



Oil Solutions

TTF/BGTS Series

Return In-Tank Filters



Filtration

Global Filtration Technology

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Return In-Tank Filters

TTF/BGTS Series

Features/Applications for Tank Top Return Flow Filters

- Flows to 640 GPM
- 3 Micron Absolute to 120 Micron Absolute
- Disposable or Recleanable Elements
- Visual and Electrical Indicators
- BetaMaze™ long life elements
- Magnetic prefiltration
- Full flow bypass valve
- No internal leakage paths
- Inside-to-out flow thru element
- Complete contaminant removal during element service
- Optional LEIF® element

Specifications

Housing Data:

Material:

Head – Aluminum Alloy
Diffusor – Steel
Internals – Carbon Steel and Aluminum
Seals – Nitrile (Standard), Fluorocarbon

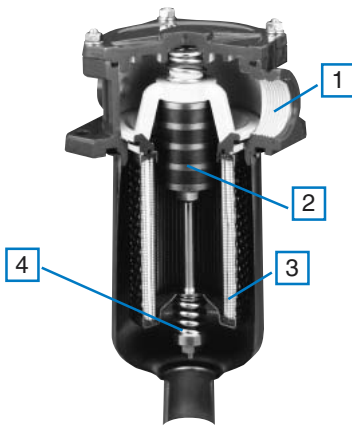
Pressure Rating:

Static – 150 psi (10.3 bar)

Temperature Range:

Operating -40°F to +250°F
(-40°C to +120°C)

Models TTF and BGTS Tank Mounted Return Flow Filters



TTF and BGTS Filters feature Arlon's exclusive Magnetic Prefiltration core which collects ferromagnetic particles from fluid upstream of the filter element. This feature alone could save hundreds of dollars a year by protecting costly equipment from increased wear and malfunction by assuring that the fluid is as pure as possible when it leaves the filter. Even during bypass due to cold start up, contaminant is collected by the magnetic core, a feature of importance on any fluid power system.

Take a close look and compare Arlon features with any other filter.

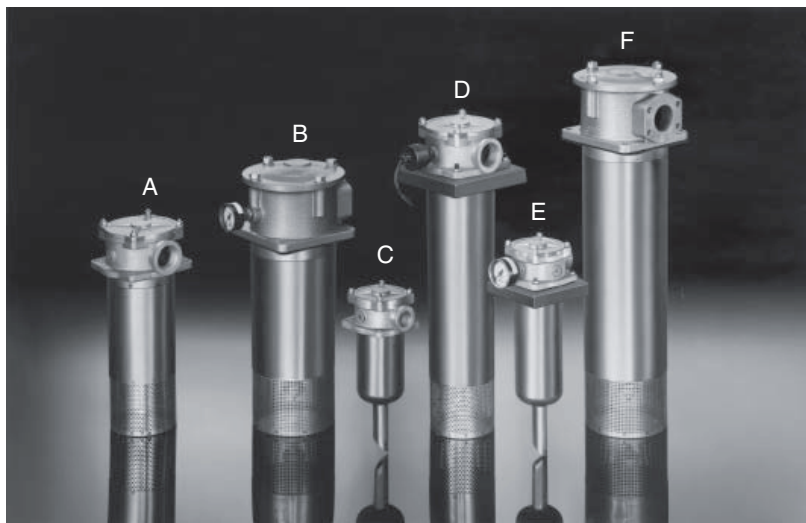
1. Fluid flows through the inlet port into an enlarged area which reduces fluid velocity. Inlet flow does not impinge on the element.
2. Filtration begins with magnetic prefiltration of ferromagnetic particles in the full fluid flow upstream of the element, not downstream or in the reservoir. Built-in or system generated ferromagnetic wear debris (even particles smaller than the element rating) are collected by the high strength (3.0K Gauss) magnetic column. This results in extended element and oil life and reduced maintenance and downtime, which reduces overall operating cost.
3. Fluid passes through the element in an inside-to-outside direction, collecting particles inside the filter cartridge. This eliminates reinjection of contaminant during element change. Clean fluid then returns to the reservoir through the diffuser which prevents fluid aeration.

Normal return line filters, that flow outside-to-inside, allow contaminated fluid to drain back into the reservoir when the element is serviced.

4. Simplified bypass design and location prevents flushing previously collected contaminant back into the system. Since the element serves as the valve there is no troublesome separate valve to remove when changing elements. Magnetic filtration occurs even during bypass. All potential leakage paths are o-ring sealed to eliminate bypass leakage that occurs in loose fitting valve assemblies.

TTF and BGTS Filters are available with disposable or cleanable elements of several contamination class levels for use in all common fluids.

Optional accessories include weld plates, which simplify installation, and visual and electric warning indicators, that assure proper element service.



- (A) TTF-230
- (B) BGTS-390 with Gauge
- (C) TTF-60
- (D) TTF-300 with Switch and Weld Plate
- (E) TTF-120 with Gauge and Weld Plate
- (F) BGTS-500

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TTF/BGTS Series

How To Size Tank Top Filters

Element Pressure Drop Factor:

Multiply the actual flow rate times the applicable ΔP factor to determine the pressure drop with a fluid viscosity of 140 SSU. Correct for other viscosities by applying the following formula:
 Flow rate (GPM) x filter factor x (new viscosity in SSU/140 SSU).

Flow/Pressure Drop Data

Fluid Conditions: Viscosity-140 SSU Sp. Gr. - 0.88

Media Code	Size Code										
	60	90	120	170	230	300	390	500	600	1000	2000
3	.905	.603	.452	.286	.205	.157	.122	.097	.082	.0493	.0246
6	.345	.236	.168	.103	.079	.057	.045	.037	.031	.0187	.0091
10	.280	.187	.127	.074	.052	.044	.032	.024	.022	.0129	.0066
20	.214	.137	.107	.049	.038	.031	.022	.017	.014	.0088	.0044
TXX	.040	.029	.021	.018	.013	.010	.007	.006	.005	.0030	.0015
ST40	.036	.025	.018	.014	.010	.007	.006	.0044	.004	.0023	.0011

Example:

Element Size Code = 230
 Element Media Code = 10
 Filter Factor = .052 (From chart)
 Flow = 60 GPM
 Viscosity = 160 SSU

Formula:

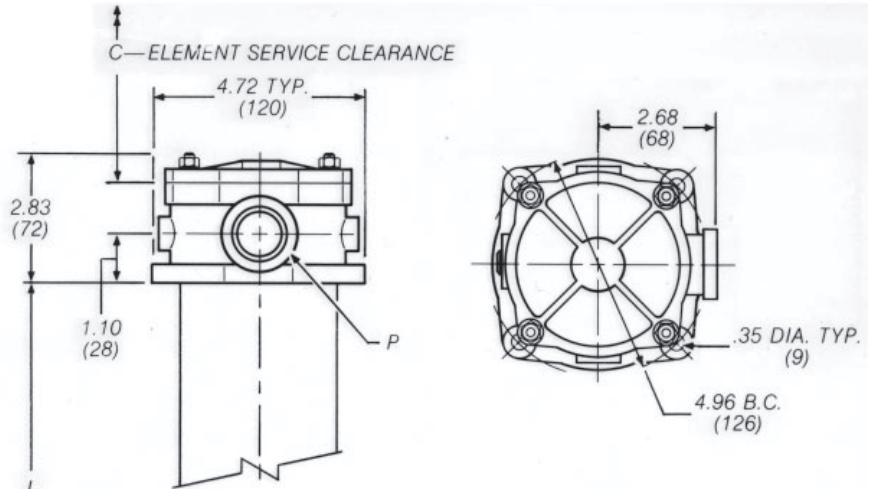
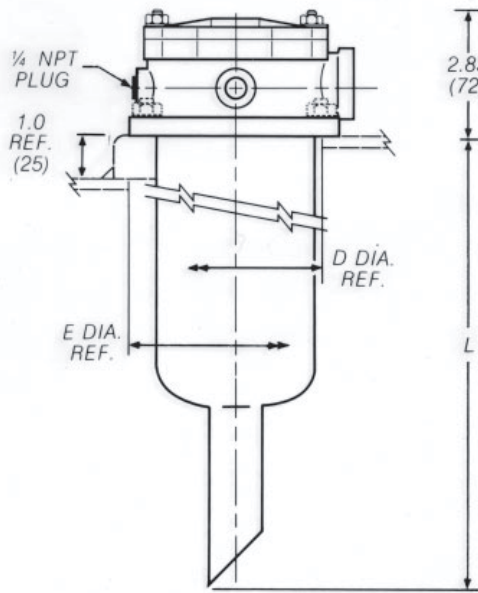
60 GPM x .052 x (160 SSU/140 SSU) = 3.6 PSID

Element Data

Media Type	Absolute Rating	Multipass Test Results To ISO 4572 (Time Weighted Averages)						
		B ₃	B ₆	B ₁₀	B ₁₂	B ₂₀	B ₂₅	B ₃₆
GDL	3	≥100	800	2000	>5000	∞	∞	∞
GDL	6	8	≥100	1000	2000	>5000	∞	∞
GDL	10	6	22	≥100	≥200	>5000	∞	∞
GDL	20	–	2	8	20	≥100	≥200	>5000
TXX	36	–	–	2	3.5	6	23	≥100

Dimensions

TTF-60, TTF-90, TTF-120



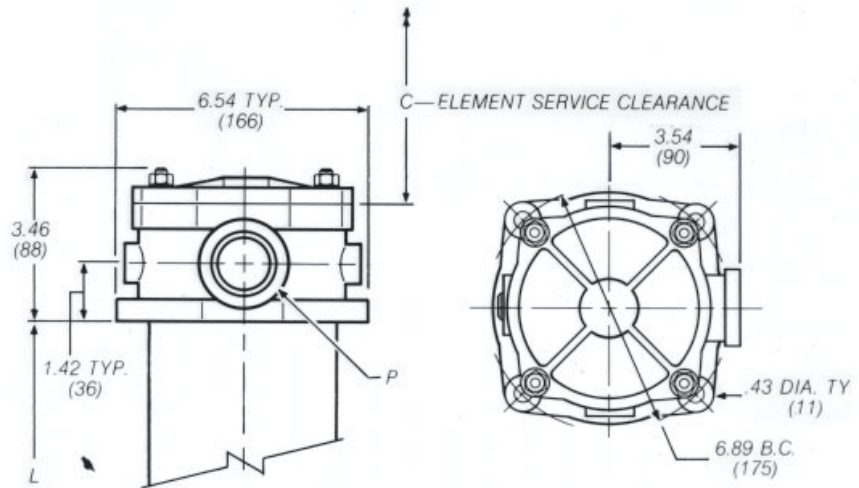
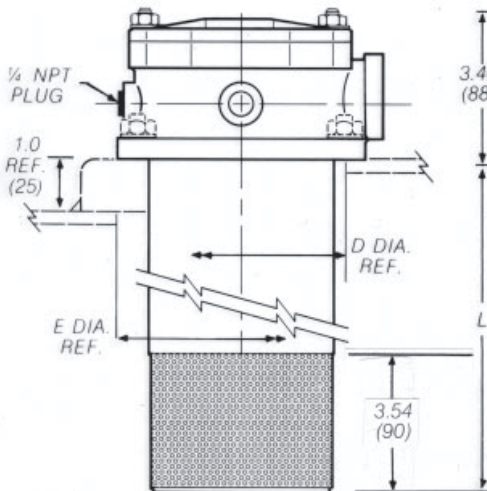
Return Line Filter — Series 1

Dimensions inches (mm)	TTF Filter Model		
	60	90	120
C	6.25(159)	8.0 (203)	10.0 (254)
L	9.25 (235)	11.0 (280)	13.0 (330)
P	1" NPT or 16 SAE Straight Thread O-Ring		
D	3.66/3.56 (93/90)		
E*	4.50/3.75 (114/95)		

E* dimension using weld plate

Dimensions

TTF-170, TTF-230, TTF-300



Return Line Filter — Series 2

Dimensions inches (mm)	TTF Filter Model		
	170	230	300
C	11.0 (279)	13.5 (343)	21.5 (546)
L	12.0 (305)	12.0 (305)	20.0 (508)
P	1½" NPT or 24 SAE Straight Thread O-Ring		
D	5.36/5.26 (136/133)		
E*	6.25/5.50 (159/140)		

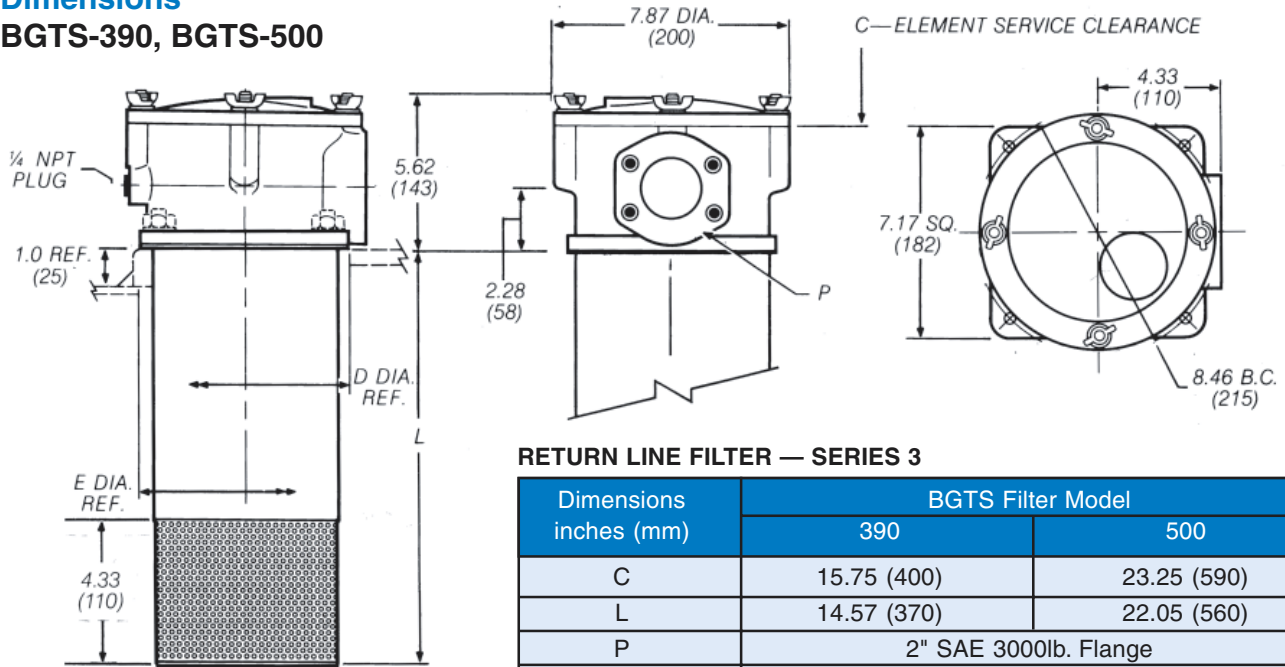
E* dimension using weld plate

Return In-Tank Filters

TTF/BGTS Series

Dimensions

BGTS-390, BGTS-500



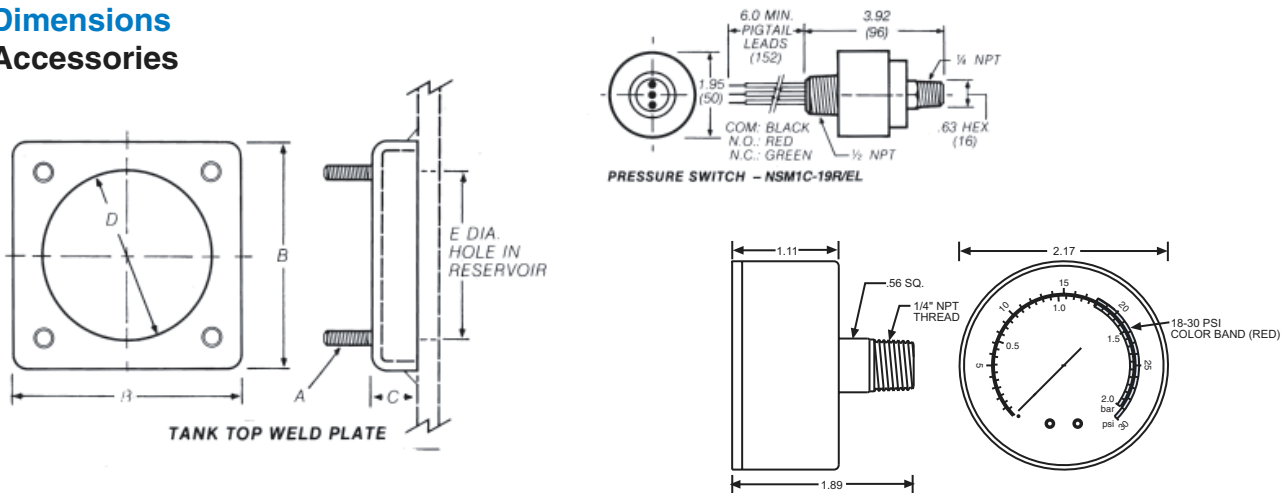
RETURN LINE FILTER — SERIES 3

Dimensions inches (mm)	BGTS Filter Model	
	390	500
C	15.75 (400)	23.25 (590)
L	14.57 (370)	22.05 (560)
P	2" SAE 3000lb. Flange	
D	6.54/6.52 (166/165.5)	
E*	7.25/6.75 (184/171)	

E* dimension using weld plate

Dimensions

Accessories

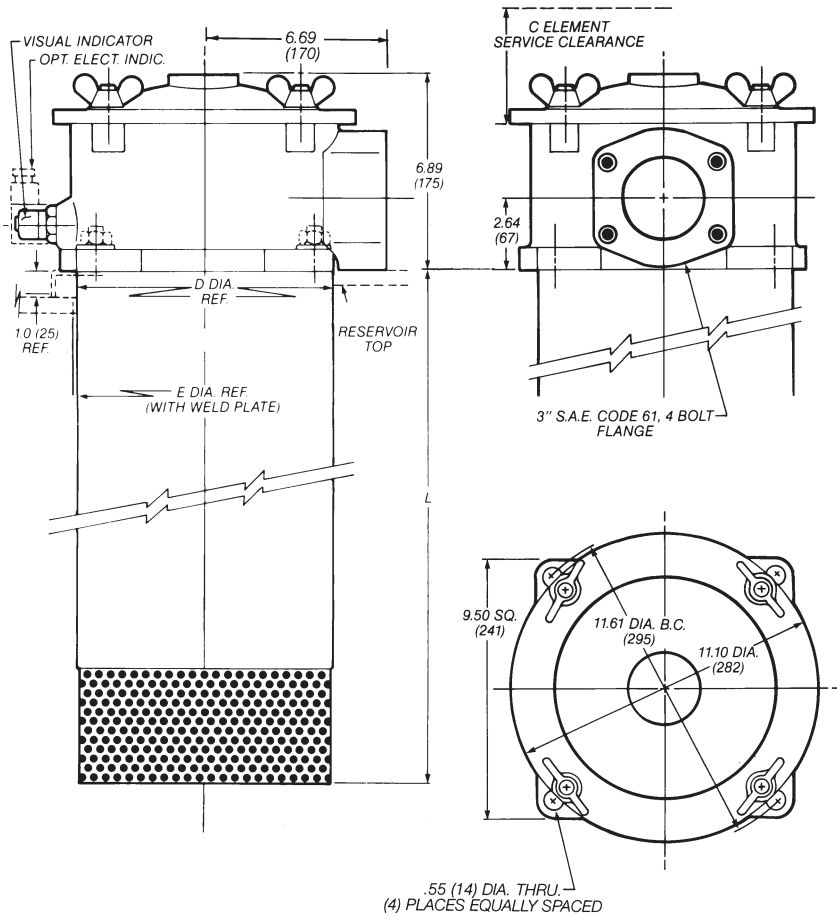


TANK TOP WELD PLATE

Dimensions inches (mm)	Filter Series		
	1	2	3
A	5/16-18 UNC-2A	3/8-16 UNC-2A	3/8-16 UNC-2A
B	5.33 (135)	7.15 (182)	7.67 (195)
C	1.00 (25)	1.00 (25)	1.00 (25)
D	3.59 (91)	5.29 (134)	6.58 (167)
E	4.50/3.75 (114/95)	6.25/5.50 (159/140)	7.25/6.75 (184/171)

Dimensions

BGTS-600, BGTS-1000, BGTS-2000



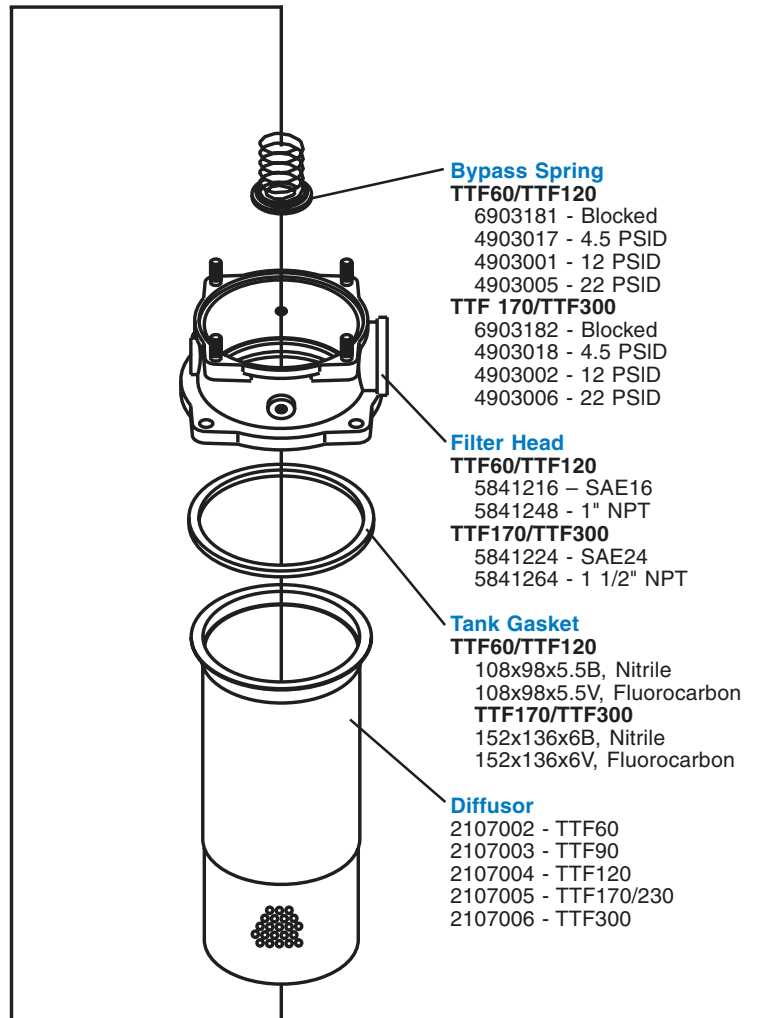
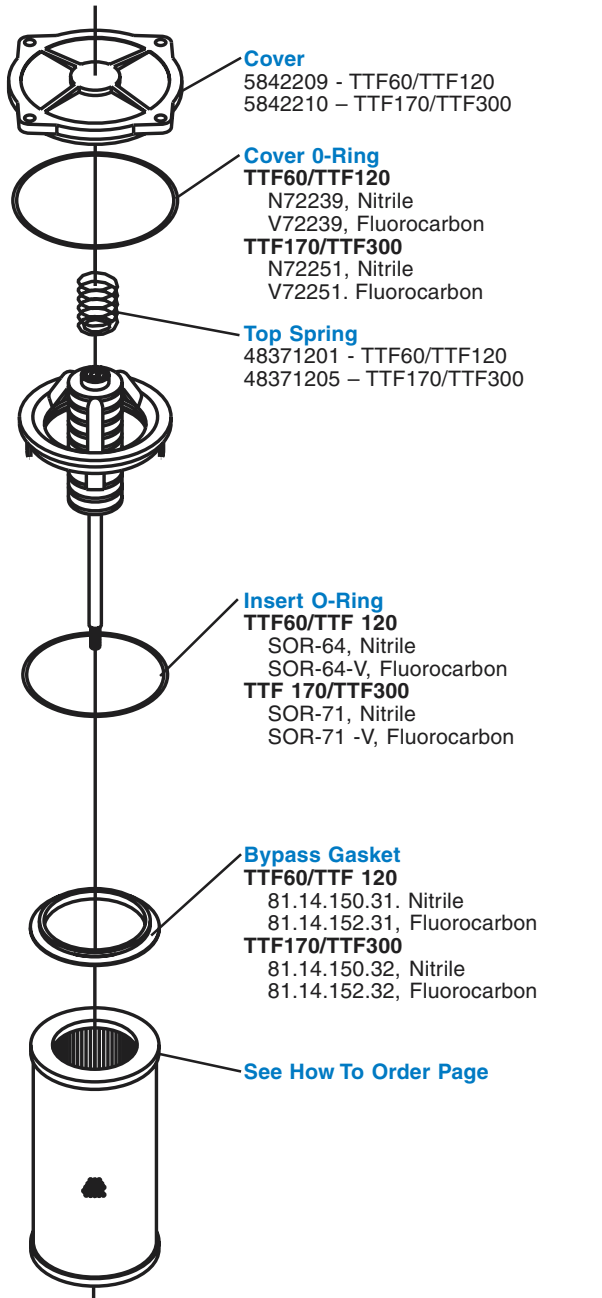
Return Line Filter - Series 4

Dimensions inches (mm)	BGTS Filter Model		
	600	1000	2000
C	18.0 (457)	27.0 (686)	48.0 (1219)
L	16.75 (425)	25.20 (640)	47.25 (1200)
D	9.49/9.47 (241/240.5)		
E	10.25/9.70 (260/246)		

Return In-Tank Filters

TTF/BGTS Series

Parts Breakdown — TTF Series

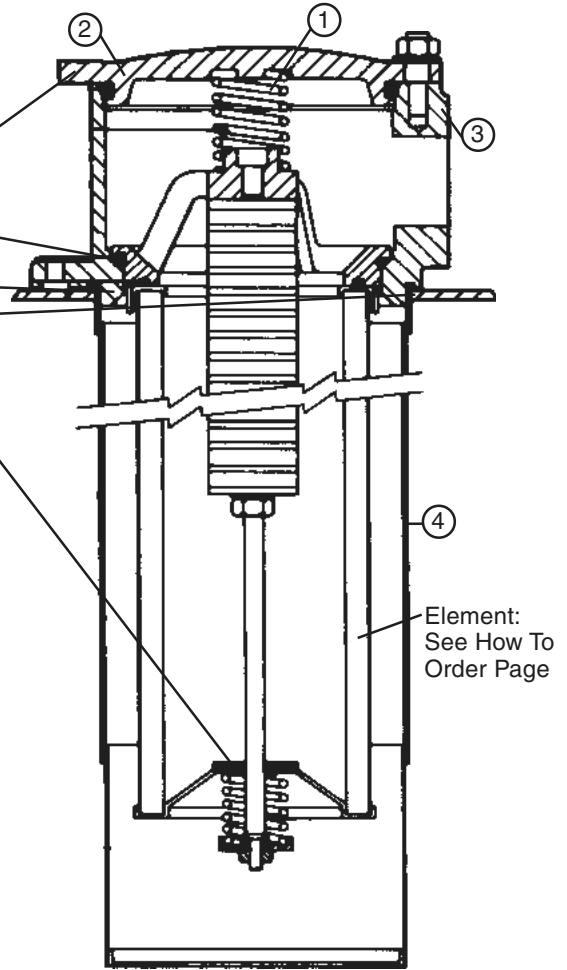


Parts Breakdown — BGTS Series

Seals		
Part Numbers		Description
BGTS 390 or 500	BGTS 600, 1000 or 2000	
R-8575	R-8875	Cover O-Ring
R-208	SOR-90	Insert O-Ring
81.14.150.33-Buna 81.14.152.33-FKM	SOR-85	Bypass Seals
182 x 164 x 4	R8975	Tank Gasket
SOR-113	SOR-115	Element O-Ring
Nitrile or Fluorocarbon		Material*

*Please specify seal material suffix when ordering Fluorocarbon seals: "-V"

Bypass Assembly		
390 Or 500	600, 1000 Or 2000	Pressure
6903183	6903184	Blocked
4903019	4903020	4.5 PSID
4903003	4903004	12 PSID
4903007	4903008	22 PSID



Item	Description	Material	Part Numbers				
			BGTS-390	BGTS-500	BGTS-600	BGTS-1000	BGTS-2000
1	Top Spring	Steel	83.07.012.03		48371205		
2	Cover	Die Cast Aluminum	84.22.064.04 (5842204)		84.22.064.06 (5842206)		
3	Head	Die Cast Aluminum	84.10.064.22 (5841031)		5841032		
4	Diffusor	Steel	21100008	21100009	2110084	2110085	2110086

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Operating And Maintenance Instructions Arlon Model TTF And BGTS Tank Top Filters

A. Mounting

1. Standard mounting.
 - a. Cut proper size hole in the top of the reservoir.
 - b. Drill holes for studs within the proper bolt circle.
 - c. Set the filter into the cutout hole and secure with proper size bolts, nuts and lock washers.
2. Mounting procedure using Arlon weld plate.
 - a. Rough cut proper size hole in the top of reservoir.
 - b. Weld the weld plate concentric to the rough cut hole.
 - c. Mount the filter onto the studs and secure with nuts and lock washers.
3. Utilize proper fittings.

B. Start-Up

1. Check for and eliminate leaks upon system start-up.
2. Check differential pressure indicator, if installed, to monitor element condition.

C. Service

1. An element must be serviced when the indicator indicates service is required.

NOTE: If the filter is not equipped with an indicator, the element should be serviced according to machine manufacturer's instructions.

D. Servicing Dirty Elements

1. Shut system down to assure that there is NO PRESSURE OR FLOW into the filter housing.
2. Remove the filter cover.
3. Remove the filter insert (bridge which holds the element in place).
4. Remove the bypass spring assembly or non-bypass plate from the stud.
5. Remove the contaminated cartridge with a twisting motion.
6.
 - a. Discard the disposable element cartridge.
 - b. Wash cleanable or mesh elements in a non-caustic solvent. Compressed air can be used to facilitate cleaning. Use care to prevent damage to the element during cleaning.

NOTE: Elements finer than 150 microns (100 mesh) may require special ultrasonic cleaning. Consult factory for recommendations.

E. Before Installing A New Element Cartridge

1. Clean the magnetic core with a lint-free cloth.
2. Check all seals and replace if necessary.

F. To Install A New Or Cleaned Element Cartridge

1. Lubricate all seals.
2. Mount new or cleaned Arlon filter cartridge.

NOTE: For ease of mounting, hold the cartridge away from the magnetic core until the stud is through the hole in the bottom of the element. Then slide it up to securely seat it to the top of the bridge.

3. Install the bypass spring assembly or non-bypass plate, and tighten until snug.

NOTE: Older versions may have a cotter pin/castellated nut retained bypass spring. In these cases, the nut should be turned down the shaft until the cross drilled hole is visible in the base of a castellation and the cotter pin inserted and ends flared to lock the bypass assembly in place.

4. Re-install the insert into the filter housing, making sure that the top-spring is secure.
5. Re-install the cover. Torque the cover nuts to 15 ft./lbs.

Follow procedures B.1 and B.2.

HOW TO ORDER:

Select the desired symbol (in the correct position) to construct a model code.

Assembly Example:

BOX 1	BOX 2	BOX 3	BOX 4	STD	BOX 5	BOX 6	BOX 7
<i>TTF230</i>	<i>S24</i>	<i>TXW510</i>	<i>B</i>	<i>T</i>	<i>22</i>	<i>S</i>	<i>TP</i>

Element Example:

BOX 3	BOX 4
<i>TXW5-10</i>	<i>B</i>

BOX 1: MODEL		
Symbol	Description	
	FULL FLOW	SURGE FLOW
<i>TTF-60</i>	16 GPM (60 l/min)	30 GPM (110 l/min)
<i>TTF-90</i>	24 GPM (90 l/min)	40 GPM (150 l/min)
<i>TTF-120</i>	32 GPM (120 l/min)	50 GPM (190 l/min)
<i>TTF-170</i>	50 GPM (190 l/min)	80 GPM (300 l/min)
<i>TTF-230</i>	60 GPM (230 l/min)	100 GPM (375 l/min)
<i>TTF-300</i>	80 GPM (300 l/min)	120 GPM (450 l/min)
<i>BGTS-390</i>	105 GPM (400 l/min)	150 GPM (565 l/min)
<i>BGTS-500</i>	135 GPM (510 l/min)	200 GPM (755 l/min)
<i>BGTS-600</i>	160 GPM (600 l/min)	220 GPM (830 l/min)
<i>BGTS-1000</i>	265 GPM (1000 l/min)	330 GPM (1250 l/min)
<i>BGTS-2000</i>	530 GPM (2000 l/min)	640 GPM (2420 l/min)

BOX 2 : PORTS	
Symbol	Description
<i>S16</i>	TTF-60/90/120
<i>N10</i>	SAE-16 (1 1/16"-12) 1" NPT
<i>S24</i>	TTF-170/230/300
<i>N15</i>	SAE-24 (1 5/16"-12) 1 1/2" NPT
<i>F2</i>	BGTS-390/500 2" Code 61 SAE Flange
<i>F3</i>	BGTS-600/1000/2000 3" Code 61 SAE Flange

Please note the bolded options reflect standard options with a reduced lead-time. Consult factory on all other lead-time options.

BOX 3 : ELEMENT							
Model	Symbol						
	10μ Nom. $\beta_{10} > 2$	3μ Abs. $\beta_3 > 100$	6μ Abs. $\beta_6 > 100$	10μ Abs. $\beta_{10} > 100$	20μ Abs. $\beta_{20} > 100$	40μ Stainless Steel Mesh	120μ Stainless Steel Mesh
<i>TTF-60</i>	<i>TXX2-10</i>	<i>TXW2-3</i>	<i>TXW2-6</i>	<i>TXW2-10</i>	<i>TXW2-20</i>	<i>ST2-40</i>	<i>ST2-120</i>
<i>TTF-90</i>	<i>TXX3-10</i>	<i>TXW3-3</i>	<i>TXW3-6</i>	<i>TXW3-10</i>	<i>TXW3-20</i>	<i>ST3-40</i>	<i>ST3-120</i>
<i>TTF-120</i>	<i>TXX3D-10</i>	<i>TXW3D-3</i>	<i>TXW3D-6</i>	<i>TXW3D-10</i>	<i>TXW3D-20</i>	<i>ST3D-40</i>	<i>ST3D-120</i>
<i>TTF-170</i>	<i>TXX4-10</i>	<i>TXW4-3</i>	<i>TXW4-6</i>	<i>TXW4-10</i>	<i>TXW4-20</i>	<i>ST4-40</i>	<i>ST4-120</i>
<i>TTF-230</i>	<i>TXX5-10</i>	<i>TXW5-3</i>	<i>TXW5-6</i>	<i>TXW5-10</i>	<i>TXW5-20</i>	<i>ST5-40</i>	<i>ST5-120</i>
<i>TTF-300</i>	<i>TXX5A-10</i>	<i>TXW5A-3</i>	<i>TXW5A-6</i>	<i>TXW5A-10</i>	<i>TXW5A-20</i>	<i>ST5A-40</i>	<i>ST5A-120</i>
<i>BGTS-390</i>	<i>TXX8A-10</i>	<i>TXW8A-3</i>	<i>TXW8A-6</i>	<i>TXW8A-10</i>	<i>TXW8A-20</i>	<i>ST8A-40</i>	<i>ST8A-120</i>
<i>BGTS-500</i>	<i>TXX8C-10</i>	<i>TXW8C-3</i>	<i>TXW8C-6</i>	<i>TXW8C-10</i>	<i>TXW8C-20</i>	<i>ST8C-40</i>	<i>ST8C-120</i>
<i>BGTS-600</i>	<i>TXX10-10</i>	<i>TXW10-3</i>	<i>TXW10-6</i>	<i>TXW210-10</i>	<i>TXW10-20</i>	<i>ST10-40</i>	<i>ST10-120</i>
<i>BGTS-1000</i>	<i>TXX12-10</i>	<i>TXW12-3</i>	<i>TXW12-6</i>	<i>TXW12-10</i>	<i>TXW12-20</i>	<i>ST12-40</i>	<i>ST12-120</i>
<i>BGTS-2000</i>	<i>TXX14-10</i>	<i>TXW14-3</i>	<i>TXW14-6</i>	<i>TXW14-10</i>	<i>TXW14-20</i>	<i>ST14-40</i>	<i>ST14-120</i>

BOX 4 : SEALS	
Symbol	Description
<i>B</i>	Nitrile (Buna)
<i>V</i>	Fluorocarbon (FKM)

BOX 5 : BYPASS	
Symbol	Description
<i>B</i>	Blocked
<i>12</i>	12 PSID (0.8 Bar)
<i>22</i>	22 PSID (1.2 Bar)

BOX 6 : INDICATOR	
Symbol	Description
<i>G</i>	0-30 PSIG Gauge
<i>S</i>	Pressure Switch w/1/2" Conduit
<i>V</i>	Visual Indicator (BGTS-600/2000 only)
<i>E</i>	Electrical Indicator w/Hirschmann (BGTS-600/2000 only)
<i>OMIT</i>	No Indicator

BOX 7 : OPTIONS	
Symbol	Description
<i>TP</i>	Weld Plate
<i>FP</i>	Fill Port in Cover
<i>FTP</i>	Fill Port/Weld Plate
<i>OMIT</i>	If not required