

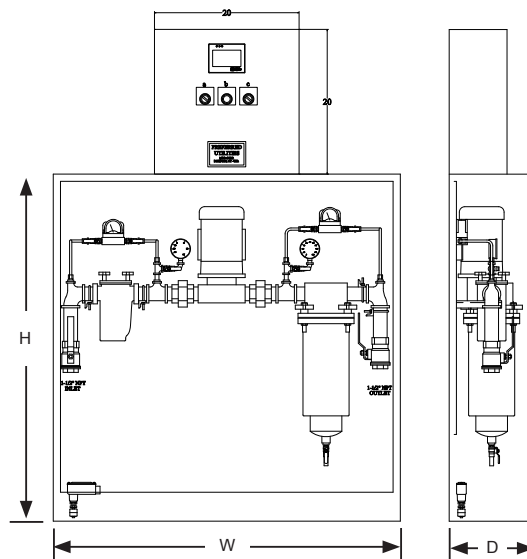
AUTOMATIC FUEL OIL FILTRATION SET

Specifications

For best results, use in conjunction with the waste water removal and storage option (WR-1) and Preferred fuel additives system (CA-1) option. See page 9 for photo.

Specifications

- Power: 120 VAC (external)
 Fluid: No. 2 Fuel Oil (diesel fuel) is standard. Consult factory for other fuel types.
 Pump: Positive displacement type with cast iron housings:
 Model PF-501, 502 & 503 are spur gear;
 Model PF-504 & 505 are internal gear
 Motors: Base mounted, Totally Enclosed Fan Cooled (TEFC) construction
 Strainer: Simplex 1" , or 1½" (according to inlet line size) complete with 100 mesh perforated basket
 Automatic Controls: - Adjustable run-time period
 - Indications/Alarms:
 Control power on
 Pump run
 Filter saturated
 Filter water level high
 System basin leak detected



Tank Turnover Time In Hours
(Rounded to Nearest Hour)

	Storage Tank Size (Gallons)					
	1,000	2,000	4,000	8,000	16,000	20,000
PF-501	6	11	22	44	89	111
PF-502	2	4	8	17	33	42
PF-503	2	3	7	13	27	33
PF-504	1	2	4	9	18	22
PF-505	1	2	3	7	13	16

Ordering Information

Select catalog number from the table below.

Catalog Number	G.P.H. Oil #2	P.S.I.	Motor		Dimension			Connection Size	Shipment
			R.P.M.	H.P.	W	H	D	Inlet - Outlet	
PF-501	180	15	1725	¼	48"	48"	12"	¾" - 1½"	2-3 Weeks
PF-502	480	15	3450	⅓	48"	48"	12"	¾" - 1½"	2-3 Weeks
PF-503	600	30	1725	½	48"	48"	12"	¾" - 1½"	2-3 Weeks
PF-504	900	30	1725	¾	48"	48"	12"	1½" - 1½"	2-3 Weeks
PF-505	1200	25	1725	¾	48"	48"	12"	1½" - 1½"	2-3 Weeks

Note: All pumps are 115 V, 60 Hz , single phase.

Optional Accessories

1. Waste water holding and removal system:

A gear pump automatically pumps water from the secondary filter housing to the holding tank based on an integral filter water detector signal. Automatic isolating valves prevent water leakage into the fuel or fuel into the water holding tank when the system is idle. The holding tank is equipped with a high level switch to alarm and shutdown the fuel maintenance system until the tank is emptied. A hand pump is provided for periodic removal of waste water from the holding tank. Requires mounting skid. Specify P/N-WR-01.

2. Chemical additive holding tank and injection system:

Chemical treatment helps to prevent fuel degradation and improve cetane rating. Higher cetane rating improves cold starting, reduces white smoke, and maximizes engine efficiency. A gear metering pump injects additives into the oil while the oil is circulating in order to ensure complete mixing. The additive feed pump operating cycle runs biannually, or it can be activated when new fuel is delivered. A welded steel chemical additive holding tank is provided. Separate skid if ordered in conjunction with standard PF series. Specify P/N-CA-01.

AUTOMATIC FUEL OIL FILTRATION SET

Suggested Specifications

2.8 FUEL FILTRATION SYSTEM

A. Acceptable manufacturers subject to compliance with the specifications:

1. Preferred Utilities

2. Pall Corporation

B. General: Provide a packaged pump and filter set to provide filtration of stored fuel on a timed cycle. The pump and filter set shall be integrated with a control panel to provide motor control, system status, and alarm indication. The main storage tank filtration system shall utilize the main fuel transfer pumps. Filtration for individual generator tanks shall have an independent transfer pump.

C. Design Criteria: Enclosure, Piping and Mounting

Provide a Fuel Oil Filtration System that is factory assembled with components piped and mounted inside a continuously welded steel enclosure. The enclosure shall be constructed of 14 gauge steel as minimum, continuously welded and constructed to NEMA 4 standards and have an integral 12" steel containment basin with plugged drain connection. The basin shall be sized to contain (capture) potential leaks from all factory installed piping and components. Doors shall be fully gasketed with a turned edge, piano hinges, and a three-point lockable latching mechanism. The enclosure interior and exterior shall be primed and finished in a durable, chemical resistant, textured gray enamel, suitable for industrial environments. Pipe shall be schedule 40 ASTM A-53 Grade "A" with ANSI B16.3 Class 150 malleable iron threaded fittings. The Fuel Oil Filtration System shall be Preferred Utilities Mfg. Corp. Danbury, CT Model PF-____ rated at ___GPH of No. 2 fuel oil.

1. Containment Basin Leak Detection Switch

Provide, mount and wire a float operated containment basin leak detection switch to shut off the pumps and energize an audible and visual alarm should a leak be detected. The level sensor shall be a plasma welded stainless steel construction. Electrical connections shall be contained in a weatherproof junction box.

2. Strainer

Oil strainer shall have cast iron body, threaded connection; size shall be suitable for the required flow and suitable for working pressures to 150 psi. Clamped cover and handle shall permit easy removal of the basket. Basket shall be constructed of 100 mesh stainless steel.

3. Pump Automatic Sequencing Flow Switch

Provide a time delayed flow sensing switch on the discharge of the pump. Flow switch shall be vane operated to actuate a single double throw snap switch. Switch shall be ship loose for alarm. Switch shall be rated for 1450 psig. Provide a flow switch outlet isolation valve for maintaining the flow switch without draining the fuel system.

4. Pump and Motor Assembly

A TEFC motor and positive displacement pump with cast iron housing shall be provided. Pumps that have aluminum, brass, or bronze housing or rotors or centrifugal pumps are not acceptable. The pump shall be an industrial type intended for continuous heavy-duty service.

5. Filtration

One filter element shall provide both particulate and water removal. Filtration provided to 10 micron.

6. Element Replacement

No special tools are required to change the filter.

7. Filter Monitoring

Filter shall have a differential pressure switch piped across it to indicate when the filter needs to be changed. The switch shall provide indication on the main filtration control cabinet to alert operators and sound a horn. The differential pressure switch shall provide clear indication of strainer basket status with the use of a Tri-Colored Scale Plate with GREEN denoting Clean, YELLOW denoting Change and RED denoting dirty strainer. This shall have one piece cast-iron body and shall be suitable for pressure to 200 psi.

8. Control Hardware

The control strategy shall be microprocessor-based. RELAY LOGIC SHALL NOT BE ACCEPTABLE. The control strategy shall be factory configured and stored on an EEPROM, and shall be safeguarded against re-configuration by un-authorized / un-qualified personnel. Control hardware shall include combination magnetic motor starter with overload protection and circuit breaker. The control cabinet shall have the ability of simultaneously communicating to a Data Acquisition System (DAS), Building Automation System (BAS) or Building Management System (BMS) via RS485 Modbus protocol and to a Personal Computer.

Automatic Operation

In order to ensure automatic fuel maintenance the filtration system shall have an adjustable automatic start and run time. The operator shall be able to set the system to run at a certain time every day or week.

9. Safety Interlocks

Provide safety interlocks to shutdown pump when a "leak" is detected.

10. Operator Interface

Operator interface shall be cabinet front door mounted and be presented by a 4.3" touch screen. Touch screen shall have a bright TFT display with full 256-color support. Image resolution shall be a minimum of 480 x 272 pixel display. As a minimum, the following indications, alarms, control switches and pushbuttons shall be provided:

- Alarm Silence, Manual Reset, Lamp/Alarm Test Pushbuttons
- Pump "Hand-off-Auto" control switch
- "Pump On", indicator
- "Filter Saturated", "Filter Water Level High" and "System Basin Leak Detected" Alarms

11. Automatic Pump Safety Integrity Check Test.

The Control system shall include a battery backed, real time clock and must be capable of automatically energizing the filtration pump once every day with a test. This is to verify filtration suction piping integrity, pump prime, and verify pump operation. Once the pump has been operated and proved operational, the test shall be recorded in the controller memory with a Time/Date stamp for later verification. If the pump fails the test, the control system

AUTOMATIC FUEL OIL FILTRATION SET

Suggested Specifications

shall generate an audible and visual alarm and log the "Failed Pump" condition.

15. Quality Assurance Inspection, Labeling and Testing

The Control Cabinet shall be manufactured in accordance with UL508A. Simply supplying UL recognized individual components are not sufficient. The assembled control cabinet as a whole must be inspected for proper wiring methods, fusing, etc., and must be labeled as conforming to UL508A (CSA C22.2 #14 for use in Canada). Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL). The system must be manufactured by a nationally recognized Trade Union (I.B.E.W. or similar trade union). Lack of an NRTL certified UL508A wiring methods inspection and label or lack of a Trade Union label will be grounds for rejection.

D. Accessory Equipment: Use where a skid mounted wastewater holding tank and chemical fuel treatment is needed. Use generally when the fuel stored is to remain undisturbed for beyond three months time.

1. Waste Water Holding and Removal System. A gear pump shall automatically pump water from the secondary filter housing to a 15 gallon galvanized steel holding tank based on an integral filter water detector signal. Automatic isolating valves prevent water leakage into the fuel or fuel into the water holding tank when the system is idle. The holding tank is equipped with a high level switch to alarm and shutdown the fuel maintenance system until the tank is emptied. A hand pump is provided for periodic removal of waste water from the holding tank. Requires mounting skid. Specify P/N-WR-01.

2. Chemical Additive Holding Tank & Injection System: Chemical treatment helps to prevent fuel degradation and improves cetane rating. Higher cetane rating improves cold starting, reduces white smoke, and maximizes engine efficiency. A gear metering pump injects additives into the oil while the oil is circulating in order to ensure complete mixing. The additive feed pump operating cycle runs biannually, or it can be activated when new fuel is delivered. A 15 gallon welded steel chemical additive holding tank is provided. Separate skid is ordered in conjunction with standard PF series. Specify P/N-CA-01.

8. Control Hardware

The control strategy shall be microprocessor-based. RELAY LOGIC SHALL NOT BE ACCEPTABLE. The control strategy shall be factory configured and stored on a EEPROM, and shall be safeguarded against re-configuration by unauthorized/unqualified personnel. Control hardware shall include combination magnetic motor starter with overload protection and circuit breaker. The control system shall provide common alarm dry contacts to be interfaced with the Building Maintenance System as required.

9. Automatic Operation

In order to ensure automatic fuel maintenance the filtration system shall have an adjustable automatic start and run time. The operator shall be able to set the system to run at a certain time every day or week.

10. Safety Interlocks

Provide safety interlocks to shutdown pump when a "leak" is detected.

11. Operator Interface

All operator interface shall be cabinet front door mounted. As a minimum, the following indications, alarms, control switches and pushbuttons shall be provided:

1. Alarm silence, manual reset, lamp/ alarm test pushbuttons
2. Pump "hand-off-auto" control switch
3. "Pump on", indicator
4. "Filter saturated", "Filter water level high" and "system basin leak detected" alarms

12. Quality Assurance Inspection, Labeling and Testing

The control cabinet shall be manufactured in accordance with UL 508A. Simply supplying UL recognized individual components is not sufficient. The assembled control cabinet as a whole must be inspected for proper wiring methods, fusing, etc., and must be labeled as conforming to UL 508A (CSA C22.2 #14 for use in Canada). Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL). The system must be manufactured by a nationally recognized trade union (I.B.E.W. or similar trade union). Lack of an NRTL certified UL 508A wiring methods inspection and label or lack of a trade union label will be grounds for rejection.

D. Accessory Equipment: Use where a skid mounted wastewater holding tank and chemical fuel treatment is needed. Use generally when the fuel stored is to remain undisturbed for beyond three months time.

1. Waste Water Holding and Removal System. A gear pump shall automatically pump water from the secondary filter housing to a 15 gallon galvanized steel holding tank based on an integral filter water detector signal. Automatic isolating valves prevent water leakage into the fuel or fuel into the water holding tank when the system is idle. The holding tank is equipped with a high level switch to alarm and shutdown the fuel maintenance system until the tank is emptied. A hand pump is provided for periodic removal of waste water from the holding tank. Requires mounting skid. Specify P/N-WR-01.

2. Chemical Additive Holding Tank & Injection System: Chemical treatment helps to prevent fuel degradation and improves cetane rating. Higher cetane rating improves cold starting, reduces white smoke, and maximizes engine efficiency. A gear metering pump injects additives into the oil while the oil is circulating in order to ensure complete mixing. The additive feed pump operating cycle runs biannually, or it can be activated when new fuel is delivered. A 15 gallon welded steel chemical additive holding tank is provided. Separate skid is ordered in conjunction with standard PF series. Specify P/N-CA-01.