DOCUMENT No. : AR＊－OMJ0032

# OPERATION MANUAL

PRODUCT NAME: **REGULATOR／MANIFOLD REGULATOR**

MODEL: ARM5S※－※－※※※

ARM5A※※－※※－※※※

ARM5B※－※※－※※※

○Read this operation manual carefully to understand before installation and operation.
○Pay extra attention on the clause concerning the safety.
○Keep this operation manual available whenever necessary.

**SMC CORPORATION**

# CONTENTS




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# 1.PRECAUTIONS FOR SAFETY

Precautions shown here are to ensure the product is used correctly and safely, and to prevent hazard and damage inflicting upon people from occurring. These precautions are divided into three catagories, "Caution", "Warning", and "Danger" to indicate the degree of possible hazard and damage, and urgency.
As all these are important for safety, never fail to follow them in addition of ISO4414, JIS B8370, and other safety regulations.

⚠ Caution : Possible harmful effects are expected to be on people and possible loss is expected only of objects when wrong operation occurred.

⚠ Warning : Possible loss or serious injury of people is expected when wrong operation occurred.

⚠ Danger : Imminebt dager that possible loss or serious injury of people is expected without evacuation.

※1)ISO 4414 Pneumatic fluid powor-General rules relating to systems

※2)JIS B 8370 Common regulations for penumatic systems.

## ⚠ WARNING

**①Suitability of penumatic equipment should be determined by a designer of the penumatic system or a person who prescribes its specifications.**

Since the product shown here is used in various operating conditions, its suitability to a system should be determined by the pnuumatic system designer or the person prescribes its specifications based on necessary analysis and tests. The person who determined the suitability of the system is responsible for the performance at a certina point of time and safety assurnace of this system.
A system should be constructed by referring to the latest product information and catalogues, discussing all the contents of specifications, and considering possibilities of equipment failure.

**②Equipment should be handled by those who have sufficient knowledge and experience**

Compressed air fluid could be hazardous fi it is handled incorrectly. Assembly, operation and maintenance of machinery and equipment for which pneumatic apparatuses are used should be performed by those who have sufficient knowledge and experience.

**③Never handle the machinery or equipment, or never take out the apparatus until safety is confirmed**

a. Check and maintenance of machinery or equipment should be performed after it is confirmed that dropping or uncontrollable running prevention measures are taken for the equipment on which the product is mounted.
b. Apparatuses should be taken out after it is confirmed equipment corresponding to air supply, that is an energy source, should be turned off; and compressed air in the sustem should be exhausted.
c. Re-starting of machinery or equipment should be done with ample care after it is confirmed that prevention measure s for sudden movement are taken.

**④When the product is used in the following conditions or environment, consideratins for safety measures should be given along with consultation to our company**

a. Outdoor usage, or usage in conditions or environment outside of the specifications indicated.
b. Usage for nuclear power, railroad, air navigation, vehicle, medical equipment, appliances contacting food and beverage, entertainment appratuses, emergency shutdown circuits, cluthc/break circuits for pressing, and safety devices.
c. Usage for applications which espacially require safety because considerable effects to people and properties are expected.

# 2.COMMON PRECAUTIONS

## Design & Selection

**⚠ Warning**

①Confirm specifications.

Products represented in this manual are designed for use in compressed ari applications only, unless other wise indicated. Do not use the products outside their design parameters. Contact SMC when using the products in applications other than compressed air.

②Confirm set pressure.

Place safety devices in areas where the output pressure ishigher than the set pressure of the regulator. Else, it may cause damage to the equipment on secondary side or a malfunction.

③Residual pressure after exhaust of inlet pressure

Note that outlet pressure can't be removed (it may have exhausted with outlet pressure set to low pressure.

④Use in the circuit where outlet is enclosed or in balance circuit.

Contact SMC before use to confirm availability of the products in these circuit.

## Installation

**⚠ Warning**

①Do not instal unless the opration manual have been read and understood.

When installing the products, allow acces for maintenance.

③Tightening torque

When installing the products, follow the listed torque specifications.

## Piping

**⚠ Caution**

Tube insertion and removal fromo one-touch fittings

1)Installing tube

①Cut the tube perpendicularly, being careful not to damage the outside surface. Use SMC tube cutter "TK-1", "TK-2" or "TK-3". Do not cut the tube with pilers, nippers, scissors, etc. other wise, the tube will be deformed and troubles may result.

②Grasp the tube, slowly push it into the one-touch fittings until it comes to a stop.

③Pull the tubing back gently to make sure it has a positive seat. Insufficient installation may cause air leakage or tube releasing.

2)Removing tube

①Push in evenly on the release button.

②Pull out the tube while keeping the release button depressed. If the release button is not held down, the tube cannot be withdrawn.

③To ensure the tubing, cut off the previously lodged portion of the tube.

**⚠ Caution**

Use of tubing other htant SMC's brand

When usign a brand of tubing other than SMC, be careful of the tolerance of the tube's O.D. shown below.

| | |
|---|---|
| 2)Soft nylon tubing | ≦ +/-0.1mm |
| 3)Polyurethane tubing | ≦ +0.15mm |
| | ≦ -0.2mm |

When the tolerance of the tube's O.D. is out of range mentioned above, donot use the buing. Tubing can not be connected and it causes air leakage or tubing may come out.

## Air source

**⚠ Warning**

①Use clear air.

If the compressed air supply is contaminated with chemicals, sythetic mateirals containing organic solvent, salnity, corrosive gas, etc., damage to the pneumatic equipment may occur.

**⚠ Caution**

①Install air filter.

Install ari filter with filtration of 5μm or less near inlet of the regulator.

②Install other air cleaning equipment such as aftercooler, air dryer and drain catch as necessary. Compressed air containing a lot of drain may cause pressure switch and other pneumatic equipment as well as the regulator to have maulfunction.

③Place mist separator at inlet of reuglator for the environment where carbon dust frequently occur.

If a lot of carbon dust comes from compressor, a part of the carbon dust may attach inside of the regulator and cause it to have malfucntion. For detail of quality of compressed air, refer to "Compressed air claning system".

## Environment

**⚠ Warning**

①Do not use in an environment where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.

②Do not expose the product to dierect sunlight for an extended period of time. If the product has to be maounted in an area where exposure to direct sunlight can not be avoided, the use of a protective cover is recommended.

③Do not mount the product in a location where it is subject to srong vibrations and.or shock. Check the product specifications for above ratings.

④Do not mount the product in a location where it is exposed to readiant heat.

## Maintenance

**⚠ Warning**

①Maintenance procedure are outline in this manual. Not followingproper procedures could cause to the product to malfunction and could lead to damage to the equipment or machine.

②Maintenance

If handled improperly, compressed air can be dangerous. Assembly, handling and repair of pneumatic systems should be performed by qualified

③Shut-down before maintenance

Before attempting any kind of maintenance, make sure the supply pressure is shut off and all residual air pressure is released from the systemt to be worked on.

④Start-up after maintenance

Apply operating pressure and power to the equipment and check for proper operation and possible air leakage. If operation is abnormal, verify product set-up parameters.

⑤Do not make any modification to the product.

## Adjustment

**⚠ Warning**

Regulator

①Set up the regulator while verifying th epressure that is indicated on inlet and outlet pressure gauges. Turning the handle excessively could damage the internal parts.

②Opearte pressure adjusting handle manually. Use of any tool may damage the regulator.

**⚠ Caution**

Regulator

①Make sure to check inlet pressure before setting the pressure.

②The range for setting outlet pressure is 85% or

③Relese lock of pressure adjusting handle before starting adjustment. Adjustment in improper order may damage the handle and cause flactuation of outlet pressure.

④Turn the handle clockwise for increase of outlet pressure and counterclockwise for decrease of outlet pressure. (Set pressure turning the handle in pressure incremental direction.)

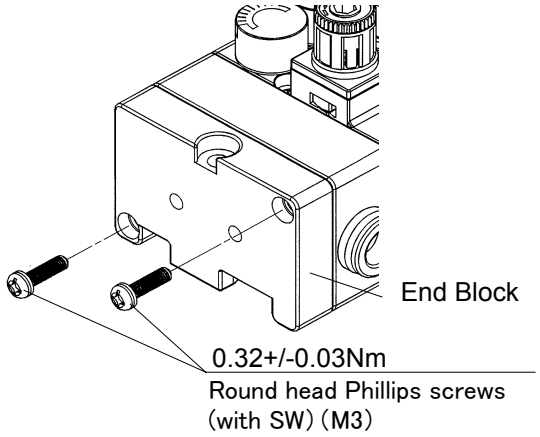
## 3.INDIVIDUAL PRECAUTIONS

### ⚠Warning

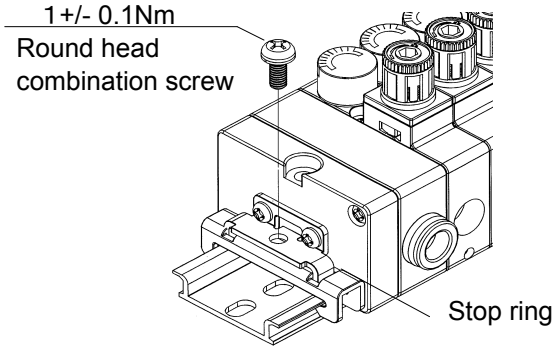
**Install the round head Phillips screws within a specified tightening torque.**

If the tightening torque exceeds the specified value, the mounting screws, block and bracket might be damaged. On the contorary, if the tighteninig torque is below the specified value, the connection might be loosened.

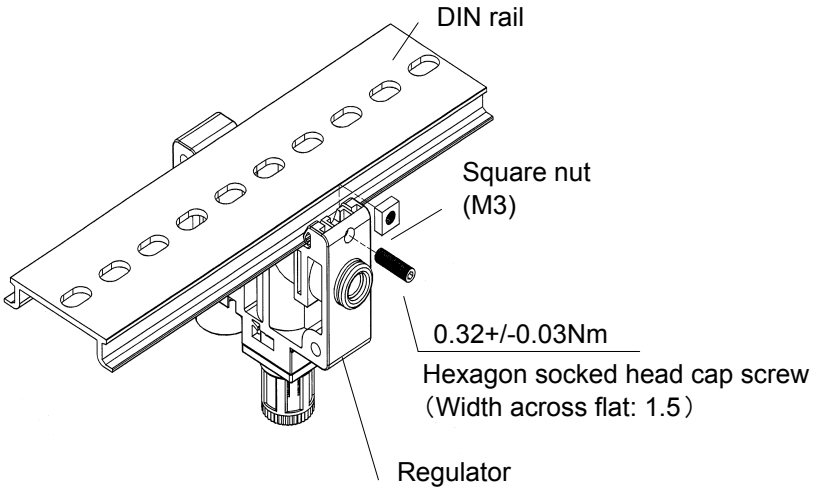
**1. Tightening torque of Round head Phillips screws for tie-rod under regulator manifold specification.**




**2. Tightening torque of round head combination screw for DIN rail stop ring under regulator manifold specification**




**3.Tightening torque of hexagon socket head cap screw for DIN rail mounting under regulator individual specification**

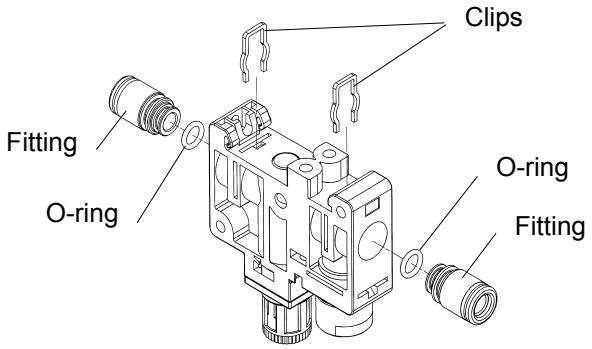


## ⚠ Caution

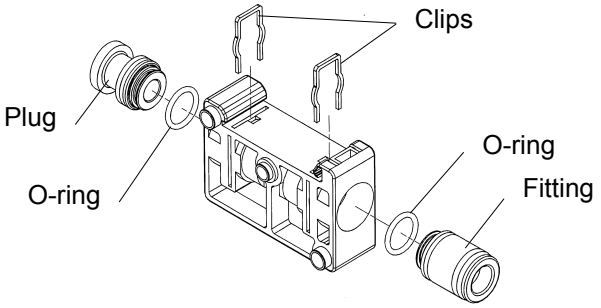
**Exchange of one-touch tube fitting.**

One-touch fitting is a cassette type, easily replaceable fitting.
See [9. Peplacement Procedure (P20 and 21)] for details of the replacement procedure.

**①Regulator block**

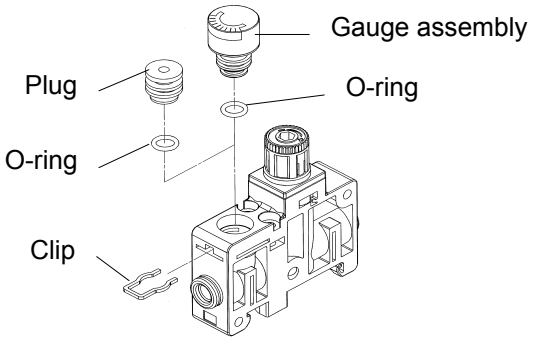



**②Common supply block**




**Exchange of pressure gauge and port plug.**

A pressure gange and port plug can also be replaced in accordance with the same replacement procedure of One-touch fittng.




Note1) Be sure to check that no pressure is supplied from the inlet and outlet ports before replacement, and eliminate the internal pressurecompletely before starting the operation. It is dangerous if the operation is started with the pressure is sealed inside.

Note 2）When a clip is pull out, hold the clip with a hand and remove it slowly.
If pulling the clip with a strong force, it may fly out and cause a dangerous situation.

Note 3) When removing the straight type One-touch fitting from each block, connect a tube or plug (KQP-**) to the One-touch fitting after removing the clip, and pull out the fitting as holding the tube (or plug).
If the One-touch fitting is pulled out as holding its release bush, the release bush might be damaged.

Note 4）Insert the replacing component all the way in properly, then insert the clip completely.
These components may come off if the insertion is not enough.

Note 5) When inserting a tube to the elbow type One-touch fitting, insert the tube as holding the fitting with a hand.
If the tube is inserted without holding the fitting, each block and the One-touch fitting may subject to excessive force,and it lead to air leakage or damage.

## 4.APPLICATION

The product described in this manual aims at pressure controlling of air lines.

## 5.SPECIFICATIONS

### ①Manifold regulator Common supply spec.

| | | |
|---|---|---|
| Regulator construction | | Direct acting |
| Working principal | | Piston type |
| Relief mechanism | Standard | Relief type |
| | Semi-standard | Non-relieving type |
| IN side tubing O.D. | | ϕ6,ϕ8,ϕ1/4",ϕ5/16" |
| OUT side tubing O.D. | | ϕ4,ϕ6,ϕ5/32",ϕ1/4" |
| Proof pressure | | 1.5MPa (225PSI) |
| Max. operating pressure | | 1.0MPa (150PSI) |
| Set pressure range | Standard | 0.05 to 0.7MPa (7 to 105PSI) |
| | Semi-standard | 0.05 to 0.35MPa (7 to 50PSI)（Low pressure type) |
| Fluid | | Air |
| Ambient and fluid temperature | | 5 to 60 °C (41 to 150 °F) |

### ②Manifold regulator individual supply spec.

| | | |
|---|---|---|
| Regulator construction | | Direct acting |
| Working principal | | Piston type |
| Relief mechanism | Standard | Relief type |
| | Semi-standard | Non-relieving type |
| IN side tubing O.D. | | ϕ4,ϕ6,ϕ5/32",ϕ1/4" |
| OUT side tubing O.D. | | ϕ4,ϕ6,ϕ5/32",ϕ1/4" |
| Proof pressure | | 1.5MPa (225PSI) |
| Max. operating pressure | | 1.0MPa (150PSI) |
| Set pressure range | Standard | 0.05 to 0.7MPa (7 to 105PSI) |
| | Semi-standard | 0.05 to 0.35MPa (7 to 50PSI)（Low pressure type) |
| Fluid | | Air |
| Ambient and fluid temperature | | 5 to 60 °C (41 to 150 °F) |

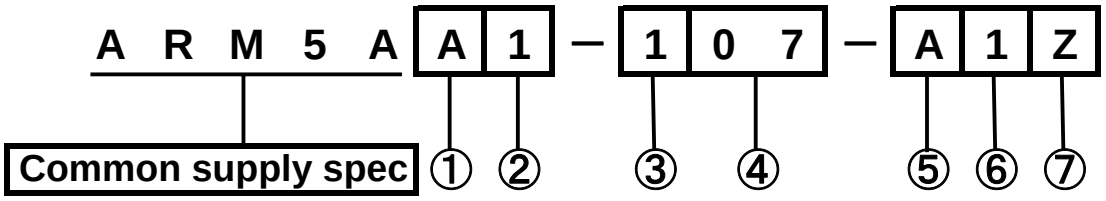
### ③Regulaor

| | | |
|---|---|---|
| Regulator construction | | Direct acting |
| Working principal | | Piston type |
| Relief mechanism | Standard | Relief type |
| | Semi-standard | Non-relieving type |
| IN side tubing O.D. | | ϕ4,ϕ6,ϕ5/32",ϕ1/4" |
| OUT side tubing O.D. | | ϕ4,ϕ6,ϕ5/32",ϕ1/4" |
| Proof pressure | | 1.5MPa (225PSI) |
| Max. operating pressure | | 1.0MPa (150PSI) |
| Set pressure range | Standard | 0.05 to 0.7MPa (7 to 105PSI) |
| | Semi-standard | 0.05 to 0.35MPa (7 to 50PSI)（Low pressure type) |
| Fluid | | Air |
| Ambient and fluid temperature | | 5 to 60 °C (41 to 150 °F) |

Note1) Not applicable to copper free spec.
Note2) If the manifold regulator is used in backflow, set pressure should be 0.1MPa (15PSI) or more.

## 6.HOW TO ORDER

### ①Manifold regulator／Common supply spec




①Manifold mounting

| Symbol | Manifold mounting |
|---|---|
| A | Direct mounting |
| B | Din rail mounting |

②IN position

| Symbol | Mounting position |
|---|---|
| 1 | Bottom |
| 2 | Top |

③No. of stations of regulator blocks

| Symbol | Stations |
|---|---|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| M | 10 |

⑤Accessory

| Symbol | Pressure gauge | | Comomon supply block mounting position | | |
|---|---|---|---|---|---|
| | With | Without | Side L (Left) | Side R (Right) | Side B (Both sedes) |
| A | ● | | ● | | |
| B | ● | | | ● | |
| C | ● | | | | ● |
| D | | ● | ● | | |
| E | | ● | | ● | |
| F | | ● | | | ● |

⑥Semi standard

| Symbol | None | Set pressure of 0.35MPa (50PSI) | Non-relieving |
|---|---|---|---|
| Nil | ● | | |
| 1 | | ● | |
| 2 | | | ● |
| 3 | | ● | ● |

⑦Unit representation

| Symbol | Description |
|---|---|
| Nil | Display unit for product label and pressure gauge: MPa |
| Z | Display unit for product label and pressure gauge: PSI |

④IN/OUT fitting type

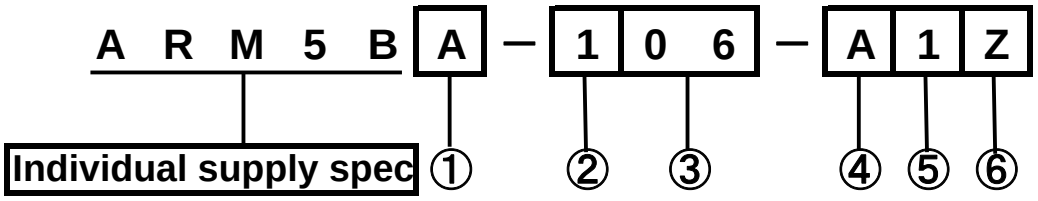
Metric size

| Symbol | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | | Elbow | | Straignt | | Elbow | |
| | ϕ6 | ϕ8 | ϕ6 | ϕ8 | ϕ4 | ϕ6 | ϕ4 | ϕ6 |
| 07 | ● | | | | ● | | | |
| 08 | ● | | | | | ● | | |
| 09 | | ● | | | ● | | | |
| 10 | | ● | | | | ● | | |
| 19 | | | ● | | | | ● | |
| 20 | | | ● | | | | | ● |
| 21 | | | | ● | | | ● | |
| 22 | | | | ● | | | | ● |
| 26 | ● | | | | | | ● | |
| 27 | ● | | | | | | | ● |
| 28 | | ● | | | | | ● | |
| 29 | | ● | | | | | | ● |
| 33 | | | ● | | ● | | | |
| 34 | | | ● | | | ● | | |
| 35 | | | | ● | ● | | | |
| 36 | | | | ● | | ● | | |

Inch size

| Symbol | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | | Elbow | | Straignt | | Elbow | |
| | ϕ1/4" | ϕ5/16" | ϕ1/4" | ϕ5/16" | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" |
| 57 | ● | | | | ● | | | |
| 58 | ● | | | | | ● | | |
| 59 | | ● | | | ● | | | |
| 60 | | ● | | | | ● | | |
| 69 | | | ● | | | | ● | |
| 70 | | | ● | | | | | ● |
| 71 | | | | ● | | | ● | |
| 72 | | | | ● | | | | ● |
| 76 | ● | | | | | | ● | |
| 77 | ● | | | | | | | ● |
| 78 | | ● | | | | | ● | |
| 79 | | ● | | | | | | ● |
| 83 | | | ● | | ● | | | |
| 84 | | | ● | | | ● | | |
| 85 | | | | ● | ● | | | |
| 86 | | | | ● | | ● | | |

## ②Manifold regulator／Individual supply spec




①Manifold mounting

| Symbol | Manifold mounting |
|---|---|
| A | Direct mounting |
| B | Din rail mounting |

④Accessory

| Symbol | Accessory |
|---|---|
| Nil | Without pressure gauge |
| A | With pressure gauge |

②No. of stations of regulator blocks

| Symbol | Stations |
|---|---|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| M | 10 |

⑤Semi standard

| Symbol | None | Set pressure of 0.35MPa (50PSI) | Non-relieving |
|---|---|---|---|
| Nil | ● | | |
| 1 | | ● | |
| 2 | | | ● |
| 3 | | ● | ● |

⑥Unit representation

| Symbol | Description |
|---|---|
| Nil | Display unit for product label and pressure gauge: MPa |
| Z | Display unit for product label and pressure gauge: PSI |

③IN/OUT fitting

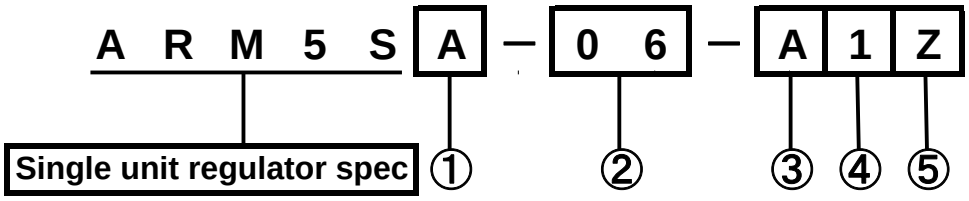
Metric size

| Symbol | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | | Elbow | | Straignt | | Elbow | |
| | ϕ4 | ϕ6 | ϕ4 | ϕ6 | ϕ4 | ϕ6 | ϕ4 | ϕ6 |
| 06 | ● | | | | ● | | | |
| 07 | | ● | | | ● | | | |
| 08 | | ● | | | | ● | | |
| 18 | | | ● | | | | ● | |
| 19 | | | | ● | | | ● | |
| 20 | | | | ● | | | | ● |
| 25 | ● | | | | | | ● | |
| 26 | | ● | | | | | ● | |
| 27 | | ● | | | | | | ● |
| 32 | | | ● | | ● | | | |
| 33 | | | | ● | ● | | | |
| 34 | | | | ● | | ● | | |

Inch size

| Symbol | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | | Elbow | | Straignt | | Elbow | |
| | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" |
| 56 | ● | | | | ● | | | |
| 57 | | ● | | | ● | | | |
| 58 | | ● | | | | ● | | |
| 68 | | | ● | | | | ● | |
| 69 | | | | ● | | | ● | |
| 70 | | | | ● | | | | ● |
| 75 | ● | | | | | | ● | |
| 76 | | ● | | | | | ● | |
| 77 | | ● | | | | | | ● |
| 82 | | | ● | | ● | | | |
| 83 | | | | ● | ● | | | |
| 84 | | | | ● | | ● | | |

## ③Single unit regulator spec




①Manifold mounting

| Symbol | Manifold mounting |
|---|---|
| A | Direct mounting |
| B | Din rail mounting |

③Accessory

| Symbol | Accessory |
|---|---|
| Nil | Without pressure gauge |
| A | With pressure gauge |

②IN/OUT fitting type

Metric size

| Symbol | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | | Elbow | | Straignt | | Elbow | |
| | ϕ4 | ϕ6 | ϕ4 | ϕ6 | ϕ4 | ϕ6 | ϕ4 | ϕ6 |
| 06 | ● | | | | ● | | | |
| 07 | | ● | | | ● | | | |
| 08 | | ● | | | | ● | | |
| 18 | | | ● | | | | ● | |
| 19 | | | | ● | | | ● | |
| 20 | | | | ● | | | | ● |
| 25 | ● | | | | | | ● | |
| 26 | | ● | | | | | ● | |
| 27 | | ● | | | | | | ● |
| 32 | | | ● | | ● | | | |
| 33 | | | | ● | ● | | | |
| 34 | | | | ● | | ● | | |

Inch size

| Symbol | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | | Elbow | | Straignt | | Elbow | |
| | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" |
| 56 | ● | | | | ● | | | |
| 57 | | ● | | | ● | | | |
| 58 | | ● | | | | ● | | |
| 68 | | | ● | | | | ● | |
| 69 | | | | ● | | | ● | |
| 70 | | | | ● | | | | ● |
| 75 | ● | | | | | | ● | |
| 76 | | ● | | | | | ● | |
| 77 | | ● | | | | | | ● |
| 82 | | | ● | | ● | | | |
| 83 | | | | ● | ● | | | |
| 84 | | | | ● | | ● | | |

④Semi standard

| Symbol | None | Set pressure of 0.35MPa (50PSI) | Non-relieving |
|---|---|---|---|
| Nil | ● | | |
| 1 | | ● | |
| 2 | | | ● |
| 3 | | ● | ● |

⑤Unit representation

| Symbol | Description |
|---|---|
| Nil | Display unit for product label and pressure gauge: MPa |
| Z | Display unit for product label and pressure gauge: PSI |

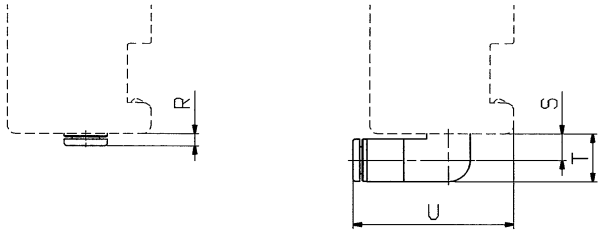
## ④Regulator option

### （1）One-touch fitting for regulator

**V V Q 1 0 0 0 — 5 0 A — L 1 C 4**

**One-touch fitting for regulator**

① ②




①Fitting Type

| Symbol | Type |
|---|---|
| Nil | Straignt |
| L1 | Elbow |

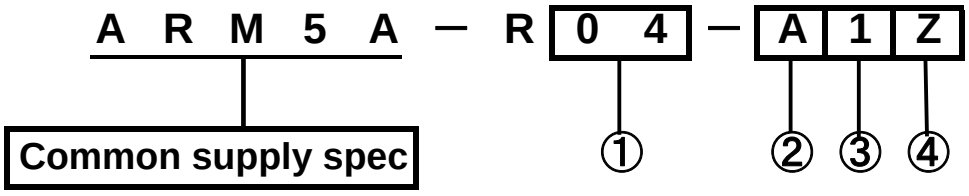
②Fitting size

| Symbol | Size |
|---|---|
| C4 | ϕ4 |
| C6 | ϕ6 |
| N3 | ϕ5/32" |
| N7 | ϕ1/4" |

| Fitting size | R | S | T | U |
|---|---|---|---|---|
| ϕ4,ϕ5/32" | 2.5 | 6 | 11 | 35.5 |
| ϕ6 | 3 | 6.5 | 11 | 36 |
| ϕ1/4" | 6.5 | 6 | 11.5 | 38.5 |

## ⑤Option

### （1）Common supply spec／Regulator block




①OUT fitting type

Metric size

| Symbol | OUT side | | | |
|---|---|---|---|---|
| | Straignt | | Elbow | |
| | ϕ4 | ϕ6 | ϕ4 | ϕ6 |
| 04 | ● | | | |
| 05 | | ● | | |
| 16 | | | ● | |
| 17 | | | | ● |

Inch size

| Symbol | OUT side | | | |
|---|---|---|---|---|
| | Straignt | | Elbow | |
| | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" |
| 54 | ● | | | |
| 55 | | ● | | |
| 66 | | | ● | |
| 67 | | | | ● |

②Content

| Symbol | Pressure gauge | | Tie-rod for station increase | |
|---|---|---|---|---|
| | With | Without | With | Without |
| A | ● | | ● | |
| B | ● | | | ● |
| C | | ● | ● | |
| D | | ● | | ● |

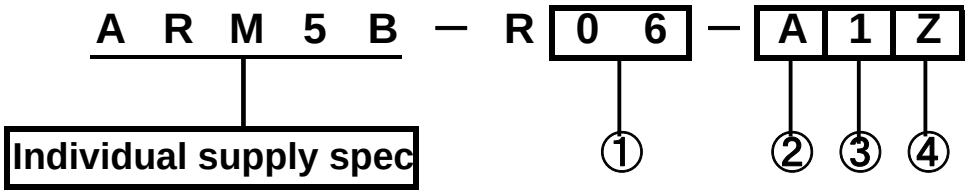
③Semi standard

| Symbol | None | Set pressure of 0.35MPa (50PSI) | Non-relief |
|---|---|---|---|
| Nil | ● | | |
| 1 | | ● | |
| 2 | | | ● |
| 3 | | ● | ● |

④Unit representation

| Symbol | Description |
|---|---|
| Nil | Display unit for product label and pressure gauge: MPa |
| Z | Display unit for product label and pressure gauge: PSI |

## （2）Individual supply spec／regulator block




①IN/OUT fitting type

Metric size

| Symbol | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | | Elbow | | Straignt | | Elbow | |
| | ϕ4 | ϕ6 | ϕ4 | ϕ6 | ϕ4 | ϕ6 | ϕ4 | ϕ6 |
| 06 | ● | | | | ● | | | |
| 07 | | ● | | | ● | | | |
| 08 | | ● | | | | ● | | |
| 18 | | | ● | | | | ● | |
| 19 | | | | ● | | | ● | |
| 20 | | | | ● | | | | ● |
| 25 | ● | | | | | | ● | |
| 26 | | ● | | | | | ● | |
| 27 | | ● | | | | | | ● |
| 32 | | | ● | | ● | | | |
| 33 | | | | ● | ● | | | |
| 34 | | | | ● | | ● | | |

Inch size

| Symbol | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | | Elbow | | Straignt | | Elbow | |
| | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" | ϕ5/32" | ϕ1/4" |
| 56 | ● | | | | ● | | | |
| 57 | | ● | | | ● | | | |
| 58 | | ● | | | | ● | | |
| 68 | | | ● | | | | ● | |
| 69 | | | | ● | | | ● | |
| 70 | | | | ● | | | | ● |
| 75 | ● | | | | | | ● | |
| 76 | | ● | | | | | ● | |
| 77 | | ● | | | | | | ● |
| 82 | | | ● | | ● | | | |
| 83 | | | | ● | ● | | | |
| 84 | | | | ● | | ● | | |

②Content

| Symbol | Pressure gauge | | Tie-rod for station increase | |
|---|---|---|---|---|
| | With | Without | With | Without |
| A | ● | | ● | |
| B | ● | | | ● |
| C | | ● | ● | |
| D | | ● | | ● |

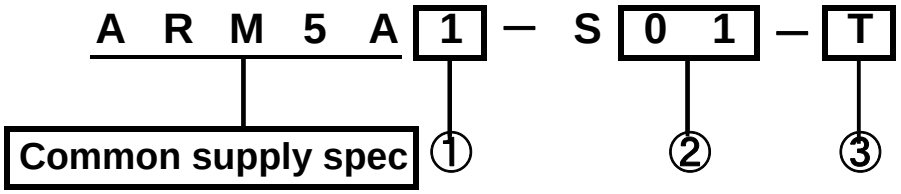
③Semi standard

| Symbol | None | Set pressure of 0.35MPa (50PSI) | Non-relief |
|---|---|---|---|
| Nil | ● | | |
| 1 | | ● | |
| 2 | | | ● |
| 3 | | ● | ● |

④Unit representation

| Symbol | Description |
|---|---|
| Nil | Display unit for product label and pressure gauge: MPa |
| Z | Display unit for product label and pressure gauge: PSI |

## （3）Common supply spec／Common supply block




①IN position

| Symbol | Mounting position |
|---|---|
| 1 | Bottom |
| 2 | Top |

②IN fitting type

Metric size

| Symbol | IN side | | | |
|---|---|---|---|---|
| | Straignt | | Elbow | |
| | ϕ6 | ϕ8 | ϕ6 | ϕ8 |
| 01 | ● | | | |
| 02 | | ● | | |
| 13 | | | ● | |
| 14 | | | | ● |

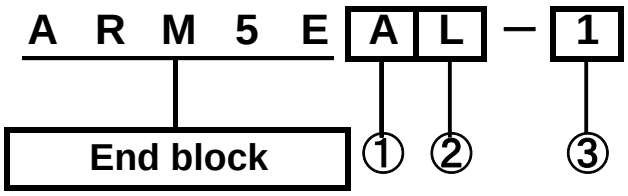
Inch size

| Symbol | IN side | | | |
|---|---|---|---|---|
| | Straignt | | Elbow | |
| | ϕ1/4" | ϕ5/16" | ϕ1/4" | ϕ5/16" |
| 51 | ● | | | |
| 52 | | ● | | |
| 63 | | | ● | |
| 64 | | | | ● |

③Tie-rod

| Symbol | Tie-rod for common supply block |
|---|---|
| Nil | Without tie-rod |
| T | With tie-rod |

## (4) End block




①Manifold mounting

| Symbol | Manifold mounting |
|---|---|
| A | Direct mounting |
| B | Din rail mounting |

②position

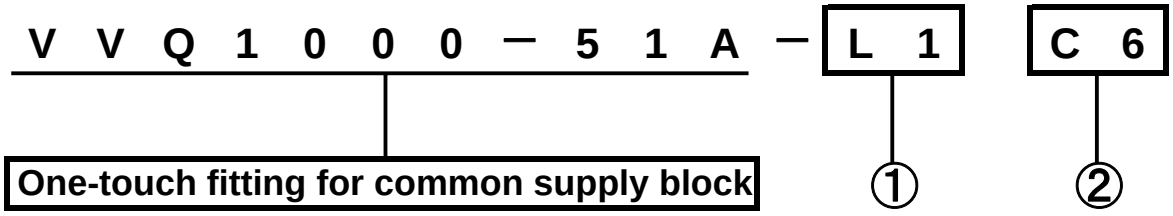
| Symbol | Mounting position |
|---|---|
| L | Left |
| R | Right |

③Supply spec

| Symbol | Supply spec |
|---|---|
| 1 | Common supply spec |
| 2 | Individual supply spec |

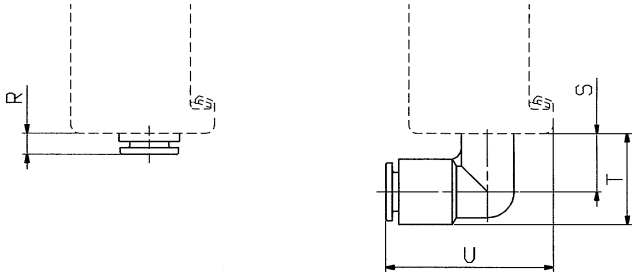
∗ Only R side end block should be selected.
L side end block should be left as Nil.

## (5) One-touch fitting for common supply block




①Fitting type

| Symbol | Type |
|---|---|
| Nil | Straignt |
| L1 | Elbow |




②Fitting size

| Symbol | Size |
|---|---|
| C6 | ϕ6 |
| C8 | ϕ8 |
| N7 | ϕ1/4" |
| N9 | ϕ5/16" |

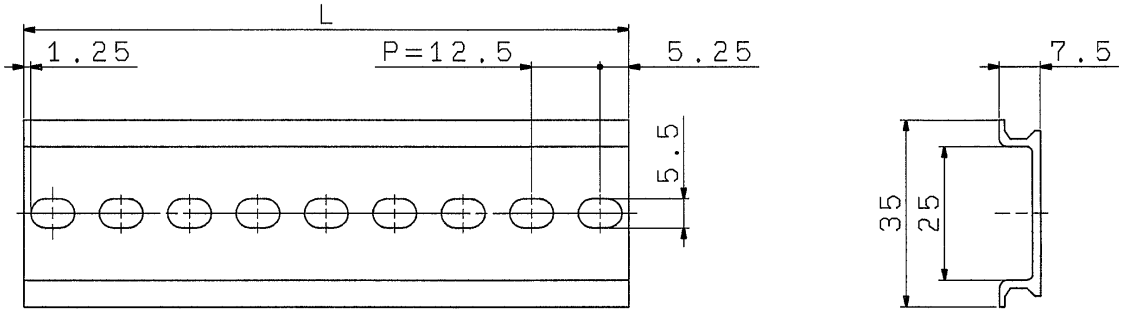
| Fitting size | R | S | T | U |
|---|---|---|---|---|
| ϕ6 | 3 | 12.5 | 19 | 35.5 |
| ϕ1/4" | 3 | 12.5 | 19 | 35.5 |
| ϕ8,ϕ5/16" | 5 | 13.5 | 21 | 38.5 |

## (6) DIN rail

**V V Q 1 0 0 0 — 9 0 — n**

**DIN rail**

①




①L dimension

| No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| L dimension | 23 | 35.5 | 48 | 60.5 | 73 | 85.5 | 98 | 110.5 |

| No. | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| L dimension | 123 | 135.5 | 148 | 160.5 | 173 | 185.5 | 198 | 210.5 |

| No. | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|
| L dimension | 223 | 235.5 | 248 | 260.5 | 273 | 285.5 | 298 | 310.5 |

| No. | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
|---|---|---|---|---|---|---|---|---|
| L dimension | 323 | 335.5 | 348 | 360.5 | 373 | 385.5 | 398 | 410.5 |

| No. | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
|---|---|---|---|---|---|---|---|---|
| L dimension | 423 | 435.5 | 448 | 460.5 | 473 | 485.5 | 498 | 510.5 |

## (7) Port plug

**V V Q 0 0 0 0 — 5 8 A**

**Port plug**

## (8) Pressure gauge

**G 1 4 — P 8 — J A**

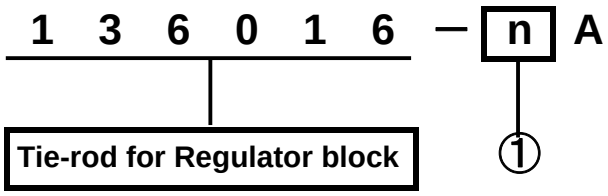
**Pressure gauge**

①

①Unit representation

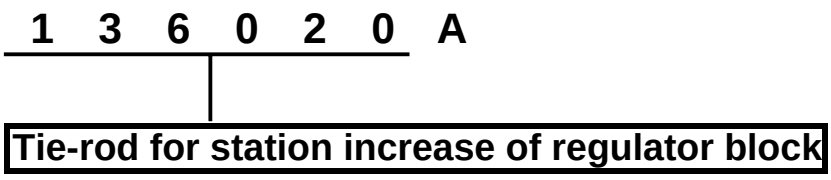
| Symbl | Pressure gauge indication range | Unit |
|---|---|---|
| Nil | 0～0.8MPa | MPa |
| P | 0～120PSI | PSI |

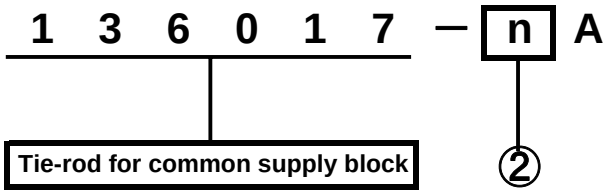
## (9) Tie-rod




①Number of stations of regulator blocks

| Symbol | Stations |
|---|---|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| 10 | 10 |




②Nnmber of common supply blocks

| Symbol | Number of blocks |
|---|---|
| 1 | 1 |
| 2 | 2 |

## 7.TROUBLE SHOOTING

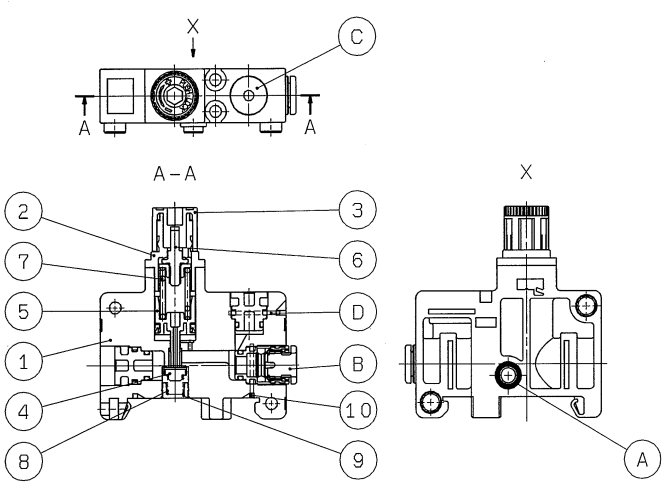
Refer to Construction Figure (shown in next page)

| TROUBLE | | POSSIBLE CAUSE | REMEDY |
|---|---|---|---|
| Demarcation | Phenomenon | | |
| Pressure | Pressure is not regulated. | 1.Opposite installation of IN and OUT tube. | 1.Check installing direction of tube and if installed opposite, reinstall it. |
| | | 2.Foreign materials caught in valve seat. | 2. Eliminate the foreign materials by flushing. (Turn the handle in + direction to open valve beforehand, and supply air with pressuring from IN side port. |
| | Set pressure does not return to zero when pressure handle is loosened. | 1.Foreign materials caught in valve seat. | 1. Eliminate the foreign materials by flushing. (Turn the handle in + direction to open valve beforehand, and supply air with pressuring from IN side port. |
| Air leakage | Air leaks between body and bonnet or exhausting port of the bonnet (near the handle). | 1.Foreign materials caught in valve seat. | 1. Eliminate the foreign materials by flushing. (Turn the handle in + direction to open valve beforehand, and supply air with pressuring from IN side port. |
| | | 2.Application of back pressure exceeding the set pressure to the outlet. | 2.Revise the air circuit so that back pressure does not exceed the set pressure |
| | Air leaks between bonnet and body. | 1. Foreign materials caught in O-ring of the fitting. | 1. Remove the fitting assembly, and wash the O-ring of the fitting. |
| | | 2.Damaged O-ring of the fitting | 2.Replace the O-ring. |
| | Air leaks between fitting and body. | 1. Foreign materials caught in O-ring of the port plug. | 1. Remove the port plug assembly, and wash the O-ring. |
| | | 2. Damaged O-ring of the port plug. | 2. Replace the port plug O-ring. |
| | Air leaks between fitting and tube. | 1.Foreign materials caught in packing inside fitting. | 1.Remove the fitting assembly and wash the packing inside it. |
| | | 2.Damaged surface of tube. | 2.Replace the tube. |
| | | 3.Improper connection between fitting and tube. | 3.Check mounting condition of tube and if mounted improperly, remount the tube to the fitting. |
| | Air leaks between body and gauge. | 1. Foreign materials caught in O-ring of the pressure gauge. | 1. Remove the pressure gauge assembly and wash the O-ring of the pressure gauge. |
| | | 2.Damaged O-ringof pressure gauge. | 2.Replace the pressure gauge. |
| | Air leaks between body and manifold block. | 1. Foreign materials caught in O-ring of the manifold block. | 1. Disassemble the manifold, and wash the O-ring. |
| | | 2. Damaged O-ring of the manifold block. | 2. Replace the O-ring of the manifold block. |
| | Air leaks between bocks. | 1. Foreign materials caught in O-ring of the regulator block. | 1. Disassemble the manifold and wash the O-ring. |
| | | 2. Damaged O-ring of the regulator block. | 2. Replace the O-ring of the manifold block. |

Note) Recommended grease is Mitsubishi diamond multipurpose No.2.

## 8.CONSTRUCTION/PARTS LIST

## ①Manifold Regulator／Common supply spec

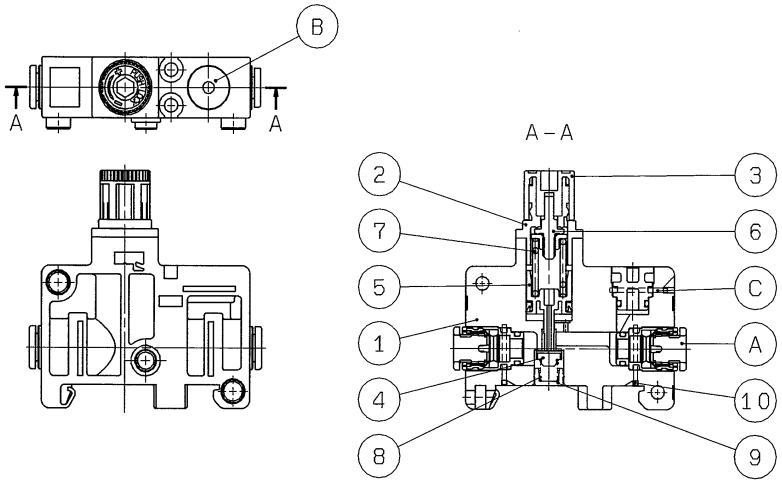



Componet parts

| No. | Description | Material |
|---|---|---|
| 1 | Body（common supply spec） | PBT |
| 2 | Bonnet | PBT |
| 3 | Handle | POM |
| 4 | Valve | HNBR・AlAlloy |
| 5 | Piston assembly | POM・NBR |
| 6 | Pressure adjusting screw assembly | - |
| 7 | Pressure adjusting spring | Stainless steel |
| 8 | Valve spring | Stainless steel |
| 9 | Valve guide | Brass Bar |
| 10 | Clip | Stainless steel |

| No. | Description | Material | Part no. |
|---|---|---|---|
| A | Oring | NBR | 136019 |
| B | Fitting assembly | — | Refer to P10 |
| C | Port plug | PBT・HNBR | Refer to P14 |
| D | Clip | Stainless steel | 136010 |

## ②Manifold regulator／Individual supply spec



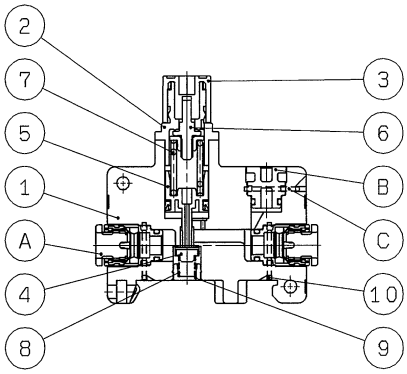

Componet parts

| No. | Description | Material |
|---|---|---|
| 1 | Body(Individual supply spec) | PBT |
| 2 | Bonnet | PBT |
| 3 | Handle | POM |
| 4 | Valve | HNBR・AlAlloy |
| 5 | Piston assembly | POM・NBR |
| 6 | Pressure adjusting screw assembly | - |
| 7 | Pressure adjusting spring | Stainless steel |
| 8 | Valve spring | Stainless steel |
| 9 | valbe guide | Brass Bar |
| 10 | Clip | Stainless steel |

Replacement parts

| No. | Description | Material | Part no. |
|---|---|---|---|
| A | Fitting assembly | — | Refer to P10 |
| B | Port plug | PBT・HNBR | Refer to P14 |
| C | Clip | Stainless steel | 136010 |

## ③Regulator／Single unit regulator spec




Componet parts

| No. | Description | Material |
|---|---|---|
| 1 | Body(Single unit regulator spec) | PBT |
| 2 | Bonnet | PBT |
| 3 | Handle | POM |
| 4 | Valve | HNBR・AlAlloy |
| 5 | Piston assembly | POM・NBR |
| 6 | Pressure adjusting screw assembly | - |
| 7 | Pressure adjusting spring | Stainless steel |
| 8 | Valve spring | Stainless steel |
| 9 | Valbe guide | Brass Bar |
| 10 | Clip | Stainless steel |

Replacement parts

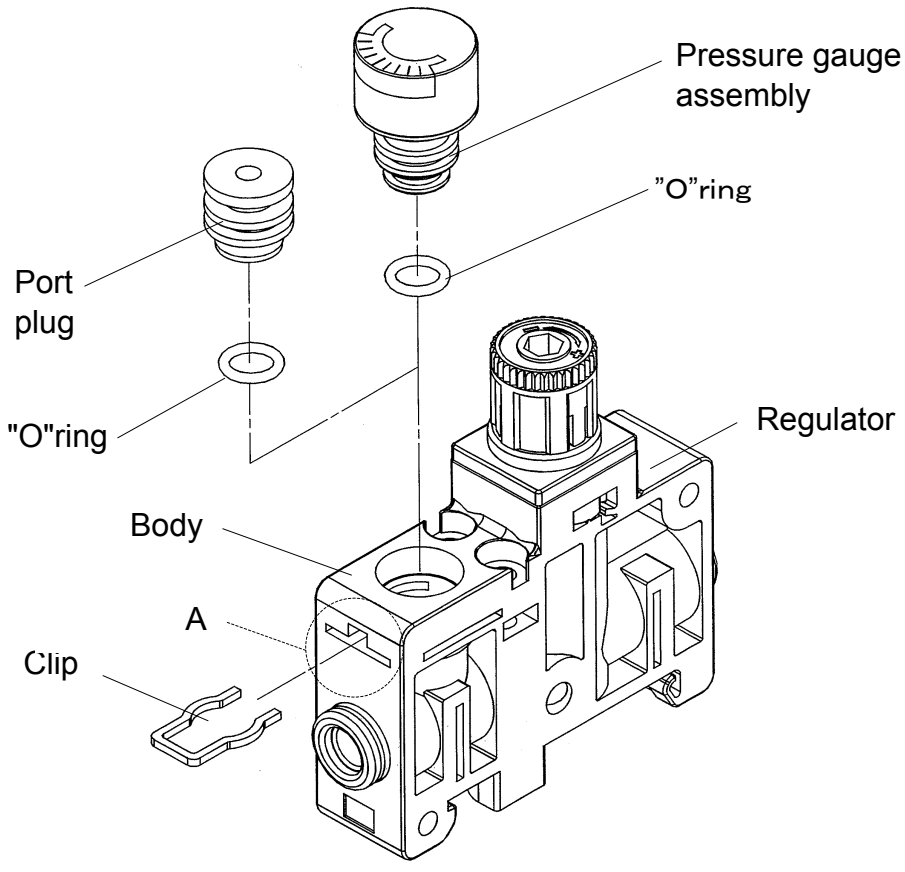
| No. | Description | Material | Part no. |
|---|---|---|---|
| A | Fitting assembly | — | Refer to P10 |
| B | Port plug | PBT・HNBR | Refer to P14 |
| C | Clip | Stainless steel | 136010 |

## 9.REPLACEMENT PROCEDURE

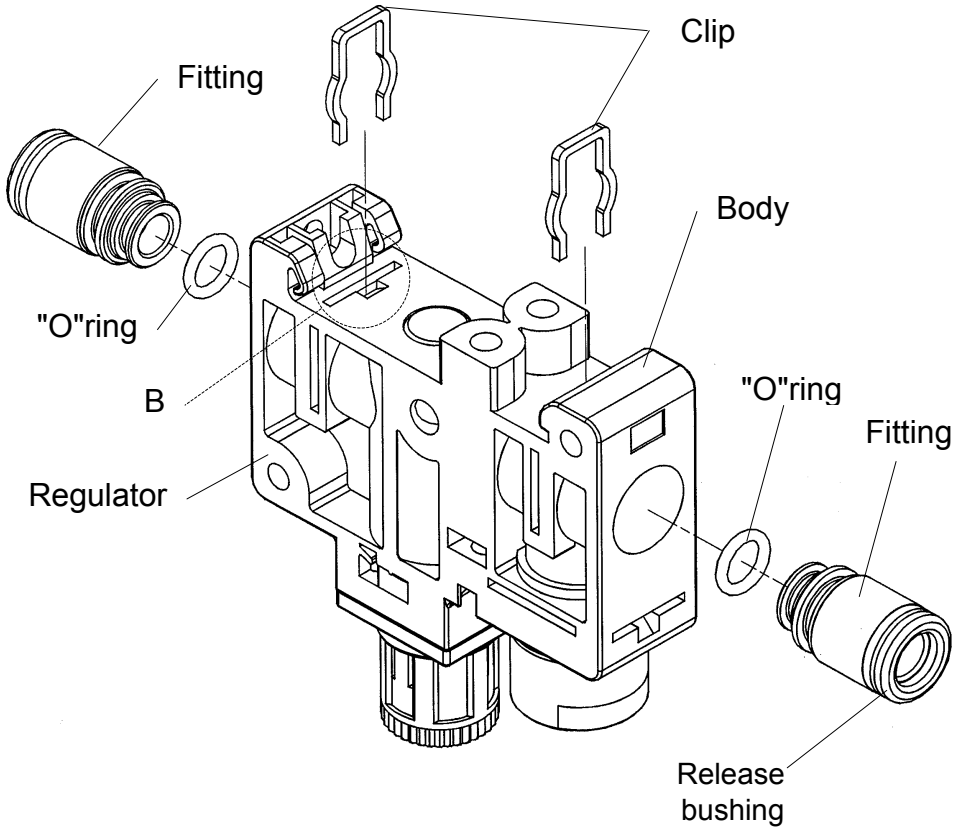
### ⚠ WARNING

Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting handle counterclockwise fully and to return it to zero.
After replacement, ensure that specified function is satisfied and external leakage is not found before starting operation.

### 1. Replacement of pressure gauge / port plug

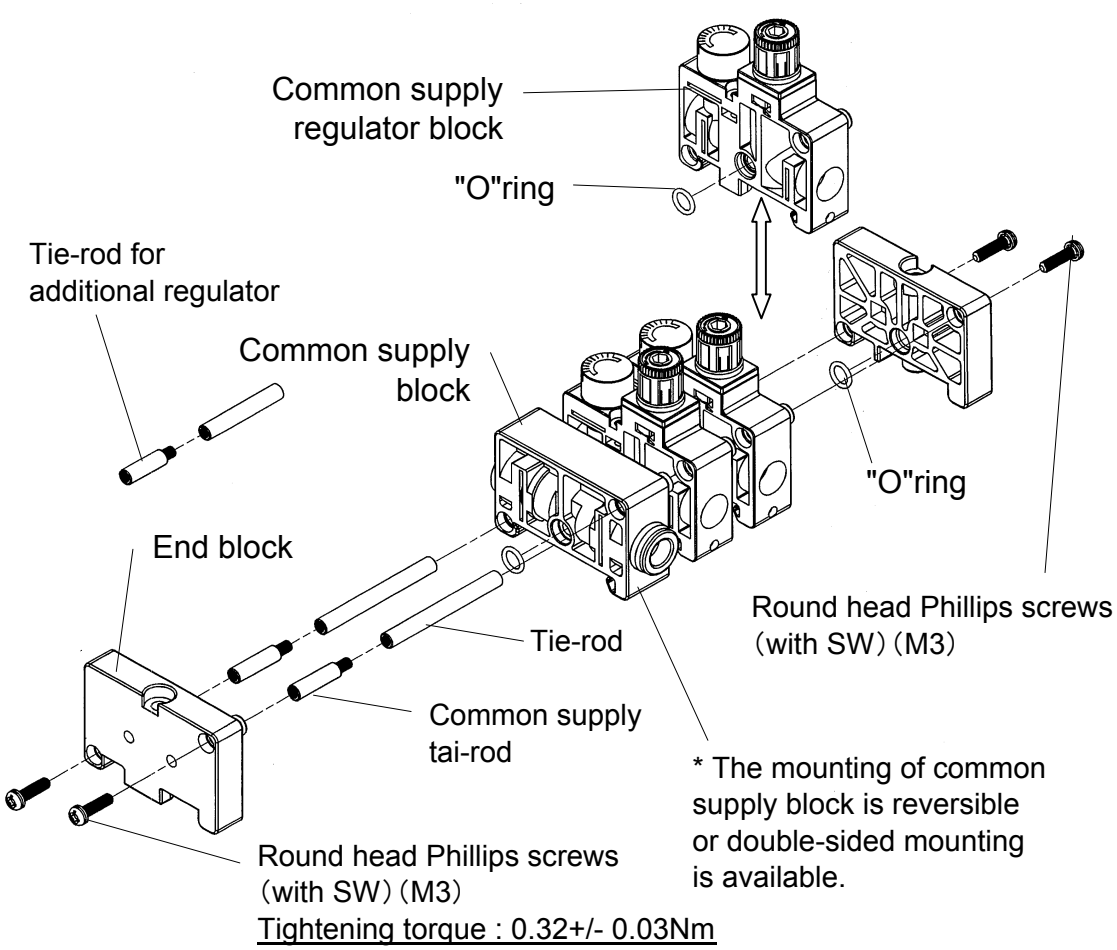
| Content | Replacement of pressure gauge / port plug | |
|---|---|---|
| Parts | Pressure gauge,Port plug | |
| Tools | Small flat driver | |
| Process | Disassembly | Assembly |
| Procedure | 1. Insert a precision flat head screw driver along with taper of hole A on OUT side of the body .<br>2. Hook the tip of the screw driver to the inserted clip, and pull out the clip.<br>* As the clip may fly out, pull it slowly as holding it with a hand.<br>3. Pull out the mounted pressure gauge /. Port plug. | 1. Insert the pressure gauge / port plug all the way in properly.<br>2. Put the clip back to the hole.<br>Use the tip of the precision flat head screw driver to insert the clip to the end properly. |
| Check item | — | 1.Presence of "O" ring.<br>(If dust or particles are remained on the O-ring it may cause air leakage. Therefore take measures to prevent them from attaching on the O-ring. |
| Disassembled diagram |  | |

## 2. Replacement of One-touch fitting

| Content | Exchange of one-touch tube fitting.（IN side and OUT side port） | |
|---|---|---|
| Parts | One-touch fitting | |
| Tools | Small flat driver | |
| Process | Disassembly | Assembly |
| Procedure | 1. Insert a precision flat head screw driver along with taper of hole B on OUT side of the body .<br>2. Hook the tip of the screw driver to the inserted clip, and pull out the clip.<br>* As the clip may fly out, pull it slowly as holding it with a hand.<br>3. Pull out the mounted One-touch fitting. | 1. Insert the One-touch fitting all the way in properly.<br>2. Put the clip back to the hole.<br>Use the tip of the precision flat head screw driver to insert the clip to the end properly. |
| Check item | — | 1.Presence of "O" ring.<br>(If dust or particles are remained on the O-ring it may cause air leakage. Therefore take measures to prevent them from attaching on the O-ring. |
| Disassembly diagram |  <br>* If it is hard to remove the fitting, do not remove the release bushing with a strong force. It that case, install the tube and plug, and pull the fitting out together with them. | |

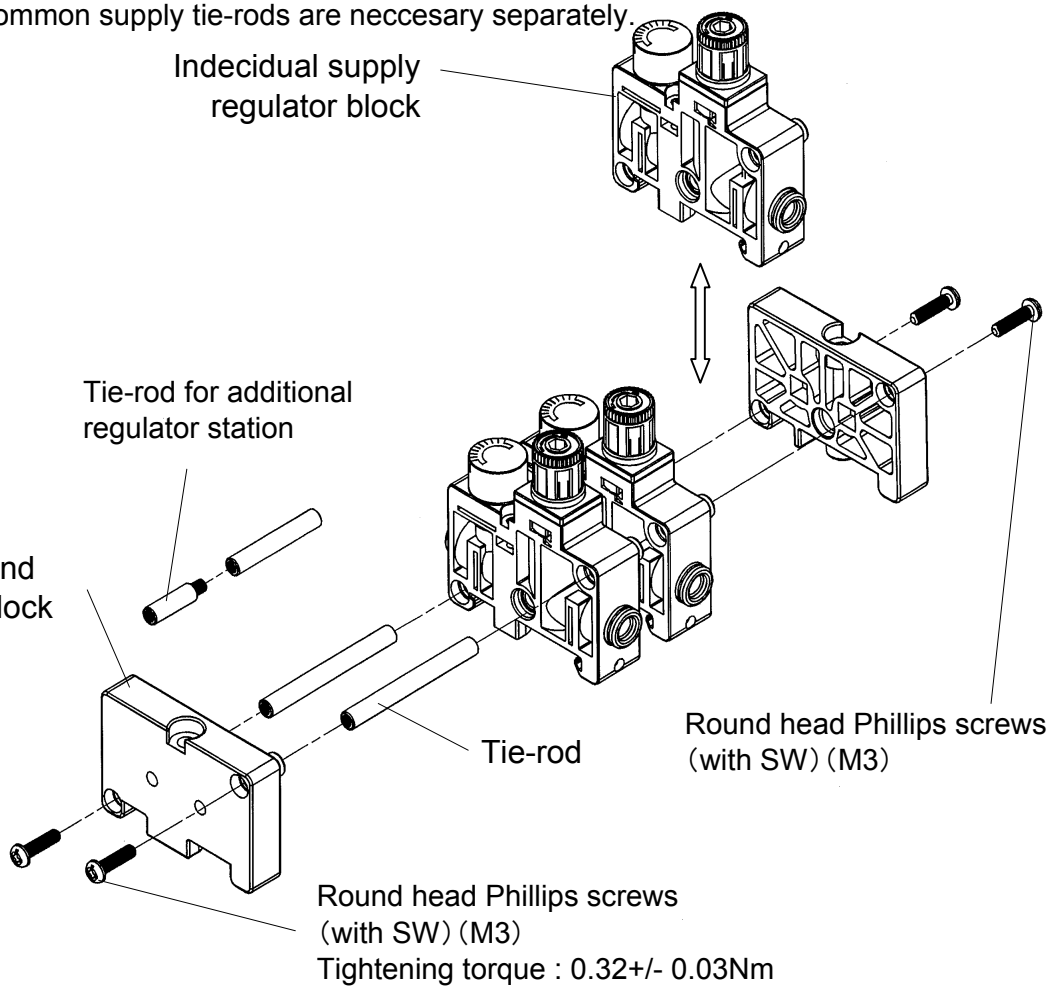
## 3. Replacement of manifold stations（Common supply specification)

| Content | Change of manifold stations and common supply block | |
|---|---|---|
| Parts | Regulator block,Common supply block | |
| Tools | Phillips driver | |
| Process | Disassembly | Assembly |
| Prodedure | 1. Loosen and remove the round head Phillips screw on the corner of the end block.<br>2. Pull out the tie-rod from the end block, common supply block and regulator. | 1. Connect the several tie-rods from each other.<br>2. Engage the tie-rods with the upper left side of the end block, and temporarily tighten them with 2 pcs of round head Phillips screws.<br>3. Check that O-ring is mounted on the recessed connection of each block of the manifold.<br>, and insert the each block to the tie-rods.<br>4. Temporalily tighten the round head Phillip screws on the right side.<br>5.Tighten the round head Phillips screws on both both sides of manifold within the follwing specified torque. |
| Check item | – | 1.Presence of "O" ring.<br>(If dust or particles are remained on the O-ring it may cause air leakage. Therefore take measures to prevent them from attaching on the O-ring. |
| Disassembly diagram | Note) The length of tie-rod and common supply tie-rod is varied depending on the applicable stations.<br>Tie-rods for additional stations, tie-rods for applicable stations or common supply tie-rods are neccesary separately. | |




Tightening torque : 0.32+/- 0.03Nm

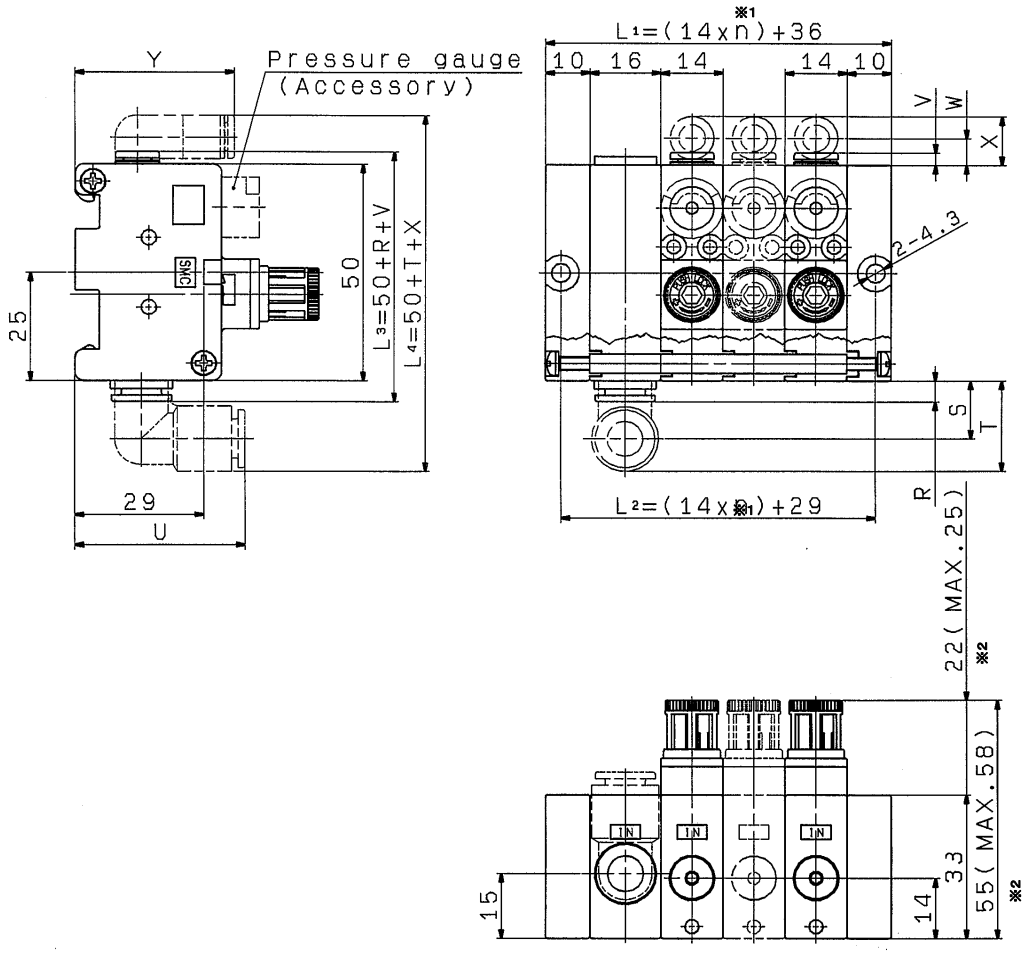
## 4. Replacement of manifold stations (Individual supply specification)

| Content | Change of manifold stations | |
|---|---|---|
| Parts | Regulator block | |
| Tools | Phillips driver | |
| Process | Disassembly | Assembly |
| Procedure | 1. Loosen and remove the round head Phillips screw on the corner of the end block.<br>2. Pull out the tie-rod from the end block, common supply block and regulator. | 1. Connect the several tie-rods from each other.<br>2. Engage the tie-rods with the upper left side of the end block, and temporarily tighten them with 2 pcs of round head Phillips screws.<br>3. Insert each block to the tie-rod.<br>4. Temporalily tighten the round head Phillip screws on the right side.<br>5. Tighten the round head Phillips screws on both both sides of manifold within the follwing specified torque. |
| Check item | – | – |
| Disassembly diagram | Note) The length of tie-rod and common supply tie-rod is varied depending on the applicable stations.<br>Tie-rods for additional stations, tie-rods for applicable stations or common supply tie-rods are neccesary separately.<br>  <br> | |

## 10.DIMENSIONS

## ①Manifold regulator／Common supply spec（Direct mounting）

* 1. n= Station of regulator blocks

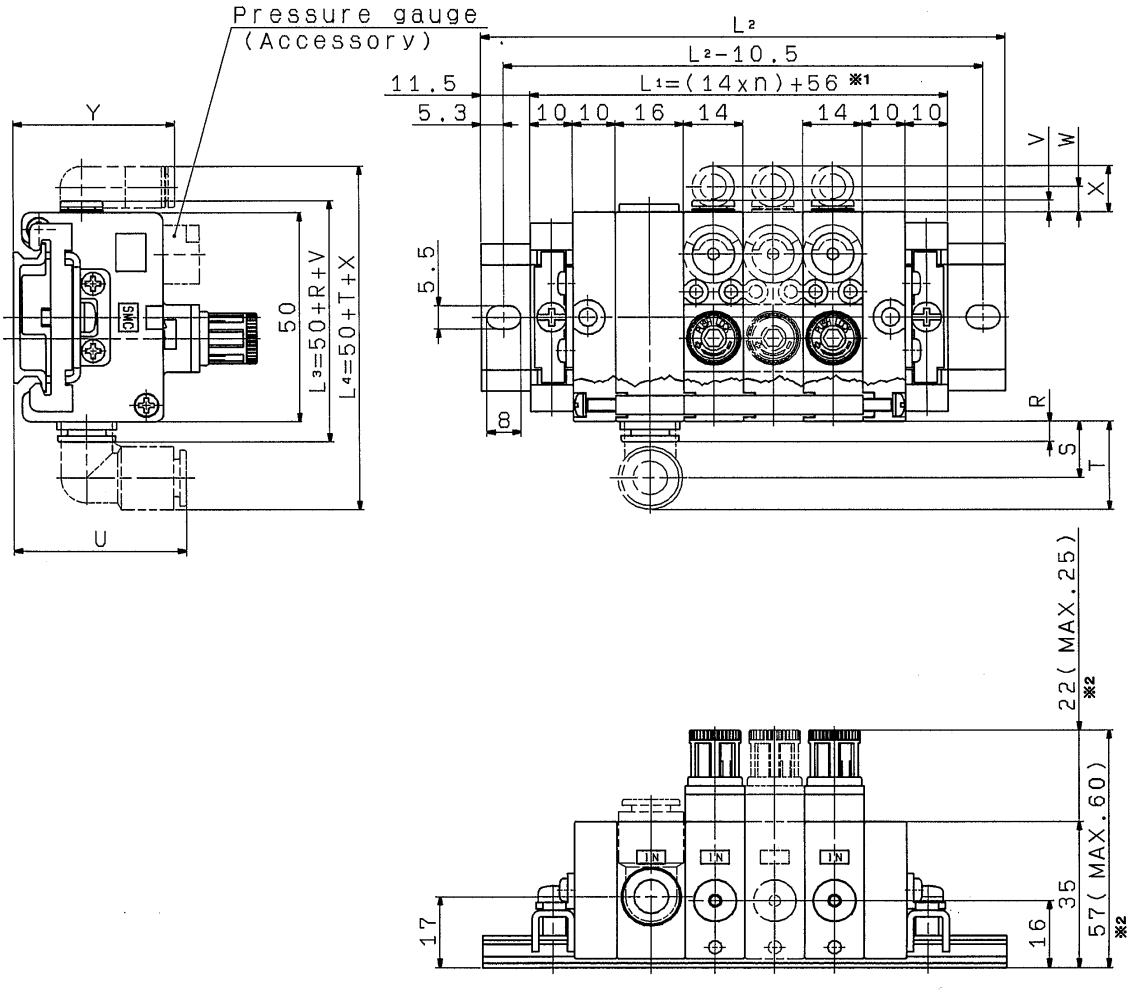



＊ 2. MAX dimension indicates the value when handle is unlocked.

| Fitting size | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | Elbow | Elbow | Elbow | Straignt | Elbow | Elbow | Elbow |
| | R | S | T | U | V | W | X | Y |
| φ4,φ5/32" | - | - | - | - | 2.5 | 6 | 11 | 35.5 |
| φ6 | 3 | 12.5 | 19 | 35.5 | 3 | 6.5 | 11 | 36 |
| φ1/4" | 3 | 12.5 | 19 | 35.5 | 6.5 | 6 | 11.5 | 38.5 |
| φ8,φ5/16" | 5 | 13.5 | 21 | 38.5 | - | - | - | - |

## ②Manifold regulator／Common supply spec（DIN rail mounting）

* 1. n= Station of regulator blocks



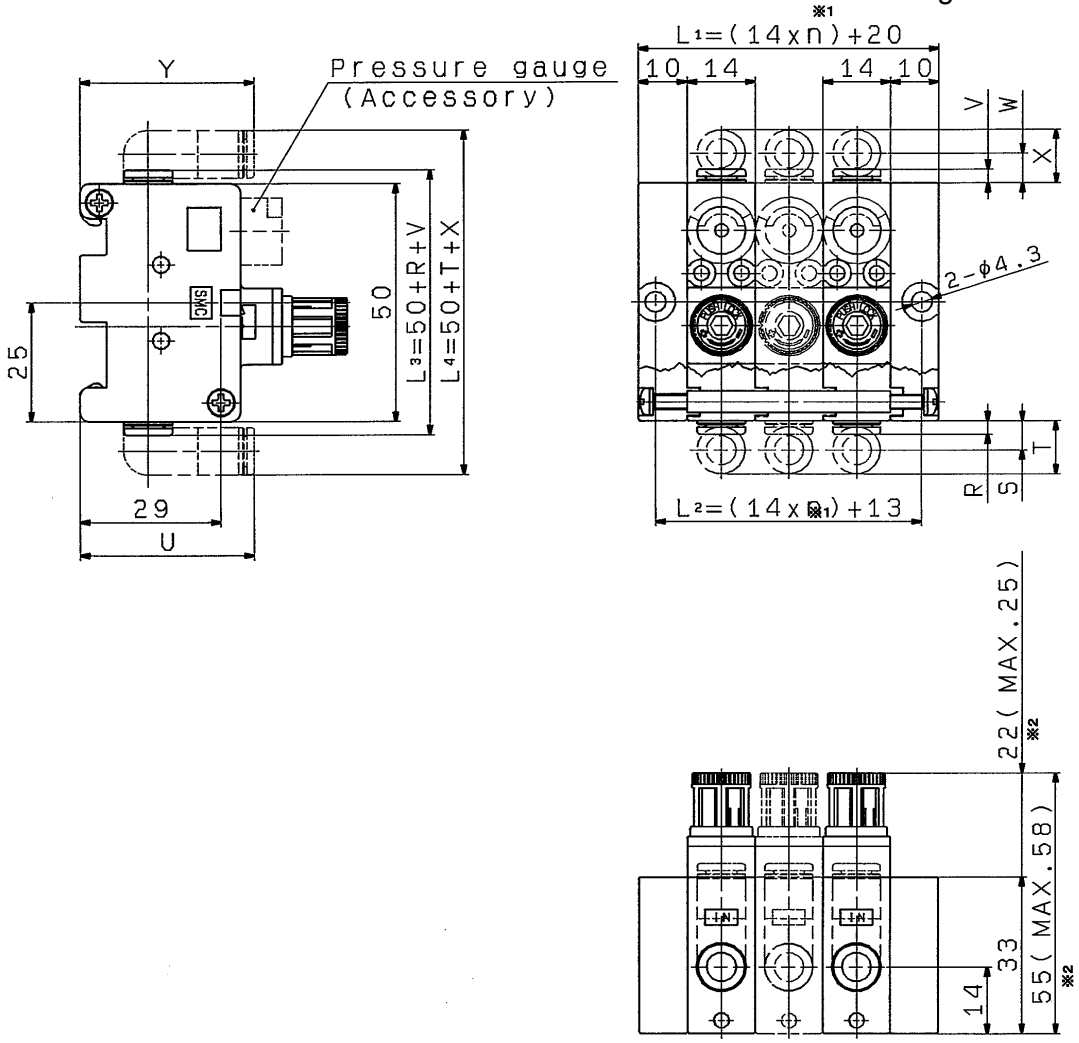

* 2. MAX dimension indicates the value when handle is unlocked.

| Fitting size | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | Elbow | Elbow | Elbow | Straignt | Elbow | Elbow | Elbow |
| | R | S | T | U | V | W | X | Y |
| φ4,φ5/32" | - | - | - | - | 2.5 | 6 | 11 | 37.5 |
| φ6 | 3 | 12.5 | 19 | 37.5 | 3 | 6.5 | 11 | 38 |
| φ1/4" | 3 | 12.5 | 19 | 37.5 | 6.5 | 6 | 11.5 | 40.5 |
| φ8,φ5/16" | 5 | 13.5 | 21 | 40.5 | - | - | - | - |

| Stations | L2 dimension |
|---|---|
| 1 | 98.0 |
| 2 | 110.5 |
| 3 | 123.0 |
| 4 | 148.0 |
| 5 | 160.5 |
| 6 | 173.0 |
| 7 | 185.5 |
| 8 | 198.0 |
| 9 | 210.5 |
| M | 223.0 |

## ③Manifold regulator／Individual supply spec（Direct mounting）

* 1. n= Station of regulator blocks

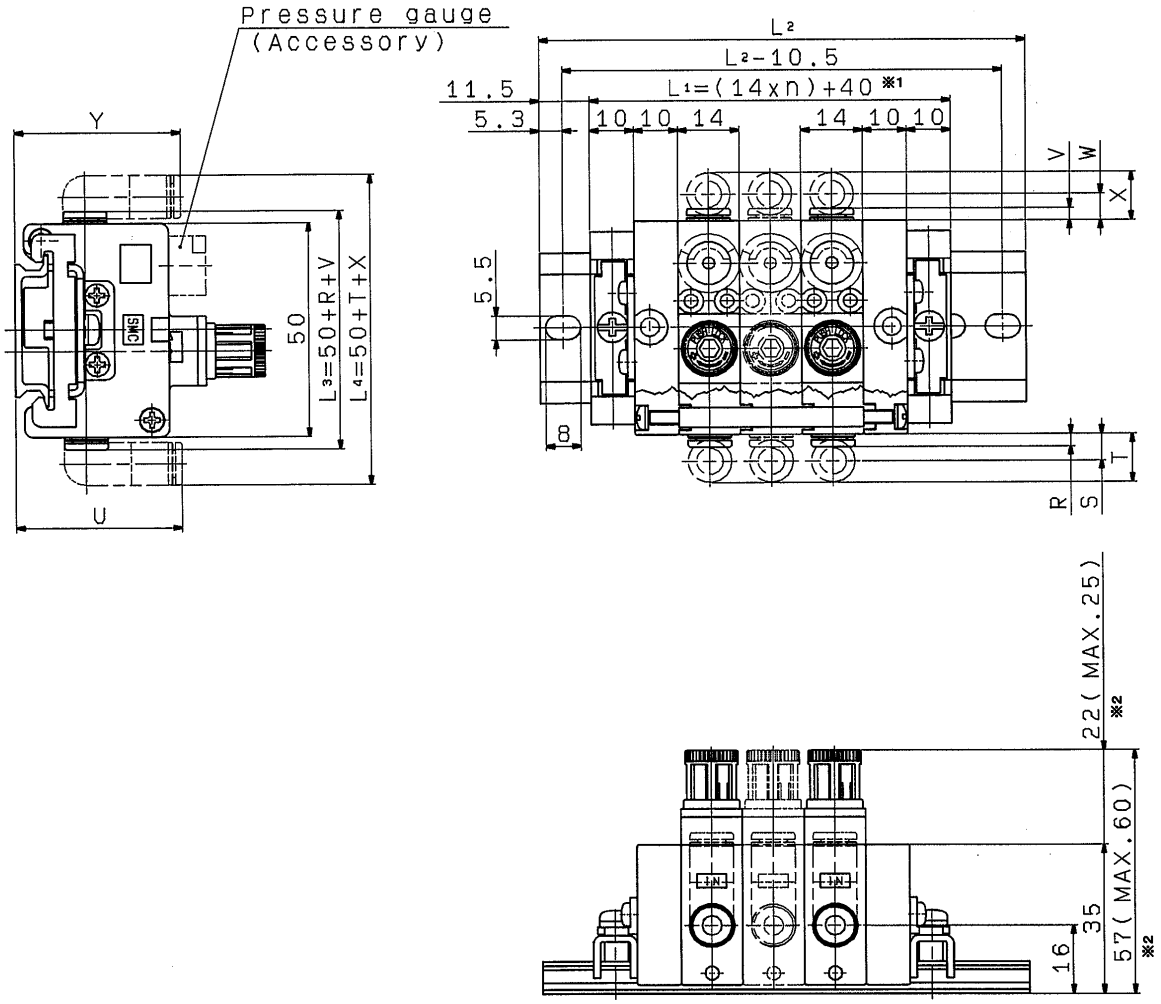



* 2. MAX dimension indicates the value when handle is unlocked.

| Fitting size | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | Elbow | Elbow | Elbow | Straignt | Elbow | Elbow | Elbow |
| | R | S | T | U | V | W | X | Y |
| φ4,φ5/32" | 2.5 | 6 | 11 | 35.5 | 2.5 | 6 | 11 | 35.5 |
| φ6 | 3 | 6.5 | 11 | 36 | 3 | 6.5 | 11 | 36 |
| φ1/4" | 6.5 | 6 | 11.5 | 38.5 | 6.5 | 6 | 11.5 | 38.5 |

## ④Manifold regulator／Individual supply spec（DIN rail mounting）

* 1. n= Station of regulator blocks

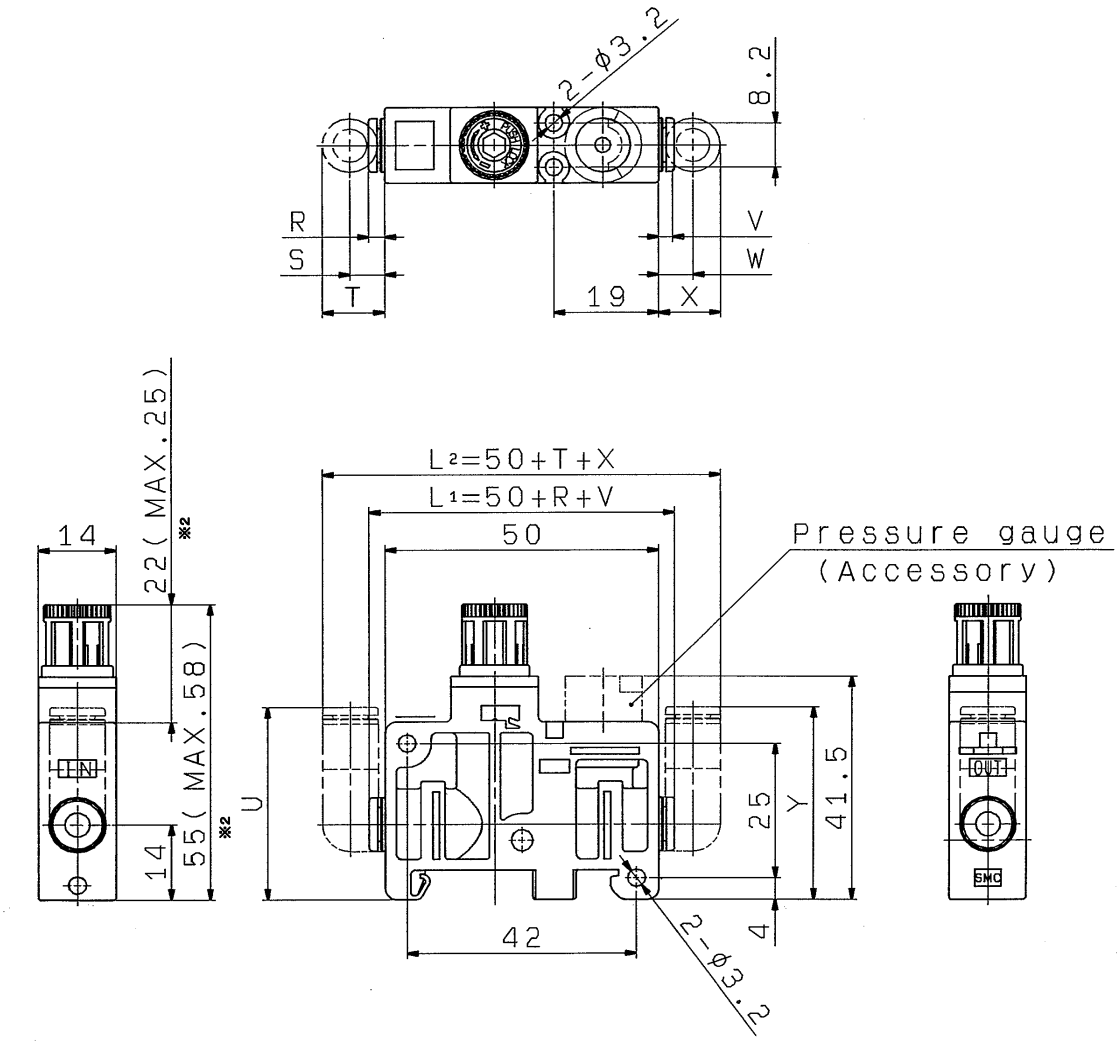



* 2. MAX dimension indicates the value when handle is unlocked.

| Fitting size | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | Elbow | Elbow | Elbow | Straignt | Elbow | Elbow | Elbow |
| | R | S | T | U | V | W | X | Y |
| φ4,φ5/32" | 2.5 | 6 | 11 | 37.5 | 2.5 | 6 | 11 | 37.5 |
| φ6 | 3 | 6.5 | 11 | 38 | 3 | 6.5 | 11 | 38 |
| φ1/4" | 6.5 | 6 | 11.5 | 40.5 | 6.5 | 6 | 11.5 | 40.5 |

| Stations | L2 dimension |
|---|---|
| 1 | 85.5 |
| 2 | 98.0 |
| 3 | 110.5 |
| 4 | 123.0 |
| 5 | 135.5 |
| 6 | 160.5 |
| 7 | 173.0 |
| 8 | 185.5 |
| 9 | 198.0 |
| M | 210.5 |

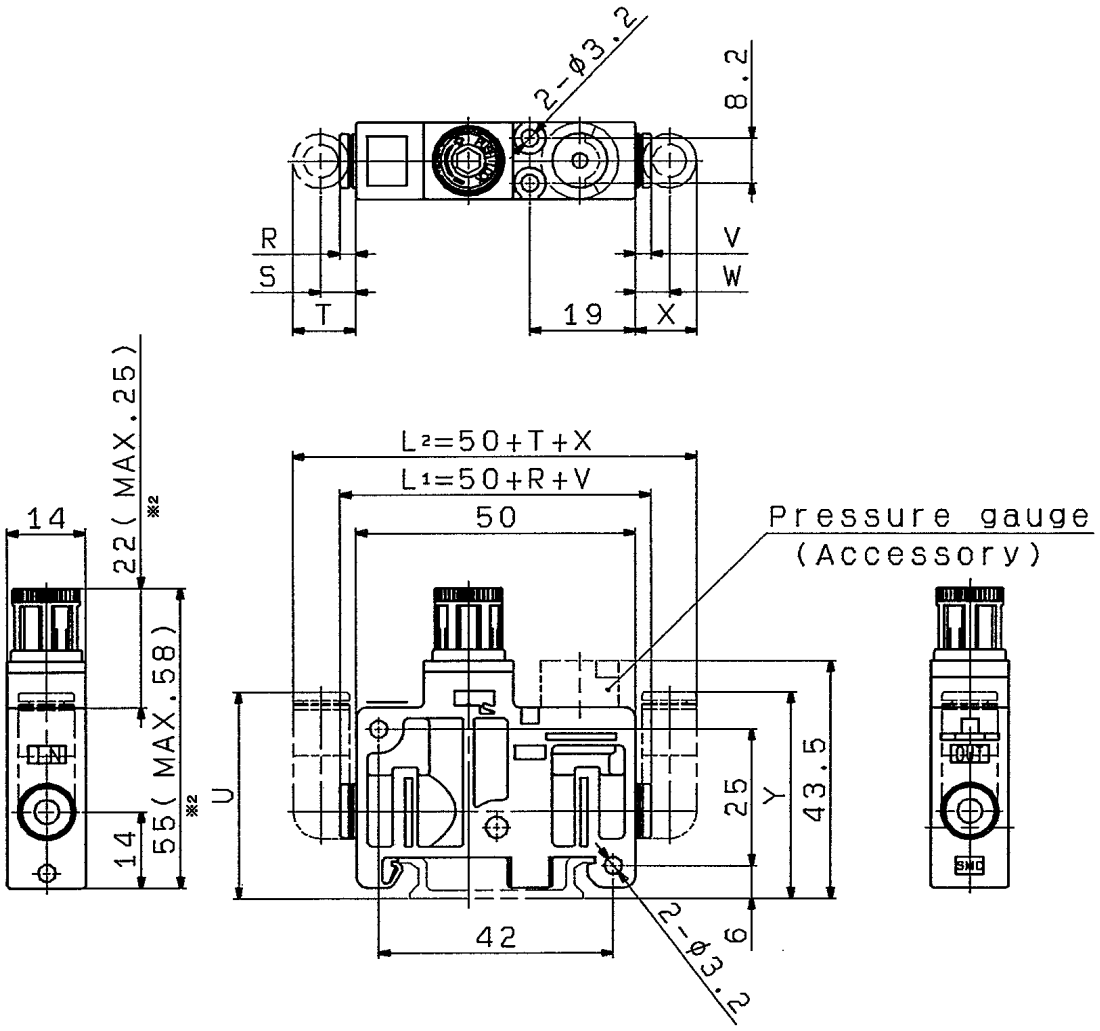
## ⑤Regulator／Single unit regulator spec（Direct mounting）




* 2. MAX dimension indicates the value when handle is unlocked.

| Fitting size | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | Elbow | Elbow | Elbow | Straignt | Elbow | Elbow | Elbow |
| | R | S | T | U | V | W | X | Y |
| φ4,φ5/32" | 2.5 | 6 | 11 | 35.5 | 2.5 | 6 | 11 | 35.5 |
| φ6 | 3 | 6.5 | 11 | 36 | 3 | 6.5 | 11 | 36 |
| φ1/4" | 6.5 | 6 | 11.5 | 38.5 | 6.5 | 6 | 11.5 | 38.5 |

## ⑥Regulator／Single unit regulator spec（DIN rail mounting）




* 2. MAX dimension indicates the value when handle is unlocked.

| Fitting size | IN side | | | | OUT side | | | |
|---|---|---|---|---|---|---|---|---|
| | Straignt | Elbow | Elbow | Elbow | Straignt | Elbow | Elbow | Elbow |
| | R | S | T | U | V | W | X | Y |
| φ4,φ5/32" | 2.5 | 6 | 11 | 37.5 | 2.5 | 6 | 11 | 37.5 |
| φ6 | 3 | 6.5 | 11 | 38 | 3 | 6.5 | 11 | 38 |
| φ1/4" | 6.5 | 6 | 11.5 | 40.5 | 6.5 | 6 | 11.5 | 40.5 |