

# **OPERATIONS INSTALLATION MANUAL**

**FT-I-2.8**

**Fuel**

**Maintenance**

**System**



**FUEL TECHNOLOGIES INTERNATIONAL LLC**

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# OPERATIONS & MAINTENANCE

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## INSTALLATION NOTES

- 1) FTI system should operate on all storage tanks. A qualified plumbing contractor and a Qualified electrical contractor should complete all installations.
- 2) Wall mount or pedestal mount should be bolted into place.
- 3) **110 volt, 20 amp.** Single-phase power source must be available at system location.
- 4) Pipe plugs were installed in the supply and return line for shipping purposes only, and must be Removed prior to installation.
- 5) **Holes** need to be added in cabinet for electrical, fuel supply line, and fuel return line.
- 6) 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 system.
- 7) **Ball valves** must be installed on the fuel **supply line** and **return line** to isolate the system for any required maintenance.
- 8) A supply line shall be installed at the sump end of the storage tank 1" from the bottom and plumbed to the fuel maintenance system. A **foot valve** must be installed on **supply line** to keep system primed.
- 9) A return line shall be installed to return fuel to the opposite end of the storage tank. A **check valve** may be required on return line, on some installations to prevent back flow pressure.
- 10) Caution should be taken not to exceed the 15-ft. vertical suction lift capability of the fuel Circulation pump.
- 11) Fuel Technologies fuel conditioner, stabilizer to be added to the existing fuel, and when Additional fuel is added to storage tank.
- 12) A **priming tee** or other means of filling fuel supply line with fuel should be installed.  
(For priming pump)

### **DO NOT RUN LONGER THAN TWO MINUTES WITHOUT FLUIDS**

- 1) On initial start up, if the system does not fill with fluid the pump may require priming.
- 2) To prime the pump, remove the strainer filter. Fill filter with diesel fuel and replace. Restart The system.
- 3) If filling filter fails to prime pump, fill entire fuel line with fuel and restart.
- 4) For starting system, see operating system page 5.

# OVERVIEW

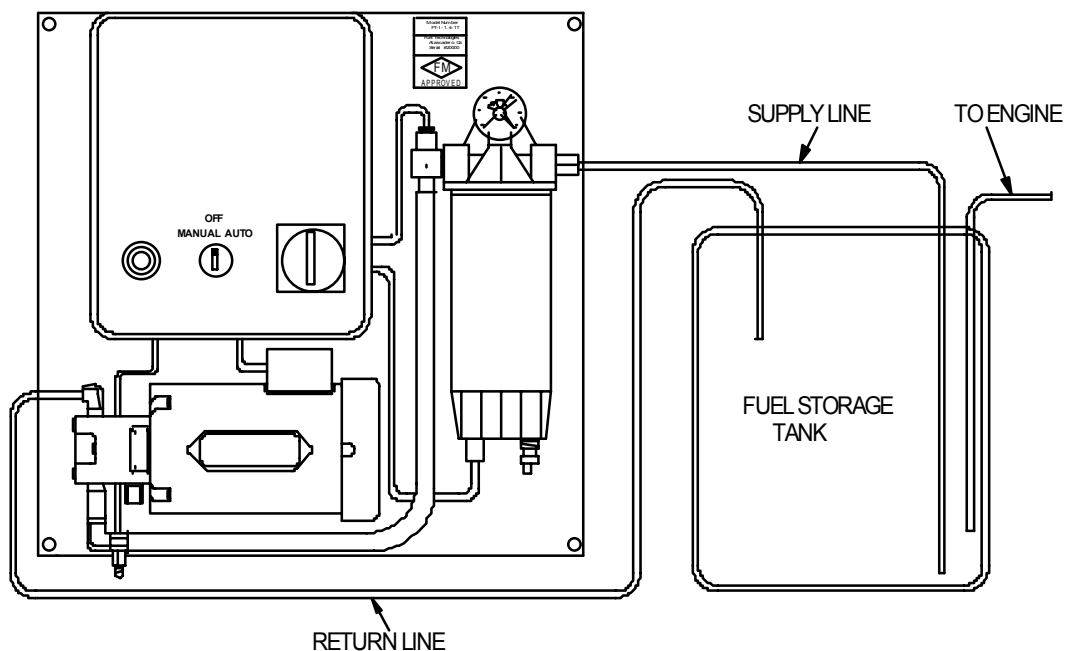
FT-I-2.8 Fuel Maintenance System is designed for ease of operation. Due to its relatively small size and weight it can be installed in most locations easily.

How often you need to clean stored fuel will vary upon tank conditions and current fuel condition.

Your FTI system uses a two-stage, filtering and water removal process. It has a 7-day programmable **PLC with EPROM memory backup, (EPROM memory backup will last approximately 80 hours with out power)** which operates from a 110 VAC power source. A vacuum sensor switch, leak detector, and a water sensor automatically turns system off, and sounds an audible alarm, and a brief description on the PLC screen, to alert maintenance to service system. There is a general alarm, dry contact, available in the control panel, for remote alarm status.

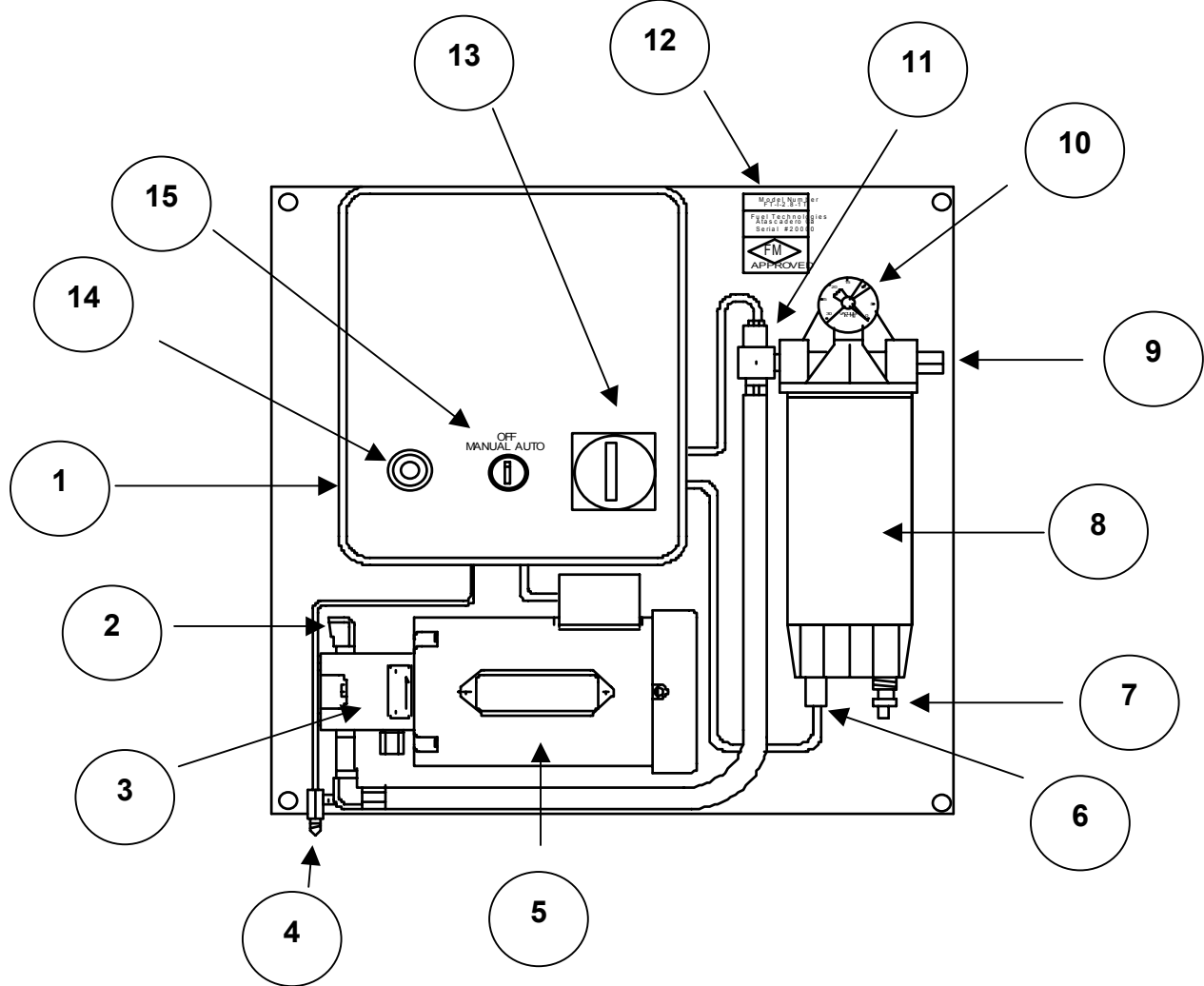
Depending on the condition of the fuel to be maintained, you may initially be changing filters more frequently than expected. By monitoring the vacuum gauge the operator can determine when it is time to change filters. As the fuel quality progressively improves, you will notice a dramatic drop in filter usage. In cases of extreme contamination, it is recommended that you have your fuel polished prior to initial use of your FTI system. Since the FTI system is designed to keep clean fuel clean, continued use prevents the fuel from deteriorating again and maintains a healthier environment to protect the engine, the fuel, and the storage tank.

## HOW IT WORKS



# FT-I-2.8

## IDENTIFYING PARTS



**1. Control Box, Electrical Hook Up 120VAC**

**2. Fuel Return Connection 1/2" npt**

**3. Pump 2.8 GPM**

**4. Leak Detector**

**5. 1/3hp Motor**

**6. Water Sensor Probe**

**7. Water Drain**

**8. Filter 2 Micron**

**9. Fuel Supply Hook Up 1/2" npt**

**10. Vacuum Gauge**

**11. Vacuum Sensor Switch**

**12. Model No., Serial No., FM Approved**

**13. Disconnect Switch**

**14. Alarm Horn**

**15. MANUAL - OFF - AUTO Switch**

# OPERATING SYSTEM

To **start** or **stop** system **manually** turn (**manual - off - auto switch**) to **manual (on)** or to **off**.

To operate FTI Fuel Maintenance System **automatically**, set the clock, then set the “on “ and “off “ times, per the programming and operating instructions in this manual. Turn the **manual - off - auto switch** to **auto**. System will run for the specified programmed time unless in alarm mode.

When alarm mode occurs, (horn starts beeping intermittently and **manual - off - auto switch** Lights up intermittently). There also will be a brief description on the PLC screen in the control Box. It will tell the operator which alarm it is.

## Check For:

1. Leak in cabinet.
2. Water in filter bowl.
3. Vacuum gauge at 15 In Hg. (turn **manual - off - auto switch** to **manual** and observe vacuum gauge with system running)

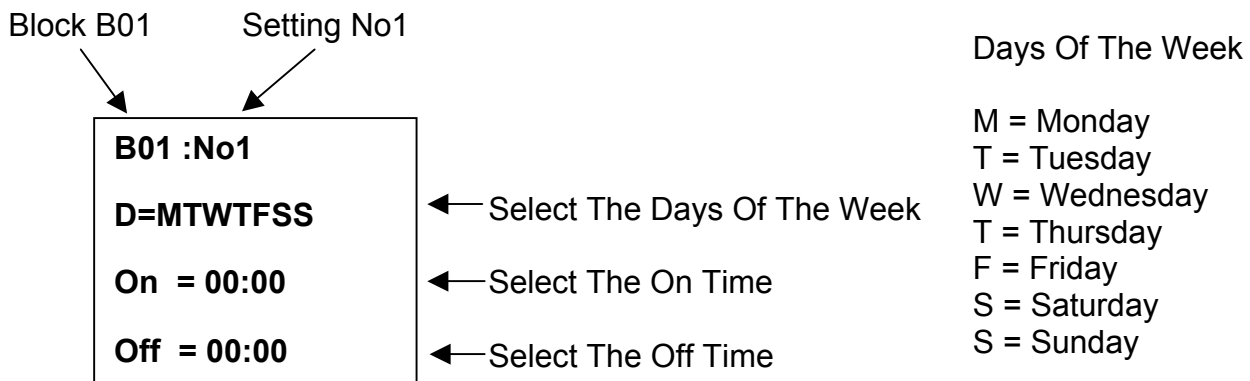
To **cancel / fix** alarms, first open control box lid & read alarm description on the PLC screen, then turn **manual - off - auto switch** to **off** to disable motor / pump.

Then do one of the following:

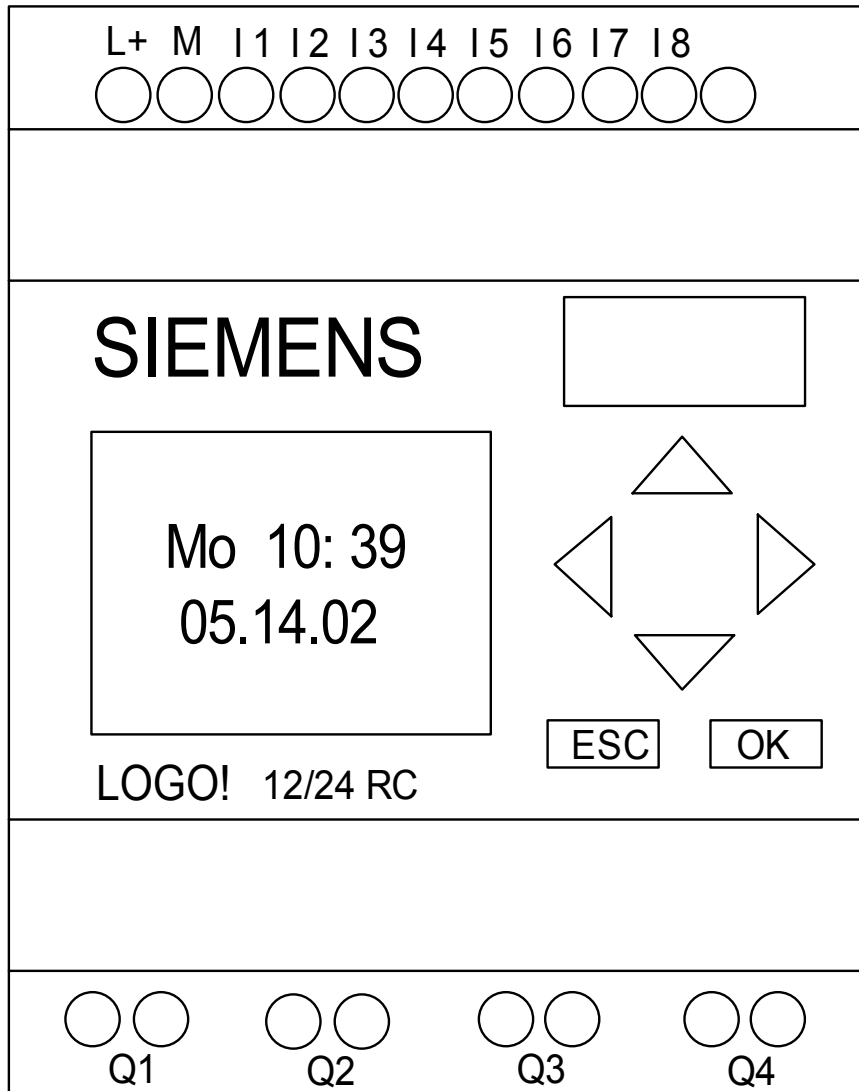
1. Repair leak, remove fuel from bottom of cabinet, turn **manual - off - auto switch** to **on** to restart motor / pump and check for leaks.
2. Drain water in filter bowl, then turn **manual - off - auto switch** to **on** to restart system.
3. Replace filter (see changing filter page 9), then turn **manual - off - auto switch** to **on** to restart system. Check for leaks.

# SEVEN DAY TIME SWITCH

The seven-day time switch has three settings **B04: No1**, **B04: No2**, and **B04: No3**, each can be used to configure a time setting. The **B04: No1**, **B04: No2**, and **B04: No3**, are used to select the days of the week to run, and the on and off times for each day.



# CONTROL PANEL PLC



# SETTING THE TIME CLOCK

1. Push **ESC** button. The screen will read as follows:

>Stop  
Set Param  
Set Clock  
Prg name

2. Push up arrow ▲ or down arrow ▼ to put the > to set clock, and then push **OK** button. The screen will read as follows:

Blinking Cursor →

Set Clock
Mo 10:35
MM.DD.YY
11.28.00

3. To change the Day Push up arrow ▲ or down arrow ▼ to scroll to the correct Day.

4. Push the right arrow ► to move the blinking cursor to the first number to set the correct time. Push the up arrow ▲ or the down arrow ▼ to change the numbers for the correct time. Do this for the four numbers.

5. After changing the last number in the time slot, push the right arrow ► to move the cursor to the first position to set the current **Month (MM), Day (DD), and Year (YY)**. Follow step 4 above to set the correct **Month, Day, and Year**.

6. Press the **OK** button when finished, make sure the cursor is blinking on the last number for the year (YY).

7. Press the **ESC** button to return to the default screen, It should look like this:

Tu 10:28
05.14.02

# SETTING THE SEVEN-DAY TIME SWITCH

1. Press the **ESC** button.

2. Push the down arrow ▼ to move cursor (>) to the **Set Param**.

3. Press the **OK** button. This screen will appear:

B04:No1
D= - - - - -
On = - - : - -
Off = - - : - -

( D = M T W T F S S )

4. Press **OK** button, the blinking cursor is now on the first dash mark. ( D=**■** - - - - - )
5. Push the up arrow ▲ To change the dash to a **M** if you want the system to run on Mondays.
6. Push the right arrow ► to move cursor to other days of the week . Choose only the days you want your system to run. Dash ( - ) means it will not run.
7. With blinking cursor on the last day selection push the right arrow ► to move cursor to the first number for the **On** (run time) selection. ( **On** =**■** - -: - - )
8. Push the up arrow ▲ or the down arrow ▼ to set the correct start time for the system to run. Continue with other numbers to set the **ON** time And the **OFF** time.
9. You can set any time between 00:00 and 23:59.
10. With blinking cursor on last number of the **OFF** time press the **OK** button.
11. Press the down arrow ▼ to change to **B04: No2**, or **B04: No3** if you have other days or **On** or **Off** times to run the system.
12. If at any time you want to exit the setup screen keep pushing the **ESC** button until the default screen appears.

## Examples

1. In the examples below the system is to run on every day from 5:30 AM to 7:40 AM. ( B04: No1)
2. In addition, the system will run every Tuesday from 3:10 PM to 6:15 PM. ( B04: No2 )
3. And last the system will run every Saturday and Sunday from 8:30 PM to 11:45 PM.( B04: No3 )

### Example 1

**B01 :No1**  
**D= MTWTFSS**  
**On = 05:30**  
**Off = 07:40**

### Example 2

**B01 :No2**  
**D= -T- - - - -**  
**On = 15:10**  
**Off = 18:15**

### Example 3

**B01 :No3**  
**D= - - - - - SS**  
**On = 20:30**  
**Off = 23:45**

## CHANGING FILTER

1. To remove filter close ball valves at fuel supply and return lines, open drain valve on bottom of Filter and drain fuel. Turn counter clockwise and remove.
2. To install new water separator filter.
  - A. Remove sight bowl from old filter by turning counter clockwise.
  - B. Clean sight bowl, and water sensor probe. Lubricate and install new gasket onto sight bowl.
  - C. Turn sight bowl clockwise on new filter and hand tighten.
  - D. Lubricate rubber seal on top of new filter and turn clockwise until contact is made, Then tighten 1/2 to 3/4 of a turn more. **Do not over tighten.**
  - E. Restart system, check for leaks.

**EVERY TIME SYSTEM IS STARTED CHECK VACUUM GAUGE. VACUUM SHOULD NOT EXCEED 15 IN HG**

## DRAINING WATER FROM WATER SEPARATOR

To remove water, open drain valve on bottom of sight bowl and allow collected water to drain. Close drain valve tightly as soon as fuel appears. The water separator should be drained on a regular basis, even if water is not present every time.

## REPLACEMENT FILTER LIST

<u>ORDER NO</u>	<u>DESCRIPTION</u>
FL-S3207S	2 MICRON (Standard)
FL-S3207T	10 MICRON (Optional)
FL-S3207P	30 MICRON (Optional)

## **LIMITED WARRANTY**

FUEL TECHNOLOGIES INTERNATIONAL LLC (FTI) makes every effort to assure that its products meet high quality and durability standards, and we expressly warrant the original consumer/purchaser of our products that each product is free from defects in materials and workmanship. Our expressed warranty is subject to the following terms and conditions:

1. The term of our warranty is one year from the date of purchase. A warranty claim received by us after one year from the date of purchase will not be honored even if it is claimed that the defect occurred prior to one year from the date of purchase.
2. Our warranty does not cover defects due, directly or indirectly, to misuse, abuse, negligence of others, repairs or alterations done outside of our facilities, or lack of maintenance.
3. Our liability for breach of our express warranty is limited to the repair or replacement of the product , at our cost.
4. We are not liable for general, special, consequential, incidental or contingent damages resulting, directly or indirectly, from the purchase or use of our products.

### **WE DISCLAIM ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PURPOSE OF OUR PRODUCTS.**

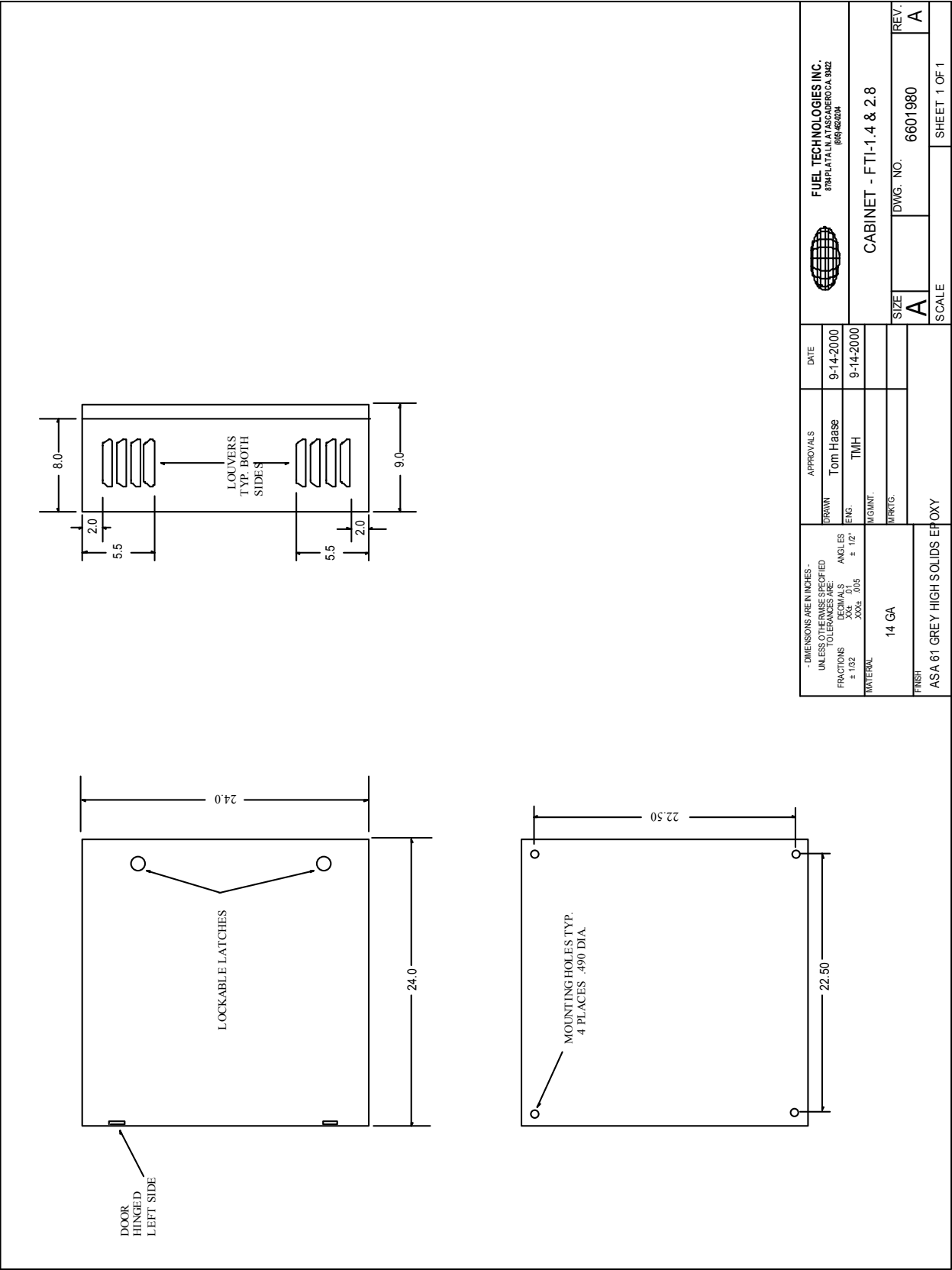
To make a claim under this warranty, call our Customer Service Representative at 1-800-801-4384. We will ask you to advise us of our Distributor's name and address, the date of purchase, model number, and a detailed explanation of the problem you are experiencing. The Customer Service Representative will arrange for a Field Engineer to inspect your system. If our inspection discloses a defect covered by our limited warranty, we will either repair or replace the defective parts of products at our election, and at our cost. If upon inspection, our Engineer determines there is not defect or that the damage to the system resulted from causes not within the scope of our limited warranty, then you must bear the cost of repair or replacement of damaged parts. For service, please contact your local Distributor.


*For your records*

Model No. \_\_\_\_\_ Date of Purchase: \_\_\_\_\_

**Fuel Technologies International LLC**  
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 <b>FUEL TECHNOLOGIES INC.</b> 878 PLATA LN. ATASCADERO CA. 9322 (805) 462-0204		DATE 9-14-2000
APPROVALS DRAWN: Tom Habb ENG: TMH MGMT.: MKTG.:	DATE 9-14-2000	REV. A
CABINET - FTI-1.4 & 2.8		DWG. NO. 6601980
MATERIAL 14 GA		SCALE A
FINISH ASA 61 GREY HIGH SOLIDS EPOXY		SHEET 1 OF 1

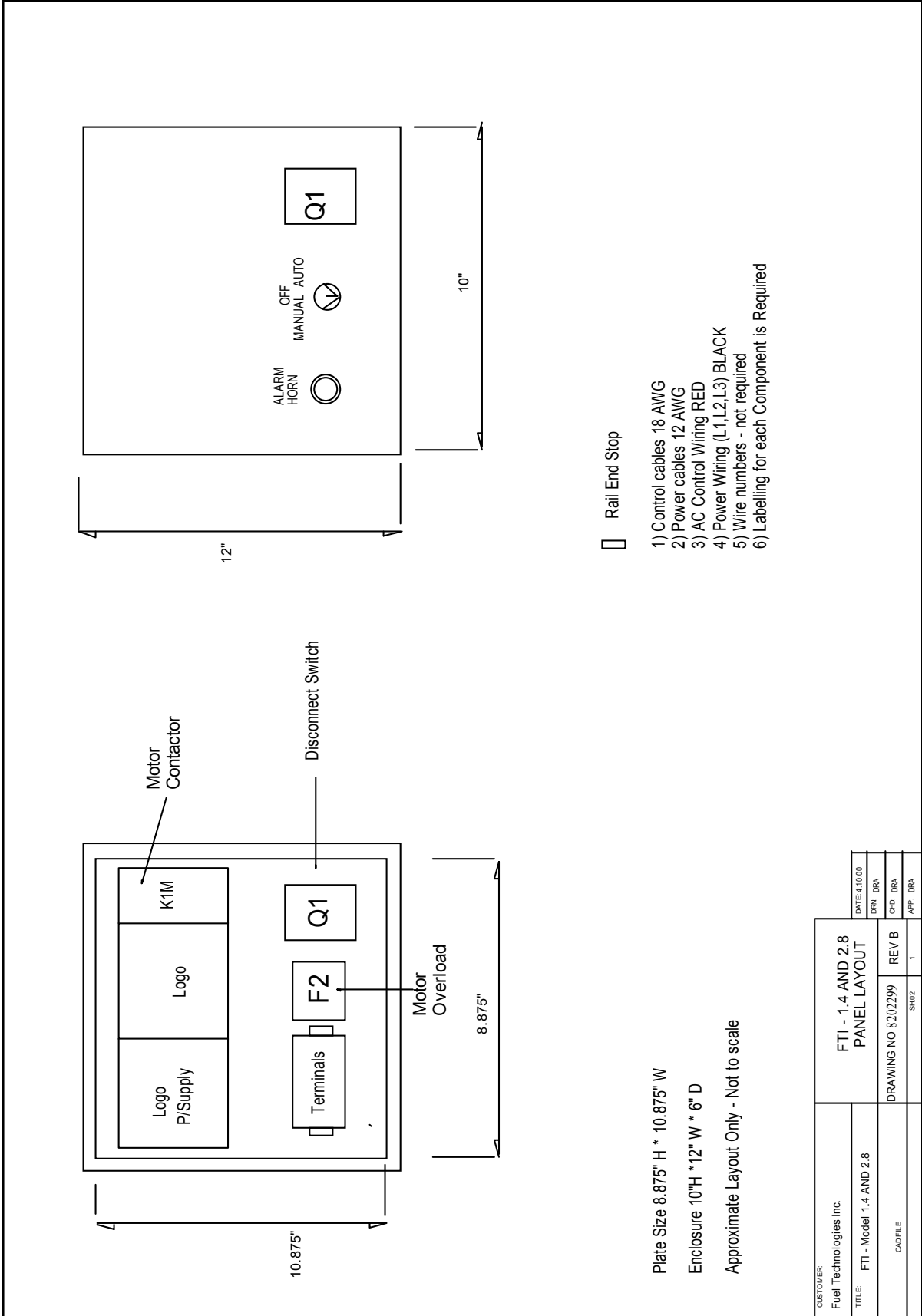
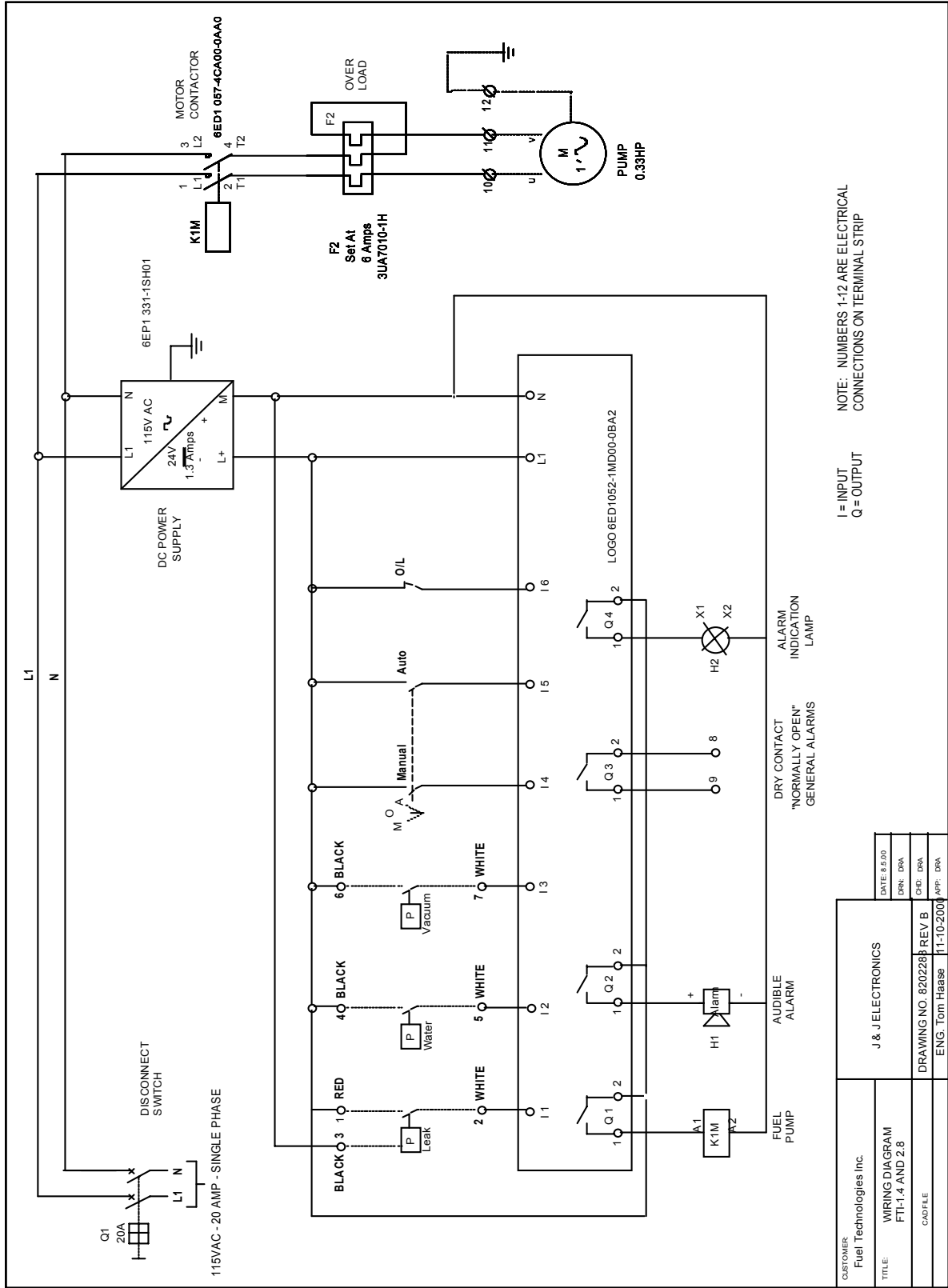


Plate Size 8.875" H \* 10.875" W

Enclosure 10"H \* 12" W \* 6" D

Approximate Layout Only - Not to scale

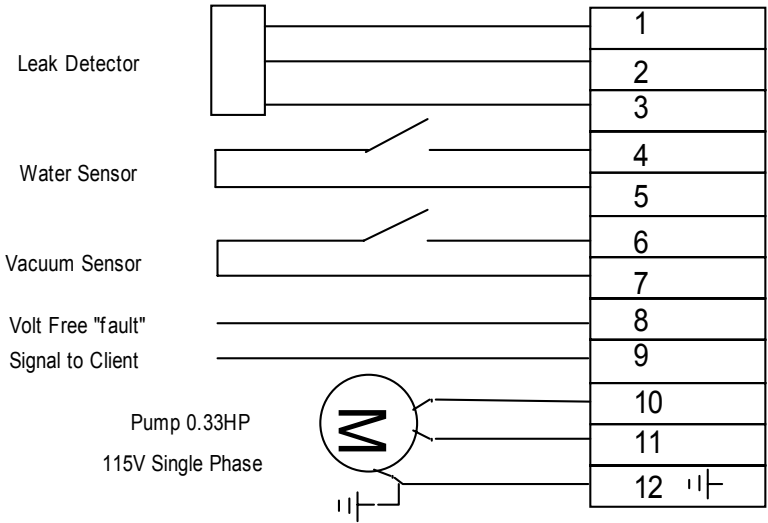
CUSTOMER	Fuel Technologies Inc.	FTI - 1.4 AND 2.8	DATE: 4.10.00
TITLE	FTI - Model 1.4 AND 2.8	PANEL LAYOUT	DRN: DBA
CAD FILE	DRAWING NO 8.210299	REV B	CHD: DBA
	SR02	1	APP: DBA



I = INPUT  
Q = OUTPUT

NOTE: NUMBERS 1-12 ARE ELECTRICAL CONNECTIONS ON TERMINAL STRIP

CUSTOMER: Fuel Technologies Inc.		DATE: 8.5.00	
TITLE: WIRING DIAGRAM FTL-1.4 AND 2.8		DRN: DRA	
DRAWING NO. 820228		GFD: DRA	
REV B		APP: DRA	
ENG. Tom Haase		11-10-2000	



CUSTOMER: Fuel Technologies Inc.	DATE: 4.10.00	
	DRN: DBA	APP: DBA
TITLE: FTI - 1.4 & 2.8 TERMINAL LAYOUT	DRAWING: NC820298	REV: A
CAD FILE	ENG: TMH	9-22-2000
<b>J &amp; J ELECTRONICS</b>		