



INSTALLATION AND MAINTENANCE INSTRUCTIONS

F102 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 3 ENGINEERING DATA

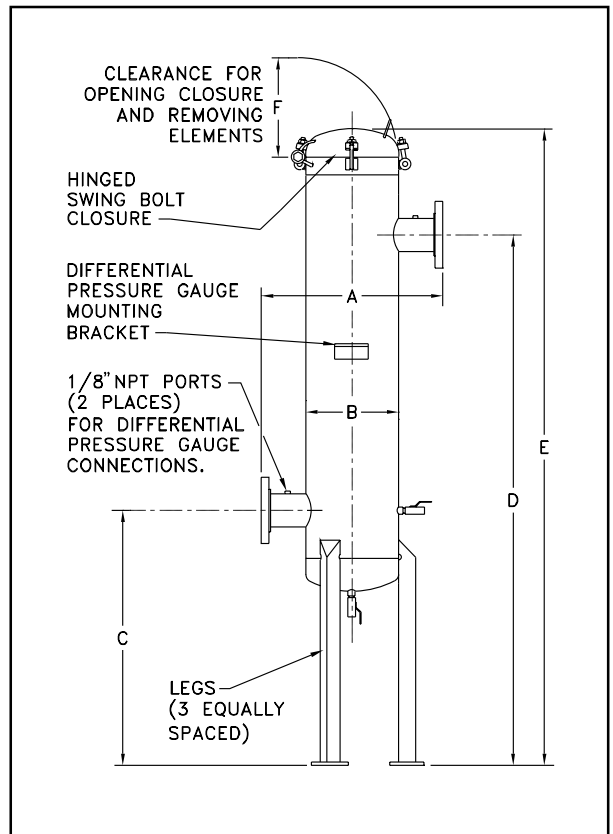


TABLE 2 AVAILABLE ELEMENT GRADES

	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

FILTER MODEL NO.	FLOW** (SCFM)	IN/OUT CONN. (INCHES)	DRAIN CONN. (NPT)	A (INCHES)	B (INCHES)	C (INCHES)	D (INCHES)	E (INCHES)	F (INCHES)	HOUSING WEIGHT*** (LBS.)
F102-1500-(*)	1500	3 FLG	1"	18-3/4	10-3/4	32	70-3/4	82	24	300
F102-2000-(*)	2000	4 FLG	1"	18-3/4	10-3/4	33-1/2	78-1/2	89-1/2	30	325
F102-3500-(*)	3500	6 FLG	1"	24-3/4	12-3/4	32	77-1/2	92	30	400
F102-5000-(*)	5000	6 FLG	1"	28	16	33-1/2	78-1/2	93	30	550
F102-7500-(*)	7500	8 FLG	1"	32	20	34-1/2	80-1/2	98-1/4	30	775
F102-10,000-(*)	10,000	10 FLG	1"	36	24	35-1/2	83-3/4	104-1/4	30	1025
F102-12,500-(*)	12,500	10 FLG	1"	36	24	35-1/2	83-3/4	104-1/4	30	1050
F102-15,000-(*)	15,000	12 FLG	1"	42	30	44-1/2	94-3/4	117-3/4	30	1675
F102-20,000-(*)	20,000	16 FLG	1"	52	36	46	99-1/4	126	30	2300

*Insert appropriate filtration grades here; for example F102-1500-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
F102-1500-(*)	520	845	1175	1500	1830	2155	2480	2810	3135	3460
F102-2000-(*)	690	1130	1565	2000	2435	2870	3310	3745	4180	4615
F102-3500-(*)	1210	1975	2735	3500	4265	5025	5790	6550	7315	8080
F102-5000-(*)	1730	2820	3910	5000	6090	7180	8270	9360	10,450	11,540
F102-7500-(*)	2595	4230	5865	7500	9135	10,770	12,405	14,040	15,675	17,310
F102-10,000-(*)	3460	5640	7820	10,000	12,180	14,360	16,540	18,720	20,900	23,080
F102-12,500-(*)	4325	7050	9775	12,500	15,225	17,950	20,675	23,400	26,125	28,850
F102-15,000-(*)	5190	8460	11,730	15,000	18,270	21,540	24,810	28,080	31,350	34,620
F102-20,000-(*)	6920	11,280	15,640	20,000	24,360	28,720	33,080	37,440	41,800	46,160

*Insert appropriate filtration grades here; for example F102-1500-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, 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.

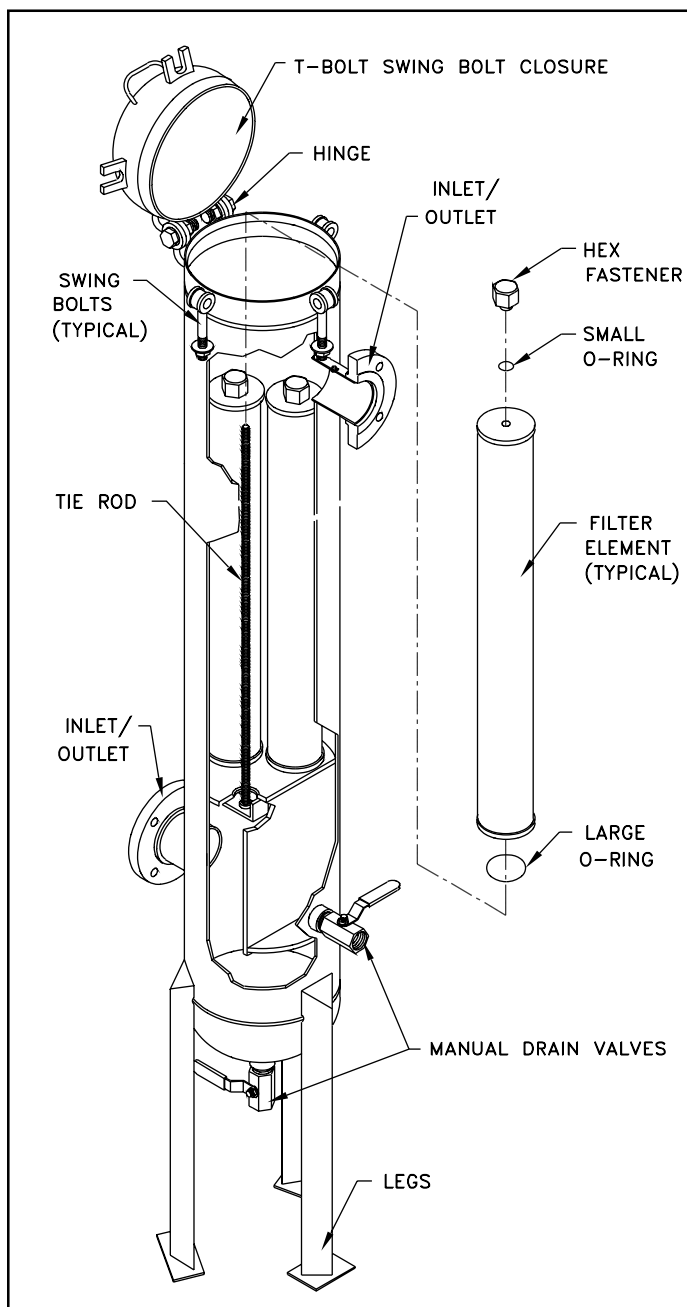
ANY DAMAGE TO VESSEL CAN MAKE IT UNSAFE. INSPECT OUTSIDE AND INSIDE OF VESSEL REGULARLY FOR CORROSION OR ANY DAMAGE (i.e., DENTS, GOUGES OR BULGES). IF DAMAGED OR CORRODED TAKE OUT OF SERVICE IMMEDIATELY AND NOTIFY YOUR CERTIFYING AUTHORITY.

USE THE PROPER RULES FOR THE GAS BEING PROCESSED.

INSTALLATION (PART 1 HOUSING)

1. Locate compressed air and gas filters at the points of lowest operating temperatures to ensure that water and oil 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 in 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 above 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.
Check labels on filter housing, and connect piping so that air flows through inlet and outlet ports as indicated. Make sure that air flow through filter element is correct. Improper flow direction can minimize filter performance. (See Table 2).
7. 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.
8. Insert 1" NPT close nipples into 1" NPT couplings in vessel and tighten securely. Screw 1" NPT manual valves onto 1" close nipples and tighten securely. (See Figure 1).
Loosen swing bolt nuts until they will clear the tabs on the

FIGURE 1 TYPICAL ASSEMBLY



INSTALLATION (PART 2 ELEMENT)

WARNING

DO NOT LOOSEN SWING BOLT NUTS BEFORE THE FILTER IS COMPLETELY DEPRESSURIZED.

- enclosure. It is not necessary to remove the nuts from the bolts. (See Figure 1).
- Element(s) are shipped separately and must be installed before filter is ready for service. Remove hex fastener(s) from tie rod(s) in housing.

- Remove element(s) from packaging and remove o-ring(s) from end cap(s) of element(s). Install o-ring(s) in o-ring groove(s) on hex fastener(s).
- Install element(s) in housing so that tie rod protrudes through small hole in endcap.
- Thread hex fastener(s) onto the tie rod(s) and tighten so that element(s) are held firmly in place. Do not over tighten. (See Figure 1).

Repeat steps 11 thru 14 for each new element required.

6. (See Table 5).

Before closing housing, inspect baffle to make certain that 7. new elements have been installed in each position.

With enclosure o-rings in place, carefully lower enclosure 8. and raise all swing bolts over tabs. Tighten all nuts evenly.

Close drain valve; then slowly open inlet and outlet valves. 9. Close by-pass valves if provided.

Filter is now in service. 10.

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 6).

REPLACEMENT PARTS

TABLE 5 REPLACEMENT PARTS

FILTER MODEL NO.	REPLACEMENT ELEMENT MODEL NUMBER	ELEMENT WEIGHT LBS.	NUMBER OF ELEMENTS IN HOUSING	SWING BOLT CLOSURE O-RING	MANUAL DRAIN VALVE
F102-1500-(*)	E101/102-500-(*)	2.8	3	26-5464	14-0451
F102-2000-(*)	E101/102-625-(*)	3.2	3	26-5465	14-0451
F102-3500-(*)	E101/102-625-(*)	3.2	5	26-5465	14-0451
F102-5000-(*)	E101/102-625-(*)	3.2	8	26-5528	14-0451
F102-7500-(*)	E101/102-625-(*)	3.2	12	26-5529	14-0451
F102-10,000-(*)	E101/102-625-(*)	3.2	16	26-5530	14-0451
F102-12,500-(*)	E101/102-625-(*)	3.2	20	CONSULT FACTORY	14-0451
F102-15,000-(*)	E101/102-625-(*)	3.2	24	CONSULT FACTORY	14-0451
F102-20,000-(*)	E101/102-625-(*)	3.2	32	CONSULT FACTORY	14-0451

*Insert appropriate filtration grades here; for example F102-3500-C and replacement element E101/102-625-C (five required).

ACCESSORIES

TABLE 6 DIFFERENTIAL PRESSURE GAUGE KITS:

PART NUMBER	MODEL NUMBER	DESCRIPTION
29-0255	PD-2 Gauge	Differential pressure gauge. (Only)
29-0257	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.

WARRANTY

I. INSTALLATION.

Unless otherwise set forth in a quotation and/or acknowledgment, Seller shall not be responsible for installation. Cost of and all risks of damage to the equipment and/or components thereof caused by installation shall be the sole responsibility of Buyer. If supervision of installation and/or supervision of start up of the equipment is to be provided by Seller, Buyer shall assume all costs incurred by Seller in furnishing supervision. If supervision of installation and/or supervision of start up of the equipment is provided by Seller, Seller shall only be responsible for any loss or damage growing out of a direct negligent act or acts of Seller's supervisor.

SELLER SHALL NOT BE RESPONSIBLE FOR IMPROPER OPERATION OF THE EQUIPMENT DUE TO FAULTY ERECTION OR INSTALLATION.

II. PERFORMANCE.

Seller shall have no responsibility for the performance of its Goods when installed under conditions varying materially from those under which the product is usually tested or operated under existing industry standards.

III. WARRANTY

All filter housings manufactured by Seller are guaranteed to be free of defective materials and workmanship for a period of five (5) years from the date of shipment. This warranty does not include elements, drain line components, gaskets, o-rings or any other types of seals, or any accessories or

All goods manufactured by Seller are guaranteed to be free from defective materials and workmanship for a period of one (1) year from date of shipment. The equipment and accessories sold but not manufactured by Seller are guaranteed only to the extent that either Seller or Buyer is able to recover under the manufacturer's warranty. This warranty shall not be assignable to buyer. expendable items.

The above warranties for all products described do not cover abuse, neglect, lack of normal maintenance, accidents or other exceptional circumstances.

Date of shipment will be defined as the date of departure from the factory or from distributor stock. A copy of the distributor invoice to the customer at time of shipment is required as verification of shipment from distributor stock. Equipment start up will be verified by receipt of the product registration card.

Seller's obligation under this warranty may, at its option, be discharged by furnishing or repairing, without charge, FOB its factory, a similar part to replace any part of its own manufacture which within the above specified periods, proves to have been defective, provided that within a reasonable time for inspection after delivery, Seller is notified of such defects and the equipment, material or part claimed to be defective is delivered pre-paid to Seller at Lake City, Pennsylvania with evidence that it has been properly maintained and used in accordance with instructions. If, in connection with such warranties, repairs are performed by the Buyer with the written authorization of Seller, then the expense in connection with such repairs shall not exceed the cost of material and direct labor. If such repairs are performed by Buyer without the written authorization of Seller, Seller will not assume any of the expenses in connection with such repairs and will immediately void any remaining warranty on the Goods.

THE REPAIR OR REPLACEMENT WARRANTY HEREIN SET FORTH IS THE EXCLUSIVE WARRANTY GIVEN BY SELLER FOR ITS GOODS. THIS WARRANTY IS GIVEN IN LIEU OF ANY OR ALL WARRANTIES, WHETHER WRITTEN OR ORAL, EXPRESSED OR IMPLIED. ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE HEREBY EXPRESSLY EXCLUDED BY SELLER. SELLER NEITHER ASSUMES,

NOR DOES IT AUTHORIZE ANY OTHER PERSON TO ASSUME ON ITS BEHALF ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS GOODS.

IV. LIMITATIONS OF LIABILITIES AND INDEMNITIES.

IN NO CASE, WHETHER AS A RESULT OF BREACH OF CONTRACT, BREACH OF WARRANTY OR TORT (INCLUDING SELLER'S OR BUYER'S NEGLIGENCE OR STRICT LIABILITY) SHALL SELLER BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES INCURRED BY BUYER, INCLUDING, BUT NOT LIMITED TO, LOSS OF SALES PROFIT, REVENUE, OR GOODWILL; LOSS OF USE OF GOODS OR ANY ASSOCIATED EQUIPMENT OR MATERIAL; COST OF CAPITAL; COST OF SUBSTITUTE PRODUCTS, FACILITIES OR SERVICES; DOWN TIME COSTS; ATTORNEY'S FEES; OR LOSSES OR CLAIMS OF CUSTOMERS OF BUYER FOR SUCH DAMAGES BUYER HEREBY AGREES TO INDEMNIFY AND HOLD HARMLESS SELLER FROM ANY AND ALL SUCH DAMAGES. BUYER FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD HARMLESS SELLER FROM ANY AND ALL CLAIMS, LIABILITY, DAMAGES OR EXPENSES (INCLUDING ATTORNEY'S FEES) DUE TO PERSONAL INJURIES OR DEATH, TO BUYER, ITS EMPLOYEES, AND THIRD PARTIES AND FROM PROPERTY DAMAGE RESULTING FROM THE NEGLIGENCE OR STRICT LIABILITY OF BUYER NOT WITHSTANDING THE PROVISIONS OF ANY WORKER COMPENSATION OR SIMILAR STATUTE.

V. SERVICE, OPERATING PROCEDURE, WARNINGS.

Should Buyer request start up supervision by Seller, a maximum number of days required for this supervision may be included and specified in the quotation and/or acknowledgment as a separate price item. The specified days are only approximate, since start up supervision is contingent upon equipment and work supplied by others and beyond the control of Seller, and Seller shall be paid for any days actually worked in addition to those specified on a pro-rata basis.

Start up supervision and warranty supervision and warranty service time will include all elapsed time during the standard working hours, as defined by Seller, or Seller's representative from the time Seller's representative leaves his operating base or another customer's plant.

Where the service to be performed is start up supervision. Seller should be notified approximately 30 days prior to start up Seller's representatives may be required to have standard time verification sheets approved by Buyer's authorized representative, and the name and title of this representative should be furnished to Seller with the notification.

Unless set forth in the quotation and/or acknowledgment, Seller shall not be obligated to provide special operating manuals or operating procedures for the operation of its equipment or supply special warning placards to be affixed to the equipment. If such manuals, procedures or placards are provided by Seller, Buyer shall be responsible for payment of cost of furnishing such items, for instructing any operator of the equipment as to the contents of such manuals and/or procedures; for requiring that such procedures be abided by; for insuring that warning placards remain affixed to the equipment and for requiring operators to abide by warning placards.

Any safety equipment required to be worn by any operator or maintenance person shall be provided by Buyer, and the failure to provide such equipment or the failure to require the use thereof shall be the Buyer's sole responsibility. Buyer shall indemnify and hold Seller harmless for any liability with respect thereto.

Seller shall not be responsible for providing safety devices and/or guarding of the equipment except as provided for in the quotation and/or acknowledgment, and Buyer specifically assumes all responsibility for supplying such safety devices and/or guarding necessary for the safe operation of the equipment. If safety devices and/or guarding are specified in the quotation and/or acknowledgment, Buyer shall be solely responsible for making certain that any operator of the equipment uses such safety devices and/or guarding and Buyer shall indemnify and hold Seller harmless with respect to any property damage and/or personal injury, including death, occasioned by any person by reason of such failure on the part of Buyer and/or its operator.

VAN AIR SYSTEMS INC
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