

# FUEL OIL TRANSFER PUMP AND DAY TANK SET

- No. 2 or No. 4 Fuel Oil
- Flows from 120 to 1600 GPH
- Integrated Pump Set and Day Tank helps reduce installation cost and occupied floor space
- Return pump is applied when day tank is located below the storage tank and gravity overflow is not possible
- Supply pump is applied when day tank is located above the fuel oil storage tank and will generate less than 15" WC priming suction
- Supply and/or Return pump combinations
- Up to two (2) simplex pumps or one duplex pump set
- Microprocessor-based
- Visual and audible alarms for day tank "High" or "Low" levels, day tank "Leak" and pump failure
- Safety shutdown for "High" level switch, day tank rupture basin leak detection
- Industrial type Cast Iron Internal Gear Pumps

### Duplex Supply or Return Pump Features

- Automatic start on "Call for Operation"
- Lead pump manual selection or automatic alternation
- Automatic lag pump back-up based day tank level and lead pump thermal overload

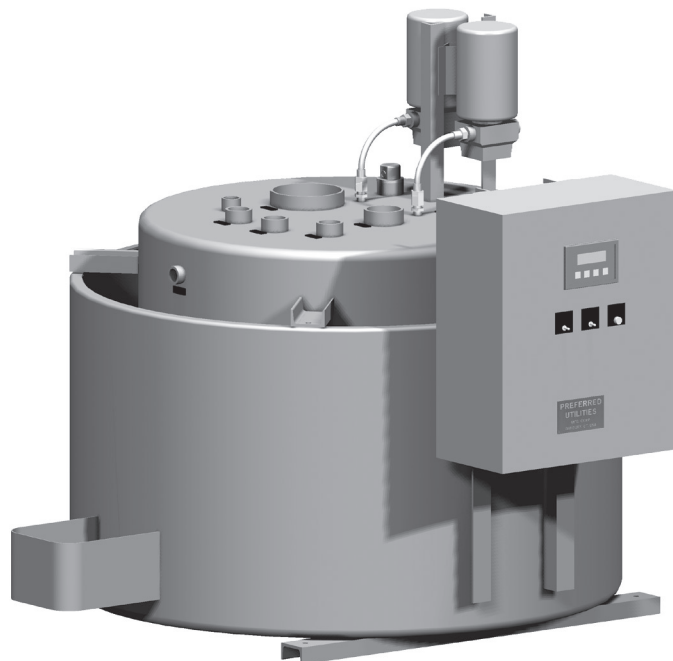
### Simplex Supply and/or Return Pumps Features

- Automatic start on "Call for Operation"

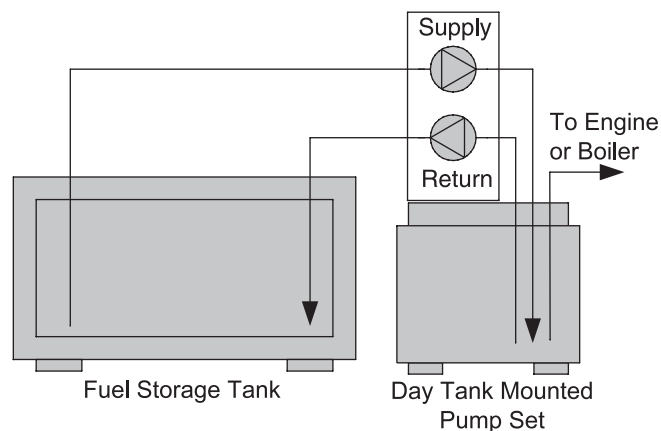
The Fuel Oil Transfer Pump and Day Tank package offers a quick and economical fuel pumping solution and provides a local supply of distillate or diesel fuel for boilers, emergency generators or other stationary engine driven or oil fired equipment. The Fuel Oil Transfer Pump and Day Tank packages include our UL approved series DT or CDT Day Tanks, supply and/or return pump(s), and a PLC-based control cabinet.

### Standard Equipment

- Microprocessor-based control with message display and keypad
- Magnetic motor starters with overload protection
- Motor circuit breakers
- Control circuit transformer (if required)
- Alarm bell with alarm silence / reset pushbutton
- "Hand-Off-Auto" switches
- "Power On" indicator
- Pump & motor assemblies
- Level control probe
- Vent Cap
- Fill cap
- Day Tank Assembly (See Page 39)



*Fuel Oil Transfer Pump and Day Tank Set*



*Fuel Oil Transfer Pump and Day Tank Set Application Example*

# FUEL OIL TRANSFER PUMP AND DAY TANK SET

## *Suggested Specifications*

### 1. Day Tank System Manufacturer Qualifications

Manufacturer shall have a minimum of ten years' experience in the design and construction of Underwriters Laboratories (UL) listed day tank systems.

### 2. Day Tank System Construction

Provide one (1) \_\_\_ gallon, UL 142 labeled Day Tank constructed of reinforced 10 gauge steel with channel side supports, 1" drain, removable gasketed 6" square inspection plate, fuel level gauge, level control probe, vent cap (shipped loose), and a 2" gasketed manual fill cap. Exterior shall be finished in an oil resistant textured gray enamel. Day Tank(s) shall be as supplied and coordinated by the Pump Set manufacturer. The Fuel Oil Day Tank shall be manufactured by Preferred Utilities Mfg. Corp. Danbury, CT, Model CDT-S-R-UL.

### 3. Tank Connections

Tank connections shall include fuel inlet, required vent openings, manual fill, overflow to main tank, engine supply, and engine return. All piped with reinforced, welded pipe adapters. Fuel inlet and return must be supplied with factory installed drop tubes to prevent surging and foaming in the day tank.

### 4. Rupture Basin

Rupture Basin (indoor applications only): The Rupture Basin shall consist of an open-top, welded heavy gauge steel structure sized a minimum of 160% capacity of tank capacity. Rupture Basin (outdoor applications): The Rupture Basin shall consist of a welded steel top, welded heavy gauge steel structure sized to a minimum of 160% capacity of tank capacity. Exterior shall be finished in an oil resistant, textured gray enamel. Provide a factory installed rupture basin leak detector for alarming and fuel supply pump shut down. Electrical connections shall be contained in a weatherproof junction box. Switch shall be a Preferred Model RBS.

### 5. Level controls

Level Controls shall have four (4) float operated switches rated at 100 watts and factory installed in the day tank. Levels of control: emergency high-level alarm and total pump shutdown (90% capacity), pump off (80% capacity), pump on (50% capacity), and emergency low-level secondary pump on and annunciation (40% capacity). Unit shall be suitable for pressures to 150 psi, and shall be made entirely of non-ferrous material. Electrical connections shall be contained in a weatherproof junction box. Level Control shall be Preferred Model PLS-xx-4.

### 6. Supply Pump

The tank shall include a fuel oil Supply Pump to draw oil from the main storage tank to the Day Tank. Locate Day tank in a position that will generate less than 15" of priming suction.

### 7. Return Pumping (when main tank's maximum fuel level is at a higher level than the day tank)

The Return Pump shall return fuel to the main tank in the event the day tank level exceeds 90% of its normal capacity. The Return Pump shall be activated by a separate, high-level float switch. The Return Pump capacity will be equal to or greater than the capacity of the Supply Pump.

### 8. Duplex Supply Pumps (or Return Pumps)

The two (2) Pumps shall alternate as the lead when the tank is pumping fuel. The lead pump shall be activated when the fuel level declines to 50% of tank capacity; the standby pump shall be activated and operate in tandem with the lead pump if the fuel level declines to 40% of capacity. The standby pump shall be activated and the lead pump shutdown upon a lead pump thermal overload.

### 9. Pumps Construction

Pumps shall be positive displacement rotary type pumps with cast iron housing and self-adjusting mechanical, Carbon ring seals. Pumps that have aluminum, brass, or bronze housings or rotors are not acceptable. Packing gland equipped pumps, Carbonator shaft mounted pumps or centrifugal pumps are not acceptable. Pump shall be Preferred Model \_\_\_\_\_ rated at \_\_\_ GPH.

### 10. Motors

Provide and mount two (2) TEFC, rigid base, standard NEMA frame motors.

### 11. Control Cabinet

Provide a completely pre-wired and factory tested control cabinet to ensure job site reliability. The pump set and control cabinet shall be the product of one manufacturer for single source responsibility. The control system enclosure shall be constructed to NEMA 12/13 standards. Doors shall be fully gasketed with a turned edge, piano hinges, and a three point lockable latching mechanism. Cabinet interior shall be primed and finished in a white gloss, chemical resistant enamel. Cabinet exterior shall be primed and finished in a durable, chemical resistant, textured gray enamel, suitable for industrial environments.

### 12. Control Hardware

The control strategy shall be microprocessor-based. RELAY LOGIC SHALL NOT BE ACCEPTABLE. The control strategy shall be factory configured and stored on a EEPROM, and shall be safeguarded against re-configuration by un-authorized / un-qualified personnel. The controller shall be designed so that it will "fail safe" in the event there is a microprocessor failure. Control hardware shall include combination magnetic motor starters with overload protection and circuit breakers. The control system shall provide common alarm dry contacts to be interfaced with the Building Maintenance System as required.

### 13. Safety Interlocks

Provide safety interlocks to shutdown both pumps during any of the following conditions; day tank "leak detected" and "high-high" day tank level for supply pumps and "low-low" day tank level for return pumps. These interlocks must continue to ensure safe pump operation even if the controller has failed or is out of service and the pump set is operated in manual "hand" mode.

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## Suggested Specifications

### 14. Operator Interface

All operator interface shall be cabinet front door mounted. As a minimum, the following indications, alarms, control switches and pushbuttons shall be provided:

1. Alarm Silence, Manual Reset, Lamp/Alarm Test Pushbuttons
2. Lead Pump Selection and "Hand-off-Auto" control switches for each pump
3. Pump Status and Tank Level indications
4. Pump Failure, Day Tank Leak, Day Tank High level and Day Tank Low level Alarms
5. Alarm Bell shall be provided for alarm conditions

### 15. Quality Assurance Inspection, Labeling and Testing

The Control Cabinet shall be manufactured in accordance with UL508A (CSA C22.2 #14 for use in Canada). Simply supplying UL recognized individual components are not sufficient. The assembled control cabinet, as a whole, must be inspected for proper wiring methods, fusing, etc., and must be labeled as conforming to UL508A. Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL). The system must be manufactured by a nationally recognized Trade Union (I.B.E.W. or similar trade union). Lack of an NRTL certified UL508A wiring methods inspection and label or lack of a Trade Union label will be grounds for rejection.

### 16. Factory Testing

Fuel oil storage tank and day tank hydrostatic testing is required to ensure tightness prior to shipment. The minimum pressure for testing the tank shall be five (5) psi. The hydrostatic pressure shall be maintained until all joints and connections have been visually

inspected for leaks, but in no case for less than one-half hour. The tank shall not show any permanent deformation as a result of the test. The Rupture basin (open top) shall be hydrostatic tested prior to shipment. The basin shall maintain a full water level while all joints and connections are visually inspected for leaks. The test shall be run for no less than one-half hour. Pump Sets must be fully tested prior to shipment. Operation of pump set instrumentation shall be tested. A copy of the test procedures shall be sent to the consulting engineer and owner. The owners and or the consulting engineer, at their discretion, shall observe this and all other tests. A certificate of factory testing, together with a copy of the wiring and arrangement diagrams shall be placed in the control cabinet prior to shipment.

### Specifications

- Power: 120 Vac (external)  
 Fluid: No. 2 or No. 4 Fuel Oil is standard. Consult factory for other fuel types  
 Pump: Positive displacement type with cast iron housings and self-adjusting mechanical seals  
 Motors: Base mounted, TEFC

Catalog Number	G.P.H. Oil #2	P.S.I.	Motor	
			R.P.M.	H.P.
11804	180	15	1725	1/3"
11812	480	15	1725	1/3"
11813	600	15	1725	1/3"
11814	900	15	1725	3/4"
11815	1200	15	1725	3/4"

*Note: All pumps are 115V 60Hz 1 phase. (the height of the unit is calculated by adding 18" to the DT's height)*

### Ordering Information

For complete system, please specify:

1. Select Day Tank Size (see page 40)
2. Select Supply Pump Catalog Number (see above table)
3. Select Return Pump Catalog Number (see above table)

*Note: Up to two simplex or one duplex pumpset in any combination of : (1) supply pump, (1) return pump, (2) supply pumps or (2) return pumps*