



INSTALLATION AND MAINTENANCE INSTRUCTIONS

F101 SERIES FILTER HOUSINGS

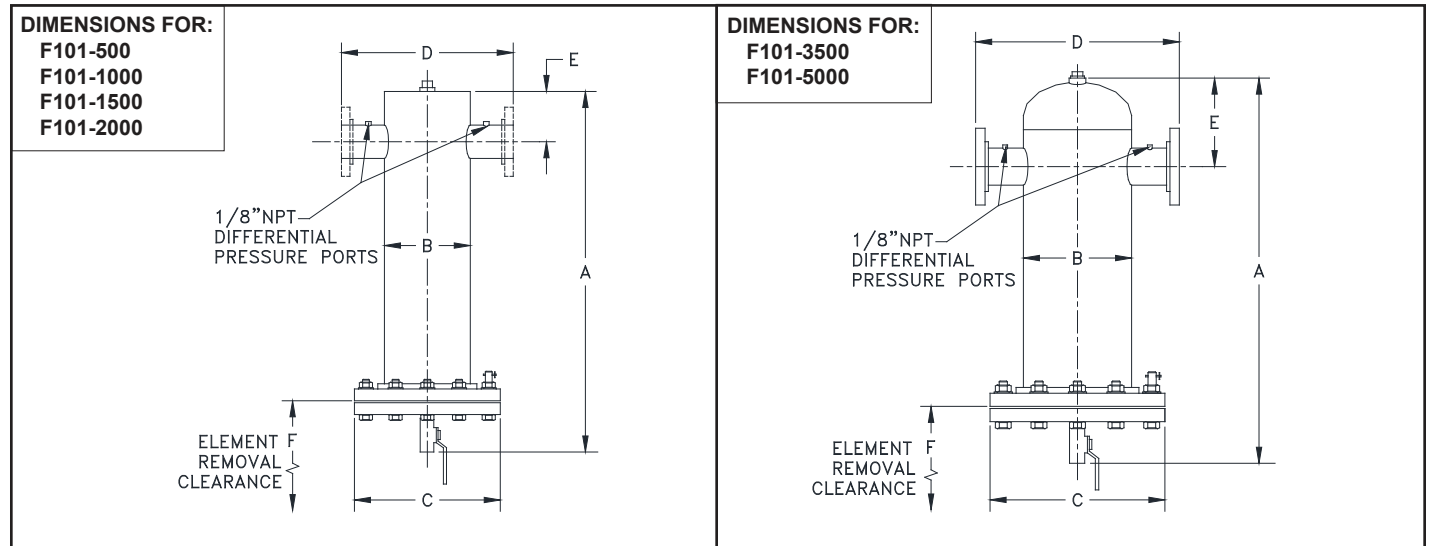
TABLE 1 OPERATING CONDITIONS

MAXIMUM WORKING PRESSURE	
All Standard Models	250 PSIG
High Temperature Models (HT)	165 PSIG
Special Models	Consult Data Plate
AMBIENT TEMPERATURE	
Minimum	35°F
Maximum	150°F
MAXIMUM INLET TEMPERATURE	
AA, A, RAA, RA, RB, and RC Series	225°F
B Series	175°F
C Series	125°F
RD Series	80°F
HT Series	450°F

TABLE 2 AVAILABLE ELEMENT GRADES

	ELEMENT GRADE	PURPOSE	FLOW DIRECTION THRU ELEMENT	COLOR CODE
Oil Removal (Liquid)	AA	Extra Coarse Coalescing	In/Out	Black
	A	Coarse Coalescing	In/Out	Green
	B	General Purpose Coalescing	In/Out	Red
	C	High Efficiency Coalescing	In/Out	Blue
Solid Particle Removal	RAA	Extra Coarse Particulate	Out/In	Black
	RA	Coarse Particulate	Out/In	Green
	RB	General Purpose Particulate	Out/In	Red
	RC	High Efficiency Particulate	Out/In	Blue
	HT	High Temperature Particulate	Out/In	Zinc Plate
Oil Vapor Removal	RD	Vapor Adsorbing	Out/In	Black

TABLE 3 ENGINEERING DATA



FILTER MODEL NO.	FLOW ** (SCFM)	IN/OUT CONN. (INCHES)	DRAIN CONN. (NPT)	A (INCHES)	B (INCHES)	C (INCHES)	D (INCHES)	E (INCHES)	F (INCHES)	BOTTOM BLIND FLANGE WEIGHT (LBS.)	HOUSING WEIGHT *** (LBS.)
F101-500-(*)	500	2 NPT	1/2"	39	6-5/8	11	11-7/8	4-5/8	24	28	110
F101-1000-(*)	1000	3 NPT	1/2"	41-1/8	8-5/8	13-1/2	15-1/2	5-1/4	24	47	150
F101-1500-(*)	1500	3 NPT	1/2"	44-1/2	10-3/4	16	17-3/4	6-1/4	24	69	250
F101-2000-(*)	2000	4 FLG	1/2"	50-7/8	10-3/4	16	18	6-3/8	30	69	265
F101-3500-(*)	3500	6 FLG	1/2"	56-5/8	12-3/4	19	24-3/4	14-1/2	30	102	390
F101-5000-(*)	5000	6 FLG	1"	61-5/8	16	23-1/2	28	16	30	177	600

*Insert appropriate filtration grades here; for example F101-1500-B.

**Flow is based on SCFM @ 100 PSIG @ 100°F.

***Housing weight does not include elements. For element weights see Table 5.

TABLE 4 FLOW CAPACITIES AT VARIOUS OPERATING PRESSURES (SCFM)

MODEL NO.	25 PSIG	50 PSIG	75 PSIG	100 PSIG	125 PSIG	150 PSIG	175 PSIG	200 PSIG	225 PSIG	250 PSIG
F101-500-(*)	175	280	390	500	610	720	825	935	1045	1155
F101-1000-(*)	345	565	780	1000	1220	1435	1655	1870	2090	2310
F101-1500-(*)	520	845	1175	1500	1825	2155	2480	2810	3135	3460
F101-2000-(*)	690	1130	1565	2000	2435	2870	3310	3745	4180	4615
F101-3500-(*)	1210	1975	2735	3500	4265	5025	5790	6550	7315	8080
F101-5000-(*)	1730	2820	3910	5000	6090	7180	8270	9360	10,450	11,540

*Insert appropriate filtration grades here; for example F101-1500-B.

WARNINGS

DO NOT REMOVE, REPAIR OR REPLACE ANY ITEM ON VESSEL WHILE IT IS UNDER PRESSURE.

DO NOT OPERATE IF THERE IS A LEAK IN VESSEL. TAKE VESSEL OUT OF SERVICE IMMEDIATELY AND NOTIFY YOUR CERTIFYING AUTHORITY.

DO NOT OPERATE ABOVE MAXIMUM WORKING PRESSURE (MWP) AT MAXIMUM OPERATING TEMPERATURE (°F) SHOWN ON ASME NAMEPLATE.

THIS ASME CODE VESSEL MUST BE PROTECTED BY A PRESSURE RELIEF VALVE. Refer to OSHA 1910.169 Par b, Sub Par (3) and ASME Boiler and Pressure Vessel Code, Section VIII, Div 1 UG-125, Par (1). Also check government regulations, i.e., state and local codes.

DO NOT WELD, GRIND OR SAND VESSEL. IT WILL NOT BE SAFE TO OPERATE.

DO NOT OPERATE VESSEL IF THERE HAS BEEN A FIRE. TAKE VESSEL OUT OF SERVICE IMMEDIATELY AND NOTIFY YOUR CERTIFYING AUTHORITY.

ANY DAMAGE TO VESSEL CAN MAKE IT UNSAFE. INSPECT OUTSIDE AND INSIDE OF VESSEL REGULARLY FOR CORROSION OR ANY DAMAGE (i.e., DENTS, GOUGES OR BULGES). IF DAMAGED OR CORRODED TAKE OUT OF SERVICE IMMEDIATELY AND NOTIFY YOUR CERTIFYING AUTHORITY.

USE THE PROPER RULES FOR THE GAS BEING PROCESSED.

INSTALLATION (PART 1 FILTER HOUSING)

1. Locate compressed air and gas filters at the point of lowest operating temperatures to ensure that water and oil vapor will not condense downstream of the filter.
2. Filters should be installed close to the point of use to minimize the risk of pipe scale, dirt, etc. recontaminating the compressed air or gas. This is particularly important when installing new filters on an existing installation which has not had proper filtration.
3. Protect filters from reverse flow conditions. Do not install filters downstream of quick opening valves.
4. Before installing filter check ambient and operating temperature and pressure conditions to verify that they are within the specified ranges. **(See Table 1)**. Also verify that system flow rate corresponds to the rated capacity of the filter. **(See Table 4)**. Operating filter at flows above rated capacity will result in increased pressure drop. Do not use reducers to match filter inlet size. The resulting restriction will cause high pressure drop.
5. Install filter in vertical position. Provide required minimum clearance below filter to allow for replacement of elements. **(See Table 3)**.
6. Install inlet and outlet shutoff valves to facilitate replacement of elements. By-pass piping is recommended.
7. Check labels on filter housing, and connect piping so that air flows through inlet and outlet ports as indicated. Make sure air flow through filter element is correct. Improper flow direction can minimize filter performance. **(See Table 2)**.
8. Install differential pressure gauge (optional) on filter housing using instructions provided with gauge kit. Differential pressure is used to monitor element life (except grade RD) and indicates when an element change is required. **(See Table 6)**.
9. Insert close nipple in threaded hole on bottom blind flange and tighten securely. Screw manual drain valve on close nipple and tighten. **(See Figure 2)**. When automatic draining is required, a motorized ball valve or solenoid type is recommended.

FIGURE 1 LONG FLANGE BOLT (Element access)

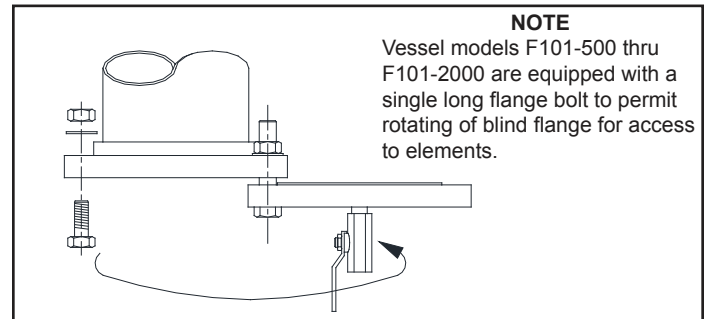
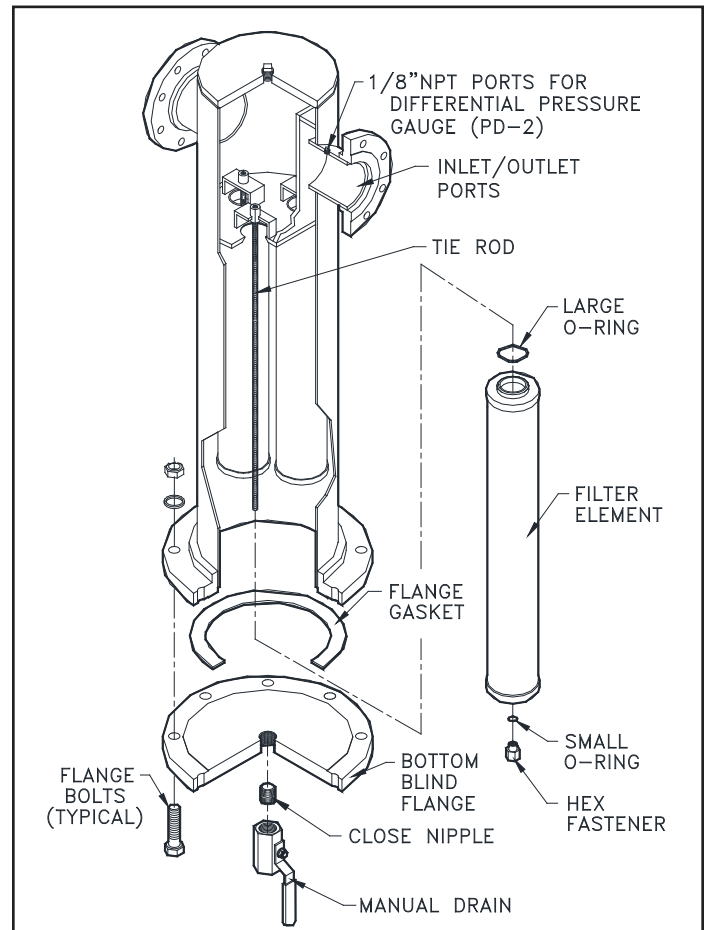


FIGURE 2 TYPICAL ASSEMBLY



INSTALLATION (PART 2 ELEMENT)

WARNING

DO NOT LOOSEN FLANGE BOLTS BEFORE THE VESSEL HAS BEEN COMPLETELY DEPRESSURIZED.

1. Provide support under blind flange to prevent it from falling when bolts are removed. Blind flanges are heavy and could cause injury if allowed to fall. **(See Table 3 for blind flange weights).**
2. Remove bolts from flange and lower blind flange for access to elements. Filter models F101-500 through 2000 are equipped with a single long flange bolt to permit rotation of blind flange for access to elements. **(See Figure 1).**
3. **Element(s) are shipped separately and must be installed before filter is ready for service. Remove hex fasteners(s) from tie rod(s) in housing.**
4. Remove element(s) from packaging and remove o-ring(s) from bottom end cap(s) of element(s). Install o-ring(s) in o-ring groove(s) on hex fastener(s). **(See Figure 2).**
5. Install element(s) in housing so that the tie rod protrudes through small hole in bottom end cap. Thread hex fastener(s) onto the tie rod(s) and tighten so that
 6. the element(s) are held firmly in place. Do not over tighten. **(See Figure 2).**
 7. Before closing housing, inspect baffle to make certain that new elements have been installed in each position. **(See Table 5 for element replacement data).**
 8. With gasket in place, carefully raise or swing blind flange into place and align bolt holes. Insert all bolts and completely tighten all nuts evenly.
 9. Close drain valve; then slowly open inlet and outlet valves. Close by-pass valves if provided.
 10. Filter is now in service.

MAINTENANCE

- Drain oil removal filters every shift.
- Check differential pressures regularly on coalescing and particulate filters (AA, A, B, C, RA, RB, RC, and HT grades). When differential pressure reaches 10 psid, install clean elements. On adsorbing filters (grade RD), install clean elements when hydrocarbon vapors are first detected downstream or every six months, whichever comes first.
- For correct replacement element model numbers, see label on filter housing and/or the bottom endcap of the element. **(Refer to Table 5).**

REPLACEMENT PARTS

TABLE 5 REPLACEMENT PARTS

FILTER MODEL NO.	REPLACEMENT ELEMENT MODEL NUMBER	ELEMENT WEIGHT LBS	NUMBER OF ELEMENTS IN HOUSING	HOUSING GASKET	HEX FASTENER	MANUAL DRAIN VALVE
F101-500-(*)	E101/102-500-(*)	2.8	1	18-0207	26-3258	14-0450
F101-1000-(*)	E101/102-500-(*)	2.8	2	18-0206	26-3258	14-0450
F101-1500-(*)	E101/102-500-(*)	2.8	3	18-0210	26-3258	14-0450
F101-2000-(*)	E101/102-625-(*)	3.2	3	18-0210	26-3258	14-0450
F101-3500-(*)	E101/102-625-(*)	3.2	5	18-0209	26-3258	14-0450
F101-5000-(*)	E101/102-625-(*)	3.2	8	18-0211	26-3258	14-0451

*Insert appropriate filtration grades here; for example F101-3500-C and replacement element E101/102-625-C (five required).

ACCESSORIES

TABLE 6 DIFFERENTIAL PRESSURE GAUGE KITS:

PART NUMBER	MODEL NUMBER	DESCRIPTION
29-0370	PD-2 GAUGE	Differential pressure gauge. (Only)
29-0371	PD-2/SW GAUGE	Differential pressure gauge with N.O. reed switch. (Only)
84-0129	PD-2 KIT	Differential pressure gauge with nylon tubing and brass tube fittings.
84-0131	PD-2/SW KIT	Differential pressure gauge with N.O. reed switch, nylon tubing and brass tube fittings.
84-0130	PD-2/HT KIT	Differential pressure gauge with stainless steel tubing and steel tube fittings (for HT units).
84-0211	PD-2/HT SW KIT	Differential pressure gauge with N.O. reed switch, stainless steel tubing and steel tube fittings (for HT units).

TROUBLESHOOTING

CONDITION	POTENTIAL CAUSE	RECOMMENDATION
Initial pressure drop too high	Filter undersized for flow rate. Filter grade too fine. Filter inlet smaller than pipe size.	Install larger filter. Install coarser grade element. Install larger filter.
Oil carryover	Oil present in system before installing filter. Excessive inlet oil > 50ppm. Filter installed backwards. Filter bowl not being drained. High differential pressure. Defective seal. Incorrect replacement element. By-pass valve leaking or open Unfiltered air entering from source down stream of filter. High operating temperatures. Cooling by refrigerated dryer.	Clean piping. Check compressor and/or air/oil separator if compressor is rotary vane or screw. Lower lube rate if reciprocating compressor. Install coarse coalescer for prefiltration. Check installation instructions. Check and repair auto drain. Drain frequently if manual valve. Check element if excessive (7-10 psid or above). Check o-ring in element. Check and use finer grade. Close valve. Check seals. Relocate filter or install additional filter. Install, clean, replace or relocate aftercooler. Install grade B or C filter downstream of dryer.
Short element life	Excessive particulate contamination. High compression temperatures causing varnish/carbon formation. Oil water emulsion overloading element. High viscosity oil or freeze-up due to low ambient temperature.	Install coarse coalescing filter immediately upstream of existing filter. Use compressor lubricant with good temperature stability. Lower lube rates where possible. Use coarser grade filter element. Inspect separator. Remove water with better separation. Raise ambient temperatures. Heat trace inlet piping and housing.