



STEADY STATE FUEL SYSTEMS

Model SSFT-SFR-D5-L-CPU

SSFS Duplex Pump Fuel Delivery System with High Efficiency Filtration

1. Description

- a. Diesel fuel delivery system shall operate concurrent with the generator run cycle.
- b. While operating the fuel delivery system shall filter the fuel from the main storage tank and have the ability to filter fuel from the main storage tank when generator is not running.
- c. Fuel delivery system shall include stainless steel rotary vane pumps rated at 5 gpm while operating at 1745 RPM motor speed.
- d. Motors shall be 3/4 HP, single phase 115-208/230 VAC, NEMA 56 frame, TEFC, continuous duty.
- e. Fuel delivery system shall include an inlet manifold to generator fuel tank that includes a stainless steel spring loaded check valve, stainless steel 3 gpm flow restrictor with Buna elastomers and a spring loaded bypass valve
- f. set at 10 psi.
- g. Fuel delivery system shall include a high efficiency filter assembly that includes a particulate filter and a water absorbing filter. Both filters shall be spin on assemblies.
- h. Filter adapters shall include color coded differential pressure sensors that indicate green/yellow/red for filter maintenance.
- i. Filter adapters shall include an internal bypass spring that is set at 25 psid.
- j. Filter assembly shall include selectable normally open or closed, electric differential pressure sensors set to actuate at 20 psid.
- k. Fuel delivery system shall include a stainless steel, cross plate heat exchanger plumbed to exchange heat from the generator fuel return and the main storage tank fuel return.
- l. Fuel delivery system shall include a 14 gallon reservoir w/ bolted removeable lid, buna gasket and rupture basin with integral leak switch.

2. Pump and Motor Ratings

- a. Pump: 5 GPM, Rotary vane, carbon graphite vanes, stainless steel housing, mechanical seal, positive displacement with internal pressure relief.
- b. Motor: 3/4 HP, 1745 RPM, Continuous duty, 115/208-240 VAC @13.6/7.52-6.8 Full Load Amps, 1 phase, 50/60 Hz TEFC, NEMA 56C frame with 1.15 service factor.

3. Controller Specifications

- a. UL-508a PLC based controller with the following features:
 - i. NEMA 3r lockable non-metallic enclosure.
 - ii. Panel mounted disconnect switch.
 - iii. Integral pump motor starter with thermal overload.
 - iv. Modbus, Bacnet RS-485 or TCIP communication.
 - v. Differential pressure monitoring of the particulate and water absorbing high capacity filters.
 - vi. 7" Operator interface touchscreen with high resolution graphic display.



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- vii. Pump motor overload.
- viii. Tank level monitoring with programmable alarm points for Critical Low, Low, High and Critical high level.
- ix. System flow switch.
- x. Fuel temperature sensor. (optional)

4. Voltage Options

- a. Single phase 208-240 VAC with dedicated circuit.

5. Input devices

- a. Skid leak sensor, brass shaft, buna float, rated at 24 VDC, normally open. (closes with liquid detected)
- b. Fuel level sensor, 4-20mA continuous level sensor, brass shaft buna float.
- c. 3 gallon per minute flow switch, normally open, globe style, teflon shuttle with shock and vibration proof spring and stem assembly.
- d. Temperature sensor, 4-20mA (optional).
- e. Normally open Generator Run Signal.
- f. Differential pressure switch, one each for particulate and water absorbing filters, set at 20 psid, normally open.
- g. Fuel pump overload circuit.

6. Heat Exchanger

- a. System shall include an integral 32 plate, stainless steel, cross flow heat exchanger rated to cool generator return fuel from up to 150 degrees Fahrenheit down to 100 Fahrenheit degrees at a maximum 75 degree Fahrenheit temperature of main fuel supply.

7. Filtration Specifications

- a. High efficiency particulate filtration with spin on canister.
- b. Includes Electrostatic Reduction Technology.
- c. Target ISO cleanliness of 14/13/11 or better in a single pass.
- d. Efficiency of 4 micron @ Beta 2000.
- e. High capacity water absorbing media spin on filter as second stage of filtration.
- f. Minimal clean fuel pressure drop of 1 psi or less at 10 gpm.
- g. High capacity adapter with visible, integrally mounted differential pressure indicator (Green/Yellow/Red).
- h. Filter adapter must include 25 psid bypass valve integral to adapter head.
- i. Electric differential pressure sensor must be installed in each adapter head with a 20 psid actuation point.
- j. System must include filter isolation valves and bypass valve to support filter change concurrent while system is operating.



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8. Enclosure

- a. Optional enclosure door shall include double hinged front access doors and powder coated finish.
- b. Welded louvers for ventilation shall be included.
- c. Enclosure exterior dimensions shall be 42" wide x 32" deep x 72" tall.
- d. Enclosure shall include 3" x 5" anchor clips for mounting to pad.

9. Equipment Skid

- a. Exterior dimensions of skid assembly shall be 36" deep x 28" wide and include a fully welded, 1/8" steel square tube frame assembly.

10. Plumbing

- a. Fuel Oil supply line shall be installed at low end of main fuel tank to maximize fuel recirculation.
- b. Fuel return line shall be located at opposite end from supply line (to the greatest degree possible) and dip tube shall extend approximately $\frac{1}{2}$ the tank height or diameter into the fuel tank.
- c. Caution should be taken not to exceed the 15 feet lift capability to the fuel circulation pump.
- d. Inlet connection and piping from main fuel storage tank to SSFS system shall be 1" minimum.
- e. Fuel return line to main fuel tank shall be $\frac{3}{4}$ " minimum.
- f. Fuel supply and return to generator is sized at $\frac{3}{4}$ " and can be reduced as needed to accommodate generator fuel supply and return loop.
- g. Friction loss and head pressures should be taken into careful consideration by the installer when sizing the fuel supply and return loops for both flowpaths.

11. Installation Precautions

- a. The Steady State Fuel delivery system has no thermal expansion capacity. The fuel delivery system, specifically the fuel oil return flowpath must remain unobstructed to allow unwanted fuel pressure to be relieved back to the main fuel tank.
- b. Installer must prevent the installation of a closed loop system that may lead to pump or filter damage.
- c. Steady State Fuel Systems LLC is not responsible for any damage due to excessive line pressure caused by thermal expansion.