



HydraFLOW

50 gpm max.

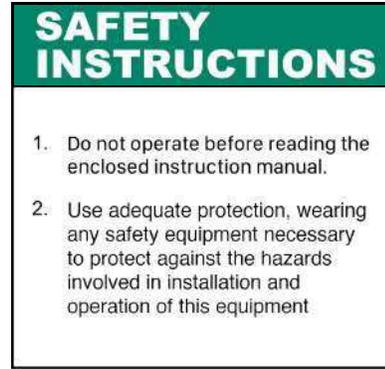
3000 psi max



WARNING
DO NOT OPERATE
MACHINERY BEFORE
READING MANUAL FULLY

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

Warnings



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.

Table of Contents

Section	Page
Safety Instructions & Warning Tags	1
Introduction	2
Safety Precautions	3
HydraFLOW Installation & Mounting	4-5
Start-Up, Operation, & Maintenance	6
Model Number Construction & Overall Dimensions	7
Filter Breakdown & Parts List	8-12
Warranty	13

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

- Mount the PTO as recommended by PTO manufacturer.
- 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.
- 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 21/32" diameter holes in the appropriate location for mounting the unit as shown in **Fig. 4**.
- Use the fasteners in the hardware packet supplied by Paragon to mount the HydraFLOW.

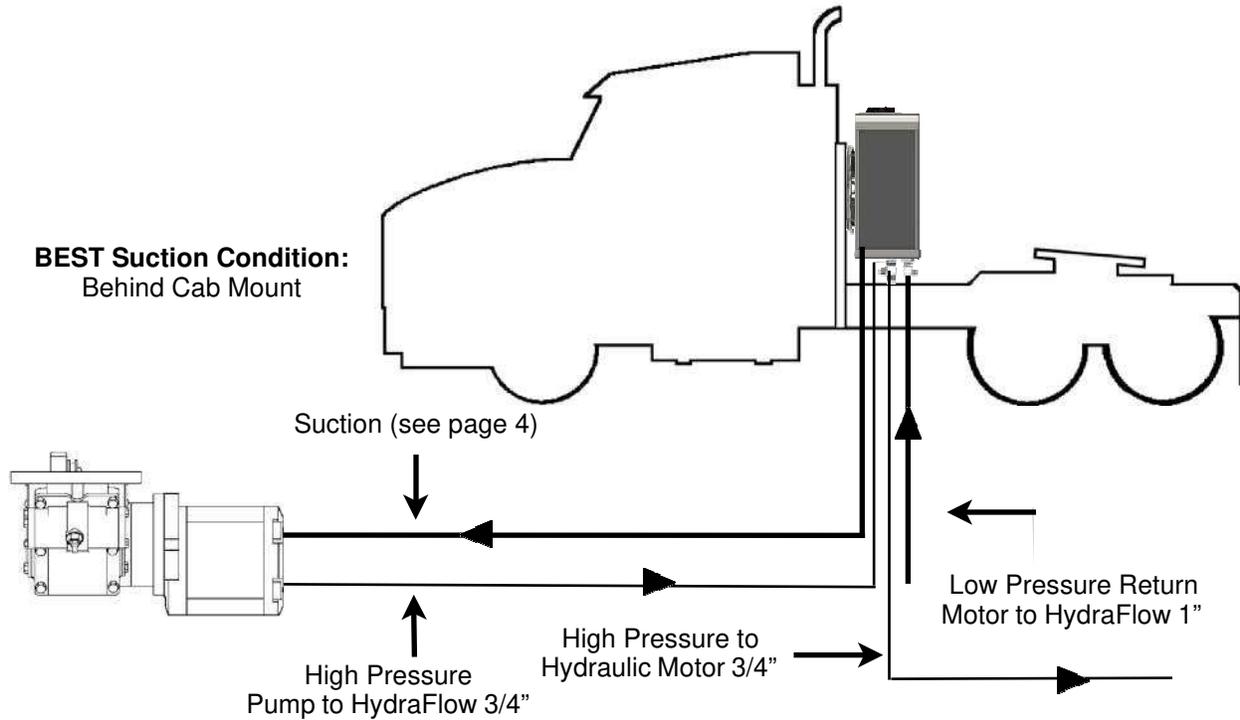
Hydraulic Hoses & Fittings

- DO NOT** use thread tape or pipe dope on threaded connections, this will contaminate the hydraulic system.
- ALL** HD model coolers have a 2" female National Pipe Thread connection located on the bottom of the cooler.
- ALL** hydraulic hoses must be supported and not allowed to hang on the cooler connections.
- Use of Loctite 542 or equivalent is recommended for any National Pipe Thread (NPT) hydraulic connections.
- 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.

Fig. 1

Suction Hose Chart	
GPM Flow	Hose Size
0-20	1-1/4"
20-25	1-1/2"
26-50	2"

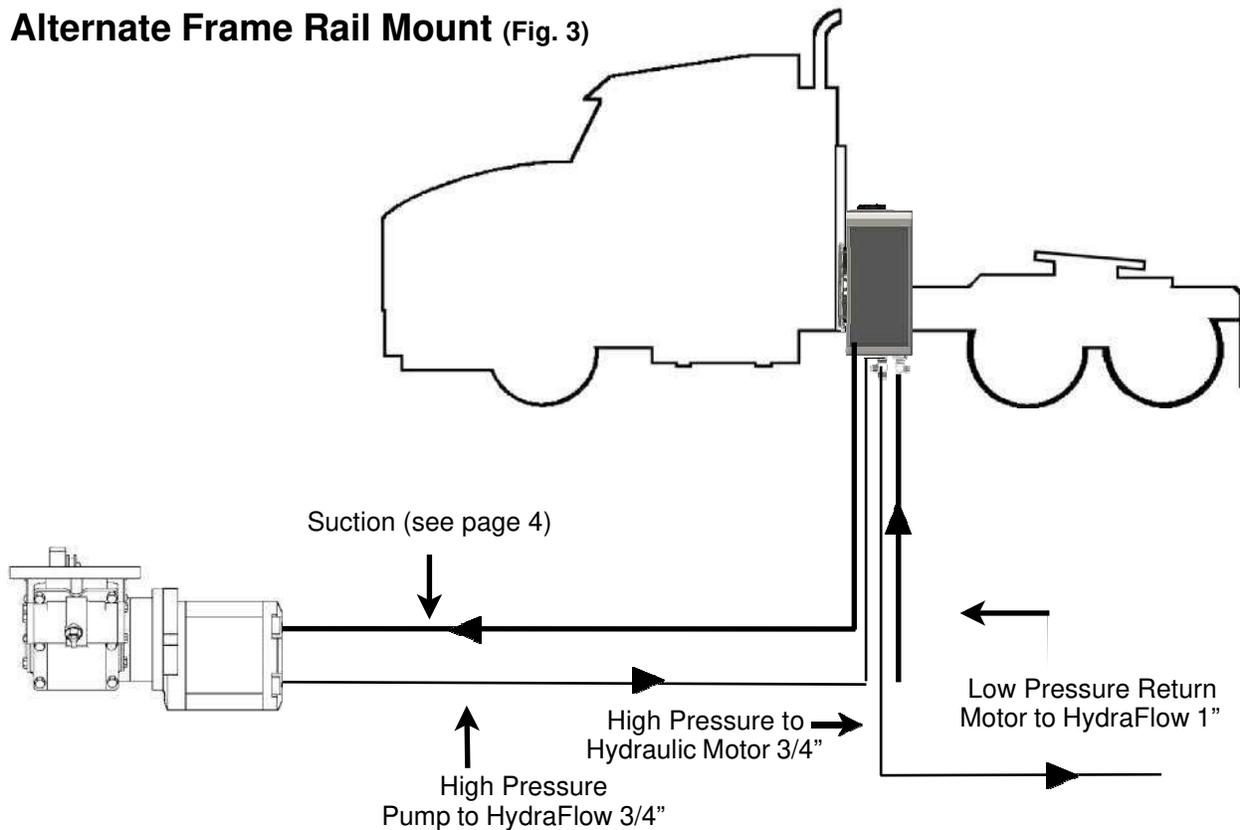
Preferred behind the cab mount (optimum suction conditions, Fig. 2)



Note:

- Review Hose Chart (Fig. 1) 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.

Alternate Frame Rail Mount (Fig. 3)



Initial Start Up (Two People Required)

1. Remove the filler cap, filter and filter bowl.
2. Fill the HydraFLOW **1/2 full** with hydraulic lubricant.

NOTE: Paragon recommends an (ISO) 32 non-foaming hydraulic oil. (Example: Mobil SHC 630 Hydraulic 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 (no oil should be in the top sight glass).
9. Replace the filter bowl, filter and fill cap.
10. Start the engine and slowly release the clutch.
11. While the engine is running, engage the PTO and pump according to manufacturer recommendations.
12. Check for leaks, disengage the PTO according to manufacturer recommendations and stop the engine.
13. Re-check the oil level.

Operation of System

1. Check oil level in the HydraFLOW.
Correct oil level is the bottom sight glass completely full and the top sight glass completely empty 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.

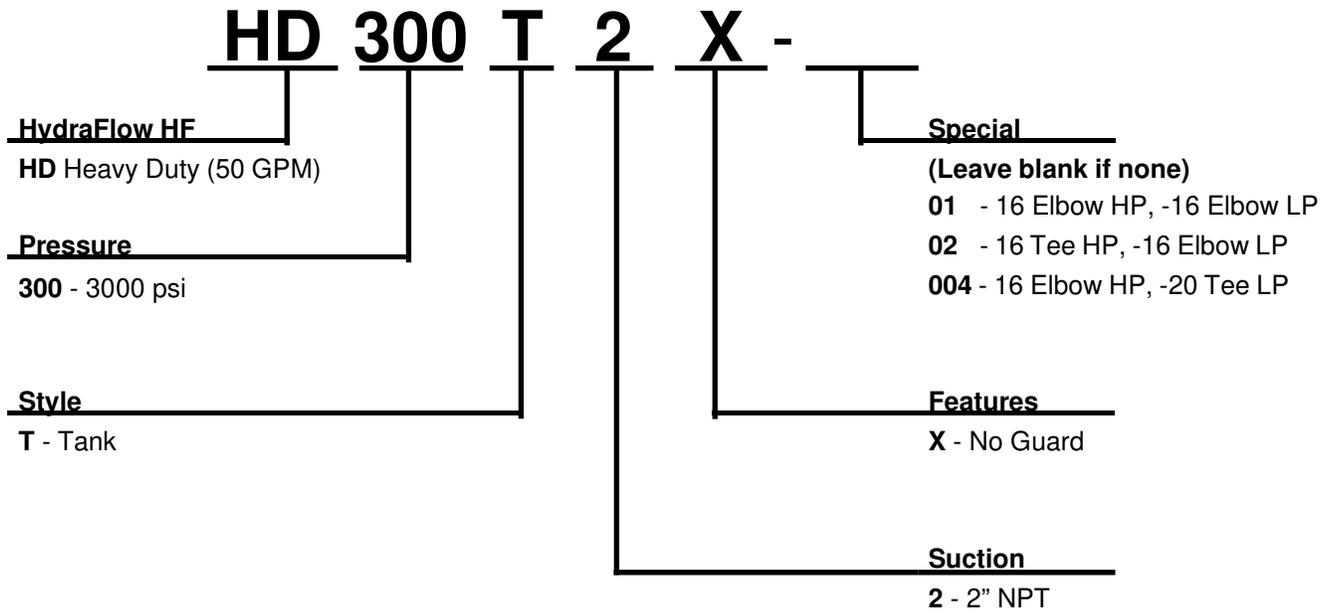
NOTE: Oil level will drop in the sight glass when the system is in operation.
5. Operate valves slowly.
6. To shut down the system, put the valve in neutral (if available), disengage the PTO per manufacturer recommendations.

Maintenance

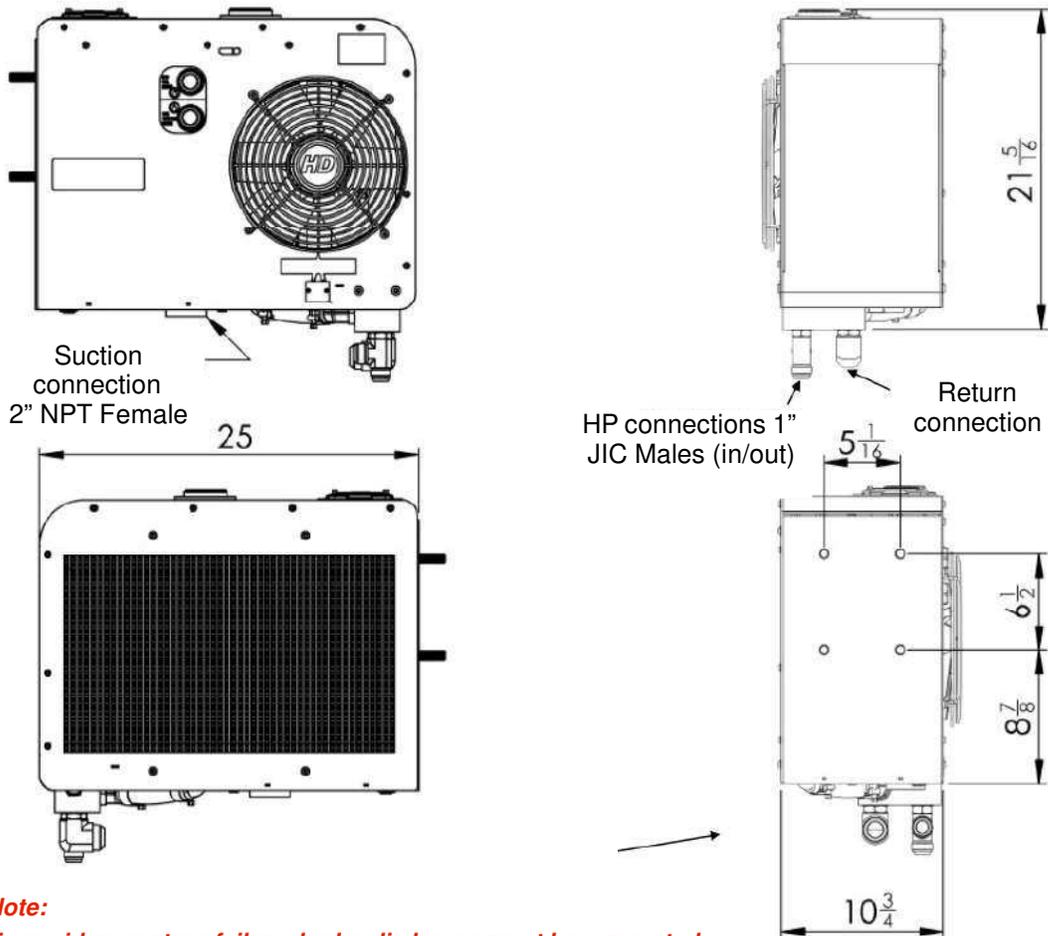
Daily	Check oil level before operating (the system must be off). <i>Correct oil level is the bottom sight glass completely full and the top sight glass completely empty when the unit is <u>not</u> operating.</i>
Weekly	Visually inspect the system each week. Check hoses, fittings, and mounting.
Every 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.

Model Number Construction



Overall Dimensions (Fig. 4)



Note:
To avoid premature failure, hydraulic hoses must be supported and not allowed to hang or pull on cooler connections.

Filter Breakdown



Diffuser Assy: 352-005 / 352-009 (lip)

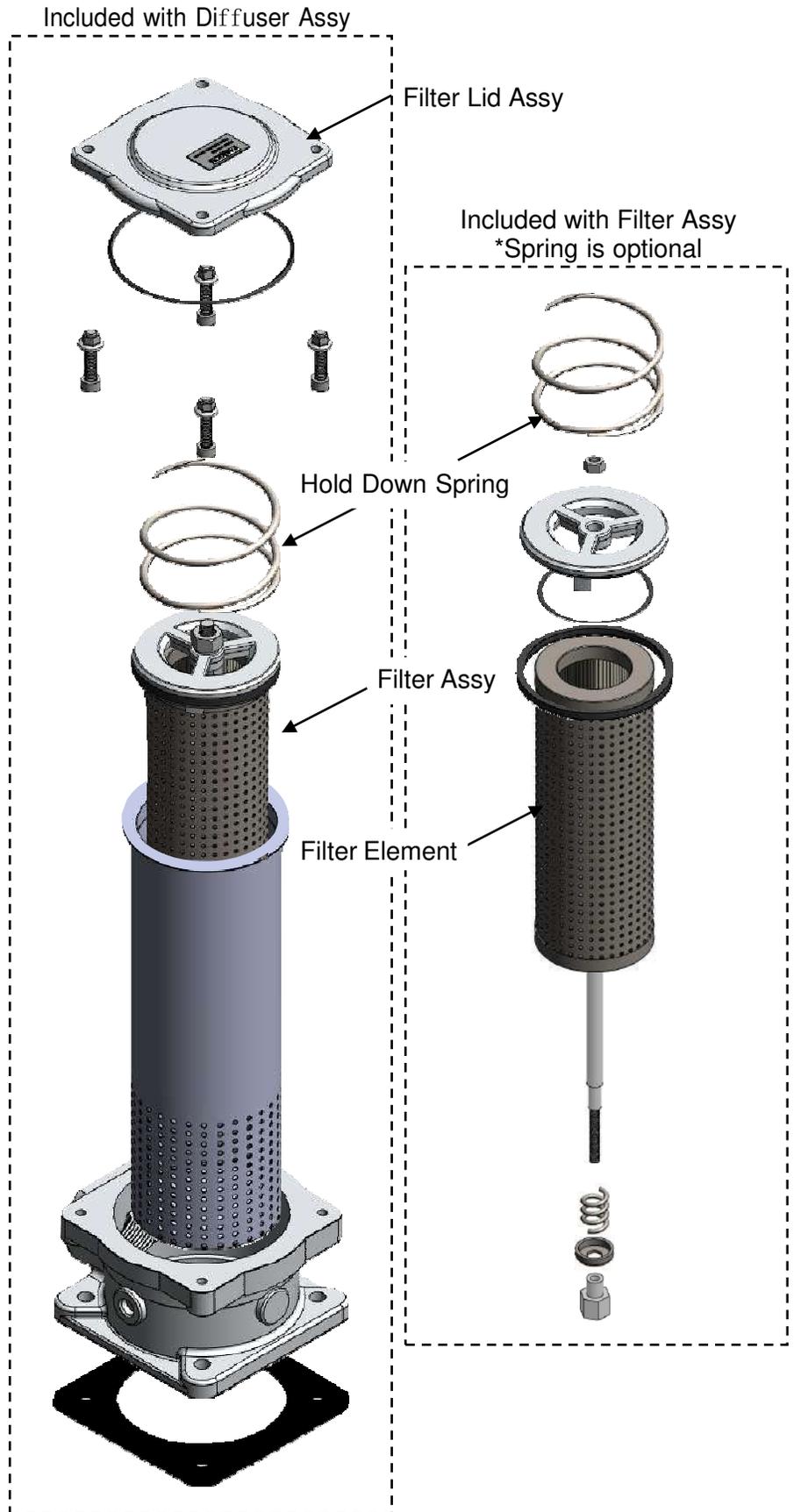
Filter Assy: 351-006

Filter Assy w/ Spring: 351-003

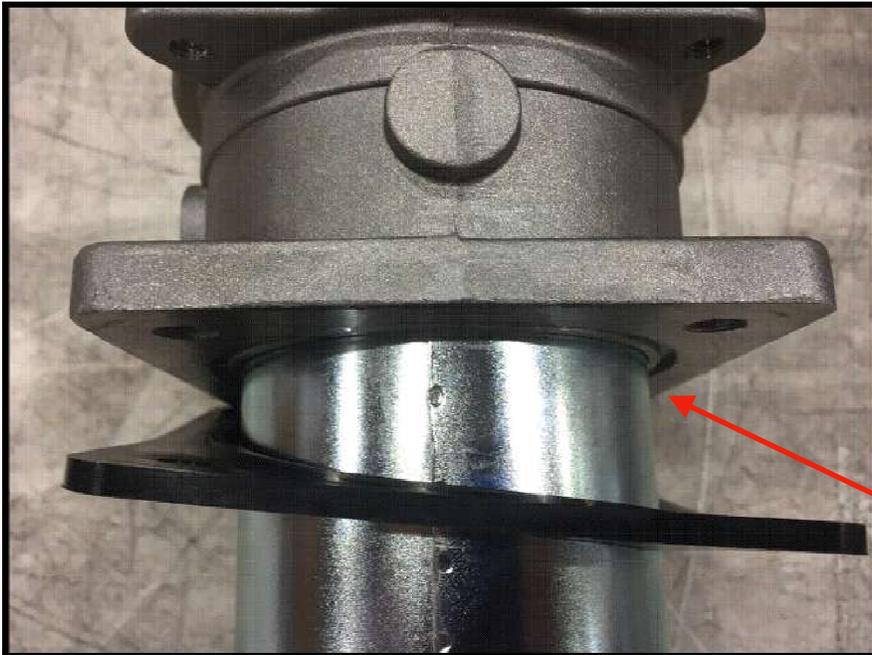
Filter Lid: 522-001

Hold Down Spring: 580-001

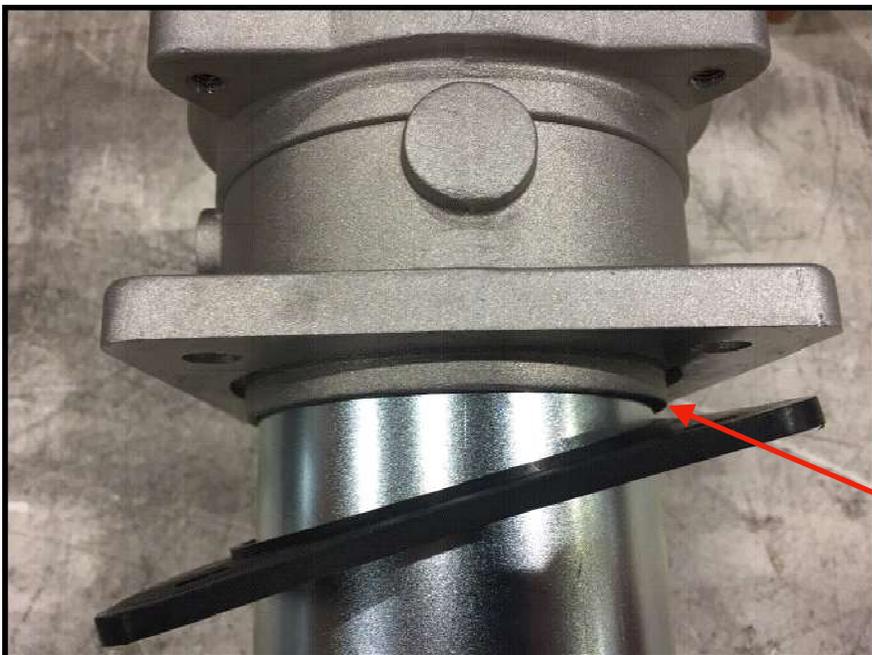
Filter Element: 350-000



Filter Head Options

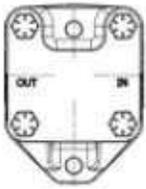


Filter Head without Lip
Part # 352-005

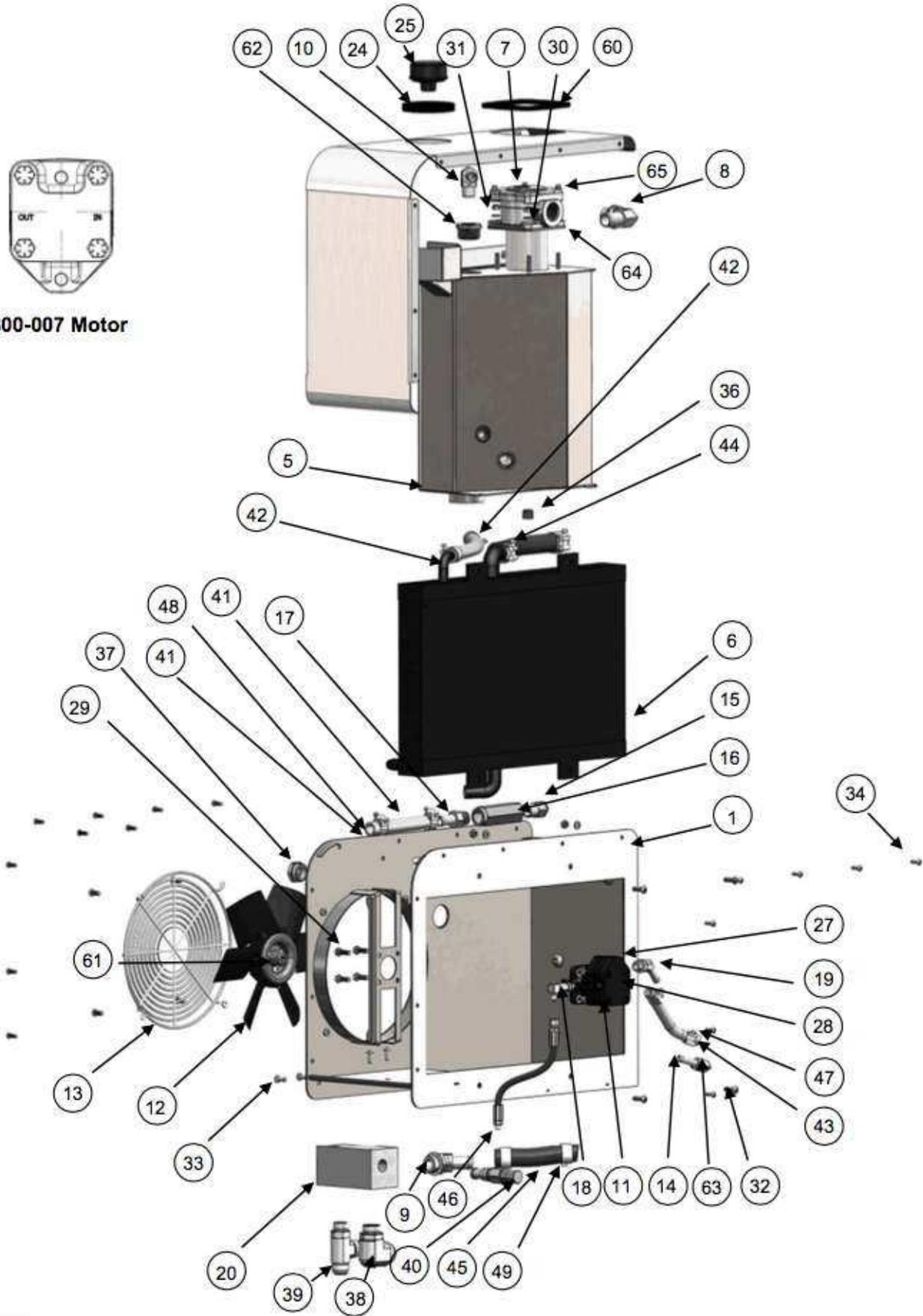


Filter Head with Lip
Part # 352-009

Parts List



300-007 Motor



Parts List

Item	Part Number	Description	QTY. STD	QTY. SQ. Filter
1	500-022	Frame - bolt-in tank	X	1
1	500-018	Frame - weld-in tank	1	X
5	500-026	Tank - bolt-in	X	1
6	370-000	Hyd. Heat Exchanger	1	1
7	352-001	Filter/Diffuser - 4 bolt (Round)	1	X
7	352-005	Filter/Diffuser - 4 bolt (Square)	X	1
8	-8522	Elbow 90 deg - SAE -16 x 1" barb	1	1
9	328-001	Elbow 45 deg - 16SAE x 16 barb	1	1
10	328-003	Elbow -12 barb x -NPTM	1	1
11	300-007	Fan Motor (new style) (Replaces 300-001)	1	1
12	507-000	Fan	1	1
13	524-000	Fan Guard	1	1
14	85219	Hose Barb 90 elbow -8 x -8 nptm plated	1	1
15	322-005	Hyd 45 elbow -12 NPTM x -12NPTM	1	1
16	335-002	Radiator Bypass Valve	1	1
17	85227	Barb to check valve 3/4" hose barb x 3/4" NPTM	1	1
18	322-027	Flow Control (for 300-007)	1	1
19	322-026	Fan Motor Flow Control Valve (for 300-001)	1	X
19	328-000	Hose Barb 45 elbow -8 barb x 6 SAE	1	1
20	362-001	Control Block - HD series (Pilot/Old)	1	X
20	362-003	Control Block - HD series Direct New (RDFA)	1	1
24	521-803	Grommet, Filler Cap	X	1
24	85241	Rubber U-Trim	Per Foot	X
25	359-002	Hyd Breather 1" NPT - Red Cap (standard)	1	1
25	359-004	Hyd Breather 1" NPT, 5 psi - Red Cap (Bulk Feed)	1	1
27	92354-0313	Washer - lock 5/16" s/s	4	8
28	85234	Nut - 5/16 s/s	4	8
28	85234	Nut - 5/16	4	8
28	85234	Nut - 5/16 plated	4	8
29	228-010	Screw Hex Head GR5 5/16" X 1" PLTD	4	4
30	296-004	Washer Flat Gr5 5/16" PI	1	4
31	284-026	Nut Hex 5/26-18 Nyloc PI	1	6

Parts List

Item	Part Number	Description	QTY. STD	QTY. SQ. Filter
32	214-013	Capscrew Button head 5/16 x 1" - S/S	1	4
33	214-012	Capscrew Button head 5/16 x 3/4" - S/S	1	8
34	85230	Screw 1/4-20 x 3/4" button head Allen s/s	18	17
36	90094-050	1/2" NPT plug	1	1
37	355-004	Hyd Sight Glass 1" NPTM w/ ball	1	2
38	322-015	Elbow 90 degree 16 - SAE x -20 JIC	1	1
39	320-015	Tee 16SAE x -15 JIC x -16 JIC	1	1
40	331-000	Relief Valve - 3000 psi (Pilot/Old)	1	X
40	331-001	Relief Valve - 3000 psi Direct New (RDFA)	1	1
41	85242-1	Hose 3/4" low pressure bypass (per foot)	Per Foot	Per Foot
42	85242-1	Hose 3/4" low pressure bypass (per foot)	Per Foot	Per Foot
43	85236	Hose fan motor return 1/2" (per foot)	Per Foot	Per Foot
44	360-001	Hose - rad out 1" (per foot)	1	1
45	360-000	Hose - rad in 1" (per foot)	1	1
46	361-000	Hose - fan motor feed	1	1
47	313-017	Hose Clamp T-Bolt -8 hose	2	2
48	313-018	T Clamps -12 Hose	4	4
49	313-019	T Clamps -16 hose	4	4
60	85241	Rubber U-Trim	Per Foot	X
60	521-804	Grommet, Square Filter	X	1
61	85258	E Clip 1/2"	2	2
62	335-001	Low Pressure Bypass Valve	1	1
63	85259	Nut, Seal 1/2" NPT	1	1
64	526-001	Gasket - Hydraflow Filter (Round)	1	X
65	85250	Filter Cap HD Hydraflow (Round)	1	X
-	350-000	Filter Element HD Hydraflow	1	1
-	526-021	Gasket HD bolt-in Tank	X	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

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
www.paragondirect.com