



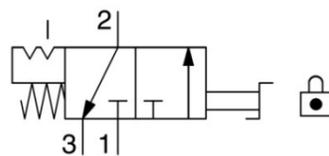
ORIGINAL INSTRUCTIONS

Instruction Manual

Pressure Relief 3 Port Valve with Locking Holes

Series VHS#0-A and VHS#0-B (Single Action)

Series VHS#510-A and VHS#510-B (Double action)



The intended use of this valve is to release residual pressure by switching the valve by hand.

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 Single action

Model	VHS20	VHS30	VHS40	VHS40-06	VHS50
Fluid	Air				
Min. air quality	5 µm filtration				
Ambient and fluid temperature	-5 to +60 °C (No freezing)				
Proof pressure	1.5 MPa				
Min. operating pressure	0.1 MPa				
Max. operating pressure	1.0 MPa				
Handle switching angle	90°				
Flow	Refer to online catalogue				
Paint colour (Standard)	Handle: Red		Body: White		
Weight for -A series	76 g	127 g	247 g	293 g	532 g
Weight for -B series	92 g	156 g	301 g	349 g	630 g
Model	VHS 2510	VHS 3510	VHS 4510	VHS 4510-06	VHS 5510
Weight for -A series	77g	129g	250g	296g	536g
Weight for -B series	93g	158g	304g	352g	635g

Table 1

3 Installation

3.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.
- Confirm the symbols "1" and "2" before the valve is connected. The port marked "1" is the air inlet and the port marked "2" is the outlet. Pressurization is only possible via the inlet port "1". Reverse connection may cause malfunction. The port symbols and corresponding piping types are shown in the table below.

Port symbol	1	2	3
Piping type	Inlet	Outlet	Exhaust

Table 2

Caution

- The valve must be switched to each position instantly and securely. Stopping the knob between the extreme positions may cause malfunction.
- Do not remove the mounting screws from the bonnet. This may cause malfunction.
- Indicator window**
The supply/exhaust status of the air flow can be verified at a glance in the indicator window.



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.
- Do not mount in a location exposed to radiant heat.
- Consult SMC if the ambient environment does not permit leakage.
- Employ suitable protective measures in locations where there is contact with water droplets, oil, or welding spatter.
- Install a silencer into port (3) to prevent the ingress of dust if there is a lot of dust in the atmosphere. If dust enters the valve via port (3), it may cause air leakage.

3.3 Piping

Warning

- Before 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.

Thread	1/8	1/4	3/8	1/2	3/4	1
Tightening Torque [N·m]	7 to 9	12 to 14	22 to 24	28 to 30	28 to 30	36 to 38

Table 3

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 Supply

Warning

- Use clean air. Do not use compressed air which contains chemicals, synthetic oils containing organic solvents, salts or corrosive gases, etc., as this can cause damage or malfunction.

3 Installation – continued

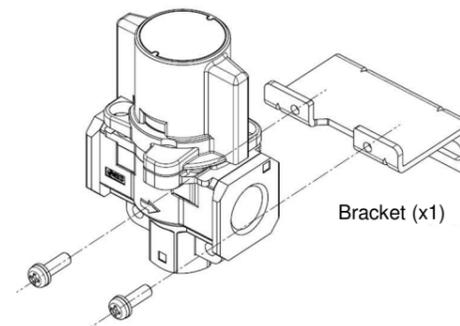
- Install an air dryer or after cooler on the upstream side of the pressure release 3 port valve because air containing excessive drainage may cause malfunction.
- Do not apply negative pressure. It may result in malfunction.

Caution

- Install a mist separator on the inlet side to remove carbon powder from the compressor or other equipment. An excessive amount of carbon dust ingress via the inlet may cause the valve to malfunction.

3.6 Assembly of optional parts

3.6.1 Bracket assembly



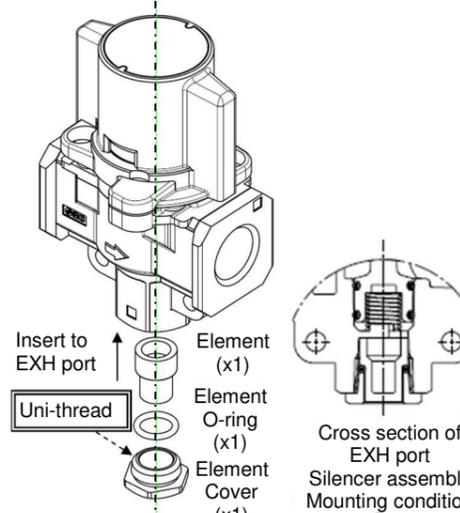
Cross recessed head screw with captive washer (x2)

Figure 1

- Installation of bracket
Align two holes of the bracket with the holes at the bottom of the product. (See Figure 1)
- Tightening of screw
Insert the mounting screws (cross recessed head screw with captive washer) to the holes of the product at the opposite side of the bracket

and tighten the screws to hold the bracket. Torque value for the bracket screw:
 VHS20,30,2510,3510: M4=1.5Nm
 VHS40,40-06,4510,4510-06: M5=3.0Nm
 VHS50,5510: M6=5.2Nm

3.6.2 Silencer assembly



Cross section of EXH port Silencer assembly Mounting condition

Figure 2

- Mounting of the element
After inserting the element O-ring to the element, insert the element to EXH port.
- Tightening of the screw of the element cover
Mount the element cover to the female thread of EXH port.
* The male thread of the element cover is Uni-thread. It is applicable to all thread types of Rc/G/NPT.

4 Settings

4.1 Double action

Double action type requires two actions (push the handle + turn). Confirm that the handle is pushed properly before turning it. If the handle is not pushed properly to the end, the internal parts will be broken by turning the handle. Two step action prevents malfunction.

Step1

Push down the handle



Step2

Turn the handle



4.2 Locking hole



Recommended lock shackle diameter : φ5mm or more



4.3 Built-in Silencer (Option) [Bronze Sintered Metal Element]

Caution

- Products made of bronze may contain uneven colour due to the oxidation process of the atmosphere.
However, this oxidation process occurs in the limited range of less than 1 µm of thickness and is so thin as to not affect the product characteristics. The uneven colour occurs depending on the storage duration before utilization (stock as a product, stock in customers).
* If this is a problem, please contact SMC, so that SMC can pre-treat them with nickel plating.

5 How to Order

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

6 Outline Dimensions (mm)

Refer to drawings/catalogue for outline dimensions.

7 Maintenance

7.1 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 out 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.

8 Limitations of Use

8.1 Limited warranty and Disclaimer/Compliance Requirements Refer to Handling Precautions for SMC Products.

Warning

- Do not attempt to lock the valve in the "supply" position.
- Locking holes are provided to lock the valve in the de-energised position.

9 Contacts

Refer to www.smcworld.com for contacts.

SMC Corporation

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