Medium Main Line Filter
AF4000 (oil-free)

■ Main Line Components / Main Line Filter

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Medium
Main Line Filter

AF4000 Series

Meeting the Demands of Oil-Free Air Lines

High performance main line filter AF4000 Series with stainless steel housing for clean environments.
Ideal for use with oil-free air lines.

Differential pressure gauge port

A differential pressure gauge (option) mounting port is provided on the top of the filter.

prevention

With residual pressure release function

It is equipped with a band cover as standard to prevent the band from being removed inadvertently during operation or when there is residual pressure. If the band cover fixing screws are loosened, a small amount of air will leak and inform the operator.

Easy element replacement

A band method has been adopted for tightening the housing. The element can be replaced without tools.

Time management of element replacement

Compatible with liquid oil mist, etc., for which the replacement time is difficult to determine with the conventional differential pressure method. Time management of replacement interval (approx. one year) by indication of blinking lamp.

Mechanism preventing housing dislocation

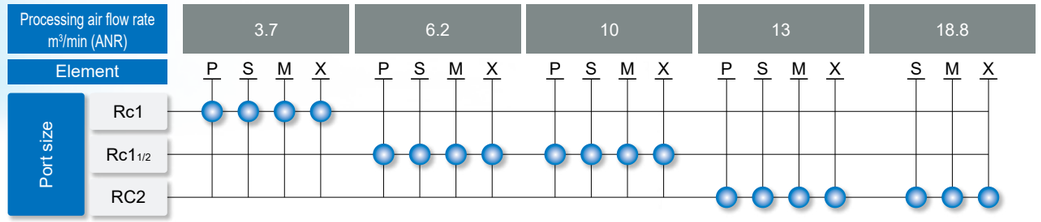
The mechanism prevents the housing from falling when the band cover is removed when replacing the element, etc. Can be removed and installed with both hands.

Highly reliable drain discharger mounted

A highly reliable automatic drain (DT Series) is provided for the drain discharger. Drainage can be discharged without wasteful air loss.

Diverse lineup

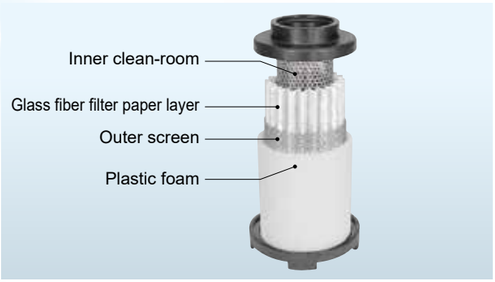
Choose from 19 models, with 5 flow rate options for each of the four types (P-type: 4 flow rates). The ideal model can be selected based on the flow rate and quality of air.



*Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa.

M-Type Element Structure

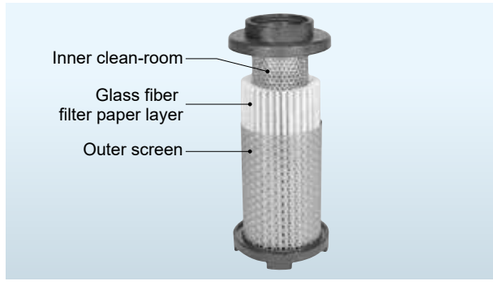
- Removes particles 0.01 μm and larger
- Outlet oil concentration 0.01 mg/m³ (20°C)
- Reduced pressure drop for increased efficiency.



1. Efficient Oil Mist Removal: The use of water- and oil-repellent glass fiber filter paper allows for efficient oil mist collection and coalescing while reducing pressure loss for optimized performance.
2. Large Filtration Area: The pleated structure provides a large filtration area for superior performance.
3. Eco-friendly: Vinyl chloride resin is not used.

S-Type Element Structure

- Removes particles 1 μm and larger



1. Glass fiber filter paper is used as standard to improve the collection performance and water resistance.
2. The new pleated structure provides a large filtration area.
3. Ensures consistent, reliable collection performance even with water droplets in the air stream.

AF4000 Series Variations

Removing Water Drops Solid Particle Removal

Ideal for use as a pre-filter for air dryers.

P-Type

- Removes particles 5 μm and larger
- 99% Water Separation Efficiency

Solid Particle Removal

Protects Expensive Pneumatic Components.

S-Type

- Removes particles 1 μm and larger

High-performance removal of oil mist and solids

For Pneumatic Circuits Which Prohibit Passage of Oil.

M-Type

- Removes particles 0.01 μm and larger
- Removes oil to a secondary side oil concentration of 0.01 mg/m³ (20°C)

Removes oil vapor and odors

For pneumatic circuits which prohibit passage of odors

X-Type

- Activated carbon fiber adsorption
- Removes oil vapor and odors up to secondary side oil concentration of 0.003 mg/m³ (20°C)

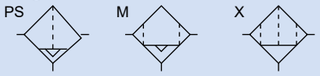
Medium main line stainless steel filter

AF4000P/S/M/X Series

Ideal for pre-filter, oil removal and deodorizing applications

●Processing air flow rate: 3.7 to 18.8 m³/min (ANR) (0.7 MPa)

Circuit Diagram Symbol



Model No. Notation

AF4 004 P - 25 - GA

- AF4: Model No.
- 004: ❶Flow rate category
- P: ❷Element
- 25: ❸Bore size
- GA: ❹Accessories

Note: The required performance may not be attained if using at a level less than the selected pressure. Always select the model No. with the working pressure.

❶Flow Rate Category

Code	Description
004	3.7 m³/min (ANR)
007	6.2 m³/min (ANR)
010	10 m³/min (ANR)
013	13 m³/min (ANR)
020	18.8 m³/min (ANR) (❷Items S, M, X only)

❷Element

Code	Description
P	P-type (solids/water removing filter)
S	S-type (solids removing filter)
M	M-type (oil mist filter)
X	X-type (deodorizing filter)

❸Bore size

Code	Description
25	Rc1
40	Rc1-1/2
50	Rc2

❹Accessories

Code	Description	
Blank	None	
GA	Differential pressure gauge (GA400-8-P02) included	
Note EL	Element Life Indicator included	

Note: The M-type in Item ❷ comes standard with an element life indicator.

Flow rate compensation coefficient

Pressure (MPa)	Auxiliary coefficient
0.2	0.36
0.3	0.5
0.4	0.62
0.5	0.75
0.6	0.88
0.7	1.0
0.8	1.13
0.9	1.25
1.0	1.38

If the inlet pressure is not 0.7 MPa, multiply the coefficient above with the processing air flow rate.

Specifications for Food Manufacturing Processes

(Catalog No.CC-1271AA)

●Food grade lubricants that can be used in food manufacturing processes, and resin and rubber materials that conform to the Food Sanitation Laws are used.

AF4□□□□ - · · · · · · · - FP□

Specifications

Item		AF4004□-25	AF4007□-40	AF4010□-40	AF4013□-50	AF4020□-50
Processing air flow rate	m³/min (ANR)	3.7	6.2	10	13	18.8
Working fluid		Compressed air				
Working pressure	MPa	0.1 to 1.0				
Ambient temperature	°C	5 to 60				
Proof pressure	MPa	1.5				
Port size	Rc	1	1-1/2		2.	
Weight	kg	3	3.3	3.7	4.3	6
Element life indicator		Standard only for M-type				
Condensate Drains		DT3000-15-W (Excluding X-type)				
Drain outlet bore size		Directly connecting bore size ø5.7 to ø6 nylon tube (Excluding X-type)				

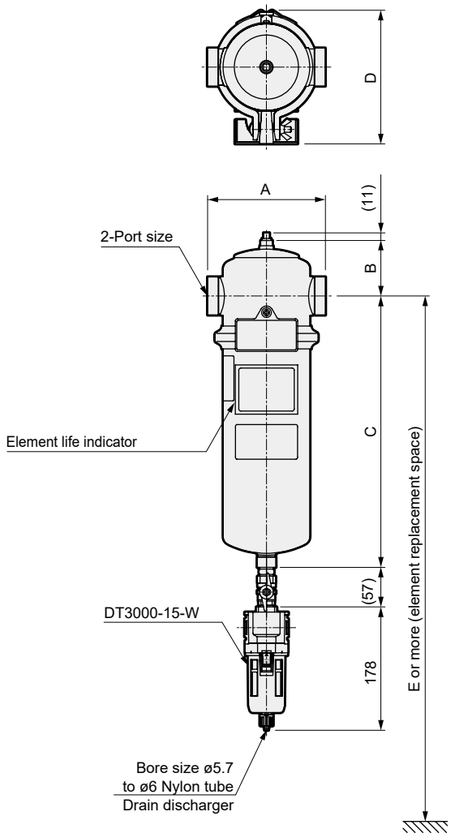
□ indicates the series name.

Item			P-type	S-type	M-type	X-type
Performance	Processing air conditions	Inlet air pressure MPa	0.7			
		Inlet air temperature °C	32			
		Inlet air dew point °C	–	–	No water infiltration or droplet generation	Pressure dew point10°C
		Inlet oil concentration mg/m³	–	–	3	0.01
	Degree of Filtration µm		5	1	0.01	Activated carbon fiber adsorption
	Secondary side oil concentration mg/m³		–	–	0.01	0.003
	Water separation efficiency %		99	–	–	–
	Pressure drop	Initial MPa	0.005	0.005	0.01	0.009
	Element Replacement time	Pressure drop MPa	0.02	0.07	0.07	–
		Duration of use	8000 hours or 1 year			

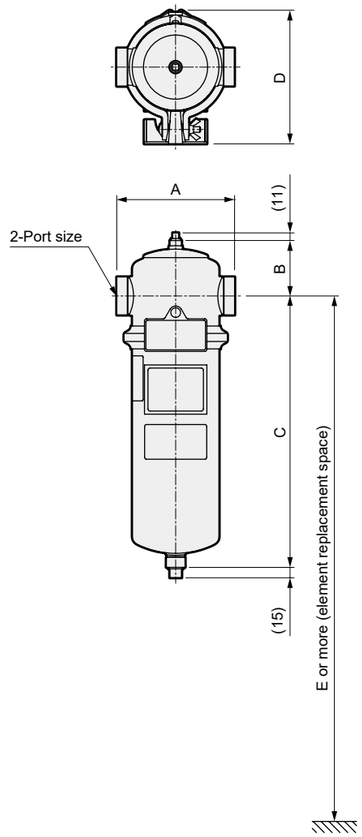
*1: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa.
*2: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.
*3: The secondary side oil concentration is the value when the inlet air temperature is 20°C.
*4: The drain discharger is NO. Air is purged with initial drainage until pressure reaches 0.1 MPa.
*5: The P/S/M-type element must be replaced when the pressure drops or the service life is reached, whichever comes first.
*6: Replace the X-type element when the service life is reached or when the deodorizing effect is lost.
*7: AF4020 does not have P-type.

Dimensions

●AF4004P/S/M to AF4020S/M



●AF4004X to AF4020X

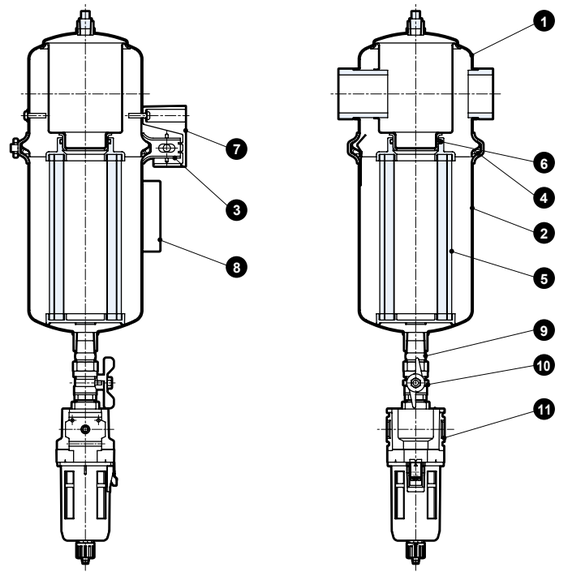


Model No.	Port size	A	B	C	D	E
AF4004P/S/M/X-25	Rc1	160	72.5	209	192.7	570
AF4007P/S/M/X-40	Rc1-1/2	170	80	283.5	192.7	730
AF4010P/S/M/X-40	Rc1-1/2	170	80	391.5	192.7	940
AF4013P/S/M/X-50	Rc2	173	86.5	478	192.7	1100
AF4020S/M/X-50	Rc2	173	86.5	635	192.7	1420

*1: The element life indicator is mounted only on the M-type.
*2: E dimensions indicate the maintenance space.
*3: Drain discharger and ball valve are attached.

Internal Structure Diagram / Material

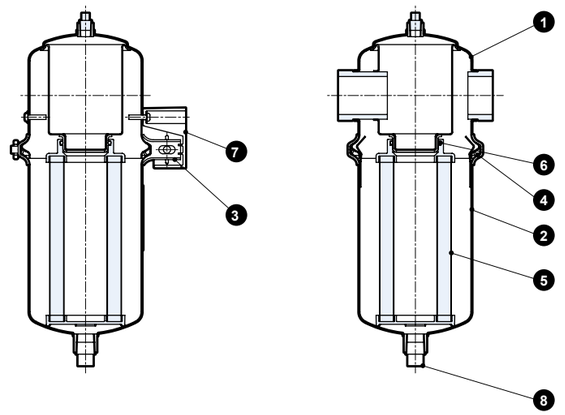
●P, S, M-types



No.	Part name	Material
1	Cover	SUS304
2.	Bowl	SUS304
3	Band	SUS304
4	O-ring	NBR
5	Element	
6	O-ring	NBR
7	Band cover	Polyamide
8	Element life indicator	
9	Nipple	SUS304
10	Ball valve	C3771, PTFE, SUS, etc.
11	Condensate Drains	DT3000-15-W

Drain discharger and ball valve are attached. The element life indicator is mounted only on the M-type.

●X-type



No.	Part name	Material
1	Cover	SUS304
2.	Bowl	SUS304
3	Band	SUS304
4	O-ring	NBR
5	Element	
6	O-ring	NBR
7	Band cover	Polyamide
8	Plug	SUS304

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Safety Precautions

Be sure to read this section before use.
Refer to Intro 15 for General Precautions.

Product-specific cautions: Medium main line filter AF4000 Series

Manufacturer's Disclaimer

⚠WARNING

■The manufacturer cannot be held liable in the following cases:
- In the case where there are serious errors in the operator's use.
- Illegal modifications or repairs using non-standard parts by user.

Design / Selection

⚠WARNING

■Do not use for applications other than compressed air.

■Do not use for caisson shields or medical devices such as breathing devices.
Doing so may result in serious injury.

■Do not mount and use this device on transportation equipment such as vehicles or ships.
Vibration may cause internal damage.

■Avoid direct sunlight and rain water. Resin parts may deteriorate and break.

■Do not use in locations with corrosive gases.

■Use this product within the range of the working temperature.

■Do not use the product where it could freeze. Accumulated drain may freeze and damage the product.

■Do not use in hazardous locations (possibly explosive atmospheres, etc.).

■The inlet air temperature should be kept as low as possible. Higher temperatures reduce oil removal efficiency.

■Do not use this product in an ozone generating environment.

■Avoid use where vibration and impact are present.

■Do not use this product in areas containing dust, etc.

■Do not use this product in an environment in which the compressed air contains the following gases.
- Sulfur dioxide, Chlorine gas
- Aromatic hydrocarbon compounds (For example, benzene, toluene, phenol, cyclohexane, etc.)
- Chlorinated hydrocarbon compounds (Example: Trichloroethylene, Chloroform, etc.)
- Ketones (Example: Acetone, etc.)
- Aldehydes (Example: Formaldehyde, Acetaldehyde, etc.)
- Amines (Example: Ethylamine, Methylamine, etc.)

■Always set the air flow to within the working pressure range and the processing air rate.
Otherwise, water, dust, and oil removal performance may be compromised.

■Install indoors.

■The drain discharger is a normally open type. The compatible compressor capacity is 0.75 kW or more (discharge flow rate 90 L/min or more).

■The air filter service life is reached when the pressure drops, or after 8000 hours or one year of use. Replace the element with a new one when its lifespan is reached. When using an element life indicator, replace the indicator battery with a new one when replacing the element. (Replace the X type element when the service life is reached, or when the deodorizing effect is lost.)

■The drain discharger is air purged with the initially generated drainage until the pressure rises to 0.1 MPa.

● Chemical resistance of drain discharger plastic bowl

Types of Chemicals	Categories of Chemicals	Main Products of Chemicals	General Applications	Polycarbonate	Nylon
Inorganic compounds	Acids	Hydrochloric acid, sulfuric acid, fluorine, phosphoric acid, chromic acid, etc.	Acid washing of metals, acidic degreasing solutions, Coating treatment solution	×	×
	Alkalines	Caustic soda, caustic potash, calcium hydroxide, aqueous ammonia, sodium carbonate, etc.	Alkaline degreasing solution for metals	×	○
	Inorganic salts	Sodium sulfide, potassium nitrate, potassium bichromate, sodium sulfate, etc.		×	○
Organic compounds	Aromatic hydrocarbons	Benzene, toluene, xylene, ethyl benzene, styrene, etc.	Contained in paint thinner (benzene, toluene, xylene)	×	×
	Chlorinated aliphatic hydrocarbons	Methyl chloride, ethylene chloride, methylene chloride, acetylene chloride, chloroform, trichlene, perchlene, carbon tetrachloride	Organic Solvent-Based Washing Solution for Metals(Trichloroethylene, Tetrachloroethylene, Carbon Tetrachloride, etc.)	×	○
	Chlorinated aromatic hydrocarbons	Chlorobenzene, dichlorobenzene, benzene hexachloride (B/H/C), etc.	Agricultural chemicals	×	○
	Petroleum components	Solvent, naphtha, gasoline		×	○
	Alcohols	Methanol, ethanol, cyclohexanol, benzyl alcohol	Used as an antifreeze agent	×	×
	Phenol	Carbolic acid, cresol, naphthol, etc.	Disinfectant solution	×	×
	Ethers	Methyl ether, methyl ethyl ether, ethyl ether	Brake fluid additive	×	○
	Ketones	Acetone, methyl ethyl ketone, cyclohexanone, acetophenone, etc.		×	×
	Carboxylic acids	Formic acid, acetic acid, butyl acid, acrylic acid, oxalic acid, phthalic acid, etc.	Dyes/oxalic acid are used for aluminum treatment Phthalic acid used for paint base	×	×
	Phosphate ester	Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), dioctyl phthalate (DOP)	Lubricant, synthetic coolant, rust preventing agent additives Used as plasticizer for synthetic resin	×	○
	Oxyacids	Glycolic acid, lactic acid, malic acid, citric acid, tartaric acid		×	×
	Nitro compounds	Nitromethane, nitroethane, nitroethylene, nitrobenzene, etc.		×	○
	Amines	Methylamine, dimethylamine, ethylamine, aniline, acetanilide, etc.	Brake fluid additive	×	×
	Nitriles	Acetonitrile, acrylonitrile, benzonitrile, acetoisonitrile, etc.	Raw material for nitrile rubber	×	○

○symbol: Usable × symbol: Not usable

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual