

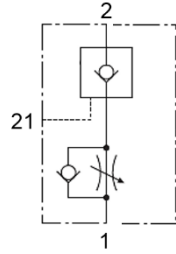


ORIGINAL INSTRUCTIONS

## Instruction Manual

### Speed Controller with Pilot Check Valve

#### ASP series (including ASP-X12 and ASP-X369)



The intended use of this product is the speed control and intermediate stopping of an actuator.

## 1 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<sup>\*)</sup>, and other safety regulations.

- \*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.
- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

	<b>Caution</b>	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
	<b>Warning</b>	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	<b>Danger</b>	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

### Warning

- **Always ensure compliance with relevant safety laws and standards.**
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

## 2 Specifications

### 2.1 General Specifications

Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure <sup>Note 1)</sup>	1.0 MPa
Min. operating pressure	0.1 MPa
Min. air quality	5 µm filtration or higher
Pilot check valve operating pressure	>50% of operating pressure (must exceed 0.1 MPa)
Ambient and operating temperature	-5 to +60 °C (No freezing)
Max. operating frequency	2 Hz
Min. operating frequency	1 cycle / 30 days
Flow rate	Refer to catalogue
Applicable tube material	Refer to online catalogue
Impact resistance <sup>Note 2)</sup>	1000 m/s <sup>2</sup>
Vibration resistance <sup>Note 3)</sup>	50 m/s <sup>2</sup> (0.35mm)

Table 1

**Note 1)** Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used.

## 2 Specifications - continued

**Note 2)** No malfunction occurred when tested in the axial direction and rectangular to the valve.

**Note 3)** No malfunction occurred in a round sweep test between 10 to 150 Hz. The test was performed in the axial direction and rectangular to the valve axis, 20 times for each condition.

### Warning

Special products might have specifications different from those shown in this section. Contact SMC for specific drawings.

### 2.2 Flow Rate and Sonic Conductance

Refer to catalogue on [www.smcworld.com](http://www.smcworld.com) for flow rate and sonic conductance.

### 2.3 Functional description

The needle valve is closed by turning clockwise and opened by turning anticlockwise. Therefore, the actuator speed is reduced by turning clockwise and increased by turning anticlockwise.

### 2.4 Design / Selection

#### Warning

- **This product cannot be used for accurate and precise intermediate stops of the actuator.**

Due to the compressibility of air as a fluid, the actuator will continue to move until it reaches a position of pressure balance, even though the pilot check valve closes with an intermediate stop signal.

- **The product cannot be used to hold a stop position for an extended period of time.**

Pilot check valve and actuators are not guaranteed for zero air leakage. Therefore, it is sometimes not possible to hold a stop position for extended period of time. In the event that holding for an extended time is necessary, a mechanical means for holding should be devised.

- **Consider the release of residual pressure.**

Actuators may move suddenly due to residual pressure, which can be dangerous during maintenance procedures.

- **When used in a balance control circuit, there are instances in which the check valve cannot release, even though the pilot pressure is 50% of the operating pressure. In these cases, pilot pressure should be the same as the operating pressure.**

- **The check valve has construction, in which it is closed by the differential pressure generated when the inlet pressure (IN side) or outlet pressure (OUT side) solenoid valve is switched. Be aware that the check valve does not close completely and the outlet pressure (OUT side) may drop when the inlet pressure (IN side) drops gently, and the differential pressure becomes smaller than minimum operating pressure or cracking pressure.**

## 3 Installation

### 3.1 Installation

#### Warning

- Do not install the product unless the safety instructions have been read and understood.
- When mounting, please firmly align the tool with the hexagon width across flats of the pilot body. If the hexagon width across flats is damaged as a result of failure to properly align the tool, the pilot body will be deformed, and poor pilot operation may result.

### 3.2 Environment

#### Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.

## 3 Installation - continued

- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

### 3.3 Piping

#### Caution

- Before connecting piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1 thread exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

### 3.4 Lubrication

#### Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, refer to catalogue for details.

### 3.5 Air source

#### Warning

- If moisture enters the inside of the connecting piping, the cover may corrode, and it may lead to a pilot operation malfunction.

## 4 How to Order

Refer to drawings or catalogue for 'How to Order'.

## 5 Outline Dimensions (mm)

Refer to drawings or catalogue for outline dimensions.

## 6 Maintenance

### 6.1 General Maintenance

#### Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

## 7 Limitations of Use

### 7.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

#### Caution

- For use with compressed air only.
- Do not use this product with a fluid other than compressed air (e.g. oxygen, hydrogen, inflammable gas, mixed gas, etc.).

## 8 Product disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose this product correctly, in order to reduce the impact on human health and the environment.

## 9 Contacts

Refer to [www.smcworld.com](http://www.smcworld.com) or [www.smc.eu](http://www.smc.eu) for your local distributor/importer.

# SMC Corporation

URL : <http://www.smcworld.com> (Global) <http://www.smc.eu> (Europe)  
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