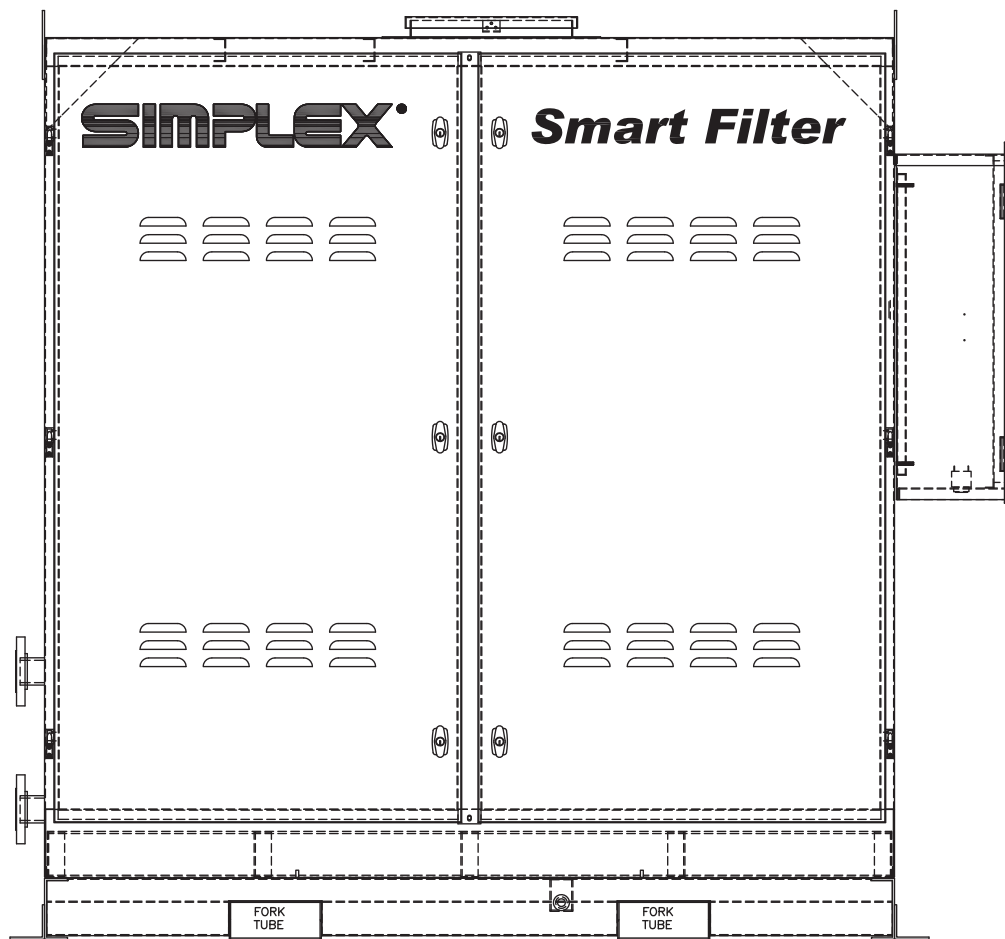


SIMPLEX[®]

SMARTFILTER MANUAL

October 2010



Contents

DESCRIPTION 2

CONTROL AND OPERATION 2

Set Current Date and Time 2

Set Automatic Filtration Time and Day Of Week 2

Alarm Conditions 3

Automatic Operation 4

Manual Operation 4

Fuel Transfer 4

Fuel Quality History 5

Tank Status 5

Filter Quality Summary 5

Automatic Water Drain 6

Water Sensor Operation 6

Priming the System with Water 6

Filter Replacement Schedule 6

The information herein is the property of Simplex, Inc. and/or its subsidiaries. Without written permission, any copying, transmitting to others, and other use except that for which it is loaned, is prohibited.

DESCRIPTION

The Smart Filter pumps fuel from a storage tank, filters and removes water from the fuel, and returns it to the storage tank. The system removes particulate material and water from the fuel, storing the water in an onboard water tank.

CONTROL AND OPERATION

SET CURRENT DATE AND TIME

1. At the main menu, press the “PROGRAM FILTER CYCLE” pushbutton on the touchscreen.
2. The touchscreen will change screens.
3. Press the “SET TIME AND DATE” pushbutton on the touchscreen.
4. The touchscreen will change screens.
5. Select the current time, date, and day of the week and press the “ACCEPT” pushbutton. If the “ACCEPT” pushbutton is not pressed, the data will not be updated.
6. Press the “SYSTEMSTATUS” button to return to the main menu.

SET AUTOMATIC FILTRATION TIME AND DAY OF WEEK

1. At the main menu, press the “PROGRAM FILTER CYCLE” pushbutton on the touchscreen.
2. The touchscreen will change screens. Up to ten automatic filtration programs may be set by the user. Each program is set with a row of elements on this page.
3. Select the day of the week for your automatic program by pressing one of the elements in the “DAY” column. Press repeatedly to select the desired day of the week.
4. Select the start time by pressing the hour and minute portions of the element in the “START TIME” column and entering the times on the popup keypad.
5. Select the duration of the automatic filter cycle by pressing the hour and minute portions of the element in the “CYCLE LENGTH” column and entering the times on the popup keypad.
6. Select the tank number from which the fuel will be drawn by pressing the element in the “TANK” column and entering the number on the popup keypad. The maximum number allowed in this element is factory set to the number of tanks designed into your control system.
7. Press the “ACCEPT” pushbutton. If the “ACCEPT” pushbutton is not pressed, the data will not be updated.
8. Press the “SYSTEMSTATUS” button to return to the main menu.

ALARM CONDITIONS

At the main menu, press the “ALARMS” pushbutton on the touchscreen to enter the alarm screen. If an alarm is not present, this pushbutton does not appear. Alarm conditions are indicated by a horn, and also on the “ALARMS” screen. The horn may be silenced with the “SILENCE HORN” pushbutton. Some alarm conditions are indicated on the “SYSTEM STATUS” screen as well as the “ALARMS” screen.

Alarms include:

1. Service strainer – High pressure detected at the strainer. Clean the strainer.
2. Service prefilter – High pressure detected at the prefilter. Clean the prefilter and replace the filter element.
3. Service coalescer High pressure detected at the coalescer. Clean the coalescer and replace the filter element.
4. Drain coalescer – For systems without automatic water drain. Manually drain the water from the coalescer.
5. Loss of flow – Pump is on but flow was not detected.
6. Leak detected – Float switch at the base of the skid detected fluid.
7. Emergency stop – Emergency stop circuit activated.
8. Pump failed – Pump contactor failed to close. Check for overload.
9. Tank 1 low – Fuel tank 1 is low.
10. Tank 2 low – For systems filtering multiple fuel tanks. Fuel tank 2 is low.
11. Tank 3 low – For systems filtering multiple fuel tanks. Fuel tank 3 is low.
12. Tank 1 high – For systems filtering multiple fuel tanks, with the capability to transfer fuel from one tank to another. Fuel tank 1 is at high level.
13. Tank 2 high – For systems filtering multiple fuel tanks, with the capability to transfer fuel from one tank to another. Fuel tank 2 is at high level.
14. Tank 3 high – For systems filtering multiple fuel tanks, with the capability to transfer fuel from one tank to another. Fuel tank 3 is at high level.
15. High water level – High level in water holding tank.
16. Fuel in water line – Fuel detected in the coalescer water drain line.
17. Valve sync error – For systems with control valves. A valve is reported out of position.
18. System overpressure – A high pressure condition was detected in the filter. Remove the restriction and restart the filter.

Alarms are displayed with a time and date stamp. Press the “SYSTEM STATUS” button to return to the main menu.

AUTOMATIC OPERATION

1. At the main menu, press the “MANUAL FILTERING” pushbutton on the touchscreen to enter the manual filtering screen.
2. The touchscreen will change screens.
3. Place the “MANUAL-OFF-AUTO” switch in the auto position.
4. The conditioning system will now filter the fuel as programmed by the user on the “PROGRAM FILTER CYCLE” screen.
5. If run times overlap, and the overlapping programs are set for the same tank, the system will run the filter until the latest end time. Overlapping user programmed filter cycles is not recommended.

MANUAL OPERATION

1. At the main menu, press the “FILTER MODE SELECT” pushbutton on the touchscreen to enter the FILTER MODE SELECT screen.
2. The touchscreen will change screens.
3. Press the “MANUAL” pushbutton.
4. The touchscreen will change screens.
5. Select the amount of fuel and the tank to filter.
6. Press the “START MANUAL FILTRATION” pushbutton.
7. The touchscreen will change to the FILTER MODE SELECT screen.
8. The pump will start and continue to run until the desired amount of fuel has been filtered, the “STOP” pushbutton is pressed, or a failure occurs. Most system alarm conditions are ignored when in manual.

FUEL TRANSFER

1. Fuel transfer from one tank to another is only available on multi-tank filtration systems.
2. At the main menu, press the “FILTER MODE SELECT” pushbutton on the touchscreen to enter the FILTER MODE SELECT screen.
3. The touchscreen will change screens.
4. Press the “TRANSFER” pushbutton.
5. The touchscreen will change screens.
6. Select the amount of fuel to transfer and the source and destination tanks.
7. Press the “START MANUAL FUEL TRANSFER” pushbutton.
8. The touchscreen will change to the FILTER MODE SELECT screen.
9. The pump will start and continue to run until the desired amount of fuel has been transferred, the “STOP” pushbutton is pressed, or a failure occurs. Most system alarm conditions are ignored when in manual.

FUEL QUALITY HISTORY

At the main menu, press the “FUEL QUALITY HISTORY” pushbutton on the touchscreen to enter the fuel quality history screen. The fuel quality history records selected events in a log format, with a time and date stamp. The most recent event is displayed at the top of the log. Buttons are provided to scroll up and down the history. Press the “SYSTEM STATUS” button to return to the main menu.

Logged events include:

1. Service Prefilter
2. Service Coalescer
3. Drain Coalescer (for systems without automatic water drain)
4. Fuel added to Tank 1
5. Fuel added to Tank 2
6. Fuel added to Tank 3

TANK STATUS

At the main menu, press the “TANK STATUS” pushbutton on the touchscreen to enter the “TANK STATUS” screen. At this screen the user can monitor totalizers, valve positions, and log new fuel deliveries, including delivery quantity and date. Delivery information is recorded in the fuel quality history.

1. Press the “NEW FUEL DELIVERY” pushbutton to enter the quantity of fuel delivered using the popup keypad.
2. Press the “MONTH”, “DAY”, and “YEAR” buttons to set the date of the delivery using the popup keypad.
3. Press the “ACCEPT” pushbutton. If the “ACCEPT” pushbutton is not pressed, the data will not be updated.
4. Press the “SYSTEM STATUS” button to return to the main menu.

FILTER QUALITY SUMMARY

At the main menu, press the “FILTER QUALITY SUMMARY” pushbutton on the touchscreen to enter the filter quality summary screen.

1. “RUN TIME SINCE LAST FUEL DELIVERY” indicates the amount of time the pump has run since the last time the “NEW FUEL DELIVERY” screen was used to record a fuel delivery.
2. “RUN TIME SINCE PREFILTER SERVICE” indicates the amount of time the pump has run since the last time the “SERVICE PREFILTER” alarm was activated.
3. “RUN TIME SINCE COALESCER SERVICE” indicates the amount of time the pump has run since the last time the “SERVICE COALESCER” alarm was activated.
4. For systems with a fine filter, “RUN TIME SINCE FINE FILTER SERVICE” indicates the amount of time the pump has run since the “SERVICE FINE FILTER” alarm was activated.
5. For systems with analog pressure measurement, approximate filter quality is displayed as a dial gauge on this screen.

AUTOMATIC WATER DRAIN

The automatic water drain and water tank (if purchased) operate based on three water sensors which distinguish between water and diesel fuel.

1. The safety water sensor (the lower sensor) must sense water for the water drain system to operate. If fuel is detected in the water line, an alarm is activated to alert the operator. To restore normal operation, the operator must manually drain the water line and prime it with water so that the safety water sensor detects water. Prime the water line by pouring water in the top of the dirty fuel side of the filter canister. This alarm usually indicates a fault with the solenoid valve (stuck open) or one of the three water sensors.
2. When the filter system is in normal operation and both the upper and middle water sensors detect water in the coalescer, the water drain solenoid valve opens.
3. The water drain solenoid closes when the lower water sensor in the coalescer stops detecting water, or when one of the following conditions occurs:
 - a. The safety water sensor detects diesel (or air).
 - b. An Emergency Stop is activated.
 - c. Either of the water holding tank high level floats is triggered.
 - d. The pump stops.

WATER SENSOR OPERATION

The water sensors provide a signal to the PLC when they detect water. For this reason, air and diesel both look the same to the water sensors. The safety water sensor must be flooded with water for the filter to operate; air or diesel in the water drain line will trigger a Fuel in Water Line alarm.

The power to the water sensors is pulsed to prolong the life of the sensors:

- When the pump is running, the water sensors are powered for ten seconds out of every minute.
- The sensors are continuously powered during and for two minutes after a water drain cycle.

PRIMING THE SYSTEM WITH WATER

For systems with automatic water drain:

Any time the water line is drained (changing the filter, etc.), it is necessary to prime the system with water. To prime the system, pour water into the top of the coalescer until it shows in the sight glass.

FILTER REPLACEMENT SCHEDULE

Replace filters annually or when indicated by Smart Filter "SERVICE PRE-FILTER" or "SERVICE COALESCER" alarms, whichever occurs first.

Simplex filter element reorder part numbers are displayed on the placard inside the door of the filter unit.