



Fuel Technologies International

Model FTI-20A Single Tank Automated Diesel Fuel Maintenance System

Maintenance Manual

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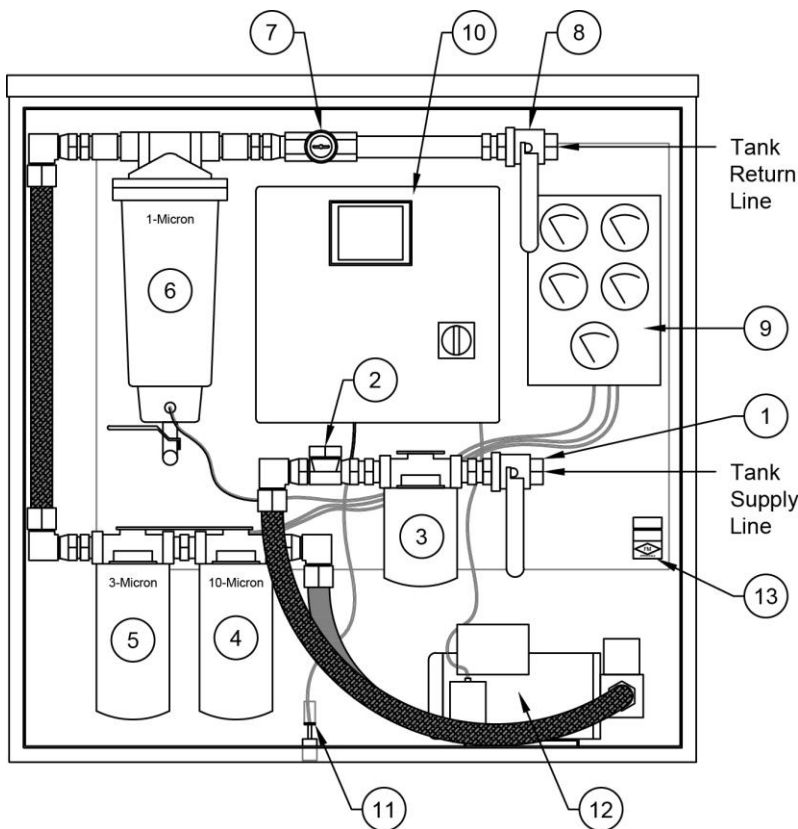
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General Maintenance Notes

1. Overview

- a. Periodically routine maintenance will need to be performed such as changing filters and draining the water separator. When filters become full, the display will indicate the specific filter that requires changing. (Refer to alarm message descriptions in the Operations Manual)
- b. For best performance, it is recommended that you **change the filters at least every six (6) months**. A periodic check of the FTI system gauges will assist you in predicting which filters to have on hand before they become clogged. (See “Gauge Layout” section for a description of gauge operations).
- c. It is always a good idea to have spare filters on hand at all times, especially in the early stages of operation. New fuel and existing fuel can have water and particulate in it. Changing weather conditions can also affect your fuel condition.
- d. **IMPORTANT:** Do not attempt any maintenance operations until the system is turned off. Switch the system to “**Manual Mode OFF**” first, to avoid mishaps or leaking fuel. After maintenance, you may return the system to “**Auto Mode**”.

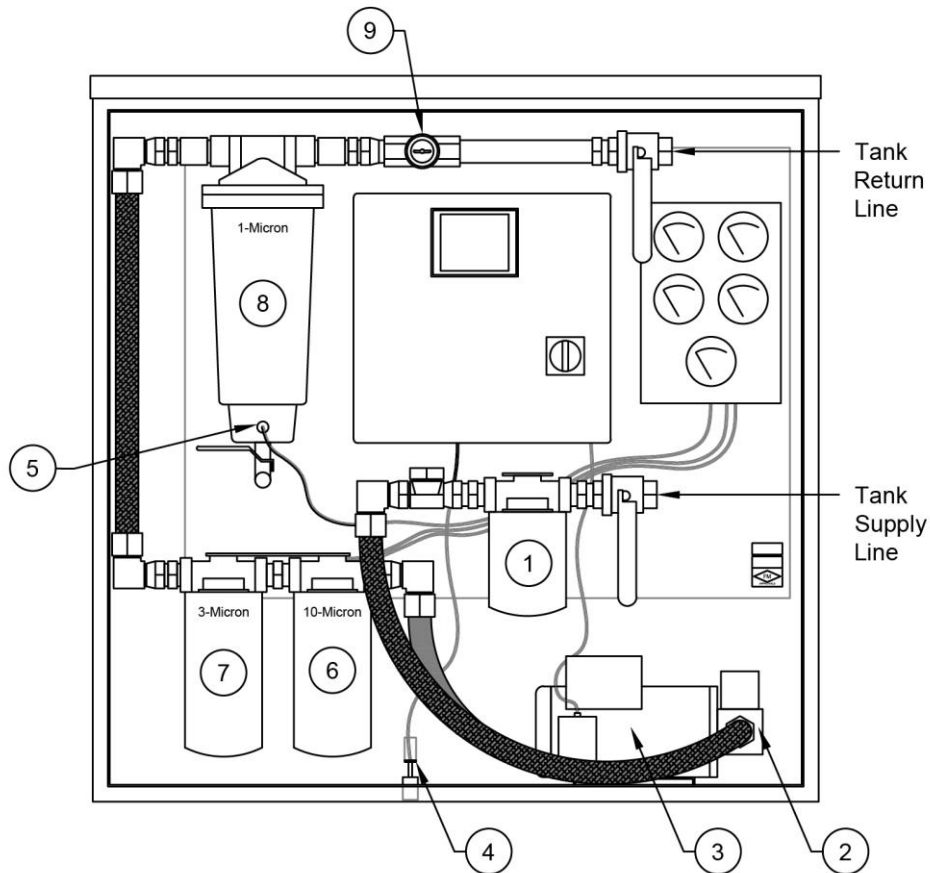
Identifying System Parts



Model FTI-20A Single Tank

1. Supply Line Connection: 2.0” NPT
2. Pump Priming Tee
3. Strainer – 100 Mesh, Spin on
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: 1.5” NPT
9. Switch Gauge Panel
10. Control Panel (UL Listed)
11. Leak Detector
12. Pump / Motor
13. Serial No. Model No., FM Approved Tag

Identifying Maintenance & Replacement Parts

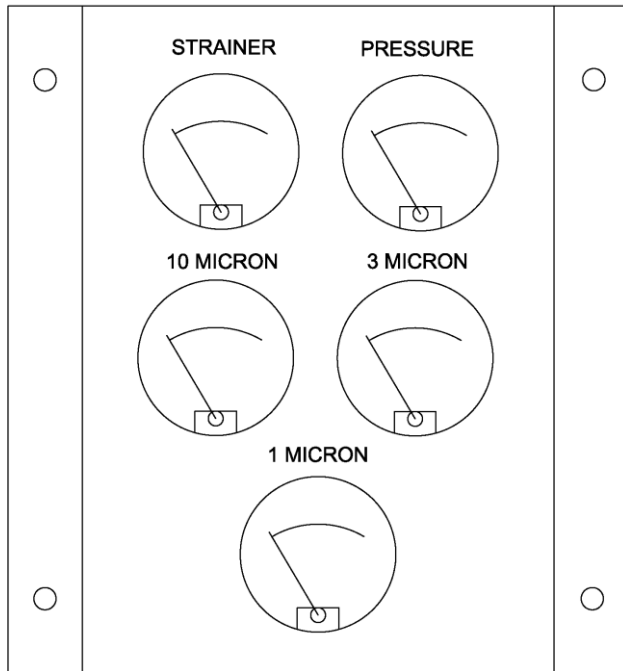


This diagram points out the replaceable parts on your FTI system. The example shown is for the model FTI-20A Single Tank. Although your model or custom unit may vary slightly in location of parts shown, the included diagram is representative of the location of the parts you will need to service or replace occasionally.

1. Maintenance & Replacement Parts

1. Strainer – Spin on Element
2. Pump
3. Motor
4. Leak Detector
5. Water Sensor
6. 10 Micron Pre Filter – Spin on Element
7. 3 Micron Pre Filter – Spin on Element
8. Water Separator and 1 Micron Particulate Replaceable Element
9. Site Glass

FTI Gauge Layout



Each switch gauge monitors the filter identified in the above diagram and offers an ongoing visual status of system pressure, vacuum and each of the filter conditions.

1. Gauges Identified

- a. **Strainer (Vacuum)** – Monitors 100 mesh strainer. (Alarm trips @ 16-18 In.hg. & Pump turns off)
- b. **System Pressure** – Monitors system pressure.
 - i. Measurement will vary due to restrictions of filters and length of pipe back to tank. (45 PSI High Set Point with Alarm and Shut off) (1-3 PSI Low Set Point to Monitor Flow with Alarm & Shut off)
- c. **10 Micron Filter** – Monitors 10-micron filter. (Alarm trips @ 16-18 DP & Pump turns off)
- d. **3 Micron Filter** – Monitors 3-micron filter. (Alarm trips @ 16-18 DP & Pump turns off)
- e. **1 Micron Filter** – Monitors 1-micron filter. (Alarm trips @ 16-18 DP & Pump turns off)

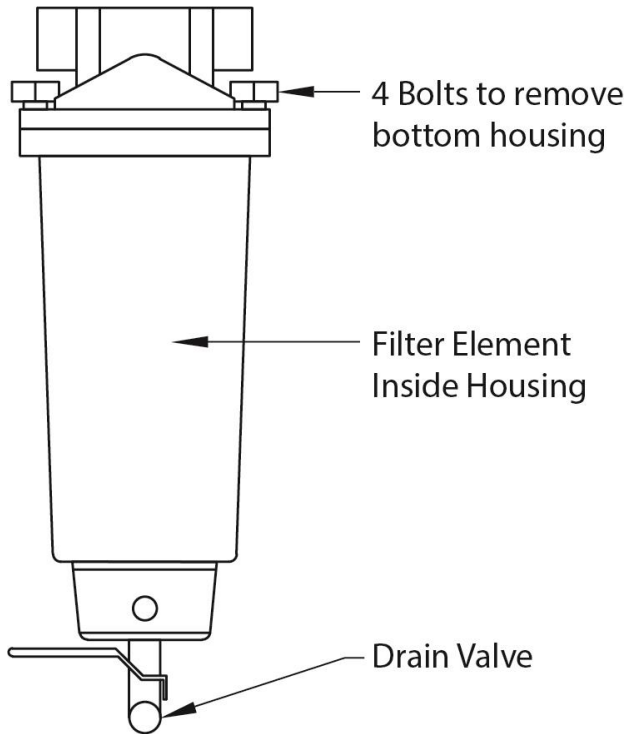
2. Gauge Readings

- a. **Filters are almost full** – When the needle nears the contact point of the switch gauge.
- b. **Checking gauges** – Monitor pressures each month can help determine when you need to re-supply filters before they need changed.
- c. **Servicing** – When a gauge is maxed out, it will turn the unit off, sound an alarm, and display the appropriate alarm message description on the controller screen.
 - i. Refer to the “Alarm message descriptions” in the Operations Manual for required maintenance.



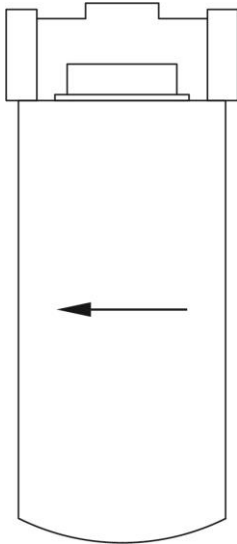
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Changing the 1 Micron Filter / Water Separator

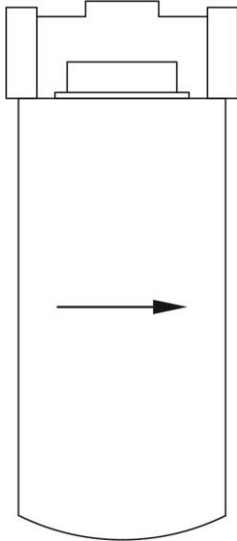


1. Turn off system. Put in manual mode
2. Close inlet and outlet ball valves
3. Remove ground wire at bottom of filter housing
4. Open air vent valve on the filter head
5. Drain filter housing at drain valve on bottom
6. Loosen four collar bolts
7. Rotate & remove housing with filter element
8. Inspect filter housing, clean if dirty
9. Remove the head gasket (O-ring)
10. Lubricate and install new gasket
11. Replace element with new one
12. Repeat above steps to close filter housing
13. Tighten all collar bolts to 100 In. Lbs.
14. Turn on system and check for leaks
15. Return system to **"Auto Mode"** to run programmed schedule.

Changing 3-Micron, 10-Micron, and Strainer



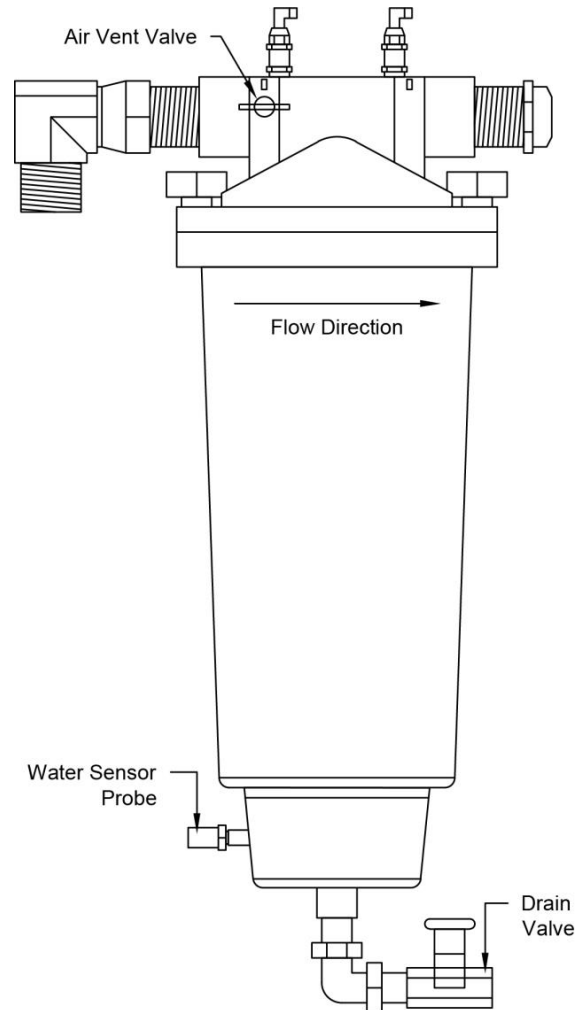
1. To remove filter, put in ***“Manual Mode”***
2. Close inlet and outlet ball valves
3. Drain fuel at Racor Separator filter assembly
4. Turn filter counter clockwise



1. To reinstall new filter, lightly coat seal on filter with fuel
2. Place on fitting and turn clockwise
3. Seal hand tight
4. Turn system back on ***“Auto Mode”***
5. Check for leaks

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Draining Water Separator



1. Turn off system. Put in **“Manual Mode”**
2. Close inlet and outlet ball valves
3. Attach drain hose to bottom drain valve on filter housing
4. Open top air vent valve on front of filter head
5. Open ball valve on bottom of filter housing
6. Drain water
7. Reverse above steps and run system
8. Check for leaks
9. Return system to **“Auto Mode”** to run programmed schedule
10. **NOTE*** - It is recommended that you periodically drain water separator (even if not yet full) to remove any contaminate collected in bowl, and to reduce the possibility of clogging the petcock and/or water sensor.

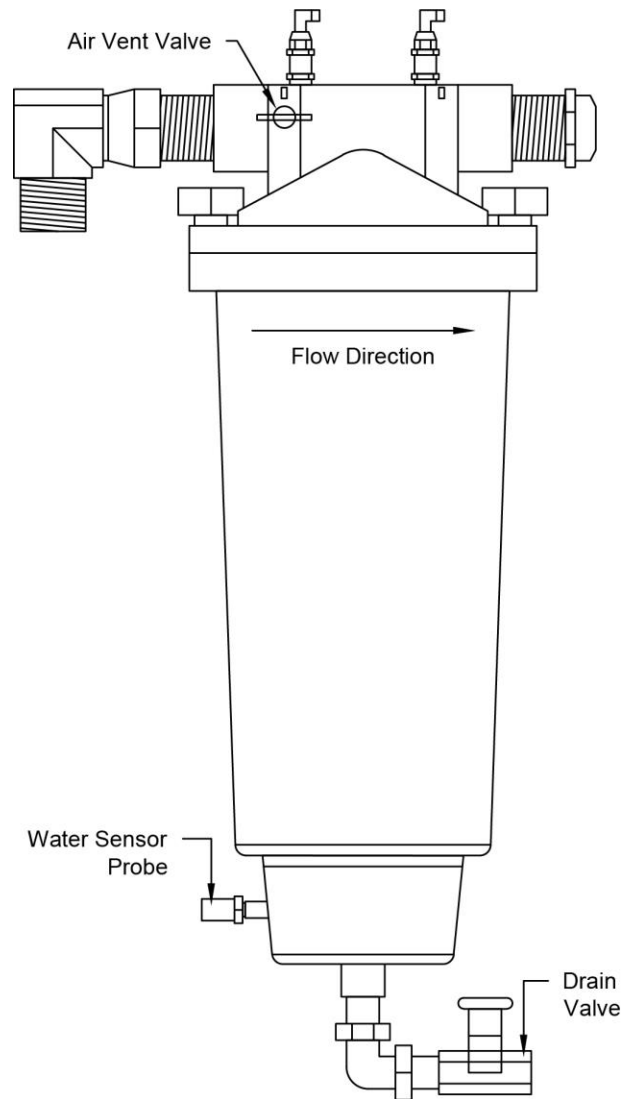
Water Sensor Alarm

1. Water Sensor Alarm not Shutting off

- a. If, after draining the water separator, the alarm continues while restarting system, unplug water level sensor cable located near the bottom of filter housing. Restart system and run several minutes to clean metal elements of the water sensor. Plug cable in and check system.
- b. If system continues to sound an alarm after above procedure, repeat procedure and run system longer than before.
- c. **NOTE*** - If this still fails to clear alarm, refer to next section (Cleaning water level sensor)

2. Cleaning Water Level Sensor

- a. **NOTE*** - Cleaning the water level sensor (located near the bottom of housing) will be required if the contacts become contaminated with dirt or water, and will not allow alarm to be reset or turned off.
- b. Drain fuel from the water separator just below water sensor level
- c. Disconnect sensor cable on the side of filter housing
- d. Unscrew water level sensor and remove
- e. Clean metal contacts on sensor with shop towel, then replace
- f. Reconnect cable, start system and check for leaks





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Replacement Filters List

1. Five Stages of Filtration

- a. **Stage 1** – 100 Mesh Stainless Steel – Spin on Element
- b. **Stage 2** – 10-Micron – Particulate Removal – Spin on Element
- c. **Stage 3** – 3-Micron – Particulate Removal – Spin on Element
- d. **Stage 4** – 1-Micron fine finish – Replaceable element in filter housing
- e. **Stage 5** – Water separation and removal – Replaceable element in filter housing

2. Model – FTI-20A Single Tank

- a. **Stage 1** – FL-50-100M (100 Mesh Strainer Spin on – 1 ea.)
- b. **Stage 2** – FL-70-10N (10 Micron Spin on – 1 ea.)
- c. **Stage 3** – FL-70-03N (3 Micron Spin on – 1 ea.)
- d. **Stage 4 & 5** – FL-FBO-60336 (1-Micron & Water Separation Element – 1 ea.)

To order replacement parts, please contact your local rep, or visit www.fueltech.us

The following are answers to the most commonly asked questions about the FTI system and potential problems that may occur.

1. System will not operate / display is not working:

- a. Check power source (24V DC) and circuit breaker in the FTI panel and wiring. If okay; Contact FTI representative.

2. Display reads “Filtering XX tank ON” and pump/motor is not running:

- a. Check pump/motor overload contactor relay (located in control box) reset if needed.
- b. Check motor overload button located on motor. (no on all motors)

3. Leaks – Drip around or on bottom of filter

- a. Check filter installation and tighten filter if necessary. If this does not stop the leak, check filter seals. Clean or replace seals as necessary.

4. Water drip

- a. Close bottom drain valve on filter housing.

5. Moisture around hose fittings

- a. Tighten hose fittings

6. High Pressure Alarm

- a. See alarm message descriptions. (Operations Manual, Alarm Message Descriptions)

7. Vibration

- a. Check pump-mounting bolts (and all other bolts). Tighten if necessary.

8. Water sensor malfunction still comes on after draining water

- a. Follow the procedure using the Water Sensor Alarm Error (Water Sensor Alarm not shutting off) to flush the sensor elements. (Maintenance Manual – Page 8)

NOTE* - If in doubt or if the problem cannot be resolved, please contact your FTI representative.



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Limited Warranty

FUEL TECHNOLOGIES INTERNATIONAL (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 1-805-462-8849. 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: _____