



Handheld Filter Unit

Flow rate available in 0.7 GPM & 2.8 GPM

OPERATORS MANUAL

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Advantages



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Table of Contents

	Description	Page
1.	General Information	3
2.	Standard Feature	4
3.	Model Code	5
4.	Specification Sheet	6
5.	Engineering Product Warranty	7
6.	Safety Instructions	8
7.	Fluid Compatibility	8
8.	Installation and Start-Up Procedures	9-12
9.	Troubleshooting	13
10.	System Components	14



1. GENERAL INFORMATION

The **Handheld Filter Unit** is designed to filter oil to meet or exceed new oil cleanliness specifications. The system is designed to remove particulate contamination from a wide variety of oils, and it is typically equipped with high-efficiency filter elements made from pleated microglass media rated Beta $x(c) \geq 1000$ Per ISO 16889, meaning that 99.9% of all particles "x" Micron and larger are removed in one pass.

The oil is drawn from an existing reservoir to the filtration system by means of a self-priming positive displacement gear pump. The oil passes through the filter housing before being discharged to the outlet, at which point it is pumped back to the existing reservoir. Medium weight hydraulic hose are used at both the inlet and the outlet.



2. STANDARD FEATURES

Features	Advantages	Results
Differential Pressure Indicators	Precise Filter Life Indication	<ul style="list-style-type: none">• Less Filter Waste• Reduced Filter Costs
Positive Displacement Pump	No Need to Prime System	<ul style="list-style-type: none">• Less Operator Labor• No Additional Equipment Required
Medium Grade Hydraulic Hose	Longer Life	<ul style="list-style-type: none">• Reduced Replacement Costs
Steel Frame	Strong, Steel Powder Coated Frame	<ul style="list-style-type: none">• Durable, Long-Lasting
In-Line Sample Port Valves	Quick and Easy Oil Sampling	<ul style="list-style-type: none">• No System Downtime for Oil Sampling
Inlet Strainer	Protects Pump from Large Particles	<ul style="list-style-type: none">• Longer Pump Life
Small, Compact Design	Perfect use in tight, confined spaces	<ul style="list-style-type: none">• More Portable• Easier Maneuverability



3. MODEL CODE

Model Number: HH050-2.8-**-V-SH		
Classification	Code	Description
Product Type	HH	Handheld Mobile Filter Unit
Connection Size	050	1/2" FPT Inlet and Outlet
Flow Rate	0.7 or 2.8	0.7 or 2.8 GPM
Filter: Micron Rating	**	Micron Rating - Beta [c] ≥ 1000 @ 99.9%
Seal Material	V	Viton®
Sample Port	S	Oil Sampling Ports
Hoses	H	Medium Pressure Hydraulic Hoses
Electrical Requirements	Blank	115 Volts / 1 Phase / 60 Hertz

HANDHELD UNIT

Model #: HH050-2.8-**-V-SH

Serial #: 00007559

Replacement Element: PFP75EX8B (6μ microglass)

Flow Rate: 2.8 GPM

Max Operating Pressure: 100 PSI

Seal: Viton

Electrical: 1/60/115/230

MFG. Date: 03/2016



4. SPECIFICATION SHEET

Installation Requirements	
Input Voltage	220 V / 1 PH / 60 Hz
Designed FLA (Full Load Amps)	6 AMPS @ 115 Volts
Inlet Connection Size	3/4" FPT
Outlet Connection Size	3/4" FPT
Electrical Operating Specifications	
Oil Pump Motor	(See Motor Nameplate Rating)
Mechanical Operating Specifications	
Flow Rate	0.7 or 2.8 GPM
Maximum Discharge Pressure	100 PSI (689.5 kPa)
Seal Material	Buna-N
Product Restrictions	
IMPORTANT: This system should never be used to remove particulates from volatile fluids such as gasoline since the pump cannot be used for solvents with low lubricity. In addition, the unit should not be used on liquids with a flash point below 200°F (93°C).	



5. ENGINEERING PRODUCT WARRANTY

For a period of one (1) year from the date of delivery, Precision Filtration Products (Seller) engineered products are warranted to be free from defects in materials and workmanship when properly installed, maintained, or operated within the specific working parameters for which the equipment was designed. If the engineered product does not perform as warranted, it will be repaired or replaced at the Seller's discretion. The Seller will provide parts and labor, free of charge if the defect had occurred within the first year.

This warranty does not apply to consumable components such as filter elements, light bulbs, etc. This warranty shall not apply to product altered by anyone other than Seller or their representative.

At the Purchaser's option, the defect may be handled by one of the following methods:

- Ship (freight pre-paid) the unit in its entirety to Seller for repair or replacement.
- Remove the defective component and ship (freight pre-paid) to Seller for inspection and test. Upon completion of the evaluation typically fourteen (14) business days, Seller will notify Purchaser if the claim is warranty related. If the claim is valid, a replacement component will be immediately shipped. If the claim is found to be due to improper installation, maintenance, or operation, a Purchase order will be required for the replacement component.
- Remove defective component and ship (freight pre-paid) to Seller with an open Purchase Order. Seller will immediately ship a replacement component and begin evaluation concurrently. Upon completion of the evaluation, typically fourteen (14) business days, Seller will notify Purchaser if the claim is warranty related. If the claim is valid, the open Purchase Order will be returned without any charges. If the claim is found to be due to improper installation, maintenance, or operation, the open Purchase Order will be invoiced for the amount of the replacement component.

SELLER SHALL NOT BE RESPONSIBLE OR LIABLE FOR DOWNTIME, LOSS OF INCOME, LIVING EXPENSES, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES THAT MAY ARISE OUT OF THE USE OF THIS PROPERTY. THIS WARRANTY IS THE SOLE WARRANTY MADE BY PRECISION FILTRATION PRODUCTS IN REGARDS TO THIS EQUIPMENT. PRECISION FILTRATION PRODUCTS MAKES NO OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.



6. SAFETY INSTRUCTIONS

This system has been examined and tested for safety. If there is any possibility that the oil being purified is contaminated with a solvent or materials which could be considered hazardous, either with toxicant or flammable explosives, the purifier should not be used unless precautions are taken to vent the vapors in a safe manner according to local, state, and federal codes and the flash point is above 200°F (93°C). This caution is necessary to prevent the possibility of fire, explosion, or toxic injury to persons and property.

NOTE: Normal safety practices and common sense should always be exercised when operating this unit.

7. FLUID COMPATIBILITY

Depending on the model number, the following seals apply:

The process fluid must be compatible with Viton seal material. Viton is good in the temperature range of -15°F to +400°F. It is generally recommended for lubricating, fuel, and hydraulic oils. The unit may be ordered with other seals to provide compatibility with specialty fluids.

The process fluid must be compatible with Buna seal material. Buna-N is generally recommended for petroleum, water, diesel, and water glycol. This unit may be ordered with other seals to provide compatibility with specialty fluids. Buna-N is good in the temperature range of -65°F to +250°F.



8. INSTALLATION AND START-UP PROCEDURES

8.1 Unpacking

This system is delivered with maximum protection during transportation and handling.

NOTE: All damage attributed to the handling and deliver of the unit must be recorded and brought to the attention of the shipper immediately.

This unit has been thoroughly tested for a minimum of one (1) hour run time. Fluid used to test the unit is a Shell Turbo® Oil T32, unless otherwise specified by the customer. The unit has been thoroughly inspected for defects prior to the delivery. All connections, however, should be checked prior to operating this unit, vibration and/or rough handling during delivery could adversely affect component alignment and/or connection tightness.

8.2 Mechanical Installation

With the system in place, connect the inlet and outlet hoses from the reservoir to the system. The inlet port has been sized to provide enough flow to operate the unit in the standard mode using oil with a maximum viscosity of 1500 SSU (323.7 cSt). A hose diameter equal to inlet/outlet port size (see specification sheet) is required to provide adequate oil supply to this unit.

NOTE: Use of a smaller diameter line will restrict the flow and will adversely affect the automatic operation of the unit.

The inlet/outlet connections have been sized for maximum hose lengths of 10 feet. Use of longer hose lengths must be approved prior to installation. Use of a "quick disconnect" on the inlet line is not recommended. This can restrict flow to the unit in specific applications. Oil is drawn into the unit by vacuum created by the system and is capable of pulling oil with up to 8-ft (2.4m) of negative head. For applications that exceed this, please consult the factory.



8.3 Operating Instructions

Connect inlet and outlet hoses to the oil supply reservoir and system. Connect power supply cord to the electrical receptacle.

CAUTION: Main Power Disconnect should be located within a line of sight to the power source.

Close all drain valves and open the inlet & outlet valves (if supplied) on the filtration system and the oil supply reservoir.

Initial Starting Procedure:

1. Read Mechanical Installation (7.2)
2. Plug the cord into the power source and turn the unit on then off quickly to verify proper motor rotation. Proper rotation is verified before each unit is shipped but this should be verified with every power outlet that the machine will use. If the rotation is not correct, the plug should be rewired accordingly. Unplug the machine from the power source. *If the unit does not start, press the on-off switch down completely to reset the overload then try to restart.
3. It is recommended that the machine is tested with a barrel or tote of fluid without quick disconnects before any application specific fittings or quick disconnects are installed so that the flow can be visually verified.
4. If the machine was ordered with wands, install them and put both wands into the largest bung of a barrel or tote of oil. If the machine was not ordered with wands, install the connection fitting on the inlet hose (suction) and leave the outlet hose without a quick disconnect fitting. The suction hose should be connected to the tote drain port and the outlet (return) hose should be guided into the tote fill port.
5. Ensure that the oil sampling valves are closed.
6. Plug the machine into the power source and start it. Visually inspect that the fluid is flowing and continue to run the HH Unit for several minutes. Flow may also be verified by opening the sampling valve after the second filter outlet.
7. While the machine is running, check for any leaks around fittings and verify that the fluid is flowing.
8. Check the element differential pressure gauge on the filter spin-on head. The gauges might show a reading or not depending on the fluid viscosity.
9. Allow the machine to run for several minutes and check for leaks again.
10. Turn the machine off at the switch and unplug the machine. Slide the wands into the guide rings on the cart frame and place the wand ends into the removable drip pan for drainage.

Routine Starting Procedure:

1. Ensure that the oil sampling valves are closed.
2. If quick disconnect fitting are being used, ensure that they are properly connected with the mating fitting.
3. Plug the cord into the power source and turn the unit on then off quickly to verify proper motor rotation. Proper rotation is verified before each unit is shipped but this should be verified with every power outlet that the machine will use. If the rotation is not correct, the plug should be rewired accordingly.
4. Check the element differential pressure gauge (photo 1). The piston might be sliding into the red area or not depending on the fluid viscosity and filter element dirt load condition. If the differential pressure gauge piston is in the green the element does not need to be changed. If the piston is in the red, the fluid might be cold or the element needs to be changed. The filter spin-on head is equipped with an integral bypass valve that is open when the piston is in the red. The bypass is for pressure relief so some of the fluid will continue to flow through the element, but this will greatly compromise the efficiency of the filter element and flow will be restricted. Visually inspect that the fluid is flowing and continue to run the HH Unit for several minutes.
5. If the flow cannot be visually verified the sampling port may be opened to confirm the flow of fluid. The actual flow cannot be verified, but the movement of fluid can be detected.
6. As the machine runs, the element differential pressure gauge and vacuum indicator should be checked periodically.
7. If the fluid is not flowing freely it can be attributed to any of the following conditions; cold oil, dirty filter element, dirt Y-strainer on pump inlet.



Photo 1: Element DP Gauge



Filter Element Service Instructions:

1. Before servicing the filter element ensure that the machine is off and is not plugged into a power outlet.
2. Relieve any pressure by opening a sample port isolation valve. If quick disconnect fittings have been installed on the hoses pressure may not be relieved by disconnecting the HH Unit from a machine.
3. Dump the removable drip pan before removing the spent spin-on elements. Remove the spent element by turning the spin-on counter clockwise by hand or with a strap wrench. The spin-on element will be full of oil so be prepared to dump the oil into the drip pan or have some other receptacle ready for dumping.
4. Remove the gasket from spin-on head and discard it.
5. Remove the new gasket that is provided with the new spin-on element and lubricate it generously. Install the new lubricated gasket onto the spin assembly head.
6. Inspect the new element for severe dents or other damage that could compromise the integrity of the spin-on and result in leakage and injury. If the element is severely damaged discard it as leakage or injury may be a result.
7. Install the new element by turning it clockwise until the spin-on makes good contact with the gasket and is hand tight. Continue tightening another half turn.
8. Once the cart is restarted check the spin-on element for leakage and tighten more if necessary.
9. Failure to properly lubricate the gasket before installation may result in leakage.
10. Refer to routine starting procedure before starting the unit again.

Y-Strainer Pump Protector Service Instructions

1. Before servicing the pump protector, ensure that the machine is off and is not plugged into a power outlet.
2. Relieve any pressure by opening a sample port valve. If quick disconnect fittings have been installed on the hoses pressure may not be relieved by disconnecting the HH Unit from a machine.
3. Place a bucket or other receptacle under the strainer housing to catch the fluid that will drain from the strainer housing and hose.
4. With a wrench or socket, turn the strainer housing plug counter clockwise to remove.
5. Remove strainer screen paying close attention to the orientation of the basket and clean it with shop air or rinse to remove any contaminant.
6. Reinstall the strainer basket in the same orientation before removal and tighten the strainer housing plug.
7. Refer to routine starting procedure before starting the unit again. When the unit is restarted, check the plug for leaks.

9. TROUBLESHOOTING

Problem	Cause	Solution
Unit fails to start switch is activated	<ul style="list-style-type: none"> • Improper external power connection • Breaker at main power source tripped 	<ul style="list-style-type: none"> • Check input power • Make sure it matches machine specifications • Make sure the power cord is the right size
Unit fails to pump fluid	• Inlet valve is partially or fully closed	<ul style="list-style-type: none"> • Position inlet valve to full open • Valve should be "full port" type valve to reduce restrictions and should be sized as large as the inlet hose
	• Air leak on inlet supply line	• Check all fittings to ensure no air leaks exist
	• Strainer screen blocked	• Remove encasement housing from strainer assembly. Remove screen and clean with clean lint free rag or blow with air
	• Outlet valve partially or fully closed	• Ensure that outlet valves on both filtration system and reservoir are fully open
Unit pump making excessive noise	• Inlet valves partially or fully closed	• Ensure that all inlet valves on system and reservoir are fully open
	• Strainer obstructed	• Remove and clean screen with air
	• Inlet hose sized incorrectly	Inlet hose should be sized to match system inlet diameter with a maximum length of 20'. In the event that a longer inlet hose is needed a larger diameter should be used to ensure proper supply to the system

10. SYSTEM COMPONENTS

