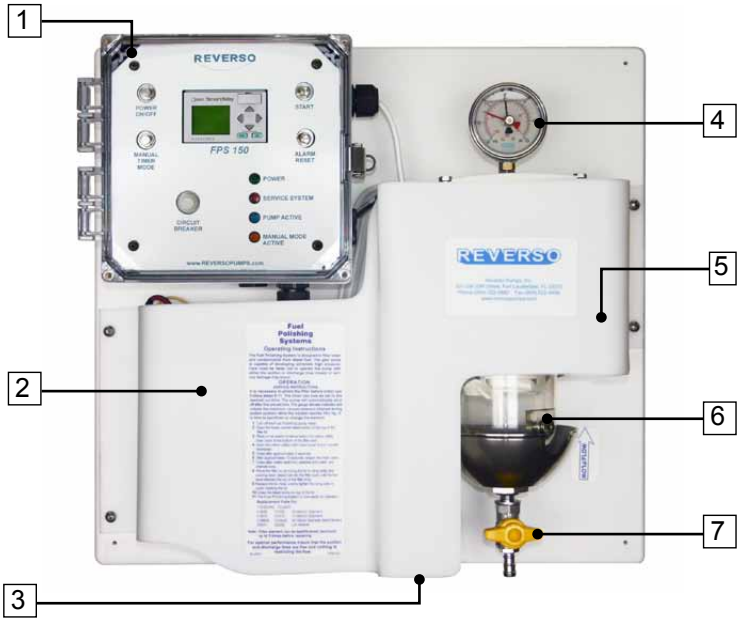
FPS-150


REVERSO
POWER ON/OFF
START
MANUAL TIMER MODE
ALARM RESET
FPS 150
POWER
SERVICE SYSTEM
PUMP ACTIVE
MANUAL MODE ACTIVE
CIRCUIT BREAKER
www.REVERSOPUMPS.com
REVERSO
Fuel Polishing Systems
Operating Instructions
FLOW

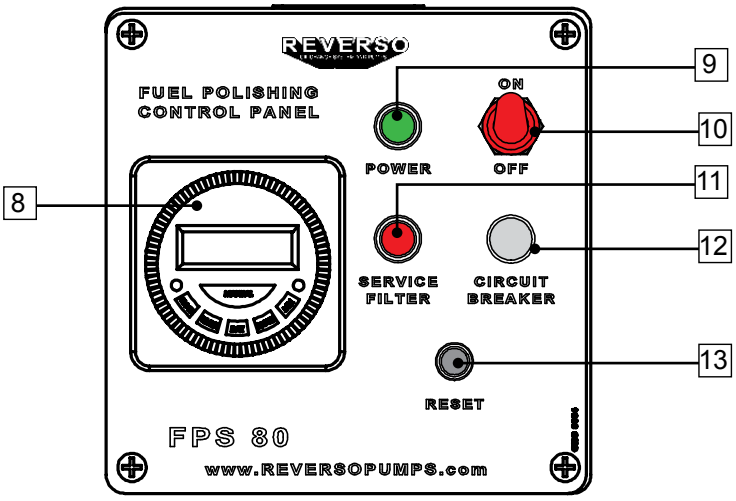
Table of Contents

Reverso Pumps, Inc
201 SW 20th Street, Fort Lauderdale, FL 33315
Ph: (954) 522-0885 | Fax: (954) 522-0456

1. Control panel
2. Cover (pump underneath)
3. Outlet (under cover)
4. Fuel/water separator (may include vacuum gauge)
5. Inlet
6. Water sensor (may be included)
7. Drain valve - *Push in and turn counter-clockwise to open*
8. Digital timer
9. Power indicator light
10. Power switch
11. Service filter indicator light
12. Circuit breaker
13. Reset button



Previous Version of Digital Timer and Control Panel

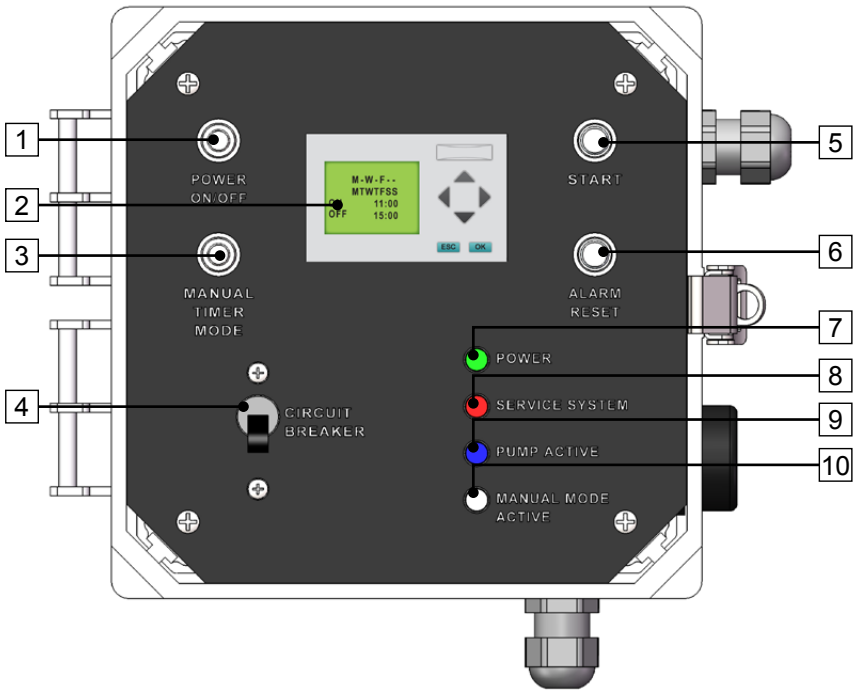


Control Panel

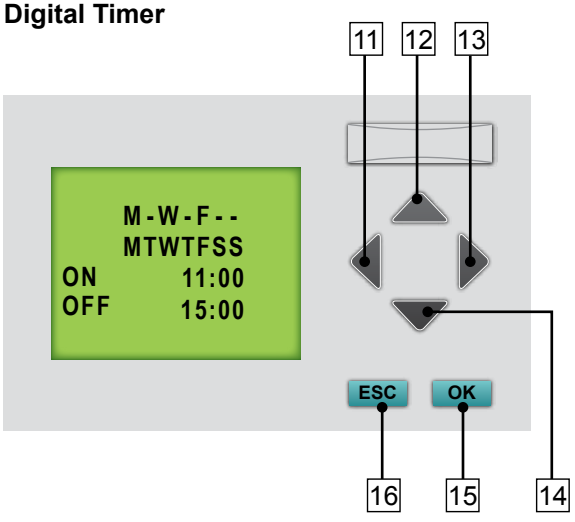
1. Power button
2. Digital timer
3. Manual timer mode button
4. Circuit breaker
5. Start button
6. Alarm reset button
7. Power on light - *indicates when system is on*
8. Service system light - *indicates an alarm has been triggered and user must service the system*
9. Pump active light - *indicates fuel polishing system is running*
10. Manual timer mode active light - *indicates system is operating in manual timer mode (not schedule timer mode)*

Digital Timer

11. Left key
12. Up key
13. Right key
14. Down key
15. OK key
16. Escape key



Digital Timer



Flow Rate	Approximately 150 GPH (567.8 LPH)	
Circuit Breaker	10A@12V, 5A@24V	
Service Space	4” on top and bottom, to facilitate changing filter elements and draining water and particulate from the bowl	
Pump	Brass Gear stainless shaft	
Max. Lift	5 ft. (1.52 m) vertical lift (lines>1/2”)	
Timer	Digital or mechanical timer	
Inlet	1/2” male JIC flare fitting	
Outlet	1/2” male JIC flare fitting	
Filter Torque Values	Bowl Retainer Ring	8 Nm (105 in-lbs)
	Lid	8 Nm (105 in-lbs)
	Bleed Screw	6 Nm (53 in-lbs)

Warning

- The system has been developed to be used with diesel fuel only, DO NOT USE WITH GASOLINE.
- The system is designed to meet environmental standards for safe operation (NOT for use with fluids that have a flash point below 135°F (38°C), e. g.: Gasoline, alcohol, aviation fuels...)

Primary Inspection

- Upon delivery inspect the FPS (Fuel Polishing System) for any damage that may have occurred during shipment.
- Inspect the interior of the unit for mechanical or electrical damage.
- If the unit is damaged upon delivery, contact the shipping company immediately.

Mounting

- The FPS should be wall mounted on a hard, vertical surface capable of supporting the weight of the unit.
- The control electronics are enclosed in a NEMA 4 weather proof box and will withstand being located outside.
- In all cases the unit should be located as close as possible to the tank being serviced. (see Max. Lift in Technical Specifications).
- When installing the unit below the level of the fuel on above ground fuel tanks, consideration should be made to the installation of an anti-syphon valve to prevent fuel spillage in the case of a leak in the piping system.

Electrical

- Installation of unit should only be performed by qualified installation personnel who have thoroughly read and understands the installation instructions covered in this manual.
- To avoid the risk of electric shock, make sure that the power supply is disconnected. Ensure that the power supply is at zero volts with a multimeter before making any electrical connections.
- To ensure operator safety the FPS must be connected to properly grounded power sources.
- Make sure that your unit and power supply are configured for the same voltage rating.
- External control voltage must be supplied by customer.

Piping

Use quality approved fuel line materials with at least 1/2” inner diameter line. Smaller plumbing will place excessive load on the motor and shorten its life. A full port ball valve should be installed on the inlet and outlet ports of the FPS.

The pickup line(s) (suction) should originate from the lowest point of the tank and should be connected directly to the inlet. For optimal performance, ensure that this line is free and nothing is restricting flow. It is recommended to install a foot valve to keep the system primed, especially if the system is located above the lowest possible fuel level in the tank.

If the FPS is mounted below tank top level, a priming tee should be installed on the highest point of the suction line to be able to easily prime the systems suction line.

The return line(s) (discharge) should be connected to the outlet and enter the tank as far as possible from the pick up tube and extending 2/3 down into the tank. For optimal performance, ensure that the outlet, discharge or return, line(s) are free and nothing is restricting their flow.

The suction line of the FPS must be independent and separate from the suction line of the engine. Do not integrate into engine fuel system.

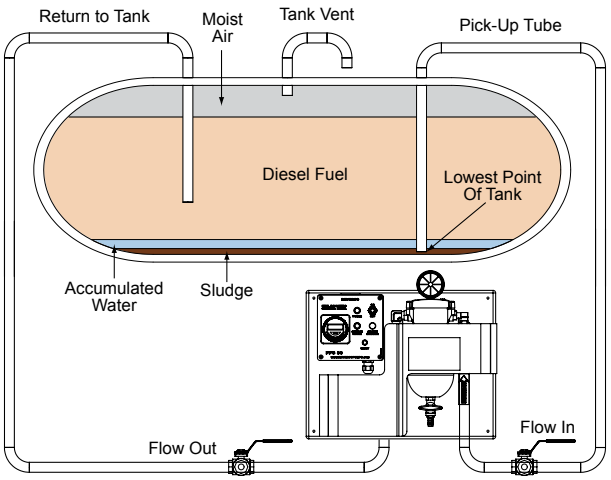
When installing this unit, FLEXIBLE CONNECTIONS MUST BE USED TO REDUCE STRESS on the plumbing and prevent damage to the unit.

Refer to Diag. 2 on next page.

Hoses, piping, solenoid valves and foot valves shown in the diagrams below are not provided with the system and must be provided by the user/contractor, unless agreed upon otherwise.

Single Tank Diagram

Diag. 2



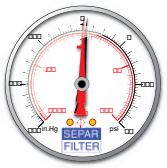
1

Open the fuel supply valve.
Prime fuel system and
check for leaks.

2

Set gauge pressure indicator (red needle) slightly to the left of the black needle prior to operation.

The gauge will indicate maximum vacuum pressure during system operation.



3

If the system is equipped with a **mechanical timer**, turn timer knob clockwise to desired number of hours for operation.
If the system is equipped with a **digital timer**, choose timer mode if available. You may have previous verison (circular digital timer).

Manual Timer Mode

Operate in this mode if system will run one set time.

- Must press manual timer mode button to activate / deactivate.
- Manual timer mode light will be ON.
- Pump will start upon pressing the start button.
- Pump will automatically shut off after the preset run time.

Schedule Timer Mode

Operate in this mode if system will start/stop automatically on the programmed days of the week and times.

- Must press manual timer mode button to activate / deactivate.
- Manual timer mode light will be OFF.
- Pump will automatically start and stop according to the preset date and time.

4

Press start button.
Power on indicator will be lit.

If in manual timer mode, pump will immediately begin running.

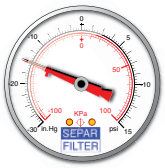
If in schedule timer mode, pump will only begin running if within programmed date/time to run.

Verify the pump is operating by checking vacuum gauge located on the filter. Gauge will be reading 0-5 in-Hg of vacuum.

5

When the indicator reaches 15 in-Hg, it is time to drain or change the filter element.

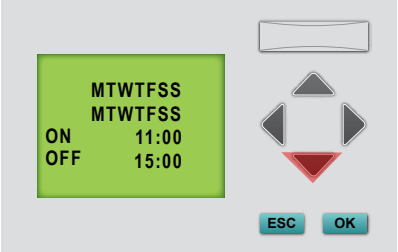
The same procedure is necessary if the water level reaches 30% of the clear bowl.



Digital Timer Instructions: Set Date and Time

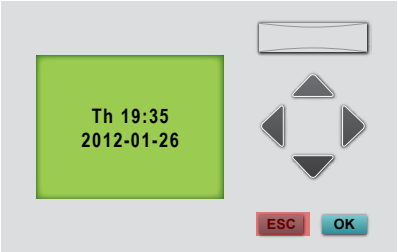
1

Starting at the program screen, press DOWN key to view current time screen.



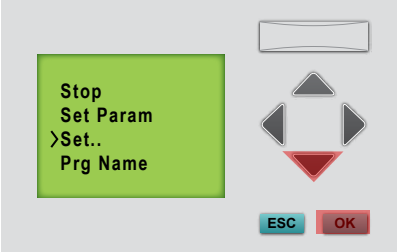
2

The current date and time is displayed. Time is shown as 24 hr clock. Date is shown YYYY-MM-DD. Press ESC key.



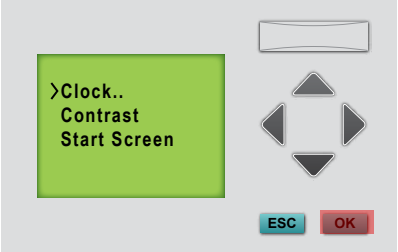
3

Use the DOWN arrow to move the cursor to Set.. option. Press OK key to continue.



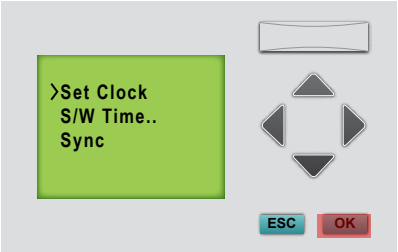
4

Select Clock.. option. Press OK key to continue.



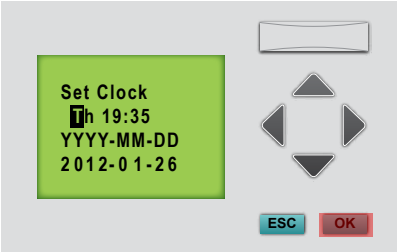
5

Select Set Clock option and press OK key to continue.



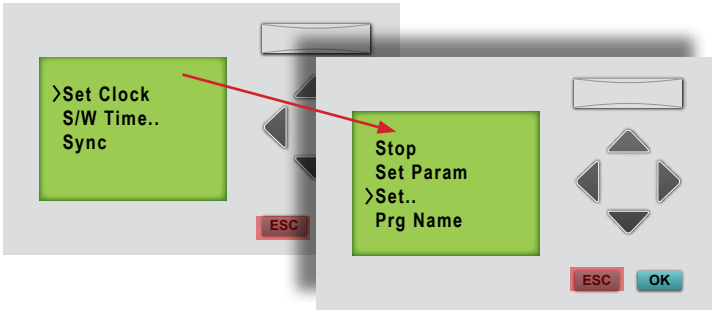
6

Flashing black box indicates your selection. Use LEFT/RIGHT key to move selection. Use UP/DOWN key to change date and time. Press OK key when finished and to return to previous menu.



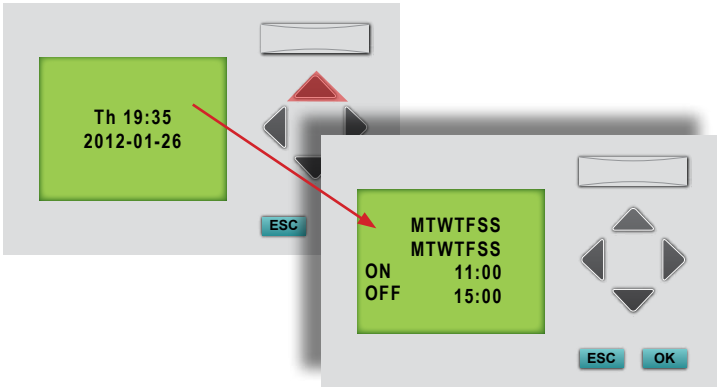
7

Press ESC key. Press ESC key again to return to current time screen.



8

Now shown is the current time screen. Press UP key to return to program screen.

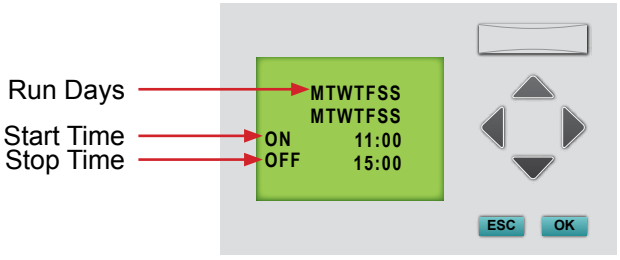


Digital Timer Instructions: Set Schedule Timer

1

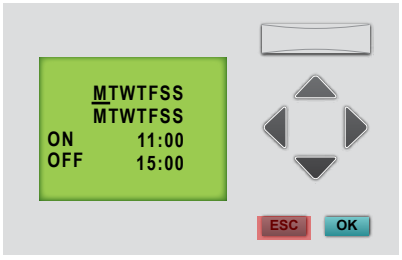
When using this method, follow sequence exactly or damage to program can occur (non-warrantable situation).

A. Ensure the breaker is ON.
B. Move the red power switch to the ON position and power indicator light is on.
C. Ensure timer mode is switched to Schedule Timer.



2

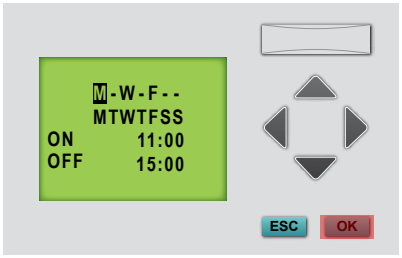
Hold the ESC key until flashing underline appears under the first day of the week. This flashing underline indicates your selection. Use the LEFT/ RIGHT keys to move between the dates, start time, and stop time.



3

Change the run days

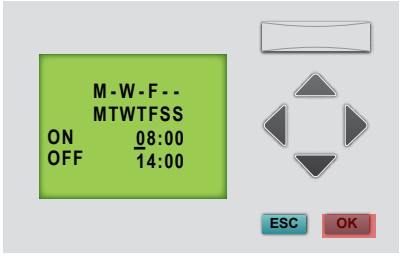
With the flashing underline in the days row, press the OK key until flashing box appears. Use the LEFT/ RIGHT key to move between days. Use the UP/ DOWN key to program run days. A dash(-) indicates the system will not run on that day. Press OK key when finished and the cursor will return to flashing underline.



4

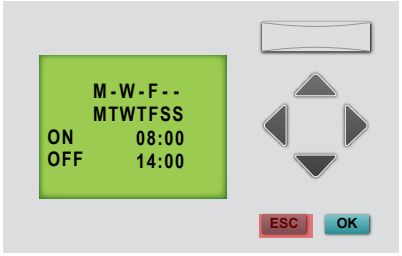
Change the run time

With the flashing underline in the days row, use the LEFT/RIGHT key to move to start time (ON).Press OK key until flashing box appears. Use UP/DOWN key to change time. Press OK key when finished and the cursor will return to flashing underline. Repeat with stop time (OFF).



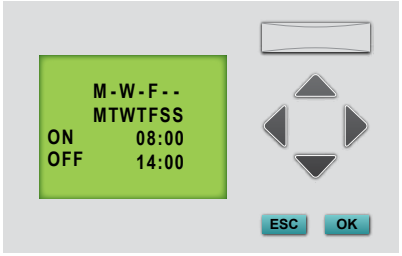
5

Press ESC to save. Flashing underline will disappear.



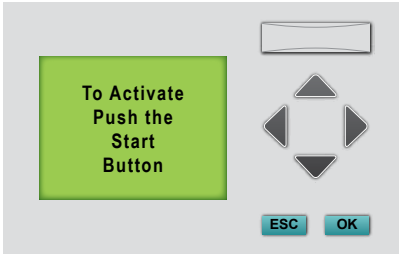
6

Setting the schedule timer is finished. In this example, system will run on Monday, Wednesday and Friday. System will start at 8:00 am and stop at 2:00 pm.



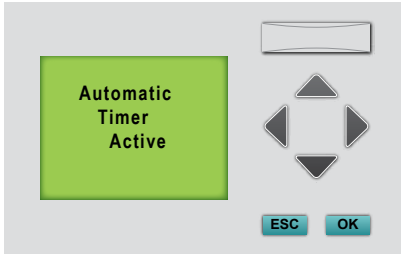
7

Every 5 seconds, screen will request user to push Start button to activate pogram.



8

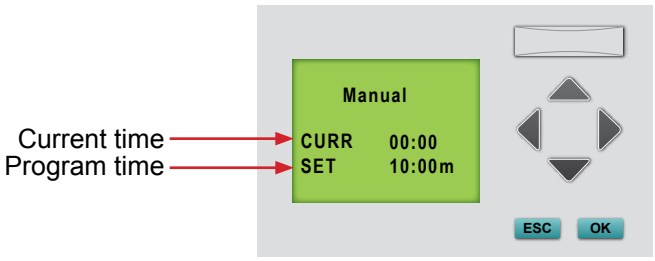
Afterwards, every 5 seconds screen will indicate the schedule timer is active.



Digital Timer Instructions: Set Manual Timer

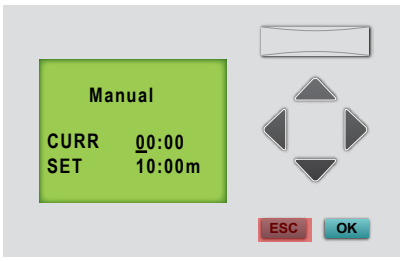
1

Top row indicates current time.
Bottom row indicates program time.



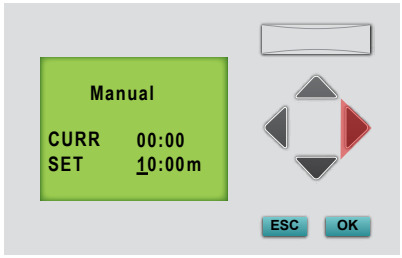
2

Press and hold ESC key until flashing underline appears. This indicates your selection.



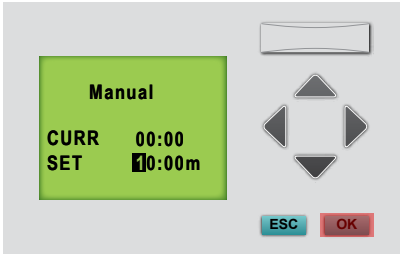
3

Use RIGHT arrow key to move underline to program time (SET).



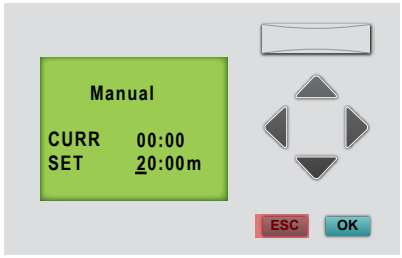
4

Press OK key and flashing box appears.
Use UP/DOWN key to change time. The “m” indicates minutes and can be changed to “h” for hours.
When finished, press OK key.



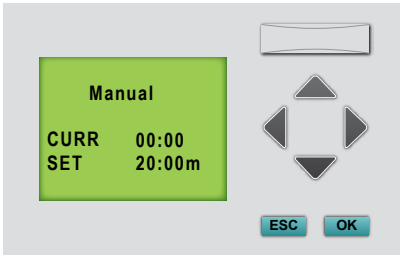
5

Flashing box will return to flashing underline. Press ESC to save. Flashing underline will disappear.

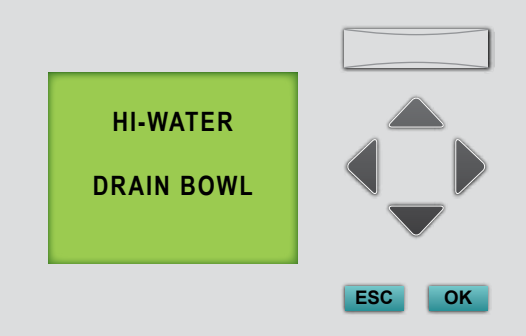


6

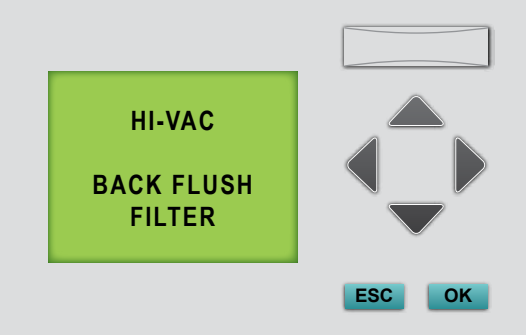
In the screen shown below, the system is set to run for 20 minutes and will stop once the time has expired.



There are three different alarms installed in the unit.
If one of the alarms should sound: De-energize system when servicing unit.
1. Follow the directions displayed on the screen.
2. Press RESET/STOP button
3. Wait at least 2 minutes, then press START to restart the unit.
If you have successfully cleared the alarms, the unit should restart.



High Water Alarm



High Vacuum Alarm

Backflushing procedure can be executed up to 5 times before replacing the filter element.

Previous Version Digital Timer: Set Schedule Timer

1

Set Current Date and Time
Press and hold CLOCK key. Press DAY key until current day is displayed. Repeat using HOUR and MIN key to set the time. Release CLOCK key.

2

Set Programs
Press TIMER key. "1 ON" will appear in the left of screen. This is the first program that you want the device to turn on.

3

Press DAY key to select the day(s) you would like this program to run. There are 15 different choices. When the one you require is displayed, stop pressing the DAY key. Press HOUR key to set the hour. Press the MIN key to set the minute.

4

Press TIMER key; "1 OFF" is displayed in the left of the screen. Follow the instructions in the previous step to set the desired days and times you want Program 1 to turn off.

5

Press TIMER key again to now set the second program you want the device to run. "2 ON" will appear in the left of the screen. Repeat the same procedure to set as many of the 8 programs as you would like.

6

Press TIMER key to advance the display and view each on and off setting. Double check the dates and times displayed. To make any changes, follow the previous steps.

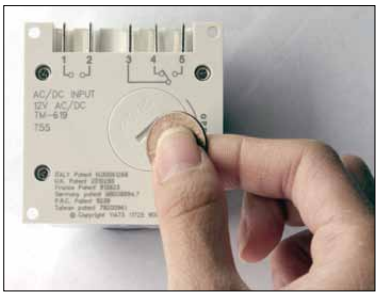
When finished, press CLOCK key and timer will start to execute programs.

7

Manual Operation
The line above ON/AUTO/OFF indicates which mode is operating. Press the MANUAL key to select ON/AUTO/OFF mode. ON mode will turn the device on. The red ON indicator light will be on if the unit is operating. AUTO mode will begin the programs you have previously set. OFF will turn off the device.

8

Replace the Battery
Remove the control box cover. Use a coin to remove battery cover on the back of the timer. Lift the battery out with a flat head screwdriver. Install new battery. Replace battery cover and then control box cover.

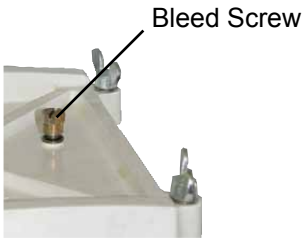


Prior to servicing the filters, ensure that the engine is OFF.
Backflushing is for particulate removal only and will not remove sludge once embedded in the filter media.

1

Turn the system off and shut off the fuel supply valve.

Open the bleed screw located at top of filter lid by slightly unscrewing it.
This will break the vacuum in the filter allowing water and small particulates to be released from the filter element.



2

Allow water and dirt to settle into bowl.
Large droplets of water and dirt will fall to the bottom of the bowl.

3

PUSH in and turn counter-clockwise to open drain valve.

4

Drain out the water and dirt that has accumulated in the bottom of the bowl.

5

Close drain valve by pushing and turning clockwise.
Allow dirt and water to settle again.
As the fuel is drained out of the separator in step 4, more dirt and water will be flushed from the filter and will collect in the bottom of the bowl.

6

If necessary, repeat step 4 and 5.
Open fuel supply valve.

7

Prime the filter and close the bleed screw (refer to Technical Specifications for torque values).

Prior to servicing the filters, ensure that the unit is OFF.

Step 1
Shut off the fuel supply valve and isolate unit before servicing the filter.

Step 2
Loosen the lid screws evenly.

Step 3
Remove the lid.

Step 4
Take out the spring cassette.

Step 5
Lift out filter element by the handle. Replace with new filter element and re-fit the spring cassette.

Step 6
Inspect lid gasket. Replace if necessary.

Step 7
Fit lid checking for correct positioning. Evenly tighten in the sequence shown (refer to Technical Specifications for torque values).

Step 8
Open the fuel supply valve, prime fuel system and check for leaks.

Replacement Filter Element

Element #	Description
01010	10 Micron
01030	30 Micron (Standard)
01060S	60 Micron (Stainless Steel)

Problem	Possible Causes
No fuel delivery	• Pump does not run • Pump and filter are not primed • Fuel supply or discharge line blocked. Check the alarm • Lift is too high • Air leak in fuel supply to pump • Inlet or outlet valve closed. Check the solenoid valve • Foot (check) valve installed backwards
Insufficient fuel delivered	• Air leak at inlet • Lift too high • Pump worn • Inoperative foot valve • Piping improperly installed or dimensioned • Filter/water separator plugged
Rapid pump wear	• Pump has been run dry or insufficient fuel • Plumbing on inlet side not appropriately dimensioned. Pump requires too much power • Air in plumbing lines • Liquid too viscous
Noisy operation	• Insufficient fuel supply • Air leaks in the inlet pipe • Air or gas on the suction side
Motor does not turn or turns intermittently	• Control power not available • Tripped circuit breaker on control board • Pump failed and seized • Motor failure • Check service switch is in the ON position (-)
Pump leaks fuel	• Loose pump plumbing fittings • Worn pump shaft seal • Excessive heat from over head storage tank • Worn pump 0-rings or seals