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CKD

SM－391679－A

INSTRUCTION MANUAL

MAIN LINE FILTER
AF2000 SERIES

AF2004P, M, X-25
AF2007P, M, X-40
AF2010P, M, X-40
AF2013P, M, X-50
AF2020P, M, X-50
AF2026P, M, X-65

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

Jun-14 2nd edition
ＣＫＤ Corporation

Safety instructions

This manual is intended for personnel who are familiar with basic knowledge about electricity, compressed air, fluid, piping, and refrigerant. CKD shall not be held responsible for troubles or accidents that result from installation, operation or repairs made by personnel who are not qualified or trained for the above subjects.
Improper handling may cause the machine not to be operated at its maximum performance level or lead to accidents or personal injury.
Always confirm the machine specification and operate the machine in the correct manner designated by CKD.
This machine is equipped with various safety and other protective devices.
However, improper handling of the machine may cause personal injury and/or damage to the machine. Read this operation manual carefully and fully comprehend its contents before operation.
Read the contents of the following warning labels, as well as cautions stated in the operation manual, and follow the instructions contented therein.
Keep this operation manual near the machine where all concerned personnel have easy access to it.

FORWARD

Thank you very much for purchasing our Main Line Filter .
This manual explains basic points of installation, operation, etc. to have our Main Line Filter perform at their best. Be sure to read this manual before using your
Keep this booklet handy for quick reference.

Please be advised in advance that there may be some discrepancies between products and contents of this book due to improvement of specification after printing.

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1. PRODUCTS

1-1. Specifications

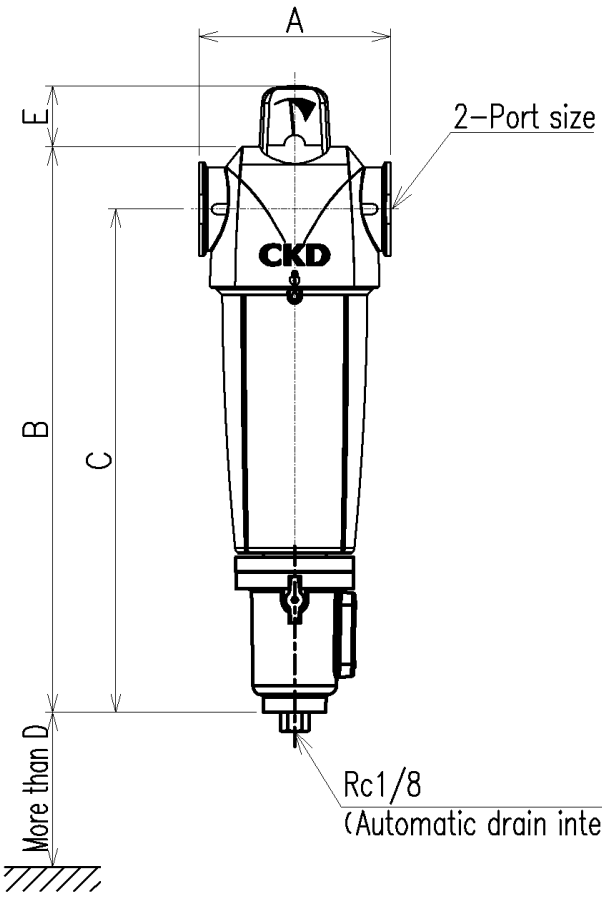
Item \ Model No.	AF2004□-25	AF2007□-40	AF2010□-40	AF2013□-50	AF2020□-50	AF2026□-65
Maximum air flow m^3/min(ANR)	3.7	6.6	9.6	13.2	19.8	25.8
Fluid used	Compressed air					
Operating pressure range MPa	0.1～1.0					
Withstanding pressure MPa	1.5					
Port size Rc	1	$1^1/_2$		2		$2^1/_2$
Mass X type in( ) kg	2.6(2.2)	3.0(2.6)	4.9(4.5)	5.6(5.25)	5.65(5.25)	11.1(10.7)
Diff. press.indicator	Standard equipment(X Series is except)					
Drain discharger	Built-in(X Series is except)					
Drain discharge port Rc	$^1/_8$(X Series is except)					

Item \ Type	P Type	M Type	X Type
Working temperature range ℃	5～60		5～30
Removal particle size μm	1	0.01	Adsorb by Activated carbon
Secondary side oil concentration mg/m^3	0.6	0.01	0.003
Initial pressure drop at rated flow MPa	0.007	0.01	0.02
Nominal operating pressure drop MPa	0.014	0.02	—

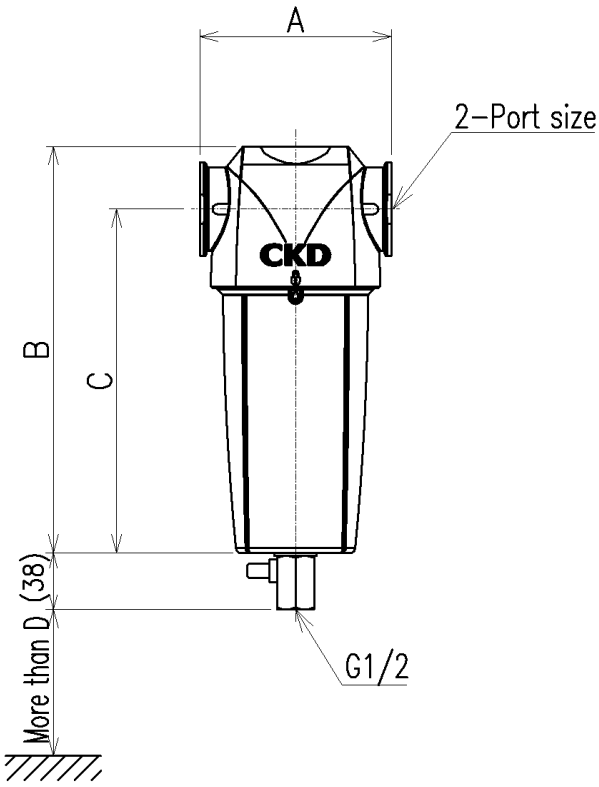
Note1. Treating air flow rate is the atmospheric pressure conversion value where inlet pressure is 0.7MPa.
Note2. ANR shows conditions where 20℃ atmospheric pressure and relative humidity 65%.
Note3. Secondary side oil content density is the value where inlet air temperature is 21℃.
Note4. Min. operating pressure of a automatic drain is 0.1MPa.
Initially generated drainage and air purged until pressure reaches 0.1MPa.
Note5. P/M type filter element is spent when DP indicator red zone or one year of use, whichever is sooner.
Note6. Replace X type element after 650 hours (at 21℃) of use or when the deodorizing effect is lost.
Note7. In X type, the ball valve has adhered to the drainoutlet.

1-2. External dimensions

P/M type



X type



Model No.	Port size	A	B	C	D	E
AF2004P/M-25	Rc1	129	383	340	70	43
AF2004X-25	Rc1	129	274	232	70	–
AF2007P/M-40	Rc1 1/2	129	473	430	70	43
AF2007X-40	Rc1 1/2	129	364	322	70	–
AF2010P/M-40	Rc1 1/2	170	541	491	100	46
AF2010X-40	Rc1 1/2	170	433	383	100	–
AF2013P/M-50	Rc2	170	633	583	100	46
AF2013X-50	Rc2	170	525	475	100	–
AF2020P/M-50	Rc2	170	633	583	100	46
AF2020X-50	Rc2	170	525	475	100	–
AF2026P/M-65	Rc2 1/2	205	750	690	120	49
AF2026X-65	Rc2 1/2	205	642	582	120	–

D dimension is a lower limit necessary to remove the element. Actually install it in consideration of piping dimensions of the automatic drain.

2. CAUTIONS

(1) Air flow rate through Main line filter must not exceed processed air flow rate. Otherwise, water and/or dust in compressed air could not be removed.

(2) Use it within the range of the use temperature. The following malfunction, damage, and air leak when using it outside the range.

- The element freezes, the differential pressure grows, and the element is damaged.
- Poor drainage by freezing automatic drain, or air leakage from automatic drain because of frozen damage.
- Leakage from automatic drain due to automatic drain strength decrease at high temperature.
- Malfunction or damage of differential pressure indicator at high temperature.

(3) When pressurizing Main line filter which is set-up in front or in the rear of valves, operate valve, etc. slowly. Rapid operation of valve may damage filter element and DP indicator.

(4) Avoid using this product where vibration and impact are present.

(5) When releasing pressure from piping, release it slowly at secondary side of Main line filter. If released at primary side, reverse flow may arise in Main line filter, resulting in damage of DP indicator and element.

(6) Do not use the dryer for pneumatic caisson shield or respiratory medical equipment.
※It could cause an accident includes injury.

(7) Do not use the dryer for transportation devices such as automobile, ship etc.
※Vibration could be a cause of break down of the internal components.

3. OPERATION CAUTION

3-1. Prior to opening air valve

Ensure the following check points after completion of installation Main line filter prior to opening air valve.

1) Whether drain discharger(X type is not required)are properly installed, confirm whether to be given it to the drain piping.
2) Ensure that the air flow is within max. tolerable flow rate.
3) Confirm whether the direction of the flow of air is corresponding to the method of installing the main line filter.

It indicates that the system is operable when no discrepancies is discovered.

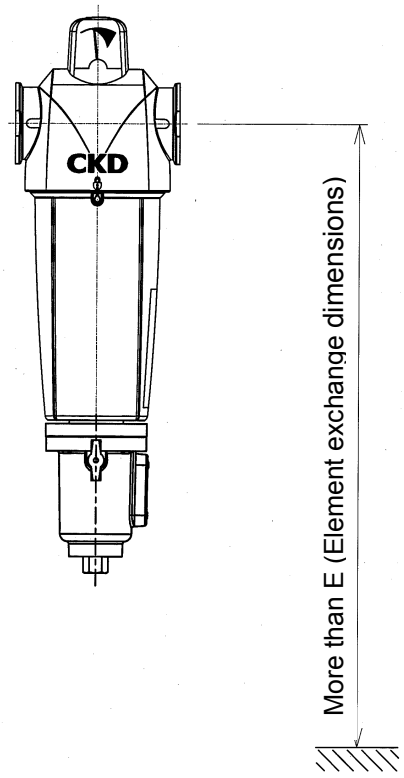
4. INSTALLATION

4-1. Place of installation

1) Do not the Main line filter in a place where it is likely to be exposed to direct sunlight and rainwater.
2) Make use of working temperature range.
3) Do not set it up in outdoor.
4) Do not use it in a place that might freeze. Because a drain freezes, Main line filter likely to breakage.
5) Inlet air temperature must low as low as the Main line filter can use. Because Oil removal rating down by inlet air temperature is high.
6) Do not use the Main line filter in a place where it is likely to danger(blowing up possible an atmosphere).
7) Avoid using this product where vibration and impact are present.
8) Provide ample room around it for later service such as replacing element or dismounting bowl.
4) Avoid its installation within the area where such gases as follows are likely mixed in the ambient air because element may be eroded or swollen.
   - Sulforous acid gas
   - Clorate gas
   - Hidensity ozone
   - Arlmatic hydro carbons solvent
     (Examples; Benzene, Toluen, Phenol, Cyclohexane etc.)
   - Chlorinated aliphatic hydrocarbons
     (Examples; Trichloro ethylene, Chlorohorm etc.)
   - Keton (Example; Aceton)
   - Aldehyde (Examples; Holmaldehyde, Acetoaldehyde etc.)
   - Amin (Examples; Ethylamin, Methyl amin etc.)

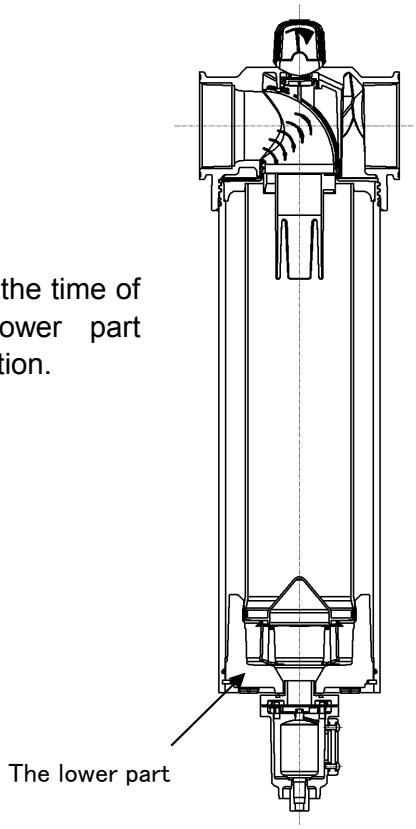
4-2. Installation

1) Install it to endure the weight of the product enough. It might cause the injury by the water leak and the fall etc. when there is incompleteness in the installation.
2) Do not mount the Main line filter in front on in the rear abrupt open/close valve.
3) Install it so as to have arrow mark coincides with direction of flow.
   It may sometimes cause a damage of element and DP indicator when back pressure is charged to Main line filter.
4) Install it as perpendicular as possible having drain port downward.
5) Install it as far away from compressor as possible so as to have compressed air cools by natural radiation in piping before coming into filter.
6) Keep primary pressure within 1.0MPa.
7) For the exchange of the filter element, take it as possible than a floor face greatly.
   （Do easy setting in consideration of length of the drain piping.）



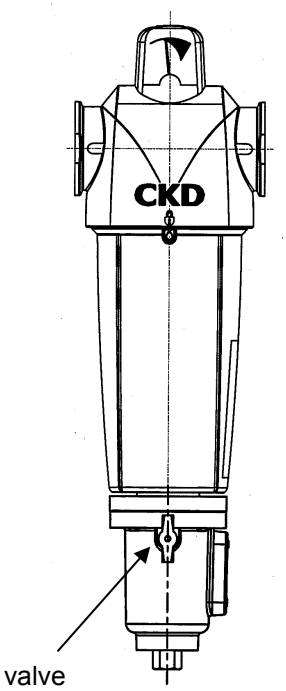
Model No.	E
AF2004P/M/X-25	410
AF2007P/M/X-40	500
AF2010P/M/X-40	591
AF2013P/M/X-50	683
AF2020P/M/X-50	683
AF2026P/M/X-65	810

8) Since the lower part may move to a vertical direction at the time of pressurization, AF2026 series should shift the lower part beforehand to perpendicular down at the time of installation.



4-3.Piping

1) Use large enough pipe to reduce pressure drop and eliminate sharp bending of piping or using stop valve with large flow resistance.
2) It is recommended to use zinc coated pipes to prevent rusting or stainless pipe.
3) Wash off cutting oil and/or rust preventive oil off the pipes and couplings.
4) Be sure to set M type before X type. Also, do not forget to install the air dryer before operation.
5) Separated oil of compressed air by Main line filter is automatically purged by automatic drain.
6) The port size of the drain discharge is Rc$^{1}/_{8}$. The drain pipe must be more than ID Φ 5.7 and within 5m in length and must not be installed upward.
7) The drain is drained by pressure. Be careful so that I fix the piping well, and spray of water does not hang to a person and the thing.
8) Lay the drain pipe so that it is not pressurized. Laying several pipes together or attaching a check valve will create a pressurized state. Do not lay the pipes in this state.
9) Fix with the attachment lug with the floor face and the ceiling, etc. when the connection piping is long or the load might join the piping part.
10) The filter is sure to be fixed with the pipe wrench and piping must screw in when you lay pipes. Port and the root are transformed, damaged when impossible power is added to port with the connected piping, and it causes the air leakage.
11) The valve clings under the filter. When maintaining it, it uses it to pull out internal pressure.
12) When air compressor is not stopped when elements are exchanged, we will recommend the bypass piping.
13) The flushing after the construction removes an element, and please carry it out.



5. MAINTENANCE

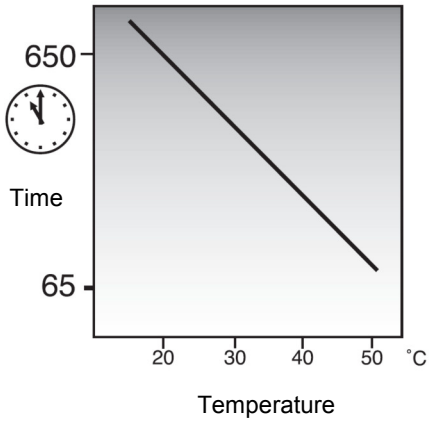
5-1. Timing of element replacement

1) P/M type filter element is spent when DP indicator red zone or one year of use, whichever is sooner. Discard clogged element because it is not washable.

2) X type absorbs odor by means of activated carbon. Because of this, a differential pressure cannot be used to measure its operation life. Replace the element when every 650 hours or its deodorizing power begins to deteriorate.

Note that the duration shortens when the insertion temperature degree is high.

The element at the end of its life cannot be revived by washing. Replace it with a new one.

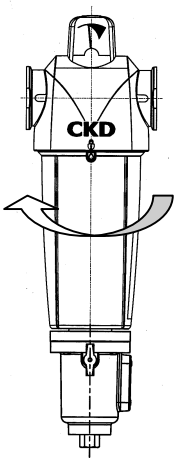


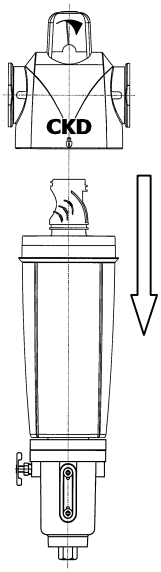
5-2. Replacement procedure of element

1) Stop supplying compressed air and release pressure in filter.
(Do not release pressure from primary side.)

2) Remove bowl

①The bowl is turned left. ②The bowl is removed below.

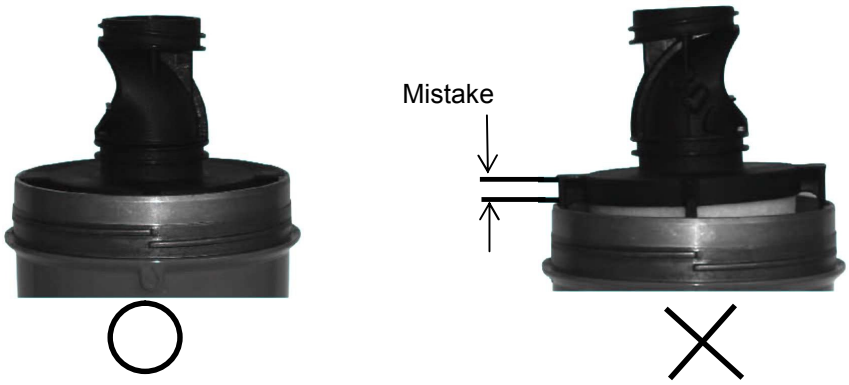




3) Replace element

①After the element is pulled out up and detached, the element for a new exchange is inserted in the bowl.

②Confirm the element is correct in the bowl and exists.

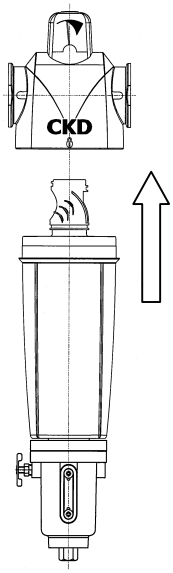


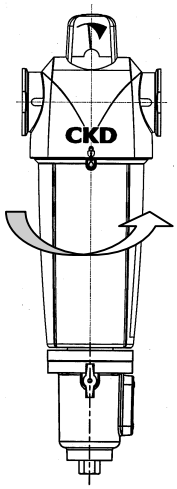
4) Install bowl

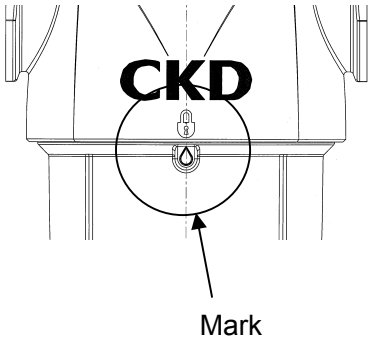
①The bowl is returned to former position.

②Turn the bowl to the right and shut.

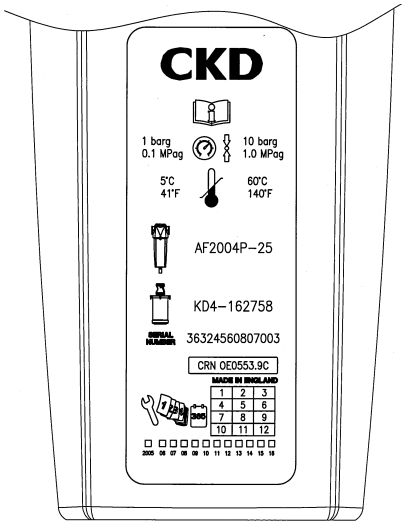
③Confirm the position of the mark is suitable.







5) The record can be described to the sticker pasted to the bowl side and use it.

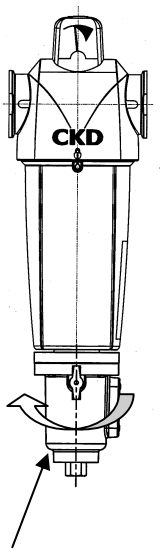


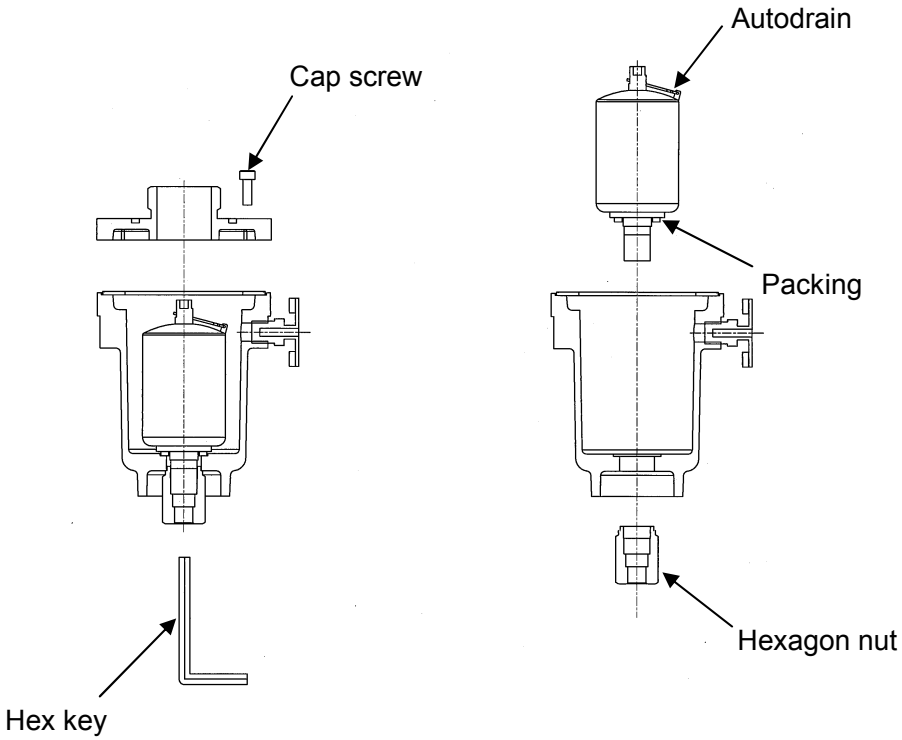
5-3. Inspection of automatic drain

A separated drain has to be discharged to outside certainly by an element of a filter. Visually inspect occasionally to confirm its appropriate functioning. Disassemble and clean it or replace with a new drain unit.

5-3-1. Replacement of automatic drain

1) Stop supplying compressed air and release pressure in filter.
(Do not release pressure from primary side.)
2) Autodraincup is turned and it removes.
3) Cap screw is removed and an upper cap is removed. It's difficult for adherence to remove because it's being sealed up with a gasket.
4) Hexagon nut is turned and an automatic drain is removed.
The automatic drain can be fixed by putting 3mm hex key from a hexagon nut. Next, turn the hexagon nut.
5) Change it for a new auto drain and the gasket.
6) The autodraincup is built oppositely. And, it firmly attaches it to the bowl.





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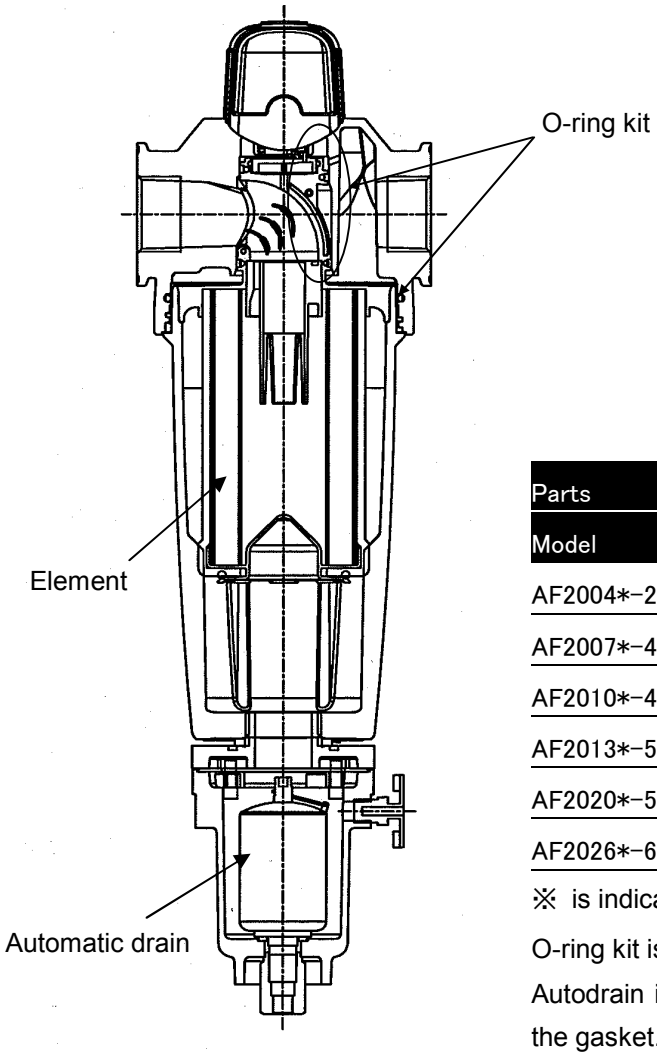
5-4. Expendable parts



Parts / Model	O-ring	Autodrain
AF2004*-25	AF2004-KD4-162779	AF2004-KFL-391722
AF2007*-40		
AF2010*-40	AF2010-KD4-162780	
AF2013*-50		
AF2020*-50		
AF2026*-65	AF2026-KD4-168282	

※ is indicated by type P･M･X

O-ring kit is 3 for the element and 1 for the bowl.

Autodrain is a set of the float assembly, the hexagon nut, and the gasket.

X type does not have automatic drain.

Element

Prats / Model	P type Element	M type Element	X type Element
AF2004*-25	AF2004P-KD4-162758	AF2004M-KD4-162759	AF2004X-KD4-162760
AF2007*-40	AF2007P-KD4-162761	AF2007M-KD4-162762	AF2007X-KD4-162763
AF2010*-40	AF2010P-KD4-162764	AF2010M-KD4-162765	AF2010X-KD4-162766
AF2013*-50	AF2013P-KD4-162767	AF2013M-KD4-162768	AF2013X-KD4-162769
AF2020*-50	AF2020P-KD4-162770	AF2020M-KD4-162771	AG2020X-KD4-162772
AF2026*-65	AF2026P-KD4-168277	AF2026M-KD4-168278	AF2026X-KD4-168279

※ is indicated by type P･M･X

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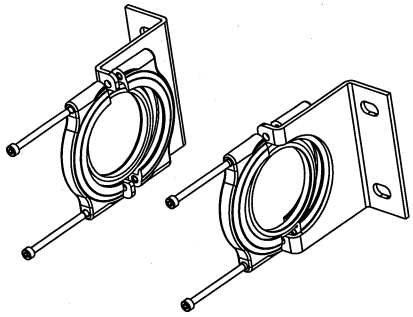
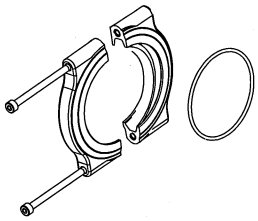
Accessories

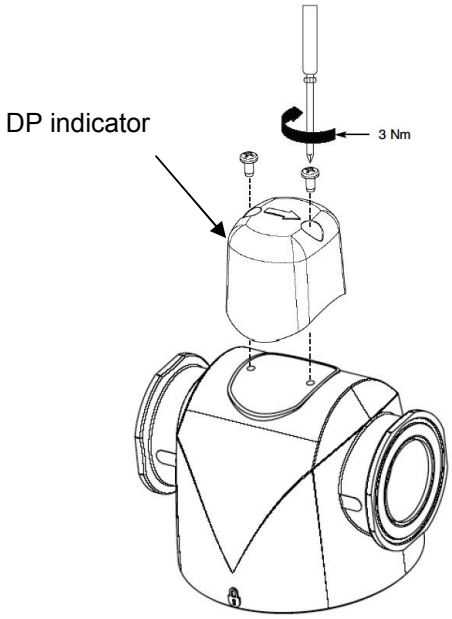
Parts / Model	Bracket kit	Module kit	DP indicator
AF2004～AF2007	AF2004-KD4-162775	AF2004-KD4-162773	AF2004-KD4-162778
AF2010～AF2020	AF2010-KD4-162776	AF2010-KD4-162774	
AF2026	AF2026-KD4-168281	AF2026-KD4-168280	



Bracket kit



Module kit



6. MODEL CODING

AF2004 P – 25
① ② ③

①Flow rate	
004	3.7m³/min(ANR)
007	6.6m³/min(ANR)
010	9.6m³/min(ANR)
013	13.2m³/min(ANR)
020	19.8m³/min(ANR)
026	25.8m³/min(ANR)

②Element type	
P	Solid/oil removal
M	High performance solid/oil removal
X	Odor removal

③Port size	
25	Rc1
40	Rc1 1/2
50	Rc2
65	Rc2 1/2

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