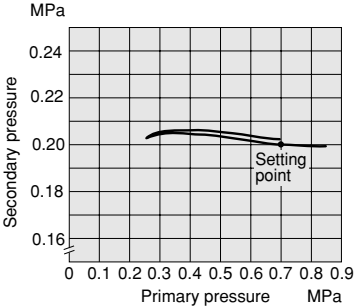
1MPa = 145psi., 1 l / min = 0.0353ft³/min.

Remark: The graphs show flow rate characteristics when the primary pressure is fixed at 0.7MPa [102psi.].

Pressure Characteristics

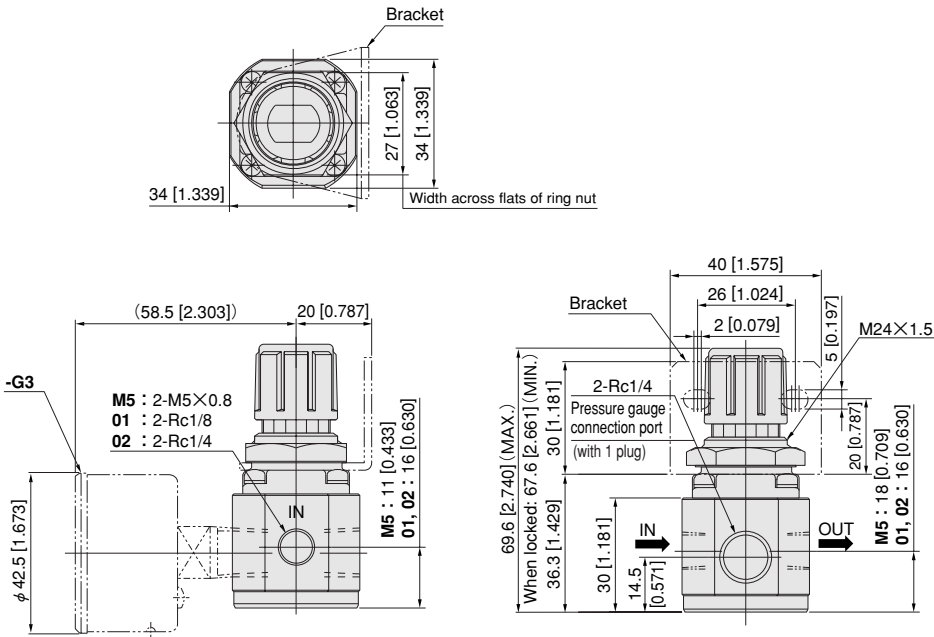
● PRS100- ☐

(Low pressure range)



1MPa = 145psi.

Dimensions mm [in.]



Remark: The mounting hole diameter for mounting the precision stainless regulator on a panel, etc. should be φ24.5 [0.965].



Order Code of Pressure Gauge Single Unit

G3S-40

Pressure indication range
3 : Low pressure specification
 0.3 MPa [44psi.]

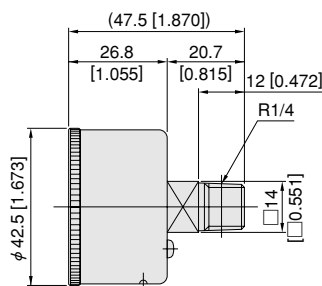
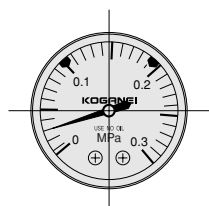
Pressure Gauge Specifications

Item	Model	G3S-40
Media		Air, N ₂ , CO ₂ , He, Ar
Port size	R	1/4
Pressure indication range	MPa [psi.]	0~0.3 [0~44]
Outer diameter	mm [in.]	42.5 [1.673]
Maximum operating pressure	MPa [psi.]	0.25 [36]
Operating temperature range	°C [°F]	5~60 [41~140]
Mass	kg [lb.]	0.091 [0.20]

Dimensions of Pressure Gauge mm [in.]

● G3S-40

Low pressure specification
 0.3 MPa [44psi.]



Major Parts and Materials

Parts	Materials
Case	SPCC (Black painting)
Flats of nipple section	Casting stainless steel
Bourdon tube	SUS316
Transparent cover	Plastic (PC)

Precautions for Use of Precision Stainless Regulator



Pressure regulation

1. Always pull out the knob firmly to regulate pressure. Turning the knob to the right (clockwise) increases the pressure, while turning it to the left (counterclockwise) reduces the pressure.
2. After pressure regulation, push the knob back into the body, and lock it in place.
3. While the precision stainless regulator employs the bleed type, the flow rate will be changed by secondary pressure. When the secondary pressure is 0, the consumed flow rate is also 0. Consumed flow rate is the highest when the secondary pressure is at 0.25MPa [36psi.], attaining a value of 2 ℓ /min [0.07ft³/min.] (ANR) or less.
4. The setting precision for optional pressure gauge is 2.5% (F.S.). If more precise pressure regulation is required, use a pressure gauge of JIS class 1.5~0.5.



Mounting and piping

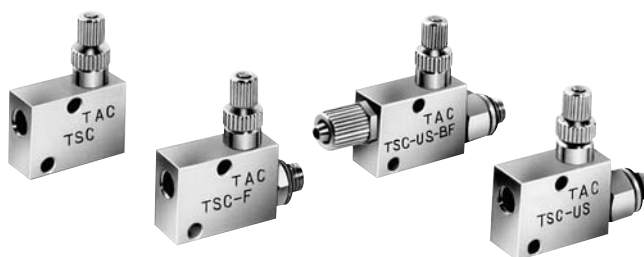
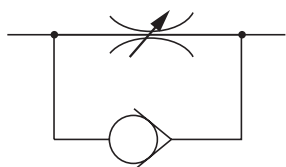
1. For the body's piping connection ports, IN is marked on the inlet port only. Caution should be exercised that the corresponding port on the opposite side of the body is the outlet port.
2. In the case of panel mounting, the panel mounting hole diameter should be φ 24.5 [0.965in.]. Set the tightening torque of the mounting ring to 980.7N·cm [87in·lbf] or less.
3. Bleeding air (gas) and relieving air (gas) are exhausted to the outside via the body's bleed hole (equipped with filter) and the plastic bonnet respectively. Note that the air (gas) cannot be retrieved.
4. When mounting a pressure gauge, apply a wrench on the square part of the pressure gauge's piping connection port.
5. For mounting of the precision stainless regulator as a single unit, use the optional bracket.



General precautions

1. Avoid installing the valve on the primary side to switch the primary pressure repeatedly.
2. Before connecting the piping for the precision stainless regulator, always flush out the pipes.
3. Usable media include air, N₂, CO₂, He, and Ar. Do not use any other media. Moreover, the media are constantly consumed during pressure regulation. Be sure you understand the configuration, etc., before use.
4. Do not use the product when the media or the ambient atmosphere contains the following substances: Organic solvents, acids, chlorine, etc.
5. Avoid using the product in locations where the ambient temperature exceeds the specified operating temperature range.
6. Avoid using the product when the specified maximum operating pressure is exceeded.
7. This product is for industrial use. Do not use it in life-support equipment or other equipment critical to human health.
8. Avoid applying excessive external force on this product.
9. Do not disassemble or remodel this product.
10. Do not expose this product to ultraviolet rays or the weather.
11. When disposing of this product, always treat it as industrial waste.

Symbol



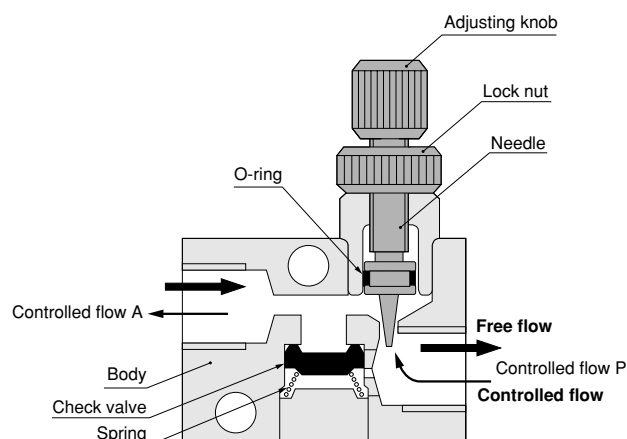
Specifications

Item \ Model		CS-TSC	CS-TSC-F	CS-TSC-F-BF	CS-TSC-US	CS-TSC-US-BF	CS-TSC-L	CS-TSC-L-BF
Piping type and port size	Controlled flow P	Female thread M5×0.8	Male thread M5×0.8		Union male thread M5×0.8		Male thread M5×0.8	
	Controlled flow A	Female thread M5×0.8		For urethane tube φ 4×2.5 Clamp fitting	Female thread M5×0.8	For urethane tube φ 4×2.5 Clamp fitting	Female thread M5×0.8	For urethane tube φ 4×2.5 Clamp fitting
Media		Air						
Operating pressure range	MPa [psi.]	0~0.9 [0~131]						
Proof pressure	MPa [psi.]	1.32 [191]						
Cracking pressure	MPa [psi.]	0.05 [7]						
Operating temperature range	°C [°F]	5~60 [41~140]						
Mass	g [oz.]	16 [0.56]	18 [0.63]	20.5 [0.72]	19 [0.67]	21.5 [0.76]	15 [0.53]	17 [0.60]

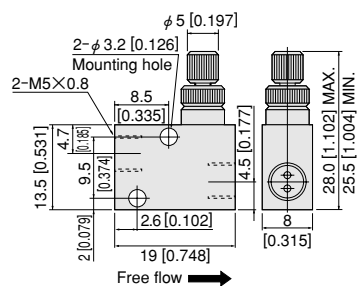
Major Parts and Materials

Parts	Materials
Body	Brass (nickel electroplated)
Needle	Stainless steel
Lock nut	Brass (nickel electroplated)
Check valve	Synthetic rubber (NBR)
O-ring	
Adjusting knob	Brass (nickel electroplated)

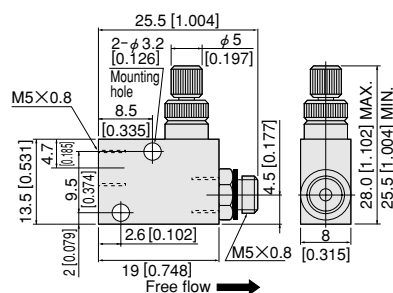
Inner Construction and Major Parts



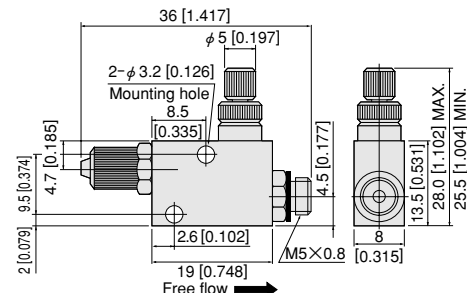
● CS-TSC



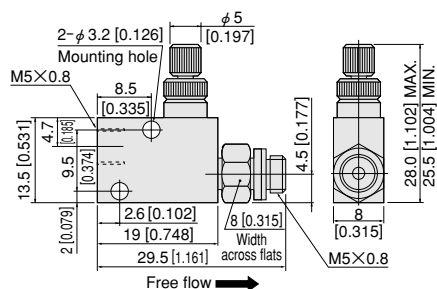
● CS-TSC-F



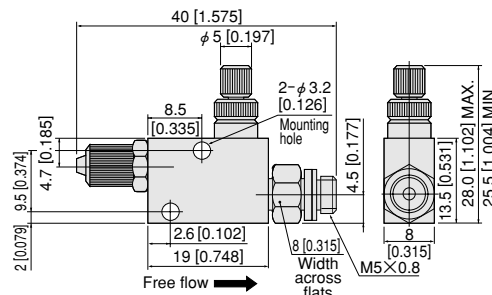
● CS-TSC-F-BF



● CS-TSC-US

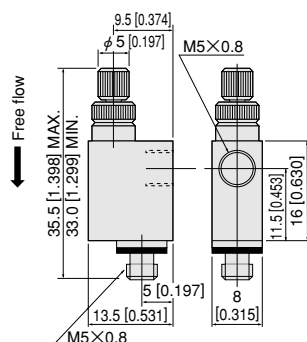


●CS-TSC-US-BF

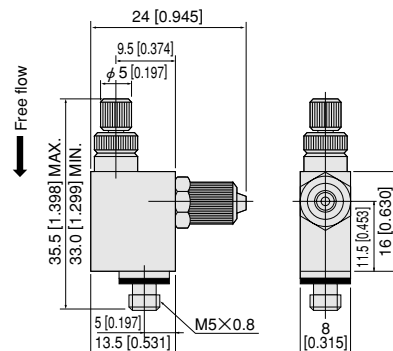


● **L type**

●CS-TSC-L

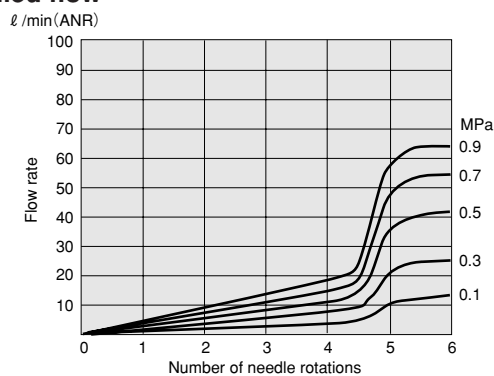


●CS-TSC-L-BF

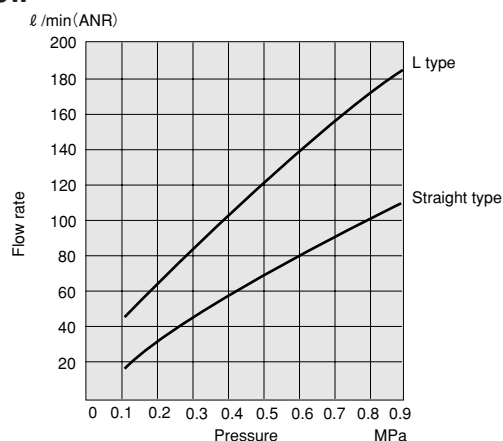


Flow Rate Characteristics

● **Controlled flow**

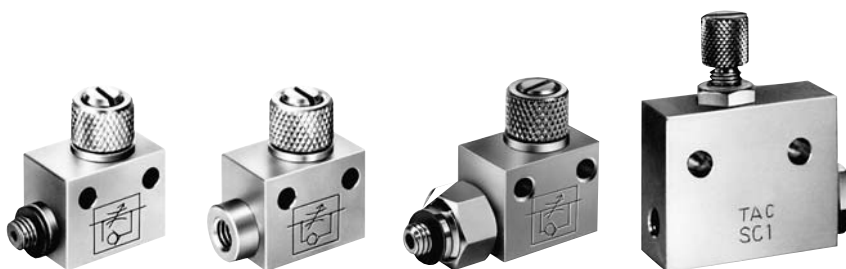
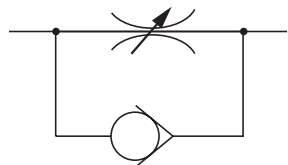

$$1 \ell / \text{min} = 0.0353 \text{ft}^3 / \text{min}.$$

- **Free flow**



1MPa = 145psi. 1 ℓ /min = 0.0353ft³/min.

Symbol

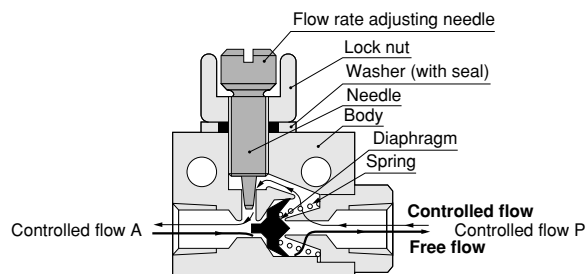


Specifications

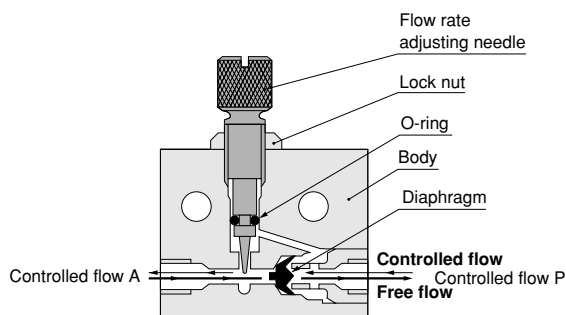
Item	Model	CS-SC0	CS-SC0-F	CS-SC0-US	CS-SC0-UL	CS-SC1	CS-SC2
Piping type		Female thread	Male thread	Union male thread		Female thread	
				Straight	Elbow		
Port size		M5×0.8					Rc1/8
Operating pressure range	MPa [psi.]	0~0.9 [0~131]					
Proof pressure	MPa [psi.]	1.32 [191]					
Cracking pressure	MPa [psi.]	0.05 [7]				0.04 [6]	0.03 [4]
Operating temperature range	°C [°F]	5~60 [41~140]					
Mass	g [oz.]	30 [1.06]	35 [1.23]	36 [1.27]	88 [3.10]	55 [1.94]	

Inner Construction and Major Parts

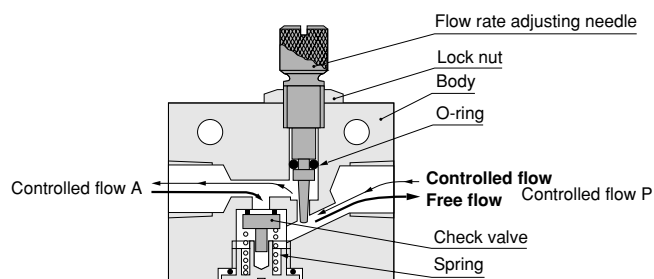
● CS-SC0



● CS-SC1



● CS-SC2

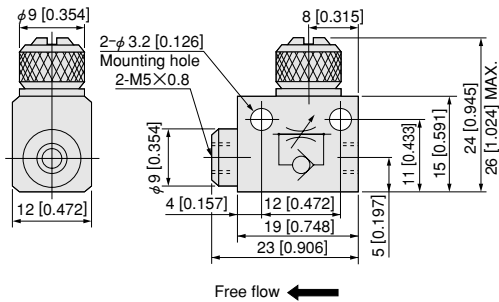


Major Parts and Materials

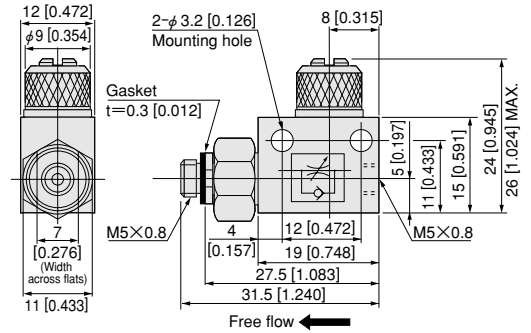
Parts	Materials
Body	Brass (nickel electroplated) ^{Note}
Needle	Stainless steel
Lock nut	Brass (nickel electroplated)
Check valve	Synthetic rubber (NBR)
O-ring	
Flow rate adjusting needle	Brass (nickel electroplated)

Note: CS-SC2 is aluminum alloy (anodized).

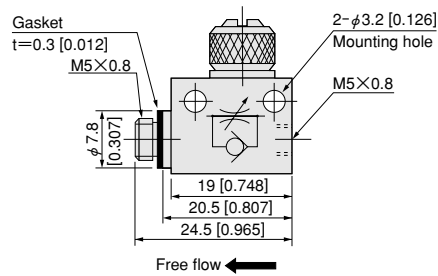
CS-SC0



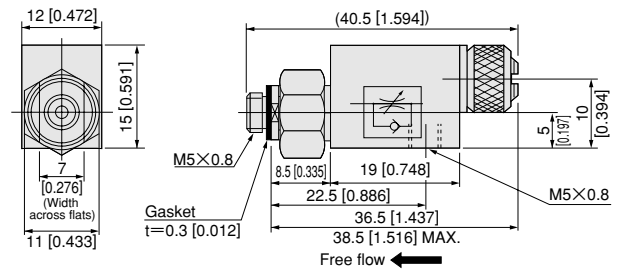
CS-SC0-US



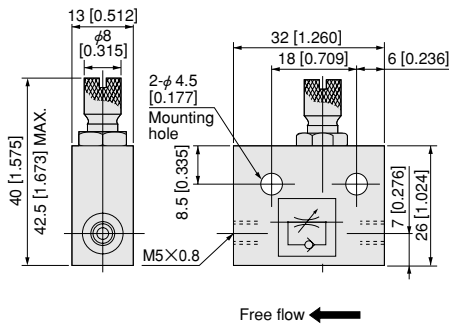
CS-SC0-F



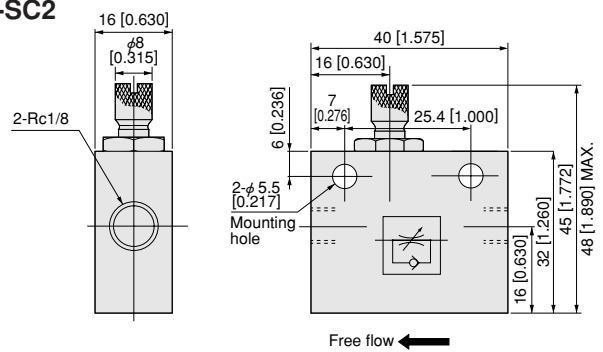
CS-SC0-UL



CS-SC1

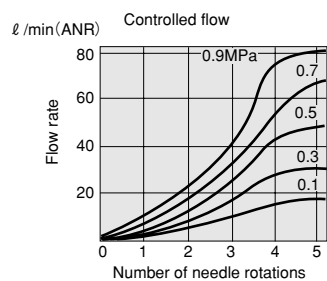


CS-SC2

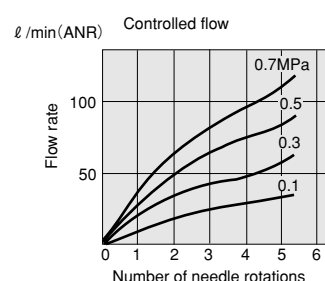


Flow Rate Characteristics

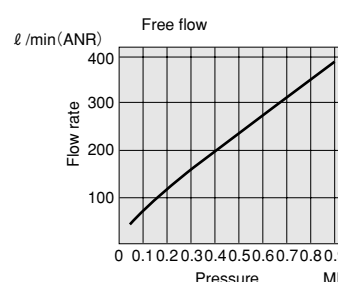
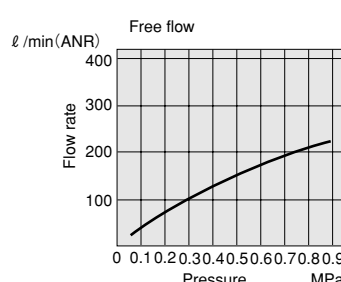
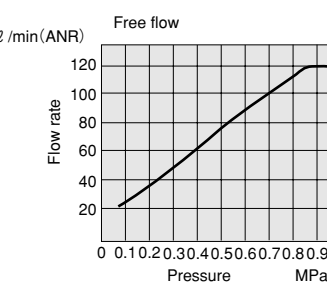
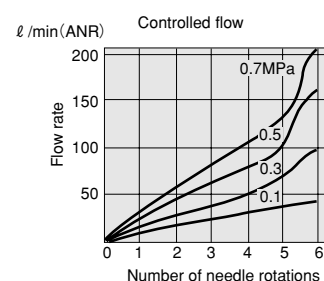
CS-SC0



CS-SC1



CS-SC2



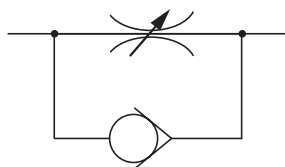
1 l/min = 0.0353 ft³/min.

1 MPa = 145 psi.
1 l/min = 0.0353 ft³/min.

SPEED CONTROLLERS SCL SERIES

Male thread; R1/8, R1/4 Female thread; Rc1/8, Rc1/4

Symbol

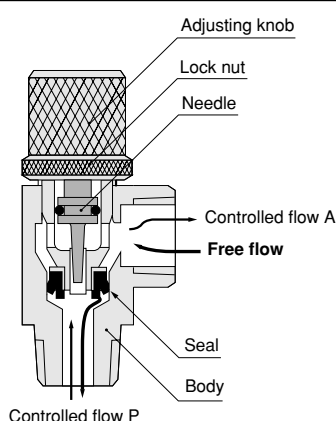


Specifications

Item	Model	CS-SCL1	CS-SCL2
Mounting type		Male thread specification, enabling direct cylinder mounting	
Port size		Controlled flow P: male thread R1/8 A: female thread Rc1/8	Controlled flow P: male thread R1/4 A: female thread Rc1/4
Media		Air	
Operating pressure range	MPa [psi.]	0~0.9 [0~131]	
Proof pressure	MPa [psi.]	1.32 [191]	
Cracking pressure	MPa [psi.]	0.06 [9]	
Operating temperature range	°C [°F]	5~60 [41~140]	
Mass	g [oz.]	46 [1.62]	125 [4.41]



Inner Construction and Major Parts

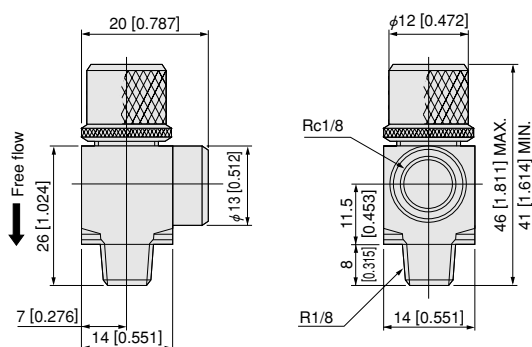


Major Parts and Materials

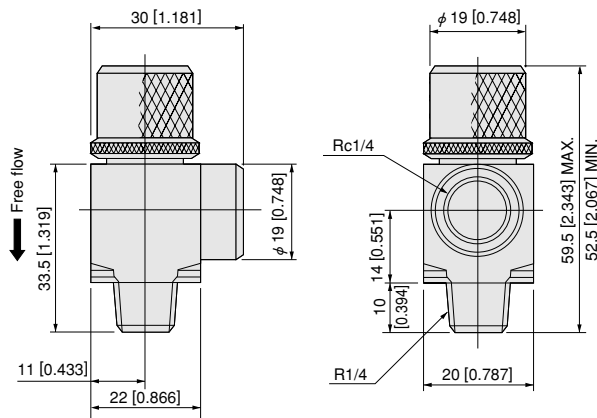
Parts	Materials
Body	Brass (nickel plated)
Needle	Stainless steel
Seal	Synthetic rubber (NBR)

Dimensions mm [in.]

CS-SCL1

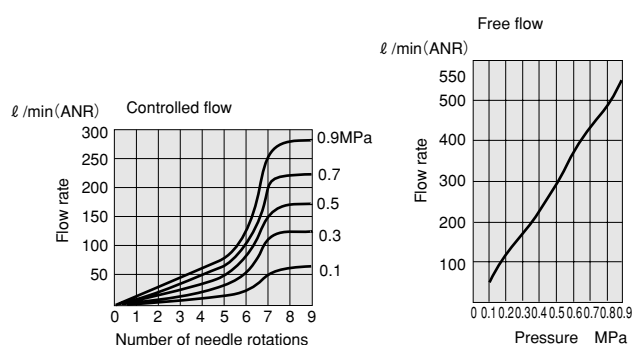


CS-SCL2

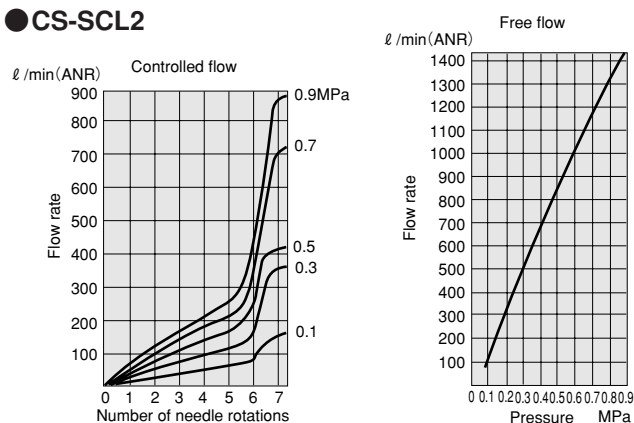


Flow Rate Characteristics

CS-SCL1

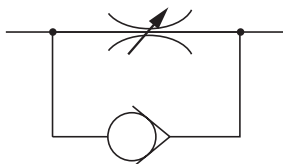


CS-SCL2



1MPa = 145psi. 1 l/min = 0.0353ft³/min.

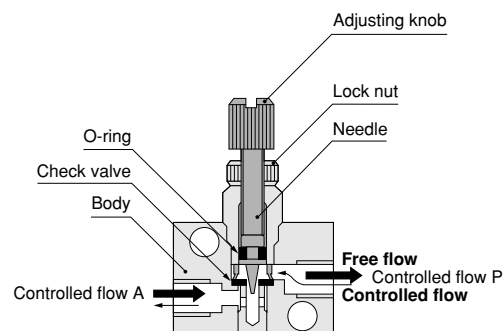
Symbol



Specifications

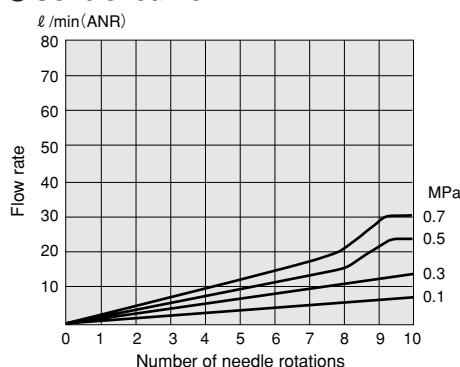
Item		Model	CS-TSCO	CS-TSCO-L	CS-TSCO-UC	CS-TSCO-UL
Piping type	Controlled flow P		Female thread		Universal male thread	
	Controlled flow A		Female thread			
Port size			M3×0.5			
Media			Air			
Operating pressure range		MPa [psi.]	0～0.7 [0～102]			
Proof pressure		MPa [psi.]	1.03 [149]			
Cracking pressure		MPa [psi.]	0.05 [7]			
Operating temperature range		℃ [°F]	5～60 [41～140]			
Mass		g [oz.]	5 [0.18]	4 [0.14]	6 [0.21]	6 [0.21]

Inner Construction and Major Parts

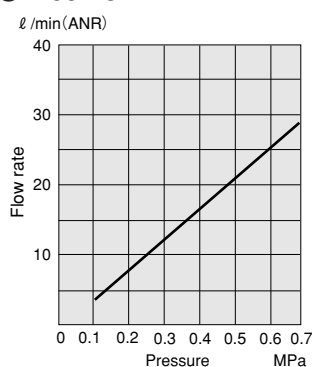


Flow Rate Characteristics

Controlled flow



Free flow



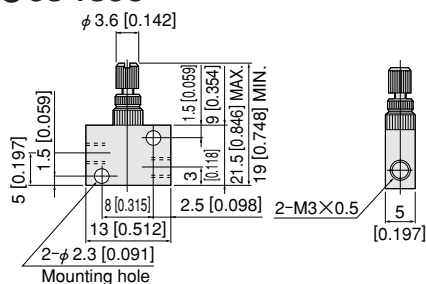
Major Parts and Materials

Parts	Materials
Body	Brass (nickel electroplated)
Needle	Stainless steel
Lock nut	Brass (nickel electroplated)
Check valve	Synthetic rubber (NBR)
O-ring	
Adjusting knob	Brass (nickel electroplated)

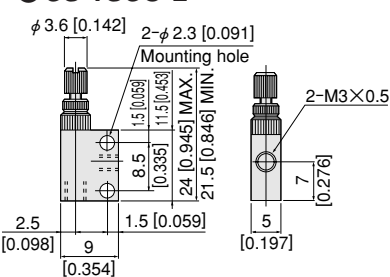
1MPa = 145psi. 1 l/min = 0.0353ft³/min.

Dimensions mm [in.]

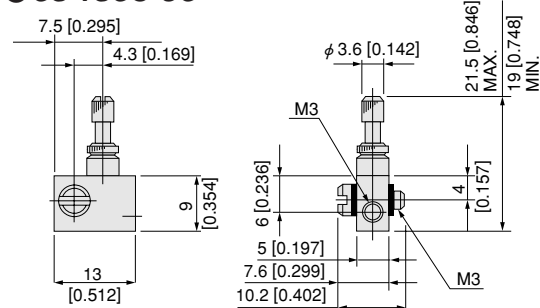
CS-TSCO



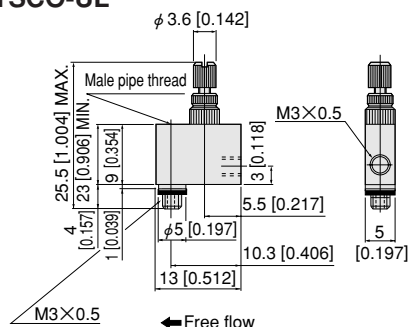
CS-TSCO-L



CS-TSCO-UC



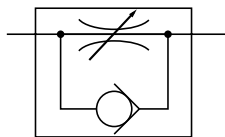
CS-TSCO-UL



Handling Instructions and Precautions

- Always use fingertips to rotate and tighten the lock nut and needle. Use of excessive tightening force with tools, etc., could cause damage to the parts.
- When using a universal male thread type, secure by tightening the male pipe thread for piping. The tightening torque should be 0.5N·m [4.4in·lbf] or less.

Symbol



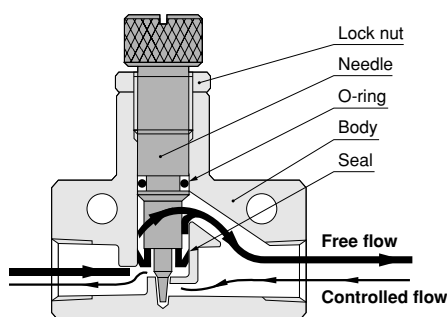
Specifications

Item	Model	CS-KSC11	CS-KSC22
Port size	Rc	1/8	1/4
Operating pressure range	MPa [psi.]	0.9 [131]	
Proof pressure	MPa [psi.]	1.3 [189]	
Cracking pressure	MPa [psi.]	0.06 [9]	0.02 [3]
Operating temperature range	°C [°F]	5~60 [41~140]	
Mass	g [oz.]	90 [3.17]	130 [4.59]

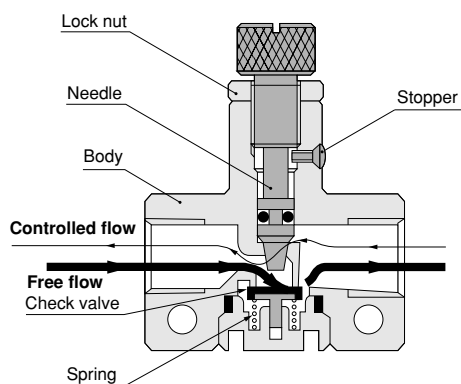


Inner Construction and Major Parts

● CS-KSC11



● CS-KSC22

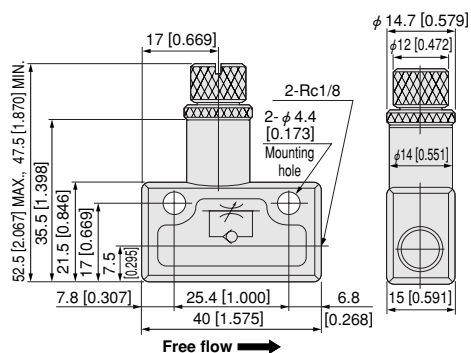


Major Parts and Materials

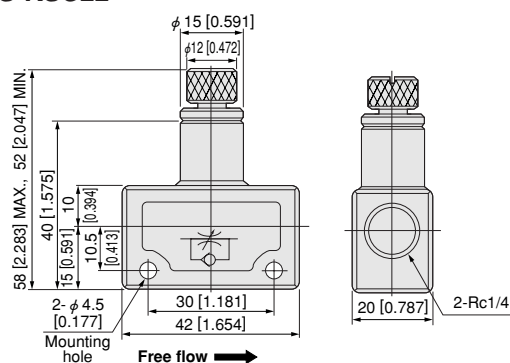
Parts	Materials
Body	Zinc die-casting
Needle, lock nut	Brass (nickel plated)

Dimensions mm [in.]

● CS-KSC11

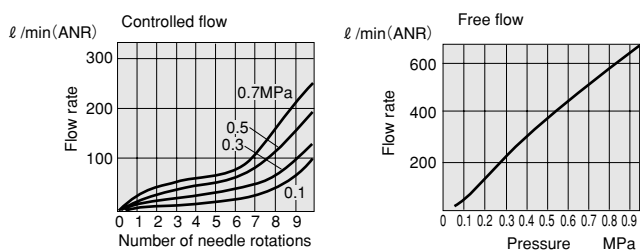


● CS-KSC22



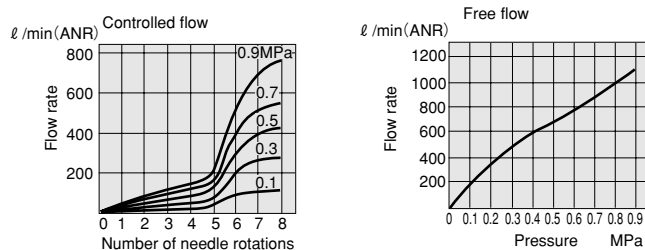
Flow Rate Characteristics

● CS-KSC11



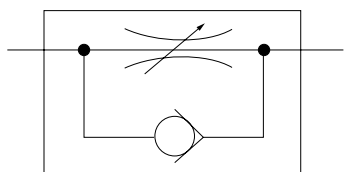
1MPa = 145psi. 1 ℓ/min = 0.0353ft³/min.

● CS-KSC22



1MPa = 145psi. 1 ℓ/min = 0.0353ft³/min.

Symbol



Specifications

Type	Standard type	Mini type	Union straight type	Large flow type
Item				
Mounting type	Direct mounting on cylinder		-----	Direct mounting on cylinder
Media	Air (Cannot be used in vacuum systems)			
Operating pressure range	0~0.9MPa [0~131psi.]			
Operating temperature range	5~60°C [41~140°F]			
Recommended tube	Nylon tube, urethane tube			
Sales unit	1 pc.			

Cautions: The tube outer diameter accuracy should be, for nylon tubes, within $\pm 0.1\text{mm}$ [$\pm 0.004\text{in.}$] of the nominal dimensions, and for urethane tubes, within $\pm 0.15\text{mm}$ [$\pm 0.006\text{in.}$] of the nominal dimensions, while the ovalness (difference between long diameter and short diameter) should be within 0.2mm [0.008in.].

●Cracking pressure

Mounting thread size	Cracking pressure MPa [psi.]
M5	0.1 [15]
01	0.1 [15]
02	0.06 [9]
03	0.07 [10]
04	0.08 [12]

Tube size	Cracking pressure MPa [psi.]
$\phi 4$	0.1 [15]
$\phi 6$	0.1 [15]
$\phi 8$	0.06 [9]
$\phi 10$	0.06 [9]
$\phi 12$	0.06 [9]

Mounting thread size	Cracking pressure MPa [psi.]
M3	0.1 [15]
M5	0.1 [15]
01	0.1 [15]
02	0.06 [9]

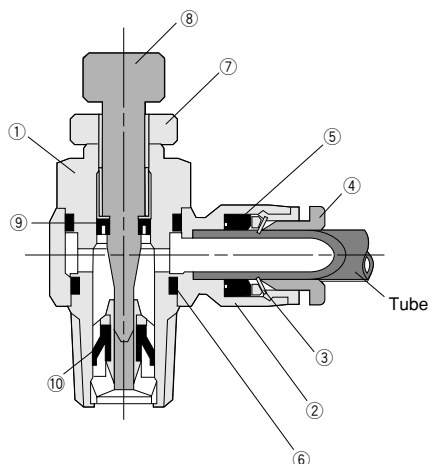
Mounting thread size	Cracking pressure MPa [psi.]
01	0.07 [10]
02	0.05 [7]
03	0.05 [7]
04	0.05 [7]

Inner Construction, Major Parts and Materials

●Standard type

●Large flow type

●Mini type

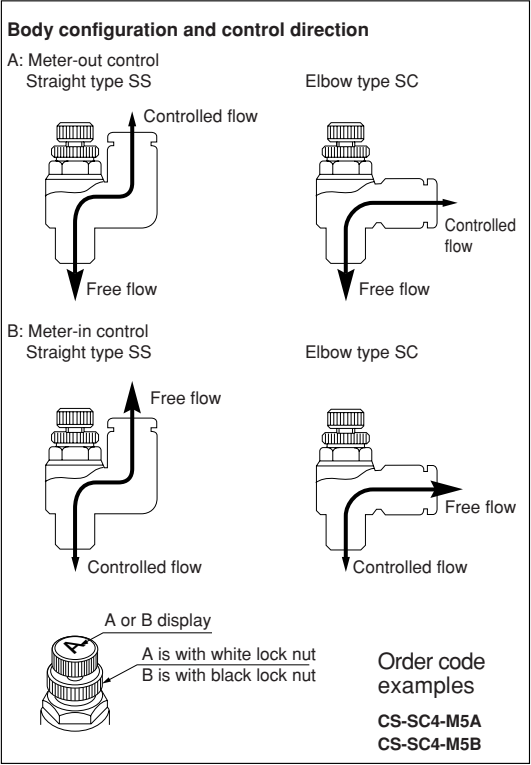
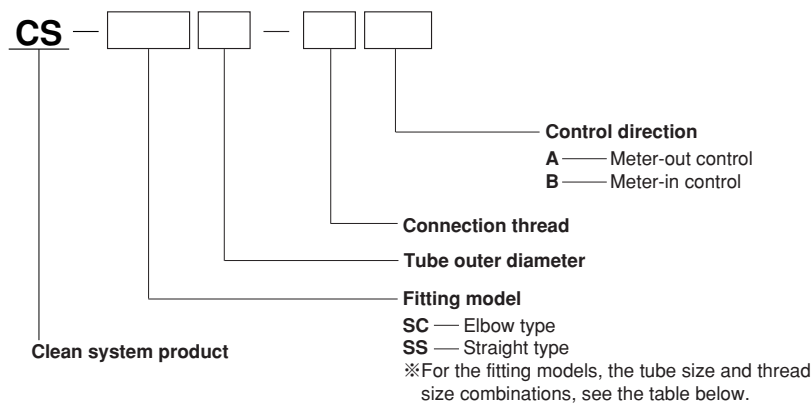


No.	Parts	Materials
①	Metal body	Brass (nickel plated ^{Note})
②	Plastic body	Polybutylene terephthalate
③	Lock claw	Stainless steel
④	Release ring	Polyacetal
⑤	Elastic sleeve	Synthetic rubber (NBR)
⑥	O-ring	Synthetic rubber (NBR)
⑦	Lock nut	Aluminum
⑧	Needle	Brass
⑨	V-seal	Synthetic rubber (NBR)
⑩	Diaphragm	

Note: For Mini type only

Order Codes

●Standard type



●SC: Elbow



Tube size mm	Thread size				
	M5×0.8	R1/8	R1/4	R3/8	R1/2
4	M5	01	—	—	—
6	M5	01	02	03	—
8	—	01	02	03	04
10	—	—	02	03	04
12	—	—	—	03	04

●SS: Straight

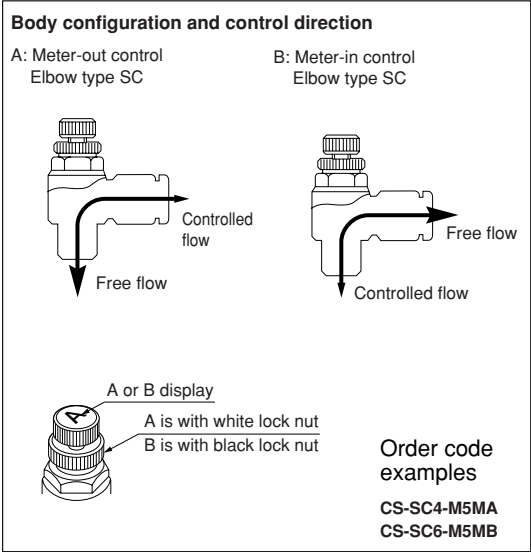
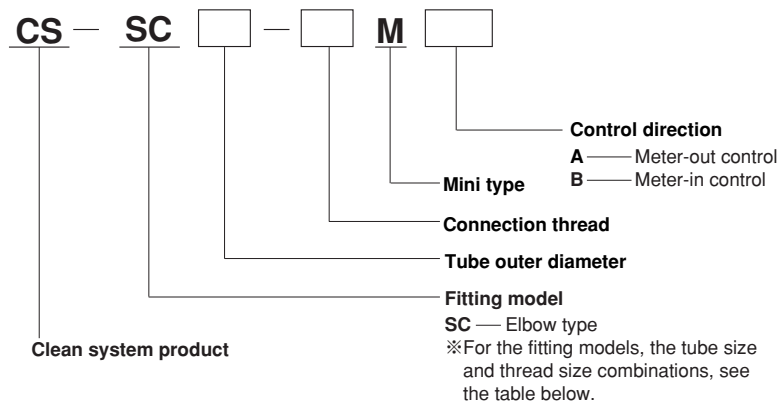


Tube size mm	Thread size				
	M5×0.8	R1/8	R1/4	R3/8	R1/2
4	M5	01	—	—	—
6	M5	01	02	—	—
8	—	01	02	03	—
10	—	—	02	03	—
12	—	—	—	03	04

Note: For details of the dimensions, see the General Catalog of Air Treatment, Auxiliary, Vacuum.

Order Codes

●Mini type



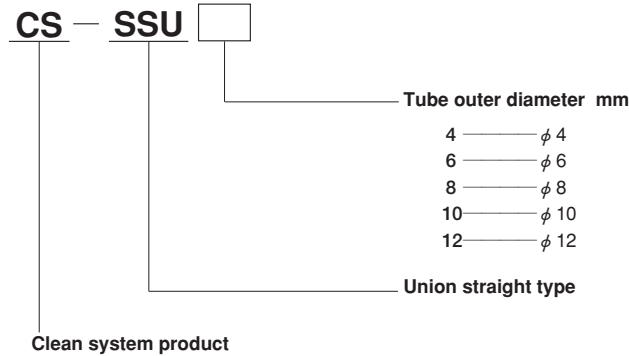
●SC: Elbow



Tube size mm	Thread size			
	M3×0.5	M5×0.8	R1/8	R1/4
3	M3	M5	—	—
4	M3	M5	01	—
6	—	M5	01	02

Note: For details of the dimensions, see the General Catalog of Air Treatment, Auxiliary, Vacuum.

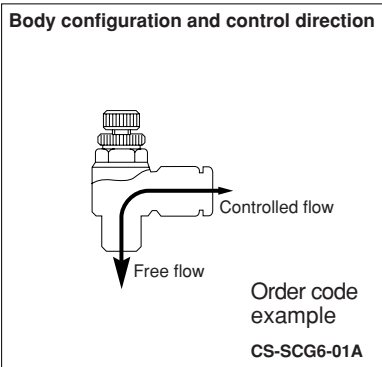
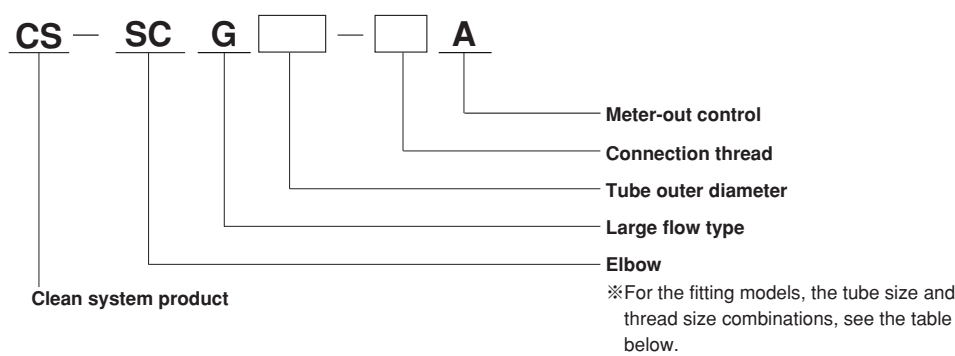
●Union straight type



Notes: 1. For the union straight type, no order code is available for control direction.
To determine the mounting direction, check the speed controller's symbol mark on the side of the body.
2. For details of the dimensions, see the General Catalog of Air Treatment, Auxiliary, Vacuum.

Order Codes

● Large flow type



Caution: The large flow type can be identified by the AG mark on the needle head, and by the blue lock nut.

● SC: Elbow



Tube size mm	Thread size			
	R1/8	R1/4	R3/8	R1/2
6	01	02	—	—
8	01	02	03	—
10	—	02	03	—
12	—	—	03	04

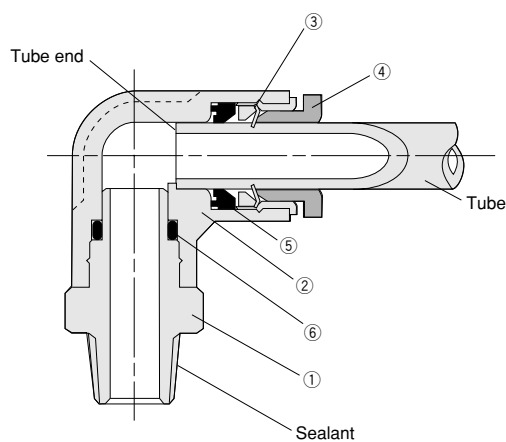
Note: For details of the dimensions, see the General Catalog of Air Treatment, Auxiliary, Vacuum.

Specifications

Media	Air
Maximum operating pressure	0.9MPa [131psi.]
Operating vacuum pressure	-100kPa [-29.5in.Hg]
Operating temperature range	0~60°C [32~140°F]
Recommended tube	Nylon tube, urethane tube
Sales unit	1 pack (10 pcs.) [For ϕ 16 [0.63in.], 1 pack (5 pcs.)]

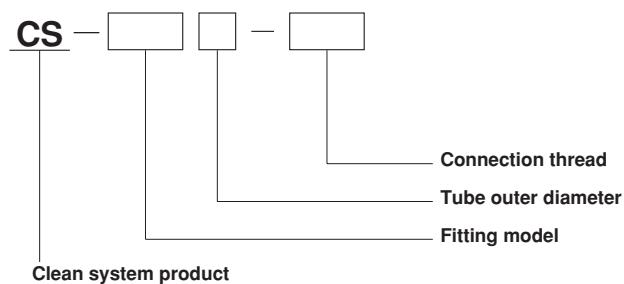
Caution: The tube outer diameter accuracy should be, for nylon tubes, within $\pm 0.1\text{mm}$ [$\pm 0.004\text{in.}$] of the nominal dimensions, and for urethane tubes, within $\pm 0.15\text{mm}$ [$\pm 0.006\text{in.}$] of the nominal dimensions, while the ovalness (difference between long diameter and short diameter) should be within 0.2mm [0.008in.].

Inner Construction, Major Parts and Materials



No.	Parts	Materials
①	Metal body	Brass (Stainless specification: SUS304)
②	Plastic body	Polybutylene terephthalate
③	Lock claw	Stainless steel
④	Release ring	Polyacetal (Stainless specification: glass reinforced PBT)
⑤	Elastic sleeve	Synthetic rubber (NBR) (Stainless specification: fluoro rubber)
⑥	O-ring	

Order Codes



●CS-TS: Straight



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M50	M5	M6	01	02	—
6	—	M5	M6	01	02	03
8	—	—	—	01	02	03
10	—	—	—	01	02	03
12	—	—	—	—	02	03
16	—	—	—	—	—	03

●CS-TSH: Hexagon socket head straight



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M5	M6	01	—	—	—
6	M5	M6	01	02	—	—
8	—	—	01	02	03	—
10	—	—	—	02	03	04
12	—	—	—	—	03	04

●CS-TSM: Female straight



Tube size mm	Thread size		
	Rc1/8	Rc1/4	Rc3/8
4	01	02	—
6	01	02	—
8	01	02	03
10	—	02	03
12	—	02	03

●CS-US: Union straight



Tube size mm
4
6
8
10
12
16

●CS-USD: Different diameter union



Tube size mm
6-4
8-6
10-8
12-10
16-12

●CS-UK: Union for bulkhead



Tube size mm
4
6
8
10
12

●CS-UKM: Female union for bulkhead



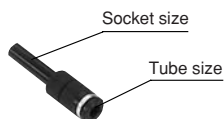
Tube size mm	Thread size			
	Rc1/8	Rc1/4	Rc3/8	Rc1/2
4	01	—	—	—
6	01	02	—	—
8	01	02	03	—
10	—	02	03	—
12	—	—	03	04

●CS-UKB: Union for bulkhead B



Tube size mm
4
6
8
10
12

●CS-UR: Reducer



Tube size mm	Socket size mm
4	6, 8
6	8, 10, 12
8	10, 12
10	12

●CS-TL: Elbow



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M5	M6	01	02	—	—
6	M5	M6	01	02	03	—
8	—	—	01	02	03	—
10	—	—	01	02	03	04
12	—	—	—	02	03	04
16	—	—	—	—	03	04

●CS-TLL: Long elbow



Tube size mm	Thread size				
	M5×0.8	R1/8	R1/4	R3/8	R1/2
4	M5	01	—	—	—
6	—	01	02	03	—
8	—	01	02	03	—
10	—	—	02	03	04
12	—	—	02	03	04

●CS-SL: Swing elbow



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M5	M6	01	—	—	—
6	M5	M6	01	02	—	—
8	—	—	01	02	03	—
10	—	—	—	02	03	—
12	—	—	—	—	03	04
16	—	—	—	—	03	04

●CS-SLH: Hexagon socket head swing elbow



Tube size mm	Thread size				
	M5×0.8	R1/8	R1/4	R3/8	R1/2
4	M5	—	—	—	—
6	—	01	02	—	—
8	—	01	02	03	—
10	—	—	02	03	—
12	—	—	—	03	04

●CS-SLM: Female swing elbow



Tube size mm	Thread size				
	M5×0.8	R-Rc1/8	R-Rc1/4	R-Rc3/8	R-Rc1/2
4	M5	01	—	—	—
6	M5	01	02	—	—
8	—	01	02	03	—
10	—	—	02	03	—
12	—	—	—	03	04

●CS-UL: Union elbow



Tube size mm
4
6
8
10
12
16

●CS-UKBL: Union elbow for bulkhead



Tube size mm
4
6
8
10
12

●CS-ULA: Socket elbow



Tube size mm	Socket size mm
4	4
6	6
8	8
10	10
12	12

●CS-ULAL: Long socket elbow



Tube size mm	Socket size mm
4	4
6	6
8	8
10	10
12	12

●CS-ULAD: Different diameter socket elbow



Tube size mm	Socket size mm
4	6
6	8
8	10
10	12

●CS-TT: Tee



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M5	M6	01	02	—	—
6	M5	M6	01	02	03	—
8	—	—	01	02	03	—
10	—	—	—	02	03	04
12	—	—	—	02	03	04
16	—	—	—	—	03	04

●CS-TB: Branch tee



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M5	M6	01	02	—	—
6	M5	M6	01	02	03	—
8	—	—	01	02	03	—
10	—	—	—	02	03	04
12	—	—	—	02	03	04
16	—	—	—	—	03	04

●CS-UT: Union tee



Tube size mm
4
6
8
10
12
16

●CS-UTD: Different diameter union tee



Tube size mm
6-4
8-6
10-8
12-10

●CS-TBY: Branch Y



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M5	—	01	02	—	—
6	M5	M6	01	02	03	—
8	—	—	01	02	03	—
10	—	—	—	02	03	04
12	—	—	—	02	03	04

●CS-TBLY: Branch elbow Y



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M5	M6	01	02	—	—
6	M5	M6	01	02	03	—
8	—	—	01	02	03	—
10	—	—	—	02	03	04
12	—	—	—	02	03	04

●CS-SLY: Swing elbow Y



Tube size mm	Thread size
4	M5(M5×0.8)
6	01(R1/8)
8	02(R1/4)
10	03(R3/8)
12	04(R1/2)

●CS-SLYM: Female swing elbow Y



Tube size mm	Thread size
4	M5(M5×0.8)
6	01(R·Rc1/8)
8	02(R·Rc1/4)
10	03(R·Rc3/8)
12	04(R·Rc1/2)

●CS-UY: Union Y



Tube size mm
4
6
8
10
12

●CS-UYD: Different diameter union Y



Tube size mm
6—4
8—6
10—8
12—10

●CS-ULY: Union elbow Y



Tube size mm
4
6
8
10
12

●CS-UB: Branch union Y



Tube size mm	Socket size mm
4	4
6	6
8	8
10	10
12	12

●CS-UBD: Different diameter branch union Y



Tube size mm	Socket size mm
4	6
6	8
8	10
10	12

●CS-UZ: Tetra union



Tube size mm
4
6
8
10
12

●CS-TBZ: Branch tetra



Tube size mm	Thread size					
	M5×0.8	M6×1	R1/8	R1/4	R3/8	R1/2
4	M5	M6	01	02	—	—
6	M5	M6	01	02	03	—
8	—	—	01	02	03	—
10	—	—	—	02	03	04
12	—	—	—	02	03	04

●CS-UWD: Different diameter double Y



Tube size mm
6—4
8—6

●CS-TBW: Branch double Y



Tube size mm	Thread size	
	R1/8	R1/4
4	01	02
6	01	—

●CS-UBW: Branch union double Y



Tube size mm	Socket size mm
4	6
6	8

●CS-UED: Different diameter triple



Tube size mm
6—4
8—4
8—6
10—6
10—8

●CS-TBE: Branch triple



Tube size mm	Thread size		
	R1/8	R1/4	R3/8
6—4	01	—	—
8—4	—	02	—
8—6	—	02	—
10—8	—	—	03

●CS-UBE: Branch union triple



Tube size mm
6—4
8—4
8—6
10—8

●CS-TBEW: Branch triple double



Tube size mm	Thread size		
	R1/4	R3/8	R1/2
8—4	02	03	—
8—6	02	03	—
10—6	—	03	04
10—8	—	03	04

●CS-UEDW: Different diameter triple double



Tube size mm
8—4
8—6
10—6
10—8

●CS-TJ: Jack (Note: Cannot be used with mini type.)



Tube size mm	Thread size			
	M5×0.8	R1/8	R1/4	R3/8
4	M5	01	—	—
6	M5	01	02	—
8	—	01	02	03
10	—	—	—	03

●CS-AN: Socket nipple



Socket size mm
4
6
8
10
12
16

●CS-AND: Different diameter socket nipple



Socket size mm
6—4
8—6
10—8
12—10
16—12

●CS-BB: Extension bushing



Thread size	Thread size				
	M5×0.8	Rc1/8	Rc1/4	Rc3/8	Rc1/2
M5×0.8 (M5)	M5, M5L	01	—	—	—
R1/8 (01)	M5	01	02	03	—
R1/4 (02)	M5	01	02	03	04
R3/8 (03)	—	01	02	03	04
R1/2 (04)	—	—	—	—	04

●CS-BBD: Different diameter extension socket



Thread size	Thread size			
	M5×0.8	Rc1/8	Rc1/4	Rc3/8
Rc1/8 (01)	M5	—	—	—
Rc1/4 (02)	—	01	—	—
Rc3/8 (03)	—	01	02	—
Rc1/2 (04)	—	—	02	03

●CS-UP: Plug



Tube size mm
4
6
8
10
12
16

●CS-UC: Cap



Tube size mm
4
6
8
10
12

Note: For details of the dimensions, see the General Catalog of Air Treatment, Auxiliary, Vacuum.

KOGANEI CLEAN SYSTEM QUICK FITTINGS MINI TYPE

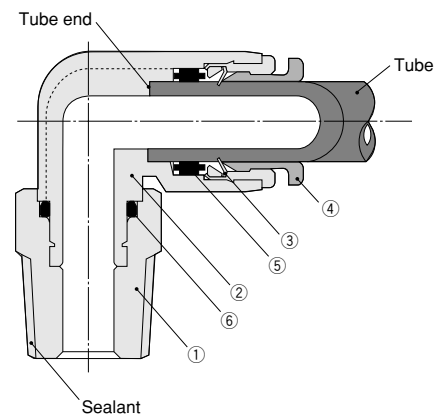
Specifications

Item \ Applicable tube size	φ 3	φ 4	φ 6
Media	Air		
Maximum operating pressure	0.9MPa [131psi.]		
Operating vacuum pressure	-100kPa [-29.5in.Hg]		
Operating temperature range	0 ~ 60°C [32 ~ 140°F]		
Recommended tube ^{Note}	Nylon tube, urethane tube		
Sales unit	1 pack (10 pcs.)		

Remark: Supplied with gasket or sealant.

Note: Use tubes with outer dimensions within ±0.1mm [±0.004in.] of the nominal dimensions.

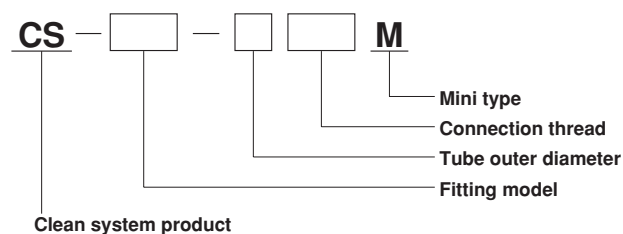
Inner Construction, Major Parts and Materials



No.	Parts	Materials
①	Metal body	Brass (nickel plated) ^{Note}
②	Plastic body	Polybutylene terephthalate
③	Lock claw	Stainless steel
④	Release ring	Polyacetal
⑤	Elastic sleeve	Synthetic rubber (NBR)
⑥	O-ring	

Note: Stainless steel for M3 size.

Order Codes



●CS-TS: Straight



Tube — Thread size			
M3×0.5	M5×0.8	M6×1	R1/8
3—M3	3—M5	3—M6	—
4—M3	4—M5	4—M6	4—01
—	6—M5	6—M6	6—01

●CS-TSH: Straight with hexagon socket



Tube — Thread size			
M3×0.5	M5×0.8	M6×1	R1/8
3—M3	3—M5	—	—
4—M3	4—M5	4—M6	4—01
—	6—M5	6—M6	6—01

●CS-TSK: Cartridge



Tube — Thread size	
M6×0.75	M8×0.75
3—M6	—
4—M6	4—M8
—	6—M8

●CS-TSM: Female straight



Tube — Thread size	
M3×0.5	M5×0.8
3—M3	3—M5
4—M3	4—M5

●CS-US: Union straight



Tube size mm
3
4
6

●CS-USD: Different diameter union



Tube size mm
4—3
6—4

●CS-UK: Union for bulkhead



Tube size mm
3
4
6

●CS-UR: Reducer



Socket — Tube size mm
4—3
6—3
6—4

●CS-TL: Elbow



Tube — Thread size			
M3×0.5	M5×0.8	M6×1	R1/8
3—M3	3—M5	3—M6	—
4—M3	4—M5	4—M6	4—01
—	6—M5	6—M6	6—01

●CS-TLL: Long elbow



Tube — Thread size			
M3×0.5	M5×0.8	M6×1	R1/8
3—M3	—	—	—
4—M3	4—M5	4—M6	4—01
—	6—M5	6—M6	6—01

●CS-UL: Union elbow



Tube size mm
3
4
6

●CS-ULA: Socket elbow



Tube, socket size mm
3
4
6

●CS-ULAD: Different diameter socket elbow



Socket — Tube size mm
4—3
6—3
6—4

●CS-TLV: 45° elbow



Tube — Thread size		
M5×0.8	M6×1	R1/8
4—M5	4—M6	4—01
6—M5	6—M6	6—01

●CS-ULAV: 45° socket elbow



Tube, socket size mm
4
6

●CS-TT: Tee



Tube — Thread size			
M3×0.5	M5×0.8	M6×1	R1/8
3—M3	3—M5	3—M6	—
4—M3	4—M5	4—M6	4—01
—	6—M5	6—M6	6—01

●CS-TB: Branch tee



Tube — Thread size			
M3×0.5	M5×0.8	M6×1	R1/8
3—M3	3—M5	3—M6	—
4—M3	4—M5	4—M6	4—01
—	6—M5	6—M6	6—01

●CS-UT: Union tee



Tube size mm
3
4
6

●CS-UTD: Different diameter union tee



Tube size mm
4—3
6—4

●CS-UY: Union Y



Tube size mm
3
4
6

●CS-UYD: Different diameter union Y



Tube size mm
4—3
6—3
6—4

●CS-UB: Branch union Y



Tube size mm
3
4
6

●CS-UBD: Different diameter branch union Y



Socket — Tube size mm
4—3
6—3
6—4

●CS-UXA: Cross A



Tube size mm
3
4
6

●CS-UXB: Cross B (different diameter)



Tube size mm
4—3
6—4

●CS-UXC: Cross C (different diameter)



Tube size mm
4—3
6—4

●CS-UP3M: Plug



For the 4mm and 6mm sizes, plugs for the standard type quick fittings can be used.

Socket size mm
3

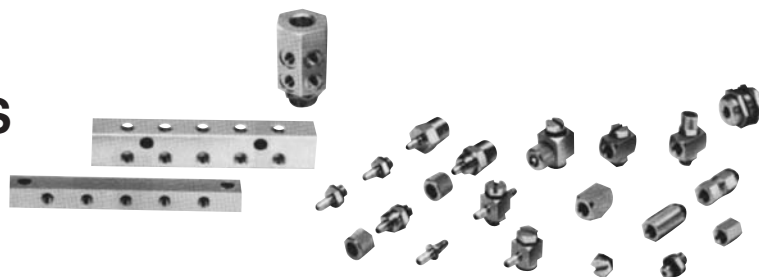
●CS-UC3M: Cap



For the 4mm and 6mm sizes, plugs for the standard type quick fittings can be used.

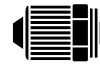
Tube size mm
3

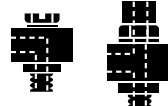
Note: For details of the dimensions, see the General Catalog of Air Treatment, Auxiliary, Vacuum.



Specifications

Note: Models shown  are also available with stainless (SUS 303) specifications. For the order code, use [model]-SUS.

Name and type		Straight (barb fitting)			Straight (barb fitting)			Straight (clamp fitting)					
													
Model		CS-BF 3.2	CS-BF 5	CS-BF 6	CS-PBF 3.2	CS-PBF 5	CS-PBF 6	CS-BF3.2-N	CS-BF 4N	CS-BF 5N	CS-BF 6N	CS-BF 4U	CS-BF 6U
Port size		M5×0.8 (male thread)			R1/8 (male thread)			M5×0.8 (male thread)					
Applicable tube	Materials	Nylon			Nylon			Nylon				Urethane	
	O.D×I.D. mm	3.2×2.4	5×3	6×4	3.2×2.4	5×3	6×4	3.2×2.4	4×2.5	5×3	6×4	4×2.5	6×4
Effective area mm ²		1.7	2.0	3.6	1.8	2.2	3.9	1.6	2.0	2.7	3.2	2.0	3.2
Materials		Brass (nickel plated)			Brass (nickel plated)			Brass (nickel plated)					
Mass g [oz.]		1.3 [0.046]	1.4 [0.049]	1.5 [0.053]	5.3 [0.187]	5.4 [0.190]	5.5 [0.194]	5.0 [0.176]	4.5 [0.159]	5.0 [0.176]	4.0 [0.141]	4.5 [0.159]	
Remarks	Attachments	With 1 gasket			—			With 1 gasket					
	Sales unit	1 pack (10 pcs.)			1 pack (5 pcs.)			1 pack (10 pcs.)					

Name and type		Straight (clamp fitting)						Elbow	Universal elbow (female thread type)		Universal elbow (barb fitting)		
													
Model		CS-BF3.2N-01	CS-BF4N-01	CS-BF5N-01	CS-BF6N-01	CS-BF4U-01	CS-BF6U-01	CS-EF	CS-UEF	CS-URTF	CS-UEF 3.2	CS-UEF 5	CS-UEF 6
Port size		R1/8 (male thread)						M5×0.8 (female thread)	M5×0.8 (female thread, male thread)		M5×0.8 (male thread)		
Applicable tube	Materials	Nylon				Urethane		—	—	—	Nylon		
	O.D×I.D. mm	3.2×2.4	4×2.5	5×3	6×4	4×2.5	6×4	—	—	—	3.2×2.4	5×3	6×4
Effective area mm ²		1.6	2.1	2.7	3.6	2.1	3.6	7.2	1.7	2.2	1.2	1.2	1.5
Materials		Brass (nickel plated)						Brass (nickel plated)					
Mass g [oz.]		10.5 [0.370]	10.0 [0.353]	10.0 [0.353]	9.5 [0.335]	11.0 [0.388]	9.5 [0.335]	5.5 [0.194]	7.1 [0.250]	7.7 [0.272]	5.4 [0.190]	5.7 [0.201]	5.9 [0.208]
Remarks	Attachments	—						—	With 2 gaskets				
	Sales unit	1 pack (10 pcs.)						1 pack (10 pcs.)	1 pack (5 pcs.)				

Specifications

Note: Models shown  are also available with stainless (SUS 303) specifications. For the order code, use [model]-SUS.

Name and type		Universal elbow (clamp fitting)					Tee (female thread type)	Universal tee (female thread type)		Universal tee (barb fitting)		
												
Model		CS-UEF 4N	CS-UEF 5N	CS-UEF 6N	CS-UEF 4U	CS-UEF 6U	CS-TF	CS-UTF	CS-UXF	CS-UTF 3.2	CS-UTF 5	CS-UTF 6
Port size		M5×0.8 (male thread)					M5×0.8 (female thread)	M5×0.8 (female thread, male thread)		M5×0.8 (male thread)		
Applicable tube	Materials	Nylon			Urethane		——	——		Nylon		
	O.D×I.D. mm	4×2.5	5×3	6×4	4×2.5	6×4	——	——		3.2×2.4	5×3	6×4
Effective area mm ²		1.3	1.4	1.5	1.3	1.5	8.0	1.6	2.2	1.6	1.7	1.7
Materials		Brass (nickel plated)					Brass (nickel plated)					
Mass g [oz.]		13.0 [0.459]					5.3 [0.187]	6.5 [0.229]	7.5 [0.265]	5.6 [0.198]	6.0 [0.212]	6.4 [0.226]
Remarks	Attachments	With 2 gaskets					——	With 2 gaskets				
	Sales unit	1 pack (5 pcs.)					1 pack (10 pcs.)	1 pack (5 pcs.)				

Name and type		Nipple (male thread type) 	Nipple (barb fitting) 			Swivel fitting 	Extension fitting 	Coupling 	Fitting for bulkhead 	Bushing 	Plug 	
Model		CS-NF	CS-NBF 3.2	CS-NBF 5	CS-NBF 6	CS-SF	CS-EXF	CS-CF	CS-BHF	CS-RBF 1	CS-RBF	CS-PF
Port size		M5×0.8 (male thread)	—			M5×0.8 (female thread, male thread)	M5×0.8 (female thread, male thread)	M5×0.8 (female thread)		R1/4-M5×0.8 (male thread) (female thread)	R1/4-M5×0.8 (male thread) (female thread)	M5×0.8 (male thread)
Applicable tube	Materials	—	Nylon			—			—			
	O.D×I.D. mm	—	3.2×2.4	5×3	6×4	—			—			
Effective area mm ²		2.1	1.6	2.1	3.6	2.1	2.1	7.8		7.8		—
Materials		Brass (nickel plated)				Brass (nickel plated)				Brass (nickel plated)		
Mass g [oz.]		1.5 [0.053]	0.25 [0.0088]	0.75 [0.0265]	1.25 [0.0441]	4.7 [0.166]	5.5 [0.194]	1.75 [0.0617]	12.6 [0.444]	18 [0.63]	7 [0.25]	1.3 [0.046]
Remarks	Attachments	With 2 gaskets	—			With 1 gasket		—	With 2 lock nuts and 2 lock washers	—		With 1 gasket
	Sales unit	1 pack (10 pcs.)				1 pack (10 pcs.)			1 pack (5 pcs.)	1 pack (5 pcs.)		1 pack (10 pcs.)

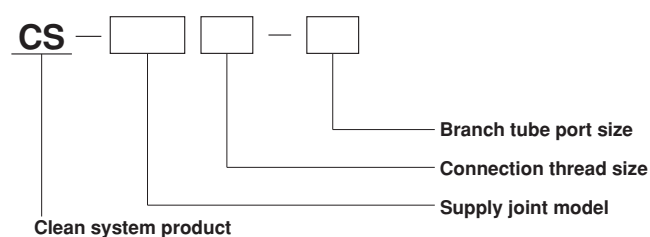
Name and type		Air manifold	Air manifold	Rotary air manifold	Terminal	Gasket
						
Model		CS-AM 8	CS-MBF 10	CS-RM 12	CS-TBF 10	CS-89-128
Port size		Rc1/8-M5×0.8 (8 places)	Rc1/8 (2 places) -M5×0.8 (10 places)	Rc1/8-M5×0.8 (12 places)	M5×0.8	—
Applicable tube	Materials	—				—
	O.D×I.D. mm	—				—
Effective area mm ²		—				—
Materials		Brass (nickel plated)	Aluminum alloy	Brass (nickel plated)	Aluminum alloy	Synthetic rubber (NBR) baked onto steel plate
Mass g [oz.]		60 [2.12]	43.8 [1.545]	137 [4.83]	20.7 [0.730]	0.1 [0.004]
Remarks	Attachments	With 1 lock nut and 1 lock washer	—			—
	Sales unit	1 pc.	1 pack (5 pcs.)		1 pack (5 pcs.)	1 pack (100 pcs.)

Name and type		Nylon tube		
				
Model		CS-N 3.2	CS-N5	CS-N6
O.D×I.D. mm		3.2×2.4	5×3	6×4
Materials		Nylon 12		
Maximum operating pressure MPa [psi.]		0.9 [131]		
Operating temperature range °C [°F]		0~80 [32~176]		
Color		White		
Unit mass g [oz.]		3.6 [0.127]	11.7 [0.413]	15 [0.53]
Applicable barb fitting		CS-BF3.2, etc.	CS-BF5, etc.	CS-BF6, etc.
Sales unit		1 roll (20m [65.6ft.])		

Specifications

Media	Air
Maximum operating pressure	0.9MPa [131psi.]
Operating vacuum pressure	-100kPa [-29.5in.Hg]
Operating temperature range	0~60°C [32~140°F]
Recommended tube	Nylon tube, urethane tube
Sales unit	1 pc.

Order Codes



●CS-STQ: Terminal quick



Main side thread size	Sub-main side tube size mm					
	4	6	8	10	12	16
M8X1 (8)	8-4	8-6	—	—	—	—
M12X1 (12)	—	12-6	12-8	—	—	—
M14X1 (14)	—	—	14-8	14-10	14-12	—
M18X1 (18)	—	—	—	—	18-12	18-16

●CS-STB: Terminal branch



Main side thread size	Sub-main side tube size mm	
	10	12
M14X1 (14)	14-10	—
M18X1 (18)	—	18-12

●CS-STS: Terminal straight



Main side thread size	Sub-main side thread size			
	M8X1	M12X1	M14X1	M18X1
M12X1 (12)	12-8	12-12	—	—
M14X1 (14)	—	12-14	14-14	—
M18X1 (18)	—	—	18-14	18-18

●CS-STT: Terminal taper



Main side thread size	Sub-main side thread size				
	M5X0.8	M6X1	Rc1/8	Rc1/4	Rc3/8
M8X1 (8)	8-M5	8-M6	8-01	—	—
M12X1 (12)	—	12-M6	12-01	—	—
M14X1 (14)	—	—	14-01	14-02	—
M18X1 (18)	—	—	—	18-02	18-03

Note: For details of the dimensions, see the General Catalog of Air Treatment, Auxiliary, Vacuum.

●CS-SBA: Bushing A



Main side thread size	Sub-main side thread size (R)			
	1/8	1/4	3/8	1/2
M8×1 (8)	8-01	—	—	—
M12×1 (12)	12-01	12-02	12-03	—
M14×1 (14)	—	14-02	14-03	14-04
M18×1 (18)	—	—	18-03	18-04

●CS-SBB: Bushing B



Main side thread size	Sub-main side thread size		
	M8×1	M12×1	M14×1
M12×1 (12)	12-8	—	—
M14×1 (14)	—	14-12	—
M18×1 (18)	—	—	18-14

●CS-SBC: Bushing C



Main side thread size	Sub-main side thread size			
	M5	M6	Rc1/8	Rc1/4
M8×1 (8)	8-M5	—	—	—
M12×1 (12)	—	12-M6	—	—
M14×1 (14)	—	—	14-01	—
M18×1 (18)	—	—	—	18-02

●CS-SLB: Elbow



Main side thread size	Sub-main side thread size (Rc)			
	1/8	1/4	3/8	1/2
M8×1 (8)	8-01	—	—	—
M12×1 (12)	12-01	12-02	—	—
M14×1 (14)	—	14-02	14-03	14-04
M18×1 (18)	—	—	18-03	18-04

●CS-SST: Socket



Main side thread size	Sub-main side thread size (Rc)			
	1/8	1/4	3/8	1/2
M8×1 (8)	8-01	—	—	—
M12×1 (12)	—	12-02	—	—
M14×1 (14)	—	—	14-03	—
M18×1 (18)	—	—	—	18-04

●CS-SKR: Reducer for bulkhead



Main side thread size	Sub-main side tube size				
	4	6	8	10	12
M8×1 (8)	8-4	8-6	—	—	—
M12×1 (12)	—	12-6	12-8	12-10	—
M14×1 (14)	—	—	14-8	14-10	14-12
M18×1 (18)	—	—	—	—	18-12

●CS-SPG: Plug



Thread size	
M8×1	8
M12×1	12
M14×1	14
M18×1	18

●CS-SCP: Cap



Thread size	
M8×1	8
M12×1	12
M14×1	14
M18×1	18

●CS-SBN: Nipple



Thread size	
M8×1	8-8
M12×1	12-12
M14×1	14-14
M18×1	18-18

●CS-SZB: Bracket



Model	Mounting model
6	SPG, SCP
12	SKR8-4
14	SKR□-6
16	SKR□-8
20	SKR□-10
22	SKR□-12
61	SPG, SCP
62	SPG, SCP

●CS-SZS: Wrench for assembling



Size mm	
Width across flats	Thickness
10×12	3.4
14×17	
19×22	4
24×27	

- Thin wrenches, specially designed for the supply joints.
- Sales unit : 1 set

Note: For details of the dimensions, see the General Catalog of Air Treatment, Auxiliary, Vacuum.

KOGANEI CLEAN SYSTEM NYLON TUBES

Nylon Tubes, Nylon Tubes for TAC Fittings

Specifications

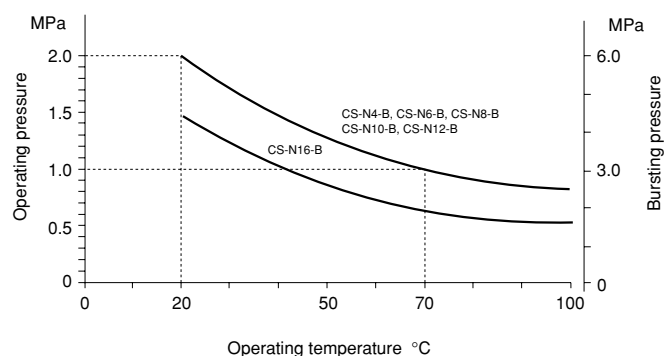
Item	Type	Nylon tube						Nylon tube for TAC fittings		
	Model	CS-N4-B	CS-N6-B	CS-N8-B	CS-N10-B	CS-N12-B	CS-N16-B	CS-N3.2	CS-N5	CS-N6
O.D.×I.D.	mm	4×2.5	6×4	8×6	10×7.5	12×9	16×13	3.2×2.4	5×3	6×4
Media		Air, vacuum (−99.99~0kPa) [−29.5~0in.Hg.]						Air, vacuum (−99.99~0kPa) [−29.5~0in.Hg.]		
Operating temperature range ^{Note 1}	°C [°F]	−40~70 [−40~158]						0~80 [32~176]		
Materials		Nylon 12						Nylon 12		
Minimum bending radius ^{Note 2}	mm [in.]	15(20) [0.59] [(0.79)]	25(30) [0.98] [(1.18)]	50(50) [1.97] [(1.97)]	60(80) [2.36] [(3.15)]	70(150) [2.76] [(5.91)]	130(500) [5.12] [(19.7)]	13 [0.51]	15 [0.59]	20 [0.79]
Color		Black						White		
Unit mass	g/m [oz./ft.]	8.5 [0.091]	19.5 [0.210]	27.5 [0.296]	42 [0.45]	62 [0.67]	84 [0.90]	3.6 [0.039]	11.7 [0.126]	15 [0.16]
Standard length	m [ft.]	20 or 100 [66 or 328]						20 [66]	20 [66]	
Sales unit		1 roll (20 or 100m) [66 or 328ft.]						1 roll (20m) [66ft.]	1 roll (20m) [66ft.]	

Notes: 1. The operating temperature range shows values for when the tube is in a stationary state. For the operating temperature range in applications where the tube is forced to swing, consult us.

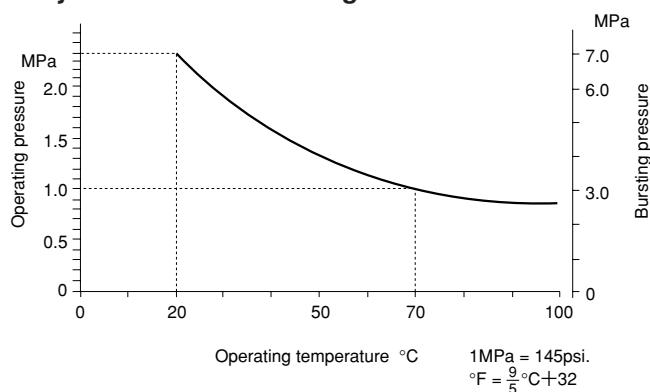
2. When using the nylon tube with a quick fitting, ensure that the minimum bending radius is greater than the value shown in parentheses ().

Operating Temperature and Pressure, and Bursting Pressure

● Nylon tube

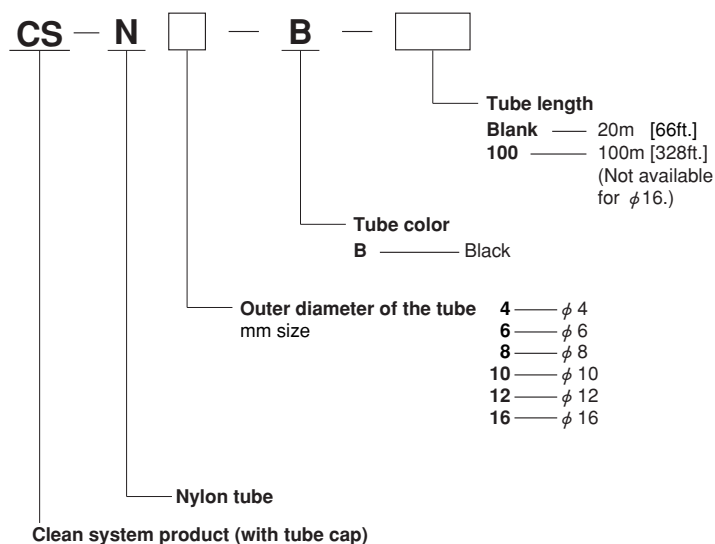


● Nylon tube for TAC fittings

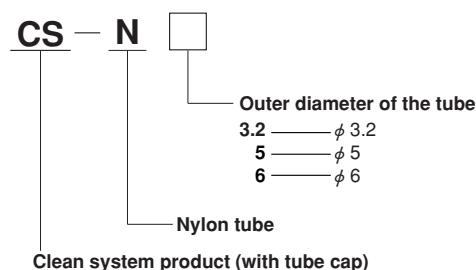


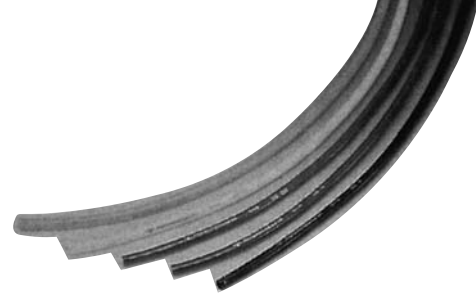
Order Codes

● Nylon tube



● Nylon tube for TAC fittings





Specifications

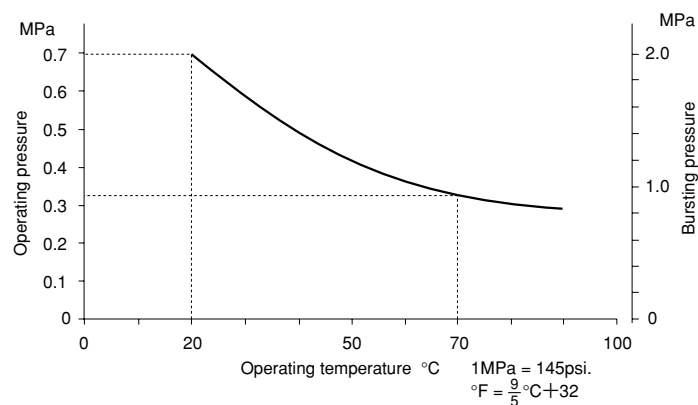
Item	Type	Urethane tube					
	Model	CS-U3	CS-U4	CS-U6	CS-U8	CS-U10	CS-U12
O.D×I.D.	mm	3×1.5	4×2.5	6×4	8×5	10×6.5	12×8
Media		Air, Vacuum (−99.99~0kPa [−29.5~0in.Hg])					
Operating temperature range ^{Note1}	°C [°F]	−15~60 [5~140]					
Materials		Polyurethane					
Minimum bending radius	mm [in.]	7 [0.28]	10 [0.39]	15 [0.59]	20 [0.79]	27 [1.06]	35 [1.38]
Color		Black or orange	Black, orange, yellow, green, blue, white			Black, orange (yellow, green, white) ^{Note2}	
Unit mass	g/m [oz./ft.]	6.5 [0.070]	9 [0.10]	19 [0.20]	36 [0.39]	54 [0.58]	74 [0.80]
Standard length	m [ft.]	20 [66] (20 or 100 [66 or 328] for black or orange only)					
Sales unit		1 roll 20m [66ft.] (20m or 100m [66ft. or 328ft.] for black or orange only)					

Notes: 1. The operating temperature range shows values for when the tube is in a stationary state. For the operating temperature range in applications where the tube is forced to swing, consult us.

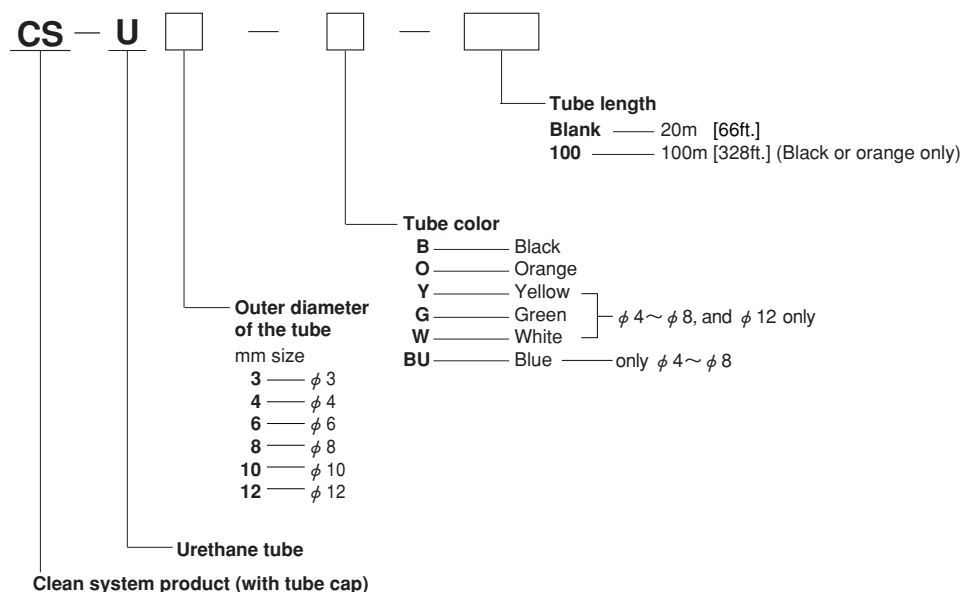
2. Tubes can be made to order in yellow, green, and white, as shown in parentheses, but are available only with a ϕ 12 bore.

Operating Temperature and Pressure, and Bursting Pressure

Urethane tube



Order Codes



SHOCK ABSORBERS
LINEAR ORIFICE TYPE
KSHC SERIES

Specifications

Item	Model	CS-KSHC4×4□-B	CS-KSHC4×4□-BD	CS-KSHC5×5□-D	CS-KSHC5×5□-DE
Mounting thread size		M6×0.75		M8×0.75	
Maximum absorption	J [ft·lbf]	0.3 [0.22]	0.5 [0.37]	1.0 [0.74]	1.5 [1.11]
Absorbing stroke	mm [in.]	4 [0.157]		5 [0.197]	
Maximum impact speed	m/s [ft./sec.]	1.0 [3.28]			
Maximum operating frequency	cycle/min	30			
Spring return force	N [lbf.]	3.0 [0.67]		6.0 [1.35]	
Angle variation		1° or less			
Operating temperature range ^{Note}	°C [°F]	0~60 [32~140]			

Item	Model	CS-KSHC6×8□-DE	CS-KSHC6×8□-EF	CS-KSHC8×8□-EF	CS-KSHC8×8□-G
Mounting thread size		M10×1		M12×1	
Maximum absorption	J [ft·lbf]	1.5 [1.11]	2.5 [1.84]	2.5 [1.84]	4.0 [2.95]
Absorbing stroke	mm [in.]	8 [0.315]			
Maximum impact speed	m/s [ft./sec.]	1.0 [3.28]			
Maximum operating frequency	cycle/min	30			
Spring return force	N [lbf.]	8.5 [1.91]			
Angle variation		1° or less			
Operating temperature range ^{Note}	°C [°F]	0~60 [32~140]			

Item	Model	CS-KSHC9×10□-GK	CS-KSHC9×10□-L
Mounting thread size		M14×1.5	
Maximum absorption	J [ft·lbf]	5.0 [3.69]	8.0 [5.90]
Absorbing stroke	mm [in.]	10 [0.394]	
Maximum impact speed	m/s [ft./sec.]	1.0 [3.28]	
Maximum operating frequency	cycle/min	30	
Spring return force	N [lbf.]	8.5 [1.91]	
Angle variation		1° or less	
Operating temperature range ^{Note}	°C [°F]	0~60 [32~140]	

Note: Shock absorption capacity could rise or fall depending on ambient temperature or speed.

Mass

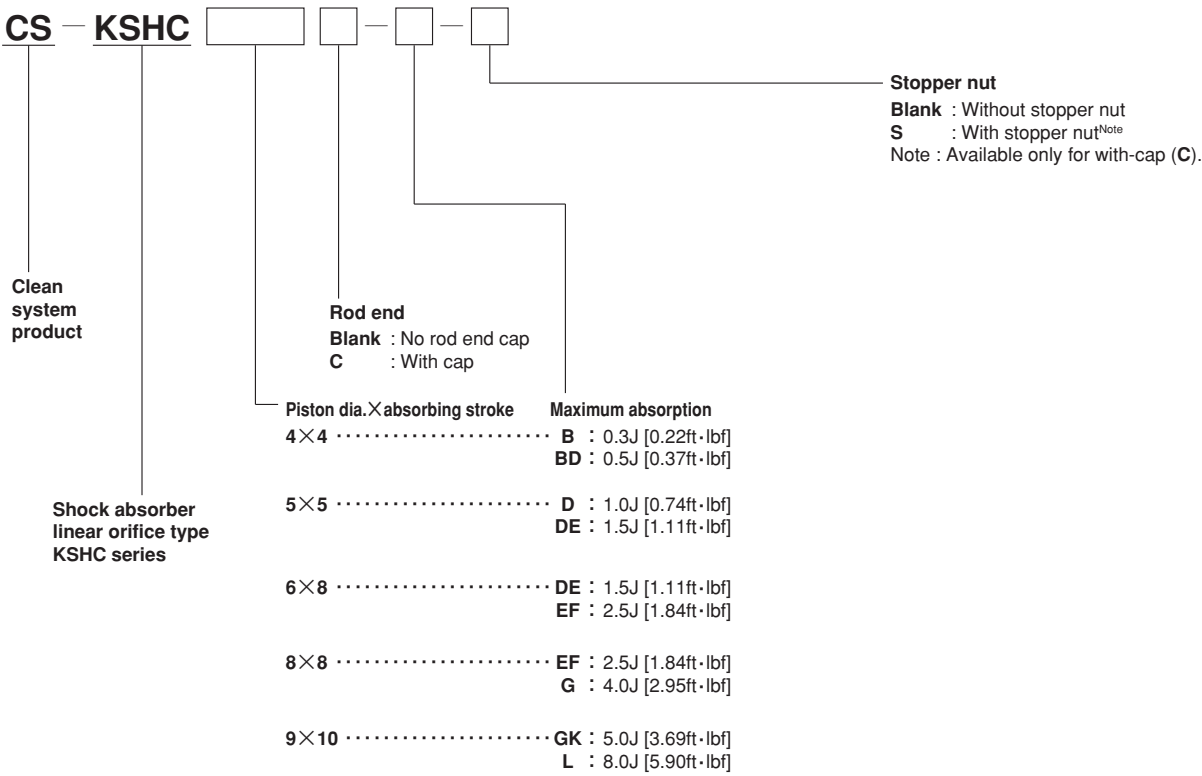
Model	Body mass	Additional mass (options)	
		Stopper nut ^{Note}	With cap
CS-KSHC4×4	4.8 [0.169]	2 [0.07]	0.1 [0.004]
CS-KSHC5×5	9.2 [0.325]	4 [0.14]	0.3 [0.011]
CS-KSHC6×8	21 [0.74]	7 [0.25]	1 [0.035]
CS-KSHC8×8	32 [1.13]	8 [0.28]	1 [0.035]
CS-KSHC9×10	58 [2.05]	15 [0.53]	2 [0.07]

Note: The stopper nut is an option available only for models with cap (C).

Calculation sample: Mass of CS-KSHC6×8 with cap and stopper nut.

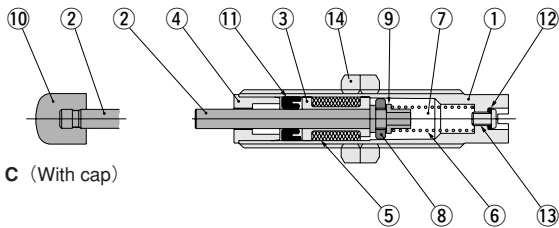
21+1+7=29g [1.02oz.]

Order Codes

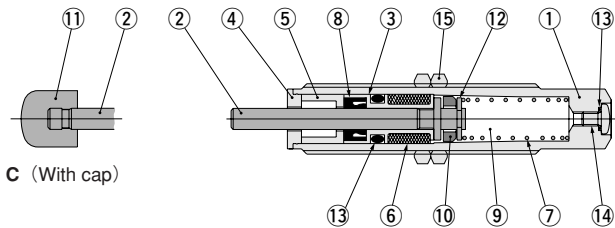


Inner Construction, Major Parts and Materials

- CS-KSHC4×4
- CS-KSHC5×5



- CS-KSHC6×8
- CS-KSHC8×8
- CS-KSHC9×10



Note : Part shapes vary somewhat between sizes.

- CS-KSHC4×4, 5×5

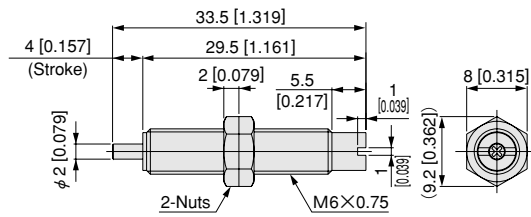
No.	Parts	Materials
①	Body	Copper alloy (nickel plated) (4×4 : free-cutting steel (nickel plated))
②	Piston rod	Steel (nickel plated)
③	Sleeve	Copper alloy
④	Plug	Stainless steel
⑤	Accumulator	Synthetic rubber
⑥	Spring	Spring steel
⑦	Oil	Special oil
⑧	Piston ring	Copper alloy
⑨	Collar	Copper alloy
⑩	Cap	Plastic (POM)
⑪	Rod seal	Synthetic rubber
⑫	O-ring	Synthetic rubber
⑬	Screw	Mild steel (zinc plated)
⑭	Hexagon nut	Mild steel (nickel plated)

- CS-KSHC6×8, 8×8, 9×10

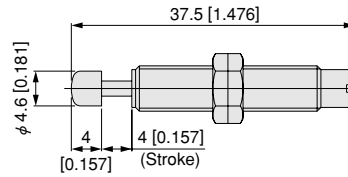
No.	Parts	Materials
①	Body	Copper alloy (nickel plated)
②	Piston rod	Steel (nickel plated)
③	Sleeve	Copper alloy
④	Plug	Stainless steel
⑤	Spacer	Stainless steel
⑥	Accumulator	Synthetic rubber
⑦	Spring	Spring steel
⑧	Rod seal	Synthetic rubber
⑨	Oil	Special oil
⑩	Piston ring	Copper alloy
⑪	Cap	Plastic (POM)
⑫	E-ring	Steel
⑬	O-ring	Synthetic rubber
⑭	Screw	Mild steel (zinc plated)
⑮	Hexagon nut	Mild steel (nickel plated)

● Nose mounting

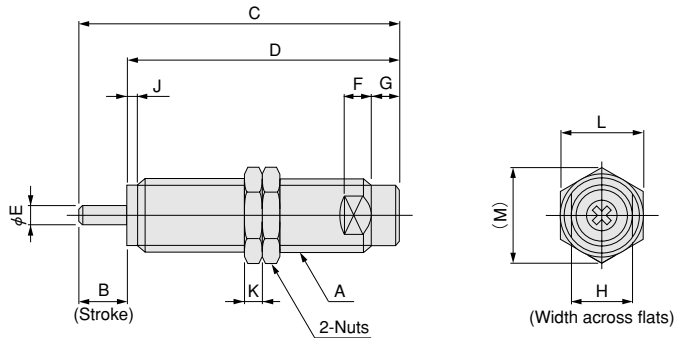
● No rod end cap : CS-KSHC4×4



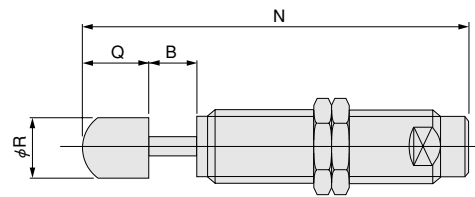
● With rod end cap : CS-KSHC4×4C



● No rod end cap : CS-KSHC□×□

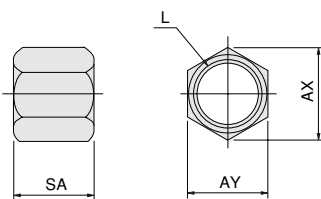


● With rod end cap : CS-KSHC□×□C



Model \ Code	A	B	C	D	E	F	G	H	J	K	L	M	N	Q	R
CS-KSHC5×5□	M8×0.75	5 [0.197]	36 [1.417]	31 [1.220]	2.5 [0.098]	3 [0.118]	5 [0.197]	7 [0.276]	1.2 [0.047]	2 [0.079]	10 [0.394]	11.5 [0.453]	41 [1.614]	5 [0.197]	6.5 [0.256]
CS-KSHC6×8□	M10×1	8 [0.315]	53 [2.087]	45 [1.772]	3 [0.118]	4 [0.157]	5 [0.197]	9 [0.354]	2 [0.079]	3 [0.118]	12 [0.472]	13.9 [0.547]	61 [2.402]	8 [0.315]	8 [0.315]
CS-KSHC8×8□	M12×1	8 [0.315]	53 [2.087]	45 [1.772]	3 [0.118]	5 [0.197]	5.5 [0.217]	11 [0.433]	2 [0.079]	3 [0.118]	14 [0.551]	16.2 [0.638]	63 [2.480]	10 [0.394]	10 [0.394]
CS-KSHC9×10□	M14×1.5	10 [0.394]	70 [2.756]	60 [2.362]	4 [0.157]	5 [0.197]	5.5 [0.217]	12 [0.472]	2 [0.079]	5 [0.197]	17 [0.669]	19.6 [0.772]	80 [3.150]	10 [0.394]	11 [0.433]

● Stopper nut : -S



Model	Code	L	AX	AY	SA
For CS-KSHC4×4C	M6×0.75	9.2 [0.362]	8 [0.315]	7 [0.276]	
For CS-KSHC5×5C	M8×0.75	11.5 [0.453]	10 [0.394]	11 [0.433]	
For CS-KSHC6×8C	M10×1	13.9 [0.547]	12 [0.472]	17 [0.669]	
For CS-KSHC8×8C	M12×1	16.2 [0.638]	14 [0.551]	17 [0.669]	
For CS-KSHC9×10C	M14×1.5	19.6 [0.772]	17 [0.669]	18 [0.709]	

Evaluation of Cleanliness (Shock Absorber KSHC Series)

There is currently no standard in JIS or elsewhere for methods of evaluating shock absorber's cleanliness. Koganei has therefore independently established our in-house measurement methods, to conduct the cleanliness evaluations.

●Measurement method

1. Measure particles in the clean bench (Figure 1) without activating the measurement use shock absorber and cylinder for driving load in the clean bench (to measure the background value).^{Note}

Note : Under the background measurement condition, the number of particles measures zero.

2. Drive the load and activate the shock absorber under the measurement condition, to measure the particles.

●Measurement conditions

Load impact speed	: 300mm/s [11.8in./sec.]
Shock absorber operating frequency	: 30cycle/min ^{Note 1}
Particle measurement time	: 1 minute
Suction rate	: 1cf/min
Measured particles	: 0.1 μ m and larger

For reference, a graph of actual values is shown in Figure 2.

The number of particles is the average value of the test samples. Also, the smaller the angle variation of eccentricity when mounting the shock absorber, the lower the number of particles is likely to be. Mount the shock absorber so that its angle of eccentricity to the workpiece is as small as possible.

- Notes: 1. The number of particles is based on 30 operation cycles. The customer's evaluation should be based on the customer's own operation frequency.
 2. Corresponds to FED-STD209E Class1.
 3. The number of particles in the graph are actual values measured under Koganei standards, and are not intended to be guaranteed values.

●Outline of particle measuring device

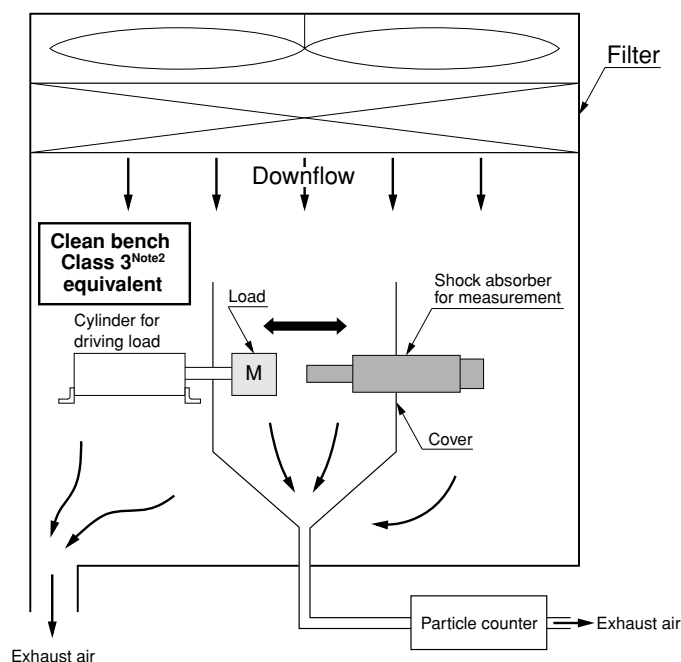


Figure 1

●Number of particles (measured value) ^{Note 3}

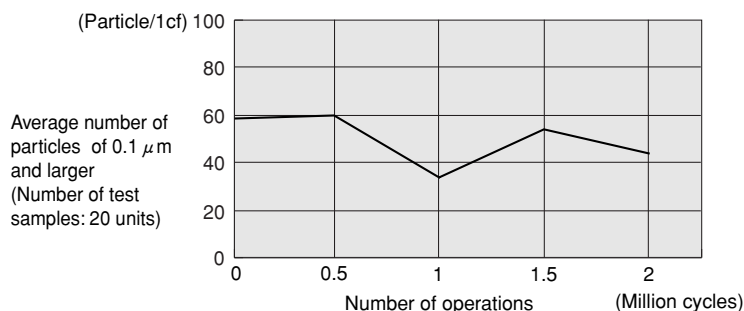


Figure 2

EQUIPMENT WITH LOW PARTICLE GENERATION SPECIFICATION

- Koganei takes orders for the manufacture of products that reduce particle generation to a minimum, in response to customer requests.

Products with a proven track record are shown below.

For specifications (number of particles), delivery, prices, and other details, consult us.

■ Multi Sliders



Note: The photo shows standard equipment.

(Order Code Examples)

MS 6 × - 2W

MS 10 × - 2W

MS 16 × - 2W

MS 20 × - 2W

■ Z Sliders



Note: The photo shows standard equipment.

(Order Code Examples)

ZS 6 × - 11W

ZS 10 × - 11W

ZS 16 × - 11W

ZS 20 × - 11W

ZS 25 × - 11W

■ Rod Sliders



Note: The photo shows standard equipment.

(Order Code Examples)

ARS 6 × - 8W

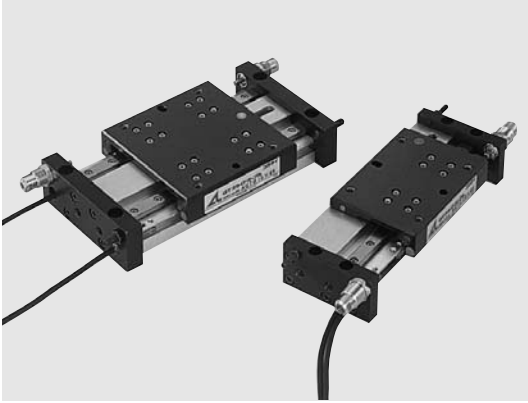
ARS 10 × - 8W

ARS 16 × - 8W

ARS 20 × - 8W

ARS 25 × - 8W

■ GT Slide Tables



Note: The photo shows standard equipment.

(Order Code Examples)

AGTB 10 × - 21W
 AGTB 16 × - 21W
 AGTB 25 × - 21W
 AGTC 10 × - 21W
 AGTC 16 × - 21W

■ Magnet Type Rodless Cylinders MRC, MRG Series



Note: The photo shows standard equipment.

(Order Code Examples)

MRCH (MRGH) 6 × - 1002W
 MRCH (MRGH) 10 × - 1002W
 MRCH (MRGH) 16 × - 1002W
 MRCH (MRGH) 20 × - 1002W
 MRCH (MRGH) 25 × - 1002W
 MRCH (MRGH) 32 × - 1002W
 MRCH (MRGH) 40 × - 1002W

■ Magnet Type Rodless Cylinders MRS Series

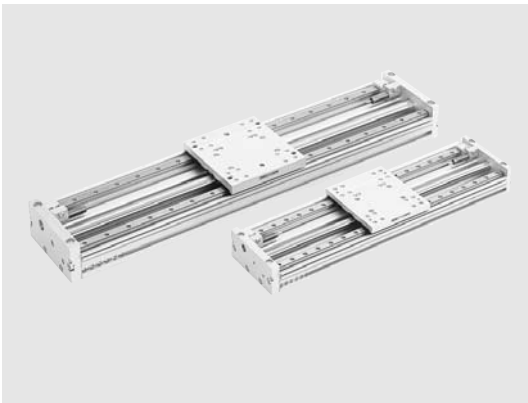


Note: The photo shows standard equipment.

(Order Code Examples)

MRS 10 × - 1014W
 MRS 16 × - 1014W
 MRS 20 × - 1014W
 MRS 25 × - 1014W

■ Magnet Type Rodless Cylinders MRW Series



Note: The photo shows standard equipment.

(Order Code Examples)

MRW 16 × - 1014W
 MRW 25 × - 1014W
 MRW 40 × - 1014W

■ Rotary Actuators RAT Series



Note: The photo shows standard equipment.

(Order Code Examples)

RAT 5 × - 10W

RAT 10 × - 10W

RAT 30 × - 10W

■ Cylinder Joints



Note: The photo shows standard equipment.

(Order Code Examples)

CJ- 3 × 0.5 - 48W

CJ- 4 × 0.7 - 47W

CJ- 5 × 0.8 - 46W

CJ- 6 × 1 - 45W

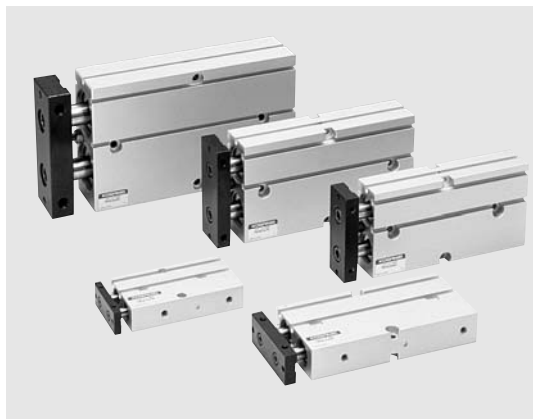
CJS (CJL) - 8 × 1 - 41W

CJS (CJL) - 10 × 1.25 - 42W

CJL - 12 × 1.25 - 116W

CJL - 14 × 1.5 - 39W

■ Twin Rod Cylinders B Series



Note: The photo shows standard equipment.

(Order Code Examples)

ATBDA 10 × - 14W

ATBDA 16 × - 14W

ATBDA 20 × - 14W

ATBDA 25 × - 14W

ATBDA 32 × - 14W

Limited Warranty

KOGANEI CORP. warrants its products to be free from defects in material and workmanship subject to the following provisions.

Warranty Period The warranty period is 180 days from the date of delivery.

Koganei Responsibility If a defect in material or workmanship is found during the warranty period, KOGANEI CORP. will replace any part proved defective under normal use free of charge and will provide the service necessary to replace such part.

Limitations

- This warranty is in lieu of all other warranties, expressed or implied, and is limited to the original cost of the product and shall not include any transportation fee, the cost of installation or any liability for direct, indirect or consequential damage or delay resulting from the defects.

- KOGANEI CORP. shall in no way be liable or responsible for injuries or damage to persons or property arising out of the use or operation of the manufacturer's product.

- This warranty shall be void if the engineered safety devices are removed, made inoperative or not periodically checked for proper functioning.

- Any operation beyond the rated capacity, any improper use or application, or any improper installation of the product, or any substitution upon it with parts not furnished or approved by KOGANEI CORP., shall void this warranty.

- This warranty covers only such items supplied by KOGANEI CORP. The products of other manufacturers are covered only by such warranties made by those original manufacturers, even though such items may have been included as the components.

The specifications are subject to change without notice.

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