



ORIGINAL INSTRUCTIONS

Instruction Manual

Shuttle Valve

Series VR12*0F (with One-Touch Fittings)



The intended use of this product is to switch the highest pressure of the two inlet ports to the outlet port.

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)¹⁾, 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.

	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.

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	1.0 MPa
Min. operating pressure	0.05 MPa
Min. pressure differential	0.05 MPa
Minimum operating frequency	1 cycle / 30 days
Maximum operating frequency	2 cycles / s
Filtration	5 µm filtration or smaller
Ambient and fluid temperature	-5 to +60 °C (No freezing)
Applicable tubing material ^{Note 1} (VR1210F, VR1220F)	Nylon, Soft nylon, Polyurethane
Shock ^{Note 2}	1000 m/s ²
Vibration ^{Note 3}	50 m/s ² (0.35mm)

Table 1

2 Specifications – continued

Note 1) Use caution when the maximum operating pressure is used with soft nylon and polyurethane. Depending on the temperature these tubes have a lower operating pressure. Refer to the specification of the tubes.

Note 2) Two axes (horizontal and vertical) and two directions were tested and no malfunction of the valve occurred (pulse shape: sine shape), 3 times (test sample mounted with bracket)

Note 3) No malfunction occurred in a sweep cycle test between 10 to 150 Hz at vibration sweep 0.35mm. The test was performed in the two axes and two directions, 7 min per cycle (20 cycles)

Note 4) Brass components are all electroless nickel plated as standard. (Copper-free and fluorine-free)

Caution

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

3 Installation

3.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.
- Do not drop and bring the product into collision when handling. Dropping or throwing the shuttle valve causes damage.
- Use clean air
If the compressed air includes chemicals, synthetic materials (including organic solvents), salinity, corrosive gas, etc., it may lead to damage or malfunction.

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.
- Do not install in a location subject to vibration or impact exceeding limits listed in specification. Check the product specifications.
- Do not mount in a location exposed to radiant heat.
- Do not apply vacuum. If evacuated, the switch absorbs outside air and results in breakage.
- Applicable fluid is limited to air. Other fluids are not acceptable. Since the product is not designed to be explosion-proof, never use in an environment containing flammable fluid and gas which may result in explosion.

3.3 Piping

Caution

3 Installation - continued

- 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.
- Stop using the equipment immediately when the air leaks are big enough to make sound, or when the equipment does not operate properly. Perform appropriate function and leakage tests.
- Make sure to check periodically that piping is not loosened and that there is no air leakage.
- Regularly check that there is no external damage.

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.

4 How to Order

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

5 Outline Dimensions (mm)

Refer to drawings and catalogue for dimensions.

6 Maintenance

6.3 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.
- Be absolutely sure to wear safety glasses when conducting periodic inspections.
- Perform periodic inspections to ensure proper operation of the shuttle valve. Unexpected problems with a machine or equipment can be minimized by verifying the operation of the shuttle-valve on a regular basis.
- Take precautions when using a shuttle valve for an interlock circuitry. When a shuttle valve is used for an interlock circuit, devise a multiple

interlock system to prevent trouble or malfunction. Verify the operation of the valve and interlock function on a regular basis.

- Secure enough space for maintenance. Maintenance cannot be done when there is no space.

7 Limitations of Use

- Limited warranty and Disclaimer/Compliance Requirements**

Refer to Handling Precautions for SMC Products.

Danger

Do not exceed any of the specifications laid out in section 2 of this document or the specific product catalogue.

8 Contacts

Refer to www.smcworld.com for contacts.

SMC Corporation

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 Specifications are subject to change without prior notice from the manufacturer.
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