



HydraFLOW™

30 gpm max.

3000 psi max



Part Number HF 300 Series



Part Number 86000 Series

WARNING

DO NOT OPERATE BEFORE
READING MANUAL

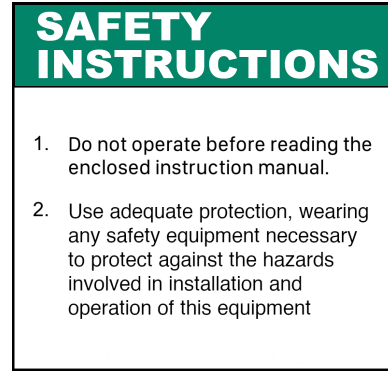
INSTALLATION, OPERATION AND MAINTENANCE **MANUAL**

Warnings



DANGER

Keep body and clothing away from drive shaft



SAFETY INSTRUCTIONS

1. Do not operate before reading the enclosed instruction manual.
2. Use adequate protection, wearing any safety equipment necessary to protect against the hazards involved in installation and operation of this equipment



WARNING

HIGH PRESSURE OIL. May cause severe injury. disconnect power, lower load, and relieve pressure before servicing hydraulic system.



WARNING

Do not touch hot surfaces



WARNING

Keep body and clothing away from machine openings



WARNING

Hearing and Eye Protection Required

NOTICE

 **WARNING:** Warning Instructions listed on this page must be reviewed by ALL operators.

Safety instruction tags were attached to your unit prior to shipment. **DO NOT** remove, paint over or obscure in any manner. Failure to heed these warnings could result in serious bodily injury to the personnel operating and maintaining this equipment.

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Introduction

CONGRATULATIONS on your purchase of a new HydraFlow. Please examine the unit for shipping damage, and **if any damage is found, report it immediately to the carrier.** If unit is to be installed at a later date make sure it is stored in a clean, dry location.



Warning: Serious injury can result from operating or repairing the unit without reading the service manual and taking adequate safety precautions.

Safety Precautions

For equipment covered specifically or indirectly in this instruction book, it is important that all personnel observe safety precautions to minimize the chances of injury. Among many considerations, the following should be particularly noted:

- Rotating shafts can be dangerous. You can snag clothes, skin, hair, hands, etc. This can cause serious injury or death.
- Do not work under the vehicle when the engine is running.
- Do not work on the hydraulic system with the engine running or power take-off engaged.
- Do not engage or disengage driven equipment by hand from under the vehicle when the engine is running.
- PTO and driveshaft should have either a safety loop or guard installed.
- Install a support strap when servicing a drive shaft to prevent personal injury.
- Always use hose rated for hydraulic duty and at the correct pressure.
- A serious or fatal injury can occur...
 - If you fail to follow warning instructions.
 - If you lack proper training.
 - If you fail to follow proper installation and operating procedures.
 - If you do not use proper tools and safety equipment.
 - If you assemble hydraulic system components improperly.
 - If you use incompatible driveline components.
 - If you use worn out or damaged driveline components.
 - If you use driveline components in a non-approved application.
- This manual contains safety instructions. Read, understand, and follow this manual.
 - Get proper training.
 - Learn and follow safe operating procedures.
 - Use proper tools and safety equipment.
 - Use proper components in good condition.
 - Ensure connections exposed to the weather are sealing properly.

Installation



CAUTION: It is the installer's responsibility to ensure that the HydraFLOW is mounted in a location providing proper clearance from any heat source(s). Paragon recommends 12" from any exhaust opening, 6" from any other heat source(s).

Power Take-Off and Hydraulic Pump

- A. Mount the PTO as recommended by PTO manufacturer.
- B. If the system contains a direct mounted hydraulic pump, ensure the hydraulic pump is mounted to the PTO as recommended by PTO, hydraulic pump, and transmission manufacturers.
- C. Ensure ALL safety labels are installed per manufacturer guidelines.

Note: The standard filter supplied in the HydraFLOW is a 10 micron nominal. Contact Paragon Tank Truck Equipment for other filtration media options.

Please refer to your hydraulic pump installation manual for correct filtration and suction specifications.

Contact the engine manufacturer for the proper engine speed range that will reduce torsional vibration to a minimum and prevent premature hydraulic pump and PTO wear.

Mounting the HydraFLOW

- Drill 7/16" diameter holes in the appropriate location for mounting the unit as shown on page 8.
- Use the fasteners in the hardware packet supplied by Paragon to mount the HydraFLOW.
- Use Code 61 Gasket (**Fig 1**). For NPT units, use hydraulic sealant (Loctite number 545 or similar).

Fig. 1



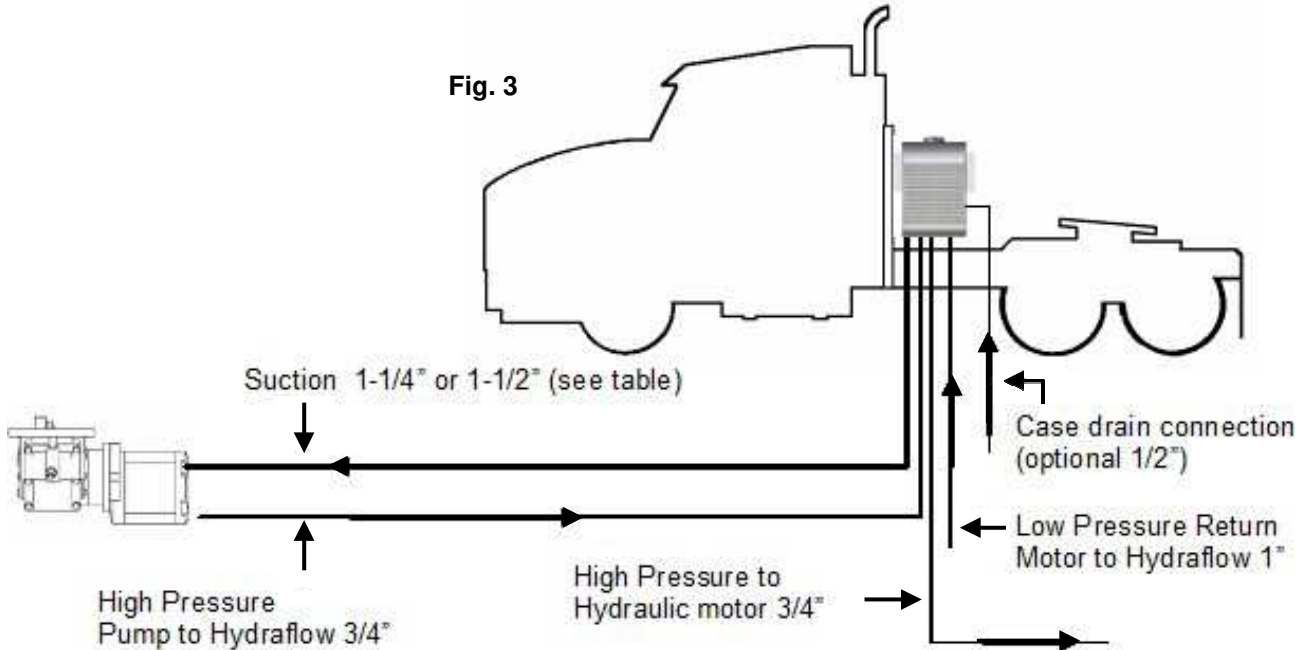
Hydraulic Hoses & Fittings

- **DO NOT** use thread tape or pipe dope on threaded connections, this will contaminate the hydraulic system.
- Hoses are customer supplied, fit according to the system drawings.
- High pressure hoses must have a pressure rating equal to or higher than the hydraulic system relief valve setting.
- The suction hose must be capable of operating in 28" Hg vacuum service.
- Attach the gasket to four bolt flange before installing the suction connection.

Fig. 2

Suction Hose Chart	
GPM Flow	Hose Size
0-20	1-1/4"
20-25	1-1/2"
26-30	2"

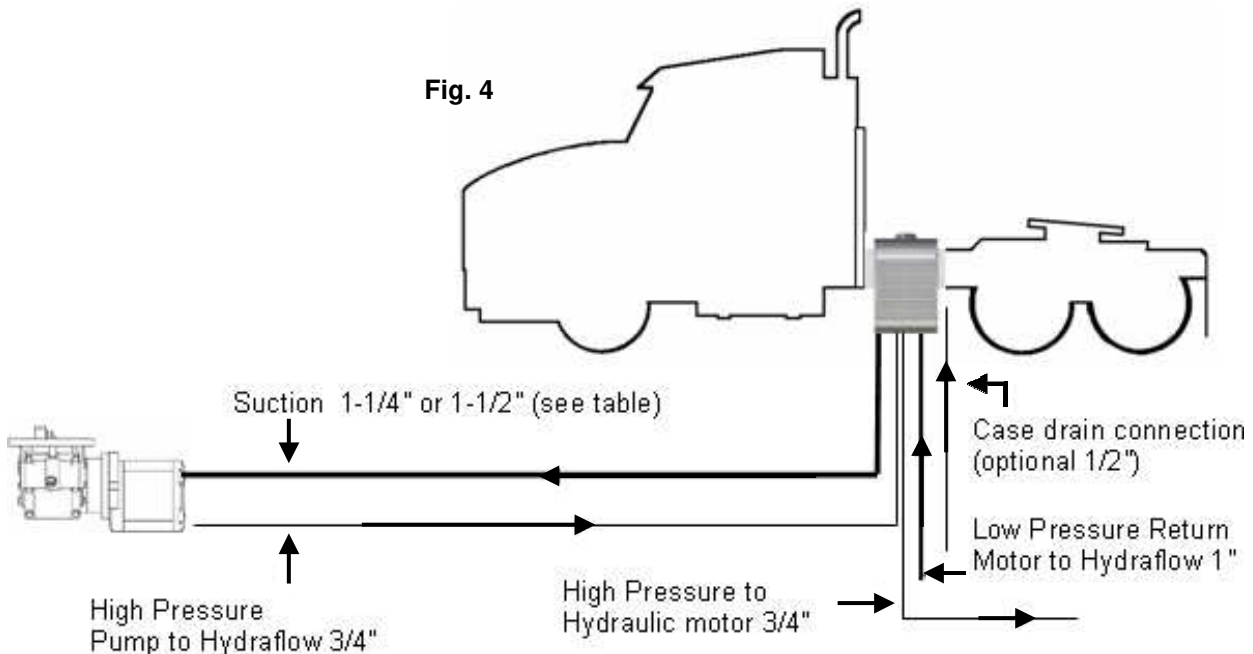
Preferred behind the cab mount (optimum suction conditions)



Note:

- Review Hose Chart (Fig. 2) to ensure the correct suction hose sizing.
- For off road applications do not mount HydraFLOW directly to the frame rail. Behind the cab mount is recommended.
- See system circuit drawing for complete hydraulic plumbing.
- If the HydraFLOW is to be spaced off of the frame rail, refer to Fig. 5 for the recommended bracket.

Alternate Frame Rail Mount



Initial Start Up (Two People Required)

1. Remove the red filler cap.
2. Fill the HydraFLOW **1/2 full** with hydraulic fluid.

NOTE: Paragon recommends an (ISO) 32 non-foaming hydraulic oil. (Example: Shell Tellus S2 V 32 Non-Foaming Oil) Use a paint filter as a strainer while filling to prevent foreign contaminants from entering the system.

3. Replace the fill cap.
4. Check all hoses and connections for no leaks.
5. Start the engine and engage the PTO and pump according to manufacturer recommendations.
6. Run for 3-5 seconds to eliminate air from the system.
7. Disengage the PTO and stop the engine.
8. Remove the fill cap and fill to the bottom of the sight glass.
9. Start the engine and slowly release the clutch.
10. While the engine is running, engage the PTO and pump according to manufacturer recommendations.
11. Check for leaks, disengage the PTO according to manufacturer recommendations and stop the engine.
12. Re-check the oil level.

Operation of System

1. Check oil level in the HydraFLOW.
Correct oil level is at the bottom of the sight glass when the unit is not operating.
2. Check fan and radiator for air flow. Clean or clear any obstructions as needed.
3. Ensure the parking brake is applied, control valves are in the neutral position.
4. Engage the PTO according to manufacturer recommendations.

NOTE: Oil level may drop if air is trapped in the system. Shut down the system and fill oil tank to the bottom of the sight glass.

5. Operate valves slowly.
6. To shut down the system, follow steps 5 thru 3 in reverse.

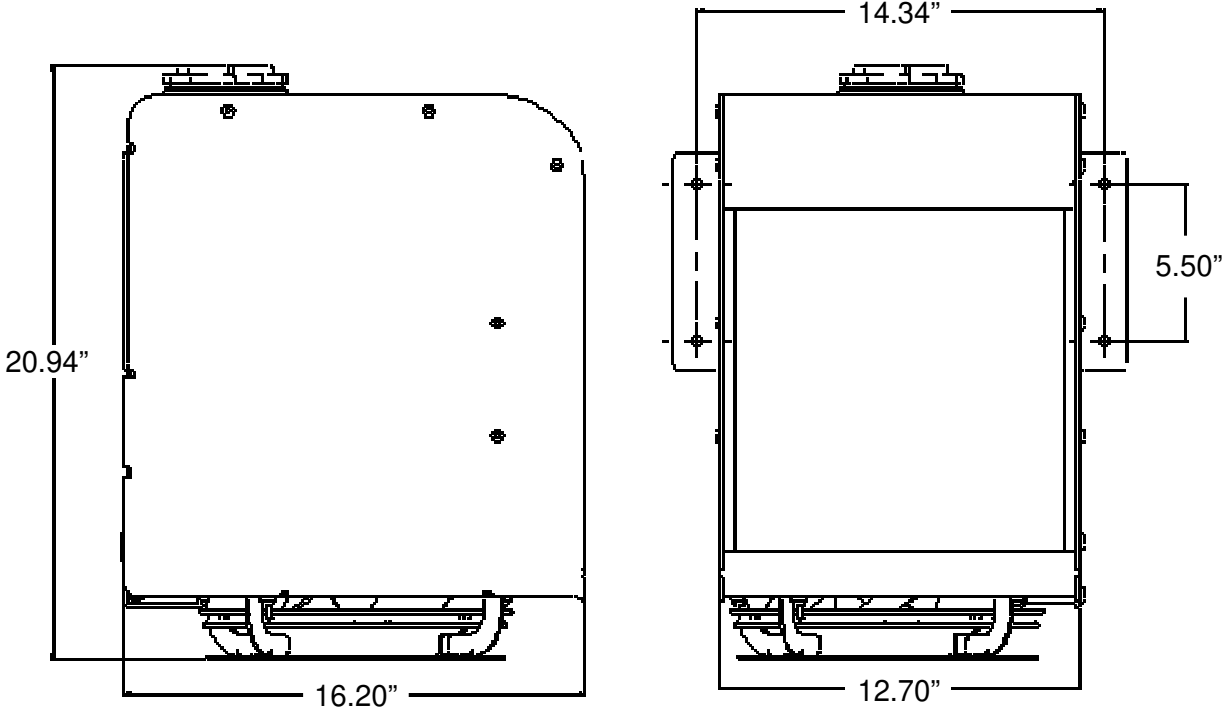
Maintenance

Daily	Check oil level before operating (the system must be off). <i>Correct oil level is at the bottom of the sight glass when the unit is <u>not</u> operating.</i>
Weekly	Visually inspect the system each week. Check hoses, fittings, and mounting.
Every 3 Months	Change filter every 3 months.
Every 6 Months	Change oil and filter every 6 months.
	Grease PTO / Pump spline every 6 months.

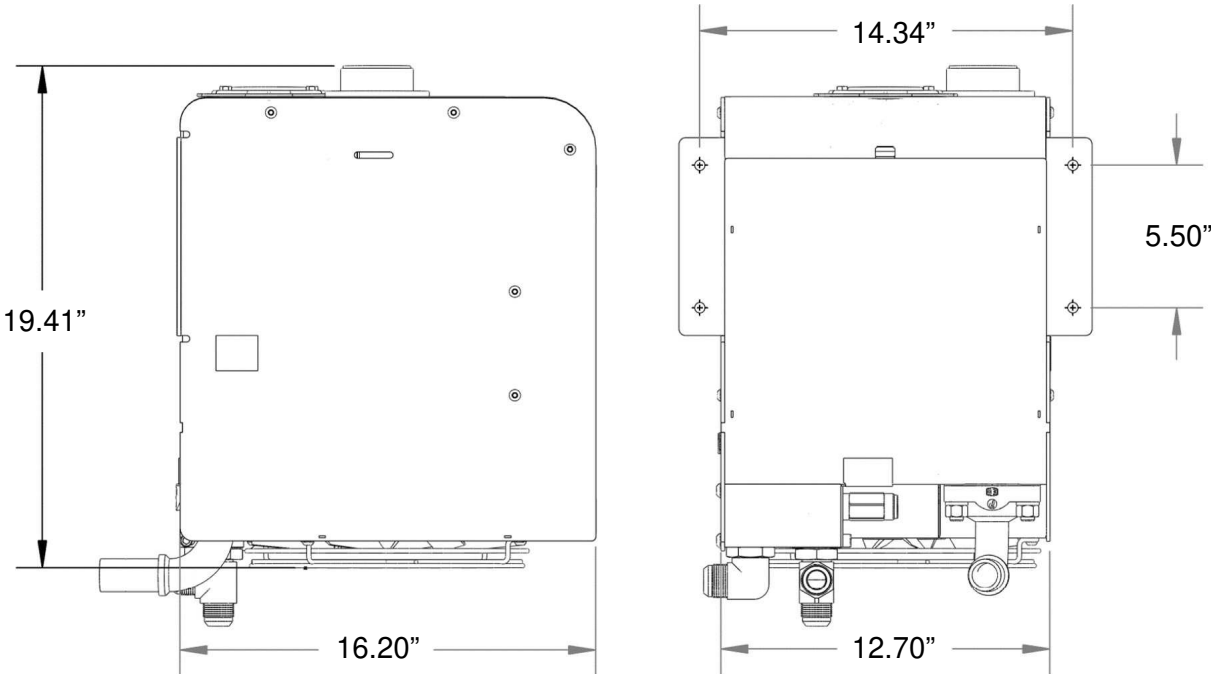
Note: If the unit has a high duty cycle, an oil analysis program is recommended.

Overall Dimensions

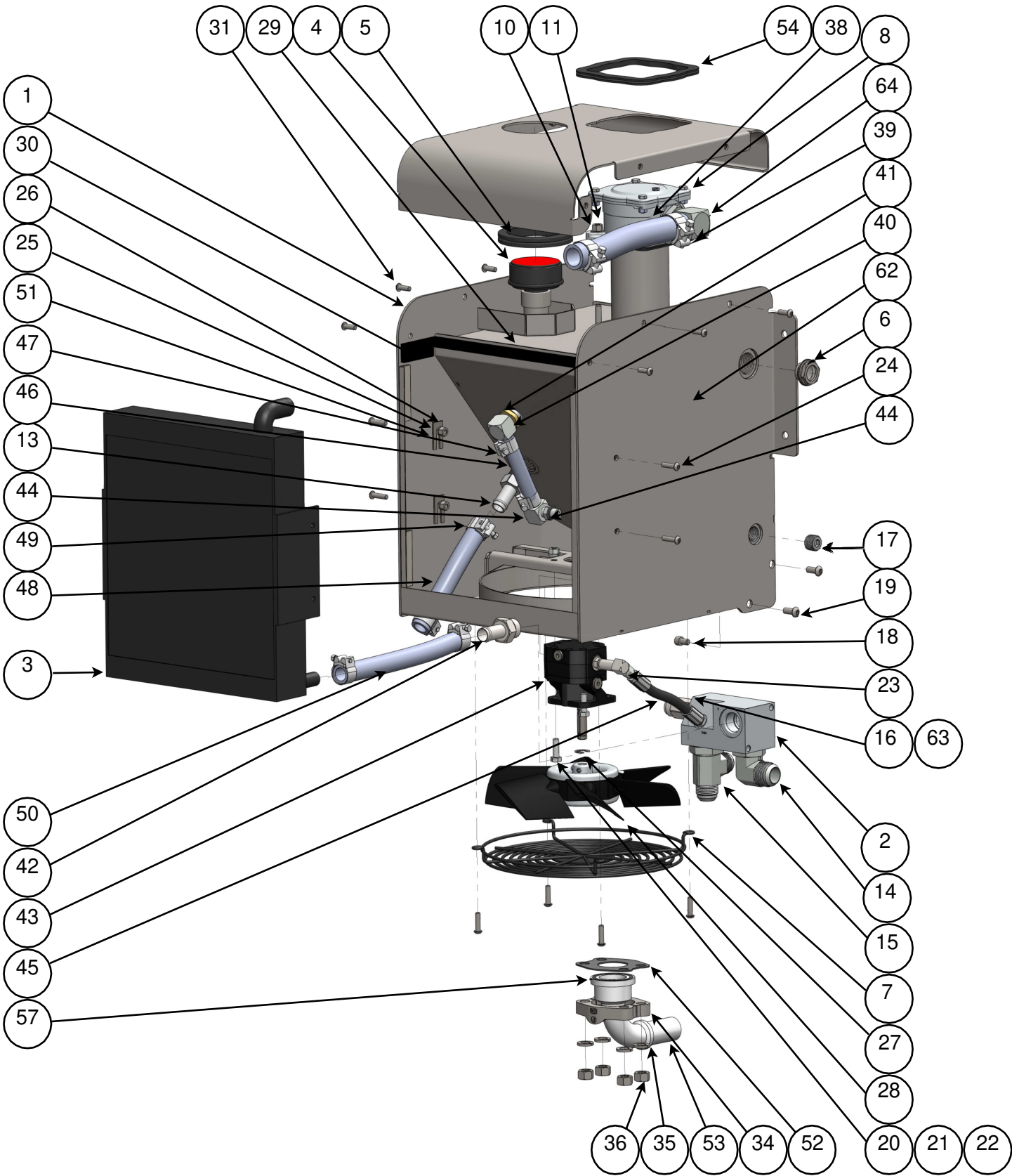
86000 Series



HF 300 Series



Parts List



HF 300 and 86000 Series Parts List

ITEM	PART NUMBER	DESCRIPTION	86000	HF300
1	500-012	Body Mainframe HF - CD61		1
1	500-013	Body Mainframe HF - 2" NPT		1
1	500-016	Body Mainframe - 1-1/2" CD61	1	
1	500-017	Body Mainframe - 2" NPS	1	
2	85209-1	Hyd. Control Block	1	1
3	85202	Hyd. Heat Exchanger (3 port)	1	1
3	370-001	Hyd. Heat Exchanger (4 port)	1	
4	359-002	Hyd. Breather 1" NPT - Red Cap	1	1
4	359-000	Hyd. Breather 3/4" NPT	1	
5	521-803	Grommet, Filler	1	1
6	355-004	Hyd. Sight Glass, 1" NPTM with Ball	1	1
6	93334-075	Hyd. Sight Glass, 3/4" NPT	1	
7	85302	Guard Fan Assy HF/H250/300	1	1
8 ⁺	352-003	Filter Assembly - Square Head		1
8 ⁺	352-008	Filter Assembly - Square Head w/ Lip		1
8	85266	Filter Assembly - w/ Breather	1	
8	352-000	Filter Assembly - No Breather	1	
9*	335-000	Hyd. Check Valve 3/4" NPT - Radiator Bypass	1	1
9*	85211	Hyd. Check Valve 1/2" NPT - Radiator Bypass	1	
10	296-004	5/16" Flat Washer	4	4
10	90191-031	Lock Washer 5/16"	4	4
11	284-026	Nut 5/16" Nylock	4	4
64	328-002	Hyd. Hose Barb 90 Degree Elbow -16 x 16 SAE	1	1
13	85227	Hose Barb -12 x -12 NPTM	1	1
14	322-021	Hyd. Elbow -16 ORBM x -16 JICM	1	1
15	85222	Hyd. Tee 12 SAE x 12 JICM x 12 JICM	1	1
16	85304	Relief Valve - 3000 PSI	1	1
63	85257	Relief Valve - 2500 PSI	1	1
17	90094-050	Plug Pipe 1/2 Soc Stl	1	1
18	85224	Capscrew Skt hd 5/16-18 x 1/2 S/S	1	1
19	214-012	Capscrew Btn Hd 5/16-18 x 3/4" S/S	2	2
20	228-010	Capscrew Hex Hd GR5 5/16-18 x 1"	4	4
21	294-008	5/16" Lock Washer	4	5
22	85234	5/16" Zinc Plated Nut	4	4
23	85305-2	Fan Flow Control	1	1
24	214-006	Capscrew Skt Hd 14-20 x 1"	4	8
25	294-003	Washer, Lock 1/4 SST	4	4
26	284-024	Nut 1/4" Nylock	4	4

HF 300 and 86000 Series Parts List (cont.)

ITEM	PART NUMBER	DESCRIPTION	86000	HF300
27	85258	Retaining Ring 1/2" - Fan Motor	2	2
28	85201	Fan - Hydraflow Std	1	1
31	214-004	Capscrew Skt Hd 1/4-20 x 3/4" S/S	10	6
34	85213	Flange Split Half 24CD61	2	2
35	294-010	Washer Lock GR5 1/2" Zinc Plated	4	4
36	85239	Nut Hex GR5 1/2" Zinc Plated	4	4
38	85244	Hose - Radiator Out to Filter 1"	1	1
39	313-021	Hyd. "T" Hose Clamp Heavy Duty -16 Hose	2	2
40	85219	Elbow 90 Degre -8 NPTM -8 Barb	2	1
41	85259	Seal Nut - 1/2" Fan Motor to Tank	1	1
42	85221	Hyd. Adaptor -12 SAEM x -12 Barb	1	1
43	85200	Fan Motor	1	1
43	300-008	Fan Motor (new style)	1	1
44	85218	Elbow 90 Degree -6 SAEM x -8 Barb	1	1
45	361-003	Hyd. Hose - Fan Motor Feed	1	1
45	361-004	Hyd. Hose - Fan Motor Feed	0	1
46	85236	Hose - Fan Motor Return	1	1
47	313-017	Hyd. "T" Hose Clamp Heavy Duty -8 Hose	2	2
48	85242-1	Hose - Radiator Bypass 3/4"	1	1
49	313-018	Hyd. "T" Hose Clamp Heavy Duty -12 Hose	6	4
50	85243-1	Hose - Control Block to Radiator	1	1
51	571-005	Shim - Radiator (Clip Type)		
52	526-003	Gasket -24 CD61 Flange Gasket	1	1
53	85261	Hyd. Hose Barb 90 Degree -20 x -24 CD61	1	1
53	329-000	Hyd. Hose Barb 45 Degree 1-1/4" x Cd 61	1	1
54	521-804	Grommet, Square Filter		1
54	521-802	Grommet, Filter	1	
56*	85303	Radiator Guard	1	(1)
57	85232	O-Ring -24 CD61 Suction Port Flange	1	1
58*	350-001	Filter Element HF 300 Series		1
58*	85253-1	Filter Element 86000 Series	1	
59*	522-001	Filter Lid - Aluminum Square Cap (bolt on)		(1)
59*	85250	Filter Cap	1	
60*	580-001	Filter Element Spring		(1)
61*	335-001	Hyd. Check Valve - Cold Oil Bypass	1	
62*	298-006	Key - HydraFLOW Fan Motor	1	1
	508-042	Bracket Extension - HF HydraFLOW	1	1

* Not shown in drawing

(QTY) Sub-assembly replacement part, or part not used in every model

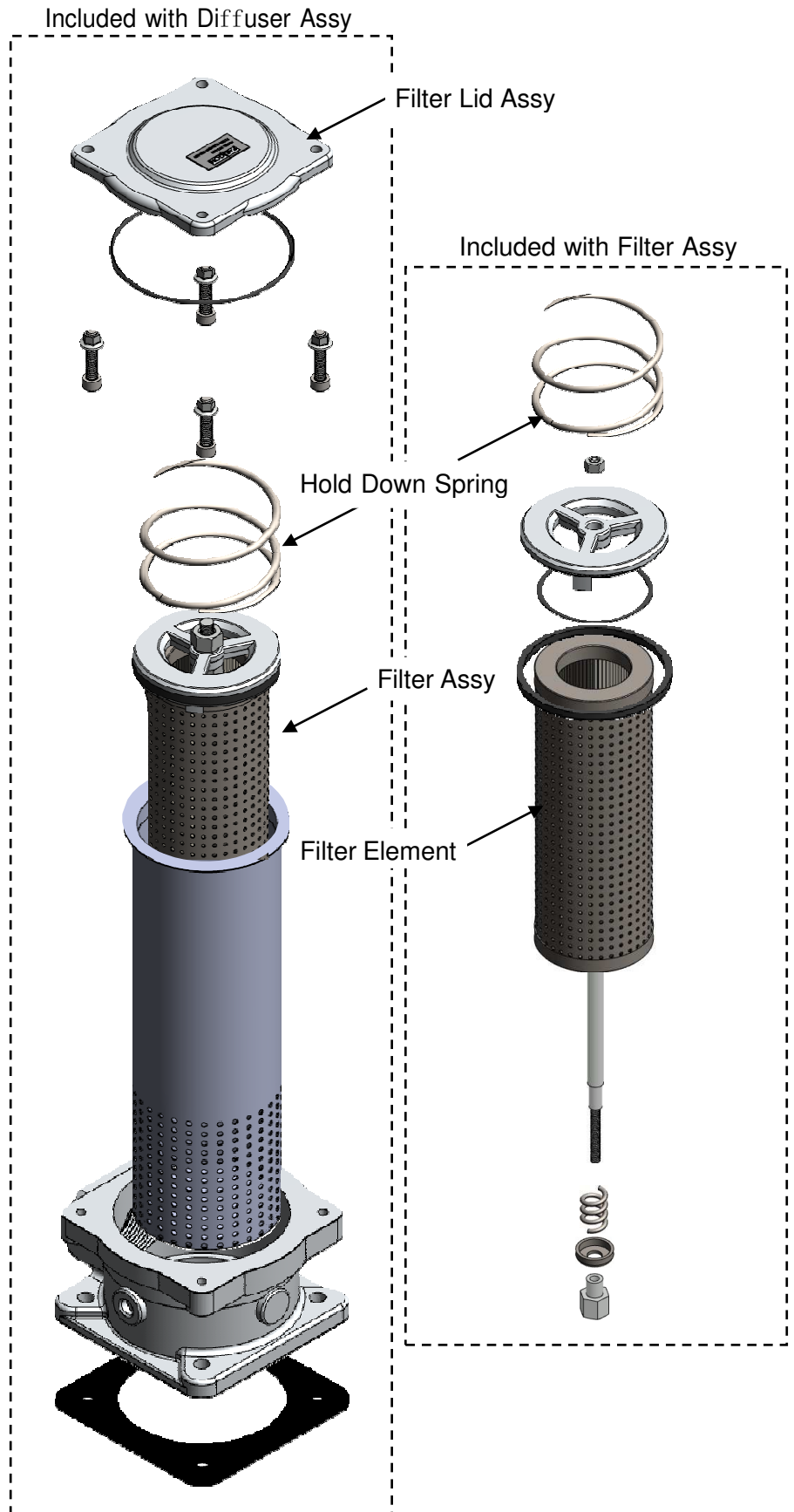
^ Note: Filter assembly includes element, bowl, housing and all gaskets.

+ See Filter Head Options for identification

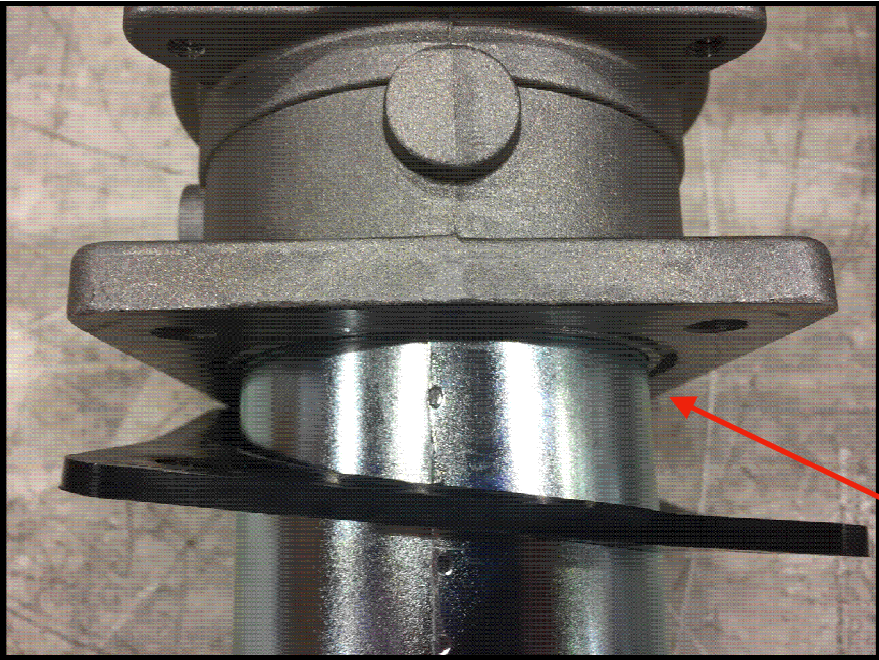
Filter Breakdown



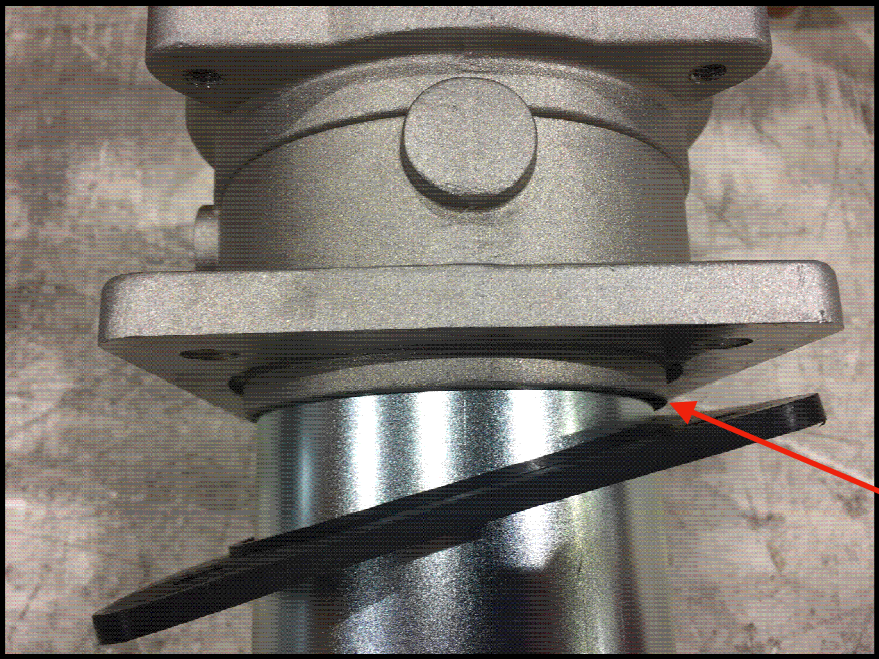
- Diffuser Assy: 352-003 / 352-008
- Filter Lid Assy: 351-006
- Filter Assy: 351-004
- Filter Lid: 522-001
- Hold Down Spring: 580-001
- Filter Element: 350-001



Filter Head Options



Filter Head without Lip
Part # 352-003

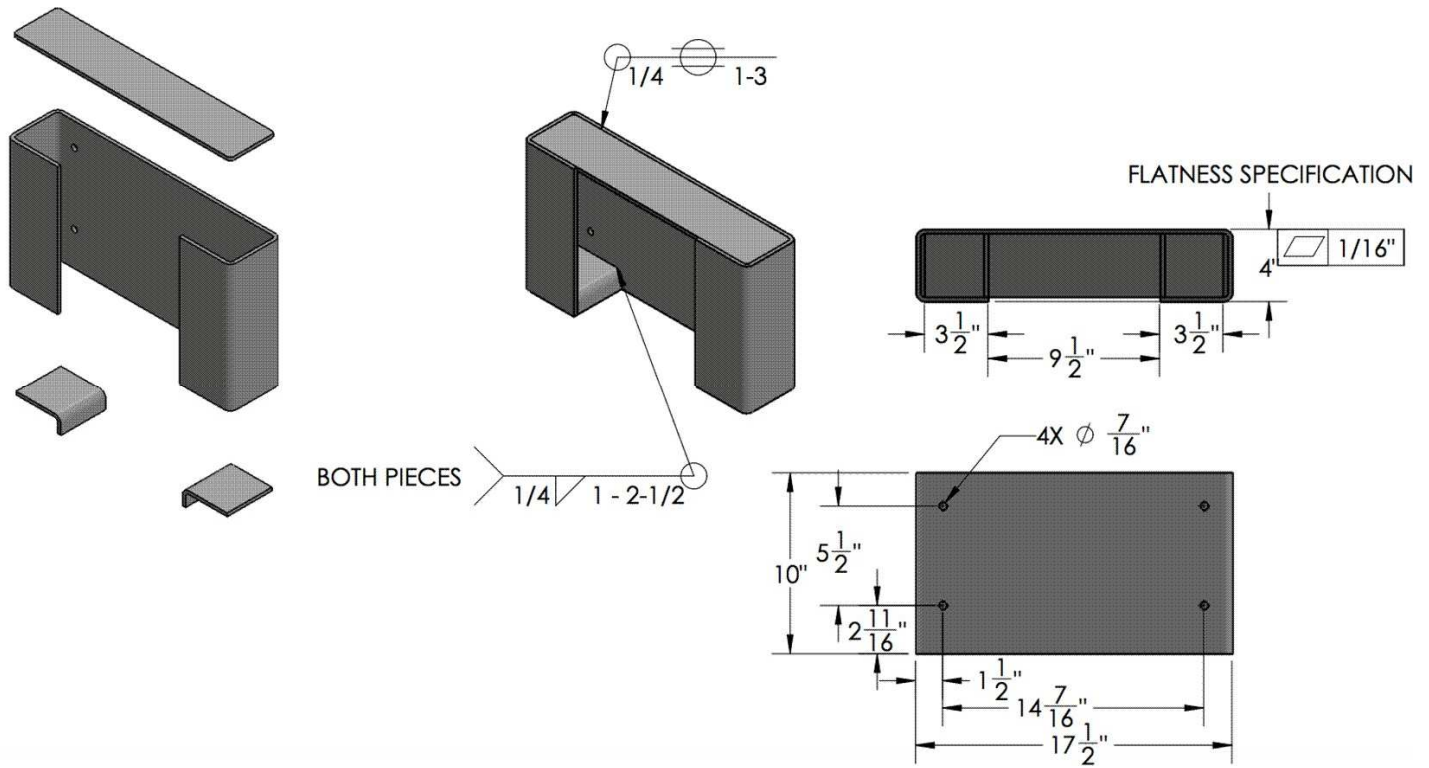


Filter Head with Lip
Part # 352-008

Recommended Bracket for HF 300 Series

Fig. 5

PART NUMBER	DESCRIPTION
508-042	Bracket Extension - HF Hydraflow



WARRANTY – HydraFLOW

Subject to the terms and conditions hereinafter set forth and set forth in General Terms of Sale, Paragon Tank Truck Equipment LLC (the seller) warrants products and parts of its manufacture, when shipped, will be of good quality and will be free from defects in material and workmanship. This warranty applies only to Seller's equipment, under use and service in accordance with seller's written instructions, recommendations and ratings for installation, operating, maintenance and service of products, for a period as stated in the table below.

THIS WARRANTY EXTENDS ONLY TO BUYER AND/OR ORIGINAL END USER, AND IN NO EVENT SHALL THE SELLER BE LIABLE FOR PROPERTY DAMAGE SUSTAINED BY A PERSON DESIGNATED BY THE LAW OF ANY JURISDICTION AS A THIRD PARTY BENEFICIARY OF THIS WARRANTY OR ANY OTHER WARRANTY HELD TO SURVIVE SELLER'S DISCLAIMER.

Product Type	Warranty Duration
New	18 months from date of shipment, or 12 months after initial startup date, whichever occurs first

All accessories furnished by Seller but manufactured by others bear only that manufacturer's standard warranty.

All claims for defective products, parts, or work under this warranty must be made in writing immediately upon discovery and, in any event within one (1) year from date of shipment of the applicable item and all claims for defective work must be made in writing immediately upon discovery and in any event within one (1) year from date of completion thereof by Seller. Unless done with prior written consent of Seller, any repairs, alterations or disassembly of Seller's equipment shall void warranty. Installation and transportation costs are not included and defective items must be held for Seller's inspection and returned to Seller's Ex-works point upon request.

THERE ARE NO WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE.

After Buyer's submission of a claim as provided above and its approval, Seller shall at its option either repair or replace its product, part, or work at the original Ex-works point of shipment, or refund an equitable portion of the purchase price.

The products and parts sold hereunder are not warranted for operation with erosive or corrosive material or those which may lead to build up of material within the product supplied, nor those which are incompatible with the materials of construction. The Buyer shall have no claim whatsoever and no product or part shall be deemed to be defective by reason of failure to resist erosive or corrosive action nor for problems resulting from build-up of material within the unit nor for problems due to incompatibility with the materials of construction.

Any improper use, operation beyond capacity, substitution of parts not approved by Seller, or any alteration or repair by others in such manner as in Seller's judgment affects the product materially and adversely shall void this warranty.

No employee or representative of Seller other than an Officer of the Company is authorized to change this warranty in any way or grant any other warranty. Any such change by an Officer of the Company must be in writing.

The foregoing is Seller's only obligation and Buyer's only remedy for breach of warranty, and except for gross negligence, willful misconduct and remedies permitted under the General Terms of Sale. In no event shall Buyer be entitled to incidental or consequential damages. Any action for breach of this agreement must commence within one (1) year after the cause of action has occurred.



Paragon Tank Truck Equipment
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