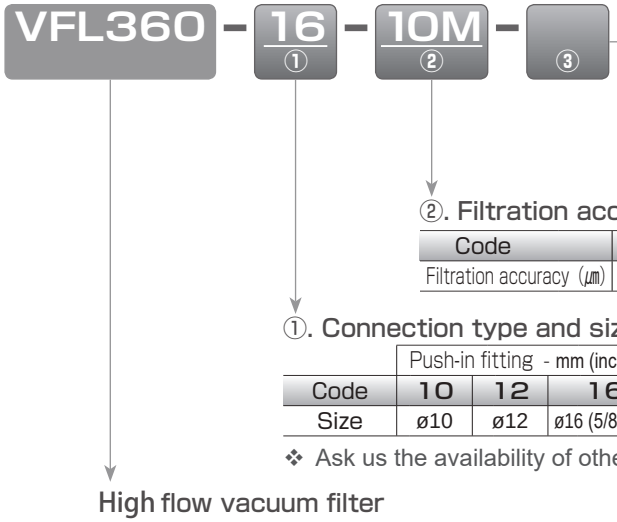
Vacuum filter for large flow vacuum generator and vacuum pump

High flow vacuum filter

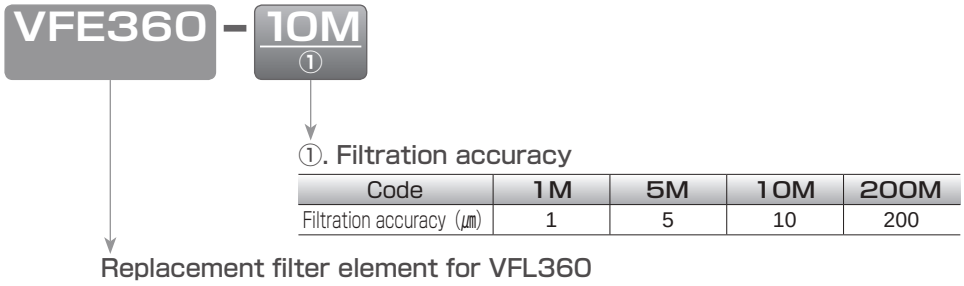
Characteristics

- Flow rate : 12.7scfm (360ℓ/min[ANR])Large capacity enables to secure **high processing flow rate**.
- **Four** types of micron rating can be selected according to applications.
  - ▶ Filtration accuracy : 1㎛、5㎛、10㎛、200㎛
- **Various** types of connections.
  - ▶ Taper pipe female thread, Parallel pipe female thread and Push-in fitting are available.

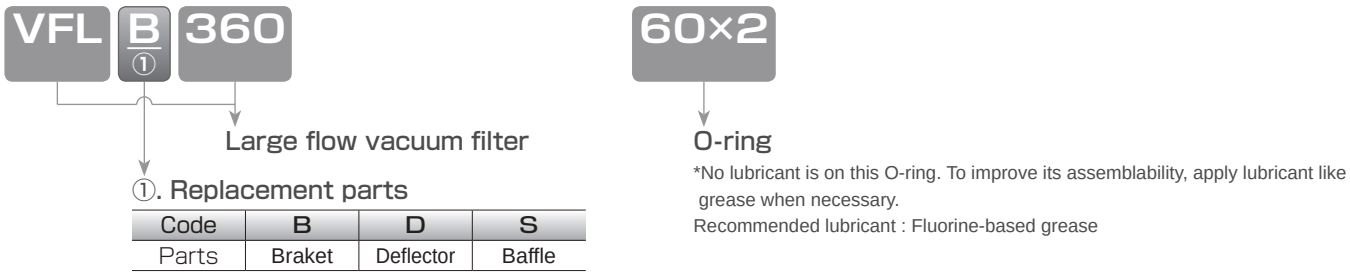
Model designation (Example)



Model designation of filter element (Example)



Model designation of replacement parts (Example)

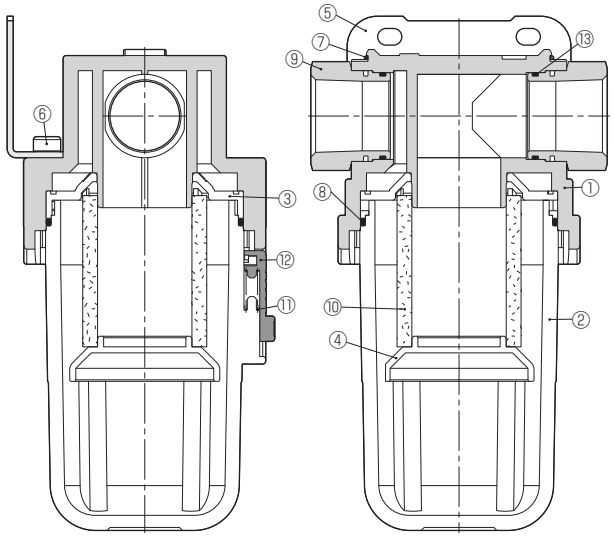


Specifications

Fluid medium	Air
Operating pressure range	-29.8 ~ 0 inHg (-101~0kPa)
Filtration accuracy	1, 5, 10, 200μm(Trapping efficiency：95%)
Operating temperature range	32~140˚F (0~60˚C) (No freezing)
Filter area	10 in^2 (64.4cm^2)
Processing flow rate (*1)	12.7scfm (360ℓ/min[ANR])
Bowl capacity	5.5 in^3 (90$cm^{3)}$
Blow-off pressure (*2)	14psi (0.1MPa) or less

*1.Processing flow rate with the conditions under filtration accuracy : 5μm and pressure loss : 3kPa of a representative filter.
*2. Allowable internal pressure when a momentary positive pressure is applied for blow-off purpose.

Construction



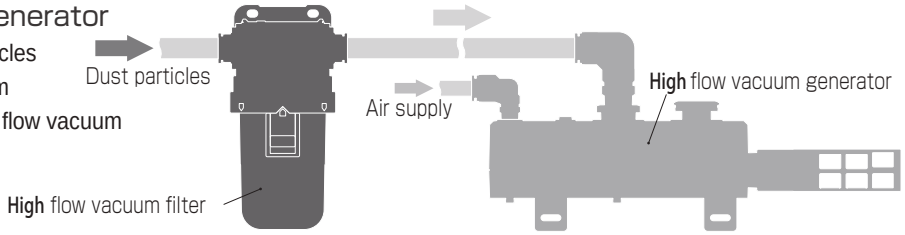
No.	Parts	Material
①	Resin body	PBT
②	Bowl	PC
③	Deflector	POM
④	Baffle	POM
⑤	Bracket	Stainless steel
⑥	Bracket fixing screw	Steel（nickel plated）
⑦	Fixing pin	Stainless steel
⑧	O-ring	Special NBR
⑨	Fitting cartridge	Aluminum
⑩	Filter element	PE + PP(*)
⑪	Spring	Stainless steel
⑫	Lock clip	POM
⑬	O-ring	NBR

*PP for filtration accuracy : 200㎛ .

Piping example

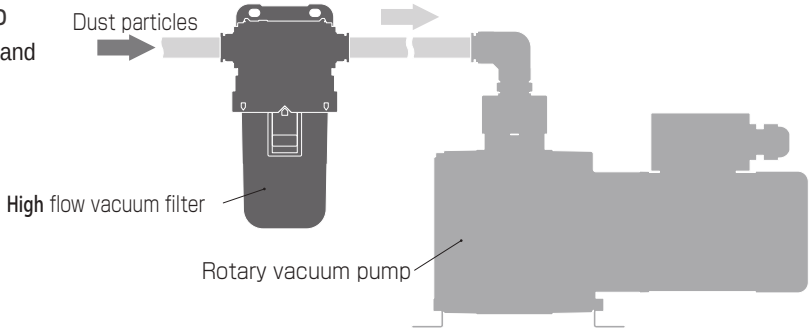
①Connecting with a vacuum generator

High flow vacuum filter removes dust particles and prevent the failure of high flow vacuum generator, by being installed close to high flow vacuum generator.



②Connecting with a vacuum pump

High flow vacuum filter removes dust particles and prevent the failure of vacuum pump, by being installed close to vacuum pump.



Safety instruction manual

⚠Warnings

1. Avoid tensile strength or moment load on the product body and the fitting cartridge. It may damage the product.
2. Carry out the maintenance of filter element periodically. There is a possibility of dropping the performance or causing troubles by clogging of the filter element. Before replacing the filter element, make sure to read “How to remove the dust in bowl and replace a filter element” carefully, release pressure and remain atmospheric pressure condition in the filter.
3. This product is not designed to be explosion-proof. Do not apply any positive pressure except momentary pressure for blow-off. It may cause damage to the product and cause injury.
4. Bowl material is polycarbonate. Avoid chemicals or atmosphere with chemicals listed in the table-1 below.The bowl may get broken and injure human body.

Table-1. Chemicals to be avoided

Chemical type	Classification	Chemicals (Major chemicals only)	Applications
Inorganic compound	Acid	Hydrochloric acid, Sulfuric acid, Nitric acid, Hydrofluoric acid, Chromic acid, etc.	Metal pickling solution, Acid cleaning liquid, Coating treatment liquid, etc
	Alkali	Alkaline substances like Sodium hydroxide, Caustic potash, Slaked lime, Aqueous ammonia, Sodium carbonate, etc.	Alkaline cleaning liquid for metal
Organic compound	Inorganic salt	Sodium sulphide, Potassium nitrate, Potassium bichromate, Sodium nitrate, etc.	
	Aromatic hydrocarbon	Benzene, Toluene, Xylene, Ethylbenzene, Styrene, etc.	Contained in paint thinner (Benzene, Toluene, Xylene)
	Aliphatic hydrocarbon chloride	Methyl chloride, Ethylene chloride, Methylene chloride, Acetylene chloride, Chloroform, Triclene, Perchloroethylene, Carbon tetrachloride, etc	Organic solvent-based cleaning liquid for metal (Triclene, Perchloroethylene, Carbon tetrachloride, etc)
	Aromatic hydrocarbon chloride	Chlorobenzene, Dichlorobenzene, Benzenehexachloride (B.H.C), etc.	Agrochemical
	Petroleum components	Solvent, Naphtha, Gasoline	
	Alcohol	Methyl alcohol, Ethyl alcohol, Cyclohexanol, Benzyl alcohol	Used as anti-freezing agent.
	Phenol	Carbolic acid, Cresol, Naphthol, etc.	Disinfectants
	Ether	Methyl ether, Methyl ethyl ether, Ethyl ether, etc.	Brake oil additive
	Ketone	Acetone, Methyl ethyl ketone, Cyclohexanone, Acetophenone, etc.	
	Carboxylic acid	Formic acid, Acetic acid, Butyric acid, Acrylic acid, Oxalic acid, Phthalic acid, etc.	yeing agent, Oxalic acid for treatment agent of Aluminum, Phthalic acid for paint plasticizer.
	Organophosphate	Dimethyl phthalate (DMP), Diethyl phthalate (DEP), Dibutyl phthalate (DBP), Dioctyl phthalate (DOP)	Grease, Synthetic hydraulic oil, Rust preventive oil additive, Used as synthetic resin plasticizer.
	Oxoacid	Glycolic acid, Lactic acid, Malic acid, Citric acid, Tartaric acid	
	Nitro compound	Nitromethane, Nitroethane, Nitroethylene, Nitrobenzene, etc.	
	Amine	Methylamine, Dimethylamine, Ethyl amine, Aniline, Acetaniline, etc.	Brake oil additive
	Nitrile	Acetonitrile, Acrylic nitrile, Benzonitrile, Aceto isonitrile, etc.	Material of Nitrile rubber

*There is some possibilities that other chemicals not listed in the table above may not be used. Please make sure to carry out sufficient evaluation before use.

⚠Cautions

1. Rust and foreign substances in a piping may cause damage, malfunction or performance drop of the product. Flushing before use and periodic flushing of a piping are recommended. Flushing on a fitting type filter shall be done with a stem or short cut tube inserted into a fitting. Sealing parts in the fitting may fly out of it.
2. Check the arrow ▷ (IN→OUT) marking on a filter before installing. Installation with a wrong direction does not fulfill the filter performance.
3. Lock the bowl properly and make sure that there is no vacuum leakage after removing dust or replacing a filter element.
4. Keep dust particles or drain water in a bowl lower than “MAX. DRAIN LEVEL” marking on it. Airflow may fling up the dust in the bowl, causing a significant reduction of the filter element lifetime.
5. Hold a hex. part on each port by a spanner wrench, when connecting a fitting with male thread, to prevent co-rotation of each port. Refer to the tightening torque in the Table-2.

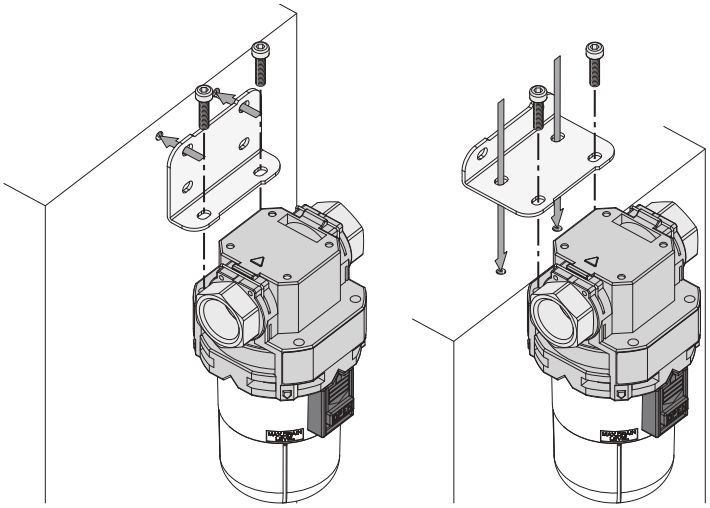
Table-2. Tightening torque (Reference)

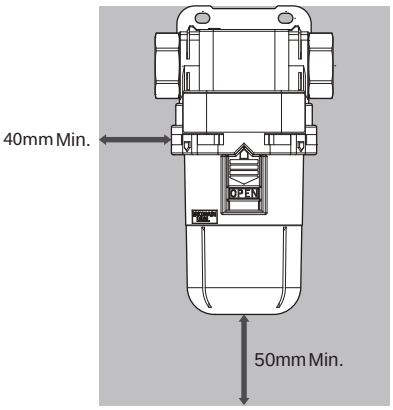
Thread type	Thread size	Tightening torque
Taper pipe thread	R3/8	12.5~14.5N·m
	R1/2	20~22N·m
	R3/4	30~35N·m
Parallel pipe thread	G3/8	Follow the tightening torque of male thread.
	G1/2	
	G3/4	

6. Install or fix the product with its bowl facing down and vertically.
7. Re-torque the bracket fixing screws periodically.

How to install

Install the bracket and filter body as shown below (Fixing torque of the bracket and filter body : 3.5N・m). Use M5 screws to install the bracket through mounting holes on it. See appearance drawings below for the mounting hole pitch.



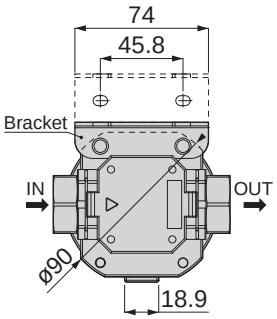


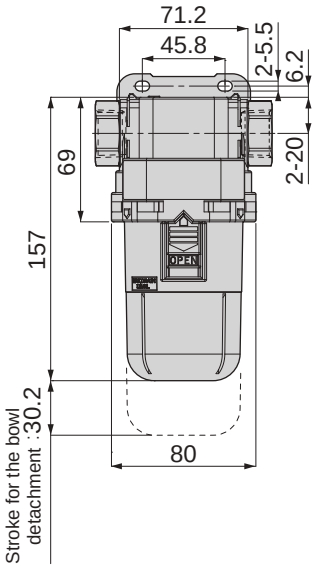
Secure a space for maintenance as above when installing or fixing the product.

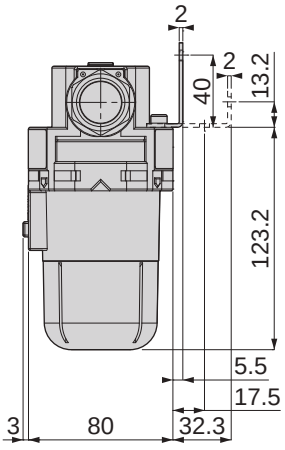
Appearance drawing

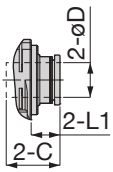
Connection type : Push-in fitting

Connection type : Female thread

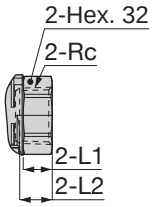




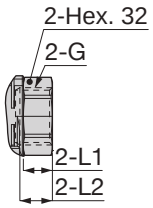




Connection type : Push-in fitting



Connection type :
Taper pipe female thread



Connection type :
Parallel pipe female thread

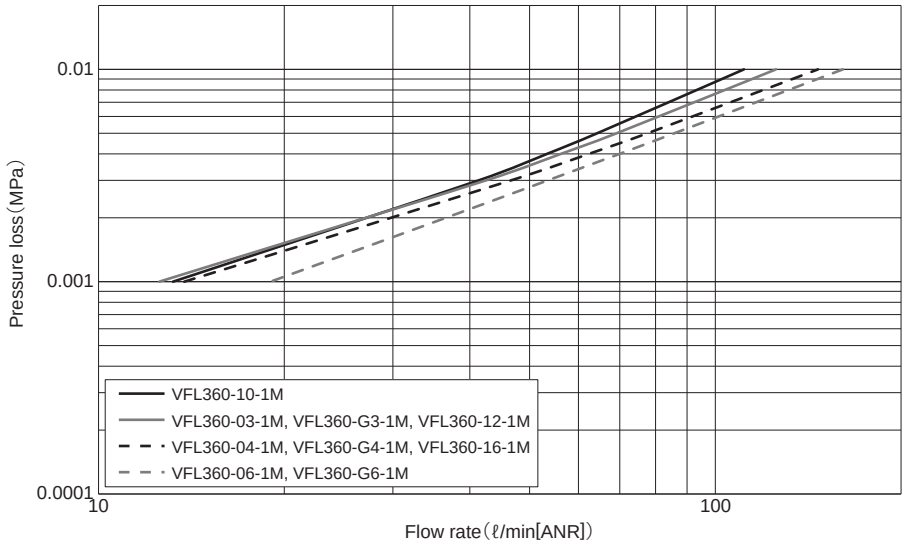
Unit : mm

Connection type		Model code	Tubing O.D. øD	Tube end C	Female thread size Rc/G	L1	Female thread depth L2	Weight (g)							
								3 : No code				3 : -NB			
								2 : -1M	2 : -5M	2 : -10M	2 : -200M	2 : -1M	2 : -5M	2 : -10M	2 : -200M
	Push-in fitting	VFL360-10-2-3	10	20.7	—	10.9	—	512	508	508	507	438	434	435	433
		VFL360-12-2-3	12	23.3	—	12.2	—	514	509	510	508	440	435	436	434
		VFL360-16-2-3	16	24.8	—	13.3	—	514	510	510	509	440	436	437	435
	Taper pipe female thread	VFL360-03-2-3	—	—	Rc3/8	13.4	10.5	528	523	524	522	454	450	450	449
		VFL360-04-2-3	—	—	Rc1/2		13	520	516	517	515	446	442	443	441
		VFL360-06-2-3	—	—	Rc3/4		15	502	498	498	497	428	424	425	423
	Parallel pipe female thread	VFL360-G3-2-3	—	—	G3/8	13.4	11	529	524	525	523	455	451	451	450
		VFL360-G4-2-3	—	—	G1/2		14	519	515	516	514	446	441	442	440
		VFL360-G6-2-3	—	—	G3/4		15	500	496	496	495	426	422	422	421

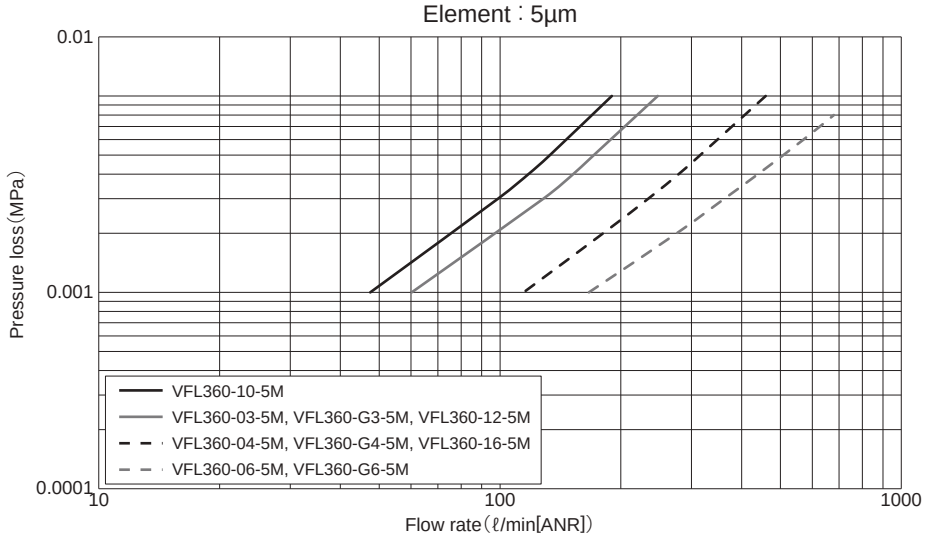
* 2 : Replaced with filtration accuracy code. 3 : Replaced with "NB" for without bracket.

Pressure loss chart

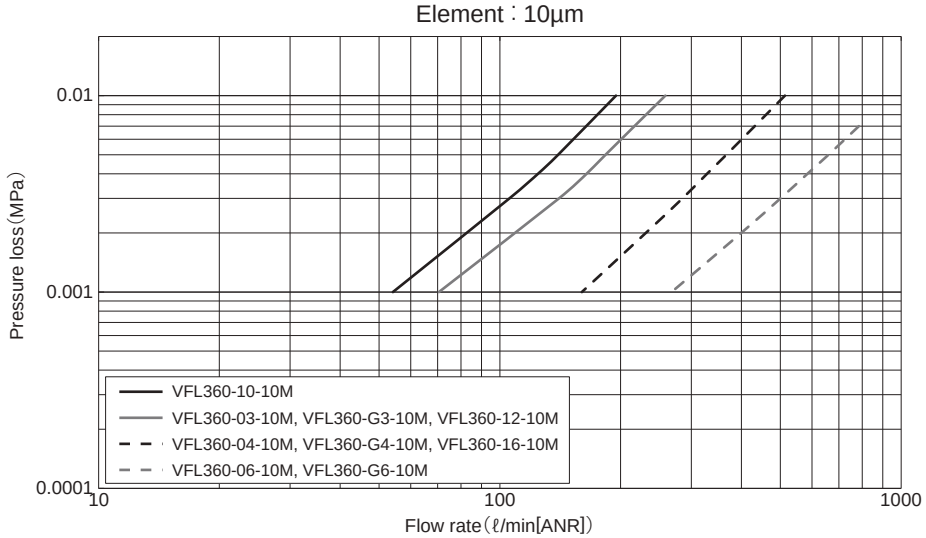
Element：1μm

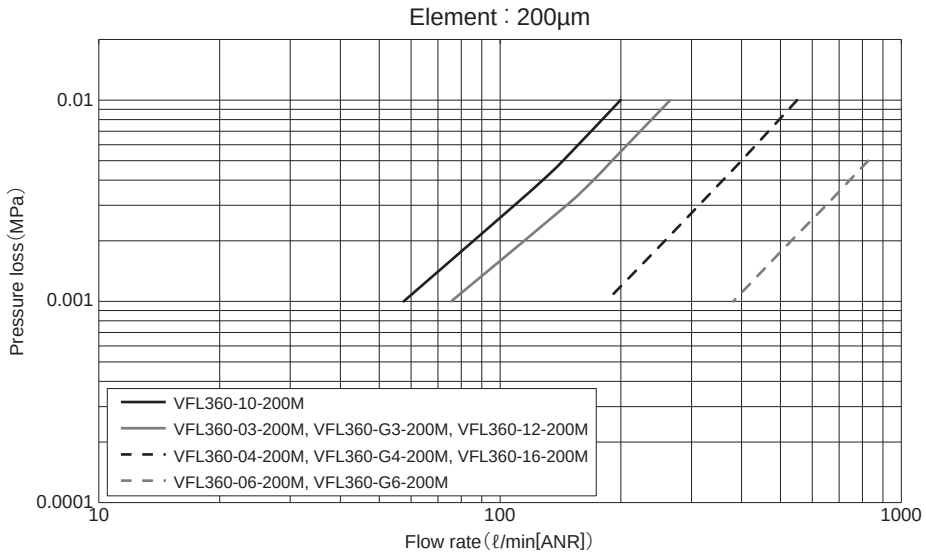


Element：5μm



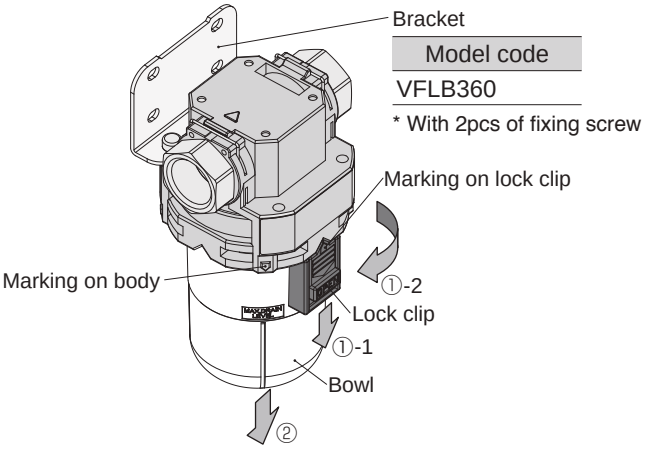
Element：10μm





How to remove the dust in bowl and replace a filter element

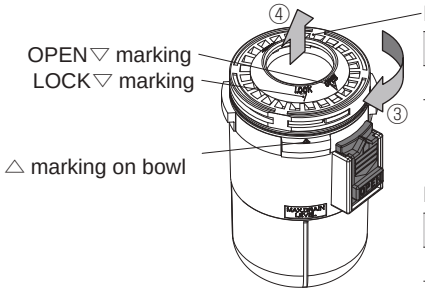
①Turn the bowl to the arrowed direction (①-2) while pushing down the lock clip(①-1). Align the marking on lock clip to the one on body.
②Pull down the bowl to detach it from the body.



Model code
VFLB360

* With 2pcs of fixing screw

③Turn the deflector to the arrowed direction to align its OPEN▽ marking to △marking on the bowl.
④Detach the deflector from the bowl and take out the filter element from the bowl.
⑤Take out the baffle from the filter element. (Only for replacement of filter element)
⑥Remove dust from the bowl and replace the filter element.
⑦Attach the baffle to the new filter element.
⑧Place the filter element vertically in the bowl and confirm that the O-ring is on the right position. Attach the deflector to the bowl with its OPEN▽marking aligned with △marking on the bowl. Then turn the deflector to align its LOCK▽marking to △ marking on the bowl.
⑨Insert the bowl to the body with the marking on the lock clip aligned with the marking on the body. Turn the bowl until the lock clip goes up and lock with a click.

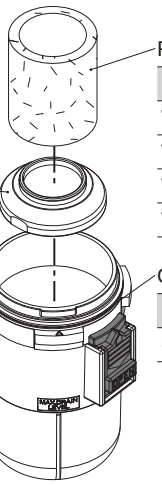


Deflector

Model code
VFLD360

Baffle

Model code
VFLS360

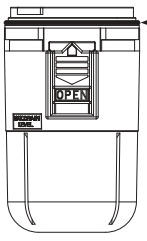


Filter element

Model code	Filtration accuracy (μm)
VFE360-1M	1
VFE360-5M	5
VFE360-10M	10
VFE360-200M	200

O-ring

Model code
60×2



←Proper position of O-ring

PISCO®

Wide Variety Vacuum Filter

- Dust and drains are removed via the filters' cyclone effect and filter element. (Large Capacity Type: VFB and VFR)
- Large capacity plastic bowl reduces maintenance/emptying frequency. (Large Capacity Bowl Type: VFR)
- Easy detachment of dome cartridge eliminates scattered dust and debris messes. (Large Capacity In-Line DomeType: VFB)
- Small vacuum filter is suitable for high-cycle vacuum operation. (Small In-Line Type: VFU0&1)
- There are 2 element length sizes available, depending on volume or exchange period of the element. (Small In-Line Type: VFU1)
- PP resin material allows for a low price Plug-In vacuum filter. (Plug-in Type: VFJ)
- Selections (VFU1,2,3) added for "Copper alloy free" and "low ozone measure".