Model FTI-10A

Single Tank
Automated Diesel Fuel Maintenance System

Installation Manual

Contents

*Remove sheets not related to the specific job.

1. Overview

a. Automated diesel fuel maintenance system with cabinet is designed for wall or pedestal mounting.
b. The **supply** or suction line to be installed at the **sump**, or low end of the Diesel Fuel Storage Tank, with a **Foot Valve**, 1" from the bottom. (not supplied)
c. The return line to be installed to the opposite end of the storage tank.
d. Caution should be taken **not to exceed the 15-ft. lift** capability of the fuel circulation pump.
e. Stabilizer to be added to the existing fuel tank, and proportionally when additional fuel is added to the storage tank.
f. Biocide to be added to stored diesel fuel annually.
g. System inlet connection: 1.5" NPT
h. System outlet connection: 1.5" NPT

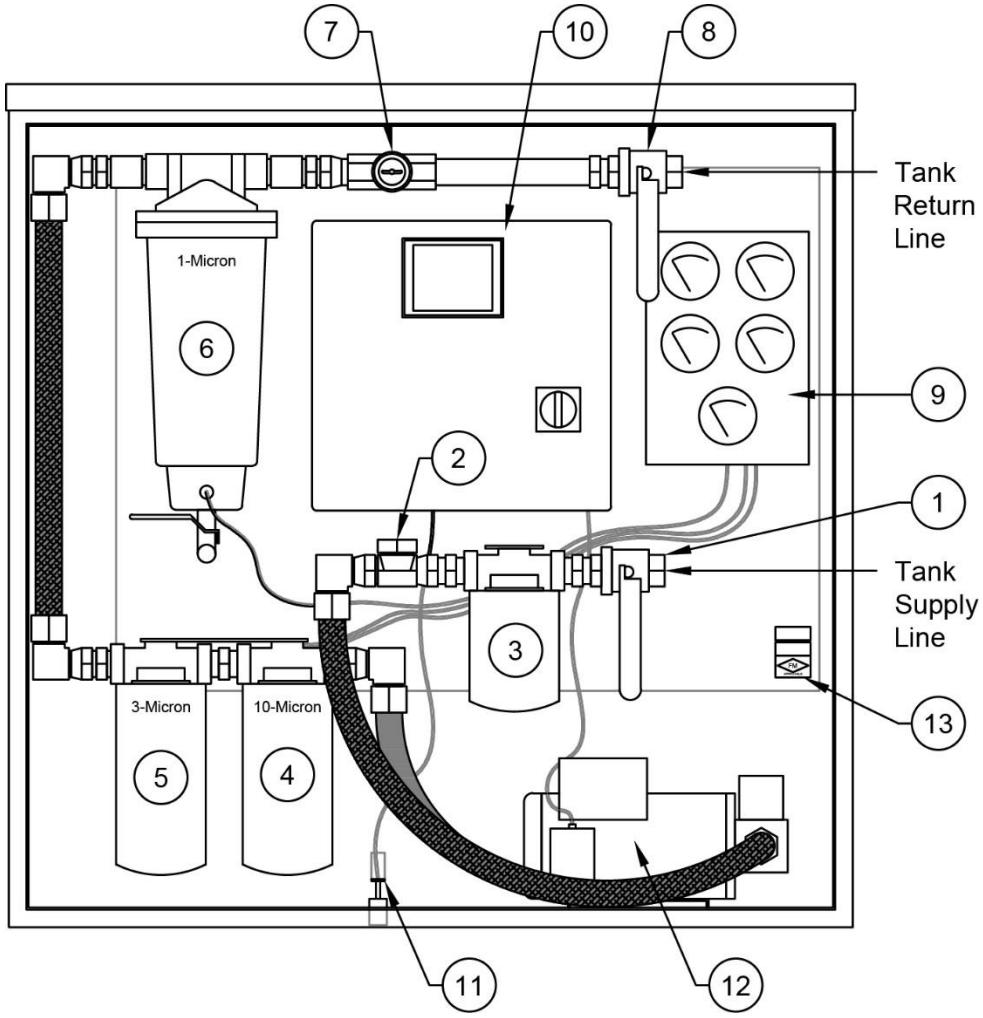
2. Installation Notes

a. FTI systems operate on either above ground or underground tanks. Any installation to be completed by a qualified plumbing contractor and qualified electrician.
b. Wall mount or pedestal mount is bolted into place. Engineer to comply with local jurisdiction regarding seismic compliance.
c. 115/230V AC, Single Phase, 20 Amp. Power supply shall be available at system location.
d. A lockable disconnect switch is provided on the FTI Control Panel for power shut off.
e. Pipe plugs were installed in the supply and return line for shipping purposes only, and must be removed prior to installation.
f. Holes will need to be added in cabinet for Electrical, Fuel supply line and Fuel return line.
g. All FTI models are factory tested using lightweight oil. Some of this fluid may remain in the system. It will not interfere with the performance of the equipment.
h. On initial startup, if the system does not fill with fluid, the pump may require priming. (see priming tee location on 3.a. diagram)

3. Installation Precautions:

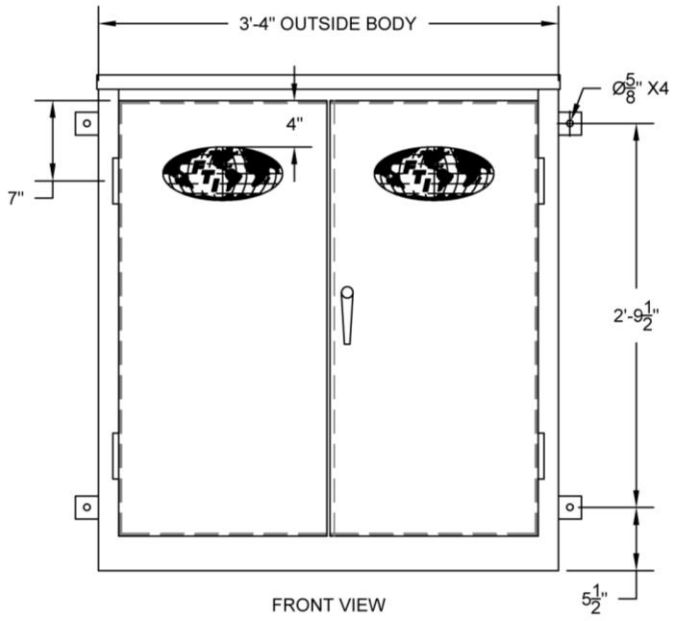
a. Model FTI-10A Single Tank has no protection against thermal expansion for the fuel lines. If the fuel lines are installed without pressure relief, damage may occur to the pump, motor or filters.
b. Installer should prevent any closed loop with the FTI-10A system in the middle.
c. FTI will not be responsible for any damage due to excessive line pressure caused by thermal expansion.
d. DO NOT RUN LONGER THAN THREE MINUTES WITHOUT FLUIDS

Identifying Parts

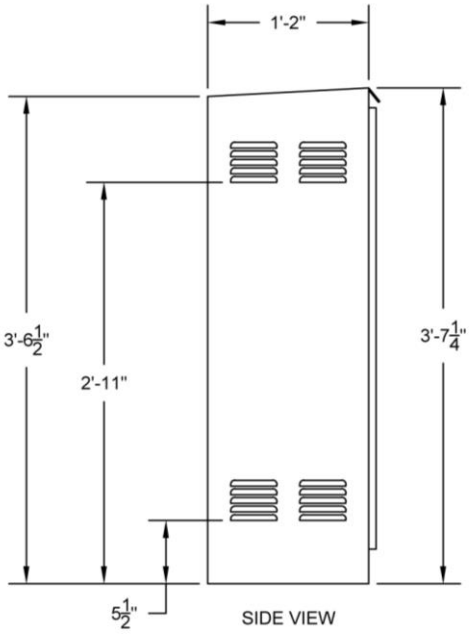


1. Supply Line Connection, SS Ball Valve, 1.5” NPT
2. Pump Priming Tee (Remove Cap and fill with Fuel to prime pump)
3. Strainer – 100 Mesh, Spin on (149 Micron)
4. 10 Micron Pre-Filter, Spin on
5. 3 Micron Pre-Filter, Spin on
6. 1 Micron & Water Separator element
7. Site Glass
8. Return line connection, SS Ball valve, 1.5” NPT
9. Switch Gauge Panel
10. Control Panel (UL Listed)
11. Leak Detector
12. Pump / Motor Assembly
13. Serial Number, Model Number, FM Approved Tag

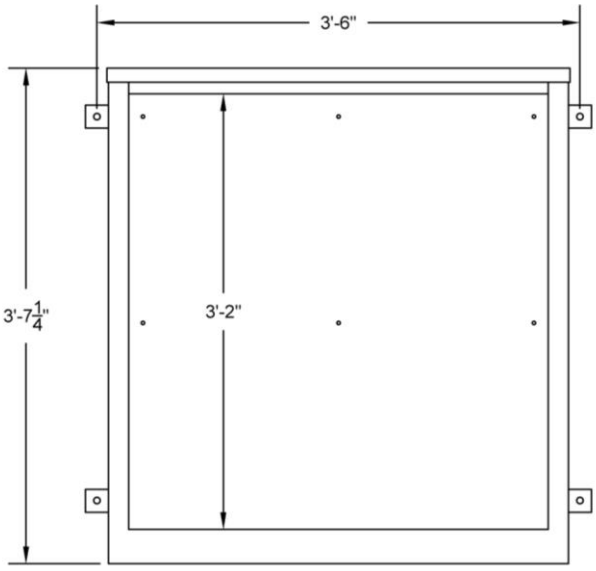
FTI-10A – Cabinet Specifications



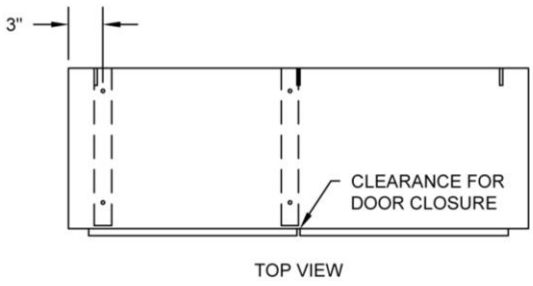
FRONT VIEW



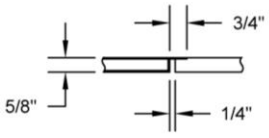
SIDE VIEW



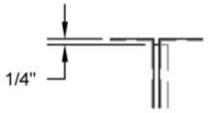
FRONT (INTERNAL) VIEW



TOP VIEW



DOOR TOP DETAIL
SCALE: X2

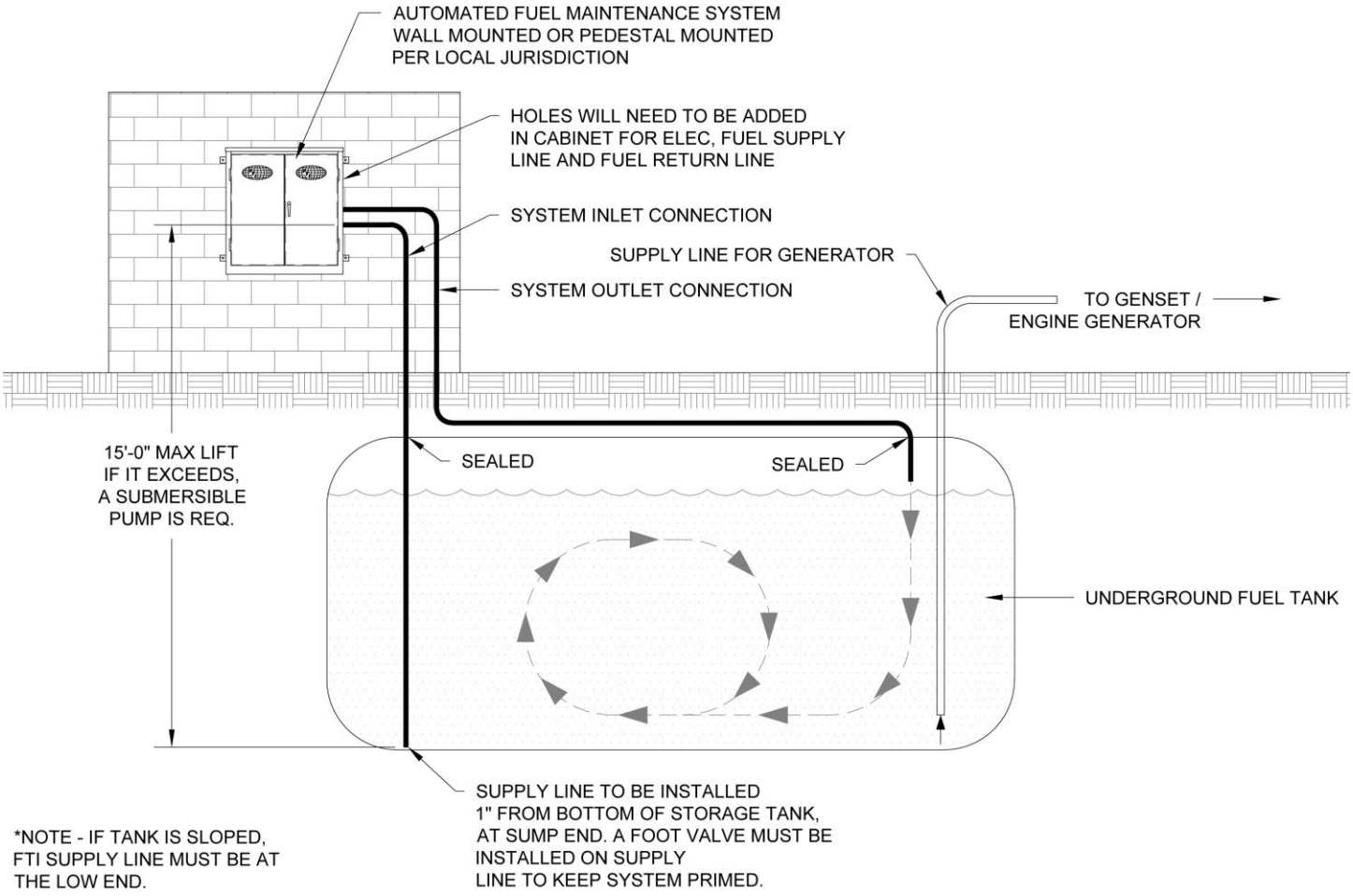


DOOR FRONT DETAIL
SCALE: X2

NOTES:
1. FABRICATE 14 GA. CRS DOORS PER DETAILS. INSIDE DIMS TO CLEAR CABINET LIP .0625 PER SIDE. APPLY NBR (OIL RESISTANT) WEATHER-STRIP AFTER FINISH
2. HANDLE - ZINC PLATED, 3-POINT LATCH, PADDLE LOCKABLE.
3. HINGES - ZINC PLATED, BOLT ON, LIFT OFF
4. SILKSCREEN - 2 PLY

FINISH
1. ZINC PRIMER BEFORE POWDER COAT
2. POWDER COAT - CARDINAL, BLACK/WHITE VEIN SEMI-GLOSS P/N: TO75-WH34

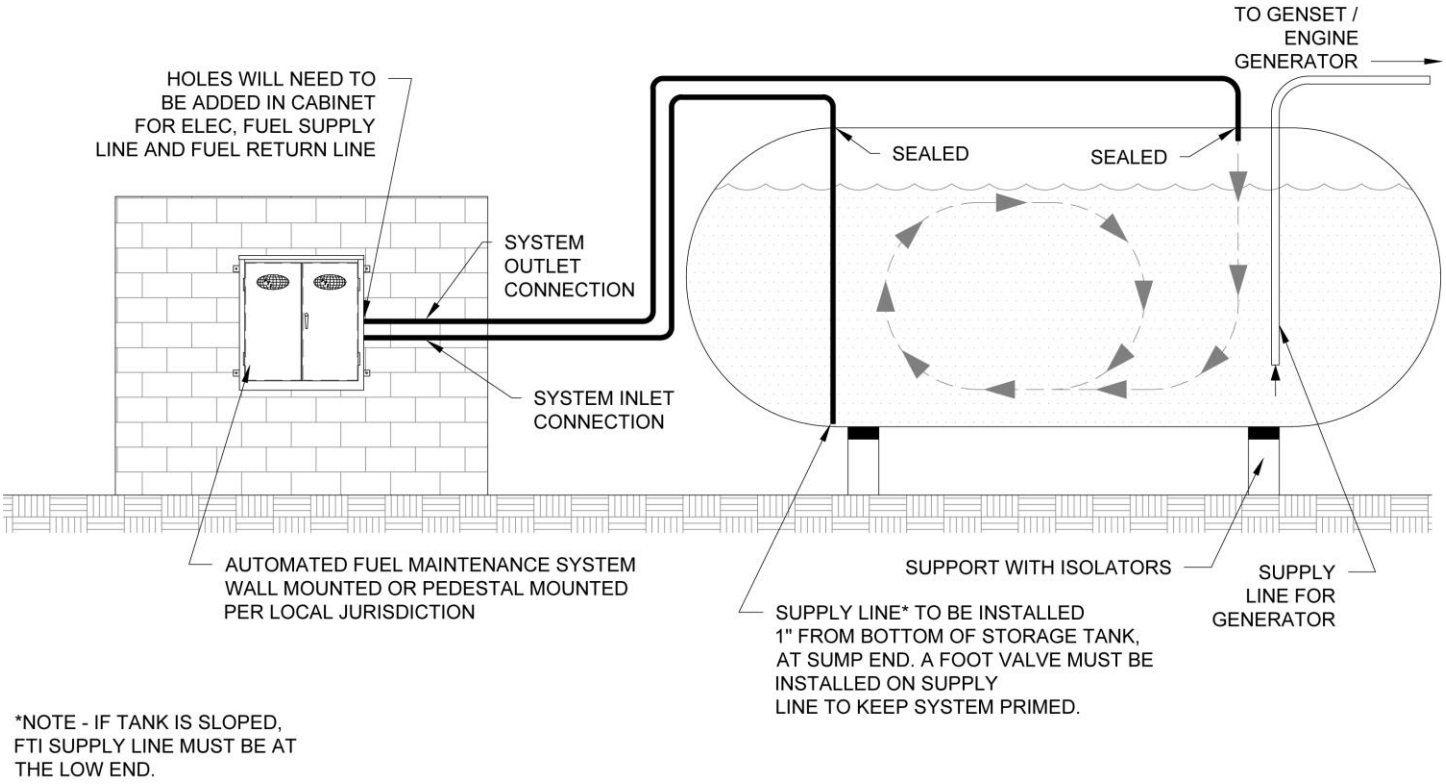
Underground Tank installation



1. Underground Tank Installation

a. **Max** uplift of 15’-0” for supply line to system inlet.
   i. If exceeded, a submersible pump is required. (provided by others)
b. Supply pickup installed 1.0” from bottom (low end) of tank.
c. Return line installed on opposite end of tank for proper circulation.
d. A Foot valve must be installed on the supply line to keep the system primed. (provided by others)
e. All tank penetrations must be sealed per local jurisdiction.
f. System Inlet 1.5” NPT
g. System Outlet 1.5” NPT
h. System to be wall or pedestal mounted per local jurisdiction.

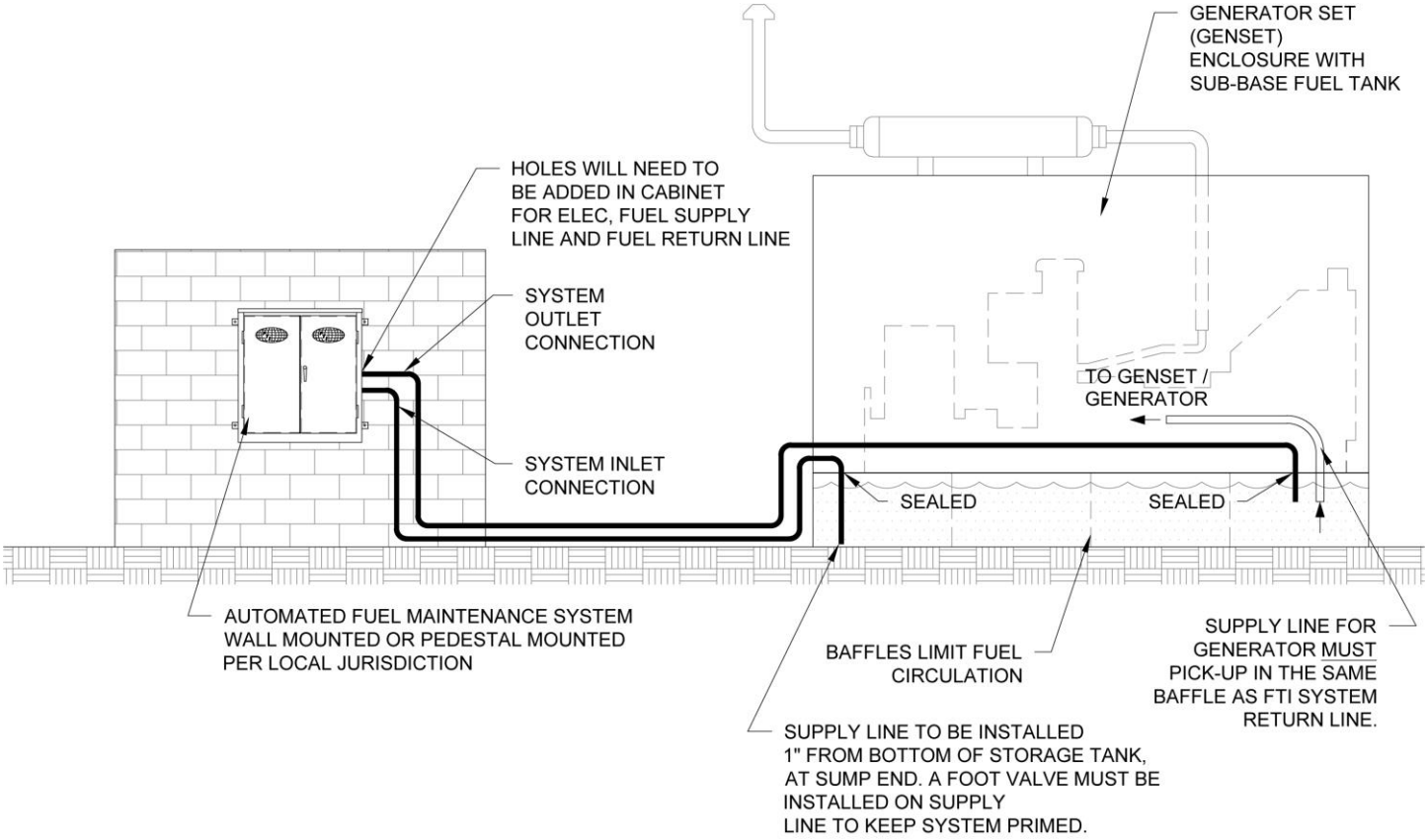
Above Ground Tank installation



1. Above Ground Tank Installation

a. Supply pickup installed 1.0” from bottom (low end)* of tank
   i. *Low end - 2% tank slope is recommended but not required.
b. Return line installed on opposite end of tank for proper circulation.
c. A Foot valve must be installed on the supply line to keep the system primed. (provided by others)
d. All tank penetrations must be sealed per local jurisdiction.
e. System Inlet 1.5” NPT
f. System Outlet 1.5” NPT
g. System to be wall or pedestal mounted per local jurisdiction.

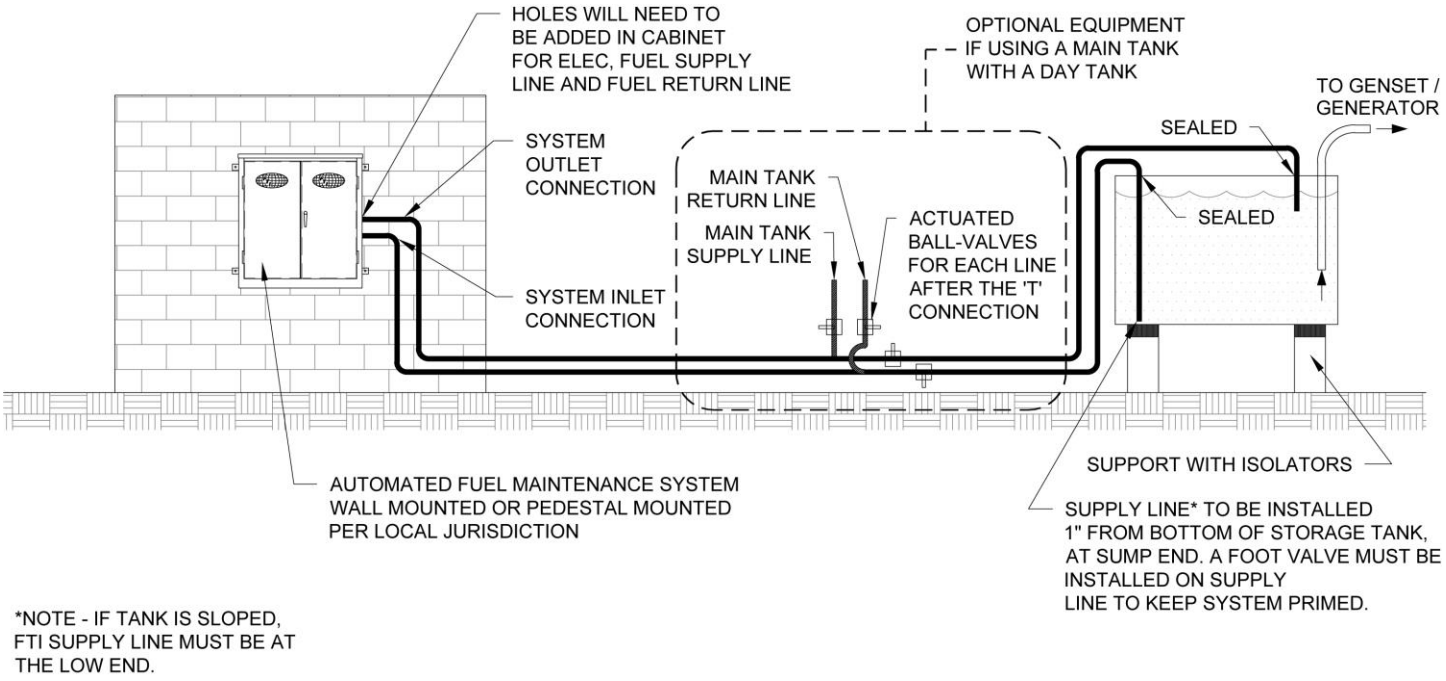
Sub-Base (Baffled) Tank Installation



1. Sub-Base (Baffled) Tank Installation

a. Supply pickup installed 1.0” from bottom of tank
b. Return line installed on opposite end of tank for proper circulation.
    i. Generator Supply line MUST be in the same baffle as FTI system return line.
c. A Foot valve must be installed on the supply line to keep the system primed. (provided by others)
d. All tank penetrations must be sealed per local jurisdiction.
e. System Inlet 1.5” NPT
f. System Outlet 1.5” NPT
g. System to be wall or pedestal mounted per local jurisdiction.
h. *NOTE – Baffles typically limit fuel circulation, fuel testing is recommended every 6 months to ensure proper filtration.

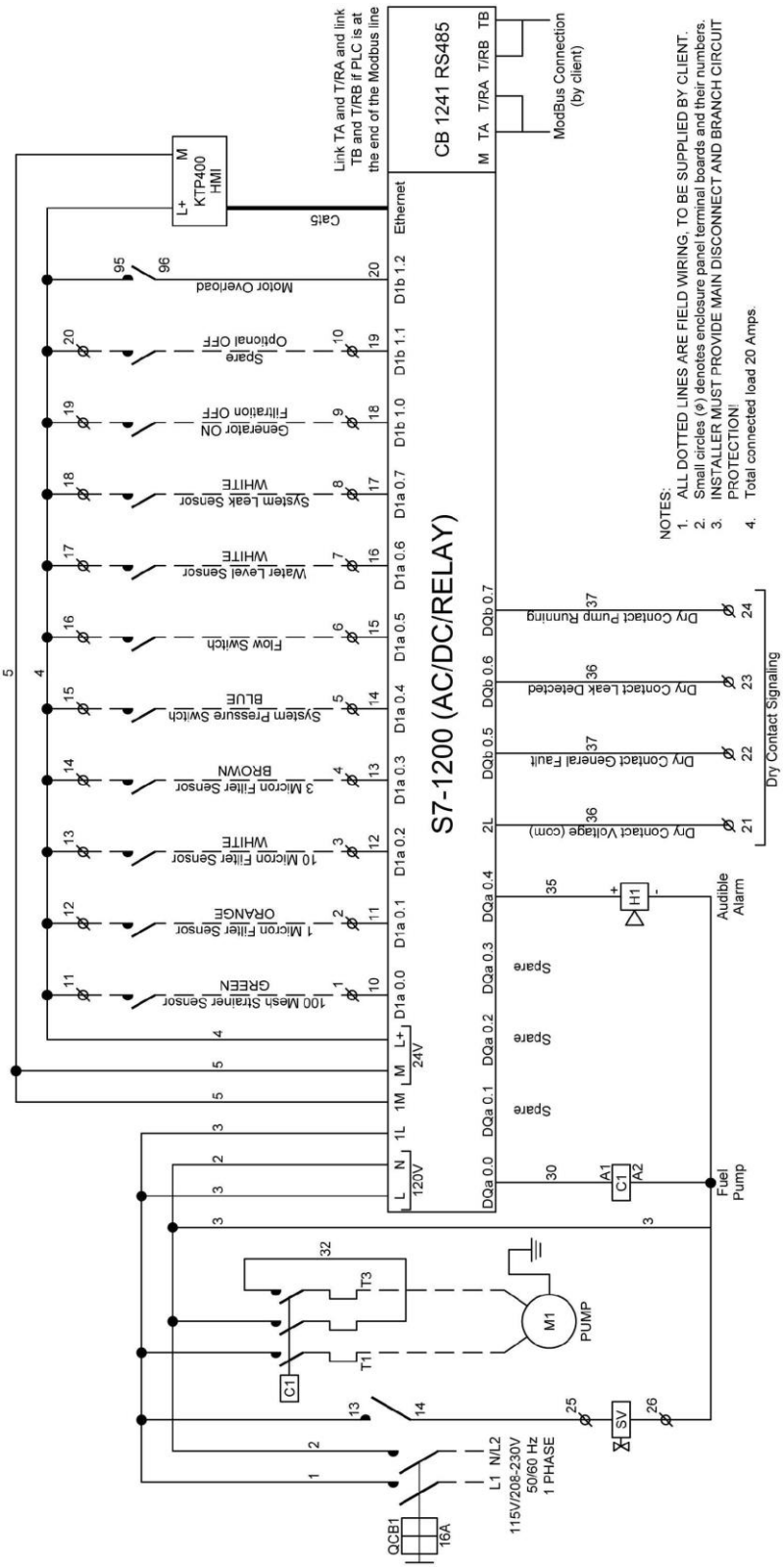
Day Tank Installation



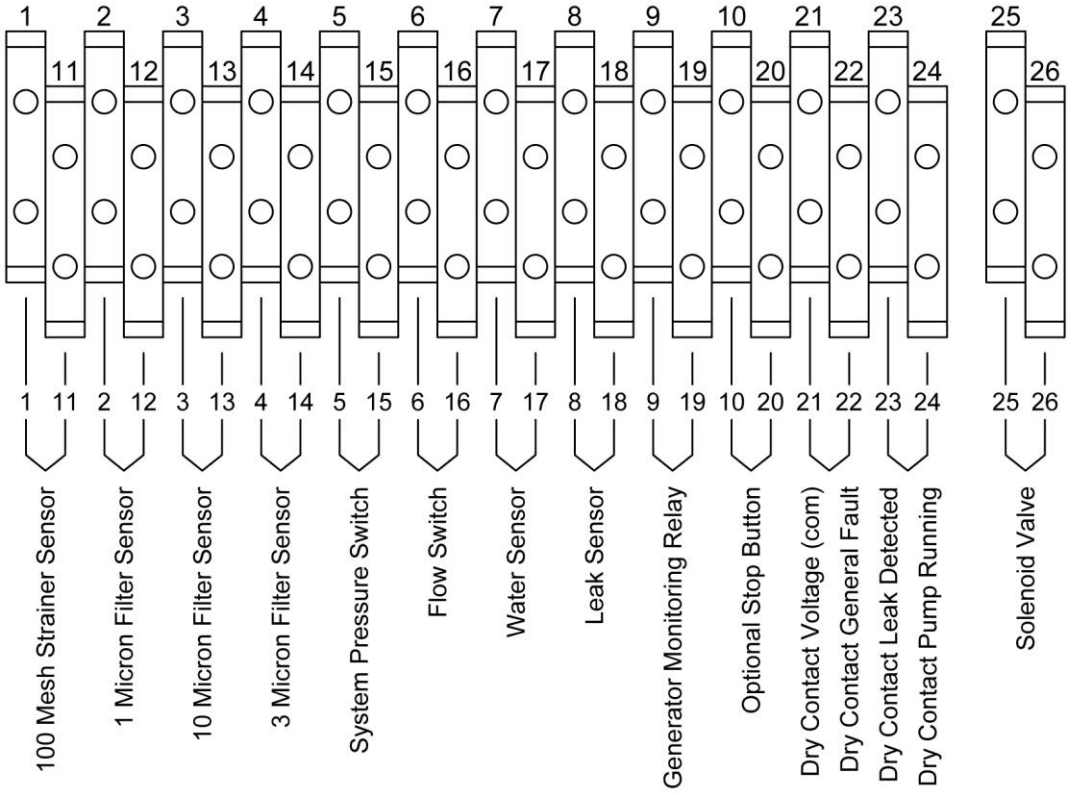
1. Day Tank Installation

a. Supply pickup installed 1.0” from bottom of tank
b. Return line installed on opposite end of tank for proper circulation.
c. A Foot valve must be installed on the supply line to keep the system primed. (provided by others)
d. All tank penetrations must be sealed per local jurisdiction.
e. System Inlet 1.5” NPT
f. System Outlet 1.5” NPT
g. System to be wall or pedestal mounted per local jurisdiction.
h. Installing with a **Main Tank**, use optional equipment in diagram.
    i. Actuated ball valves can be connected directly to the FTI System
    ii. Piping distances to be Engineer calculated by others

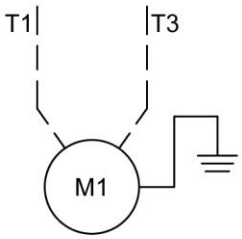
Electrical Schematic



Terminal Connections (Electrical Cont.)



Connect Motor Leads to terminal T1 and T3 on overload OL1



PUMP
115V/208-230V
50/60 Hz
1 PHASE

FTI Automated Filtration system Start-up Procedure

Technician_____ Observer_____

1. **System to be tested**
   a. FTI automated filtration system – Model* **[FTI-10A]**

2. **FTI Filtration System Start-up Procedure**
   a. Program system to automatically filter for 1 hour. Reset clock to within 1-5 minutes of start time (See Operations Manual for instructions) Place the Control Panel in AUTO mode.
   Wait for filtration to start
      i. ☐ Check MOTOR / PUMP RUNNING status.
      ii. ☐ Check SOLENOID VALVES open status. (Multi-Tank System)
      iii. ☐ Check ELECTRIC BALL VALVES open status (Multi-Tank System)

   NOTES: _____

   b. Place the control panel in MANUAL mode.
   Start manual filtration. (See Operations Manual for Instructions)
      i. ☐ Check MOTOR / PUMP RUNNING status.
      ii. ☐ Check SOLENOID VALVES open status. (Multi-Tank System)
      iii. ☐ Check ELECTRIC BALL VALVES open status (Multi-Tank System)

   NOTES: _____

   c. Simulate a strainer HIGH VACUUM ALARM at the strainer ball valve.
   Slowly close supply line ball valve until the needle at the strainer/Vacuum Gauge contacts set point and alarm sounds
      i. ☐ Check Strainer high vacuum alarm. (16-18 in hg)

   NOTES: _____

   d. Simulate a 10 MICRON HIGH DIFFERENTIAL pressure at the Switch Gauge Panel.
   With system running in MANUAL mode, use a 1/16” hex wrench and move the 10 Micron Switch Gauge contact to the left until the needle contacts it, alarm will sound.
   Replace contact set point where it was. (16-18 psi)
      i. ☐ Check 10 Micron high differential pressure alarm.

   NOTES: _____

e. Simulate a 3 MICRON HIGH DIFFERENTIAL pressure at the Switch Gauge Panel.
With system running in MANUAL mode, use a 1/16" hex wrench and move the 10 Micron Switch Gauge contact to the left until the needle contacts it, alarm will sound.
Replace contact set point where it was. (16-18 psi)
   i. ☐ Check 3 Micron high differential pressure alarm.

NOTES: _____

f. Simulate a 1 MICRON & COALESCER HIGH DIFFERENTIAL pressure at the Switch Gauge Panel.
With system running in MANUAL mode, use a 1/16" hex wrench and move the 10 Micron Switch Gauge contact to the left until the needle contacts it, alarm will sound.
Replace contact set point where it was. (16-18 psi)
   i. ☐ Check 1 Micron & Coalescer high differential pressure alarm.

NOTES: _____

g. Simulate a HIGH PRESSURE ALARM at the outlet ball valve. With system running in MANUAL mode, slowly close tank return line ball valve to simulate blockage.
When the Pressure Switch Gauge needle touches contact @ 45 psi, alarm will sound.
   i. ☐ Check high pressure alarm.

NOTES: _____

h. Simulate a LEAK in cabinet. Lift leak detector. Alarm will sound
Reset control panel.
   i. ☐ Check leak alarm.

NOTES: _____

i. Simulate a GENERATOR RUNNING action. With system running short across terminals #9 & #19 inside control panel with jumper wire. This will turn off pump and read Generator running on the screen
   i. ☐ Check pump shut off and proper description on the touch screen.

NOTES: _____

j. Simulate MOTOR OVERLOAD. With system running push the red rest button on the motor overload inside control panel.
   i. ☐ Check motor is stopped and correct alarm description on the touch screen.

NOTES: _____

k. Simulate LOSS OF PRIME (low flow). Change low flow to 1 minute (see Operations Manual). With system running short across terminals #6 & #16 inside control panel with jumper wire for 1 minute. Alarm will sound with lose of prime shown on the screen.
   i. ☐ Check low flow alarm.

   NOTES: _____

l. Simulate WATER FULL in the collection bowl. Remove water sensor cable from 1 Micron Filter Housing. Short with wire between the 2 pins.
   Reset control panel.
   i. ☐ Check Water alarm.

   NOTES: _____

TEST COMPLETE