

# Relays/Valves

## Lock-Up Valve



**Series IL201/211/220**



EMC.IL201-211-220-01A-UK

# Lock-Up Valve

## Series IL201/211/220

- The lock-up valve is used if any air source or air supply piping line failure occurs in the air operated process control line.

Single acting, Double acting: Retains pressure at the operating area as emergency operation until the air source is recovered to its normal state.

3 Port: Changes the supply port if a trouble occurs.

### How to Order

IL 201 - 02

**Thread port**

—	Rc (PT)
E	G (PF)

**Action**

201	Single acting
211	Double acting
220	3 Port

**Thread type**

—	Rc
N	NPT*
F	G*

\* Semi-standard

**Accessories**

—	None
B	With bracket

**Port size**

02	1/4
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**Suffix**

—	Standard
T	High temperature (-5 to 100 °C)
L	Low temperature (-30 to 60 °C)
S	External parts copper-free
ST	External parts copper-free/ High temperature (-5 to 100 °C)
SL	External parts copper-free/ Low temperature (-30 to 60 °C)

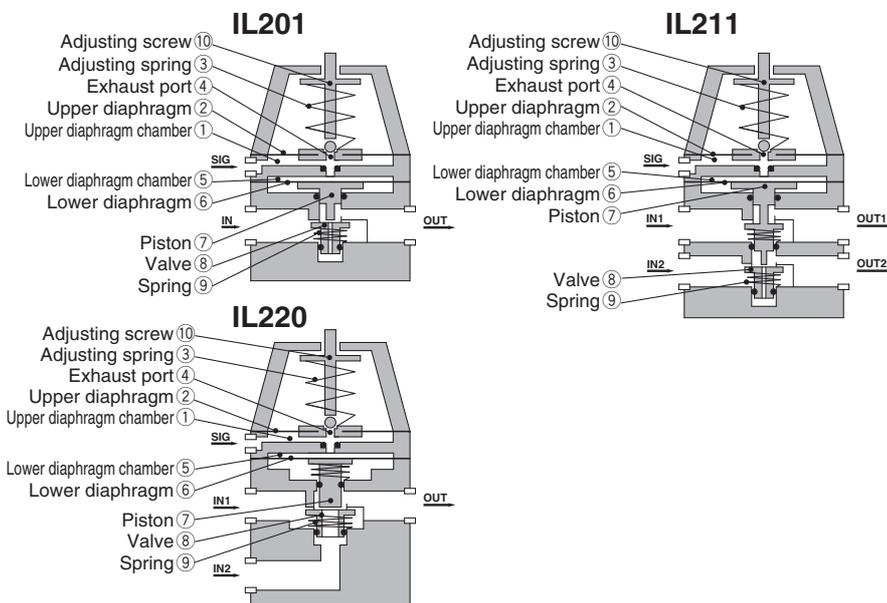


Model	IL201	IL211	IL220
<b>Action</b>	Single acting	Double acting	3 Port
<b>Signal pressure</b>	Max. 1.0 MPa <small>Note 1)</small>		
<b>Set pressure range</b>	0.14 to 0.7 MPa <small>Note 1)</small>		
<b>Shut-off pneumatic circuit pressure</b>	Max. 0.7 MPa		
<b>Ambient and fluid temperature</b>	-5 to 60 °C		
<b>Port size</b>	Rc 1/4		
<b>Differential</b> <small>Note 2)</small>	0.01 MPa		
<b>Weight</b>	0.45 kg	0.64 kg	0.7 kg

Note 1) Provide a differential pressure of 0.1 MPa or more between the signal pressure and set pressure. If the differential pressure is small, the internal part is worn out due to the structure of this product and the bleed amount from the exhaust port increases, which may affect the characteristics.

Note 2) Pressure difference between lock activated and lock released

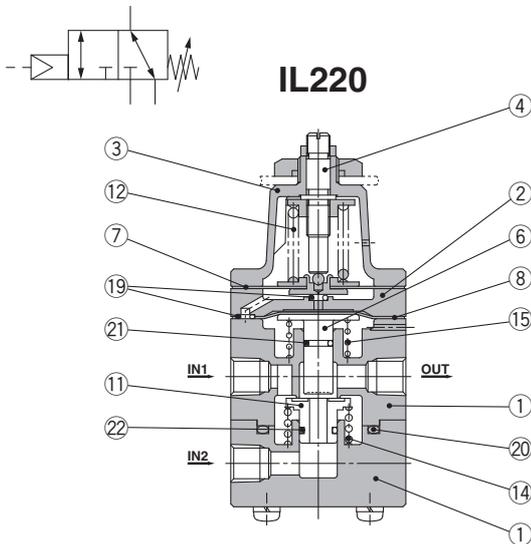
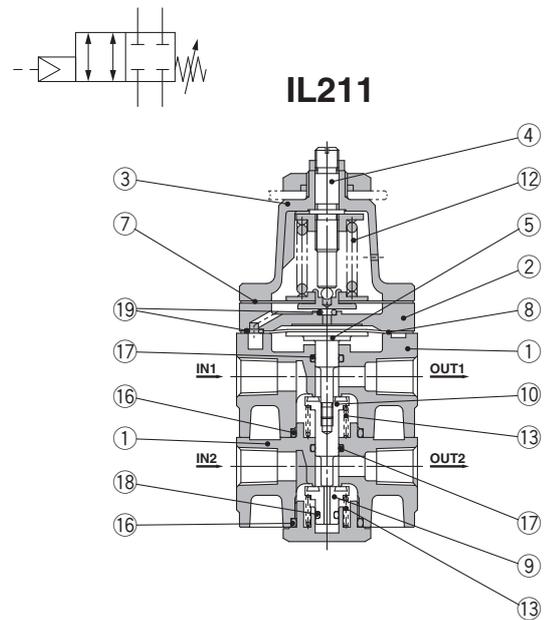
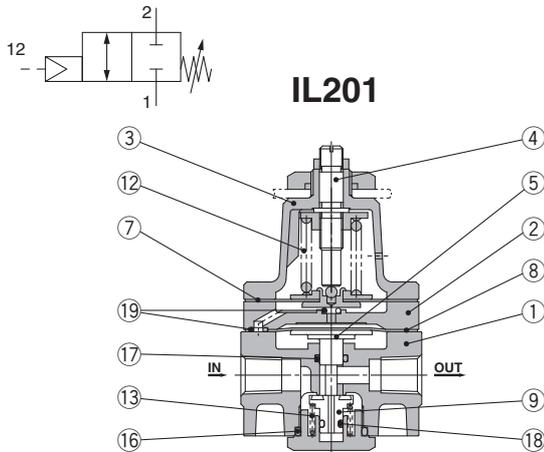
### Principle of Operation



The signal air pressure enters the upper diaphragm chamber ① to generate a force. When this force is larger than the force generated by compressing the adjusting spring ③, the upper diaphragm ② is pushed up, the exhaust port ④ is closed, and the signal air pressure enters the lower diaphragm chamber ⑤ and acts the lower diaphragm ⑥. This pushes down the piston ⑦ to open the valve.

IL201 and IL211 enter the status, in which the flow path between IN and OUT is opened. IL220 enters the status, in which the flow path between IN1 and OUT is opened. If the signal air pressure drops to a level below the set pressure for some reason, the upper diaphragm ② is pushed down, the pressure inside the lower diaphragm ⑤ is exhausted from the exhaust port ④, and the valve ⑧ is closed by the force of the spring ⑨. At this time, IN and OUT are shut down in IL201 and IL211. In IL220, IN1 and OUT are shut down, and the flow path between IN2 and OUT is opened. The set pressure is adjusted with the adjusting screw ⑩.

## Construction



### Component Parts

No.	Description	Material	Note
1	<b>Body</b>	Aluminium alloy	Silver baking finish
2	<b>Pilot body</b>	Aluminium alloy	Silver baking finish
3	<b>Bonnet</b>	Aluminium alloy	Silver baking finish
4	<b>Adjusting screw</b>	Stainless steel	
5	<b>Piston</b>	Brass	
6	<b>Piston rod</b>	Brass	
7	<b>Diaphragm assembly</b>	Aluminium alloy/Brass/NBR	Chromated
8	<b>Diaphragm</b>	NBR	
9	<b>Piston valve</b>	Brass/NBR	
10	<b>Piston valve</b>	Brass/NBR	
11	<b>Valve</b>	Brass/NBR	
12	<b>Adjusting spring</b>	Steel wire	Zinc chromated
13	<b>Valve spring</b>	Stainless steel	
14	<b>Valve spring</b>	Stainless steel	
15	<b>Piston spring</b>	Stainless steel	
16	<b>O-ring</b>	NBR	
17	<b>O-ring</b>	NBR	
18	<b>O-ring</b>	NBR	
19	<b>O-ring</b>	NBR	
20	<b>O-ring</b>	NBR	
21	<b>O-ring</b>	NBR	
22	<b>O-ring</b>	NBR	

### Replacement Parts

Model	Order no.	Contents
<b>IL201</b>	KT-IL201	Set of left nos. ⑦, ⑧, ⑨, ⑫, ⑬, ⑯, ⑰, ⑱
<b>IL211</b>	KT-IL211	Set of left nos. ⑦, ⑧, ⑨, ⑩, ⑫, ⑬, ⑯, ⑰, ⑱
<b>IL220</b>	KT-IL220	Set of left nos. ⑦, ⑧, ⑪, ⑫, ⑭, ⑮, ⑰, ⑲, ⑳, ㉑, ㉒





## 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.

## 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

- 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.

### 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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