



---

# OPERATION MANUAL

---

PRODUCT **REGULATOR** /  
NAME: **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

	Page
1. PRECAUTIONS FOR SAFETY	1
2. COMMON PRECAUTIONS	2~4
3. INDIVIDUAL PRECAUTIONS	5
4. APPLICATION	6
5. SPECIFICATIONS	6
6. HOW TO ORDER	7~16
7. TROUBLE SHOOTING	17
8. CONSTRUCTION/PARTS LIST	18~19
9. REPLACEMENT PROCEDURE	20~23
10. DIMENSIONS	24~29

CONTACT ADDRESS: SMC CORPORATION

AKIHABARAUDX 15F, 4-14-1, SOTOKANDA, CHIYODA-KU, TOKYO  
101-0021, JAPAN

TEL: 03-5207-8271

# 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 categories, "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 : Imminent danger that possible loss or serious injury of people is expected without evacuation.

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

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

## WARNING

### **① Suitability of pneumatic equipment should be determined by a designer of the pneumatic 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 pneumatic 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 certain point of time and safety assurance 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.

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

Compressed air fluid could be hazardous if 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.

### **③ Never 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 system should be exhausted.
- c. Re-starting of machinery or equipment should be done with ample care after it is confirmed that prevention measures for sudden movements are taken.

### **④ When the product is used in the following conditions or environment, considerations 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 apparatuses, emergency shutdown circuits, clutch/break circuits for pressing, and safety devices.
- c. Usage for applications which especially require safety because considerable effects to people and properties are expected.

## 2.COMMON PRECAUTIONS

### Design & Selection

#### **Warning**

① Confirm specifications.

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

② Confirm set pressure.

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

③ Residual 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.

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

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

2) Removing tube

① Push in evenly on the release button.

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

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

#### **Caution**

Use of tubing other than SMC's brand

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

2) Soft nylon tubing  $\leq \pm 0.1\text{mm}$

3) Polyurethane tubing  $\leq +0.15\text{mm}$

$\leq -0.2\text{mm}$

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

### Installation

#### **Warning**

① Do not install unless the operation manual has been read and understood.

When installing the products, allow access for maintenance.

③ Tightening torque

When installing the products, follow the listed torque specifications.

### Air source

#### **Warning**

① Use clear air.

If the compressed air supply is contaminated with chemicals, synthetic materials containing organic solvent, salinity, corrosive gas, etc., damage to the pneumatic equipment may occur.

#### **Caution**

① Install air filter.

Install an air filter with filtration of 5  $\mu\text{m}$  or less near inlet of the regulator.

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

③ Place mist separator at inlet of regulator for the environment where carbon dust frequently occurs.

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 malfunction. For detail of quality of compressed air, refer to "Compressed air cleaning system".

### Piping

#### **Caution**

Tube insertion and removal from one-touch fittings

1) Installing tube

① Cut 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 pliers, nippers, scissors, etc. otherwise, the tube will be deformed and troubles may result.

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

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

## Environment

### Warning

- ① Do not use in an environment where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.
- ② Do not expose the product to direct sunlight for an extended period of time. If the product has to be mounted in an area where exposure to direct sunlight can not be avoided, the use of a protective cover is recommended.
- ③ Do not mount the product in a location where it is subject to strong vibrations and/or shock. Check the product specifications for above ratings.
- ④ Do not mount the product in a location where it is exposed to radiant heat.

## Maintenance

### Warning

- ① Maintenance procedure are outline in this manual. Not following proper procedures could cause to the product to malfunction and could lead to damage to the equipment or machine.
- ② Maintenance  
If handled improperly, compressed air can be dangerous. Assembly, handling and repair of pneumatic systems should be performed by qualified
- ③ Shut-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 system to be worked on.
- ④ Start-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.
- ⑤ Do not make any modification to the product.

## Adjustment

### Warning

#### Regulator

- ① Set up the regulator while verifying the pressure that is indicated on inlet and outlet pressure gauges. Turning the handle excessively could damage the internal parts.
- ② Operate pressure adjusting handle manually. Use of any tool may damage the regulator.

### Caution

#### Regulator

- ① Make sure to check inlet pressure before setting the pressure.
- ② The range for setting outlet pressure is 85% or
- ③ Release lock of pressure adjusting handle before starting adjustment. Adjustment in improper order may damage the handle and cause fluctuation of outlet pressure.
- ④ Turn the handle clockwise for increase of outlet pressure and counterclockwise for decrease of outlet pressure. (Set pressure turning the handle in pressure incremental direction.)

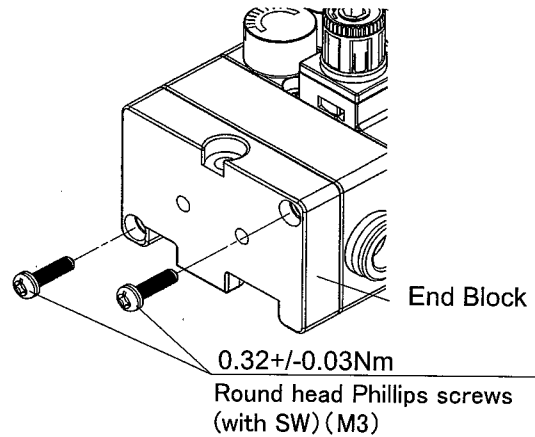
### 3.INDIVIDUAL PRECAUTIONS

#### Warning

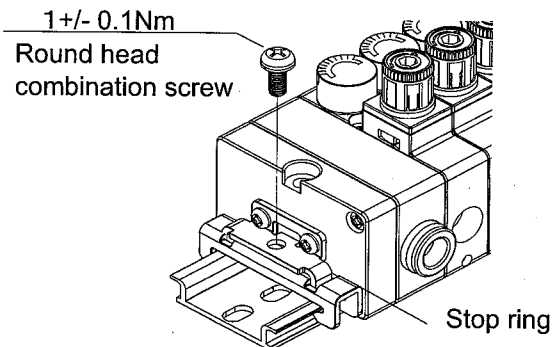
Install the round head Phillips screws within a specified tightening torque.

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

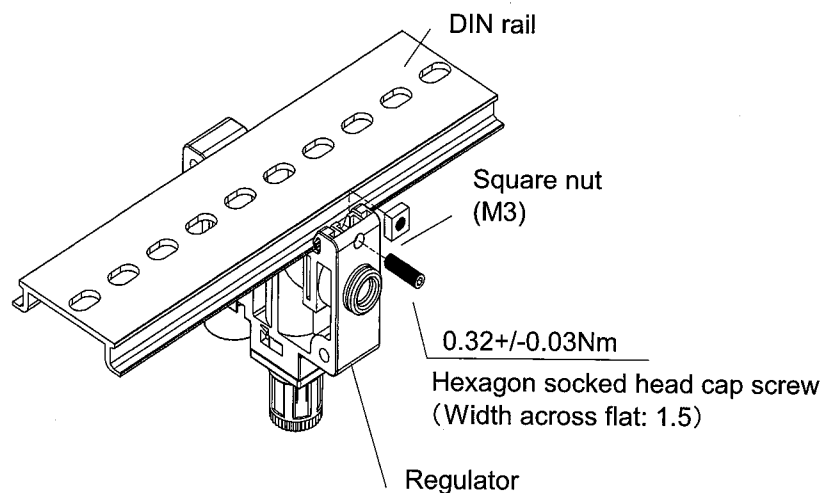
#### 1. Tightening torque of Round head Phillips screws for tie-rod under regulator manifold specification.



#### 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



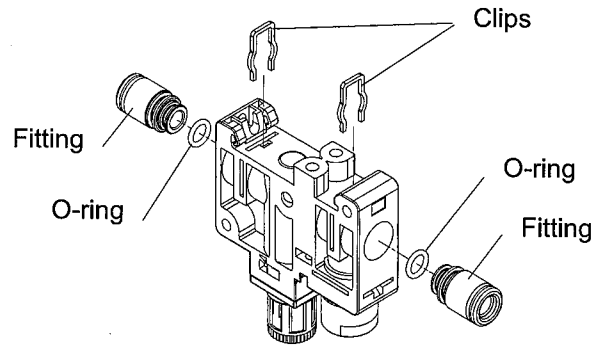
## **Caution**

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

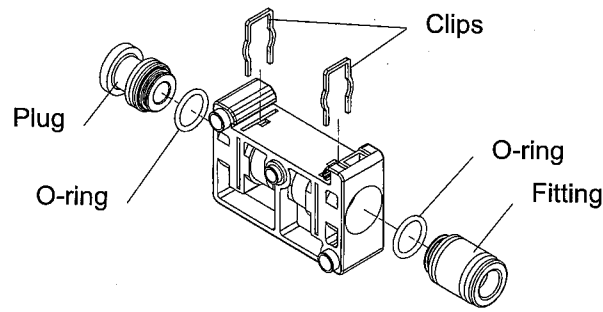
One-touch fitting is a cassette type, easily replaceable fitting.

See [9. Replacement Procedure (P20 and 21)] for details of the replacement procedure.

#### ① **Regulator block**

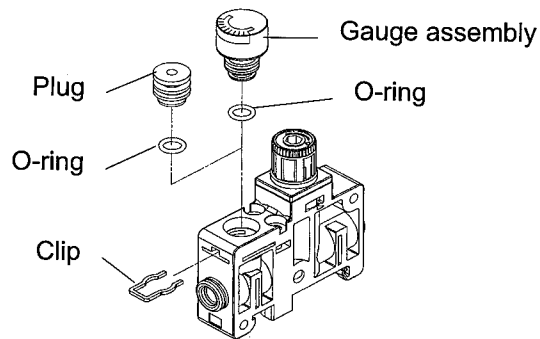


#### ② **Common supply block**



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

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



Note 1) Be sure to check that no pressure is supplied from the inlet and outlet ports before replacement, and eliminate the internal pressure completely 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)

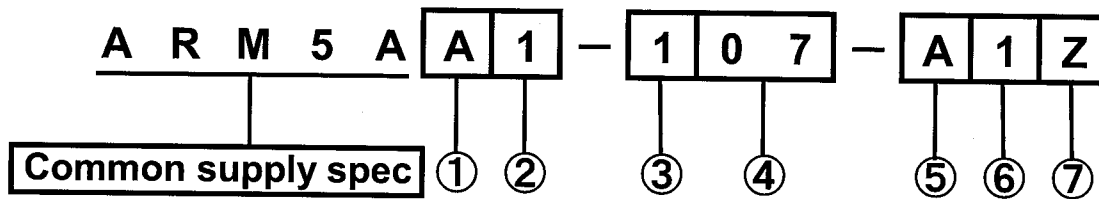
Note1) Not applicable to copper free spec.

Note2) If the manifold regulator is used in backflow, set pressure should be 0.1MPa (15PSI) or more.



## 6.HOW TO ORDER

### ① Manifold regulator / Common supply spec



#### ① Manifold mounting

Symbol	Manifold mounting
A	Direct mounting
B	Din rail mounting

#### ② IN position

Symbol	Mounting position
1	Bottom
2	Top

#### ③ No. 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

#### ⑤ Accessory

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

#### ⑥ Semi standard

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

#### ⑦ Unit representation

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

#### ④ IN/OUT fitting type

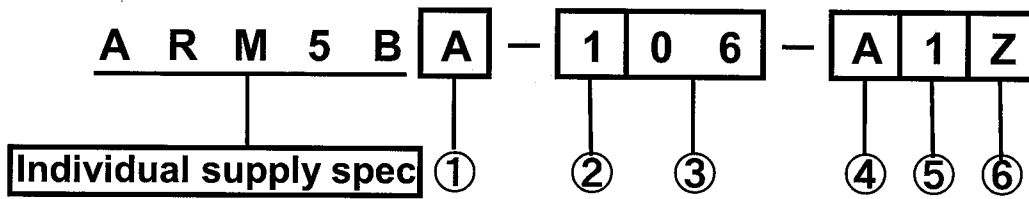
Metric size

Sym bol	IN side				OUT side			
	Straight		Elbow		Straight		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

Sym bol	IN side				OUT side			
	Straight		Elbow		Straight		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				●		●		

## ② Manifold regulator / Individual supply spec



### ① Manifold mounting

Symbol	Manifold mounting
A	Direct mounting
B	Din rail mounting

### ④ Accessory

Symbol	Accessory
Nil	Without pressure gauge
A	With pressure gauge

### ② No. 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

### ⑤ Semi standard

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

### ⑥ Unit representation

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

### ③ IN/OUT fitting

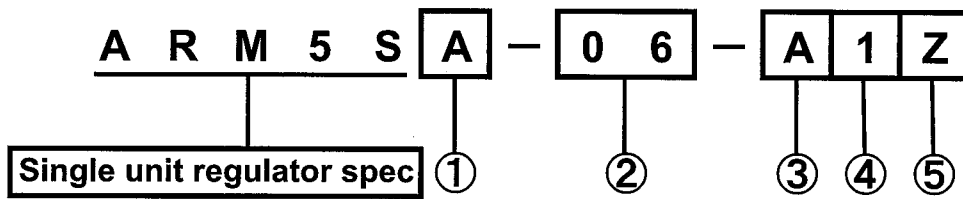
Metric size

Sym bol	IN side				OUT side			
	Straight		Elbow		Straight		Elbow	
	φ4	φ6	φ4	φ6	φ4	φ6	φ4	φ6
06	●				●			
07		●			●			
08		●				●		
18			●				●	
19				●			●	
20				●				●
25	●						●	
26		●					●	
27		●						●
32			●		●			
33				●	●			
34				●		●		

Inch size

Sym bol	IN side				OUT side			
	Straight		Elbow		Straight		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				●		●		

### ③ Single unit regulator spec



#### ① Manifold mounting

Symbol	Manifold mounting
A	Direct mounting
B	Din rail mounting

#### ③ Accessory

Symbol	Accessory
Nil	Without pressure gauge
A	With pressure gauge

#### ② IN/OUT fitting type

Metric size

Sym bol	IN side				OUT side			
	Straight		Elbow		Straight		Elbow	
	φ4	φ6	φ4	φ6	φ4	φ6	φ4	φ6
06	●				●			
07		●			●			
08		●				●		
18			●				●	
19				●			●	
20				●				●
25	●						●	
26		●					●	
27		●						●
32			●		●			
33				●	●			
34				●		●		

Inch size

Sym bol	IN side				OUT side			
	Straight		Elbow		Straight		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				●		●		

#### ④ Semi standard

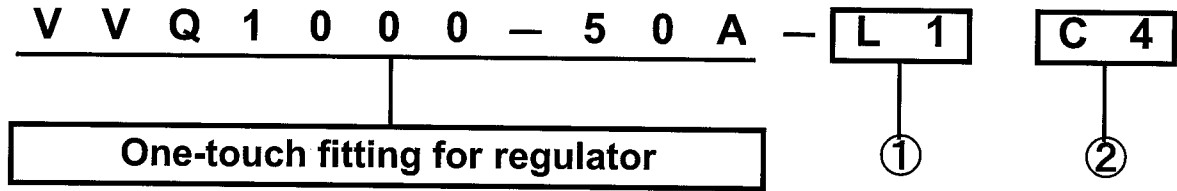
Symbol	None	Set pressure of 0.35MPa (50PSI)	Non-relieving
Nil	●		
1		●	
2			●
3		●	●

#### ⑤ Unit representation

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

#### ④ Regulator option

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



##### ① Fitting Type

Symbol	Type
Nil	Straight
L1	Elbow

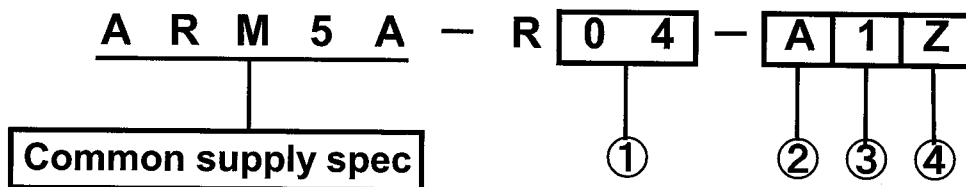
##### ② Fitting size

Symbol	Size
C4	$\phi 4$
C6	$\phi 6$
N3	$\phi 5/32''$
N7	$\phi 1/4''$

Fitting size	R	S	T	U
$\phi 4, \phi 5/32''$	2.5	6	11	35.5
$\phi 6$	3	6.5	11	36
$\phi 1/4''$	6.5	6	11.5	38.5

## ⑤ Option

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



#### ① OUT fitting type

Metric size

Sym bol	OUT side			
	Straight		Elbow	
	φ4	φ6	φ4	φ6
04	●			
05		●		
16			●	
17				●

Inch size

Sym bol	OUT side			
	Straight		Elbow	
	φ5/32"	φ1/4"	φ5/32"	φ1/4"
54	●			
55		●		
66			●	
67				●

#### ② Content

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

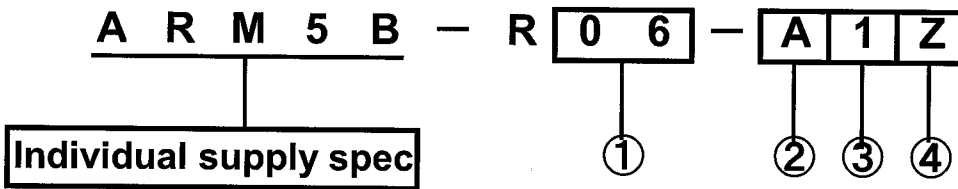
#### ③ Semi standard

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

#### ④ Unit 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



① IN/OUT fitting type

Metric size

Sym bol	IN side				OUT side			
	Straight		Elbow		Straight		Elbow	
	φ4	φ6	φ4	φ6	φ4	φ6	φ4	φ6
06	●				●			
07		●			●			
08		●				●		
18			●				●	
19				●			●	
20				●				●
25	●						●	
26		●					●	
27		●						●
32			●		●			
33				●	●			
34				●		●		

Inch size

Sym bol	IN side				OUT side			
	Straight		Elbow		Straight		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				●		●		

② Content

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

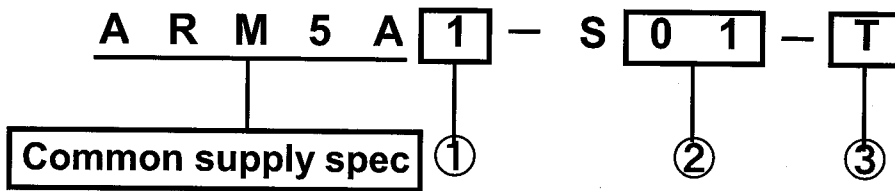
③ Semi standard

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

④ Unit 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



① IN position

Symbol	Mounting position
1	Bottom
2	Top

② IN fitting type

Metric size

Sym bol	IN side			
	Straight		Elbow	
	φ6	φ8	φ6	φ8
01	●			
02		●		
13			●	
14				●

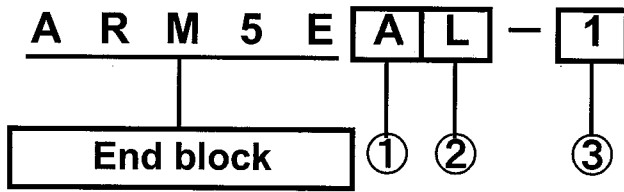
Inch size

Sym bol	IN side			
	Straight		Elbow	
	φ1/4"	φ5/16"	φ1/4"	φ5/16"
51	●			
52		●		
63			●	
64				●

③ Tie-rod

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

(4) End block



① Manifold mounting

Symbol	Manifold mounting
A	Direct mounting
B	Din rail mounting

② position

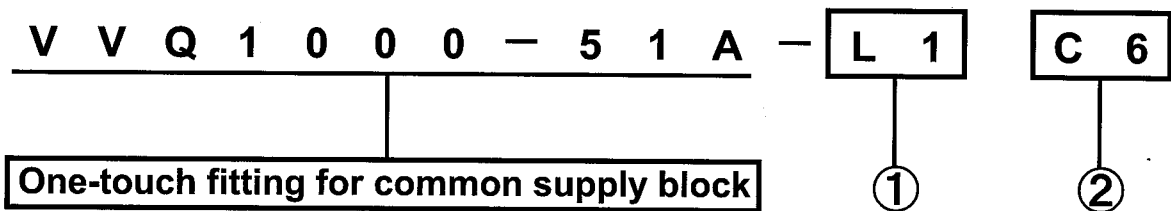
Symbol	Mounting position
L	Left
R	Right

③ Supply spec

Symbol	Supply spec
1	Common supply spec
2	Individual supply spec

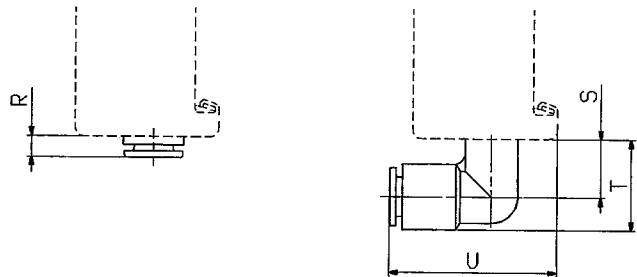
\* Only R side end block should be selected.  
L side end block should be left as Nil.

(5) One-touch fitting for common supply block



① Fitting type

Symbol	Type
Nil	Straight
L1	Elbow



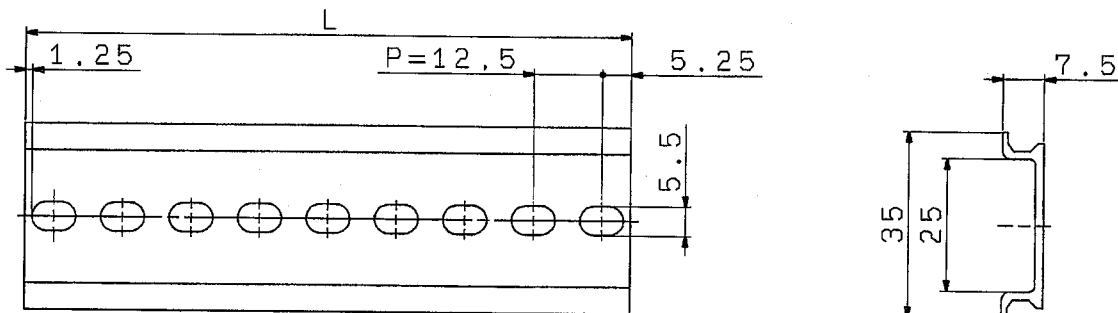
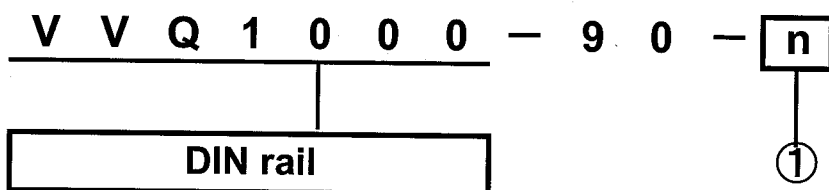
② Fitting size

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**



① L dimension

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

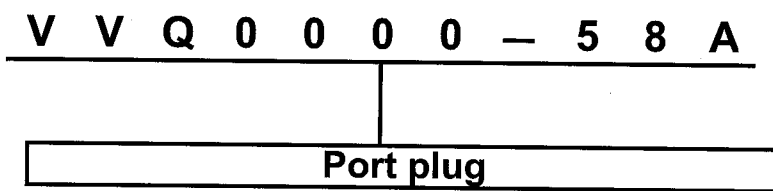
No.	9	10	11	12	13	14	15	16
L dimension	123	135.5	148	160.5	173	185.5	198	210.5

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

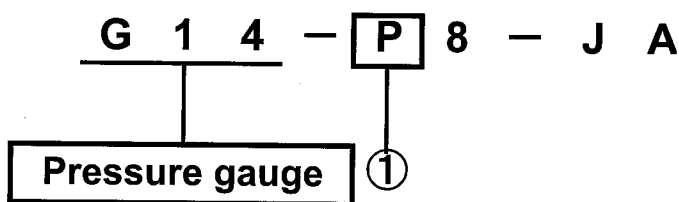
No.	25	26	27	28	29	30	31	32
L dimension	323	335.5	348	360.5	373	385.5	398	410.5

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**



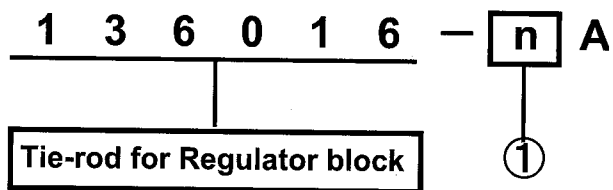
**(8) Pressure gauge**



① Unit representation

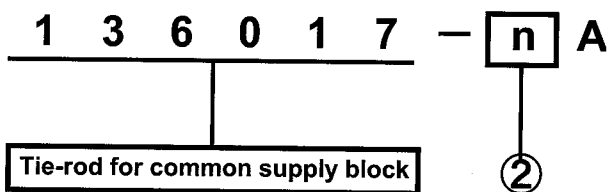
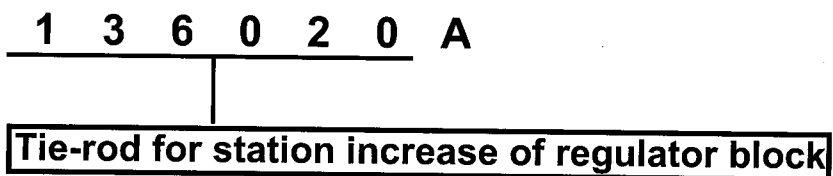
Symbol	Pressure gauge indication range	Unit
Nil	0~0.8MPa	MPa
P	0~120PSI	PSI

(9) Tie-rod



① Number 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



② Number of common supply blocks

Symbol	Number of blocks
1	1
2	2

## 7.TROUBLE SHOOTING

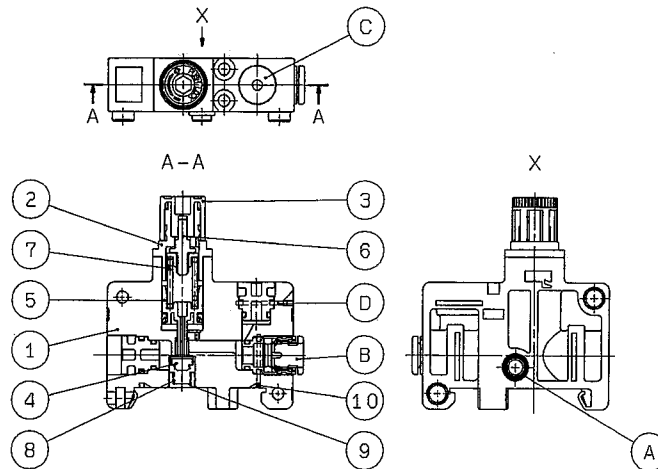
Refer to Construction Figure (shown in next page)

TROUBLE		POSSIBLE CAUSE	REMEDY
Demarcation	Phenomenon		
Pressure	Pressure is not regulated.	1.Opposite installation of IN and OUT tube. ----- 2.Foreign materials caught in valve seat.	1.Check installing direction of tube and if installed opposite, reinstall it. 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. ----- 2.Application of back pressure exceeding the set pressure to the outlet.	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.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. ----- 2.Damaged O-ring of the fitting	1. Remove the fitting assembly, and wash the 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. ----- 2. Damaged O-ring of the port plug.	1. Remove the port plug assembly, and wash the O-ring. 2. Replace the port plug O-ring.
	Air leaks between fitting and tube.	1.Foreign materials caught in packing inside fitting. ----- 2.Damaged surface of tube. ----- 3.Improper connection between fitting and tube.	1.Remove the fitting assembly and wash the packing inside it. 2.Replace the 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. ----- 2.Damaged O-ring of pressure gauge.	1. Remove the pressure gauge assembly and wash the O-ring of the 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. ----- 2. Damaged O-ring of the manifold block.	1. Disassemble the manifold, and wash the O-ring. 2. Replace the O-ring of the manifold block.
	Air leaks between bocks.	1. Foreign materials caught in O-ring of the regulator block. ----- 2. Damaged O-ring of the regulator block.	1. Disassemble the manifold and wash the O-ring. 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

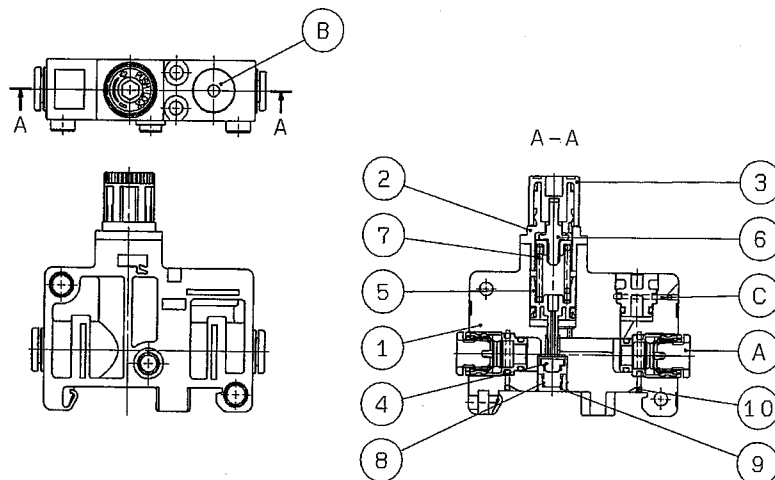


#### Componet parts

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



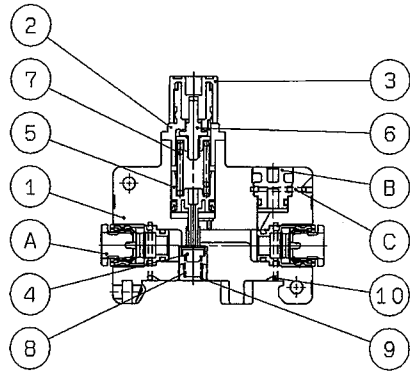
#### Componet parts

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.

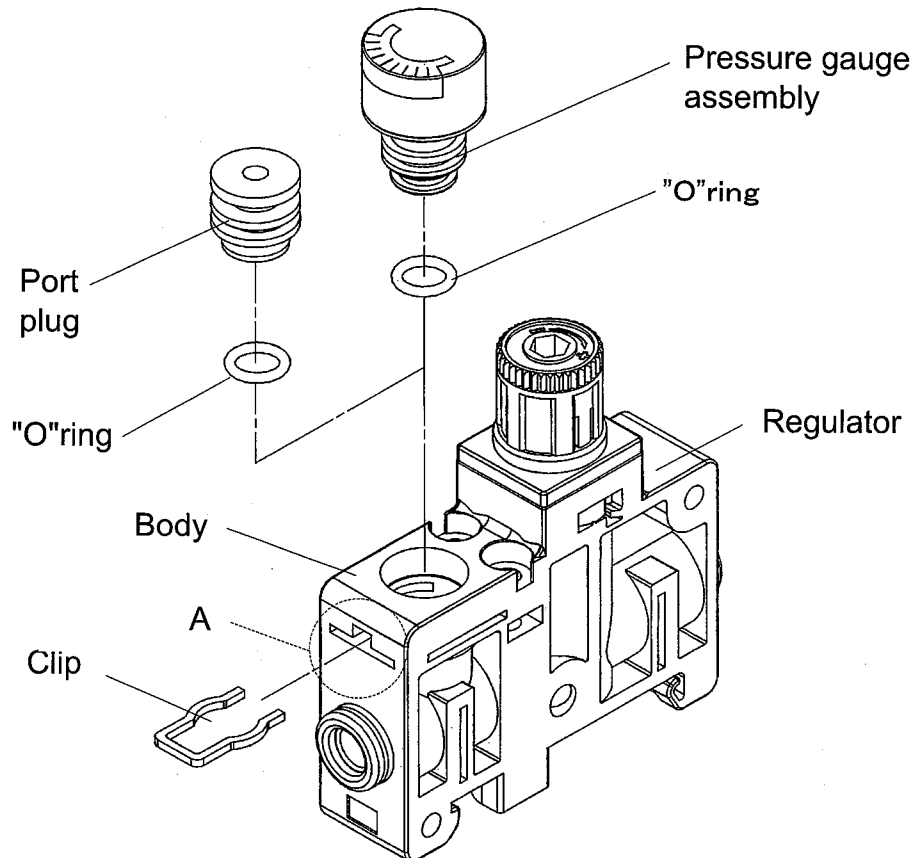
Rotate the pressure adjusting handle counterclockwise fully and to return it to zero.

After replacement, ensure that specified function is satisfied and external leakage is not found before

### 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	<ol style="list-style-type: none"> <li>1. Insert a precision flat head screw driver along with taper of hole A on OUT side of the body .</li> <li>2. Hook the tip of the screw driver to the inserted clip, and pull out the clip. * As the clip may fly out, pull it slowly as holding it with a hand.</li> <li>3. Pull out the mounted pressure gauge / Port plug.</li> </ol>	<ol style="list-style-type: none"> <li>1. Insert the pressure gauge / port plug all the way in properly.</li> <li>2. Put the clip back to the hole. Use the tip of the precision flat head screw driver to insert the clip to the end properly.</li> </ol>
Check item	—	<ol style="list-style-type: none"> <li>1. Presence of "O" ring. (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.</li> </ol>

Disassembled diagram



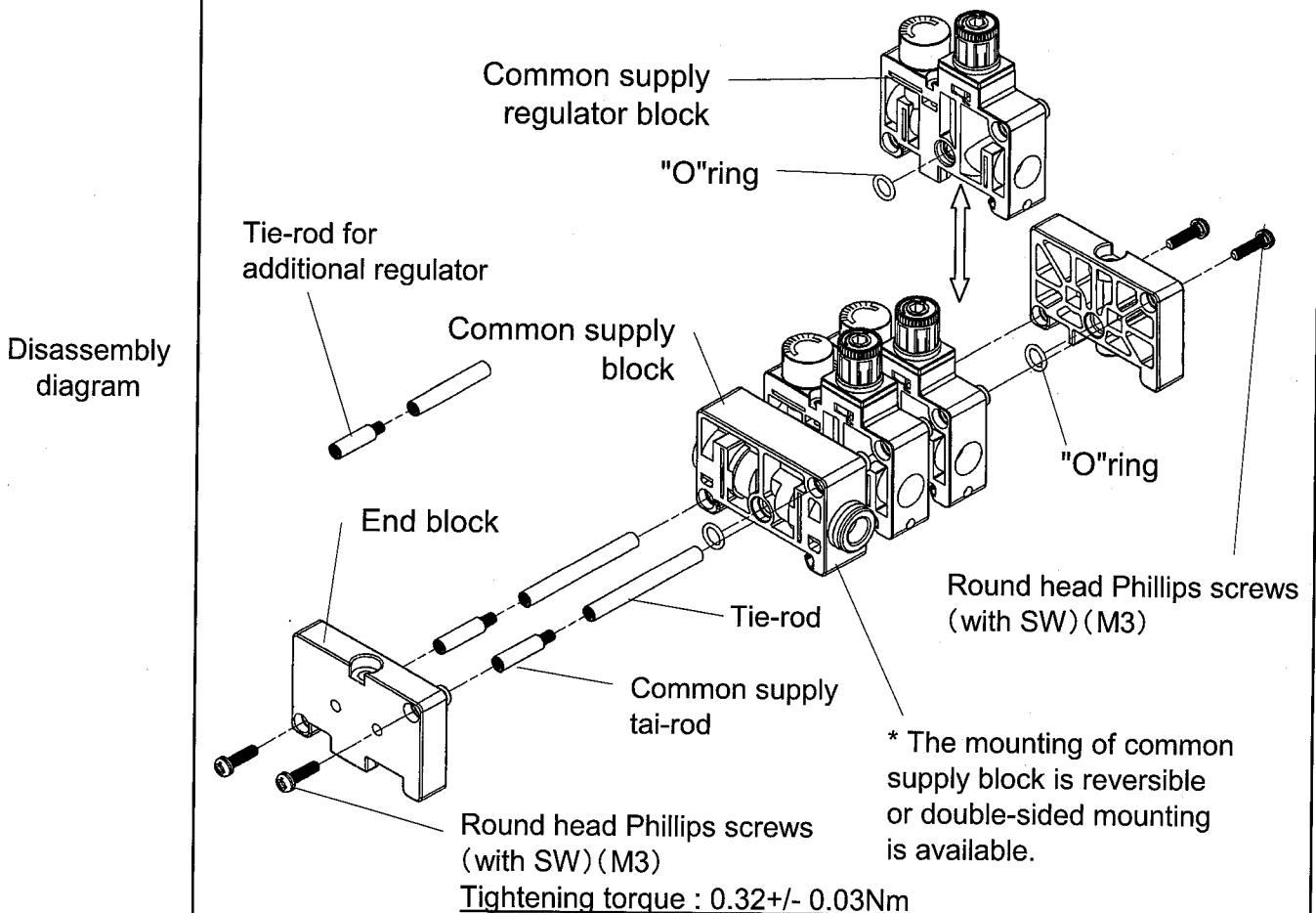
## 2. Replacement of One-touch fitting

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	<ol style="list-style-type: none"> <li>1. Insert a precision flat head screw driver along with taper of hole B on OUT side of the body .</li> <li>2. Hook the tip of the screw driver to the inserted clip, and pull out the clip. * As the clip may fly out, pull it slowly as holding it with a hand.</li> <li>3. Pull out the mounted One-touch fitting.</li> </ol>	<ol style="list-style-type: none"> <li>1. Insert the One-touch fitting all the way in properly.</li> <li>2. Put the clip back to the hole. Use the tip of the precision flat head screw driver to insert the clip to the end properly.</li> </ol>
Check item	—	<ol style="list-style-type: none"> <li>1. Presence of "O" ring. (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.</li> </ol>
Disassembly diagram	<p>* 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.</p>	

### 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	<ol style="list-style-type: none"> <li>1. Loosen and remove the round head Phillips screw on the corner of the end block.</li> <li>2. Pull out the tie-rod from the end block, common supply block and regulator.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect the several tie-rods from each other.</li> <li>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.</li> <li>3. Check that O-ring is mounted on the recessed connection of each block of the manifold, and insert the each block to the tie-rods.</li> <li>4. Temporarily tighten the round head Phillip screws on the right side.</li> <li>5. Tighten the round head Phillips screws on both both sides of manifold within the follwing specified torque.</li> </ol>
Check item	—	<ol style="list-style-type: none"> <li>1. Presence of "O" ring. (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.</li> </ol>

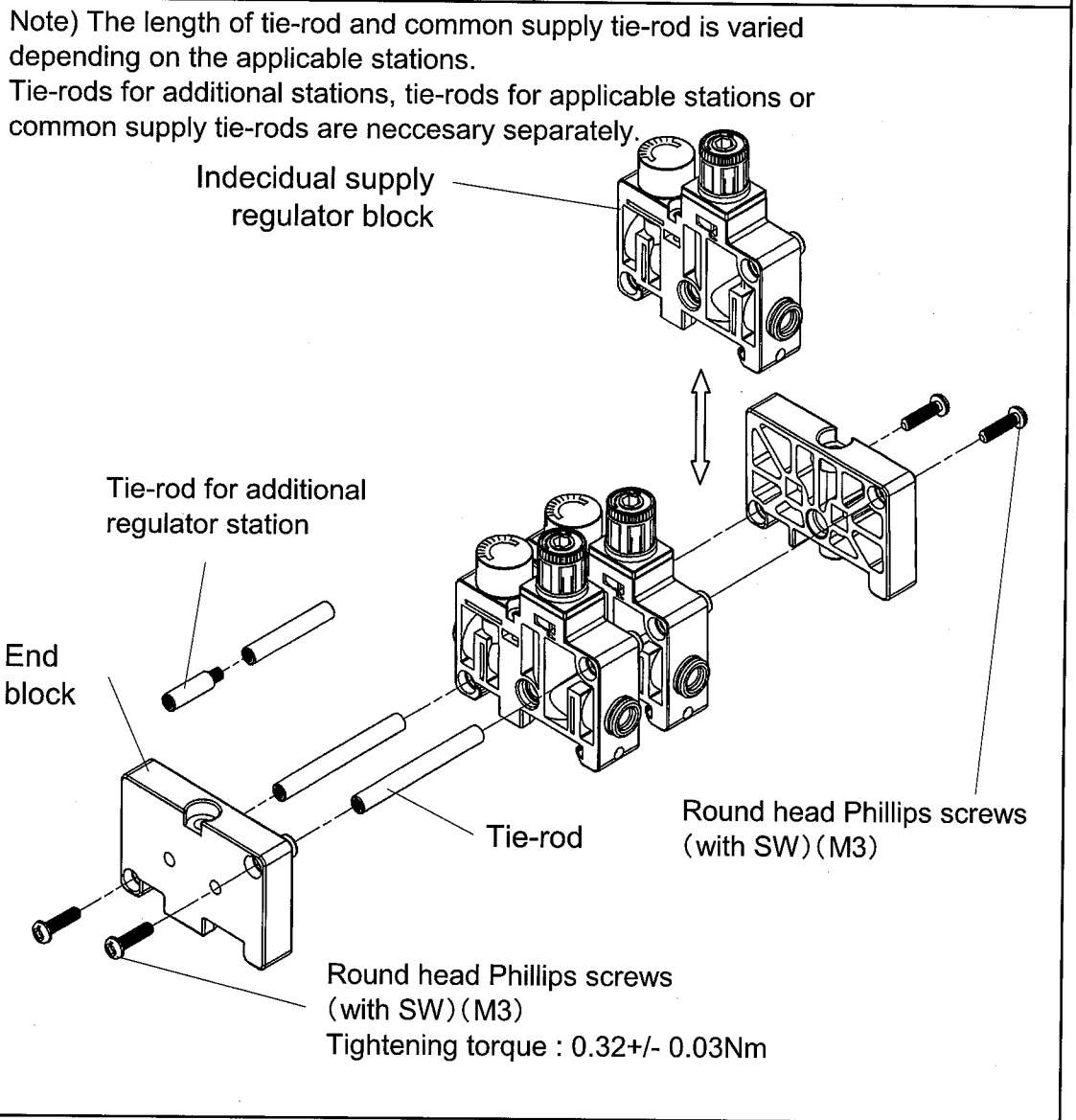
Note) The length of tie-rod and common supply tie-rod is varied depending on the applicable stations.  
Tie-rods for additional stations, tie-rods for applicable stations or common supply tie-rods are necessary separately.





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

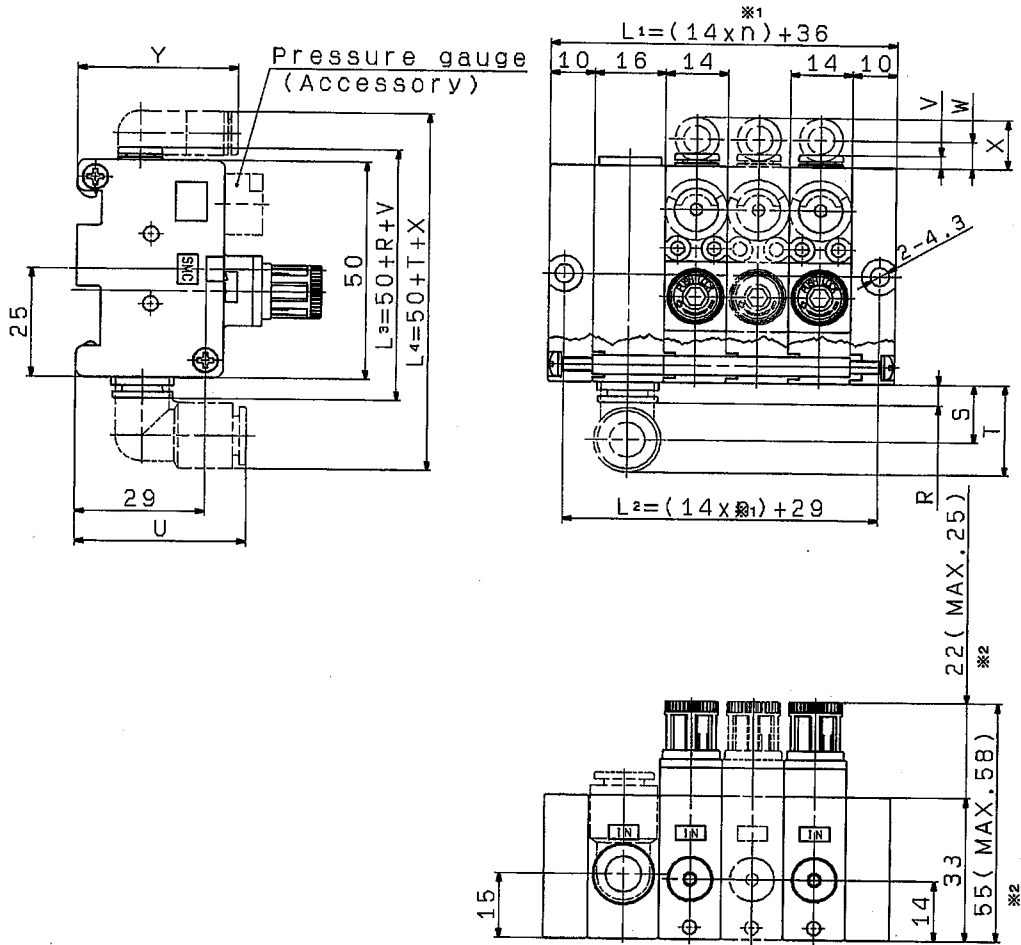
Content	Change of manifold stations	
Parts	Regulator block	
Tools	Phillips driver	
Process	Disassembly	Assembly
Procedure	<ol style="list-style-type: none"> <li>Loosen and remove the round head Phillips screw on the corner of the end block.</li> <li>Pull out the tie-rod from the end block, common supply block and regulator.</li> </ol>	<ol style="list-style-type: none"> <li>Connect the several tie-rods from each other.</li> <li>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.</li> <li>Insert each block to the tie-rod.</li> <li>Temporarily tighten the round head Phillip screws on the right side.</li> <li>Tighten the round head Phillips screws on both both sides of manifold within the following specified torque.</li> </ol>
Check item	—	—



# 10.DIMENSIONS

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

\* 1. n= Station of regulator blocks

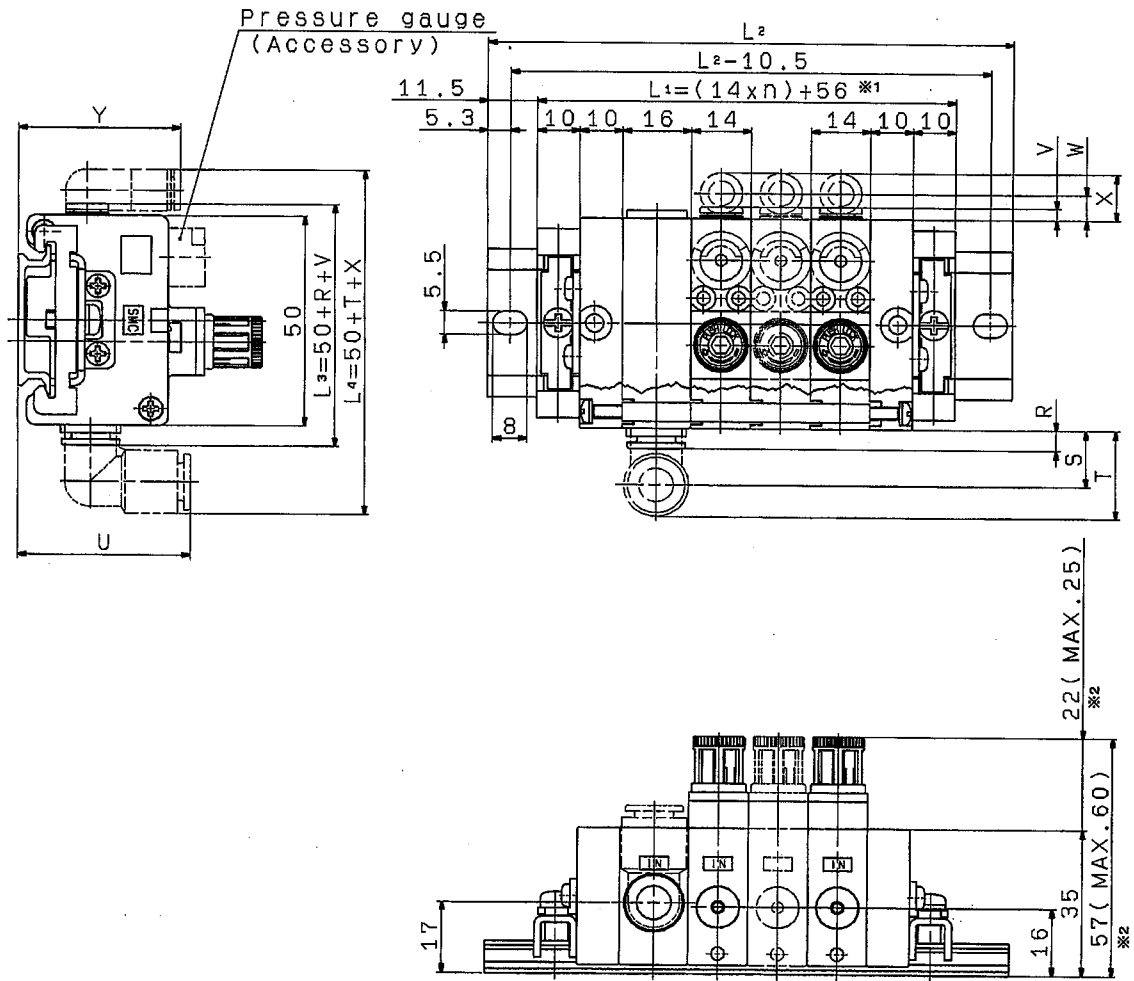


\* 2. MAX dimension indicates the value when handle is unlocked.

Fitting size	IN side				OUT side			
	Straight	Elbow	Elbow	Elbow	Straight	Elbow	Elbow	Elbow
	R	S	T	U	V	W	X	Y
□4, □5/32"	-	-	-	-	2.5	6	11	35.5
□6	3	12.5	19	35.5	3	6.5	11	36
□1/4"	3	12.5	19	35.5	6.5	6	11.5	38.5
□8, □5/16"	5	13.5	21	38.5	-	-	-	-

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

\* 1. n = Station of regulator blocks



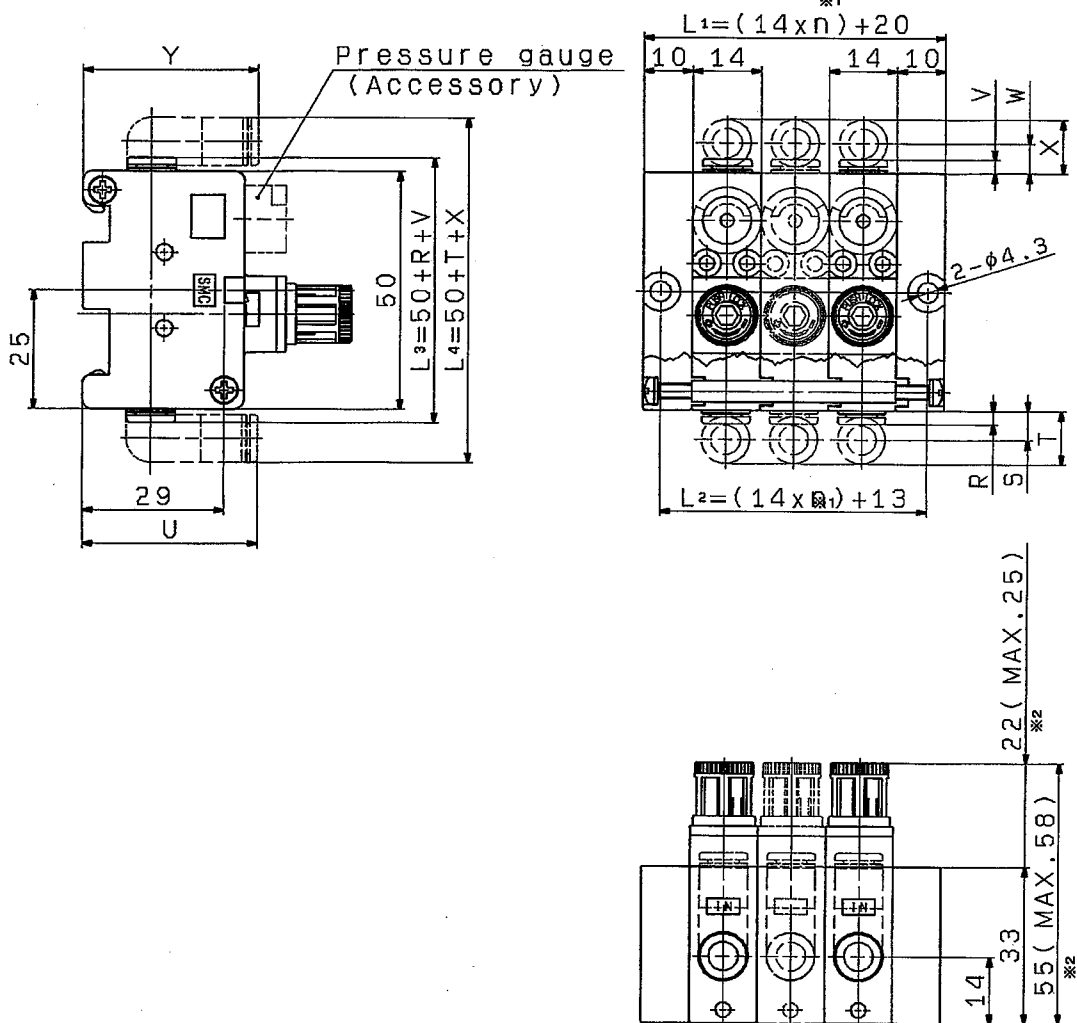
\* 2. MAX dimension indicates the value when handle is unlocked.

Fitting size	IN side				OUT side			
	Straight	Elbow	Elbow	Elbow	Straight	Elbow	Elbow	Elbow
	R	S	T	U	V	W	X	Y
□4, □5/32"	-	-	-	-	2.5	6	11	37.5
□6	3	12.5	19	37.5	3	6.5	11	38
□1/4"	3	12.5	19	37.5	6.5	6	11.5	40.5
□8, □5/16"	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

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

\* 1. n = Station of regulator blocks

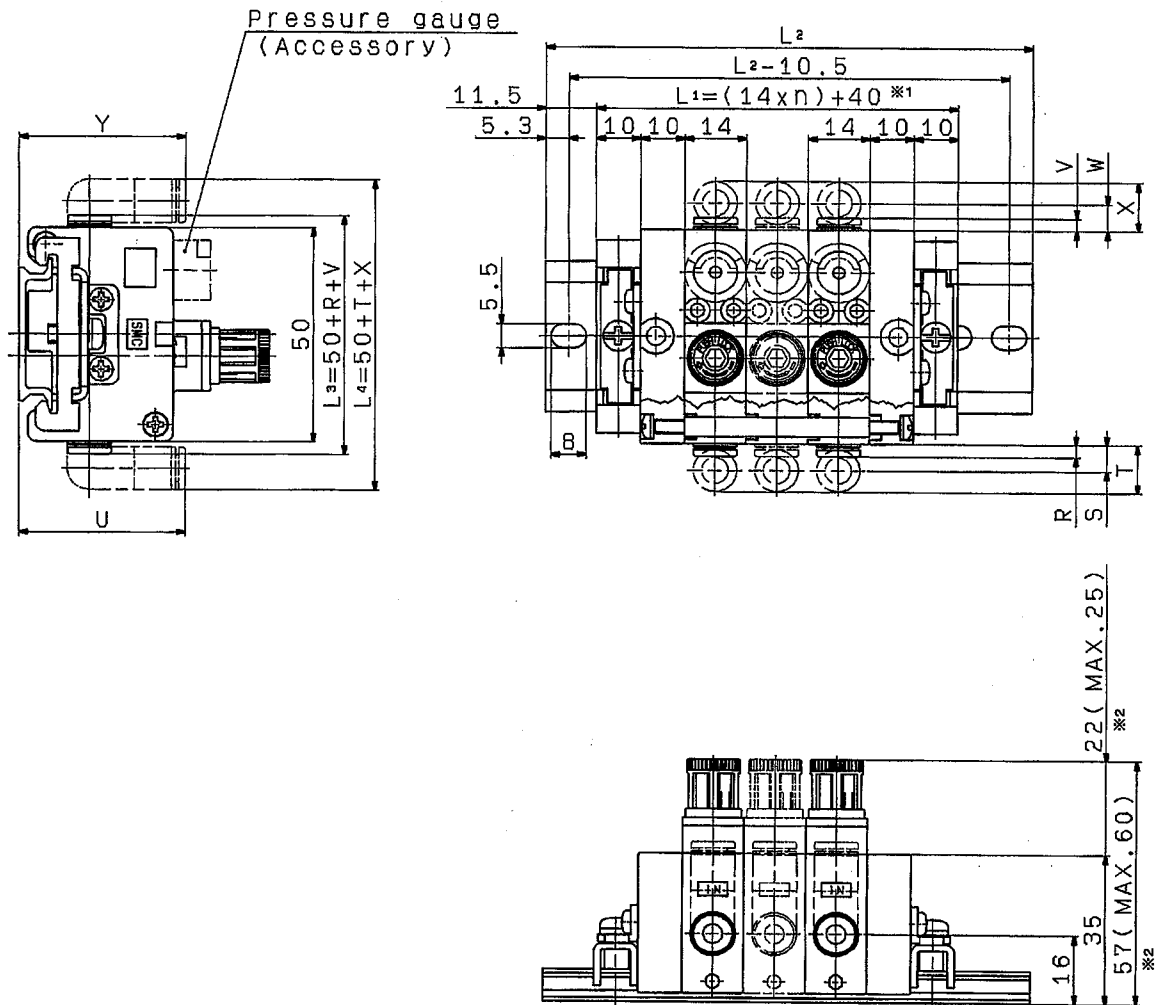


\* 2. MAX dimension indicates the value when handle is unlocked.

Fitting size	IN side				OUT side			
	Straight	Elbow	Elbow	Elbow	Straight	Elbow	Elbow	Elbow
	R	S	T	U	V	W	X	Y
□4, □5/32"	2.5	6	11	35.5	2.5	6	11	35.5
□6	3	6.5	11	36	3	6.5	11	36
□1/4"	6.5	6	11.5	38.5	6.5	6	11.5	38.5

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

\* 1. n = Station of regulator blocks

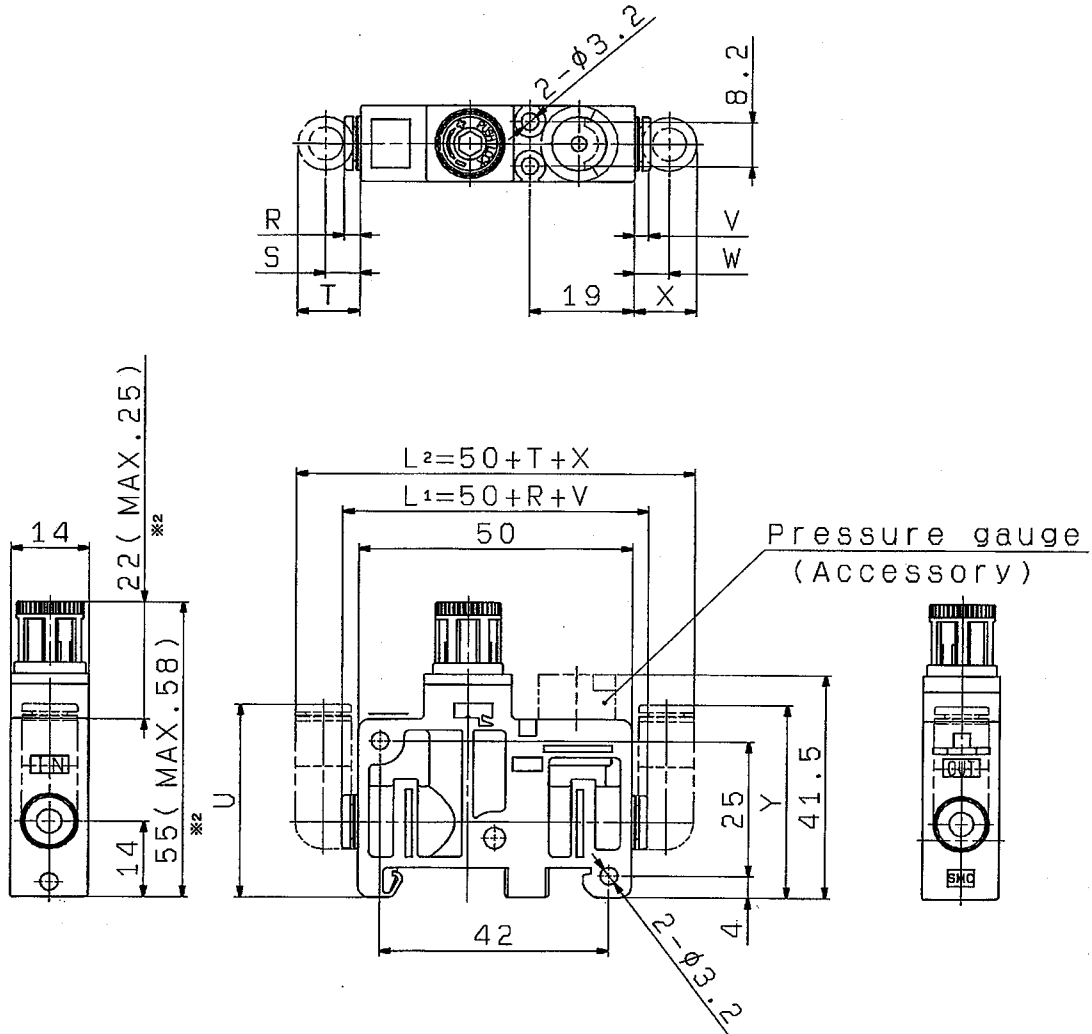


\* 2. MAX dimension indicates the value when handle is unlocked.

Fitting size	IN side				OUT side			
	Straight R	Elbow S	Elbow T	Elbow U	Straight V	Elbow W	Elbow X	Elbow Y
□4, □5/32"	2.5	6	11	37.5	2.5	6	11	37.5
□6	3	6.5	11	38	3	6.5	11	38
□1/4"	6.5	6	11.5	40.5	6.5	6	11.5	40.5

Stations	L <sub>2</sub> 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

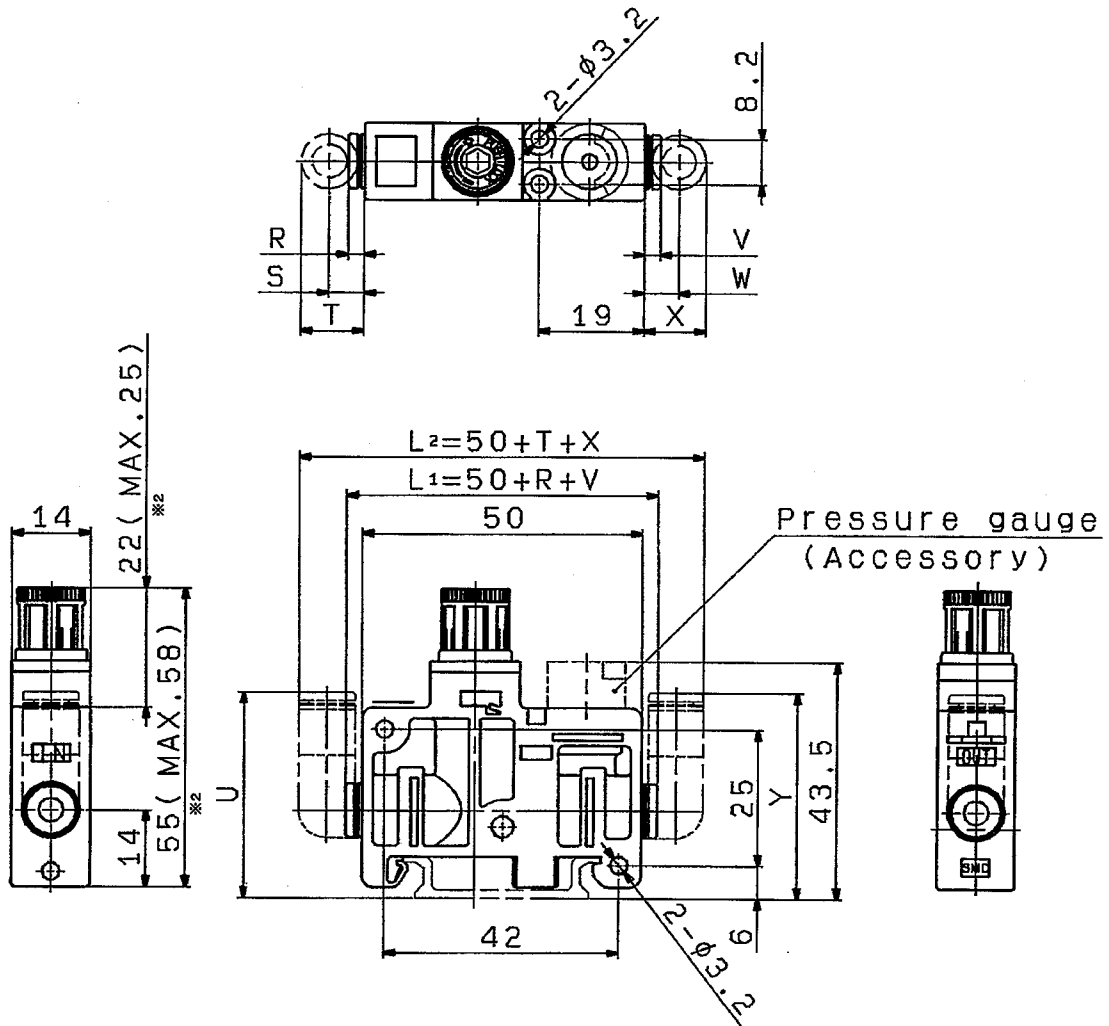
⑤ Regulator / Single unit regulator spec (Direct mounting)



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

Fitting size	IN side				OUT side			
	Straight	Elbow	Elbow	Elbow	Straight	Elbow	Elbow	Elbow
	R	S	T	U	V	W	X	Y
□4, □5/32"	2.5	6	11	35.5	2.5	6	11	35.5
□6	3	6.5	11	36	3	6.5	11	36
□1/4"	6.5	6	11.5	38.5	6.5	6	11.5	38.5

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



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

Fitting size	IN side				OUT side			
	Straight	Elbow	Elbow	Elbow	Straight	Elbow	Elbow	Elbow
	R	S	T	U	V	W	X	Y
□4, □5/32"	2.5	6	11	37.5	2.5	6	11	37.5
□6	3	6.5	11	38	3	6.5	11	38
□1/4"	6.5	6	11.5	40.5	6.5	6	11.5	40.5