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*...Innovative liquid vaporizing and gas mixing solutions*

# ***Filtaire***

*Oil Demister*

## ***Operation & Maintenance Manual***

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# Introduction

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## DESCRIPTION

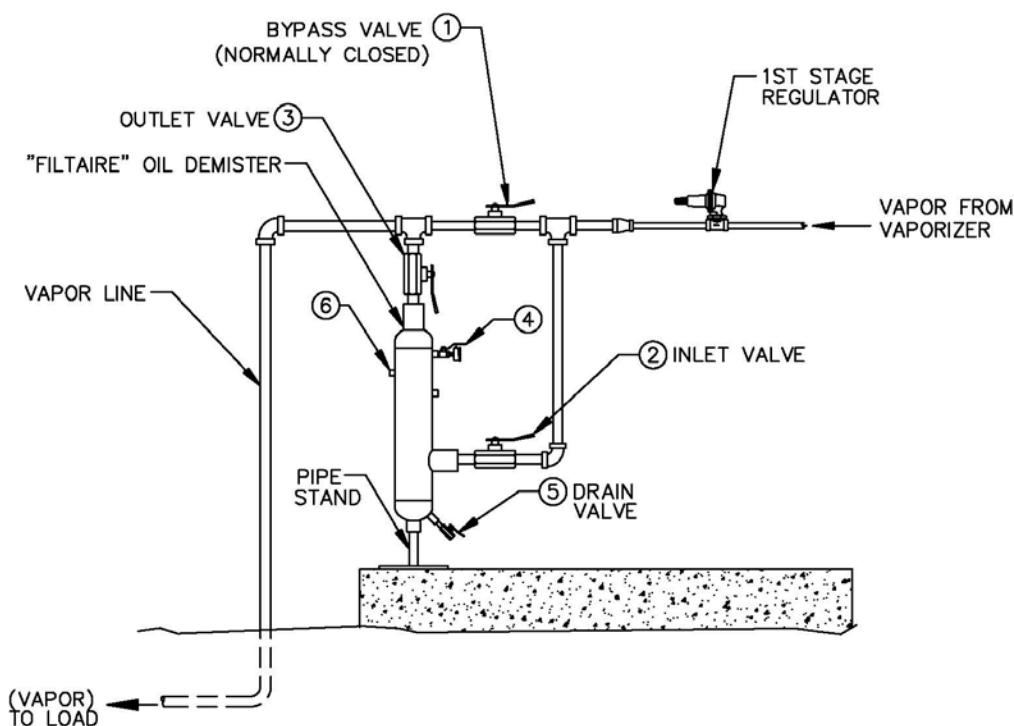
The FILTAIRE is a filtering device designed to trap heavy hydrocarbons commonly present in LPG gas vapor. It also traps other materials, which may be in the gas due to storage conditions and internal condition of the equipment.

Impurities are collected in the system and periodically removed through the system blow down drain. Residual heavy end hydrocarbons with boiling points higher than pure LPG are trapped by the filter and fall to the bottom for removal.

A complete FILTAIRE system consists of inlet and outlet connections, a blow-down drain (5), a pressure gauge (4), a vent which is normally plugged (6), and a bypass valve system for cleaning (1, 2, and 3). The bypass valves enable the system to continue operating when the FILTAIRE is removed for cleaning (see Figure 1).

Note: Items 4, 5 and 6 are included with FILTAIRE assemblies.

**Figure 1- Description of Operation**

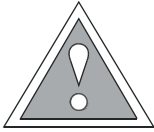


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# Installation

# 2

## WARNING

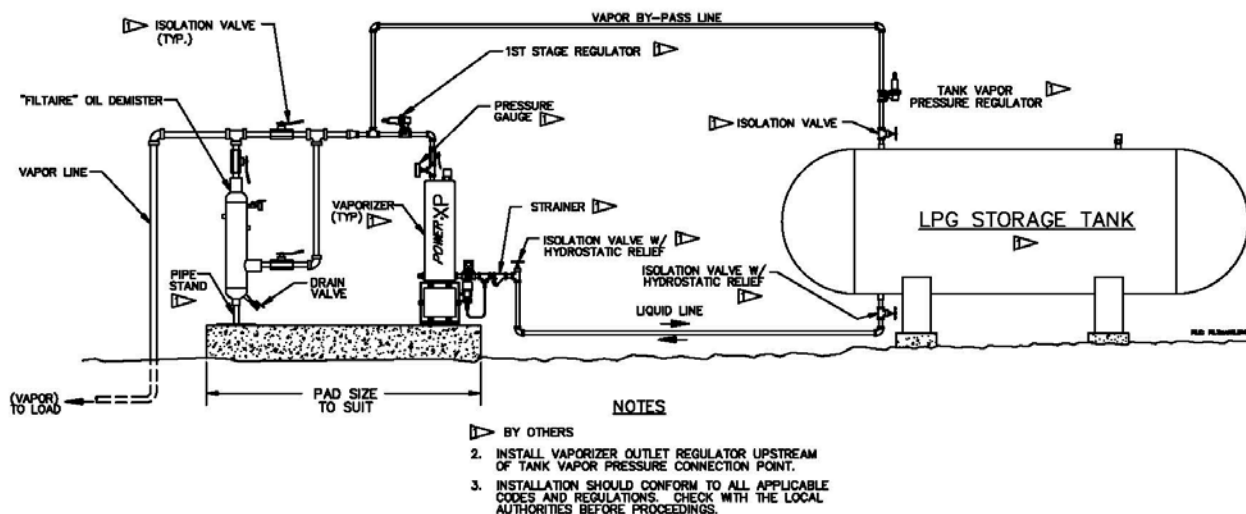


*The equipment described in this manual is designed to operate with LP-gas, a flammable fuel under pressure. The nature of the application involves inherent hazards that could result in injury. ONLY a trained and fully qualified person should service this equipment.*

## INSTALLATION PROCEDURE

1. Gas must pass through the FILTAIRE for it to work properly. Mount it downstream of the vaporizer and the first stage regulator. Mount it level for the filter to work efficiently.
2. Insulation may be required depending on gas pressure, outside temperature and system requirements.
3. The FILTAIRE must have a bypass around the filter with shut-off valves for removal and cleaning. See the accompanying diagram.
4. The filtered impurities must be drained to proper containers. Make provisions for draining and disposing of the material safely.
5. A customer supplied relief valve must be installed to protect Filtaire and downstream equipment from potential overpressure damage.

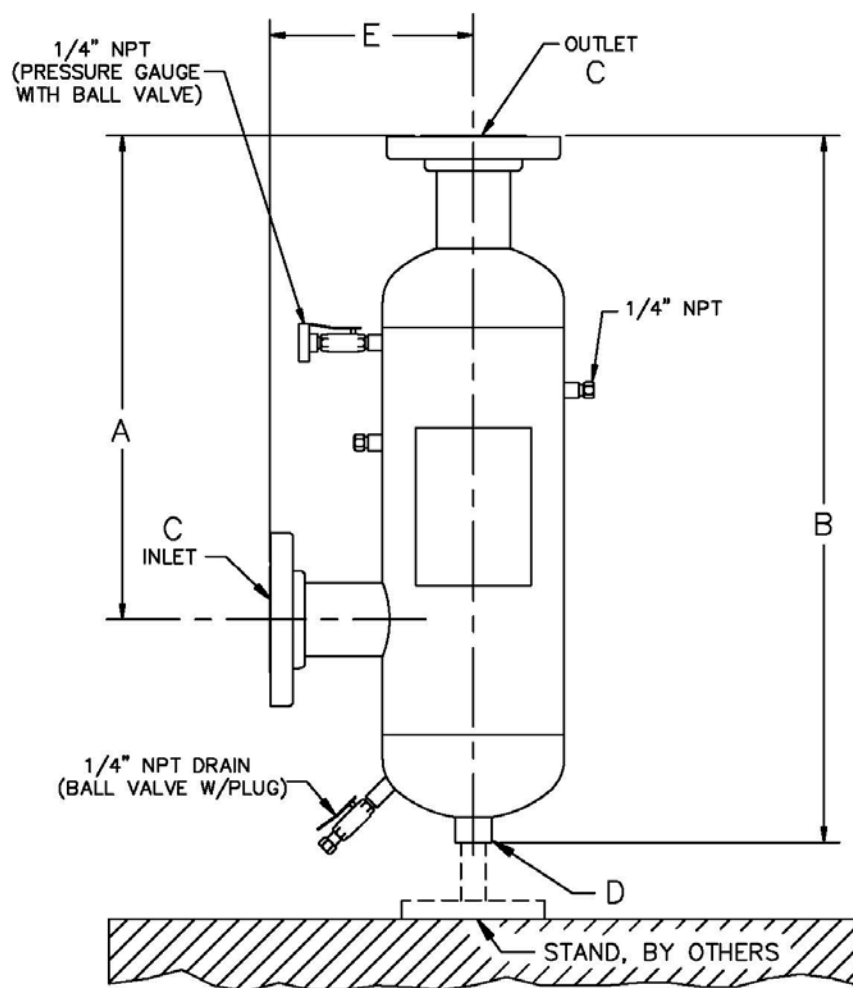
**Figure 2 – Installation**



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## Installation

Figure 3 - General Equipment



FILE: FILTMAN3.DWG

MODEL	F4	F6	F10	F12	F14	F16
A	19"	20 1/2"	25"	27"	33"	35"
B	27 1/4"	30 1/4"	37 1/2"	41 1/4"	48 3/4"	51 3/4"
C	**1 1/2" NPT	***2" NPT	4" 300# FLANGE	6" 300# FLANGE	6" 300# FLANGE	6" 300# FLANGE
D	3/4"	1"	1 1/2"	2"	3"	3"
E	5"	6 1/4"	10 3/8"	11 3/8"	12"	13"
****WEIGHT	52	100	230	335	385	435

\* SCREWED CONNECTIONS (1" SCH 80 PIPE X 4 1/2" LONG, T.O.E.) MODEL F2

\*\* SCREWED CONNECTIONS (1 1/2" FULL COUPLING, 3000# F.S.) MODEL F4

\*\*\* SCREWED CONNECTIONS (2" FULL COUPLING, 3000# F.S.) MODEL F6

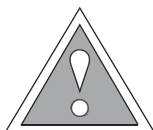
\*\*\*\* APPROXIMATE WEIGHT

### NOTES:

1. DESIGN PRESSURE: 250 PSIG @ 650°F.

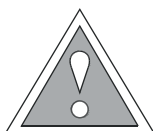
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## WARNING



*The equipment described in this manual is designed to operate with LP-gas, a flammable fuel under pressure. The nature of the application involves inherent hazards that could result in injury. ONLY a trained and fully qualified person should service this equipment.*

## WARNING



*Apply a liberal amount of soap/water solution to all external threaded and flanged connections. Check for leaks by observing new bubble formation in the soap/water solution. Repair any leaks and retest before opening downstream valves to consuming equipment.*

## PERIODIC DRAINING

During normal operation the FILTAIRE should be drained periodically to remove the material deposited in the bottom. The schedule for draining depends on the quality of LPG gas and the usage of the entire system. Those using the system must establish the draining schedule. A general rule of thumb used to help establish the draining schedule is to measure the amount of heavy end hydrocarbons drained after the initial one week of normal operation. Based on the amount drained after one week, the schedule should be adjusted so that the total amount of collected heavy end hydrocarbons does not exceed the maximum amount outlined in Table 1 below.

### EXAMPLE:

After the first week of normal operation, an F12 FILTAIRE was isolated and drained. The total amount of drained heavy end hydrocarbons was measured to be 1L (0.26 US Gallons). Based on the measured amount, periodic draining should be performed at least once in 6 weeks to ensure that the amount of collected heavy end hydrocarbons does not exceed the maximum amount of 6L (1.6 US Gallons) from Table 1.

**Table 1 – Maximum Amount of Accumulated Heavy End Hydrocarbons.**

	F4	F6	F10	F12	F14	F16	F20	F24	F30
(US gallons)	0.15	0.34	1.1	1.6	2.2	3.3	7.2	10	14
(Liters)	0.6	1.3	4.1	6.0	8.2	13	27	37	54

### ***NOTE***

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***If the filter is too dirty the outlet pressure will decrease.***

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### **CLEANING THE FILTER**

A dirty filter causes a larger than normal pressure drop, decreasing the outlet pressure. A decreasing outlet pressure indicates the FILTAIRE has accumulated significant amount of residue and must be cleaned to keep on operating properly. In general, a FILTAIRE must be cleaned every 6 months. The frequency of cleaning will greatly depend on the quality of LPG used as well as the application it is used for.

#### **CLEANING SCHEDULE:**

Drainage and cleaning of the FILTAIRE is determined by use. Once it is noted how often cleaning is necessary, a maintenance schedule can be established. A maintenance form (Table 2) is provided to help you establish a schedule.

## Cleaning the Filter (refer to Figure 1)

When the unit is dirty it must be cleaned. For proper cleaning, the stainless steel filter must be soaked and reverse flushed.

### RECOMMENDED PROCEDURE

1. Open the bypass valve, close the Filtaire inlet and outlet valves.
2. When bleeding the FILTAIRE, connect a hose or drainpipe from the drain valve to a safe container with a vent. Make a good connection and bleed the material to the container



### CAUTION

**PRESSURE MUST BE ZERO FOR THE FILTAIRE TO BE REMOVED. CONTENTS UNDER PRESSURE ARE DANGEROUS.**

3. Close the drain valve.
4. Remove Filtaire from the system and place in a cleaning area.
5. Cap the inlet.
6. Fill the unit with kerosene or a similar light solvent and allow it to soak for 24 hours.
7. Reverse-flush the unit (flush from outlet flange) with kerosene until the Kerosene is clear and no residue is left.
8. After flushing, allow the kerosene or solvent to drain completely and let the unit dry. Air can be pumped through the unit to dry it thoroughly. Kerosene or solvent must not enter the propane system.
9. Remove the inlet cap.
10. Re-install the unit. Connect the inlet and outlet. Close the blow-down drain.
11. Open the Filtaire inlet and outlet valves and close the bypass valve.
12. The FILTAIRE is operational.

NOTE: Maintenance form is provided to note maintenance dates and operation pressures.

### CAUTION

**THE CONTENTS OF THE FILTAIRE ARE FLAMMABLE NEVER CLEAN THE UNIT WHEN THERE IS A SOURCE OF IGNITION IS PRESENT - ELECTRICAL SPARK OR FLAME.**



## ***Maintenance***

**Table 2 – Maintenance Form**

[illegible]

## SPARE PARTS

ASDI PN: 30897  
ASDI PN: 30641

Float Switch  
Pressure Gauge 0-300 psig

## AUTOMATIC MAINTENANCE OR HIGH LIQUID WARNING

Optional liquid level switches can be installed in the Filtaire to warn maintenance that the Filtaire requires draining due to the accumulation of liquid in the reservoir. Provisions for single or dual liquid level switches can be made during manufacturing. One switch allows a warning when the reservoir needs draining. A second switch can be used to shut down the system if liquid continues to increase in the reservoir. This same system can be used to provide an additional safety that will prevent liquid propane from getting into consuming equipment if a failure allows liquid to pass through the vaporizer.

Figure 4 shows the physical location of the liquid level switches. Contact the factory for any special design requirements or applications.

Figure 5 has electrical drawings of suggested connections of the liquid level switched to provide an alarm and a control output. Maximum current through the liquid level switch is ¼ amp so an interposing relay is required for larger loads.

## Options

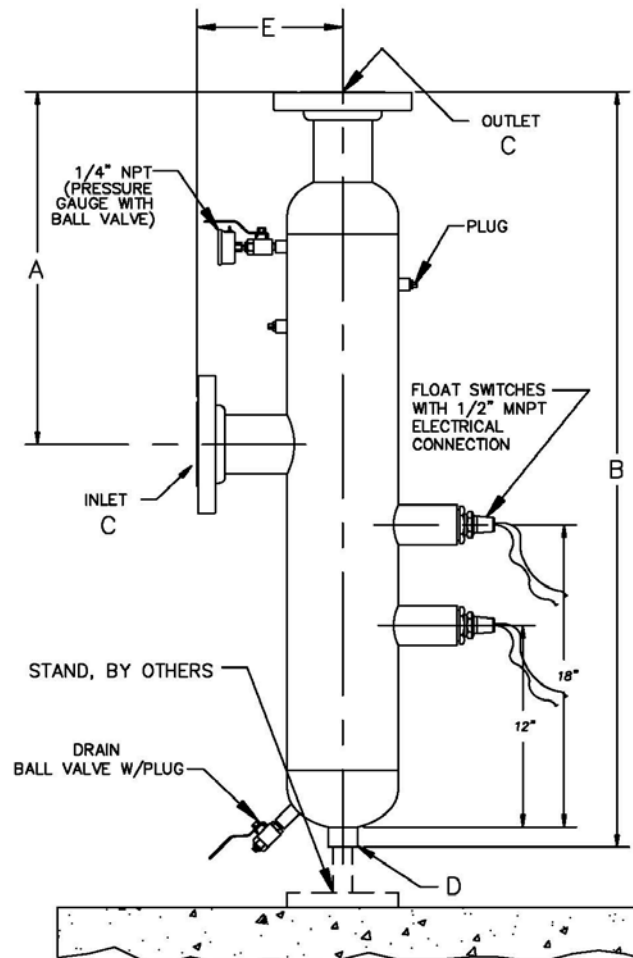
Figure 4 - Options (A)

MODEL	F4	F6	F10	F12	F14	F16
A	20"	21"	25"	27"	33"	35"
B	40"	45"	49"	56 1/2"	65"	66"
C	*1 1/2"	*2"	4" 300# FLANGE	6" 300# FLANGE	6" 300# FLANGE	6" 300# FLANGE
D	1"	1"	2"	2"	3"	3"
E	5"	6 1/4"	10 3/8"	11 3/8"	12"	13"
**WEIGHT	85	120	230	335	385	435

\* FNPT COUPLING CONNECTION  
 \*\* APPROXIMATE WEIGHT

### NOTES:

1. OPTIONAL ASME STAMP
2. DESIGN PRESSURE: 250 PSIG @ 650°F.



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