



Operation Manual

PRODUCT NAME

Bacteria Removal Filter

MODEL / Series / Product Number

HF2B-SFDA203-**

SMC Corporation

Contents

	Page
1. Safety Instructions	2
2. Specifications	7
3. How to Order	8
4. Component name and spare parts list	8
5. Replacement of the element	9
6. Dimensions	10



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)^{*)}, and other safety regulations.

*) 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.



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.

1. Operation Precautions

Selection/Caution on Design

Do not select a model exceeding specification ranges and carefully consider the purpose of use, required specifications, and operating conditions, such as fluid, pressure, flow rate, nominal filtration rating, and environment. Incorrect handling can result in unexpected accidents.

1. The product is not certified under the High Pressure Gas Safety law, so for nitrogen and Carbon dioxide gas(gas), its maximum operating pressure will be 0.99 MPa (gauge pressure).
2. The product removes and reduces bacteria contained in the compressed air. Bacterial removal refers to the effect of reducing bacteria. It does not mean that all bacteria are eliminated. Not for eliminating the virus.
LRV (Log Reduction Value) is a mathematical representation that was obtained from the test (evaluation based on JIS K 3835) using test bacteria (*Brevundimonas diminuta*).
3. The product is assembled and packaged in a clean room environment but does not adhere to the sanitation control procedures for the use in food and medical industries.
4. If the compressed air includes ozone, do not use it since it may damage the product or cause malfunction.

Caution on Installation

Warning

1. Initial pressure drop
Set the air flow capacity with an initial pressure drop of 0.03 MPa or less. If the initial pressure drop is set to be high, its life will be shortened due to clogging.
2. Pressure fluctuation of the circuit
Do not install the product in a place where it can be affected by a pulsation (including surge pressure) of over 0.1 MPa.
3. Generally, the following pollutant particles are contained in compressed air.
[Example: Pollutant particle substances contained in the compressed air]
 - Moisture (drainage)
 - Dusts and particles which are in the surrounding air
 - Deteriorated oil which is discharged from the compressor
 - Solid foreign matter such as rust and/or oil in the piping
 - 1) The HF2B-SFDA series is not compatible with compressed air which contains fluids such as water and/or oil.
 - 2) Install a dryer, line filter, mist separator, micro mist separator, super mist separator, or odorremoval filter, etc., for the source of the air for the HF2B-SFDA series.
 - 3) Use a grade that meets ISO8573-1: 2010 [1: 4: 4] for the compressed air purity classes on the inlet side of the HF2B-SFDA series.

Operating Environment

Warning

1. Do not operate under the conditions listed below due to a risk of malfunction.
 - In locations containing corrosive gases, organic solvents, and chemical solutions, or in locations in which these elements are likely to adhere to the equipment
 - In locations in which sea water, water, or water steam could come in contact with the equipment
 - In locations that are exposed to direct sunlight (Shield the equipment from sunlight to prevent its resin material from ultraviolet ray degradation or overheating.)
 - In locations that have a heat source and poor ventilation (Shield the equipment from heat sources to protect it from softening degradation due to radiated heat.)
 - In locations that are exposed to shocks and vibrations
 - In locations with high humidity or large amounts of dust
2. When the product is used for blowing, use caution to prevent the work from being damaged by entrained air from the surrounding area.

If compressed air is used for air blow, compressed air blowing out from the blow nozzle may entrain foreign matter (solid particles and liquid particles) floating in the ambient air, blowing it against the workpieces and causing adhesion. Therefore, sufficient precautions must be taken about the ambient environment.

Mounting

Warning

1. Flushing
 - Flush and clean the piping before installing the product. Dust and foreign matter left in the piping can cause operating failure and malfunction.
 - When connecting pipework, flush before initial use and element replacement to reduce particle generation. After that, start main operation.
2. Unpacking the sealed package

Since the filter is sealed in an antistatic double bag, the inner package should be unpacked in a clean atmosphere (such as a clean room).
3. Piping ports
 - When connecting pipework, apply a wrench across the flats of the IN or OUT side to prevent the main body from rotating.
 - Connect the piping in accordance with the flow direction marked on the case.
If connected in reverse, the element could break.
4. Installation

Secure the product with the brackets included in the packaging.

Maintenance

Warning

Perform maintenance and inspection according to the procedures indicated in the operation manual. If handled improperly, malfunction or damage of machinery and equipment may occur.

1. When removing the product, exhaust the air and ensure the air is released to atmosphere before removing it.
2. When the element comes to the end of its life, immediately replace it with a new filter or replacement element.
 - Life of element -
The life of the element ends when either of the following two conditions occurs.
 - 1) After 1 year of usage has elapsed.
 - 2) When the pressure drop reaches 0.1 MPa even though the operating period has been less than 1 year

2. Specifications

Port size	Rc1/4, NPT1/4, G1/4, Rc3/8, NPT3/8, G3/8	
Fluid	Air, Nitrogen, Carbon dioxide gas(gas)	
Rated flow	500L/min (ANR) ^{*1}	
Nominal filtration rating ^{*2}	0.01µm (99.99%) ^{*5}	
Operating pressure range ^{*3}	-100kPa to 1.0MPa (For nitrogen, Carbon dioxide gas: 0.99MPa)	
Operating temperature	5 to 45°C	
Initial pressure drop	0.03MPa(Inlet pressure 0.7MPa, at max. flow rate)	
Element proof differential pressure ^{*4}	0.5MPa	
Proof pressure	1.5MPa	
Element life	1 year, or when the pressure drop reaches 0.1 MPa	
Materials of parts in contact with fluid	Metal parts	Stainless steel
	Resin/Rubber parts	Materials compliant with FDA/Food Sanitation Law
Weight	Port size 1/4	450g
	Port size 3/8	430g

*1 Maximum flow rate at inlet pressure 0.7 MPa and pressure drop 0.03 MPa.

*2 Measured under SMC's specified conditions.

*3 The maximum operating pressure varies depending on temperature.

*4 This means that the element does not break at 0.5 MPa.

*5 The bacteria removal filter is intended to filter solid particles. It is not suitable for the separation of water and oil.

Bacteria removal performance (bacteria capture performance of filter element) LRV ≥ 9

LRV (Log Reduction Value) indicates the bacteria capture performance.

$$LRV = \log_{10} \frac{A}{B}$$

A: Total number of test bacteria applied upstream of the filter
B: Total number of test bacteria after passing through the filter (downstream)

[Demonstrated by a third-party research institution (Test reference report No.: 2019D-BT-548)]

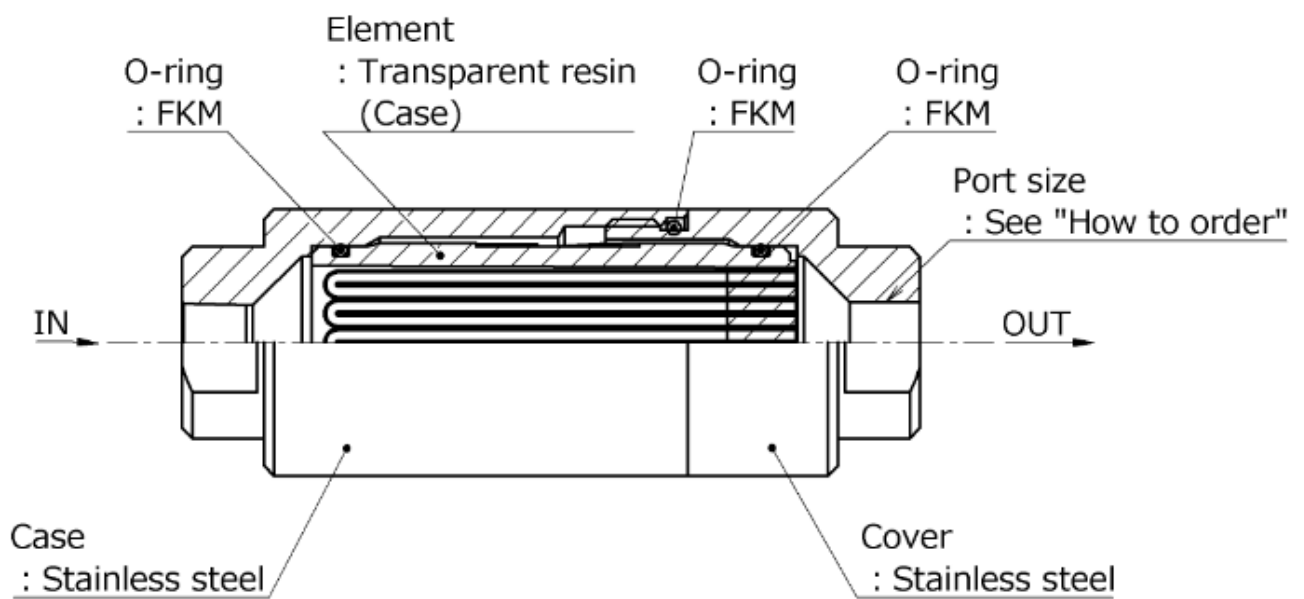
* This does not guarantee that all bacteria will be removed. Not for eliminating the virus. This is the data evaluated based on JIS K 3835.

3. How to Order

HF2B-SFDA203- **

Symbol	Thread type	Symbol	Port size
Nil	Rc	02	1/4
F	G	03	3/8
N	NPT		

4. Component name and spare parts list



Replacement Parts

Description	Part no.	Note
Element set	SFDA-EL200	With 3 O-rings
Bracket	SFD-BR200	

5. Replacement of the element

5-1. Stop

Stop operation and reduce the filter's internal pressure to atmosphere.

5-2. Removal of the cover

Hold the flats of the cover and case with a wrench and unscrew.

* It is possible that the element comes out together with the cover. In this case, step 5-3 is not necessary.

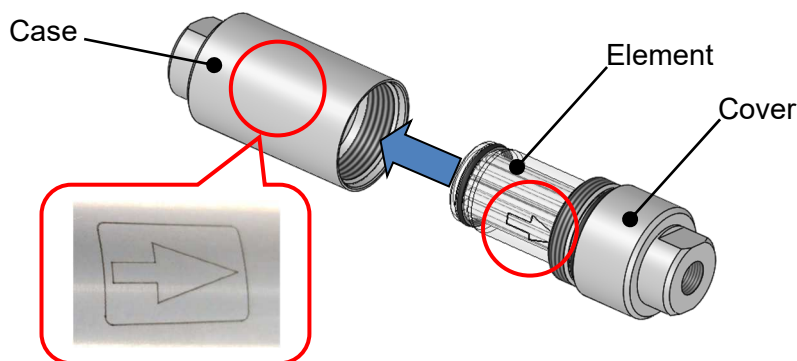
5-3. Removal of the element

Remove the element from the case.

5-4. Mount the element

Mount the new element to the cover and insert into the case.

Make sure that the direction of the arrow on the element and the laser printed arrow on the case are the same.



5-5. Tightens the cover

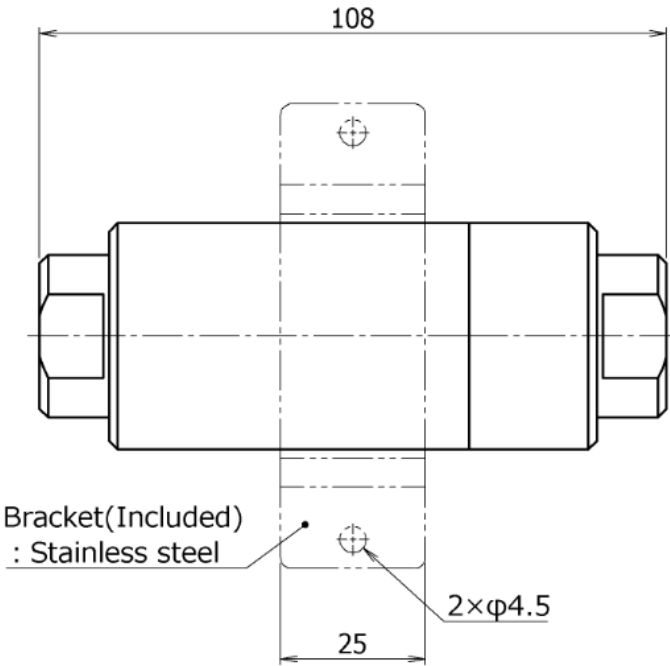
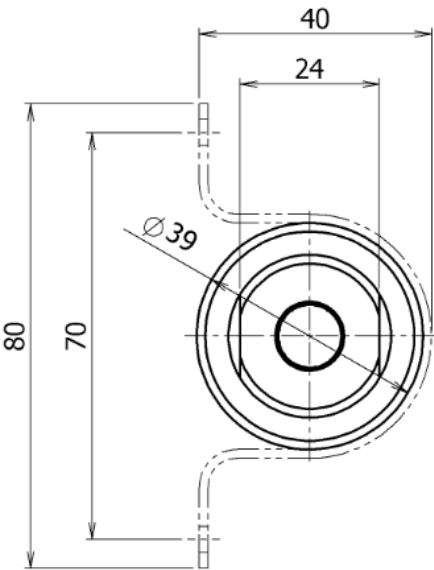
Hold the flats of the cover and case with a wrench and screw together.
Fastening torque recommended: 10+/-2Nm

5-6. Start of operation

Before actual operation, confirm there is no leakage.

If there is leakage, remove the element after stopping the operation. Clean the seating surfaces, check and replace the O-ring and tighten the cover.

6. Dimensions



Revision history
1st edition: January 2024
Revision: March 2024

SMC Corporation

Tel: + 81 3 5207 8249 Fax: +81 3 5298 5362
URL <https://www.smcworld.com>

Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
© SMC Corporation All Rights Reserved