Packaged Pump Sets

for Diesel/Fuel Oil Application

Description

Simplex **SPS Series Packaged Pump Sets** are pre-engineered, integrated systems of pumps, pump drivers, controls and accessories, pre-plumbed and pre-wired, totally contained within an enclosure equipped with a leak detection basin. External ports are provided for connection of field plumbing. Four models are available spanning from 2 GPM through 36 GPM, simplex, duplex, triplex or quadplex pumps; 0.33 through 7.5 HP and are suitable for wall or pad mounting. Isolated compartments are provided for mechanical and electrical devices. Full system integration of pumps, starters, controls, tank monitors, tank level controls, external alarm panels is provided.
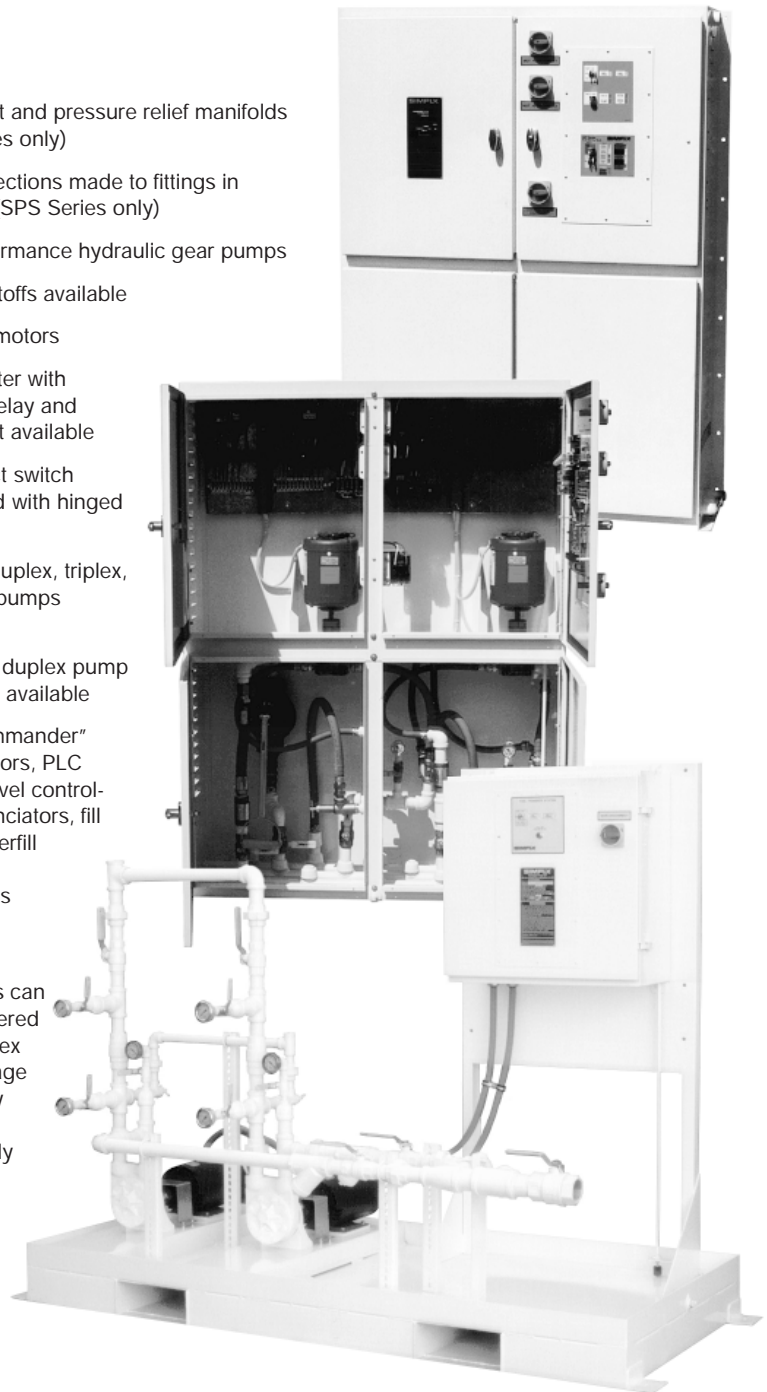
If requirements exceed the capacity of an SPS enclosure, pump sets can be specified skid-mounted. Simplex **SKS Series Skid Pump Sets** offer the customer a greater variety and quantity of options but because of the open catch basin design they are suitable for indoor installation only.

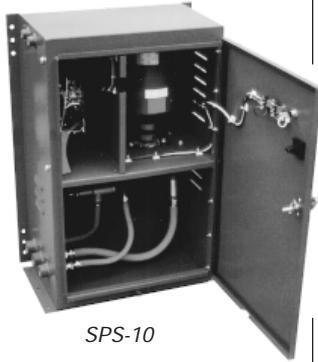Simplex Packaged Pump Sets are intended for use with fuel oil or lube oil.

Features

• System engineered, integrated function packages

• TYPE 1 indoor enclosure, primed and painted

• TYPE 3R weatherproof enclosure, primed and painted, available

• Wall or pad mountable

• Segregated electrical/mechanical compartments within enclosure

• Enclosure drip pan and leak detector

• Pressure relief valve, external port for relief to tank available

• Pump disconnect circuit upon leak detection

• Inlet, outlet and pressure relief manifolds (SPS Series only)

• Fuel connections made to fittings in sidewalls (SPS Series only)

• High performance hydraulic gear pumps

• Pump shutoffs available

• Industrial motors

• Motor starter with overload relay and disconnect available

• Disconnect switch interlocked with hinged door

• Simplex, duplex, triplex, quadplex pumps available

• Automatic duplex pump controllers available

• "Tank Commander" tank monitors, PLC Control, level controllers, annunciators, fill panels, overfill panels are available as options

• Packaged Pump Sets can be engineered with Simplex Main Storage Tanks, Day Tanks and Fuel Supply Systems

SIMPLX®

Application Guide

SPS-10

MEMBER PEI
PETROLEUM EQUIPMENT INSTITUTE

MODEL	SINGLE	DUPLEX	TRIPLEX	QUADPLEX
SPS-10	10GPM-¾HP	N/A	N/A	N/A
SPS-20	25GPM-1½HP	17GPM-1HP	2GPM-½HP	N/A
SPS-30	36GPM-5HP	25GPM-2HP	7GPM-1HP	2GPM-½HP
SPS-50	36GPM-7½HP	36GPM-5HP	25GPM-3HP	17GPM-2HP

CHOOSING A PUMP

Super-XL Pump

for applications where the pump starts and stops on demand, such as for automatic tank refilling. Use for viscosity to 1000 SSU. Use also for high pressure applications up to 2500 PSI. Do not use for noise sensitive applications.

Series 420 Pump

(cast iron gear) for continuous duty applications where the pump runs nonstop for extended periods of time. Use for boiler feed loop applications. Use also for noise sensitive applications. Viscosity range to 5000 SSU or higher with slow speed motor.

SPS-30 mounted on a tank.

CHOOSING A MODEL

SPS-10

simple single pump applications

SPS-20

complex single pump applications involving starters and level controllers
– or –
simple duplex and triplex pump applications involving starters and duplex controller

SPS-30

complex and large, single pump applications involving starters and level controls
– or –
complex duplex, triplex, quadplex pump applications involving starters and controllers

SPS-50

highly complex duplex, triplex, quadplex pump applications involving starters and elaborate, controllers

SKS

size and complexity is dependent on available site space, rated TYPE 1 indoor

WARNING: These Pump Sets are not intended for use with gasoline or other flammable liquids having a flash point less than 100°F. Use with gasoline or use with any flammable liquids at a temperature exceeding the flash point of that liquid, presents an immediate explosion and fire hazard. Do not use the Pump Set at a temperature exceeding the flash point of its contents.

	SPS-10	SPS-20	SPS-30	SPS-50
SINGLE Basic (-BS)	X	X	X	X
Super (-SS)	X	X	X	X
DUPLEX Basic (-BD)		X	X	X
Super (-SD)		X	X	X
Engineer Specifications (-ED)			X	X

Standard Equipment List

NOTE: All Standard Pump Sets include Super-XL 2GPM, 1/3HP, 115V AC pumps and containment sump with leak sensor. Optional pumps and motors are available.
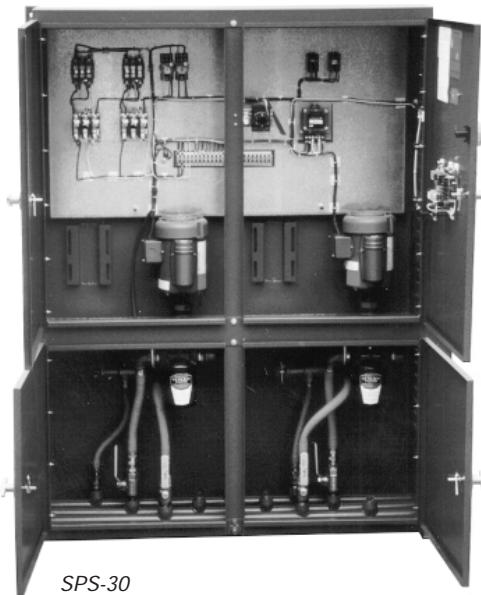
SINGLE PUMP

Basic (-BS)
• Super-XL 2GPM, 1/3HP, 115V AC pump
• Opt. 191, containment sump leak sensor

Super (-SS)
• Super-XL 2GPM, 1/3HP, 115V AC pump
• Opt. 260, door mounted disconnect switch with interlock
• Opt. 768, single-phase starter with coil wired to terminal block
• Opt. 087, shut-off valves on inlet and outlet
• Opt. 095, pressure relief valve
• Opt. 070, check valve
• Opt. 191, containment sump leak sensor

SPS-30

DUPLEX PUMP

Basic (-BD)
• DUPLEX Super-XL 2GPM, 1/3HP, 115V AC pump
• Opt. 345, automatic duplex pump controller
• Opt. 070, check valve
• Opt. 191, containment sump leak sensor

Super (-SD)
• DUPLEX Super-XL 2GPM, 1/3HP, 115V AC pump
• Opt. 345, automatic duplex pump controller
• Opt. 070, check valve
• Opt. 260, door mounted disconnect switch with interlock
• Opt. 768, single-phase starter
• Opt. 087, shut-off valves on inlet and outlet
• Opt. 095, pressure relief valve
• Opt. 191, containment sump leak sensor

Engineer Specifications (-ED)
• DUPLEX Super-XL 2GPM, 1/3HP, 115V AC pump
• Opt. 345, automatic duplex pump controller
• Opt. 070, check valve
• Opt. 260, door mounted disconnect switch with interlock
• Opt. 768, single-phase starter
• Opt. 087, shut-off valves on inlet and outlet
• Opt. 095, pressure relief valve
• Opt. 060, fuel strainer
• Opt. 100, pressure gauge with isolation hand valve, each pump outlet
• Opt. 101, vacuum gauge with isolation hand valve, each pump inlet
• Opt. 285, loss of flow alarm/lag pump activate
• Opt. 191, containment sump leak sensor

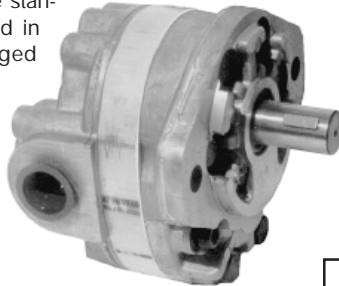*SPS-20*

SUPER-XL Pumps

Description

The Simplex SUPER-XL is a high-technology hydraulic pump featuring pressure-loaded, self-compensating gears and a mechanical shaft seal. The SUPER-XL is the standard pump used in Simplex Packaged Pump Sets and is available in 2-25 GPM capacity range.

Features

• Pressure loaded design
• Efficient, simple design with few moving parts
• Exceptionally compact and lightweight for their capacity
• Efficient at high pressure operation
• Resistant to cavitation effects
• High tolerance to system contamination
• Reliable under cold weather operation
• Sleeve bearing construction
• Multi-Fluid compatibility

PUMP MODEL	DISPLACEMENT IN³ (CC/REV.)	RPM	Flow, GPM (LPM)				
			100 PSI (6.9 Bar)	1000 PSI (69 Bar)	1500 PSI (103 Bar)	2000 PSI (138 Bar)	2500 PSI (172 Bar)
SUPER XL-11	.262 (4.29)	1800	1.99 (7.54)	1.86 (7.05)	1.79 (6.78)	1.73 (6.56)	1.66 (6.29)
SUPER XL-39	.942 (15.44)	1800	7.08 (26.83)	6.87 (26.04)	6.77 (25.66)	6.66 (25.24)	6.56 (24.86)
SUPER XL-62	1.47 (24.14)	1800	11.10 (42.07)	10.81 (40.97)	10.70 (40.55)	10.60 (40.17)	10.40 (39.42)
SUPER XL-90	2.23 (36.5)	1800	16.70 (63.29)	16.50 (62.54)	16.30 (61.78)		
SUPER XL-114	3.35 (54.9)	1800	25.30 (95.89)	24.90 (94.37)	24.60 (93.23)	24.40 (92.48)	

Series 420 Pumps

Simplex Series 420 internal gear rotary pumps are used for lubricating, low pressure hydraulic, transfer, circulating, burner oil and many other industrial pump applications.

Precisely machined and assembled with only two moving parts, they achieve and retain their reliability over a wider range of viscosities than alternative pump designs. And they're substantially quieter than other pump designs.

All rotors are precision milled and ground. 420, 422, 424 rotors are made from bar stock and 426, 428, 429 from forgings. All models have bushing support provided for the rotor shaft for added reliability. Pumps are equipped with a mechanical seal. With optional seals available in a number of different materials, these pumps can meet almost any temperature or fluid compatibility requirement.

A wide range of configurations with capabilities from .5GPM to 200GPM is available.

There are only two moving parts. Pumping action is based on a rotor, idler gear and crescent-shaped partition cast integral with the cover. Optional automatic reversing is available.

Model 420, 422, 424 UL Listed

MATERIALS OF CONSTRUCTION					
HOUSING	COVER	ROTOR	IDLER	IDLER PIN	SEAL
CAST IRON	CAST IRON	STEEL	IRON	HARDENED STEEL	MECHANICAL CARBON RING NI-RESIST OR CERAMIC SEAL

TC Liquid Level Controllers

Description

The **Simplex Tank Commander TC-774** and **TC-775** are UL listed, microprocessor based, multifunction liquid level controllers. They have two modes: **User Mode** and **Programmer Mode**.

During normal operation the Mute pushbutton can be used to silence the audible alarm. Subsequent alarms which occur after an initial silenced alarm will cause the audible alarm to sound again until muted.

The face of the **TC-774** includes the following indicators:
• Refill reminder
• Current level via 5-digit LED display
• Operation mode via 4-digit LED display
• High and low level alarms
• Tank leak and line leak alarms
• Not auto

In addition to the above indicators, the face of the **TC-775** includes the following indicators:
• Pump 1 and Pump 2

User Mode

During User Mode the top window displays the fuel tank level and the bottom window displays the operation. In the **TC-775**, the User Mode is divided into four submodes: Auto, Pump 1 Test/Run, Pump 2 Test/Run and Off.

Programmer Mode

The TC-774 and TC-775 are programmable for **Level Indication** and **Level Setpoints**. During this mode the upper window displays the number or configuration and the bottom window displays the parameter being programmed.
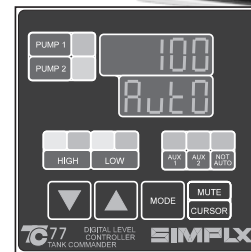
In addition, the Programmer Mode in the **TC-775** is divided into numerous submodes. Within these submodes the operator can enter values for parameters relevant to the fuel tank, the pump and the probe. The operator can also re-calibrate the probe in this mode.

Level Indication is programmable for gallons, liters, percent of capacity or percent of vertical level.

TC-774 Level Setpoints are: High-High Alarm, High Alarm, Refill Reminder Off, Refill Reminder On and Low Alarm and Low-Low Alarm.

TC-775 Level Setpoints are: High-High Alarm, High Alarm, High Alarm/Start Lag Pump, Stop Tank Fill, Start Tank Fill, Low Alarm, Low Alarm/Start Lag Pump, Low-Low Alarm, Start Tank Drain and Stop Tank Drain.

SST Analog Level Controller

The **Simplex SST Series Analog Level Controller** is a relay based, float switch activated, multifunction liquid level controller. The controller may be requested UL 508A Listed. SST applications include:

• Single fill pump control
• Duplex fill pump control, level switch activated
• Duplex fill pump control, pressure switch activated
• Single drain pump control
• Duplex drain pump control
• Pump-in, pump-out control
• Tank fill control
• Tank drain control
• Valve control
• Leak detection
• Overfill prevention

The controller can be supplied in a number of installation configurations, including:
• Flush panel mounting
• TYPE 1 enclosure
• TYPE 4X enclosure

The SST controller is activated by level point sensing float switches. The controller is supplied with a float switch-level transmitter assembly designed to the specific tank dimensions. The transmitter assembly can be supplied in a number of mounting configurations, including:
• 3.5" NPT
• 4.0" NPT
• Gasketed plate

The standard level transmitter is suitable for use with class-II flammable liquids or water. Optional level transmitters are available:
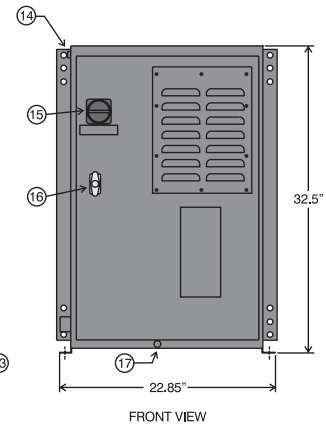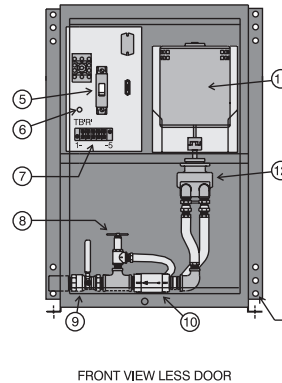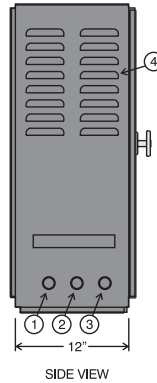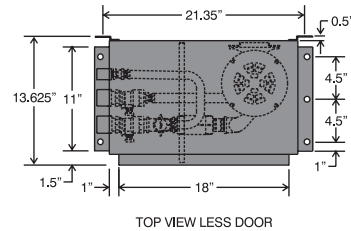• Intrinsically safe transmitters for use with Class I liquids
• Alloy or plastic materials for use with corrosive liquids
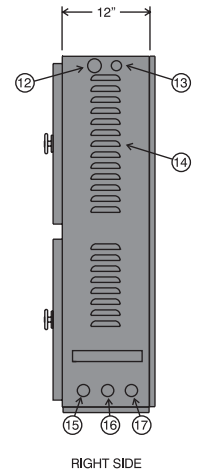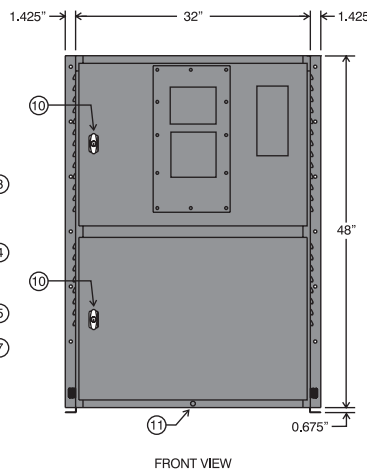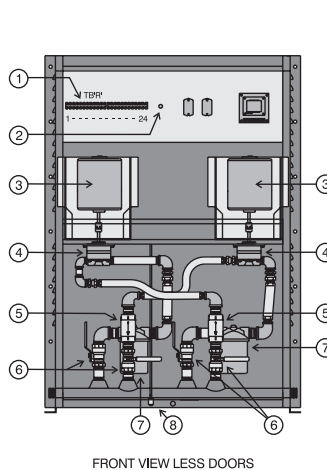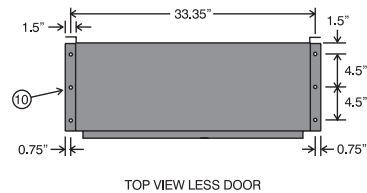
Dimensions and Key Features

SPS-10

1. Pressure Relief Outlet, ¾" NPT Male
2. Pump Inlet, ¾" NPT Male
3. Pump Outlet, ¾" NPT Male
4. Vent Louvers
5. Circuit Breaker
6. Ground Stud
7. Dry Contact for Customer Connections
8. Relief Valve, Opt. 095
9. Ball Valve, Option 087
10. Check Valve, Option 070
11. Motor
12. Pump
13. Mounting Holes (24), .437" Dia.
14. Customer Conduit Entry
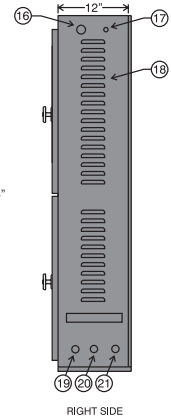15. Main Disconnect Switch, Opt. 260
16. Lockable Latch
17. Sump Drain Plug

TOP VIEW LESS DOOR

SIDE VIEW

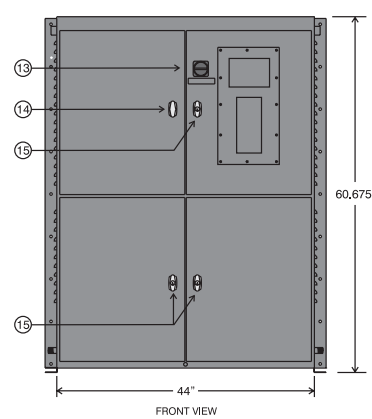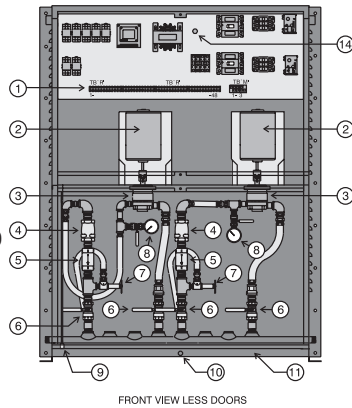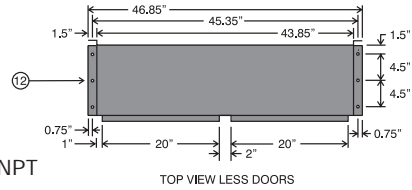FRONT VIEW LESS DOOR

FRONT VIEW

SPS-20

1. Dry Contacts for Customer Connections
2. Ground Stud
3. Motor (2)
4. Pump (2)
5. Check Valve (2), Opt. 070
6. Ball Valve (4), Opt. 087
7. Fuel Strainer (2), Opt. 060
8. Floatswitch
9. Mounting Holes (6), .437" Dia.
10. Lockable Latch (2)
11. Sump Drain
12. Customer Conduit Entry, Each Side, 1"
13. Customer Conduit Entry, Each Side, ½"
14. Vent Louvers
15. Pump Outlet Manifold, 1" NPT Male
16. Pump Inlet Manifold, 1" NPT Male
17. Pressure Relief Manifold, 1" NPT Male

TOP VIEW LESS DOOR

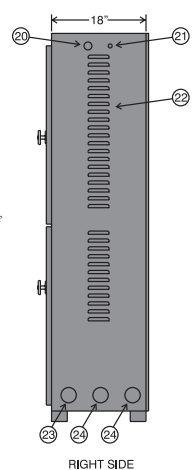FRONT VIEW LESS DOORS

FRONT VIEW
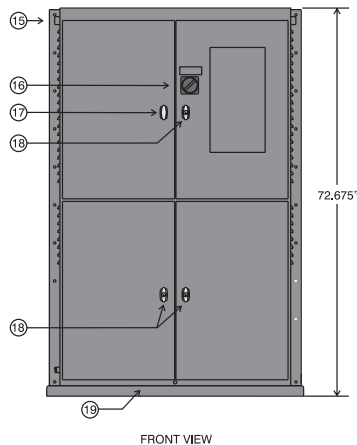
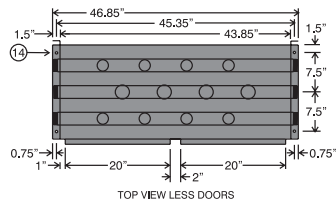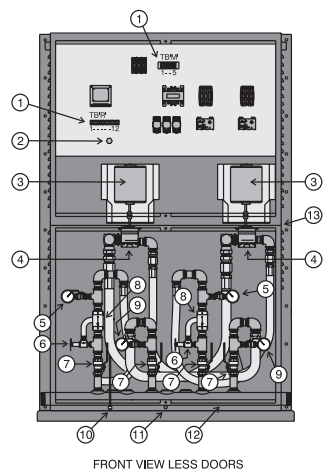RIGHT SIDE

SIMPLX®

SPS-30

1. Dry Contacts for Customer Connections
2. Motor (2)
3. Pump (2)
4. Flow Switch (2), Opt. 285
5. Check Valve (2), Opt. 070
6. Ball Valve (4), Opt. 087
7. Pressure Relief Valve (2), Opt. 095
8. Pressure Gauge with Isolation Valve(2), Opt. 100
9. Floatswitch
10. Sump Drain
11. Leak Sump
12. Mounting Holes (6), .437" Dia.
13. Main Disconnect Switch, Opt. 260
14. Latch
15. Lockable Latch (3)
16. Customer Conduit Entry, Each Side, 1"
17. Customer Conduit Entry, Each Side, ½"
18. Vent Louvers
19. Pump Outlet Manifold, 1" NPT
20. Pump Inlet Manifold, 1" NPT
21. Pressure Relief Manifold, 1" NPT

TOP VIEW LESS DOORS

FRONT VIEW LESS DOORS

FRONT VIEW

RIGHT SIDE

SPS-50

1. Dry Contacts for Customer Connections
2. Ground Stud
3. Motor (2)
4. Pump (2)
5. Pressure Gauge with Isolation Valve (2), Opt. 100
6. Pressure Relief Valve (2), Opt. 095
7. Ball Valve (4), Opt. 087
8. Check Valve (2),Opt. 070
9. Vacuum Gauge with Isolation Valve (2), Opt. 101
10. Floatswitch
11. Sump Drain
12. Leak Sump
13. Compartments Barrier
14. Mounting Holes (6), .437" Dia.
15. Wall Mounting Flange
16. Main Disconnect Switch, Opt. 260
17. Latch
18. Lockable Latch (3)
19. Pump Unit Mounting Channel
20. Customer Conduit Entry, Each Side, 1"
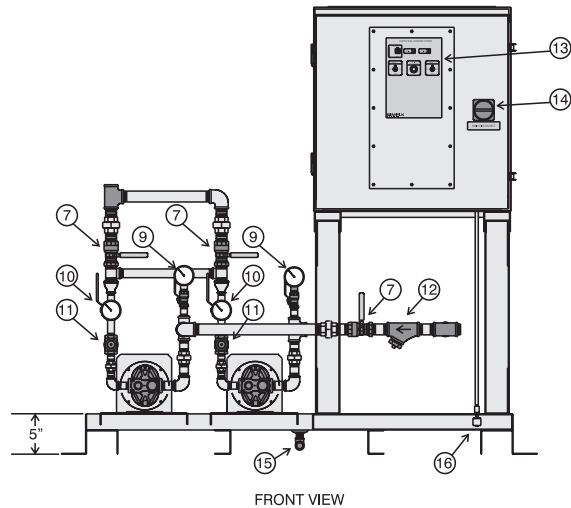21. Customer Conduit Entry, Each Side, ½"
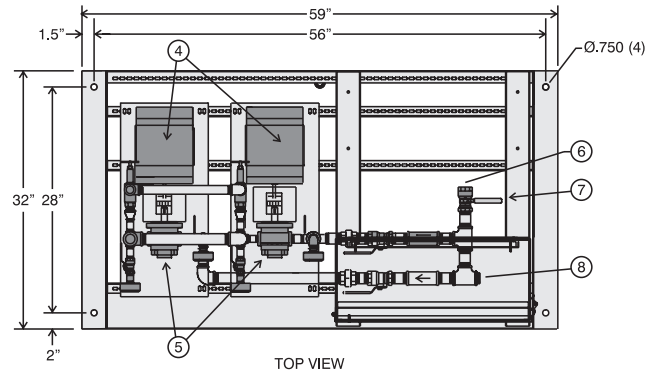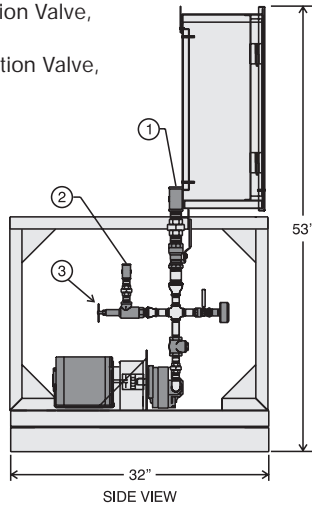22. Vent Louvers
23. Pump Outlet Manifold, 1" NPT Male, 1" NPT Threadlets
24. Pump Inlet Manifold, 1" NPT Male, 1" NPT Threadlets
25. Pressure Relief Manifold, 1" NPT Male, 1" NPT Threadlets

TOP VIEW LESS DOORS

FRONT VIEW LESS DOORS

FRONT VIEW

RIGHT SIDE

Dimensions and Key Features

SKS

1. Pump Outlet, 1" NPT Female
2. Pressure Relief Outlet , .75" NPT Female
3. Pressure Relief Valve, Opt. 095
4. Motor (2)
5. Pump (2)
6. Pump Inlet, 1" NPT Female
7. Ball Valve, 1" NPT, Opt. 087 (4)
8. Alternate Pump Inlet, 1" NPT Female
9. Vacuum Gauge with Isolation Valve, Opt. 101 (2)
10. Pressure Gauge with Isolation Valve, Opt. 100 (2)
11. Swing Check Valve, Opt. 070 (2)
12. Fuel Strainer, Opt. 060
13. Duplex Pump Controller, Opt. 345
14. Main Disconnect Switch, Opt. 260
15. Sump Drain, .5" NPT Female
16. Fuel Line Leak Detector Floatswitch, Opt. 191

TOP VIEW

SIDE VIEW

FRONT VIEW

Partial Options List

for the complete list of options see "Packaged Pump Sets SPS Series, Model and Accessory Source Guide".

Mechanical

- ❏ **015** Auxiliary hand pump
- ❏ **060** Fuel strainer
- ❏ **070** Check valve
- ❏ **080** Solenoid valve
- ❏ **087** Manual shut-off valve
- ❏ **095** Pressure relief valve
- ❏ **100** Pressure gauge with Isolation Valve
- ❏ **101** Vacuum gauge with Isolation Valve
- ❏ **103** Flow gauge

Control Devices and Alarms

- ❏ **260** Disconnect switch
- ❏ **262** Control power transformer
- ❏ **281** Operation mode selector switch
- ❏ **285** Loss of flow alarm
- ❏ **298** Control relay
- ❏ **349** Basic PLC Controller

Duplex Pump Systems

- ❏ **345** Multifunction duplex pump controller
- ❏ **347** Manual duplex pump selector switch

Super XL Pumps

- ❏ **400** 7GPM pump
- ❏ **410** 10GPM pump
- ❏ **415** 17GPM pump
- ❏ **417** 25GPM pump

Series 420 Pumps

- ❏ **420** 3 GPM, ½ HP
- ❏ **422** 5 GPM, ¾ HP
- ❏ **424** 11 GPM, 1 HP
- ❏ **426** 13 GPM, 1½ HP
- ❏ **428** 28 GPM, 3 HP
- ❏ **430** 45 GPM, 5HP
- ❏ **432** 61 GPM, 7.5HP