



# Operation Manual

PRODUCT NAME

5.0 MPa Silencer

MODEL / Series / Product Number

VCHN Series

**SMC Corporation**

# Contents

- 1. Contents . . . . . P1
  
- 2. Safety Instructions . . . . . P2 to 3
  
- 3. How to order / Specifications . . . . . P4 to 5



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

\*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components  
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components  
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  
etc.



## **Danger**

**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



## **Warning**

**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



## **Caution**

**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

## **Warning**

### **1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

### **2. Only personnel with appropriate training should operate machinery and equipment.**

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

### **3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

### **4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.**

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

### **5. This product is not certified according to the High Pressure Gas Safety Law (in Japan).**



# Safety Instructions

## **Caution**

**We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.**

**Use in non-manufacturing industries is not covered.**

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

## **Limited warranty and Disclaimer/Compliance Requirements**

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

### **Limited warranty and Disclaimer**

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\*2)  
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.  
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

**\*2) Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty

### **Compliance Requirements**

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.



# Series VCHN Specific Product Precautions

Be sure to read this before handling.

## Caution on Design

### Warning

1. The exhaust port can clog due to a clogged or frozen silencer.

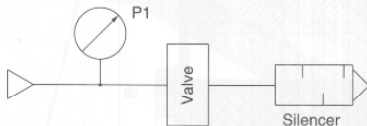
Consider design safety to avoid malfunctions of the entire system. Also, under conditions conducive to freezing, use a freeze-reduction model. (VCHNF series)

### Caution

1. A silencer reduces compressed air exhaust noise from the pneumatic equipment.

Noise other than that generated by the exhaust assembly (noise generated inside piping, due to equipment vibration, solenoid valve switching, etc.) cannot be reduced. As for noise generated by sources other than the exhaust, locate the cause and take measures.

2. Silencer inlet side pressure shows the solenoid valve supply pressure (P1). (See below.)



3. Noise reduction may vary, depending on the pneumatic circuit or pressure, etc. exhausted from solenoid valves.

## Adjustment

### Caution

1. Select a silencer with a larger effective area (including the synthetic effective area) than the solenoid valve.

## Mounting

### Caution

1. Tighten the silencer, using an appropriate wrench on the width across flats, within the range of the recommended tightening torque as shown below.

Do not use a pipe wrench. Otherwise, the silencer will be damaged.

Recommended Tightening Torque				
	(Unit: N·m)			
Connecting thread	3/4	1	1-1/4	1-1/2
Torque	28 to 30	36 to 38	40 to 42	48 to 50

2. Do not apply a lateral load on the main body during or after mounting.
3. When the silencer has loosened due to vibrations from the mounted equipment, mount the silencer after applying an anti-loosening agent to the thread.

## Maintenance

### Caution

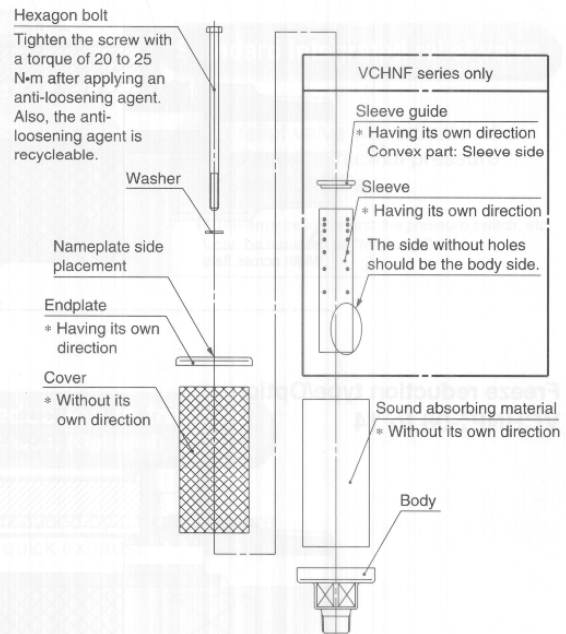
1. When exhaust speed begins to slow from clogging and system functionality begins to degrade, replace with a new silencer or sound-absorbant material.

Also, be sure to confirm the actuator's operation status once per day.

## How to Replace the Sound Absorbing Material

### Caution

1. When replacing the sound absorbing material, please follow the instructions below.



## Replacement Parts

### Sound Absorbing Material Part No.

Part no.	Description	Applicable model
VCHN3-EL	Sound absorbing material	For VCHN(F)3
VCHN4-EL	Sound absorbing material	For VCHN(F)4

# 5.0 MPa Silencer

# Series VCHN

**35 dB(A) noise reduction**

(At supply pressure of 4.0 MPa, back pressure 2.0 MPa)

\* 45 dB(A) noise reduction model can be "Made to Order".

**1/10 Clogging reduction**  
(SMC comparison)

**Double-layer sound absorbing material**  
with different filtration reduces clogging.

**Standard integrated relief valve**

The relief valve will activate when the silencer's internal pressure exceeds 1.8 MPa.

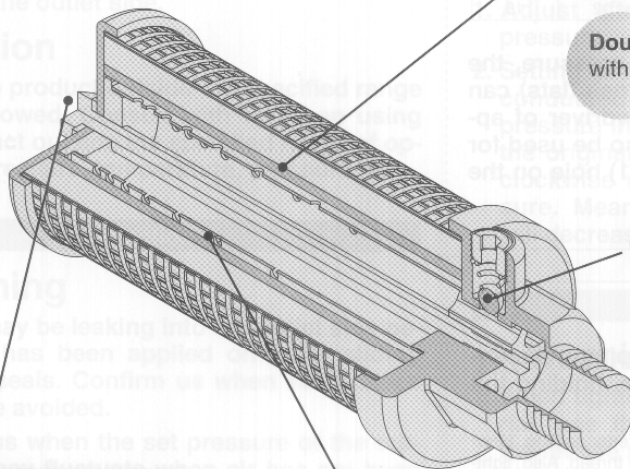
\* The error indicator and the pressure switch, etc. can be mounted as "Made to Order".

**Improved maintenance**

By **removing a bolt**, the sound absorbing material can be replaced without removing the silencer.

**30-40% reduction in freezing**  
(SMC comparison) (Optional)

Freezing is reduced by a high pressure **sleeve** and quick exhaust.



## How to Order

VCHN    **3** - **06**

Option

Nil	None
F	With freeze reduction

Port size

Symbol	Port size	VCHN <span style="border: 1px solid black; padding: 2px;">  </span> 3	VCHN <span style="border: 1px solid black; padding: 2px;">  </span> 4
06	R3/4	●	
10	R1	●	●
12	R1-1/4		●
14	R1-1/2		●

Body size

3
4

Symbol



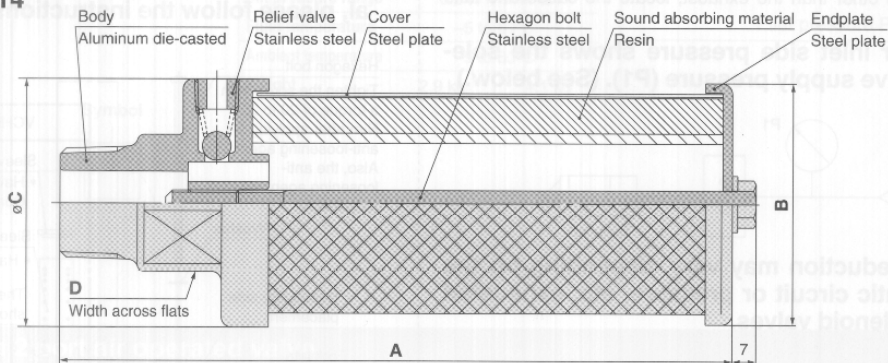
## 5.0 MPa Silencer *Series VCHN*

### Specifications

Model	VCHN3		VCHNF3		VCHN4			VCHNF4		
Fluid	Air, Inert gas									
Max. operating pressure (MPa)	5.0 (Solenoid valve inlet pressure)									
Relief valve unlocking pressure (MPa)	1.8									
Port size	R3/4	R1	R3/4	R1	R1	R1-1/4	R1-1/2	R1	R1-1/4	R1-1/2
Effective area (mm <sup>2</sup> )	200	280	160	180	280	370	370	180	320	320
Sound absorbing material effective area (Single) (mm <sup>2</sup> )	420					500				
Fluid temperature (°C)	5 to 80									
Ambient temperature (°C)	5 to 80									
Noise reduction dB(A)	35 (Supply pressure 4.0 MPa, Back pressure 2.0 MPa)									

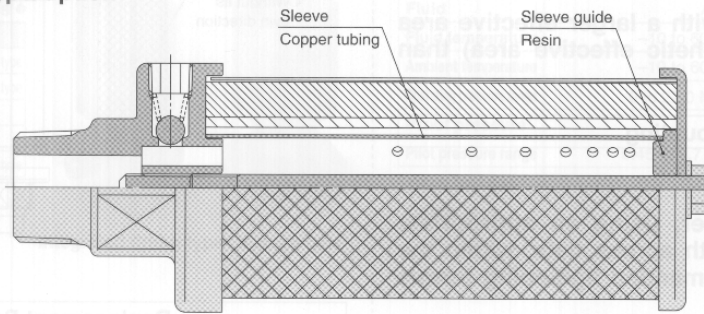
### Construction/Dimensions

#### VCHN<sub>3</sub>-06 to 14



#### Freeze reduction type/Option

#### VCHNF<sub>3</sub>-06 to 14



Model	Port size (R)	A	B	C	D	Weight (g)
VCHN3-06	3/4	200	ø72	ø74	41	590
VCHNF3-06	3/4	200	ø72	ø74	41	710
VCHN3-10	1	200	ø72	ø74	41	605
VCHNF3-10	1	200	ø72	ø74	41	725
VCHN4-10	1	230	ø72	ø74	41	665
VCHNF4-10	1	230	ø72	ø74	41	810
VCHN4-12	1-1/4	240	ø72	ø74	54	765
VCHNF4-12	1-1/4	240	ø72	ø74	54	910
VCHN4-14	1-1/2	240	ø72	ø74	54	790
VCHNF4-14	1-1/2	240	ø72	ø74	54	935

Revision history
A: Change to latest format

# SMC Corporation

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.  
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