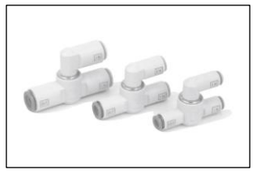
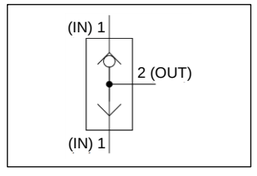
ORIGINAL INSTRUCTIONS

Instruction Manual
Shuttle Valve with One-touch Fittings
Series VR12*0F





The intended use of this product is to switch the highest pressure of the two inlet port 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: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.

- 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 Valve specifications

Fluid	Air
Proof pressure [MPa]	1.5
Max. operating pressure [MPa]	1.0
Min. operating pressure [MPa]	0.05
Min. pressure differential [MPa]	0.05
Ambient and fluid temperature [°C]	-5 to 60 (No freezing)
Flow characteristics	Refer to catalogue
Applicable tubing material Note 1)	Nylon, Soft nylon, polyurethane
Min. operating frequency	1 cycle / 30 days
Max. operating frequency [Hz]	2
Duty cycle	Contact SMC
Lubrication	Not required
Impact resistance [m/s^2] Note 2)	1000
Vibration resistance [m/s^2] Note 3)	50
Mounting orientation	Unrestricted
Weight	Refer to catalogue

Table 1.

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.

2 Specifications - continued

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 0.35 mm. 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)

2.2 Response time

Valve response time depends on the overall circuit design, so it must be determined by the circuit designer.

2.3 Special products

⚠ Warning

Special products (-X) 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.

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 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.
- Do not use in high humidity environment where condensation can occur.
- Contact SMC for altitude limitations.

3.3 Operating pressure condition

- When the difference in input air pressure between the two IN sides is 0.05 MPa or more, the air with higher pressure constantly flows to the OUT side.

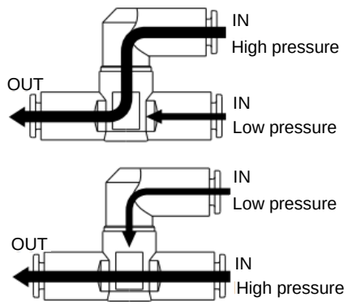


Figure 1.

3.4 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.
- Stop using the equipment immediately when air leaks are large enough to be audible, or when the equipment does not operate properly. Perform appropriate function and leakage tests.
- Check periodically that piping is not loosened and that there is no air leakage.
- Regularly check that there is no external damage.
- When connecting tubes using One-touch fittings, provide some spare tube length.
- Do not apply external force to the fittings when binding tubes with bands.

3 Installation - continued

3.5 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.

3.6 Air supply

⚠ Warning

- Use clean air. If the compressed air supply includes chemicals, synthetic materials (including organic solvents), salinity, corrosive gas etc., it can lead to damage or malfunction.

⚠ Caution

- Install an air filter upstream of the valve. Select an air filter with a filtration size of 5 µm or smaller.

4 How to Order

Refer to catalogue for ‘How to Order’.

5 Outline Dimensions

Refer to 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.
- Take precautions when using a shuttle valve for interlock circuitry. When a shuttle valve is used for an interlock circuit, devise a multiple interlock system to prevent malfunction. Verify the operation of the valve and interlock function on a regular basis.

7 Limitations of Use

⚠ Warning

The system designer should determine the effect of the possible failure modes of the product on the system.

7.1 Limited warranty and disclaimer/compliance requirements

Refer to Handling Precautions for SMC Products.

⚠ Warning

7.2 Effect of energy loss on valve state

- The valve is an OR logic element in an all-air circuit. When the air pressure is cut to both inputs the valve goes into an undefined state. Backflow of air from out to in port may occur under this condition.
- It is the responsibility of the system designer to determine the effect on the system when air pressure is cut and when it is restored.

7.3 Cannot be used as an emergency shut-off valve

This product is not designed for safety applications such as an emergency shut-off valve. If the valves are used in this type of system, other reliable safety assurance measures should be adopted.

7.4 Holding of pressure

Since valves are subject to air leakage, they cannot be used for applications such as holding pressure (including vacuum) in a system.

⚠ Caution

7 Limitations of Use - continued

7.5 Low temperature operation

Unless otherwise indicated in the specifications for each valve, operation is possible to -5˚C, but appropriate measures should be taken to avoid solidification or freezing of drainage and moisture, etc.

8 Product Disposal

This product shall 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 or www.smc.eu for your local distributor/importer.

SMC Corporation

URL : https:// www.smcworld.com (Global) https:// www.smc.eu (Europe)
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