

CleanLine™ Filter

310652 rev.H

For petroleum-based oils, synthetic oils and anti-freeze* mixtures.

***CleanLine 1800 filters must be used for anti-freeze mixtures,
CleanLine 900 filters are not compatible with anti-freeze.**

Model 248418 Wall Mount CleanLine 900 Filter Assembly

900 psi (6.2 Mpa 62 bar) Maximum Working Pressure

Model 248421 Pump Mount CleanLine 900 Filter Assembly

900 psi (6.2 Mpa 62 bar) Maximum Working Pressure

Model 248417 Wall Mount CleanLine 1800 Filter Assembly

1800 psi (12.4 Mpa 124 bar) Maximum Working Pressure

Model 248419 Pump Mount CleanLine 1800 Filter Assembly

1800 psi (12.4 Mpa 124 bar) Maximum Working Pressure

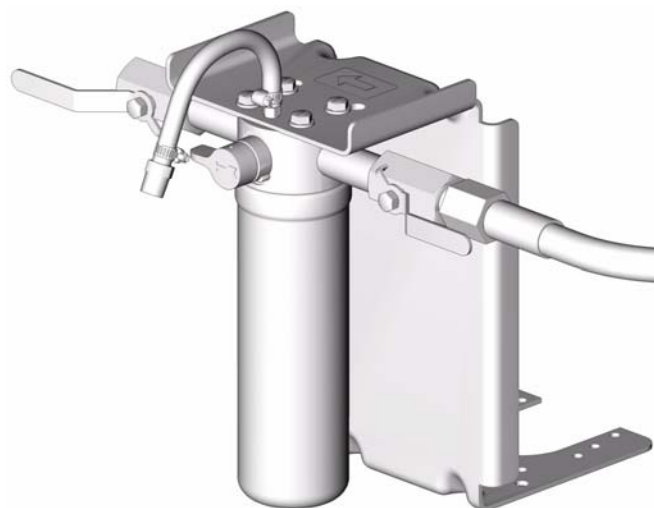


Important Safety Instructions

Read all warnings and instructions in this manual.
Save these instructions.

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Warnings

The following warnings include general safety information for this equipment. More specific warnings are included in the text where applicable.

 WARNING	
 	<p>INJECTION HAZARD</p> <p>High-pressure fluid from dispense valve, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Seek immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure in this manual, when you replace the filter.
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read MSDS's to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. • Check equipment daily. Repair or replace worn or damaged parts immediately. • Do not alter or modify equipment. • For professional use only. • Use equipment only for its intended purpose. Call your Graco distributor for information. • Comply with all applicable safety regulations.



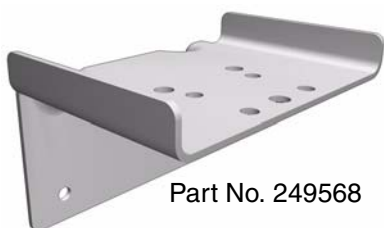
A series of horizontal lines for writing, spanning the width of the page.

Installation

The CleanLine Filter™ is installed upstream from the dispense equipment. It can be pump or wall-mounted.

Wall-mount

1. Fasten the wall-mount bracket (part no. 249568) to the wall using screws long enough to provide secure support. See FIG. 1.
2. Observe the flow-direction arrows on the top of the filter assembly. See FIG. 3. Position the filter assembly correctly and secure the assembly to the bracket using four screws (10) for models 248418 and 248421 or three screws (107) for models 248417 and 248419.



Part No. 249568

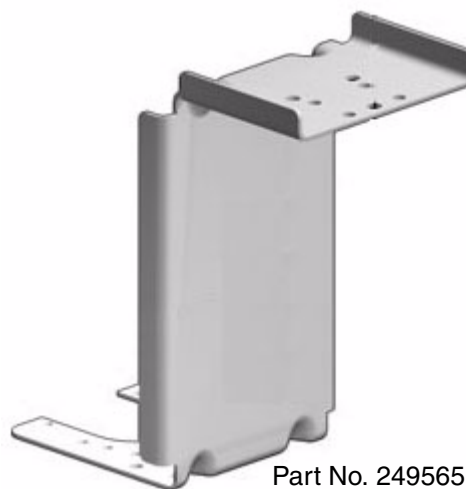
FIG. 1

Pump-mount

1. Attach the pump-mount bracket (part no. 249565) to the base of the pump. See FIG. 2. The method of attachment will vary by pump. The Fire-Ball 425 series of pumps uses machine screws to mount the bracket into pre-tapped holes in the pump base. The Fire-Ball 225 and 300 series pump bases are not tapped. You will need to use the machine screws and lock-nuts provided with bracket kit 249565.
2. Observe the flow-direction arrows on the top of the filter assembly. See FIG. 3. Position the filter assembly correctly and secure the assembly to the bracket using four screws (10) for models 248418 and 248421 or three screws (107) for models 248417 and 248419.

CleanLine 900

1. Install barbed fitting (9) and pressure relief tube (12) as shown in FIG. 4. Apply thread sealant to threads of barbed fitting (9).
2. Route the tube (12) back to bulk tank or to used oil container.

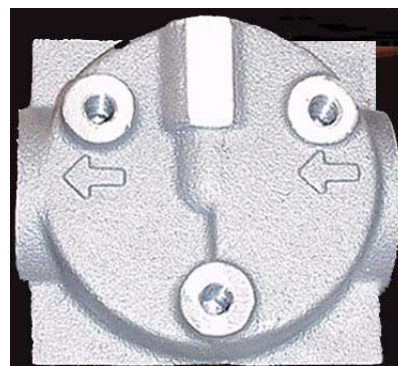


Part No. 249565

FIG. 2



CleanLine 900 Filter
Models 248418 and 248421



CleanLine 1800 Filter
Models 248417 and 248419

FIG. 3

Operation

Relieve Pressure


WARNING



Follow **Relieve Pressure** procedure before replacing CleanLine Filter cartridge. Read warnings on page 2.

CleanLine 900 Filter (models 248418 and 248421)

1. Turn off air supply to pump.
2. Close upstream and downstream ball valves (6). See FIG. 4.
3. Turn drain valve (4) slowly to relieve filter pressure.

 System will release oil through pressure relief tube (12). Be sure tube is installed correctly. Drain valve (4) springs back to closed position.

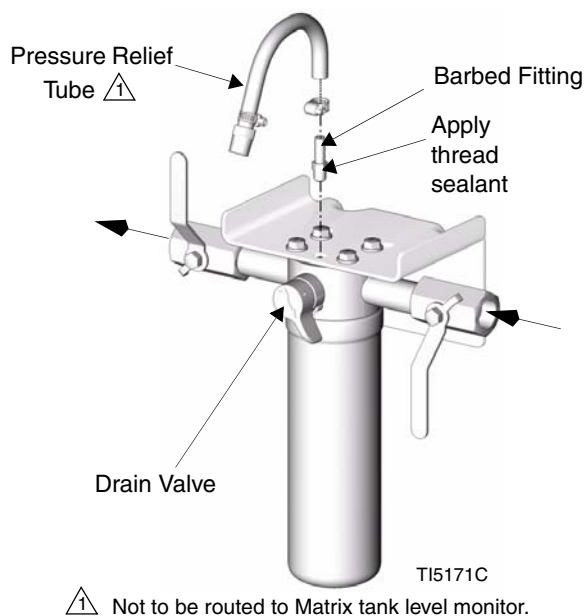


FIG. 4

CleanLine 1800 Filter (models 248417 and 248419)

1. Turn off air supply to pump.
2. Close upstream ball valve (101).
3. Trigger the dispense valve.
4. Close downstream ball valve (101) to ensure oil does not run out.

Flush System

Flush the system before installing meters and for ongoing operation for all service fluids. Follow this procedure for each dispense location in the system, starting at the location farthest from the pump.

WARNING




Follow **Relieve Pressure** procedure before replacing CleanLine Filter cartridge. Read warnings on page 2.

1. To determine the necessary flush time in minutes:
 - a. Measure the approximate length of the fluid line from the filter outlet to the dispense end of the hose. Be sure to include the entire length of hose coiled in the hose reel.
 - b. Determine the largest inside diameter (I.D.) of pipe or hose in the system.
 - c. On the following table, select the line length and the larger I.D. of pipe or hose to determine flush time.

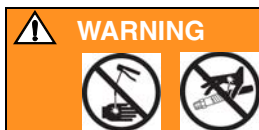
Combined length of pipe and hose (feet)	Flush Time (minutes)				
	Largest inside diameter of pipe or hose (inches)				
	.5	.625	.75	1.0	1.5
50-100	1/2	1/2	1/2	1	2
100-200	1/2	1	1	2	4
200-300	1	1	1 1/2	3	6
300-400	1	1 1/2	2	3 1/2	8
400-500	1	2	2 1/2	4	10
500-750	1 1/2	2 1/2	3 1/2	6 1/2	15
750-1000	2	3 1/2	5	6 1/2	20

2. Install all system components including the Graco CleanLine Filter system. Do not install dispense equipment until initial flush is complete.
3. Close the fluid shut-off valve.

4. Ensure the main fluid outlet valve at the pump is closed.
5. Place dispense end of hose into a waste oil container. Secure the hose so it will not come out during flushing.
6. Slowly open the main fluid outlet valve at the pump. At the same time, gradually increase the air pressure to the pump until there is good flow through the hose.
7. Dispense fluid continuously at 2 gpm or more for the length of time determined by the table information. In an existing fluid line, the flushed oil can be returned to the bulk tank and reused. In a newly installed line, the flushed oil *should be not be reused*.
8. Repeat this procedure for each dispense location and each service fluid in the system.
9. After service fluids have been flushed install meter(s).
10. The system is now ready for use.

 It is all right to flush with mineral spirits, kerosene and other petroleum-based fluids with the CleanLine Filter installed.

CleanLine Filter Cartridge Replacement



WARNING

Follow **Relieve Pressure** procedure before replacing CleanLine Filter cartridge. Read warnings on page 2.

The CleanLine Filter cartridge should be replaced at least once a year or any time you notice a reduced flow rate or other signs of degraded performance. To replace the CleanLine Filter, perform the following steps:

CleanLine 900 Filter (models 248418 and 248421)

1. Relieve pressure (see Relieve Pressure on page 5).

2. Close both ball valves (6).
3. Place a waste container below the filter to catch the oil in the filter.
4. Unscrew the filter (5).
5. Apply oil to the new filter seal.
6. Tighten new filter 1/10 turn after filter contacts base.
7. Open both ball valves (6).
8. Turn system pressure back on.



Replacing the filter cartridge allows air into the system. Spitting will occur during dispense until air is purged from the system.

CleanLine 1800 Filter (models 248417 and 248419)

1. Relieve pressure (see Relieve Pressure on page 5).
2. Close both ball valves (101).
3. Place a waste oil container below the filter to catch the oil in the housing (104) and filter cartridge (103).
4. Unscrew the housing (104).
5. Pull the filter cartridge (103) straight down.
6. Apply grease to the o-ring inside the replacement cartridge (103).
7. Firmly push the replacement cartridge (103) straight up, onto the nipple inside the manifold (102).
8. Replace the housing (104) and torque to 15 ft. lbs.
9. Open both ball valves (101).
10. Turn system pressure back on.



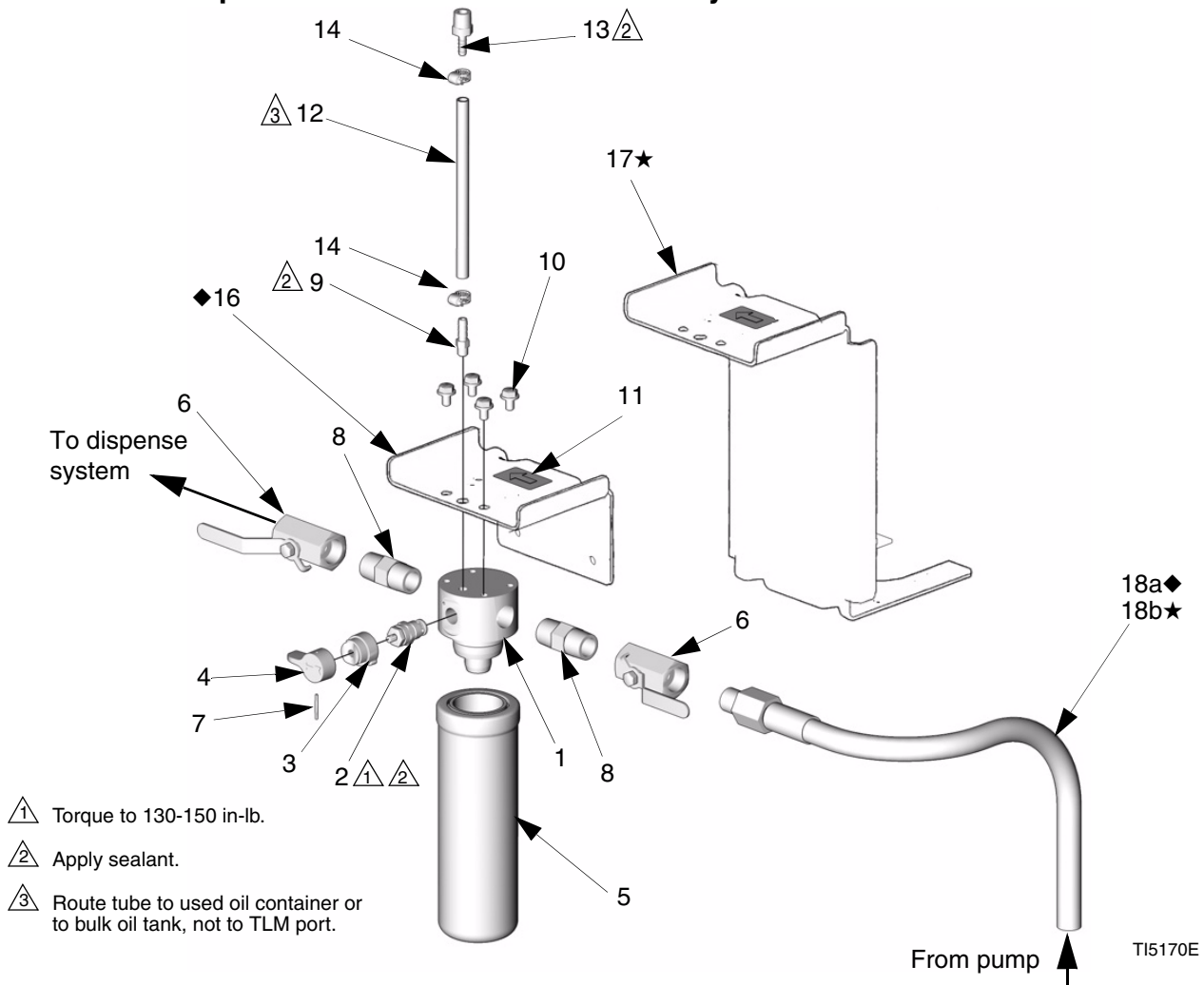
Replacing the filter cartridge allows air into the system. Spitting will occur during dispense until air is purged from the system.



Parts for CleanLine 900 Filter

Model 248418 Wall Mount CleanLine Filter Assembly

Model 248421 Pump Mount CleanLine Filter Assembly

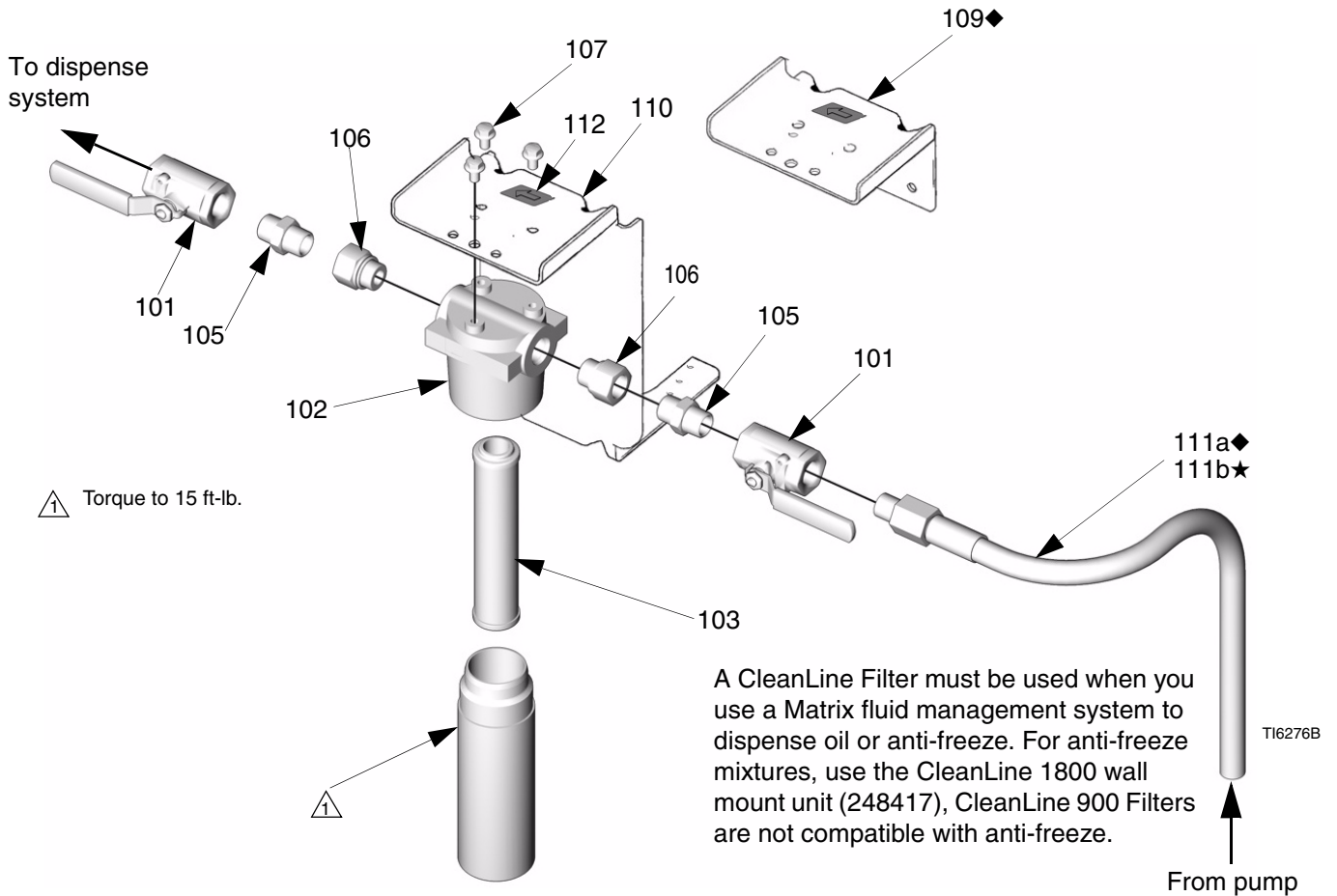


Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	15E281	MANIFOLD, filter	1	16◆	249568	BRACKET, wall mount for 248418 Includes label (11)	1
2	234842	VALVE, drain	1	17★	249565	KIT, pump mount bracket for 248421 (includes pump mounting hardware and label (11))	1
3	287389	BASE, valve	1	18a◆	111010	HOSE, 3/4" x 10', coupled 3/4 npt (mbe) for wall mount model 248418	1
4	187625	HANDLE, valve, drain	1	18b★	109105	HOSE, 3/4" x 6', coupled 3/4 npt (mbe) for pump mount model 248421	1
5	15D702	FILTER, spin-on	1	19*	113344	FITTING, swivel (connects Fire-Ball 300 fluid out to hose (18))	1
6	119388	VALVE, ball, 3/4	2	20*	157785	FITTING, swivel (connects Fire-Ball 424 fluid out to hose (18))	1
7	111600	PIN, grooved	1				
8	15H103	NIPPLE, pipe	2				
9	114287	FITTING, barbed, 1/4 ID tube, 1/8 npt	1				
10	111801	SCREW, cap, hex head	4				
11	15E328	LABEL, product ID filter	1				
12	15E327	TUBE, pressure relief	1				
13	119529	FITTING, barbed, 1/4 ID tube, 3/8 npt	1				
14	119454	CLAMP, worm drive	2				
15	110110	SEALANT, pipe (not shown)					

Parts for CleanLine 1800 Filter

Model 248417 Wall Mount CleanLine Filter Assembly

Model 248419 Pump Mount CleanLine Filter Assembly



Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
101	119388	VALVE, ball	2	111a◆	111010	HOSE, 3/4" x 10" coupled 3/4 npt (mbe) on wall mount for model 248417	1
102	119189	MANIFOLD, filter	1	111b★	109105	HOSE, 3/4" x 6', coupled 3/4 npt (mbe) on tank mount model 248419	1
103	119278	ELEMENT, filter	1	112	15E328	LABEL	1
104	119279	HOUSING, filter	1	113*	113344	FITTING, swivel (connects Fire-Ball 300 fluid out to hose (18)	1
105	15H103	NIPPLE, pipe	2	114*	157785	FITTING, swivel (connects Fire-Ball 424 fluid out to hose (18)	1
106	119200	FITTING, adapter, SAE12-3/4 npt(f)	2				
107	113802	SCREW, hex head, flanged	3				
108	110110	SEALANT, pipe (not shown)					
109◆	249568	BRACKET, wall mount for 248418 Includes label (112)	1				
110★	249565	KIT, pump mount bracket for 248421 (includes pump mounting hardware and label (112))	1				

◆ Model 248417
★ Model 248419
* Not shown

Technical Data

Maximum Working Pressure	
CleanLine 900 Filter (models 248418 and 248421)	900 psi (6.2 MPa, 62 bar)
CleanLine 1800 Filter (models 248417 and 248419)	1800 psi (12.4 MPa, 124 bar)
Outlet	3/4 x 14 npt
Filtration Efficiency	
CleanLine 900 Filter (models 248418 and 248421)	$\beta_{14} = 1000$ (ISO 16889) ¹
CleanLine 1800 Filter (models 248417 and 248419)	$\beta_{10} = 1000$ (ISO 16889) ²
Wetted parts	
CleanLine 900 Filter (models 248418 and 248421)	zinc plated steel, filter media ³
CleanLine 1800 Filter (models 248417 and 248419)	aluminum, filter media ³
Weight (dry)	7 lbs. (3.18 Kg.)

¹ For particle sizes 14 micron and larger, filtration is 99.9% efficient.

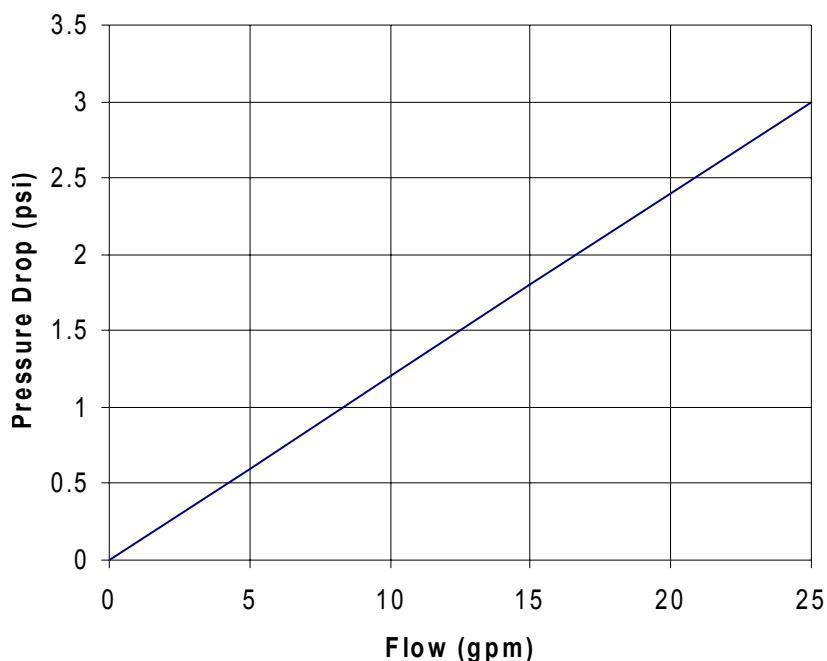
² For particle sizes 10 micron and larger, filtration is 99.9% efficient.

³ The filter media is compatible with petroleum-based fluids and most phosphate esters, water/oil emulsions, and high water content fluids.

Flow Characteristics

Flow measurements were made with 32cSt [150 SSU] hydraulic oil at 100°F (37.7°C), fluid specific gravity of 0.9.

Pressure Drop vs. Flow



Corrections:

To correct filter element pressure drops for various viscosities and specific gravities, use one of the following formulae:

$$\Delta P_m = \Delta P_e \times (SSU/150) \times S.G./0.9$$

or

$$\Delta P_m = \Delta P_e \times (cSt/32) \times S.G./0.9$$

or

$$\Delta P_m = \Delta P_e \times (cP/29)$$

Calculation Definitions:

ΔP_e = Element pressure drop from curve

ΔP_m = Corrected element pressure drop

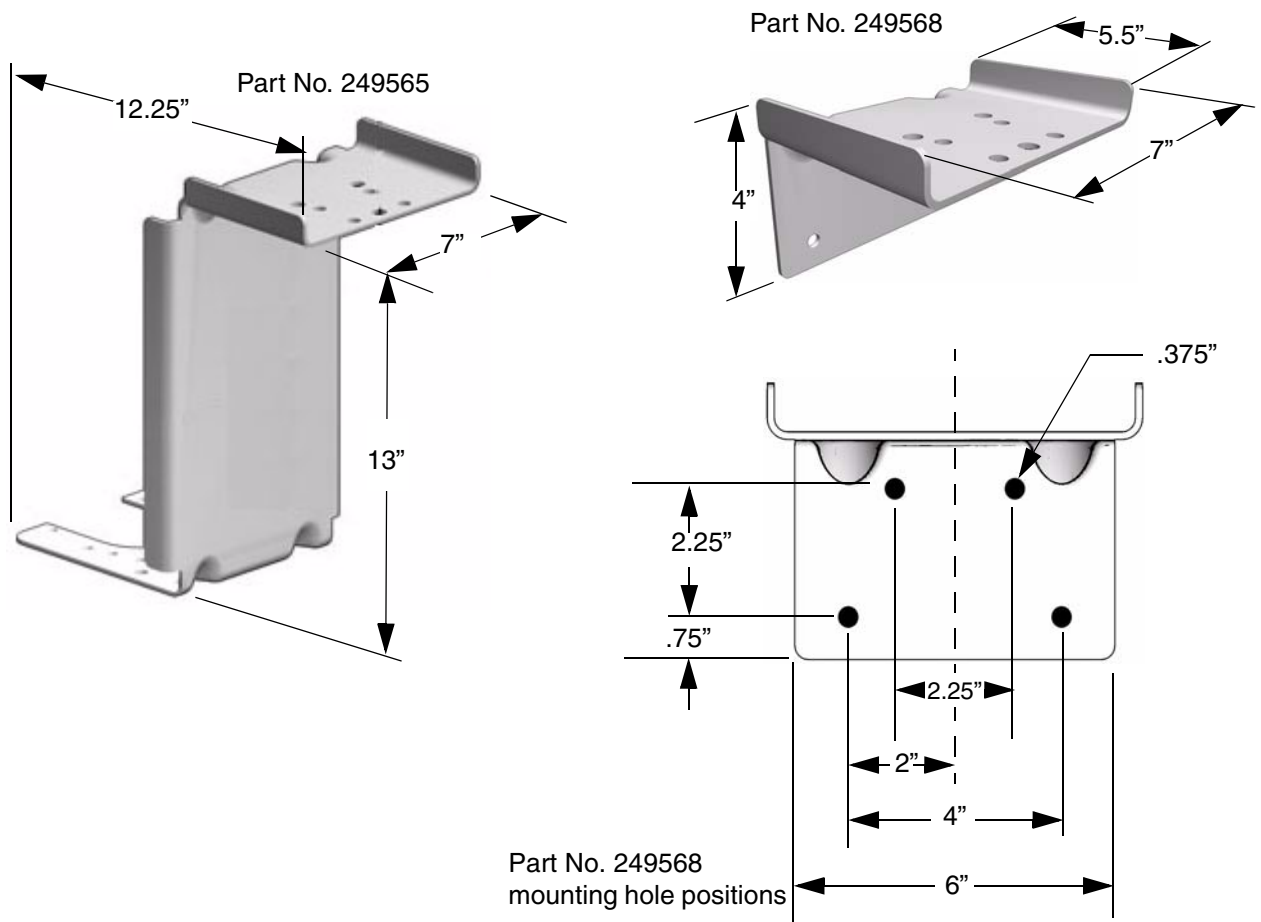
S.G. = New specific gravity

SSU = New SSU viscosity
(Saybolt Seconds Universal)

cSt = New cSt viscosity (centistokes)

cP = New cP viscosity (centipoise)

Dimensions



Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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Graco Information

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6928 **or Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

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Graco reserves the right to make changes at any time without notice.*

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Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441

www.graco.com

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