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KOGANEI

ACCESSORIES GENERAL CATALOG

AIR TREATMENT, AUXILIARY, VACUUM, AND FLUORORESIN PRODUCTS

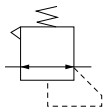
SMALL-SIZED PRECISION REGULATOR

CONTENTS

SMALL-SIZED PRECISION REGULATOR

PR100

Symbol



Specifications

Item \ Model		PR100
Media		Air
Port size	Rc	1/8
Sensitivity	MPa [psi.]	0.001 [0.15]
Pressure setting range	MPa [psi.]	0.02～0.5 [2.9～72.5]
Maximum operating pressure	MPa [psi.]	0.93 [135]
Proof pressure	MPa [psi.]	1.5 [218]
Operating temperature range (atmosphere and media)	°C [°F]	5～60 [41～140]
Air consumption Note	ℓ/min [ft³/min.] (ANR)	1.5 [0.053]
Lubrication		Not required
Mass	kg [lb.]	0.07 [0.15]
Materials		Aluminum

Note: Value when secondary air pressure is set to 0.5MPa [72.5psi.].

Order Codes

PR100 — □ — □

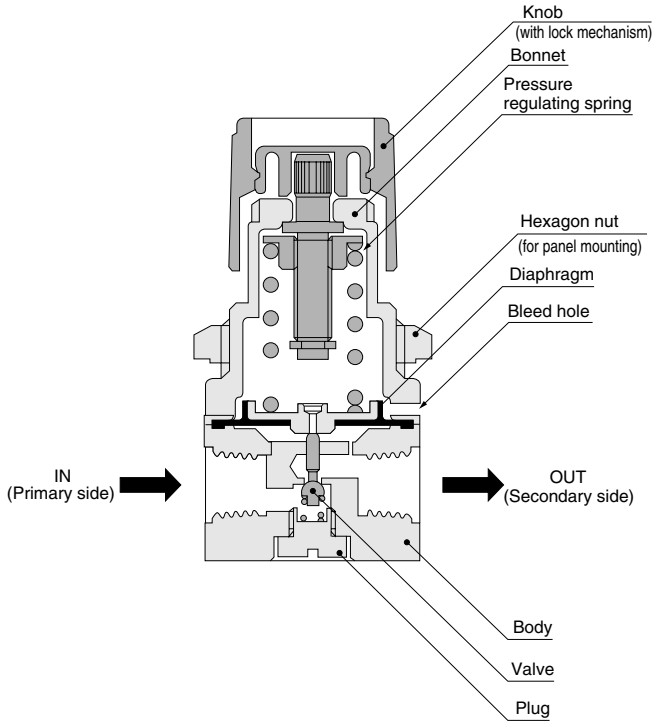
Bracket
Blank — Without bracket
B — With bracket

GA20 — With outer diameter 20mm [0.79in.] pressure gauge (Bottom piping, φ20×1MPa [145psi.])
GD20 — With outer diameter 20mm [0.79in.] pressure gauge (Back piping, φ20×1MPa [145psi.])

Small-sized precision regulator

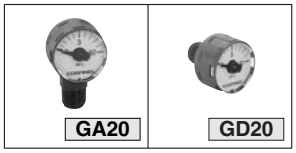
Note: The pressure gauge with optional setting is JIS class 3.
For situations requiring more precise pressure regulation, use a pressure gauge in or near the JIS class 1.5.
For pressure gauge specifications and dimensions, see p.171.

Inner Construction



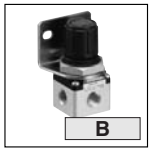
Options

With outer diameter 20mm [0.79in.] pressure gauge



●Bottom piping ●Back piping

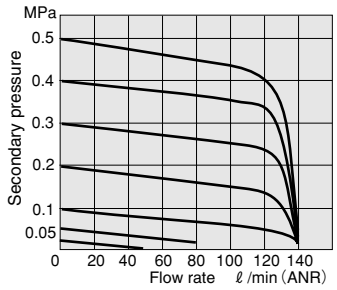
With bracket



Bracket

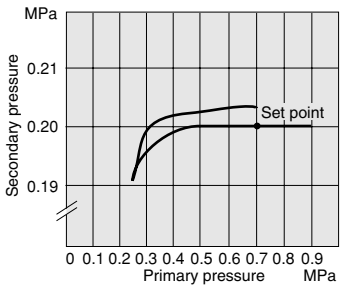
●**8-10Z**

Flow Rate Characteristics



Remark: Graph shows flow rate characteristics when the primary pressure is fixed at 0.7MPa [102psi.].

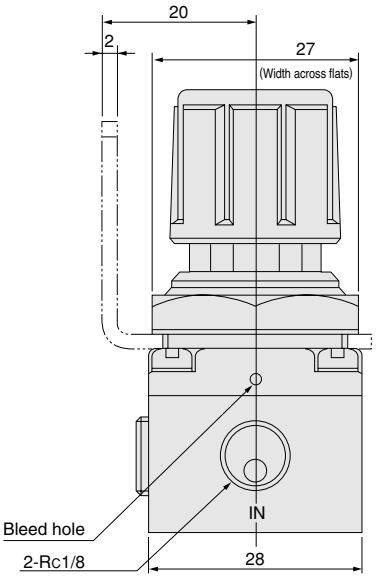
Pressure Characteristics

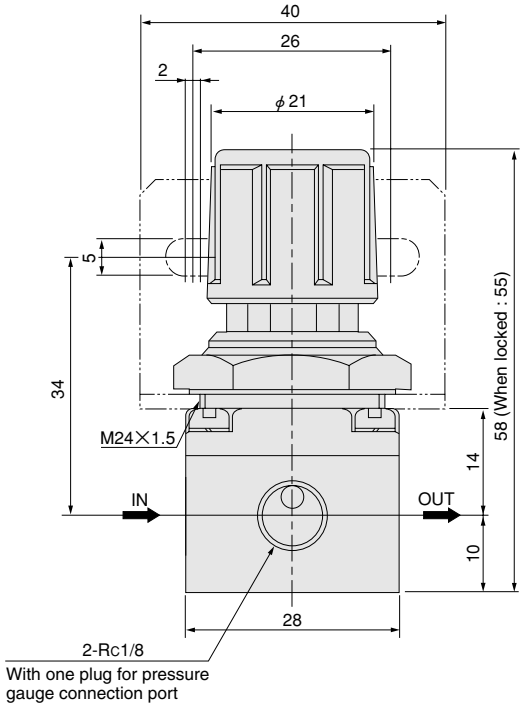


1MPa = 145psi. 1 ℓ/min = 0.0353ft³/min.

Dimensions (mm)

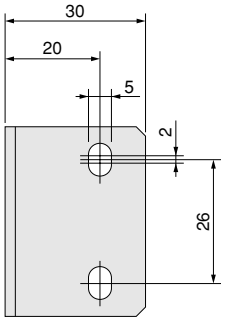
PR100

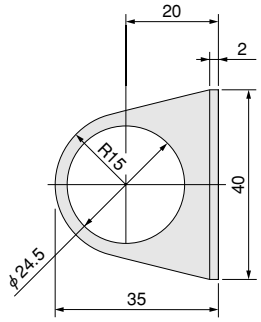




Remark: Mounting holes for installing PR100 on a panel are ϕ 24.5.

8-10Z





Mounting and piping

1. If mounting the precision regulator as a single unit, use a bracket (optional). A ring nut for panel mounting can also be used. Mounting holes for mounting the precision regulator on a panel are ϕ 24.5 [0.965in.].
2. For piping to the precision regulator, plumb the piping so that the air supply side connects to the IN port and the actuator side connects to the OUT port.

Cautions: 1. The regulator cannot be used with the IN port and the OUT port in the reversed positions.
2. Avoid a mounting position that blocks the bleed hole. Blocking the bleed hole could prevent pressure regulating.

Pressure regulation

1. Perform pressure regulation by pulling out firmly on the knob. Rotating it to the right (clockwise) increases the pressure, and rotating to the left (counterclockwise) reduces the pressure. After regulating pressure, push the knob back into the body and lock it in place.

Cautions: 1. The precision regulator is a bleed type, which means that a slight amount of air constantly bleeds out from the bleed hole while the secondary side is under pressure regulation. This is a normal situation.
2. The air bleed amount was adjusted at time of shipment from the Koganei. Absolutely never attempt to loosen the plug.

2. Avoid applications that involve setting a valve in the primary side of the precision regulator and repeatedly switching the primary pressure.

General precautions

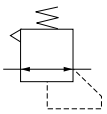
1. Always thoroughly blow off (use compressed air) the piping before plumbing. Entering chips, sealing tape, rust, etc., generated during plumbing could result in air leaks or other defective operation.
2. Use air for the media. For the use of any other media, consult us. Use clean air that does not contain deteriorated compressor oil or other contaminants.
   Install an air filter (with filtration of a minimum 5μ m) close to a pressure reducing valve to eliminate any air line condensate or dust. Moreover, clean the air filter at regular intervals. The entering of condensates or other particles, etc., into the small-sized precision regulator could result in defective operation.
3. The product cannot be used when the media or the ambient atmosphere contains any of the substances listed below.
   Organic solvents, phosphate ester type hydraulic oil, sulphur dioxide, chlorine gas, or acids, etc.
4. If using in locations subject to dripping water, dripping oil, etc., or to large amounts of dust, use something to cover and protect the unit.

PRECISION REGULATOR

PR200

- Single diaphragm type achieves high-precision pressure regulation in a compact size.
- Push lock type regulator knob for light, smooth pressure regulation.

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 [0.7～36]
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 [ft³/min] (ANR)	5 [0.18]
Lubrication		Not required
Mass	kg [lb.]	0.29 [0.64]
Materials		Aluminum die-casting

Note: Values are at secondary air pressure 0.25MPa [36psi.].

Order Codes

PR200 — □ — □

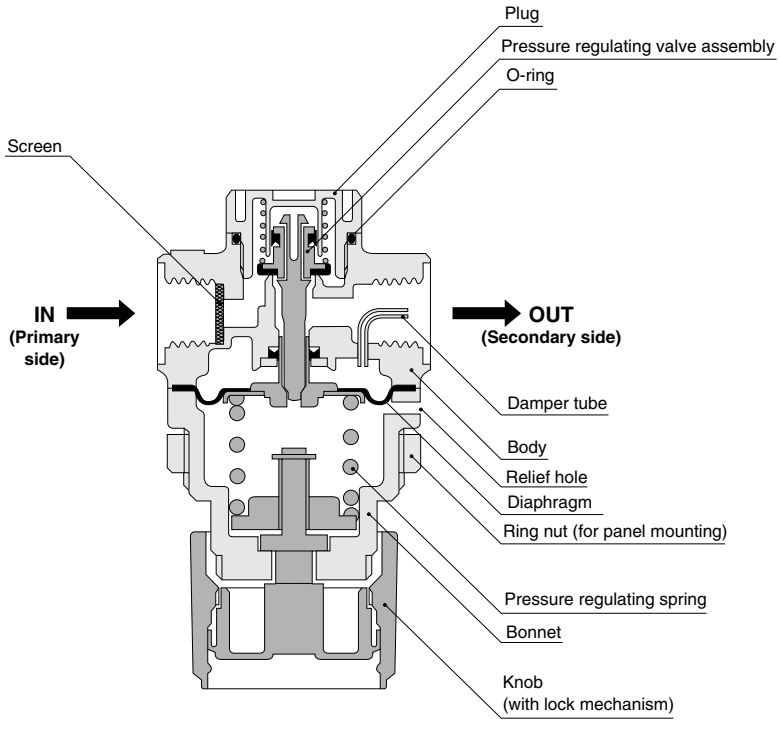
Bracket
Blank — No bracket
B — With bracket

Pressure gauge specification
Blank — No pressure gauge
G3P — With small precision pressure gauge (0.3MPa [44psi.])[Note 1]
G3PS — With small precision pressure gauge (with throttle valve) (0.3MPa [44psi.])
G3 — With pressure gauge[Note 2] (0.3MPa [44psi.])
E2 — With pressure gauge with electronic switches[Note 3] (1MPa [145psi.])
E21 — With pressure gauge with electronic switches[Note 3] (100kPa [14.5psi.])

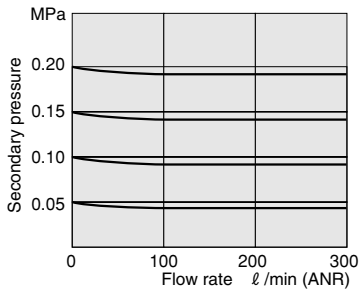
Precision regulator

Notes: 1. For details about the **G3P** small precision pressure gauge, see p.174.
2. For details about the **G3** pressure gauge, see p.172.
3. For specifications and dimensions of the pressure gauge with electronic switches, see p.177～181.

Inner Construction



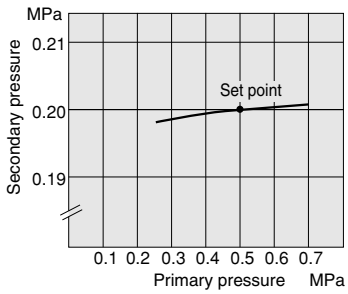
Flow Rate Characteristics



Remark: Graph shows flow rate characteristics when the primary pressure is fixed at 0.7MPa [102psi.].

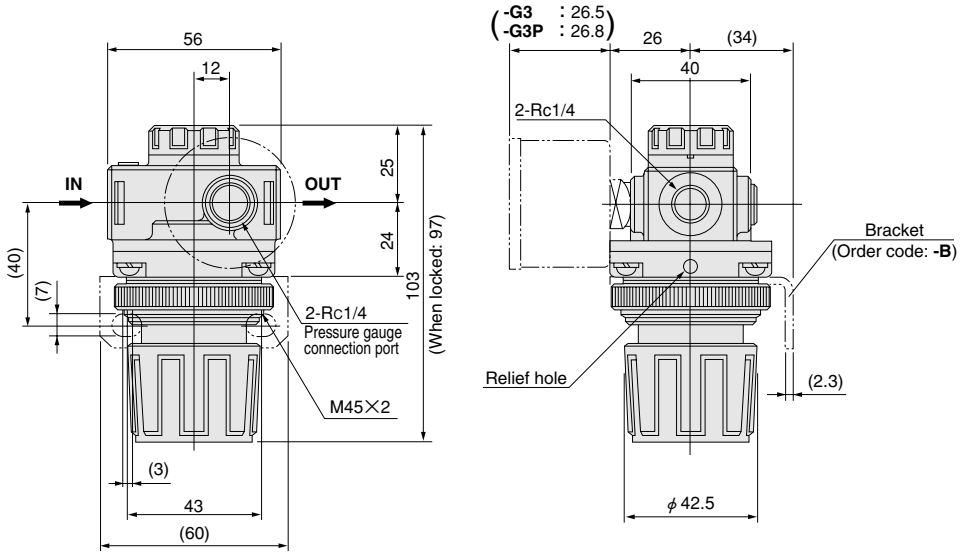
1MPa = 145psi. 1 ℓ/min = 0.0353ft³/min.

Pressure Characteristics



Dimensions of Precision Regulator (mm)

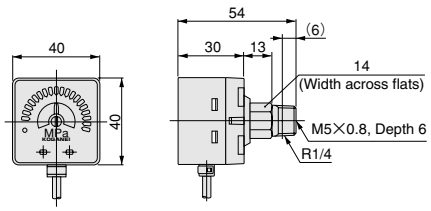
PR200



Note: The mounting hole for attaching the regulator on a panel, etc. is ϕ 46. A panel thickness of 1.5～6mm is required for mounting. Use the ring nuts provided to mount.

Options

●Pressure gauge with electronic switches: **-E2, -E21**



MODULES AND ADAPTERS

- F module is a connector facilitating combinations of Multi Series equipment of the same body size.
- D module offers a mounting bracket function.
- T module provides branch piping at desired locations.
- S adapter allows easy installation and removal of equipment without disturbing the piping.
- Standard can be used as NCU specification.

Model List

For 150, 300 and 600 series

Body size \ Module, adapter	F module	D module	T module		S adapter	
	F (For modules only)	**D** (Brackets for combined use)	**T** (Branch piping)	**DT** (Brackets for combined use with branch piping)	**S** (Port connection)	**DS** (Brackets for combined use with piping connection)
15 (For 150 series)	Multi Series ⇨ ⇦ Multi Series **8-15F**	Multi Series ⇨ ⇦ Multi Series **8-15D**	Connection port ⇩ Connection port ⇨ Multi Series **8-15T□**	Connection port ⇩ Connection port ⇨ Multi Series **8-15DT□**	Connection port ⇨ Multi Series **8-15S□**	Connection port ⇨ Multi Series **8-15DS□**
30 (For 300 series)	**8-30F**	**8-30D**	**8-30T□**	**8-30DT□**	**8-30S□**	**8-30DS□**
60 (For 600 series)	**8-60F**	**8-60D**	**8-60T□**	**8-60DT□**	**8-60S□**	**8-60DS□**

Remark: Material is zinc die-casting.

For connections between different sizes

Body size \ Module	D module
	D (Brackets for combined use)
20 (For connecting 150 and 300 series)	For **300** series ⇨ ⇦ For **150** series **8-20D**
40 (For connecting 300 and 600 series)	For **600** series ⇨ ⇦ For **300** series **8-40D**

Order Codes

8 — □ □ □

Module and adapter
- **F** —— F module
- **D** —— D module for bracket-combined use
- **T** —— T module
- **DT** —— T module for bracket-combined use
- **S** —— S adapter
- **DS** —— S adapter for bracket-combined use

Port size[Note 2] **Rc**

1/8	1/4	3/8	1/2	Applicable body size
1	**2**			150
	2	**3**		300
	2[Note 3]	**3**	**4**	600

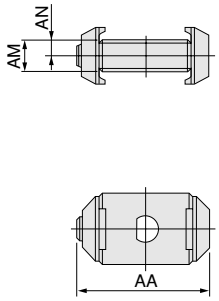
Body size
- **15** —— For 150 series, HR200 and HRA200
- **20** —— For connecting 150 and 300 series[Note 1]
- **30** —— For 300 series
- **40** —— For connecting 300 and 600 series[Note 1]
- **60** —— For 600 series, HR600 and HRA600

Notes: 1. Used only with D module.
2. Not available in F module or D module.
3. Used only with S adapter and DS adapter.

For details about equipment combinations, see p.58.

Dimensions of F Modules (mm)

FRL-MOD□



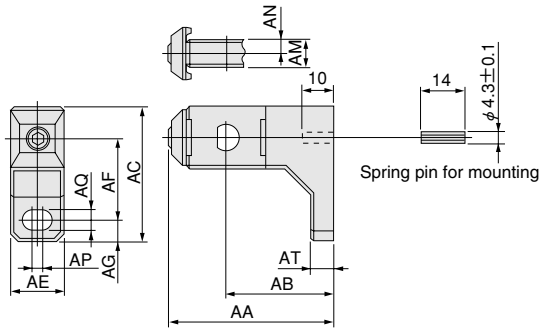
Type \ Code	AA	AC	AE	AM	AN	Mass g
8-15F	36	20	17.4	8	4	38
8-30F	42	24	19.4	10	5	63
8-60F	56.5	30	31	12	6	150

Note: When assembling with other equipment, add the AM dimensions to the total.

Dimensions of D Modules (mm)

8-15D
8-30D

FRL-MOD□



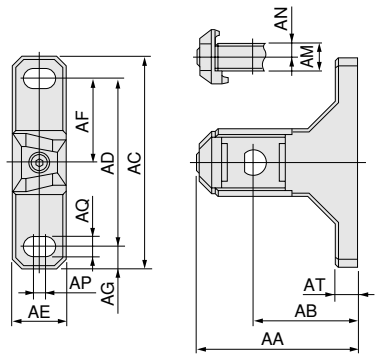
Model \ Code	AA	AB	AC	AE	AF	AG	AM	AN	AP
8-15D	50.5	32	49	17.4	31	8	8	4	4
8-30D	61.5	40	50.5	19.4	31	8	10	5	4

Model \ Code	AQ	AT	Mass g
8-15D	7	6	84
8-30D	7	8	137

Note: When assembling with other equipment, add the AM dimensions to the total.

8-20D
8-40D

FRL-MOD□

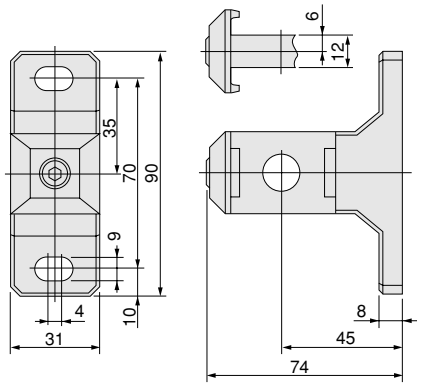


Model \ Code	AA	AB	AC	AD	AE	AF	AG	AM	AN	AP
8-20D	61.5	40	78	62	19.4	31	8	10	5	4
8-40D	74	45	90	70	31	35	10	16.8	6	4

Model \ Code	AQ	AT	Mass g
8-20D	7	8	141
8-40D	9	8	300

Note: When assembling with other equipment, add the AM dimensions to the total.

8-60D



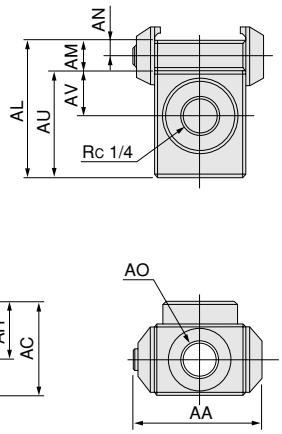
Mass: 260 g

Note: When assembling with other equipment, add 12mm to the total.

Dimensions of T Modules (mm)

FRL-MOD□

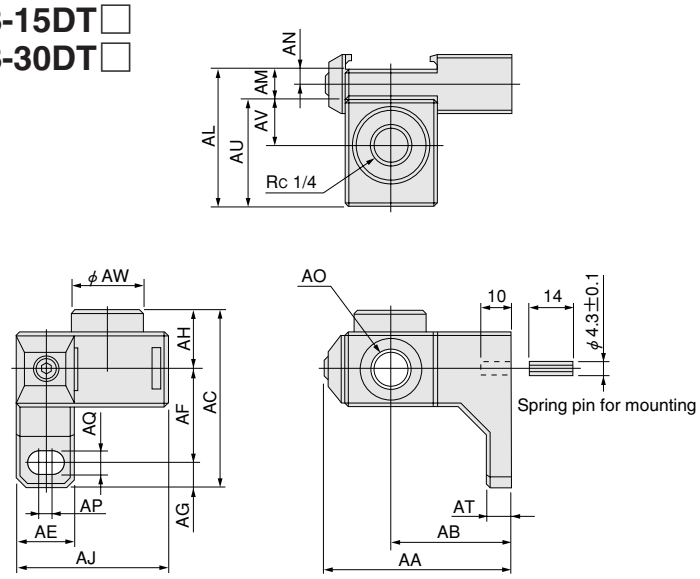
8-15T□
8-30T□
8-60T□



Model \ Code	AA	AC	AH	AJ	AL	AM	AN	AO	AU	AV	AW	Mass g
8-15T1	36	27	17	43.5	39	8	4	Rc1/8	31	13	20	116
8-15T2	36	27	17	43.5	39	8	4	Rc1/4	31	13	20	110
8-30T2	42	31	19	49.5	45	10	5	Rc1/4	35	15	24	196
8-30T3	42	31	19	49.5	45	10	5	Rc3/8	35	15	24	181
8-60T3	56.5	40	24	66.5	57	12	6	Rc3/8	45	19	32	271
8-60T4	56.5	40	24	66.5	57	12	6	Rc1/2	45	19	32	264

Note: When assembling with other equipment, add the AL dimensions to the total.

8-15DT□
8-30DT□



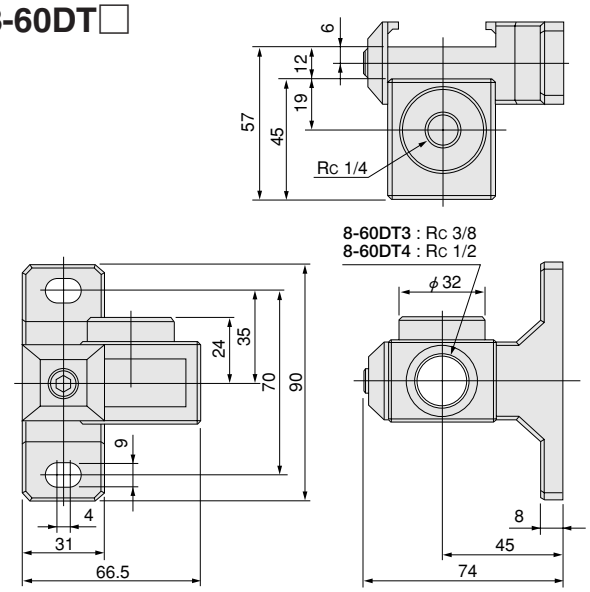
Model \ Code	AA	AB	AC	AE	AF	AG	AH	AJ	AL
8-15DT1	50.5	32	56	17.4	31	8	17	44	39
8-15DT2	50.5	32	56	17.4	31	8	17	44	39
8-30DT2	61.5	40	58	19.4	31	8	19	50	45
8-30DT3	61.5	40	58	19.4	31	8	19	50	45

Model \ Code	AM	AN	AO	AP	AQ	AT	AU	AV	AW
8-15DT1	8	4	Rc1/8	4	7	6	31	13	20
8-15DT2	8	4	Rc1/4	4	7	6	31	13	20
8-30DT2	10	5	Rc1/4	4	7	8	35	15	24
8-30DT3	10	5	Rc3/8	4	7	8	35	15	24

Model \ Code	Mass g
8-15DT1	161
8-15DT2	155
8-30DT2	273
8-30DT3	257

Note: When assembling with other equipment, add the AL dimensions to the total.

8-60DT□



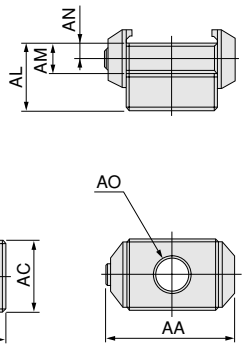
Mass
8-60DT3: 385g
8-60DT4: 375g

Note: When assembling with other equipment, add 57mm to the total.

Dimensions of S Adapters (mm)

FRL-MOD□

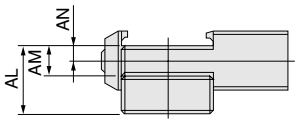
8-15S□
8-30S□
8-60S□

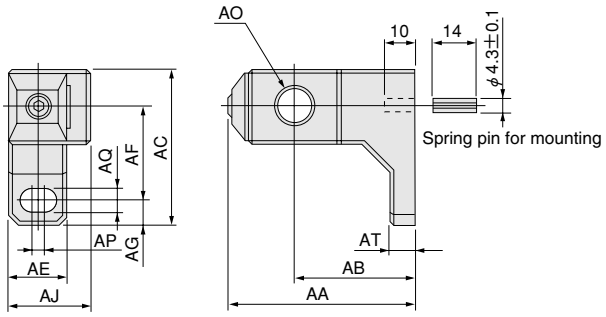


Model \ Code	AA	AC	AJ	AL	AM	AN	AO	Mass g
8-15S1	36	20	24.5	20	8	4	Rc1/8	51
8-15S2	36	20	24.5	20	8	4	Rc1/4	49
8-30S2	42	24	26.5	22	10	5	Rc1/4	81
8-30S3	42	24	26.5	22	10	5	Rc3/8	78
8-60S2	56.5	32	37.5	28	12	6	Rc1/4	190
8-60S3	56.5	32	37.5	28	12	6	Rc3/8	187
8-60S4	56.5	32	37.5	28	12	6	Rc1/2	183

Note: When assembling with other equipment, add the AL dimensions to the total.

8-15DS□
8-30DS□



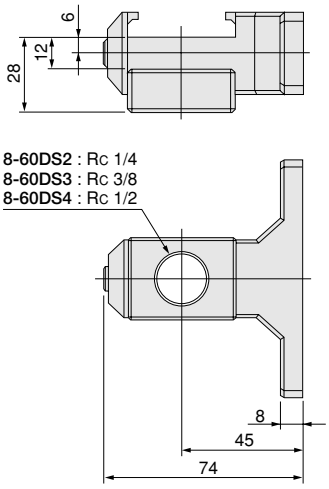


Model \ Code	AA	AB	AC	AE	AF	AG	AJ	AL	AM	AN	AO	AP	AQ	AT
8-15DS1	50.5	32	49	18	31	8	25	20	8	4	Rc1/8	4	7	6
8-15DS2	50.5	32	49	18	31	8	25	20	8	4	Rc1/4	4	7	6
8-30DS2	61.5	40	51	20	31	8	27	22	10	5	Rc1/4	4	7	8
8-30DS3	61.5	40	51	20	31	8	27	22	10	5	Rc3/8	4	7	8

Model \ Code	Mass g
8-15DS1	96
8-15DS2	94
8-30DS2	155
8-30DS3	150

Note: When assembling with other equipment, add the AL dimensions to the total.

8-60DS□



Mass
8-60DS2: 302g
8-60DS3: 299g
8-60DS4: 295g

Note: When assembling with other equipment, add 28mm to the total.

BRACKETS

Bracket Models and Applicable Components

Components type		Bracket model	Remark
F.R.L. combinations	C150	**8-15D**	D module for bracket-combined use, standard equipment
	C200	**8-20D**	
	C300	**8-30D**	
	C400	**8-40D**	
	C600	**8-60D**	
Filter regulators	FR150	**8-15 (8-15A)**	Standard equipment
	FR300	**8-30 (8-30A, 8-60B)**Note2	
	FR600	**8-65 (8-60B)**Note2	
Air filters	F150	**8-15A**	Body supporting type, optional
	F300	**8-30A (8-60B)**Note2	
	F600	**8-60B**	Piping supporting type, optional
Mist filters	MF300	**8-30A (8-60B)**Note2	Body supporting type, optional
	MF400	**8-60B**Note2	Piping supporting type, optional
	MF600		
Micro mist filters	MMF150	**8-30A (8-60B)**Note2	Body supporting type, optional
	MMF300	**8-60B**Note2	Piping supporting type, optional
	MMF400		
Regulators	R150	**8-15**	Standard equipment
	R300	**8-30 (8-60B)**Note2	
	R600	**8-65 (8-60B)**Note2	
Precision regulator	PR200	**8-21Z**	Body supporting type, optional
High-relief regulators	HR200	**8-22Z**	Body supporting type, optional
	HR600		
	HRA200		
	HRA600		
Manifold regulators	MR300	**8-30D**	D module for bracket-combined use, optional
Lubricators	L150	**8-15A**	Body supporting type, optional
	L300	**8-30A (8-60B)**Note2	
	L600	**8-60B**Note2	Piping supporting type, optional
Residual pressure exhaust valves	300V	**8-31C**	Body supporting type, optional
	600V		

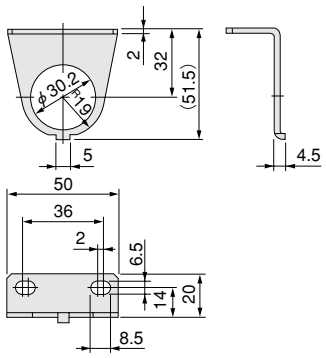
Notes: 1. Models in parentheses ( ) are non-standard, but are acceptable for use.
2. Pipe supporting type brackets (8-60B) are sold in a set of two brackets.

Dimensions of Brackets (mm)

FRL-BR

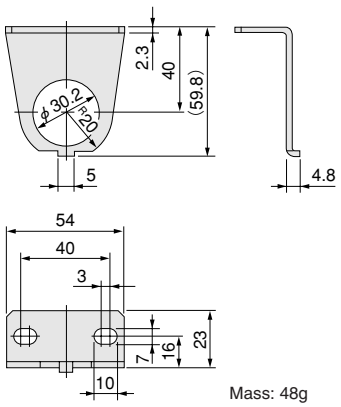
For Filter Regulator and Regulator

8-15



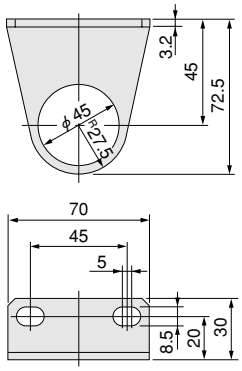
Mass: 31g

8-30



Mass: 48g

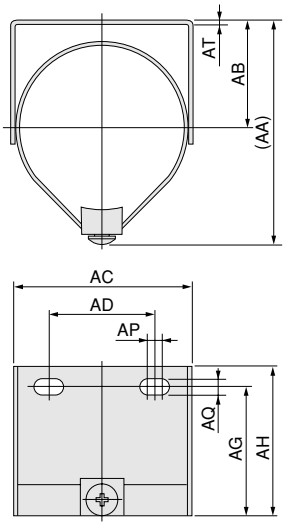
8-65



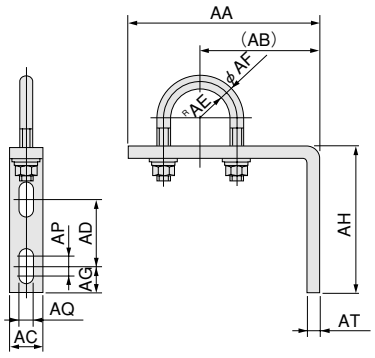
Mass: 69g

For Air Filter, Mist Filter, Micro Mist Filter, and Lubricator

FRL-BR



Mass
8-15A: 60g
8-30A: 80g



Mass: 107g

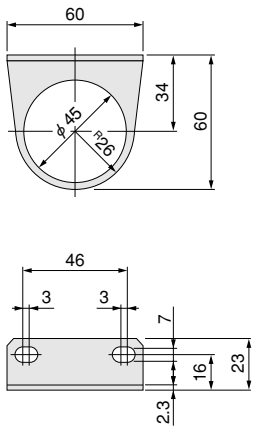
Model \ Code	AA	AB	AC	AD	AG	AH	AP	AQ	AT
8-15A	64	32	46	32	50	56	2	6.4	1.2
8-30A	84	40	66.8	40	48	56	5	6.4	1.2

Model \ Code	AA	AB	AC	AD	AE	AF	AG	AH	AP	AQ	AT
8-60B	72	45	12	25	11	5	10	55	7	5.5	4.5

Note: Pipe supporting type brackets (8-60B) are sold in a set of two brackets.

For Precision Regulator

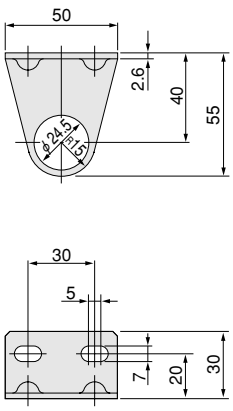
8-21Z



Mass: 42g

For High-relief Regulator

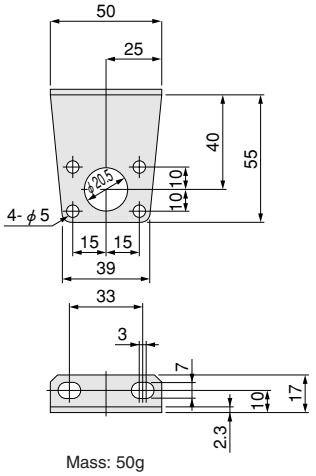
8-22Z



Mass: 52g

For Residual Pressure Exhaust Valve

8-31C



Mass: 50g

Filter Regulator, Regulator, Precision Regulator, Manifold Regulator, and High-relief Regulator

Mounting and piping

●General overview for regulators

In regulator configurations (with the exception of types with built-in check mechanism), the OUT port (secondary) pressure may not be exhausted to the IN port (primary) side even when the IN port pressure is 0MPa. To ensure that exhaust is performed, either use a type with built-in check mechanism, or install a check valve alongside.
If a regulator with built-in check mechanism installed after the solenoid valve for cylinder pressure adjustment performed, make sure that cylinder back pressure does not cause secondary pressure on the regulator with built-in check mechanism to rise above the set pressure. The check mechanism may not operate correctly. (As a guide, use at a pressure differential between the push and pull sides of 0.3MPa or less.)
Also, because regulator (with the exception of the High-relief Regulator) relief ports are smaller than the diameter of the piping port, they may not be able to respond to sudden increases in pressure on the OUT port (secondary) side. For situations where pressures can rise sharply due to a force being applied to the cylinder externally, either use a High-relief Regulator or set the relief valve to OUT.

●Precision Regulator

1. If mounting the Precision Regulator as a single unit, use a bracket (optional). A ring nut for panel mounting can also be used.
2. When piping to the Precision Regulator, position the piping so that the air supply side connects to the IN port and the actuator side connects to the OUT port. To prevent the fitting on the OUT port side from interfering with the damper tube, use piping with inner diameter at least 3mm [0.12in.] or more.

Cautions: 1. The regulator cannot be used with the IN port and the OUT port in the opposite positions.
2. When mounting a fitting on the OUT port, be careful to avoid damaging the damper tube. In addition, avoid using a plug or a fitting with too small inner diameter in the OUT port. Bending the damper tube or blocking the hole could damage the precision regulator function, preventing accurate regulating pressure.
3. Avoid a mounting position that blocks the relief hole. Blocking the relief hole could prevent regulating pressure.

●Manifold Regulator

1. Use sufficiently large IN port piping, and supply via the IN ports at both manifold ends as much as possible. Moreover, when using five or more units on a manifold, mount a T module somewhere in the middle of the units, and supply via the IN ports in at least three different locations.
2. To stabilize secondary pressure, ensure a sufficiently large pressure differential (0.3MPa [44psi.] MIN.) between the IN port pressure and OUT port pressure.

●High-relief Regulator

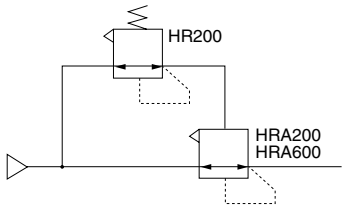
1. The High-relief Regulator's IN port (primary side) is on the top surface of the body, where the arrow ▶mark is located.
2. The High-relief Regulator can be mounted as a module with any equipment in the air preparation Multi Series. Module formation and equipment compatibility for HR200 and HRA200 is the same as the 150 series, and for HR600 and HRA600, the same as the 600 series.
3. For single unit mounting, use brackets (order code :**-B**). A ring nut for panel mounting can also be used.
4. When mounting a pressure gauge, never grab the pressure gauge body for tightening. Always use a wrench on the square section around the connection port to tighten.
5. When mounting a muffler or exhaust filter on the EXH port, use the following table to select the type.

Model	Recommended muffler, exhaust filter
HR200 **HRA200**	**KM-22, KM-23** **EF300, EF600, EF800**
HR600 **HRA600**	**KM-31** **EF300, EF600, EF800**

For details, see p.549 and 552.

6. While any mounting direction is acceptable, mounting with the EXH port pointing straight up could result in noisy operation. In this case, change the pressure setting, increase the exhaust volume, or perform some other preventive measures.
7. If using a mounting ring to mount the regulator, use a mounting torque of 980.7N·cm [86.7in·lbf] or less.

Cautions: 1. Avoid operating methods that involve setting a valve on the primary side of the High-relief Regulator and repeatedly switching the primary pressure.
2. If mounting a muffler, etc., on the EXH port, use a tightening torque for HR200 and HRA200 of 294.2N·cm [26.0in·lbf] or less, and for HR600 and HRA600, 490.3N·cm [43.4in·lbf] or less. When mounting, always use a wrench on the hexagonal section of the exhaust plug. Avoid using steel piping to connect the EXH port.
3. In the external pilot type, exhausting primary pressure while supplying pilot air could cause damage to the diaphragm. For this reason, exhaust the primary side of the regulator that controls pilot pressure, and the primary side of the external pilot type at the same time.



4. To avoid interfering with the piping volume, select a regulator with a large relief flow rate for the pilot regulator to be used for the external pilot type. In addition, do not allow the pilot air piping length to exceed the values shown in the table below.

O.D ×I. D.mm [in.]	Piping length m [ft.]
4×2 [0.157×0.079]	2 [6.6]
6×4 [0.236×0.157]	20 [65.6]
8×6 [0.315×0.236]	50 [164]

Pressure regulation

Caution: Perform the setting while checking the primary pressure and secondary pressure gauge displays. Rotating the knob too far could cause damage to the internal parts. Be particularly careful not to rotate it too far during depressurization, since time is required for relief.

●Filter Regulator, Regulator, Manifold Regulator

Perform pressure regulation by pulling out the knob firmly. Rotating it to the right (clockwise direction) increases the pressure, and rotating to the left (counterclockwise direction) reduces the pressure. After regulating pressure, push the knob back into the body and lock it in place.

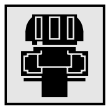
Cautions: 1. Do not attempt to rotate the knob while in the locked position.
2. In the FR150 and R150 series, vibration noise can occur when the pressure differential between the primary pressure and setting pressure is large (0.7MPa [102psi.] or more). In this situation, reduce the pressure differential (0.5MPa [73psi.] or less).

●Precision Regulator, High-relief Regulator

Perform regulating pressure by pulling out the knob firmly. Rotating it to the right (clockwise direction) increases the pressure, and rotating to the left (counterclockwise direction) reduces the pressure. After regulating pressure, push the knob back into the body and lock it in place.

Remark: When regulating pressure, connect a pressure gauge of a class JIS 1.5 or equivalent to the Precision Regulator's pressure gauge connection port (Rc1/4).

Cautions: 1. To maintain accurate pressure adjustment conditions while locked, the Precision Regulator knob includes a free (neutral) state between the lock state and pressure adjustment state. To switch between the regulating pressure and lock states, pull the knob firmly out or push it in until a clicking sound shows that it has firmly arrived in the lock state or pressure adjustment state.
2. The Precision Regulator is a bleed type, which means that a slight amount of air constantly bleeds out of the bleed hole while the secondary side is undergoing pressure adjustment. This is a normal situation.
3. The internal pilot type uses a metal contact seal on the pilot regulator portion that causes it to bleed a slight amount of air. This is a normal situation.



Residual Pressure Exhaust Valve

Mounting and piping

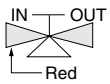
1. When mounting the Residual Pressure Exhaust Valve as a single unit, use either a mounting thread on the R port side or a bracket (optional). If using steel piping, the piping itself can serve as a support.
2. Connect the piping for the Residual Pressure Exhaust Valve so that the P port is on the primary (media) side and the A port is on the mechanical device side. If using as a 2-port valve, use a Rc1/4 plug to block the R port.

Cautions: 1. The unit cannot be used with the P port and A port in reversed positions.
2. If using in locations subject to dripping water, dripping oil, etc., or to large amounts of dust, use something to cover and protect the unit.

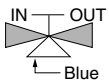
Switching valves

To switch between air supply or exhaust, rotate the knob by 90 degrees. Rotation to the left (counterclockwise direction) switches to the air supply state, while rotating to the right (clockwise direction) switches to the exhaust state. As there is no neutral position (where the P port air would return back to A or R), slowly rotating the knob can slowly increase the supply or exhaust volume. To determine the current valve state, check a display window on the side of the knob.

Air supply



Exhaust



Caution: After switching the knob firmly by 90 degrees, always check that it is locked in place.

General precautions

1. Always thoroughly blow off (use compressed air) the tubing before piping. Entering chips, sealing tape, rust, etc., generated during piping work could result in air leaks or other defective operation.
2. Use clean air for the media. Install an air filter (with filtration of a minimum 5μm). For the use of any other media, consult us.
3. The product cannot be used when the media or the ambient atmosphere contains any of the substances listed below.
Organic solvents, phosphorate acid ester type hydraulic oil, sulphur dioxide, chlorine gas, acids, or alkali.
4. If using in locations subject to dripping water, dripping oil, etc., or to large amounts of dust, use something to cover and protect the unit.