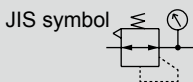




Precision regulator

RP1000 Series

● Port size: Rc1/4



Specifications

1 MPa = 10 bar

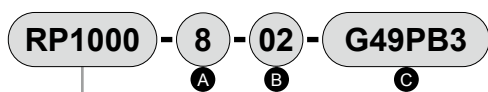
| Descriptions | RP1000-8-02 | RP1000-8-04 | RP1000-8-07 |
|------------------------------|---|--|--|
| Working fluid | Compressed clean air (refer to recommended air circuit on page 453) | | |
| Max. working pressure | MPa | 1.0 (≈150 psi, 10 bar) | |
| Min. working pressure | MPa | Set pressure +0.1 (≈15 psi, 1 bar) *1 | |
| Proof pressure | MPa | 1.5 (≈220 psi, 15 bar) | |
| Ambient / fluid temperatures | °C | -5 (23°F) to 60 (140°F) (no freezing) *3 | |
| Set pressure | MPa | 0.003 (≈0.44 psi) to 0.2 (≈29 psi) | 0.005 (≈0.73 psi) to 0.4 (≈58 psi) 0.005 (≈0.73 psi) to 0.7 (≈100 psi) |
| Sensitivity | | Within 0.1% of full scale | |
| Repeatability | | Within ±0.5% of full scale | |
| Air consumption *2 | ℓ/min(ANR) | 1.3 or less 3.4 or less | |
| Port size | | Rc1/4 | |
| Pressure gauge port size | | Rc1/8 | |
| Weight | g | 250 | |

*1: Flow rate of the secondary side is to be zero. For RP1000-8-04, if the set pressure is 0.3 MPa and over, increase +0.2 MPa in the set pressure.

*2: Conditions where the primary pressure is 0.7 MPa. Air is released to the atmosphere normally.

*3: The range is -5 to 50°C when a digital pressure sensor is used.

How to order



Model
RP1000: Precision regulator

| A Port size | | B Set pressure range | | C Other attachments | |
|-------------|-------|----------------------|-------------|---------------------|---------------------------|
| 8 | Rc1/4 | 02 | MAX.0.2 MPa | Blank | Without attachment |
| | | 04 | MAX.0.4 MPa | G49P | Pressure gauge (G49D-6-□) |
| | | 07 | MAX.0.7 MPa | B3 | L type bracket |
| | | | | R2 | Digital pressure sensor |

*1: A pressure gauge, a digital pressure sensor and a bracket are enclosed.

*2: A pressure gauge with the same pressure range as the regulator is enclosed.

*3: One R1/8 plug is enclosed with the product.

Discrete attachment model No.

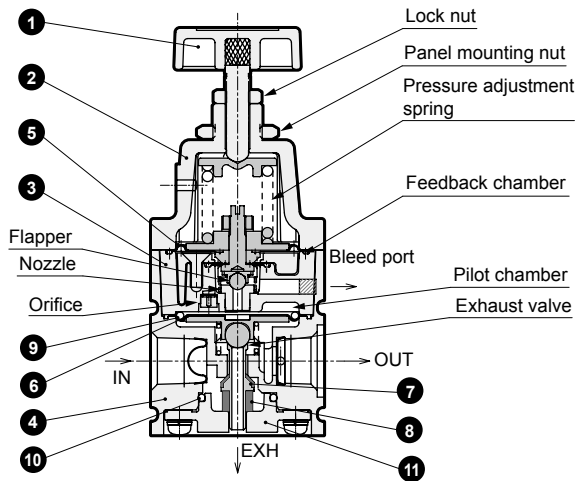
| Model | Discrete attachment model No. |
|---|-------------------------------|
| RP1000-8-02-G49P | G49D-6-P02 |
| RP1000-8-04-G49P | G49D-6-P04 |
| RP1000-8-07-G49P | G49D-6-P10 |
| RP1000-8- ⁰² / ₀₄ -B3 | B131 |
| RP1000-8- ⁰² / ₀₄ -R2 | PPX-R10N-6M |

Clean-room specifications (Catalog No. CB-033SA)

● Anti-dust generation structure for use in cleanrooms

RP1000-.....- **P70**

Internal structure and parts list



| No. | Part name | Material |
|-----|--------------------------|--|
| 1 | Pressure adjustment knob | Polyacetal resin, stainless steel |
| 2 | Cover | Aluminum alloy die-casting |
| 3 | Pilot body assembly | Aluminum alloy die-casting, etc. |
| 4 | Body | Aluminum alloy die-casting |
| 5 | Pilot diaphragm | Hydrogenated nitrile rubber |
| 6 | Main diaphragm | Hydrogenated nitrile rubber |
| 7 | Valve | Hydrogenated nitrile rubber, stainless steel |
| 8 | Bottom rubber | Silicone rubber |
| 9 | O-ring | Nitrile rubber |
| 10 | O-ring | Hydrogenated nitrile rubber |
| 11 | Bottom plug | Polybutylene terephthalate resin |

Operational explanation

Air supplied from the IN side is prevented from flowing to the OUT side by the 7 valve. Some supplied air passes through the orifice to flow into the pilot chamber.

When the 1 pressure adjustment knob is rotated, the pressure adjustment spring is compressed, and the 5 pilot diaphragm and the flapper are pushed down to close the nozzle.

If the pressure in the pilot chamber rises, the 6 main diaphragm is forced lower to open the 7 valve, and to supply air to the OUT side. The intake air flows into the feedback chamber, and works on the 5 pilot diaphragm. If the diaphragm is forced upward until the air reaches the pressure of the regulator spring, the 5 pilot diaphragm and flapper are forced upward to open the nozzle, and an extremely small amount of air is released to the atmosphere to reduce pressure in the pilot chamber. At the same time, the OUT side pressure works on the 6 main diaphragm to force it upward, and the 7 valve is closed and the set pressure is maintained.

When the air is consumed and the pressure drops on the OUT side, the pressure in the feedback chamber also drops. The 5 pilot diaphragm and the flapper are forced lower to close the nozzle. This allows the pressure in the pilot chamber to decrease, and the 6 main diaphragm is forced upward to open the exhaust valve, and the surplus pressure is exhausted from EXH port in OUT side to the atmosphere.

This pilot pressure control method using the nozzle and flapper can follow up a minimal pressure change, which enables the high precision pressure control.

Repair parts list

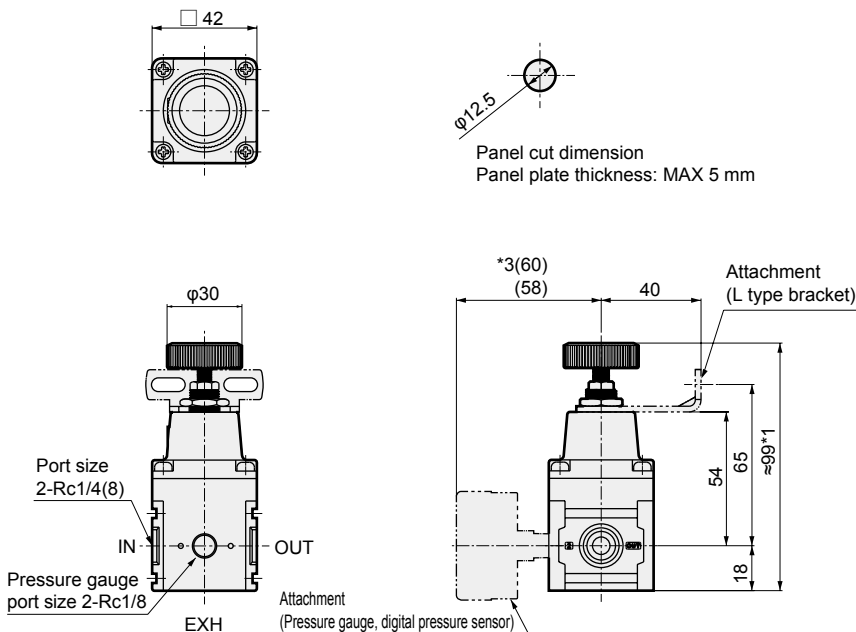
For 0.2 and 0.4 MPa

| Model No. | No. |
|-----------------------|----------|
| RP1000-PILOT-ASSY | 3, 5 |
| RP1000-DIAPHRAGM-ASSY | 6, 9 |
| RP1000-VALVE-ASSY | 7, 8, 10 |

For 0.7 MPa

| Model No. | No. |
|--------------------------|----------|
| RP1000-PILOT-ASSY-07 | 3, 5 |
| RP1000-DIAPHRAGM-ASSY-07 | 6, 9 |
| RP1000-VALVE-ASSY-07 | 7, 8, 10 |

Dimensions

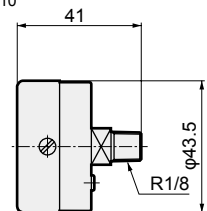


- *1: Dimensions at the setting pressure of 0 MPa
- *2: Pressure gauge, digital pressure sensor and bracket are optional.
- *3: Dimensions when the digital pressure sensor is assembled.

Pressure gauge

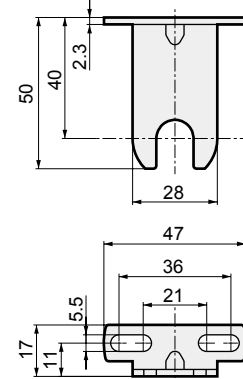
G49D-6
P02
P04
P10

Weight: 86g



L type bracket B131

Weight: 29 g
Material:
Steel
Nickel plated

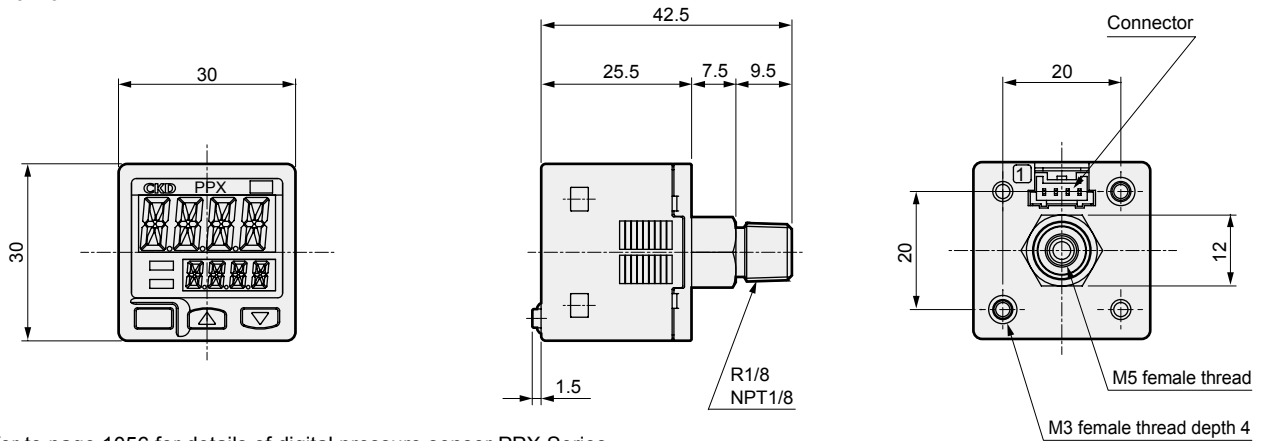


| |
|-----------------------|
| F.R.L |
| F (Filtr) |
| R (Reg) |
| L (Lub) |
| PresSW |
| Shutoff |
| SlowStart |
| FimResistFR |
| Oil-ProhR |
| MedPresFR |
| No Cu/ PTFE FRL |
| Outdrs FR |
| F.R.L (Related) |
| CompFRL |
| LgFRL |
| PrecsR |
| VacF/R |
| Clean FR |
| ElecPneuR |
| AirBoost |
| SpdContr |
| Silncr |
| CheckV/ other |
| Jnt/tube |
| AirUnt |
| PrecsCompn |
| Mech/ ElecPresSw |
| ContactSW |
| AirSens |
| PresSW Cool |
| AirFloSens/ Contr |
| WaterRtSens |
| TotAirSys (Total Air) |
| TotAirSys (Gamma) |
| RefrDry |
| DesicDry |
| HiPolymDry |
| MainFiltr |
| Dischrg etc |
| Ending |

RP1000 Series

F.R.L Dimensions

● PPX-R10N-6M



Note: Refer to page 1056 for details of digital pressure sensor PPX Series.

Weight: 40g

Flow characteristics

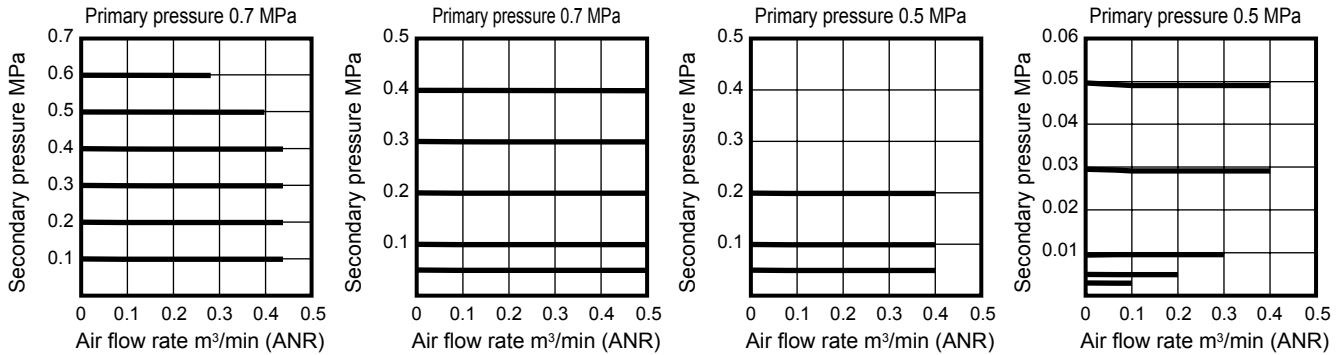
● RP1000-8-07

● RP1000-8-04

● RP1000-8-02

● RP1000-8-02

(Flow characteristics at low pressure)

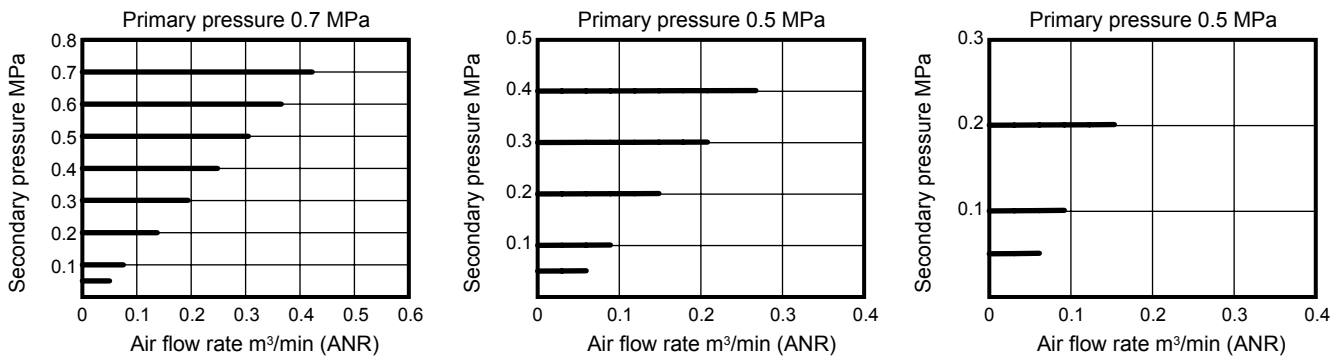


Relief flow characteristics

● RP1000-8-07

● RP1000-8-04

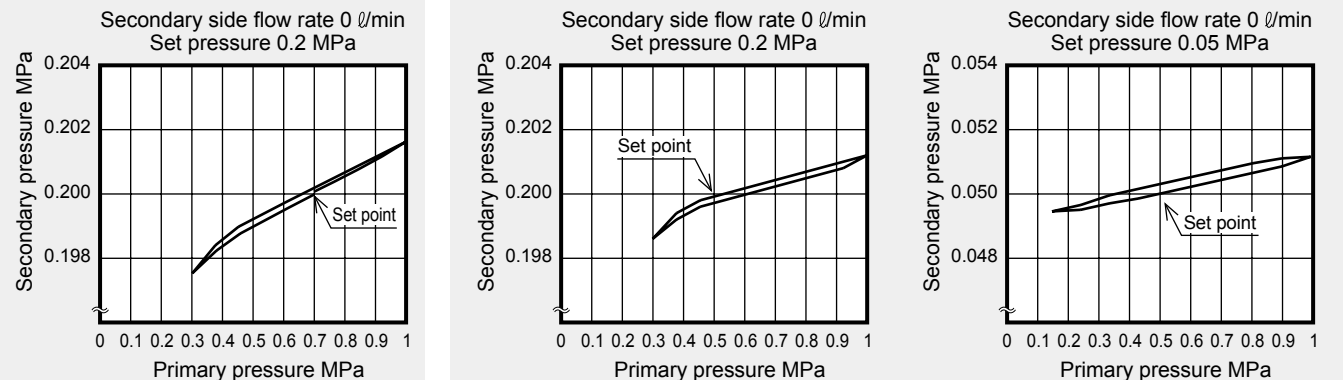
● RP1000-8-02



Pressure characteristics

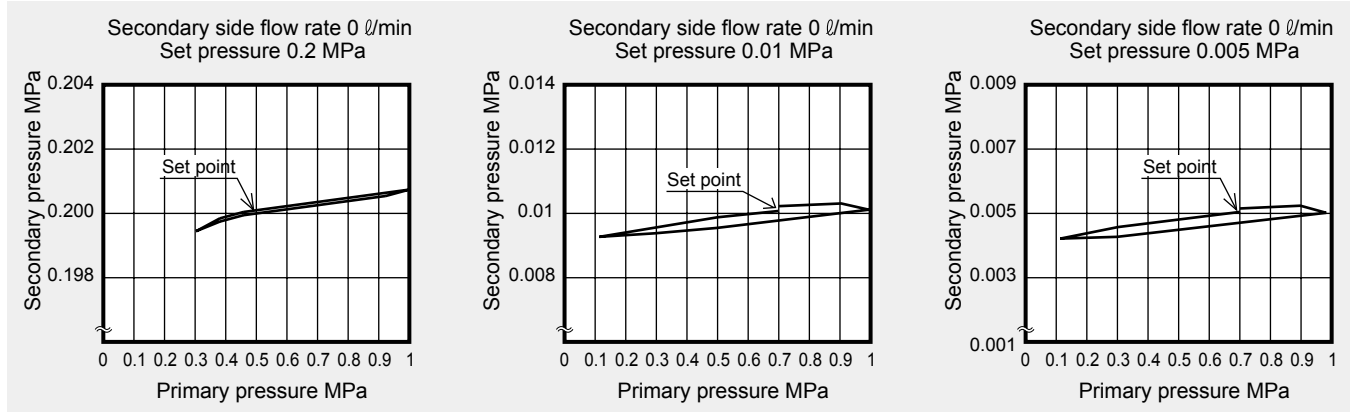
● RP1000-8-07

● RP1000-8-04

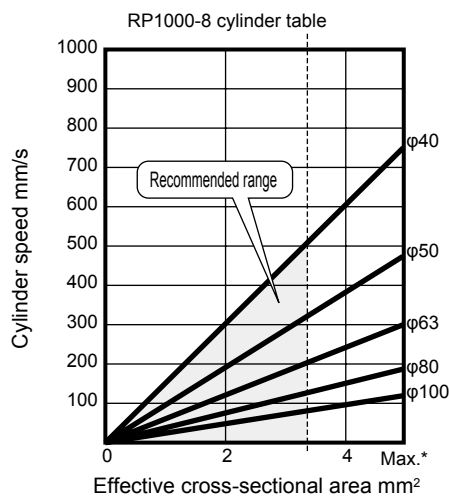


Pressure characteristics

● RP1000-8-02



Cylinder speed range of RP1000



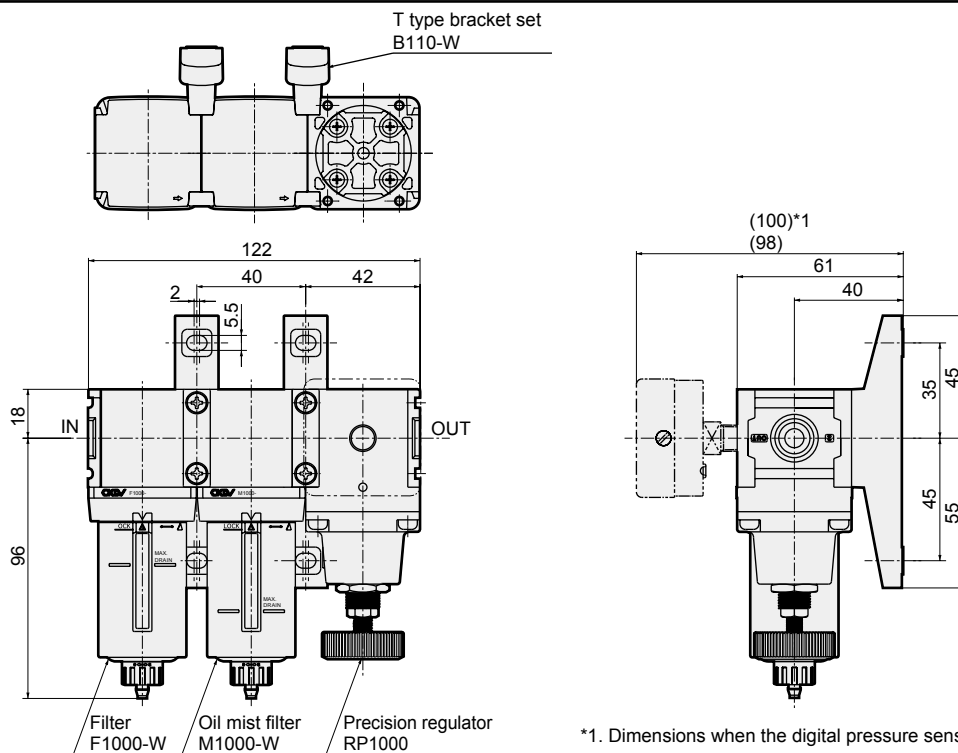
This cylinder table shows the available range according to the air supply and exhaust flow rate of the precision regulator and the required consumption flow rate at the cylinder PUSH/PULL.

----- Recommended cylinder line
(70% of max. flow rate is recommended)

* Max. cylinder line
(Cylinder directly installed)

Note: Using at a speed higher than the maximum could cause relief malfunctions.

Example of precise pressure control system



* Contact CKD if required for assembly.

| Compatible model | Filter | Oil mist filter | Precision regulator | T type bracket set |
|-------------------|---------|-----------------|---------------------|--------------------|
| Product model No. | F1000-W | M1000-W | RP1000 | B110-W (2 pcs.) |

- F.R.L
- F (Filtr)
- R (Reg)
- L (Lub)
- PresSW
- Shutoff
- SlowStart
- FimResistFR
- Oil-ProhR
- MedPresFR
- No Cu/
PTFE FRL
- Outdrs FR
- F.R.L
(Related)
- CompFRL
- LgFRL
- PrecsR**
- VacF/R
- Clean FR
- ElecPneuR
- AirBoost
- SpdContr
- Silncr
- CheckV/
other
- Jnt/tube
- AirUnt
- PrecsCompn
- Mech/
ElecPresSw
- ContactSW
- AirSens
- PresSW
Cool
- AirFloSens/
Contr
- WaterRtSens
- TotAirSys
(Total Air)
- TotAirSys
(Gamma)
- RefrDry
- DesicDry
- HiPolymDry
- MainFiltr
- Dischrg
etc
- Ending



Precision regulator

RP2000 Series

● Port size: Rc1/4 Rc3/8

JIS symbol



Specifications

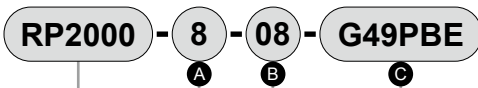
| Descriptions | RP2000-8-08 | RP2000-10-08 |
|------------------------------|---|--------------|
| Working fluid | Compressed clean air (refer to recommended air circuit on page 453) | |
| Max. working pressure | 1.0 (≈150 psi, 10 bar) | |
| Min. working pressure | Set pressure +0.1 (≈15 psi, 1 bar) *1 | |
| Proof pressure | 1.5 (≈220 psi, 15 bar) | |
| Ambient / fluid temperatures | -5 (23°F) to 60 (140°F) (no freezing) *3 | |
| Set pressure | 0.03 (≈4.4 psi, 0.3 bar) to 0.85 (≈120 psi, 8.5 bar) | |
| Sensitivity | Within 0.2% of full scale | |
| Repeatability | Within ±0.5% of full scale | |
| Air consumption | 5 or less *2 | |
| Port size | Rc1/4 | Rc3/8 |
| Exhaust side port size | Rc3/8 | |
| Pressure gauge port size | Rc1/8 | |
| Weight | 470 | |

*1: Flow rate of the secondary side is to be zero.

*2: Conditions where the primary pressure is 0.7 MPa and set pressure is 0.3 MPa. Consumed air is normally released to the atmosphere from the bleed port and EXH port. So, air consumption is the total of consumption volume released from the bleed port and EXH port. Air 1 ℓ/min. (ANR) or less is released from EXH port.

*3: The range is -5 to 50°C when a digital pressure sensor is used.

How to order



Model
RP2000: Precision regulator

| A Port size | | B Set pressure range | | C Other attachments | |
|-------------|-------|----------------------|--------------|---------------------|-------------------------|
| 8 | Rc1/4 | 08 | MAX.0.85 MPa | Blank | Without attachment |
| 10 | Rc3/8 | | | G49P | Pressure gauge |
| | | | | B | C type bracket |
| | | | | E | Silencer |
| | | | | R2 | Digital pressure sensor |

*1: If an Rc1/2 port size is required, use a pipe adaptor set (model No.: A400-15-W).

*2: Attachment is attached.

*3: The pipe adaptor set and C type bracket cannot be used together.

*4: One R1/8 plug is enclosed with the product.

Discrete attachment model No.

| Attachment code | Discrete attachment model No. |
|-----------------|-------------------------------|
| G49P | G49D-6-P10 |
| B | B220 |
| E | SLW-10A |
| R2 | PPX-R10N-6M |

Clean-room specifications (Catalog No. CB-033SA)

● Anti-dust generation structure for use in cleanrooms

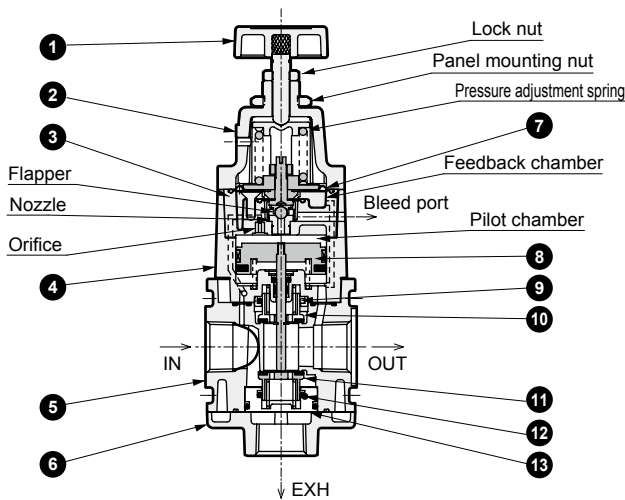
RP2000 - - P70

Specifications for rechargeable battery (Catalog No. CC-1226A)

● Structure compatible with rechargeable battery manufacturing process

RP2000-..... - P4*

Internal structure and parts list



| No. | Part name | Material |
|-----|--------------------------|---|
| 1 | Pressure adjustment knob | Polyacetal resin, stainless steel |
| 2 | Cover | Aluminum alloy die-casting |
| 3 | Pilot body assembly | Aluminum alloy die-casting, etc. |
| 4 | Top body assembly | Aluminum alloy die-casting, etc. |
| 5 | Body | Aluminum alloy die-casting |
| 6 | Exhaust adaptor | Aluminum alloy die-casting |
| 7 | Pilot diaphragm | Hydrogenated nitrile rubber |
| 8 | Piston assembly | Aluminum, stainless steel, etc. |
| 9 | O-ring | Nitrile rubber |
| 10 | Exhaust valve | Copper alloy, hydrogenated nitrile rubber |
| 11 | Air supply valve | Copper alloy, hydrogenated nitrile rubber |
| 12 | O-ring | Nitrile rubber |
| 13 | Bottom cap | Copper alloy |

Operational explanation

Air supplied from IN side is stopped its flow to OUT side by the air supply valve. Some supplied air passes through the orifice to flow into the pilot chamber. When the ① pressure adjustment knob is rotated, the pressure adjustment spring is compressed, and the ⑦ pilot diaphragm and the flapper are pushed down to close the nozzle. Pressure in the pilot chamber rises, forcing the piston lower to open the ④ air supply valve, and to supply air to OUT side. The intake air flows into the feedback chamber, and works on the ⑦ pilot diaphragm. If the diaphragm is forced upward until the air reaches the pressure of the regulator spring, the ⑦ pilot diaphragm and flapper are forced upward to open the nozzle, and an extremely small amount of air is released to the atmosphere to reduce pressure in the pilot chamber. At the same time, the OUT side pressure works on the piston to force it upward, the ⑪ air supply valve is closed and the set pressure is maintained.

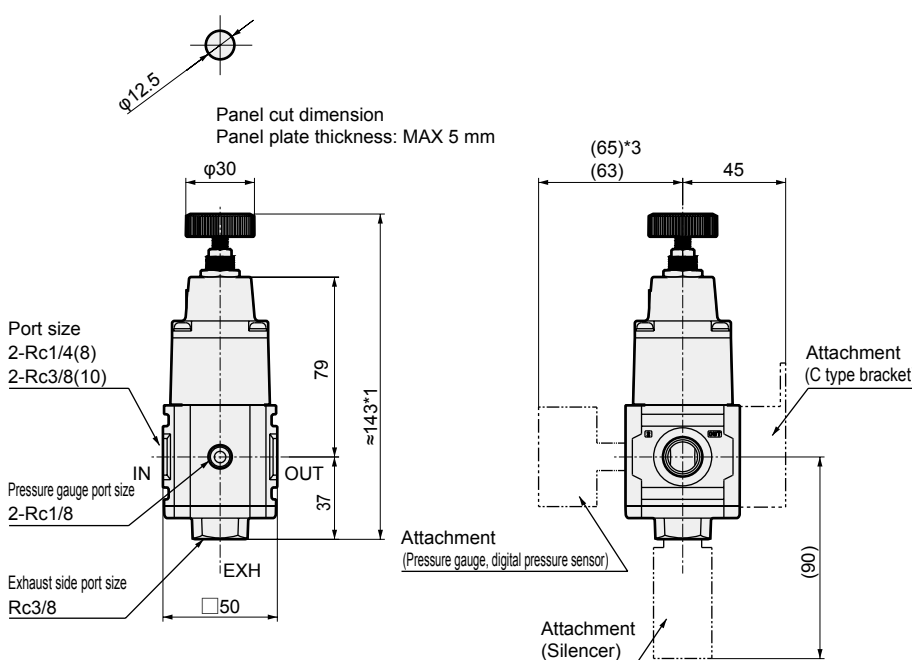
When the air is consumed and the pressure drops on the OUT side, the pressure in the feedback chamber also drops. The ⑦ pilot diaphragm and the flapper are forced lower to close the nozzle. Pressure in the pilot chamber rises, causing the piston to open the ④ air supply valve, compensating for any drop in pressure. If the OUT side pressure increases further than the set pressure, the pressure in the feedback chamber also increases. The ⑦ pilot diaphragm and the flapper are forced upward to open the nozzle. This allows the pressure in the pilot chamber to decrease, and the piston is forced upward to open the ⑩ exhaust valve; the surplus pressure is pumped from EXH port on the OUT side to the atmosphere. This pilot pressure control method using the nozzle and flapper can follow up a minimal pressure change, which enables the high precision pressure control.

Repair parts list

| No. | Part name | Model No. |
|-----|---------------------|-----------------------|
| 3 | Pilot body assembly | RP2000-PILOT-ASSY |
| 7 | Pilot diaphragm | |
| 4 | Top body assembly | RP2000-TOP-BODY-ASSY |
| 11 | Air supply valve | RP2000-BTM-VALVE-ASSY |
| 12 | O-ring | |
| 13 | Bottom cap | |

Note: Parts No. (8), (9), (10) are contained in the top body assembly (4)

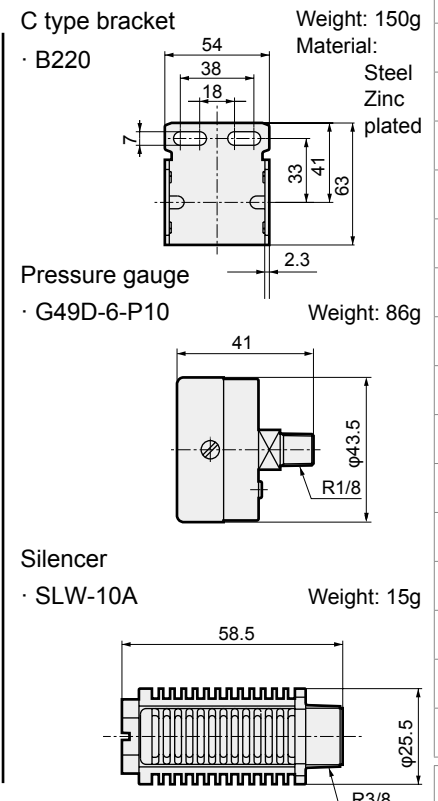
Dimensions



*1: Dimensions at the setting pressure of 0 MPa

*2: Pressure gauge, digital pressure sensor, C type bracket and silencer are optionally included.

*3: Dimensions when the digital pressure sensor is assembled.

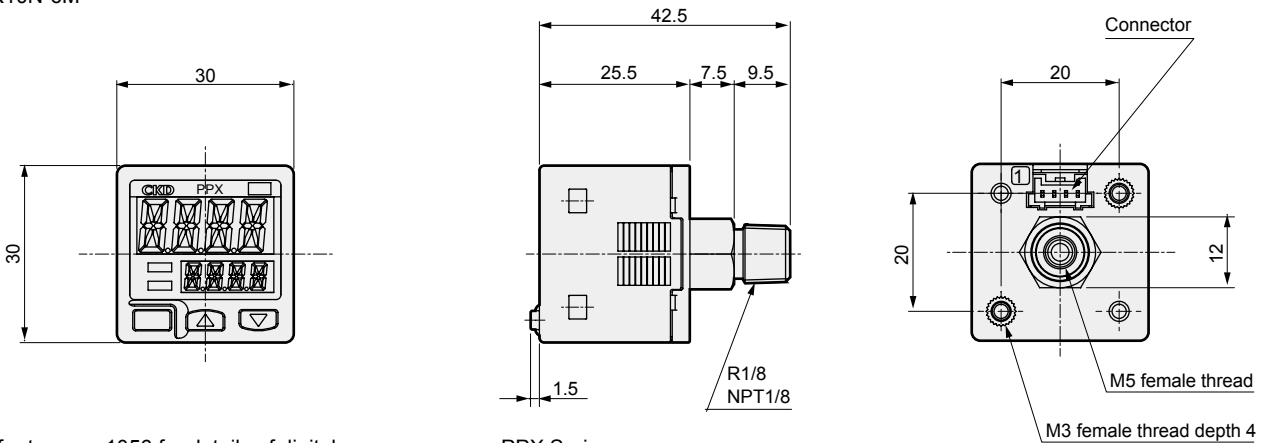


| |
|-----------------------|
| F.R.L |
| F (Filtr) |
| R (Reg) |
| L (Lub) |
| PresSW |
| Shutoff |
| SlowStart |
| FimResistFR |
| Oil-ProhR |
| MedPresFR |
| No Cu/ PTFE FRL |
| Outdrs FR |
| F.R.L (Related) |
| CompFRL |
| LgFRL |
| PrecsR |
| VacF/R |
| Clean FR |
| ElecPneuR |
| AirBoost |
| SpdContr |
| Silncr |
| CheckV/ other |
| Jnt/tube |
| AirUnt |
| PrecsCompn |
| Mech/ ElecPresSw |
| ContactSW |
| AirSens |
| PresSW Cool |
| AirFloSens/ Contr |
| WaterRISens |
| TotAirSys (Total Air) |
| TotAirSys (Gamma) |
| RefrDry |
| DesicDry |
| HiPolymDry |
| MainFiltr |
| Dischrg etc |
| Ending |

RP2000 Series

F.R.L Dimensions

F (Filtr) ● PPX-R10N-6M



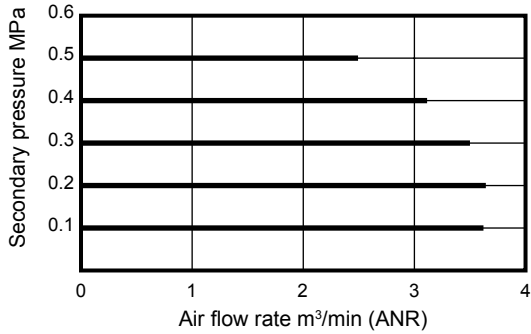
Note: Refer to page 1056 for details of digital pressure sensor PPX Series.

Weight: 40g

Flow characteristics

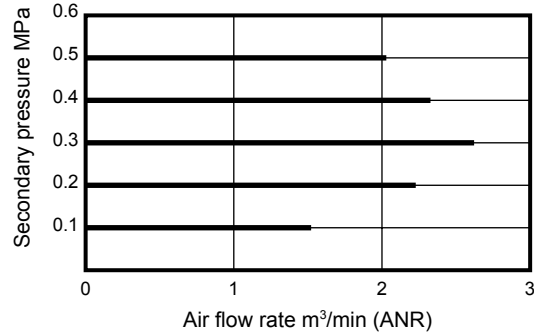
● RP2000-10-08

Primary pressure 0.7 MPa



● RP2000-8-08

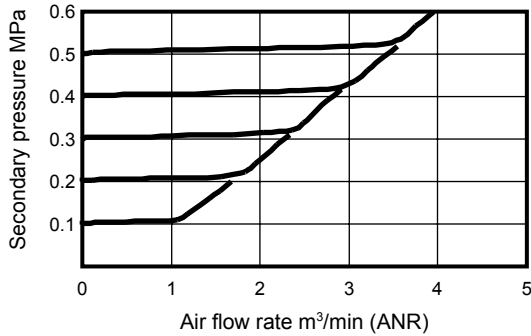
Primary pressure 0.7 MPa



Relief flow characteristics

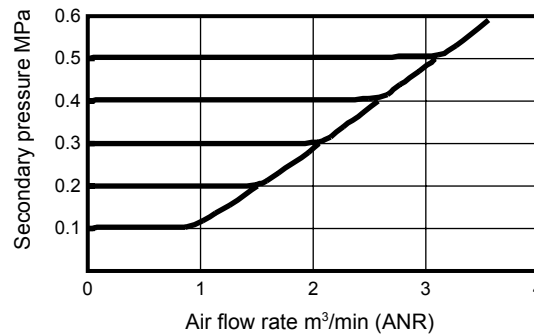
● RP2000-10-08

Primary pressure 0.7 MPa



● RP2000-8-08

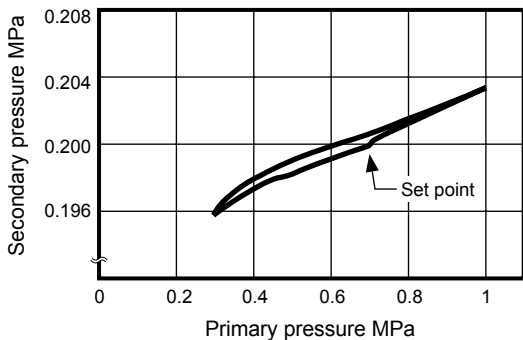
Primary pressure 0.7 MPa



Pressure characteristics

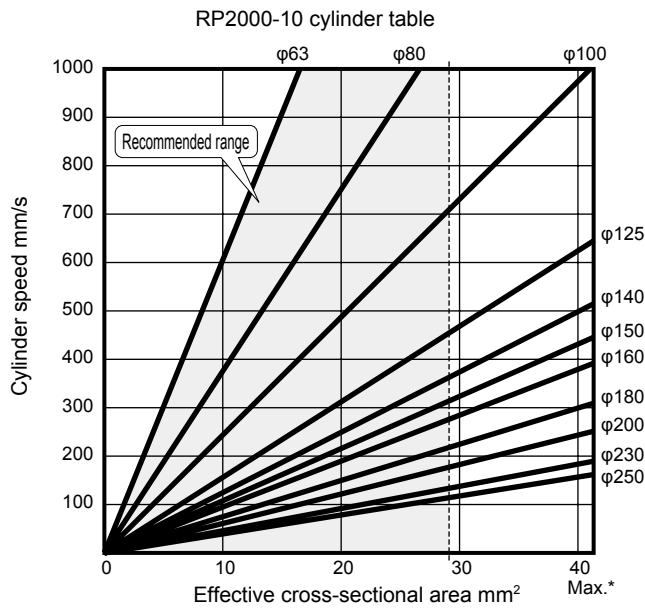
● RP2000-*-08

Secondary side flow rate 0 l/min



- F.R.L
- F (Filtr)
- R (Reg)
- L (Lub)
- PresSW
- Shutoff
- SlowStart
- FilmResistFR
- Oil-ProhR
- MedPresFR
- No Cu/PTFE FRL
- Outdrs FR
- F.R.L (Related)
- CompFRL
- LgFRL
- PrecsR
- VacF/R
- Clean FR
- ElecPneur
- AirBoost
- SpdContr
- Silncr
- CheckV/other
- Jnt/tube
- AirUnt
- PrecsCompn
- Mech/ElecPresSw
- ContactSW
- AirSens
- PresSW Cool
- AirFloSens/Contr
- WaterRtSens
- TotAirSys (Total Air)
- TotAirSys (Gamma)
- RefrDry
- DesicDry
- HiPolymDry
- MainFiltr
- Dischrg etc
- Ending

Cylinder speed range of RP2000

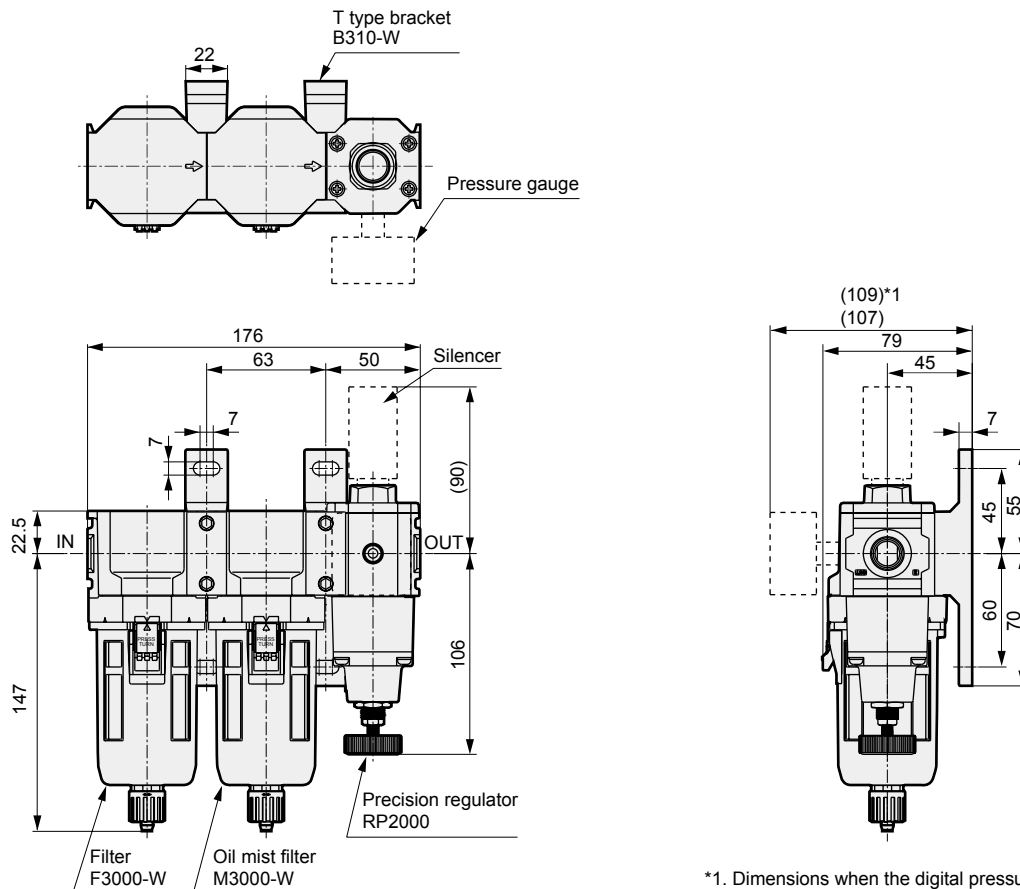


This cylinder table shows the available range according to the air supply and exhaust flow rate of the precision regulator and the required consumption flow rate at the cylinder PUSH/PULL.

----- Recommended cylinder line
(70% of max. flow rate is recommended)

* Max. cylinder line
(Cylinder directly installed)

Example of precise pressure control system



*1. Dimensions when the digital pressure sensor is assembled.

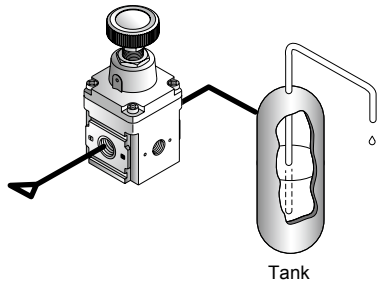
* Contact CKD if required for assembly.

| Compatible model | Filter | Oil mist filter | Precision regulator | T type bracket set |
|-------------------|---------|-----------------|---------------------|--------------------|
| Product model No. | F3000-W | M3000-W | RP2000 | B310-W (2 pcs.) |

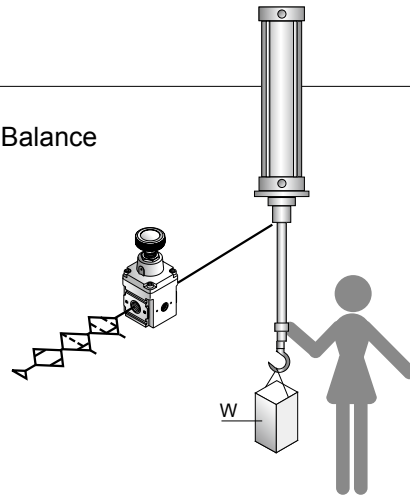
- F.R.L
- F (Filtr)
- R (Reg)
- L (Lub)
- PresSW
- Shutoff
- SlowStart
- FimResistFR
- Oil-ProhR
- MedPresFR
- No Cu/ PTFE FRL
- Outdrs FR
- F.R.L (Related)
- CompFRL
- LgFRL
- PrecsR**
- VacF/R
- Clean FR
- ElecPneuR
- AirBoost
- SpdContr
- Silncr
- CheckV/ other
- Jnt/tube
- AirUnt
- PrecsCompn
- Mech/ ElecPresSw
- ContactSW
- AirSens
- PresSW Cool
- AirFloSens/ Contr
- WaterRtSens
- TotAirSys (Total Air)
- TotAirSys (Gamma)
- RefrDry
- DesicDry
- HiPolymDry
- MainFiltr
- Dischrg etc
- Ending

Applications

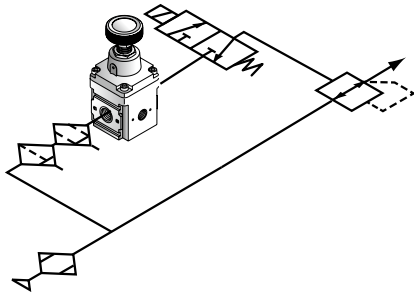
Fluid discharge control



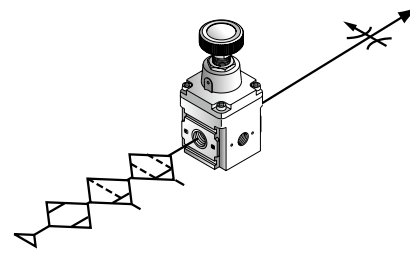
Balance



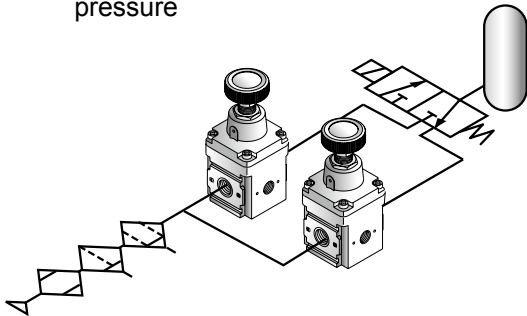
Pilot pressure control



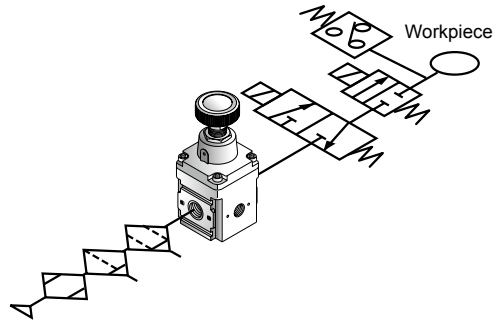
Very low pressure blow



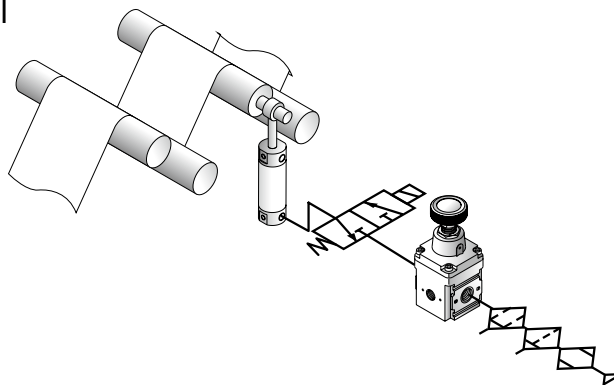
Quick pressure regulation of tank pressure



Leakage test



Tension control



- F.R.L
- F (Filtr)
- R (Reg)
- L (Lub)
- PresSW
- Shutoff
- SlowStart
- FimResistFR
- Oil-ProhR
- MedPresFR
- No Cu/
PTFE FRL
- Outdrs FR
- F.R.L
(Related)
- CompFRL
- LgFRL
- PrecsR**
- VacF/R
- Clean FR
- ElecPneuR
- AirBoost
- SpdContr
- Silncr
- CheckV/
other
- Jnt/tube
- AirUnt
- PrecsCompn
- Mech/
ElecPresSw
- ContactSW
- AirSens
- PresSW
Cool
- AirFloSens/
Contr
- WaterRtSens
- TotAirSys
(Total Air)
- TotAirSys
(Gamma)
- RefrDry
- DesicDry
- HiPolymDry
- MainFiltr
- Dischrg
etc
- Ending