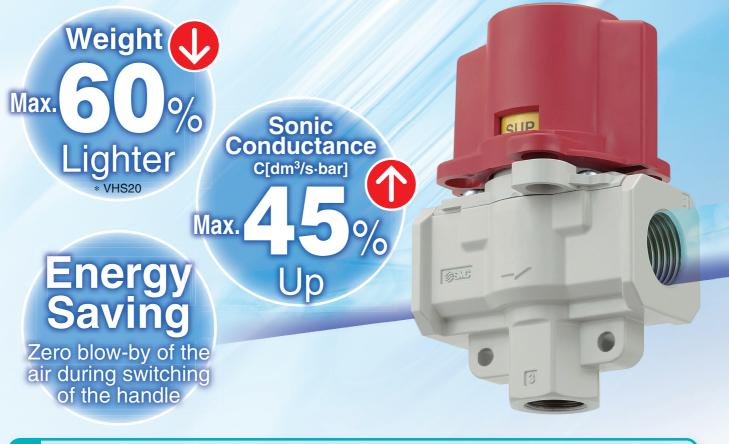
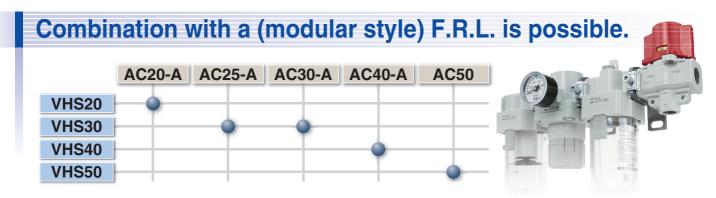
Conforming to OSHA Standard **Pressure Relief 3 Port Valve New** with Locking Holes







Single Action Series VHS20/30/40/50 Double Action Series VHS2510/3510/4510/5510

Single Action Series VHS20/30/40/50 Double Action Series VHS2510/3510/4510/5510



Safety Measure

Can prevent accidents caused by inadvertent air supply problems.

With the indicator window



The supply/exhaust status of the air flow can be verified at a glance in the indicator window.

SUP : Supply EXH : Exhaust

Double action

Push the handle and then turn, **2-step** action prevents malfunction.





When in the exhaust position, the valve may be padlock secured. Prevents accidental start-ups while personnel are cleaning or servicing equipment.

OSHA standard (Occupational Safety and Health Administration Department of Labor)

For safety control, OSHA rule requires energy sources for certain equipment be turned off or disconnected and that the device either be locked or labelled with a warning tag. Step1 Push down the handle

SMC

Conforming to OSHA Standard Pressure Relief 3 Port Valve with Locking Holes

Options Built-in silencer (EXH port) With bracket Silencer can be mounted Built-in silencer afterwards 6 Element Õ 8 Ð Bracket Element cover ace savin

Variations

Made to Order

SUP

Red body is available.

(-X1)

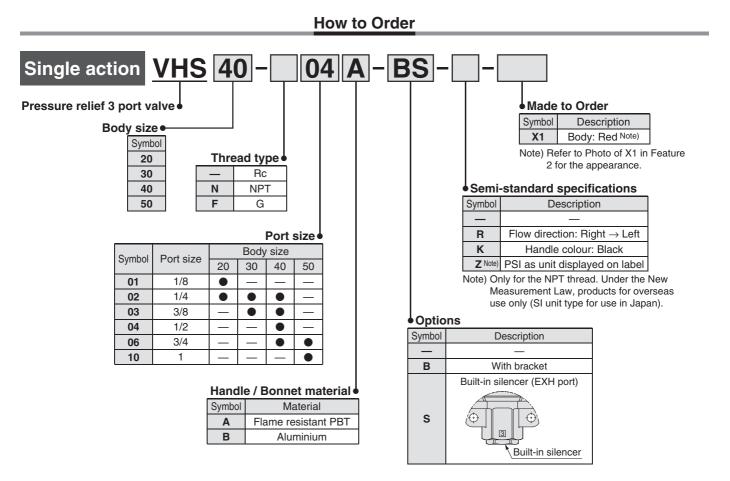
Body

Port size 1/8, 1/4, and 3/8 are now available for double action type.

Single action	VHS20	VHS30	VHS40	VHS50
Double action	VHS2510	VHS3510	VHS4510	VHS5510
1/8	-			
1/4	├ ─• │		•	
3/8			•	
1/2	\vdash		•	
3/4	\vdash		•	•
1				•

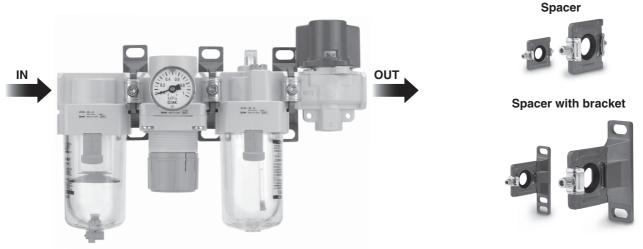


Conforming to OSHA Standard Pressure Relief 3 Port Valve with Locking Holes (Single Action) Series VHS20/30/40/50



A spacer or spacer with bracket is required if the valve is combined with modular F.R.L. Please order it separately. VHS type can be ordered from How to Order of modular F.R.L. combination.

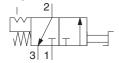
Pressure relief 3 port valve	Spacer part no.	Spacer with bracket part no.	Applicable air preparation equipment
VHS20	S20 Y200-A		AC20-A
VHS30	VHS30 Y300-A		AC25-A, AC30-A
VHS40	Y400-A	Y400T-A	AC40-A
VHS40-06	Y500-A	Y500T-A	AC40-06-A
VHS50	Y600-A	Y600T-A	AC50, AC55, AC60



Conforming to OSHA Standard Pressure Relief 3 Port Valve with Locking Holes (Single Action) Series VHS20/30/40/50



JIS Symbol



OSHA standard (Occupational Safety and Health Administration Department of Labor)

For safety control, OSHA rule requires energy sources for certain equipment be turned off or disconnected and that the device either be locked or labelled with a warning tag.

Specifications

Standard specifications

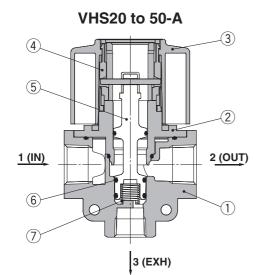
otui	idal d specifications								
	Model	VHS20	VHS30	VHS40	VHS40-06	VHS50			
Fluic	8			Air					
Amb	ient and fluid temperature		–5 to (60°C (No fre	ezing)				
Proo	f pressure			1.5 MPa					
Oper	rating pressure range	0.1 to 1.0 MPa							
Hand	lle switching angle	90°							
Pain	t colour (Standard)	Handle: Red Body: White							
Weight	A (Handle, bonnet: Flame resistant PBT)	76 g	127 g	247 g	293 g	532 g			
weight	B (Handle, bonnet: Aluminium)	92 g	156 g	301 g	349 g	630 g			

Flow-rate characteristics

	Port si	izo				Elow-rat	e character	rietice		
	10115	20		IN→		i iow-iau	e character		EVI	
Model	IN, OUT	EXH				001	→EX⊦	1		
	IIN, OO1		C[dm3/s·bar]	b	Cv	Q[l/min(ANR)]*1	C[dm3/s·bar]	b	Cv	Q[l/min(ANR)]*1
VHS20	1/8	1/8	2.4	0.43	0.65	667	2.5	0.39	0.69	675
VH320	1/4		3.3	0.40	0.88	898	3.1	0.51	0.84	919
VHS30	1/4	1/4	6.4	0.45	1.7	1807	6.2	0.38	1.7	1663
VH330	3/8	1/4	8.3	0.41	2.3	2274	7.0	0.41	1.9	1918
	1/4		7.3	0.49	2.0	2128	8.5	0.35	2.3	2233
VHS40	3/8	3/8	10.9	0.45	3.0	3078	11.6	0.40	3.1	3156
	1/2		14.2	0.39	3.8	3835	13.3	0.43	3.6	3699
VHS40-06	3/4	1/2	18.3	0.31	5.0	4683	17.7	0.37	4.8	4714
VUCEO	3/4	1/2	23.8	0.41	6.4	6521	21.8	0.41	5.9	5973
VHS50	1	1/2	31.9	0.33	8.6	8270	23.5	0.44	6.4	6585

*1 These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

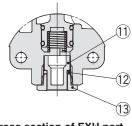
Construction



3 (4) (5) (2)(8) OUT IN 6 (1) $\overline{7}$ EXH

SMC

Built-in silencer (Option)

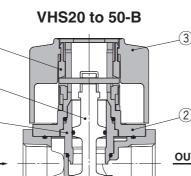


Cross section of EXH port

Component Parts

No.	Description	Mate	erial	Note
INO.	Description	VHS20 to 50-A	VHS20 to 50-B	NOLE
1	Body	ADO	C12	White
2	Bonnet	Flame resistant PBT (UL-94 Standard V-0 equivalent)	White	
3	Handle	Flame resistant PBT (UL-94 Standard V-0 equivalent)	ADC12	Red
4	Cam ring	PC	M	—
5	Spool	PE	ЗТ	—
6	Spool O-ring	H-N	—	
7	Spool spring	Stainles	—	
8	Ferrule	PC	DM	—

* The VHS series cannot be disassembled. Parts cannot be shipped separately.



Model	Bracket assembly part no. Note 1)	Silencer assembly part no. Note 2)			
VHS20	VHS20PW-180AS	VHS20PW-190AS			
VHS30	VHS30PW-180AS	VHS30PW-190AS			
VHS40	VHS40PW-180AS	VHS40PW-190AS			
VHS40-06	VHS40PW-180-06AS	VHS40PW-190-06AS			
VHS50	VHS50PW-180AS	VHS50PW-190AS			

Note 1) Bracket/1pc., mounting screw/2pcs.

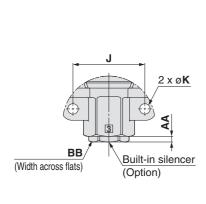
Option Part No.

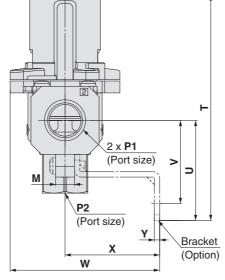
Note 2) Element (1), element O-ring (12), element cover (13) 1pc. for each.

Series VHS20/30/40/50

Dimensions

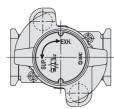


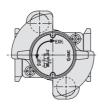




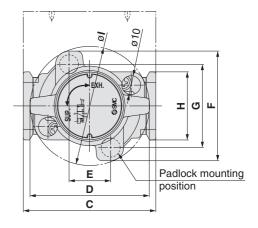
SUP ⊲ IN OUT **Ø**34C മ ۲ ۲ zţ Q EXH R s

VHS30





VHS20



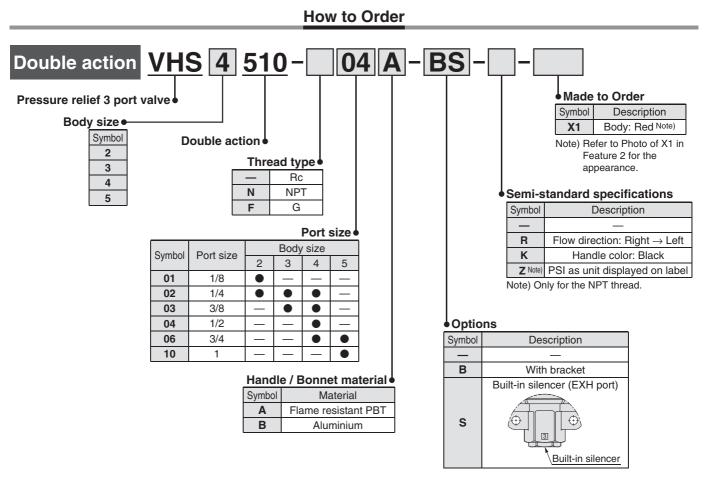
Dimensions

Dimensions															[mm]
Model	Standard specifications														
woder	P1	P2	Α	В	С	D	E	F	G	н	I	J	К	L	М
VHS20	1/8, 1/4	1/8	66.4	22.3	40	37.5	14	46.6	33.6	28	43	24	4.5	14.8	9
VHS30	1/4, 3/8	1/4	80.3	29.4	53	49	19	52	38	30	49	30	4.5	19	9
VHS40	1/4, 3/8, 1/2	3/8	104.9	38.5	70	63	22	58	44	36	63	38	5.5	24	10
VHS40-06	3/4	1/2	110.4	42	75	63	22	58	44	44	63	43	5.5	26	10
VHS50	3/4, 1	1/2	134.3	53	90	76	26	76	61	53	81	50	6.5	31	12

		Options specifications											
Model		With bracket										Built-in silencer	
	N Q R S T U V W X Y									AA	BB		
VHS20	5.4	8.4	27	40	75.4	31.3	25.3	53.3	30	2.3	3	12	
VHS30	6.5	10	36.5	53	90.9	40	33	67	41	2.3	3	14	
VHS40	8.5	19	43.5	70	119.4	53	44	79	50	2.8	3	19	
VHS40-06	8.5	19	43.5	70	123.4	55	46	79	50	2.8	4	22	
VHS50	11	27.5	49.5	90	152.3	71	60	108	70	3.2	4	22	

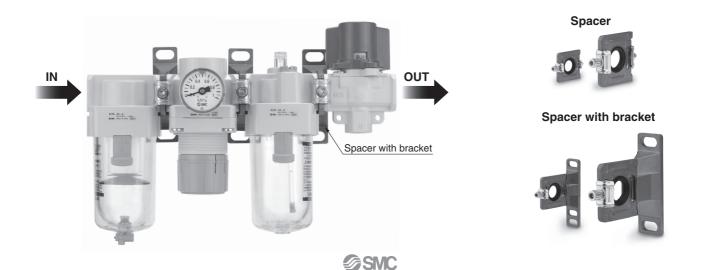
Conforming to OSHA Standard Pressure Relief 3 Port Valve with Locking Holes (Double Action) Series VHS2510/3510/4510/5510

(RoHS)



A spacer or spacer with bracket is required if the valve is combined with modular F.R.L. Please order it separately.

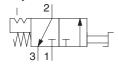
Pressure relief 3 port valve	sure relief 3 port valve Spacer part no.		Applicable air preparation equipment
VHS2510	Y200-A	Y200T-A	AC20-A
VHS3510	Y300-A	Y300T-A	AC25-A, AC30-A
VHS4510	Y400-A	Y400T-A	AC40-A
VHS4510-06	Y500-A	Y500T-A	AC40-06-A
VHS5510	Y600-A	Y600T-A	AC50, AC55, AC60



Series VHS2510/3510/4510/5510



JIS Symbol



OSHA standard (Occupational Safety and Health Administration Department of Labour)

For safety control, OSHA rule requires energy sources for certain equipment be turned off or disconnected and that the device either be locked or labelled with a warning tag.

Specifications

Standard specifications

otai	iuaru specifications								
	Model	VHS2510	VHS3510	VHS4510	VHS4510-06	VHS5510			
Fluic				Air					
Amb	ient and fluid temperature		–5 to (60°C (No fre	ezing)				
Proo	f pressure			1.5 MPa					
Oper	ating pressure range	0.1 to 1.0 MPa							
Hand	lle switching angle	90°							
Pain	t colour (Standard)	Handle: Red Body: White							
Weight	A (Handle, bonnet: Flame resistant PBT)	77 g	129 g	250 g	296 g	536 g			
weight	B (Handle, bonnet: Aluminium)	93 g	158 g	304 g	352 g	635 g			

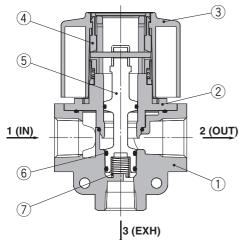
Flow-rate characteristics

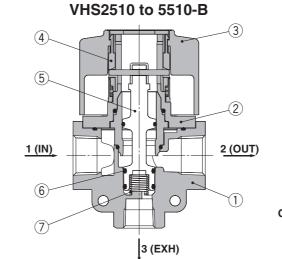
	Port si	ize	Flow-rate characteristics										
Model	IN, OUT	EXH			OUT→EXH								
	IN, OUT		C[dm3/s·bar]	b	Cv	Q[I/min(ANR)]*1	C[dm3/s·bar]	b	Cv	Q[l/min(ANR)]*1			
VHS2510	1/8	1/8	2.4	0.43	0.65	667	2.5	0.39	0.69	675			
1132310	1/4		3.3	0.40	0.88	898	3.1	0.51	0.84	919			
VHS3510	1/4	1/4	6.4	0.45	1.7	1807	6.2	0.38	1.7	1663			
1133310	3/8	1/4	8.3	0.41	2.3	2274	7.0	0.41	1.9	1918			
	1/4		7.3	0.49	2.0	2128	8.5	0.35	2.3	2233			
VHS4510	3/8	3/8	10.9	0.45	3.0	3078	11.6	0.40	3.1	3156			
	1/2		14.2	0.39	3.8	3835	13.3	0.43	3.6	3699			
VHS4510-06	3/4	1/2	18.3	0.31	5.0	4683	17.7	0.37	4.8	4714			
VHS5510	3/4	1/2	23.8	0.41	6.4	6521	21.8	0.41	5.9	5973			
1133310	1	1/2	31.9	0.33	8.6	8270	23.5	0.44	6.4	6585			

*1 These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Construction

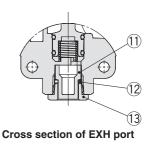
VHS2510 to 5510-A





SMC





Component Parts

No.	Description	Mat	erial	Note							
INO.	Description	VHS2510 to 5510-A	Note								
1	Body	AD	White								
2	Bonnet	Flame resistant PBT (UL-94 Standard V-0 equivalent)	White								
3	Handle	Flame resistant PBT (UL-94 Standard V-0 equivalent)	ADC12	Red							
4	Cam ring	PC	M	—							
5	Spool	PE	ЗT	—							
6	Spool O-ring	H-N	—								
7	Spool spring	Stainle	—								
8	Ferrule	PC	M	_							

* The VHS series cannot be disassembled. Parts cannot be shipped separately.

Option Part No.

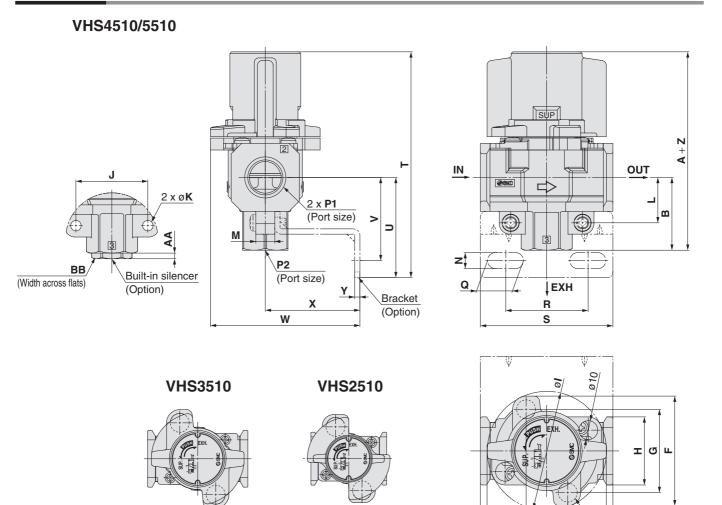
Model	Bracket assembly part no. Note 1)	Silencer assembly part no. Note 2)
VHS2510	VHS20PW-180AS	VHS20PW-190AS
VHS3510	VHS30PW-180AS	VHS30PW-190AS
VHS4510	VHS40PW-180AS	VHS40PW-190AS
VHS4510-06	VHS40PW-180-06AS	VHS40PW-190-06AS
VHS5510	VHS50PW-180AS	VHS50PW-190AS

Note 1) Bracket/1pc., mounting screw/2pcs.

Note 2) Element (1), element O-ring (2), element cover (3) 1pc. for each.

Conforming to OSHA Standard Pressure Relief 3 Port Valve with Locking Holes (Double Action) Series VHS2510/3510/4510/5510

Dimensions



Dimensions

Dimensions [mm]																
		Standard specifications														
Model	P1	P2	A (Handle down: Locked)	в	с	D	E	F	G	н	I	J	к	L	М	A+Z (Handle up: Unlocked)
VHS2510	1/8, 1/4	1/8	66.4	22.3	40	37.5	14	46.6	33.6	28	43	24	4.5	14.8	9	69.6
VHS3510	1/4, 3/8	1/4	80.3	29.4	53	49	19	52	38	30	49	30	4.5	19	9	83.5
VHS4510	1/4, 3/8, 1/2	3/8	104.9	38.5	70	63	22	58	44	36	63	38	5.5	24	10	109.1
VHS4510-06	3/4	1/2	110.4	42	75	63	22	58	44	44	63	43	5.5	26	10	114.6
VHS5510	3/4, 1	1/2	134.3	53	90	76	26	76	61	53	81	50	6.5	31	12	138.5

	Options specifications												
Model		With bracket										Built-in silencer	
	N	Q	R	S	т	U	V	W	Х	Y	AA	BB	
VHS2510	5.4	8.4	27	40	75.4	31.3	25.3	53.3	30	2.3	3	12	
VHS3510	6.5	10	36.5	53	90.9	40	33	67	41	2.3	3	14	
VHS4510	8.5	19	43.5	70	119.4	53	44	79	50	2.8	3	19	
VHS4510-06	8.5	19	43.5	70	123.4	55	46	79	50	2.8	4	22	
VHS5510	11	27.5	49.5	90	152.3	71	60	108	70	3.2	4	22	



Padlock mounting

position

Е

D С



Series VHS20/30/40/50 Series VHS2510/3510/4510/5510 Specific Product Precautions 1

Be sure to read before handling. Refer to back cover for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valve Precautions.

Precautions on Design

Marning

- 1. Please consult with SMC in cases where the ambient environment does not permit leakage or if fluid other than air is used.
- 2. Do not apply negative pressure. It may result in malfunction.
- 3. Do not supply air pressure from ports other than the 1 (P) port.

The valve will malfunction when air pressure is supplied from other ports.

Selection

Warning

1. In some cases, mineral oil grease used for internal parts and sealant may be carried to the output side.

Please contact SMC if this causes any inconvenience in use.

Installation and Adjustment

MWarning

1. 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	Piping type					
1	Inlet					
2	Outlet					
3	Exhaust					

ACaution

- 1. The valve must be switched to each position instantly and securely. Stopping the knob between the extreme positions may cause malfunction.
- 2. Do not remove the mounting screws from the bonnet.

As this may cause malfunction.

Piping

MWarning

1. The port marked with an arrow (\triangle) is the 1 (P) port (IN) and one on the opposite side is the 2 (A) port (OUT).

The port at a right angle to them is the 3 (R) port (EXH). Be sure to confirm before connecting since erroneous connection will cause malfunction.

Piping

Warning

2. Before piping is connected, the pipes should be thoroughly blown through with air (flushing) or washed to remove chips, cutting oil and other debris from inside.

Should they remain, they could cause malfunction.

- 3. When connecting pipes and fittings, etc., be sure that neither chips from the pipe threads nor sealing material get inside the valve. When using sealant tape, leave 1.5 to 2 thread ridges exposed at the end of the pipe/fitting.
- 4. When screwing a piping component into the valve, secure the female threaded side and apply the recommended tightening torque.

Under tightening may result in loosening or sealing failure while over tightening may cause damage to threads and other problems.

Recommended tightening torque Unit: [N·m]										
Connection thread	1/8	1/4	3/8	3/4	1					
Torque	7 to 9	12 to 14	22 to 24	28 to 30	28 to 30	36 to 38				

Air Supply

Warning

1. 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.

2. 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.

ACaution

- 1. Install an air filter of 5 μm or less filtration on the inlet side.
- 2. 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.

Refer to "SMC Air Preparation System" for further details on compressed air quality.

Operating Environment

MWarning

1. Do not use valves where there is direct contact with, or in atmospheres of, corrosive gases, chemicals, salt water, water or steam.





Series VHS20/30/40/50 Series VHS2510/3510/4510/5510 Specific Product Precautions 2

Be sure to read before handling. Refer to back cover for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valve Precautions.

Operating Environment

Marning

- 2. Do not use in an explosive atmosphere.
- 3. Do not use in locations subject to vibration or impact. Confirm the specifications for each series.
- 4. A protective cover should be used to shield valves from direct sunlight.
- 5. Shield valves from radiated heat generated by nearby heat sources.
- 6. Employ suitable protective measures in locations where there is contact with water droplets, oil, or welding spatter.
- 7. Install a silencer into port 3 (R) to prevent the ingress of dust if there is a lot of dust in the atmosphere.

If dust enters the valve via port 3 (R) , it may cause air leakage.

Maintenance

Warning

1. Perform maintenance procedures as shown in the instruction manual.

If handled improperly, malfunction or damage of machinery or equipment may occur.

2. Do not disassemble the product.

Improper handling will cause malfunction or breakage of the machinery or equipment.

3. When equipment is to be removed, first confirm that measures are in place to prevent dropping of driven objects and run-away of equipment, etc. Then cut the supply air pressure and electric power, and exhaust all compressed air from the system using its residual pressure release function.

When the equipment is to be started again after remounting or replacement, first confirm that measures are in place to prevent lurching of actuators and then confirm that equipment operates normally.

▲Caution

1. Once a lubricant is introduced, be sure to continue lubrication.

If it is discontinued, malfunction may result due to loss of the initial lubricant. Apply class 1 turbine oil (ISO VG32) as a lubricant. Use of other lubricants may cause malfunction.

Built-in Silencer (Option) Bronze Sintered Metal Element

≜Caution

Products made of bronze may contain uneven colour due to the oxidization process of the atmosphere.

However, this oxidization process occurs in the limited range of less than $1\mu m$ 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 customer)

* If this is a problem, please contact SMC so that SMC can pre-treat them with nickel plating.



▲ 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.



Safety Instructions Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.