SMC

DOCUMENT No.: AR＊－OML0044-A

OPERATION MANUAL

PRODUCT NAME:	REGULATOR
MODEL:	ARP20-(F,N)01～(F,N)02(B,E,G,H)(-1,3,R,Y,Z)
	ARP30-(F,N)02～(F,N)03(B,E,G,H)(-1,3,R,Y,Z)
	ARP40-(F,N)02～(F,N)04(B,E,G,H)(-1,3,R,Y,Z)

○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.

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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 ISO/IEC(※1), JIS(※1), and other safety regulations.(※2)

⚠ 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 power – – General rules relating to systems.
ISO 4413: Hydraulic fluid power – – General rules relating to systems.
IEC 60204-1: Safety of machinery – –Electrical equipment of machines. (Part 1: General requirements)
ISO10218-1992: Manipulating industrial robots –Safety.
JIS B 8370: General rules for pneumatic equipment.
JIS B 8361: General rules for hydraulic equipment.
JIS B 9960-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
JIS B 8433-1993: Manipulating industrial robots – Safety.
etc.

*2) Labor Safety and Sanitation Law, etc.

*3) Injury refers to an injury, burn, electric shock etc. which does not result in hospitalization and/or long-term medical treatment.

*4) Physical damage refers to extensive damage to premises or contents.

⚠ WARNING

① **Suitability 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.

② **Equipment 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.

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 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.

④ **When 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, space, shipping, vehicles, military, 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.

d. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Safety Instructions

⚠ Caution

1. The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements". Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

Precautions for design

⚠ WARNING

① External parts including the bonnet, handle, cover are made of resin. Organic solvents including synthetic fluid, chemicals including acetone, alcohol, ethylene chloride, sulphuric acid, nitrate, hydrochrolic acid, cutting oil, kerosene, gasoline, lock material of screw are harmful. Don't use the regulator where containing
② Consult SMC if no leakage is allowed due to the environment, or operating fluid is not air
③ Protect from ultra violet ray and radiation heat by shield.
④ Safety device needs to be installed if output pressure exceeding set pressure lead to cause the breakage of outlet device and equipment or malfunction.

⚠ CAUTION

① Select a model that is suitable for the desired purity by referring to SMC's Best Pneumatics "Air Line Equipment, Air Preparation Equipment."
② Do not use the product outside of its specifications. If the product is to be used with conditions (temperature and pressure) outside of the specifications, contact SMC beforehand.

Selection

⚠ WARNING

① Mineral grease used for internal sliding surface and packing may leak to the outlet. Please contact SMC if this is a problem.
② Residual pressure(outlet pressure) is not released even if releasing inlet pressure. Select the regulator with counter flow function. Without the function, residual pressure may not be eliminated.
③ When no air is consumed for an extended period, or the outlet side of the product is a sealed circuit or balanced circuit, the outlet pressure may fluctuate from the set value. If this fluctuation is unacceptable, contact SMC beforehand.
④ Do not use the product with the supply of inlet pressure stopped.
⑤ Set pressure of outlet pressure shall be 90% or less of inlet pressure. Pressure over 90% makes operation susceptible to flow and inlet pressure which lead to cause unstable operation.
⑥ Maximum set pressure range in the spec. has margin. Pressure set may be higher than the maximum value.
⑦ If regulator is used with circuit which require high exhaust sensitivity or set precision, please consult SMC.
⑧ Even when the product is used in the specified range, it may chatter depending on the operating conditions. Contact SMC for the details of this chattering.

Installation

⚠ CAUTION

① Connect the regulator ensuring the direction of "IN" and "OUT" for air direction or an arrow. Wrong connection lead to cause malfunction.
② Reserve a space for maintenance at the top, bottom and front of the product. Specifically, on the valve guide side (opposite side from the pressure regulator handle), we recommend leaving a space of at least 100mm for maintenance.
③ Be careful not to drop the product or subject it to impact during transportation and installation. This can impair the display accuracy of the pressure gauge.
④ Don't install where highly humid or temperature is high. Or pressure gauge may malfunction.
⑤ When the product is installed between a solenoid valve and actuator, select a reverse flow check type.

Adjustment

⚠ WARNING

① Adjust the pressure ensuring inlet pressure and outlet pressure. Turning the pressure regulator handle (referred to as the "handle") excessively can cause damage to the internal parts.
② Operate the pressure adjusting handle manually. Tools may break the handle.

⚠ CAUTION

① Check primary pressure before setting up.
② For the regulator with the pressure gauge, don't apply pressure over the maximum scale of the pressure gauge in order to protect the gauge.
③ Release the lock to adjust the pressure. After the adjustment, engage the lock.
Failure to observe this procedure can damage the handle or cause the outlet pressure to fluctuate.
- Pull the handle to unlock. (You can visually verify with the "orange mark" that appears in the gap.)
- Push the handle to lock. If the handle is hard to lock, turn it left and right a little and then push it (when the handle is locked, the "orange" mark will disappear.)

④ Adjust pressure incrementally. Pressure may become lower than set pressure if adjusted by decreasing the value. Rotate the handle clockwise to raise the set pressure.
Counterclockwise, reduce the pressure.
⑤ The product consumes a small amount of fluid from the bleed port.
The product is designed to have a bleed mechanism for highly accurate pressure adjustment, and consumes a small amount of fluid from the bleed port. This should not be considered abnormal.
⑥ Outlet pressure may rise if eliminate the inlet pressure after pressure setting and supply pressure again. The pressure becomes close to the set pressure after air is consumed in outlet.
⑦ Outlet pressure might change if uses for a long time. Please confirm set pressure regularly.

Piping

⚠ WARNING

① Flash or clean piping before piping to eliminate swarf, cutting oil, solid foreign material. Remaining of these lead to cause malfunction.

② When screw in piping or fitting, avoid entering of chips and sealing materials from piping screws into the inside of equipment. Or malfunction is led to occur. When use sealing tapes, leave 1.5～2 threads of a screw and starts taping.

③ Hold the female screw side and screw in piping with recommended tightening torque. Insufficient tightening torque lead to cause loose piping or sealing failure. Excessive torque may lead to cause screw breakage. Tightening without holding female screw side applies excessive force to the piping bracket which lead to cause breakage.

Recommended torque unit:N・m

Screw	1／8	1／4	3／8	1／2
Torque	7～9	12～14	22～24	28～30

④ Don't apply any torsional moment, or bending moment except the weight of the regulator itself. External pipings need its support separately. Hard piping like steel tube is susceptible to excessive moment load or vibration. Insert the flexible tube to cancel the influence.

Air Source

⚠ WARNING

① Use a mist separator on the inlet side of the product. If the supplied air contains condensate or dust, the bleed mechanism can malfunction.

② Do not use a lubricator at the inlet side of the product, as the bleed mechanism can malfunction.

③ Use clean air. Compressed air containing chemicals, organic solvent, synthetic oil or corrosive gas may lead to cause breakage of parts or malfunction.

Maintenance

⚠ WARNING

① Maintenance or check should be done by following the procedure in the operation manual. Incorrect handling of the product may cause breakage or malfunction of the equipment or device.

② When a reverse flow check type is used between a solenoid valve and an actuator, check the pressure gauge regularly, as there may be rapid pressure fluctuation which decreases the durability of the pressure gauge.
In some cases, a electronic type pressure gauge is recommended, rather than a Bourdon's tube type pressure gauge.

2. APPLICATION

This instrument aims at pressure controlling of air lines.

3. SPECIFICATIONS

Model			ARP20	ARP30	ARP40
Port size			1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid			Air		
Proof pressure			1.2MPa		
Max. operating pressure			0.7MPa		
Set pressure range	0.4MPa setting type	Example) ARP30-02BG	0.005～0.4MPa		
	0.2MPa setting type	Example) ARP30-02BG-1	0.005～0.2MPa		
	0.6MPa setting type	Example) ARP30-02BG-3	0.008～0.6MPa		
Setting Sensitivity			0.2% F.S.within		
Repeatbility Note1)			±1% F.S.(or±3kPa) within		
Air Consumption	0.4MPa setting type	Example) ARP30-02BG	1L/min(ANR)within(P2=0.4MPa setting)		
	0.2MPa setting type	Example) ARP30-02BG-1	0.6L/min(ANR)within(P2=0.2MPa setting)		
	0.6MPa setting type	Example) ARP30-02BG-3	1.4L/min(ANR)within(P2=0.6MPa setting)		
Gauge port size Note2)			1/8		1/4
Ambient and fluid temperature			-5～60°C(Should be no freezing)		
	Digital pressure switch	Example) ARP30-02BE1	-5～60°C(Should be no freezing)		
Construction			Bleed type		
Weight (kg)			0.2kg	0.3kg	0.5kg

Note 1) The repeatbility is +/-3kPa, when 0.2MPa setting type is selected.

Note 2) Connection size is not applicable to a square embedded pressure gauge.

4. HOW TO ORDER

ARP 30 – F 03 BG – 1

Body size
20
30
40

Thread	
Rc	Nil
NPT	N
G	F

Port size	
1/8	01
1/4	02
3/8	03
1/2	04

Options	
Symbol	Contents
Nil	–
Note3) 1	Setting pressure 0.005～0.2MPa
Note3) 3	Setting pressure 0.008～0.6MPa
R	Flow-direction: From right to left
Y	Handle is upward
Note4) Z	Nameplate, Pressure gauge Unit: PSI
Note5) ZA	Digital pressure switch with unit conversion function (Default setting: MPa)

When specifying more than one option,indicate symbols numerically then alphabetically.
Note3) Only the adjusting spring is different from the standard model.
Max.outlet pressure is 0.2MPa or more and it might go up.
Max.outlet pressure is 0.6MPa or more and it might go up.
When 0.2MPa setting type is selected, the pressure gauge for 0.2MPa is attached.
When 0.6MPa setting type is selected, the pressure gauge for 0.7MPa is attached.
Note4) Thread: NPT. Z is applicable to only overseas because of new measure ment law in Japan (SI unit)
Digital pressure switch with unit conversion function (Default setting: PSI)
Note5) Accessory :E1,E2,E3,E4.
ZA is applicable to only over seas because of new mentlaw in Japan (SI unit)

Note1) Accessories	
Nil	–
B	With bracket (with set nut)
E	Square embedded pressure gauge (With limit indicator)
E1 (Note2)	With digital pressure switch (Output specification: NPN output, Electrical entry: Bottom)
E2 (Note2)	With digital pressure switch (Output specification: NPN output, Electrical entry: Top)
E3 (Note2)	With digital pressure switch (Output specification: PNP output, Electrical entry: Bottom)
E4 (Note2)	With digital pressure switch (Output specification: PNP output, Electrical entry: Top)
G	Circular pressure gauge (With limit indicator)
H	With set nut (Panel mounting)

When specifying more than one option,indicate symbols numerically then alphabetically.
Note1) Accessory is packed together and is not mounted.(Except type E,E1,E2,E3,E4)
Note2) If "H" option is selected together, there will be no space for connecting the lead wire.
Therefore, in that case, select electrical entry option so that the lead wire is in the opposite direction from the handle.

For the handling of the digital pressure switch, refer to the Operation Manual of the digital pressure switch, ISE35 series.

5. TROUBLESHOOTING

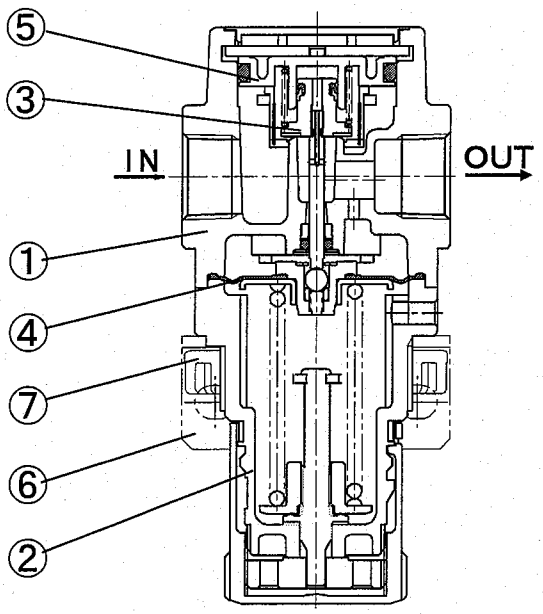
Refer to construction, disassembly drawing.(showen in next page.)

TROUBLE		POSSIBLE CAUSE	REMEDY
Demarcation	Phenomenon		
Pressure	Pressure in not regulated	1. Opposite fllow direction or opposite installation of regulator.	1. Check flow diretion and install the regulator correctly if wrong.
		2. Adjust spring is damaged.	2. Replace the adjust spring.
		3. Valve spring is damaged.	3. Replace the valve spring.
		4. Foreign materials caugth in valve seat or valve "Y" ruber.	4. Remove valve guide and clean the valve seat or valve"Y" rabur.. Grease up after washing the sliding surface of valve "Y" ruber.
		5. Valve rubber seat is damaged.	5. Replace the valve.
	Set pressure does not return to zero when pressure handle is loosened	1. Foreign materials caught in valve seat or valve "Y" ruber..	1. Remove the valve guide to clean valve, valve seat and the valve "Y" ruber. Then, grease up the valve "Y" ruber and the sliding surface.
		2. Valve rubber seat is damaged.	2. Replace the valve.
		3. Valve spring is damaged.	3. Replace the valve spring.
		4. Valve adheres to the valve guide.	4. Wash the sliding surface of valve "Y" ruber and grease up.
Air leaks	Air leaks from the bonnet exhaust port	1. Diaphragm is damaged.	1. Replace the diaphragm assembly.
		2. Piston packing is damaged.	2. Replace or clean of the piston assembly. Then, grease up the piston packing and the sliding surface.
		3. Foreign material is caught in the relieving valve seat.	3. Clean the relieving valve seat, or replace the diaphragm assembly.
		4. Foreign material is caught in the valve seat of valve "O" ring.	4. Remove the valve guide to clean valve, valve seat and the valve "O" ring. Then, grease up the valve "O" ring and the sliding surface.
		5. Valve rubber seat is damaged.	5. Replace the valve.
		6. Back pressure exceeding the set pressure is applied to the outlet.	6. Revise the air circuit so that back pressure does not exceed the set pressure.
	Air leaks between the bonnet and the body	1. Loosened bonnet.	1. Fasten the bonnet.
		2. Diaphragm is damaged.	2. Replace the diaphragm assembly.

Note) The grease used recommends Nippon oil corporaion diamond multipurpose No.2.

6. CONSTRUCTION／PARTS LIST

ARP20／30／40



COMPONENT PARTS

No.	Description	Material	Note
		ARP20/30/40	
①	Body	Aluminium die cast	color:Urban white
②	Bonnet	POM	color:Urban white

OPTION／REPLACEMENT PARTS

No.	Description	Thread	Option	Material	Part no.		
					ARP20	ARP30	ARP40
③	Valve assembly	—	—	Brass/ HNBR·NBR	ARP20P-330AS	ARP30P-330AS	ARP40P-330AS
④	Diaphragm assembly	—	—	Brass/HNBR	APP20P-151AS	ARP30P-151AS	ARP40P-151AS
⑤	Valve guide assembly	—	—	POM・NBR	ARP20P-050AS	ARP30P-050AS	ARP40P-050AS
⑥	Note1) Bracket assembly	—	—	Steel plate・POM	ARP20P-270AS	ARP30P-270AS	ARP40P-270AS
⑦	Set nut	—		POM	ARP20P-260S	ARP30P-260S	ARP40P-260S
⑧	Note2) Square embedded pressure gauge	—	—	—	Note3) GC3-4AS		
		NPT	Z	—	Note3) GC3-P4AS		
⑨	Pressure gauge cover	—	—	—	GC3P-010AS		
⑩	Circular pressure gauge	Rc	—	—	Note4) G36-4-01		Note5) G46-4-02
		NPT	—	—	Note4) G36-4-N01		Note5) G46-4-N02
			Z	—	Note4) G36-P4-N01		Note5) G46-P4-N02
		G	—	—	Note4) G36-4-01		Note5) G46-4-02
⑪	Pressure gauge adaptor assembly	Rc	—	Aluminum die cast	ARP20P-310AS-01		ARP20P-310AS-02
		NPT	—	Aluminum die cast	ARP20P-310AS-N01		ARP20P-310AS-N02
		G	—	Aluminum die cast	ARP20P-310AS-F01		ARP20P-310AS-F02
⑫	Plug assembly	Rc	—	—	ARP20P-320AS-01		ARP40P-320AS-02
		NPT	—	—	ARP20P-320AS-N01		ARP40P-320AS-N02
		G	—	—	ARP20P-320AS-F01		ARP40P-320AS-F02
⑬	Plug	Rc	—	PBT	AR20P-370AS-01		AR20P-370AS-02
		NPT	—	PBT	AR20P-370AS-N01		AR20P-370AS-N02
		G	—	PBT	AP20P-370AS-01		AP20P-370AS-02
⑭	Blanking plate assembly	—	—	—	AR20P-250AS		

Note1) Bracket and Set nut assembly.

Note2) Bracket and Mounting screws(2 pcs) assembly.

Note3) Part no. for 0.2MPa is GC3-2AS/GC3-P2AS(NPT・Z)
Part no. for 0.6MPa is GC3-7AS/GC3-P7AS(NPT・Z)

Note4) Part no. for 0.2MPa is G36-2-01(Rc)／G36-2-N01(NPT)／G36-P2-N01(NPT・Z)
Part no. for 0.6MPa is G36-7-01(Rc)／G36-7-N01(NPT)／G36-P7-N01(NPT・Z)

Note5) Part no. for 0.2MPa is G46-2-02(Rc)／G46-2-N02(NPT)／G46-P2-N02(NPT・Z)
Part no. for 0.6MPa is G46-7-02(Rc)／G46-7-N02(NPT)／G46-P7-N02(NPT・Z)

Note6) The number in the table is corresponding to the number in structural drawing (avobe-mentioned figure) and 「8.Disassembly drawing」 (P12～P13)

7. HOW TO REPLACE

⚠ WARNING

Before replacement, ensure that the regulator is not pressurized
Rotate the pressure adjusting handle to zero
Replace refering to "8. DISASSEMBLY DRAWING" (P12~P15).
After replacement, ensure that specified function is satisfied and external leakage is not found before starting operation.

1) Diaphragm assembly (Piston assembly)

Applicable model	Process	Procedure	Tools	Check item
ARP20 ARP30 ARP40	Disassembly	1) Remove the bonnet Rotate the set screw counterclockwise with cross pointed driver to remove the bonnet from the body.	Cross pointed driver	—
		2) Remove parts in order of the pressure adjusting spring, and the diaphragm assembly. Please be noted that the diaphragm assembly adheres to the bonnet if disassemble parts with the handle facing downwards	—	—
	Assembly	3) Mount parts to the body in order of the diaphragm assembly and pressure adjusting spring. Mind the direction of the diaphragm assembly and pressure adjusting screw assembly. See attached disassembly drawing.	—	Direction of diaphragm assembly.
		4) Mount the bonnet to the body Mount the bonnet to the body, and settle it roughly with four(4) set screws with a cross pointed driver. Then, Tighten screws diagonally with the tightening torque in the check item to settle.	Cross pointed driver	Tightening torque ARP20 2.35±0.3N·m ARP30 2.35±0.3N·m ARP40 3.5 ±0.3N·m

2)Valve guide assemble, valve

Applicable model	Process	Procedure	Tools	Check item
ARP20 ARP30 ARP40	Disassembly	1) Remove the cap Insert the small screw driver in the gap between the body and the cap and dig up the cap	Small driver	—
		2) Remove the cover Insert the circular pliers to two holes of the cover and rotate 45 degree, and lift it.	Circular pliers Nominal:125	—
		3) Remove the valve guide assembly Hold the valve guide with a small pliers, and lift.	Small pliers	—
		4) Remove the strainer. When removing the strainer, pay attention to the valve as it may pop out. (For the procedure, refer to P14.)	Small pliers	—
		5) Remove the valve	—	—
		6) Remove the valve spring	—	—
	Assembly	7) Mount the valve spring. install the valve spring to the valve guide.(refer to P15.)	—	Positioning the stem and the valve(centering)
		8) Mount the valve Install the valve on the valve spring.	—	—
		9) Mount the strainer (For the Installation method, refer to P15.)	—	—
		10) Mount the assembly of the valve guide and the cover Mate the notch of the body cover hole and the detent of the cover. Then push the assembly of them. Insert the circular plier to two holes of the cover to rotate 45 degree to settle.	Circular pliers Nominal:125	—
		11) Mount the cap Mate the convex of the body cover and the concave of the cap, and push them in to settle. Ensure the end of the body and the cap are almost flat.	—	Orientation of the body and the cap. Body end and the cap are almost flat.

3)Bracket assembly, Set nut(panel mount)

Applicable model	Process	Procedure	Tools	Check item
ARP20 ARP30 ARP40	Assembly	1) Mount the parts to the bracket(panel) Mate the bracket(panel) concave and the bonnet convex to mount the bracket.	—	—
		2) Settle the bracket(panel) with set nut. Rotate the set nut clockwise with a hook spanner to settle the parts to the bracket(panel). See check item for tightening torque. Set nut knurling surface shall face the bracket. When mounting with bracket, set nut tightened manually is adequate fir general used.	ARP20/30/40 Hook spanner Nominal ARP20 34/38 ARP30 52/55 ARP40 52/55	Tightening torque ARP20 2.0±0.2N·m ARP30 3.5±0.3N·m ARP40 4.0±0.4N·m

4)Square embedded pressure gauge

Applicable model	Process	Procedure	Tools	Check item
ARP20 ARP30 ARP40	Disassembly	1) Remove the pressure gauge cover. Rotate the pressure gauge cover 15 degree counterclockwise to pull out the pressure gauge cover.	—	—
		2) Remove the pressure gauge. Rotate two set screws counterclockwise with cross pointed driver to remove the pressure gauge and two set screws.	Cross pointed driver	—
	Assembly	3) Ensure "O" ring is mounted to the pressure gauge Mount "O" ring to the pressure gauge if the ring fall off.	—	Presence of "O" ring
		4) Mount the pressure gauge. Rotate two set screws clockwise with cross pointed driver to set screws temporary. Then settle them with tightening torque in check item.	Cross pointed driver	Tightening torque: 0.3±0.05N·m
		5) Mount the pressure gauge cover. Insert the pressure gauge mating two detent of the pressure gauge and holes for them so that the arrow of the pressure gauge cover comes upper right. Rotate the pressure gauge cover 15 degree opposite to the arrow to mount the pressure gauge.	—	—

5) Circular pressure gauge

Applicable model	Process	Procedure	Tools	Check item
ARP20 ARP30 ARP40	Disassembly	1) Remove the pressure gauge. Hold the pressure gauge with a spanner on the spanner flat. Then, rotate the gauge counterclockwise to remove the gauge.	Spanner Nominal: ARP20 12 ARP30 ARP40 14	—
	Assembly	2) Rap the pressure gauge thread with the seal tape leaving 1.5 to 2 threads from the end.	—	Wrap seal tape leaving 1.5 to 2 threads
		3) Mount the pressure gauge Hold the pressure gauge on the spanner flat with a spanner, and rotate it clockwise to mount the circular pressure gauge. See Check item for tightening torque of pressure gauge.	Spanner Nominal: ARP20 12 ARP30 ARP40 14	Tightening torque: ARP20 7~9 N·m ARP30 ARP40 12~14 N·m

6) Pressure gauge adapter assembly, Plug assembly

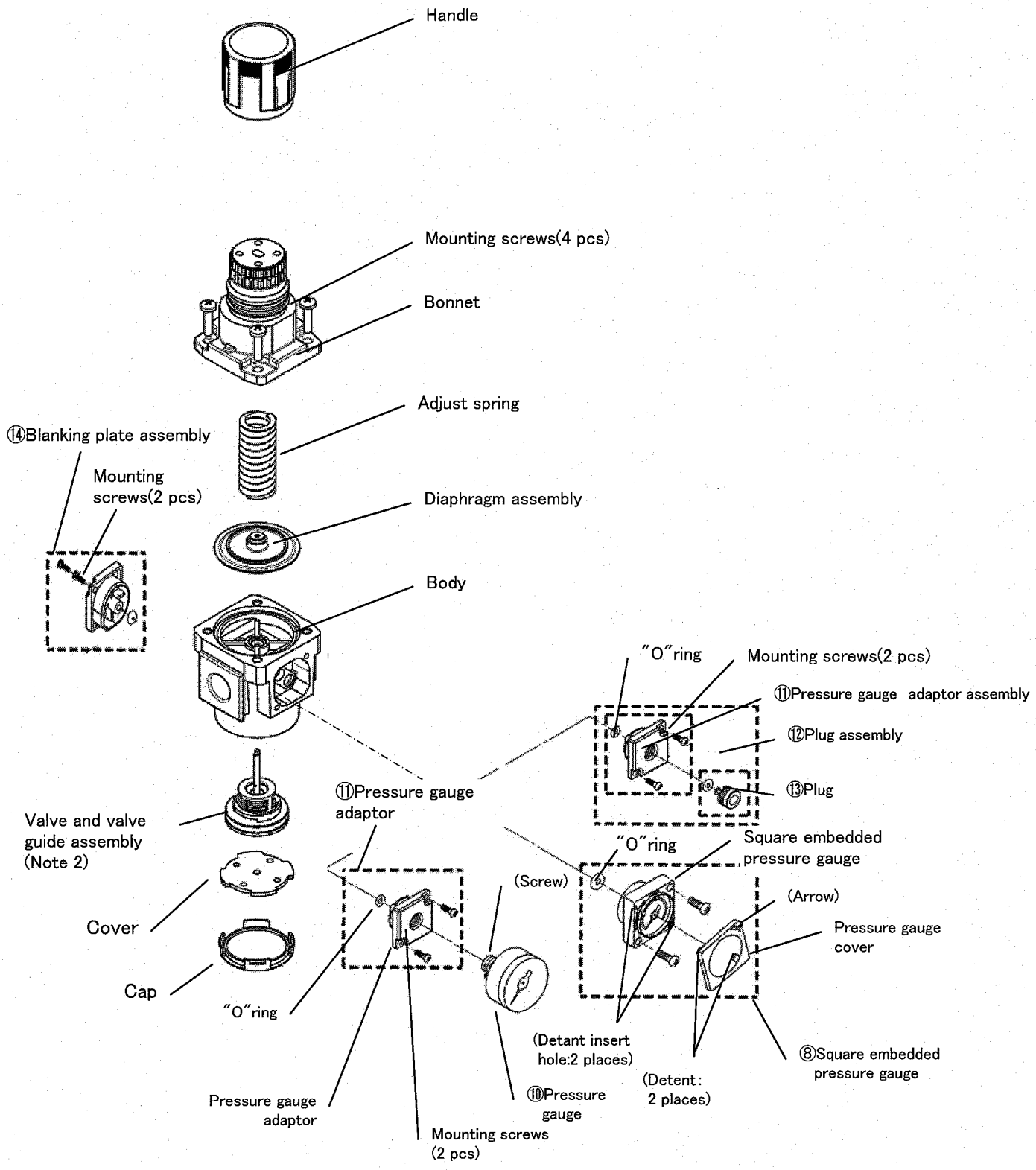
Applicable model	Process	Procedure	Tools	Check item
ARP20 ARP30 ARP40	Disassembly	1) Remove the plug Insert the hexagon spanner to hexagon hole of hexagon plug. Rotate the plug counterclockwise to remove the plug.	Spanner Nominal: ARP20 4 ARP30 ARP40 6	—
		2) Remove the pressure gauge adapter Rotate two set screws counterclockwise with cross pointed driver to remove the pressure gauge and two set screws.	Cross pointed driver	—
	Assembly	3) Confirm pressure gauge adapter has "O" ring. If not, mount "O" ring.	—	—
		4) Mount pressure gauge adapter. Rotate two screws clockwise by Phillips driver to fix pressure gauge adapter. See Check item for tightening torque of two screws.	Cross pointed driver (Torque driver)	Tightening torque: 0.3±0.05N·m
		5) Mount plug assembly. Insert hexagon spanner into hexagon hole on the plug and rotate clockwise to fix the plug. See Check item for tightening torque of two screws.	Spanner Nominal: ARP20 4 ARP30 ARP40 6	Tightening torque: ARP20 0.6±0.05 N·m ARP30 ARP40 1.0±0.1 N·m

7) Blanking plate

Applicable model	Process	Procedure	Tools	Check item
ARP20 ARP30 ARP40	Disassembly	1) Rotate two set screws counterclockwise with cross pointed driver to remove the blanking plate and two set screws.	Cross pointed driver	—
	Assembly	2) Remove the pressure gauge adapter Confirm blanking plate has "O" ring. If not, mount "O" ring.	—	—
		3) Mount the blanking plate. Rotate two screws clockwise by Phillips driver to fix blanking plate. See Check item for tightening torque of two screws.	Cross pointed driver (Torque driver)	Tightening torque: 0.3±0.05N·m

8. DISASSEMBLY DRAWING

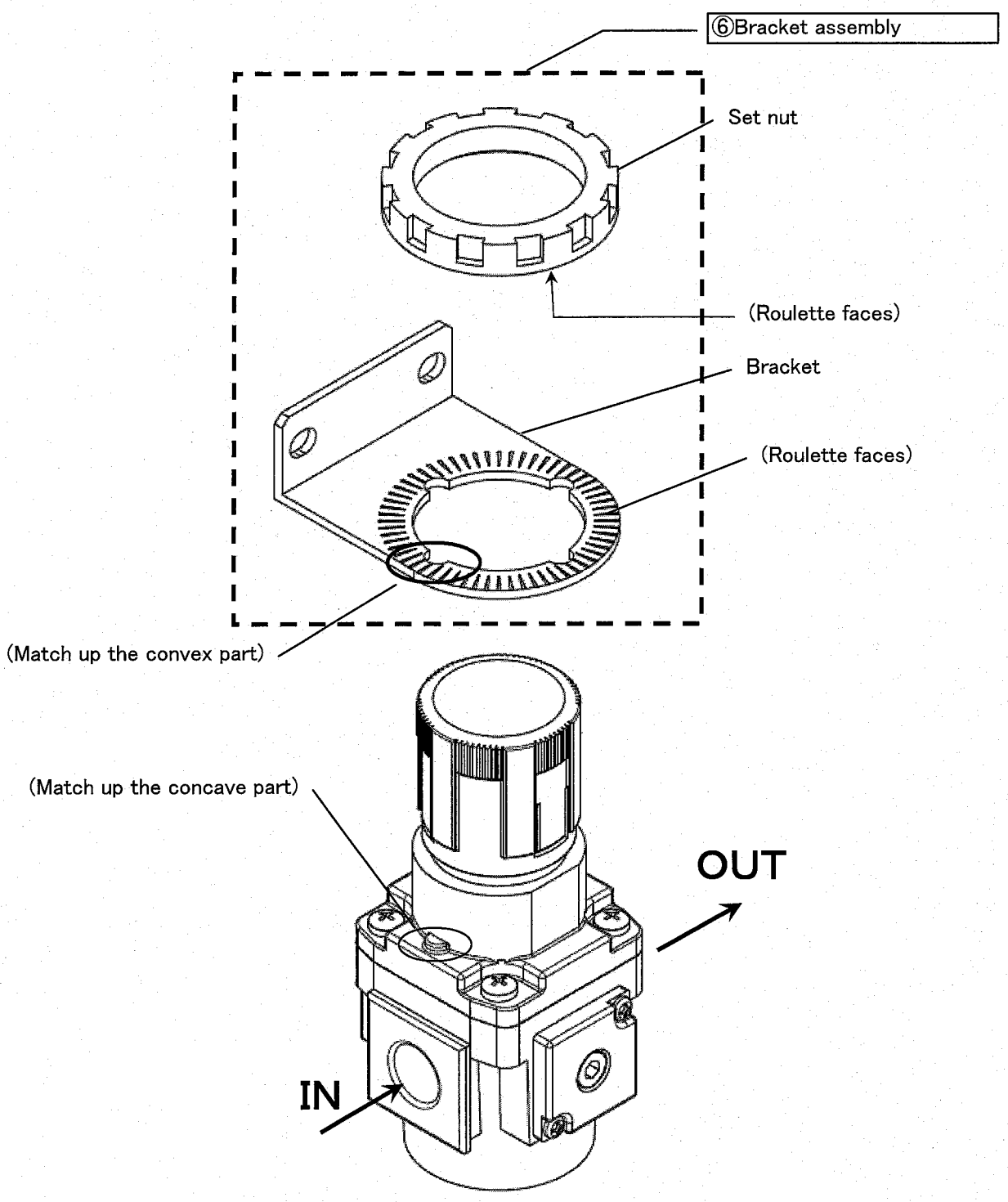
1) ARP20／30／40 Disassembly drawing.



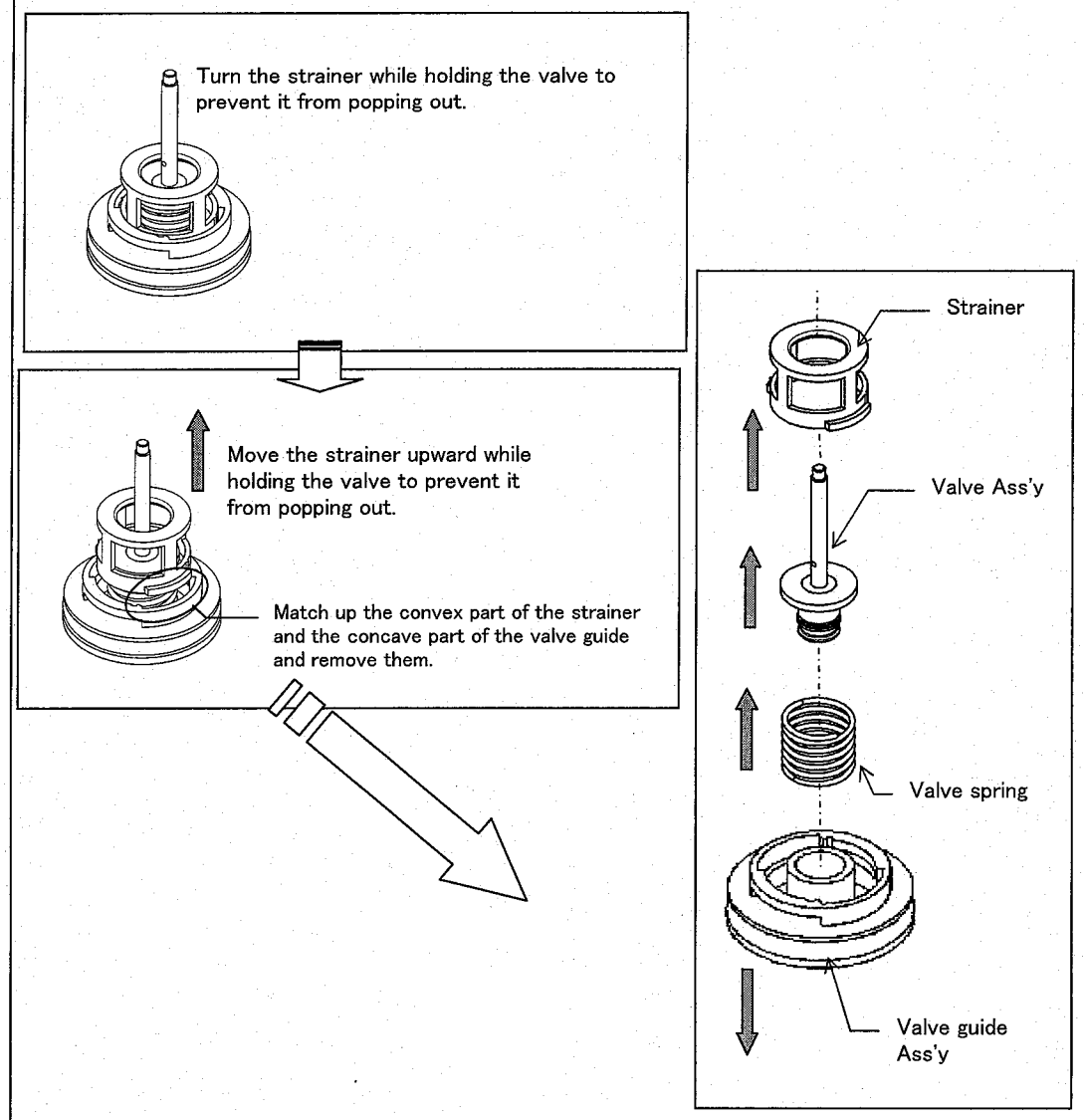
Note1) It is possible to mount ⑧Square embedded pressure gauge or ⑪Pressure gauge adaptor assembly or ⑫Plug assembly instead of ⑭Blanking plate assembly.

Note2) For the assembly of the valve and valve guide assembly, refer to P14 "Assembly Procedure for Valve and Valve Guide".

2) ARP20／30／40 Bracket assembly・Panel mounting disassembly drawing



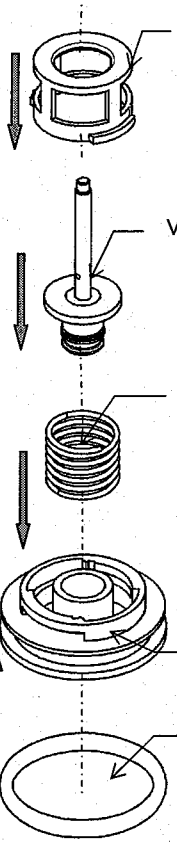
3) Disassemble the valve assembly.

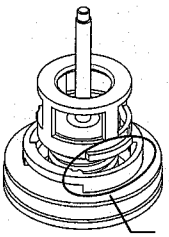
Content of work	Disassembly of the valve guide assembly
Figure of explanation	

Assembly of the Valve and the Valve Guide

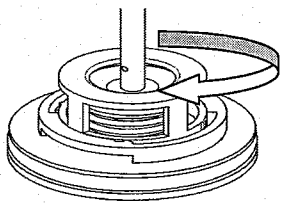
Content of work	Assembly of the Valve and the Valve Guide

Figure of explanation





Match up convex of the strainer and the concave part of the valve guide and press them to fit.



Press and turn the strainer
(until the convex part of the strainer fits into the concave part of the valve guide: Refer to the figure below.)

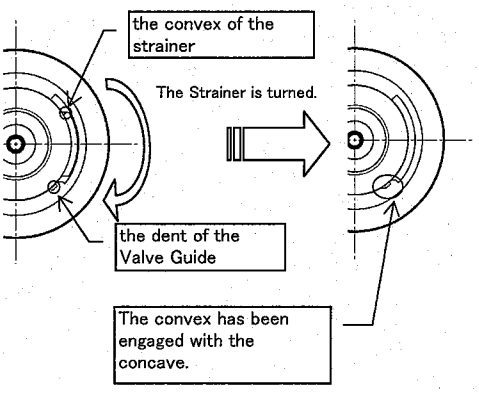
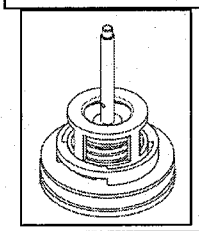
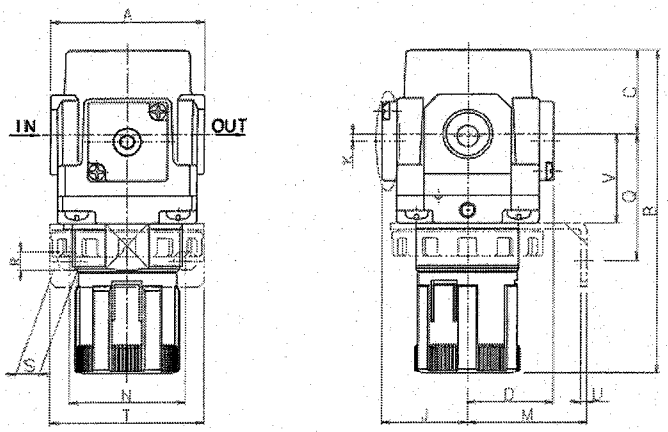


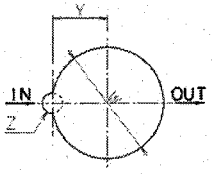
Figure of completion



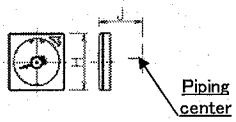
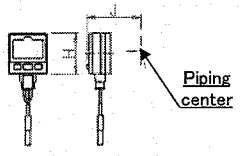
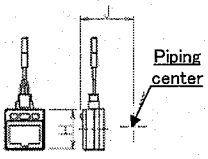
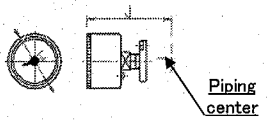
9. DIMENSIONS



Panel fitting



Gauges

Options	Square embedded pressure gauge	Digital pressure switch		Circular pressure gauge
		Electrical entry: Bottom)	Electrical entry: Top	
Figure of Externals				

Dimensions

Model	Port size	Gauge port size	Standard						
			A	Note.1 B	C	D	F	J	K
ARP20	1/8・1/4	1/8	40	98	27	28.5	M28×1	28.5	Note.2 2
ARP30	1/4・3/8	1/8	53	117	29	29.5	M38×1.5	29.5	2.5
ARP40	1/4・3/8・1/2	1/4	70	148	41	34	M42×1.5	34	1.0

Model	Accessory																
	Square embedded pressure gauge		Digital pressure switch		Circular pressure gauge		Bracket mounting dimensions							Panel mounting			
	H	J	H	J	H	J	M	N	Q	R	S	T	U	V	W	Y	Z
ARP20	□28	29.5	□27.8	40	φ37.5	66	30	34	47	5.4	15.4	55	2.3	28	28.5	14	6
ARP30	□28	30.5	□27.8	41	φ37.5	67	41	40	44	6.5	8	53	2.3	31	38.5	19	7
ARP40	□28	35	□27.8	45	φ42.5	74	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7

Note 1) The dimension B is measured with the handle unlocked.
Note 2) For ARP20 only, the pressure gauge is mounted higher than the piping center.