

# INSTALLATION AND OPERATIONS MANUAL

## **FUEL POLISHING MODULE** **(FPM)**

Models 60M, 90M, 180M  
“DIESEL ENGINES ONLY”

“Don’t Leave Shore Without It.”

**IMPORTANT**  
**READ BEFORE INSTALLING**

**THE INSTALLATION AND SETUP SHOULD BE  
PERFORMED BY A QUALIFIED TECHNICIAN**

**Another Great Product from KTI SYSTEMS, INC.**  
P.O. Box 1101, Southwick MA 01077 • 1-800-336-0315 •

# 1. UNPACKING

Inspect the *FPM* for physical damage.

Remove the shipping plugs and dust covers prior to installing the fuel line connections. This will reduce the chances of contamination.

Contents:

1ea. *FPM* unit

1ea. Installation manual

**NOTE: Vacuum gauge pointer may not rest at zero due to temperature variations. To restore gauge to operating condition, carefully “burp” black plug on back of gauge with a small screwdriver.**

# 2. PRE-INSTALLATION

1. Do not smoke or allow open flames near the installation. Turn off engine.
2. Turn off ship's power and disconnect the negative (ground) battery cable.
3. Turn off the fuel supply at the fuel tank.
4. Use adequate light and ventilation.
5. Before drilling holes or installing mounting hardware, make sure the back side is clear of obstructions such as fuel, hydraulic lines, electrical harnesses, water tanks, water lines and ships hull.
6. Use proper wire connectors, wire routing and secure wires from mechanical damage.
7. Use proper type fuel lines and connectors. Double clamp fuel hose connections with stainless steel hose clamps. Use approved pipe thread sealant (fuel compatible type) on pipe thread connections. DO NOT use Teflon tape.
8. Always use proper tooling to remove and install fittings and hardware. Also support the non-moving part when loosening and tightening.

### 3. DETERMINE THE TYPE OF INSTALLATION

*Note: There are many ways to install a fuel polishing system, below are some recommendations.*

#### **Fuel tank(s) that have a second supply and return port "A"**

If the fuel tank(s) has (have) two fuel supply ports and two return ports per tank, the *FPM* can be installed using the second set of ports as a stand alone fuel polishing (filtering) system. This is the ideal setup because the engine and polishing system can operate at the same time. Additionally the systems are isolated.

(See Figure 1-Installation "A")

Note: Figure 1 shows both single and multiple tanks.

#### **Using the existing fuel supply "B"**

**Note: Do not operate engine with the *FPM* in operation.**

The *FPM* was designed for the typical fuel tank(s) system that has(have) only one fuel supply port and one return port per tank(s). Installing a second set of ports is next to impossible because of access, so we made a system that shares the engine fuel supply/return so the fuel can be polished (filtered).

**Please note:** this is not the preferred method but using an isolation valve will allow the operator to close off the fuel supply to the polishing unit, this will protect the main engine fuel system.

(See Figure 2-Installation "B")

#### **Day tank system "C"**

Fuel systems that utilize a day tank need to filter the fuel as it is transferred from the main tanks to the day tank. The *FPM* works well in this installation.

(See Figure 3-Installation "C")

## 4. INSTALLATION “A” (SEE FIGURE 1)

### USING SEPARATE FUEL SUPPLY AND RETURN PORTS FROM/TO THE FUEL TANKS

1. Select a location that has easy access and is located close to the existing fuel supply. Try to keep the *FPM* mounted in the same horizontal plane as the fuel tanks. This helps to reduce the amount of vacuum on the system. Remember to size the distribution lines adequately for the fuel flow.
2. Mount the *FPM* on a vertical surface (A bulkhead or wall-DO NOT mount on the hull). Allow enough vertical clearance above and below the *FPM* to service the filter.
3. Using the secondary or clean out pickup connection(s) on the tank(s), connect the fuel supply line to the *FPM* inlet. If using multiple tanks, use a fuel manifold with shut off valves to select which tank to pull fuel from.
4. Connect the return line back to the tank return. If using multiple tanks, use a fuel manifold with shut off valves to select which tank to return to.
5. Connect the wiring.
6. Follow Post installation start up. (See Page 7)

**WARNING:** If using this system to transfer for polish fuel to a day tank or another storage tank use caution. It is very easy to overfill and create a fuel spill. Check the fuel quantity of the tank that is being filled.

## 5. INSTALLATION “B” (SEE FIGURE 2)

### USING THE EXISTING ENGINE FUEL SUPPLY AND RETURN

1. Select a location that has easy access and is located close to the existing fuel supply. Try to keep the *FPM* mounted in the same horizontal plane as the fuel tanks. This helps to reduce the amount of vacuum on the system. Remember to size the distribution lines adequately for the fuel flow.
2. Mount the *FPM* on a vertical surface (A bulkhead or wall-DO NOT mount on the hull). Allow enough vertical clearance above and below the *FPM* to service the filter.
3. Tee into the existing fuel source and install a shut off valve (isolation valve). This allows the system to be isolated when not in use-using a tee fitting works well on the single tank installations.
4. Connect the fuel supply line to the inlet of the *FPM*.
5. Connect the return line back to the tank return.
6. Connect the wiring.
7. Follow Post installation start up. (See Page 7)

**WARNING:** If using this system to transfer for polish fuel to a day tank or another storage tank use caution. It is very easy to overfill and create a fuel spill. Check the fuel quantity of the tank that is being filled.

## 5. INSTALLATION “C” (SEE FIGURE 3)

### USING THE FPM AS A FUEL TRANSFER PUMP TO A DAY TANK

1. Select a location that has easy access and is located close to the existing fuel supply. Try to keep the *FPM* mounted in the same horizontal plane as the fuel tanks. This helps to reduce the amount of vacuum on the system. Remember to size the distribution lines adequately for the fuel flow.
2. Mount the *FPM* on a vertical surface (A bulkhead or wall-DO NOT mount on the hull). Allow enough vertical clearance above and below the *FPM* to service the filter.
3. Connect the fuel supply line to the *FPM* inlet. If using multiple tanks, use a fuel manifold with shut off valves to select which tank to pull fuel from.
4. Connect the *FPM* outlet to the day tank inlet
5. For main tank polishing follow figure 3
6. For optional back up fuel supply follow figure 3. This allows fuel to be pulled directly from main tanks if the pump fails or there is a power failure.
7. Connect the wiring. (See Figure 4)
8. Follow Post installation start up. (See Page 7)

**WARNING:** If using this system to transfer for polish fuel to a day tank or another storage tank use caution. It is very easy to overfill and create a fuel spill. Check the fuel quantity of the tank that is being filled.

## **6. WIRING THE FPM**

**(SEE FIGURE 4)**

1. Run wires in a protected area and support wiring harness with wire ties. Run harness away from moving parts and hot areas.
2. Use approved wire connectors or solder. Protect connections from corrosion.
3. Use marine grade wire. (14 gauge min.)
4. Connect a fused/breaker 12/24 volt DC power to the (+) positive terminal block connection.
5. Connect a 12/24 volt DC ground wire to the (-) negative terminal block connection.
6. If using a timer, connect the fused/breaker 12/24 volt DC power to the Timer, then from the timer to the (+) terminal block connection.
7. Follow System start up.

## 7. POST INSTALLATION AND START UP

1. Remove filter cover and fill filter with diesel fuel. Reinstall cover and tighten T-handle.
2. Open fuel shut off at tank/manifold.
3. Reconnect the battery and apply power to the *FPM*.
4. Using the on/off switch, momentarily turn the pump on. You should hear the pump rpm's change as the air is bled out of the system. Make sure the pump does not run dry. Once the air is bled out of the system you will hear the pump rpm's sound more consistent. Leak check the connections.
5. If operation is satisfactory and there are no fuel leaks, turn off pump.

### **NORMAL OPERATION**

1. Select fuel supply and return from desired tank.
2. Turn on *FPM* and polish fuel as needed.
3. When finished, turn off pump. Close off fuel supply if sharing the fuel source with the engine.

**WARNING: If using this system to transfer for polish fuel to a day tank or another storage tank use caution. It is very easy to overfill and create a fuel spill. Check the fuel quantity of the tank that is being filled.**

### **SERVICING FILTER**

When the vacuum gauge starts to read in the red the filter element will need to be changed. Replace filter element and drain contaminants. Start pump and bleed out the air.

SEE ATTACHED RACOR FILTER INSTRUCTIONS

ROUTINELY INSPECT FPM FOR LEAKAGE AND SECURITY, ALSO  
CHECK ALL FUEL LINES AND HOSES FOR INTEGRITY.  
REPAIR AS NEEDED.