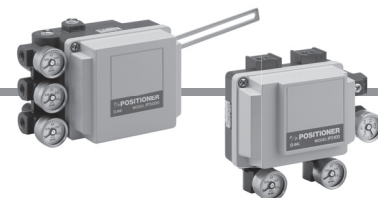


Pneumatic-Pneumatic Positioner (Lever type/Rotary type) **IP5000/5100 Series**

• JIS F8007 IP55

How to Order



IP5 000 - 0 1 0 F -									
Type		Input pressure		Pressure gauge (SUP, OUT1)		Indication of opening (Note)		Ambient temperature	
000	Lever type	0	0.02 to 0.1 MPa (Standard)	0	None	0	Not provided	—	-20 to 80 °C (Standard)
100	Rotary type	1	0.02 to 0.06 MPa 0.06 to 0.1 MPa	1	0.2 MPa	1	Indicated	T	-5 to 100 °C (High temperature)
				2	0.3 MPa			L	-30 to 60 °C (Low temperature)
				3	1 MPa				
								Pressure gauge/Air port	
								—	Rc (Standard)
								N	NPT
								F	G

Precautions

- Avoid impact to positioner while transporting and handling.
- Operate within specified temperature range to prevent deterioration of seals.
- Attach a body cover to the positioner when it is in use or left in the field in order to avoid rain water.
- Take measures to avoid dew condensation if the positioner is exposed to high temperature and humidity during transportation or storage or when it is left on the site.
- The zero point is subject to the mounting position. Adjust zero point after installation on the site.
- As the positioner contains extra-fine orifices such as restrictor and nozzle, if drain or dust is present in the supply pressure line, malfunction (*1) may result. In addition to an air filter (SMC Series AF), it is recommended to use a mist separator (SMC Series AM, AFM) and a micro mist separator (SMC Series AMD, AFD). Also, refer to "SMC Air Preparation System" for air quality.
- Never use a lubricator, as this can cause a malfunction (*1).

*1 If the restrictor is clogged, output from the OUT1 port of the positioner may occur continuously or hunching and overshoot may occur.

Accessories (Note 1)

—	None (Standard)	With standard lever (10 to 85 mm stroke) for IP5000
A	Ø 0.7 Output restriction with pilot valve	Common to IP5000 and IP5100 small capacity actuators
B	Ø 1.0 Output restriction with pilot valve	
C	Fork lever-type fitting M	Only for IP5100
D	Fork lever-type fitting S	
E	For stroke 35 to 100 mm with lever unit	Only for IP5000 (Note 2)
F	For stroke 50 to 140 mm with lever unit	

Note 1) If two or more accessories are required, the part numbers should be given in alphabetical order.
Ex.) IP5000-010-AD

Note 2) For "E" and "F", standard lever is not provided.

Specifications (Note 1)

Item	Type	IP5000		IP5100	
		Lever type lever feedback		Rotary type cam feedback	
		Single action	Double action	Single action	Double action
Supply pressure		0.14 to 0.7 MPa			
Input pressure		0.02 to 0.1 MPa			
Standard stroke		10 to 85 mm		60° to 100° Note 3)	
Sensitivity ^{Note 4)}		Within 0.1 % F.S.	Within 0.5 % F.S.		
Linearity ^{Note 2, 4)}		Within ±1 % F.S.	Within ±2 % F.S.		
Hysteresis ^{Note 2, 4)}		Within 0.75 % F.S.	Within 1 % F.S.		
Repeatability ^{Note 4)}		Within ±0.5 % F.S.			
Air consumption ^{Note 5)}		5 l/min (ANR) or less (SUP = 0.14 MPa) ^{Note}		11 l/min (ANR) or less (SUP = 0.4 MPa) ^{Note}	
Output flow rate ^{Note 5)}		80 l/min (ANR) or more (SUP = 0.14 MPa) ^{Note}		200 l/min (ANR) or more (SUP = 0.4 MPa) ^{Note}	
Ambient and fluid temperature		-20 °C to 80 °C (Standard)			
Coefficient of temperature		Within 0.1 % F.S./°C			
Air connection port ^{Note 6)}		Rc1/4 (Standard)			
Main component parts		Aluminium die-cast, Stainless steel, Brass, Nitrile rubber			
Weight		Approx. 1.4 kg		Approx. 1.2 kg	
Dimensions		118 x 102 x 86 (Body)		118 x 92 x 77.5 (Body)	

Note 1) Specification values are given at normal temperature (20 °C).

Note 2) 1/2 Split range (Standard) For operation with 1/2 split range, the linearity and hysteresis should be 1 % F.S. higher than the above specifications.

Note 3) Stroke adjustment: 0 to 60°, 0 to 100°

Note 4) Characteristics relating to accuracy differ depending on combination with other constituent loop equipment, such as positioners and actuators.

Note 5) Air consumption is due to exhaust from nozzle. And (ANR) indicates JIS B0120 standard air.

Note 6) Thread type can be specified by model selection.

Replacement Parts

Part no.	Description	Note
P378010-10	Pilot valve unit	For IP5000
P378020-11	Pilot valve unit	For IP5100
P368010-24	Fork lever assembly M	For IP5100 (Accessory: C)
P368010-25	Fork lever assembly S	For IP5100 (Accessory: D)
P378010-11	Feedback lever	For IP5000/10 to 85 mm (Accessory: —)
P378010-12	Feedback lever	For IP5000/35 to 100 mm (Accessory: E)
P378010-13	Feedback lever	For IP5000/50 to 140 mm (Accessory: F)

IP5000/5100 Series



EMC-IP5000-5100-01A-UK

IP5000/5100 Series

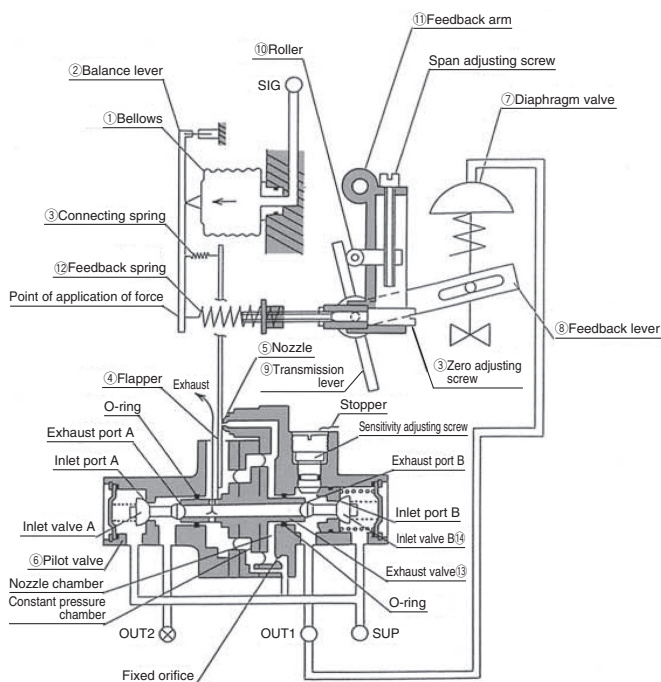
Principle of Operation

IP5000 type

When the input pressure applied to the SIG port of the positioner increases, bellows ① press balance lever ② to the left. As this movement moves flapper ④ to the left through connecting spring ③, the gap between nozzle ⑤ and flapper ④ widens, and the nozzle back pressure of pilot valve ⑥ drops. As a result, the pressure balance in the constant pressure chamber is broken, and exhaust valve presses inlet valve B ⑭ to the right, thus opening inlet port B. Then, output pressure OUT1 rises, and driven diaphragm ⑦ moves downward.

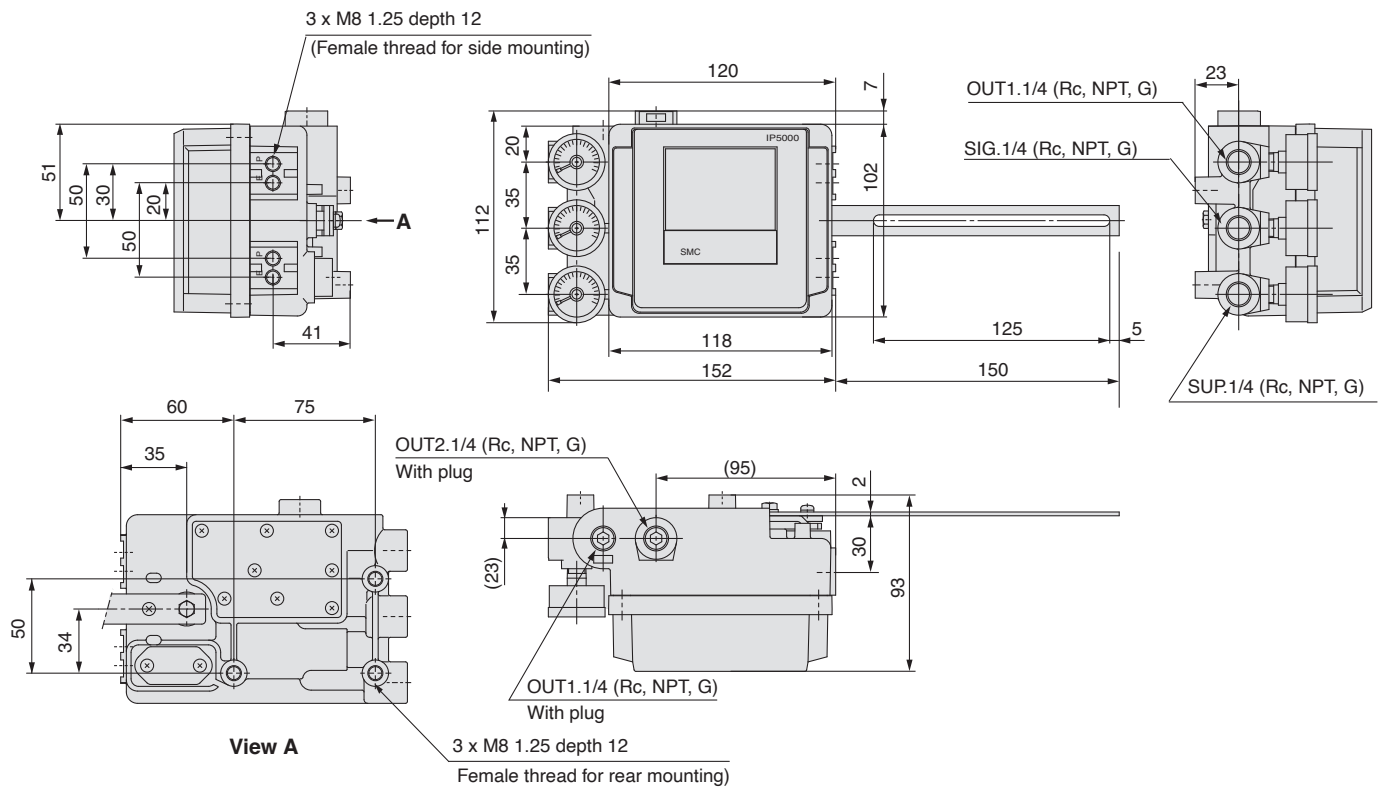
The movement of diaphragm valve ⑦ deflects feedback arm ⑪ to the right through feedback lever ⑧, transmission lever ⑨, and roller ⑩. Such deflection increases the tension of feedback spring ⑫ and acts on balance lever ②. Since driven diaphragm ⑦ moves until the tensile force of feedback spring ⑫ and the force generated by bellows ① balance, it is always set in the position proportional to the input pressure. When the signal air pressure decreases, the operation is reversed.

IP5000 principle of operation

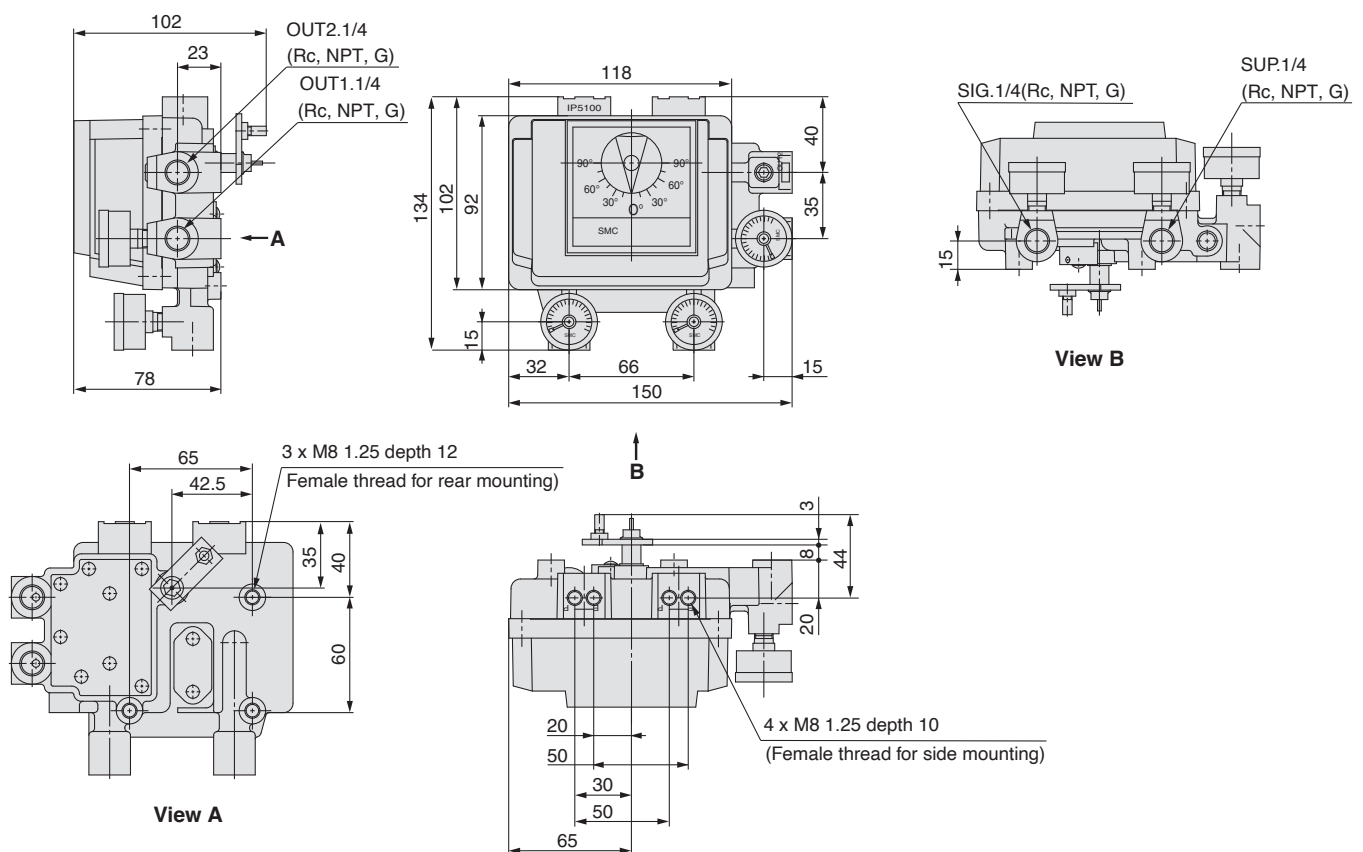


Dimensions

IP5000 type (Lever type lever feedback)



IP5100 type (Rotary type cam feedback)



Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) ¹⁾, and other safety regulations.

Caution:

Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning:

Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

Danger:

Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- 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)
- ISO 10218-1: Manipulating industrial robots - Safety.
etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. 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.

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 Requirements

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, whichever is first. ²⁾
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.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
- 2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.
Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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