



Franklin Electric
ENERGY SYSTEMS

PUMP SELECTION GUIDE



FE PETRO®

FOR 50 Hz MARKETS



SUBMERSIBLE TURBINE PUMPS

Since hitting the market in 1988, FE PETRO® Submersible Turbine Pumps (STPs) have developed a reputation as the standard in performance, quality and dependability with innovative features only available from Franklin Electric. It is, and always will be about filling cars faster and smarter. With best-in-class flow rates backed by a long history of dependability, FE PETRO® STPs are responsible for delivering fuel to thousands of customers around the globe, day in and day out.

4 Hp, 2Hp, 1 ½ Hp, and ¾ Hp options

Biofuel compatibility handles ethanol / biodiesel blends

Advanced protection prevents corrosion / extends pump life

Variable speed maximizes profits with high flow rates

MagShell® increases flow rates for higher throughput

Variable length adjustment ensures perfect onsite fit

Active air elimination for smooth fuel delivery

Safe and simple service disconnects and pressure relief

Intake filter screen keeps debris out / reduces wear

Intelligent pump controllers maximize uptime



VARIABLE SPEED TECHNOLOGY

With faster fill times during peak hours and power savings during non-peak hours, variable speed submersible pumping systems allow you to maximize profits with consistent flow rates while mitigating operating expenses and system wear.



MAGSHELL® PUMP DESIGN

The patented stainless steel MagShell®, available on 2 Hp and 4 Hp pumps, is designed to maximize flow rate capabilities, potential throughput, and profits. By expanding the pump motor shell, the MagShell® increases the area for product flow by 45%.



TURBINE PUMP INTERFACE

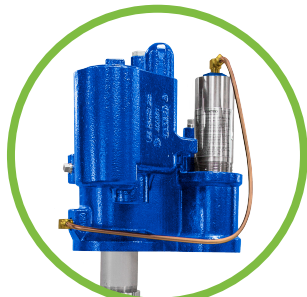
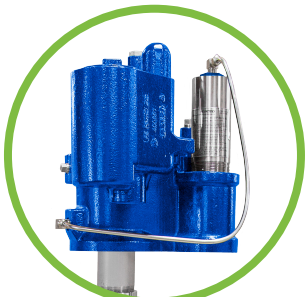
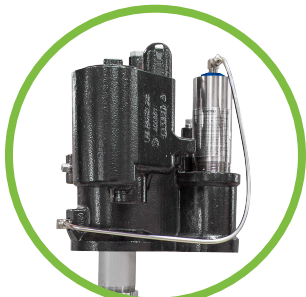
Network pump controllers with the EVO™ Series for remote enhanced pump monitoring and control features including pump-in-water automation, clogged intake escalation, tank leveling/priority, and more.

FEATURE OPTIONS

	 4 HP	 2 HP	 1 1/2 HP	 3/4 HP
Variable Speed	✓	✓		
Fixed Speed		✓	✓	✓
MagShell®	✓	✓		
Biofuel Compatibility*	✓	✓	✓	✓
Variable Length	✓	✓	✓	✓
Advanced Protection	✓	✓	✓	✓
Turbine Pump Interface**	✓	✓	✓	✓
Intake Filter Screen	✓	✓	✓	✓

*Up to 85% Ethanol and up to 20% or 100% Biodiesel.
 **Fixed speed models require a Guardian Series™ Single Phase Smart Controller (SPGC-220) and Variable Speed models require VFGC controller to network with EVO™ Series Automatic Tank Gauges.

FUEL COMPATIBILITY

			
Model	STP	IST	IST
Description	Standard Pump	Alcohol-Gas Pump	Alcohol-Gas Pump
Pump Speed	Variable Speed / Fixed Speed	Variable Speed	Variable Speed
Compatibility	Up to 10% Ethanol w/ Gas	Up to E85, up to B20, B100	Up to E85, up to B20, B100

 **ADVANCED PROTECTION**
 Advanced Protection safeguards pumps from corrosion. It builds on Alcohol-Gas compatible pumps with upgraded materials including powder-coating, E-coating, and stainless steel for enhanced durability. Choose this added level of protection for Ultra Low Sulfur Diesel applications, aboveground tanks, marinas, and aviation applications.

THE BENEFITS OF VARIABLE SPEED PUMPING

Introduced in 1997, FE PETRO® variable speed submersible turbine pumps (STPs) were the first of their kind for the petroleum equipment industry.

Variable speed systems ramp up the system's horsepower as needed to provide optimal flow rates at fueling points. This results in faster and more consistent flow rates at peak business times compared to fixed speed systems. These benefits are something only Franklin Electric variable speed STPs, the industry's highest performing 4" diameter STPs, can provide.



FASTER, SMARTER FUELING

With faster fill times during peak hours and power savings during non-peak hours, FE PETRO® 2 Hp and 4 Hp variable speed submersible pumping systems allow operators to maximize profits while mitigating operating expenses.



CONSISTENT CUSTOMER EXPERIENCE

Variable speed pumps ensure consistent flow rates, even during peak demand, providing customers with faster fueling and a smoother experience at the dispenser, reducing wait times and improving overall satisfaction.



PREVENT EQUIPMENT WEAR

Minimize sudden pressure spikes, known as hydraulic hammer, that occur during sudden stoppages in flow. These spikes can be exaggerated in fixed speed systems and lead to accelerated equipment wear and damage.



VARIABLE FREQUENCY GUARDIAN CONTROLLER

The Guardian Series™ Variable Frequency Guardian Controller (VFGC) brings advanced precision and efficiency to fueling operations. Designed to optimize performance, this intelligent controller adjusts pump motor speed in real time to maintain consistent fuel flow, even during peak demand.



BUILDING A PUMP MODEL NUMBER

A typical turbine model designation has up to five components to define the pump being supplied as follows:

XXX YYYYY Z - A - B

XXX = Basic Model Designation

- STP = Standard
- IST = Alcohol-gas, variable speed
- ISTAP = Advanced protection, variable speed

YYYYY = Factory Installed Options

- Model designations may include one or more of the following characters in alphabetical order:
- F = Floating suction adapter (1½" NPT female adapter)
 - K = Intake filter screen (IFS, factory installed to PMA)
 - M = MagShell® (flow enhancing, expanded PMA shell)
 - R* = Model R check valve (1.7 bar relief / 1.5 bar reset for PLLD)
 - W* = Model W check valve (1.1 bar relief / 0.9 bar reset for PPM4000)

Z = Pump Motor Horsepower Rating

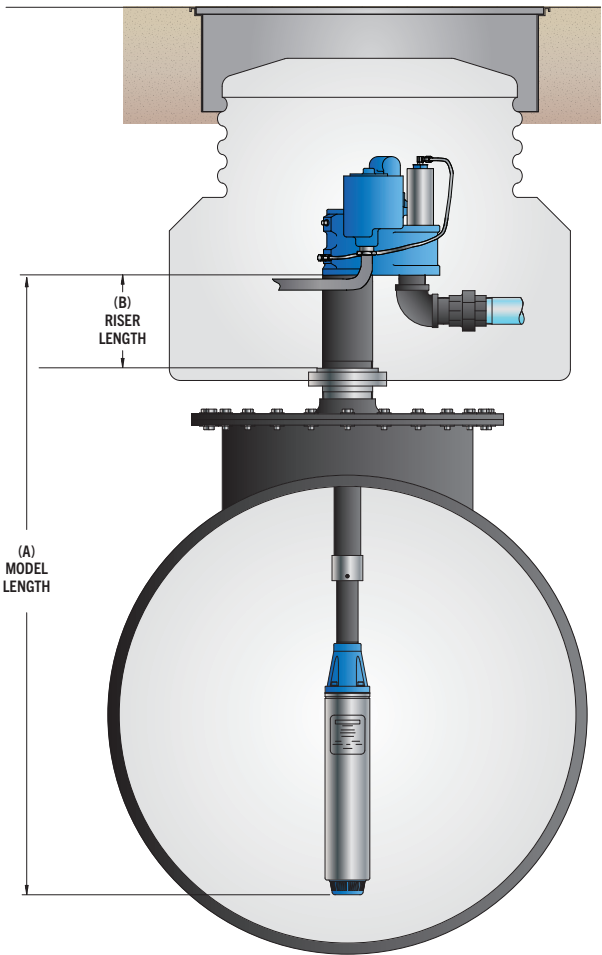
- VS4 = 4 Hp variable speed

A = Model Length (see diagram)

Each model will have a unique variable length range to choose from. See datasheets for specific details.

B = Riser Pipe Length (see diagram)

Riser pipe length is expressed as two numeric characters that indicate the total length of the riser in inches. Riser pipes are available from 178mm to 1524mm in 25mm increments (additional charge for risers 787mm or longer).



HOW TO DETERMINE HORSEPOWER RATING

This guide will help you determine the right Pump Horsepower Rating for your application.

- 1 Find the system layout that best represents your application using the dispenser count, pipework diameter, and visual pipework layout guide.
- 2 Review the common system characteristics.
- 3 Select the appropriate pump to achieve optimal flow rates for the number of nozzles operating simultaneously (recommendation highlighted in black box).
- 4 Review the pump recommendation explanation.
- 5 Choose the specific pump model from options included based on the type of fuel for your application.

PUMP SELECTION GUIDE

4 DISPENSER, 1½" SERIES PIPING CONFIGURATION

SYSTEM CHARACTERISTICS

Tank Bury Depth: 3' - 5'
Tank Diameter: 8' - 10'
Line Leak Detection: Electronic
Dispensing System: Conventional auto

Pipework: 1.65" - 1.67" ID Pipework (APT® XP1.75 or UPP® 50 mm)
Distance from Tank to 1st Dispenser: 50' - 100'
Distance Between Dispensers: 20' - 35'
Additional Components: Minimum fittings

Number of Nozzles Operating Simultaneously	Fixed Speed 1.5Hp	Fixed Speed 2.0Hp	Variable Speed 2.0Hp	Variable Speed 4.0Hp	High Pressure Fixed Speed 2.0Hp
1	+	+	10 gpm / nozzle	10 gpm / nozzle	++
2	+	+	10 gpm / nozzle	10 gpm / nozzle	++
3	10 gpm / nozzle	+	10 gpm / nozzle	10 gpm / nozzle	++
4	9 gpm / nozzle	10 gpm / nozzle	10 gpm / nozzle	10 gpm / nozzle	++
5	8-9 gpm / nozzle	9 gpm / nozzle	10 gpm / nozzle	10 gpm / nozzle	10 gpm / nozzle
6	8 gpm / nozzle	8-9 gpm / nozzle	10 gpm / nozzle	10 gpm / nozzle	9-10 gpm / nozzle
7	7 gpm / nozzle	8 gpm / nozzle	9 gpm / nozzle	10 gpm / nozzle	8-9 gpm / nozzle

Key: + Flow Rates Less Than 8 gpm 10 gpm / nozzle Optimal Flow Rates + Flow Rates Greater Than 10 gpm ++ Flow Rates Greater Than 10 gpm & Manifold Discharge Pressures up to 46 PSI

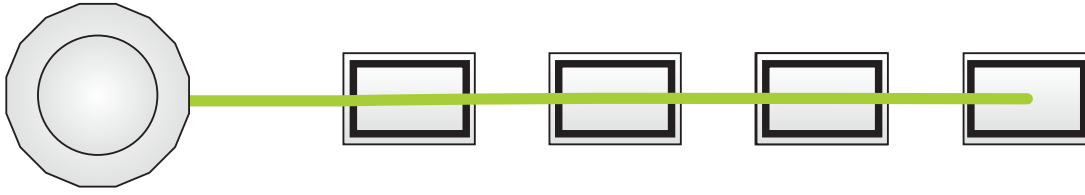
Explanation: With 8 total nozzles in the system, peak fueling times will typically occur with up to 6 nozzles operating simultaneously. To maintain 6 nozzles operating simultaneously between 8-10 gpm, the recommended Variable Speed 2.0 Hp pumps can achieve these desired flow rates without exceeding EPA mandated 10 gpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: STPAVS2 Biofuel Compatible: ISTM Advanced Protection: ISTAPM

PUMP SELECTION GUIDE

4 DISPENSER, 1¾" SERIES PIPING CONFIGURATION



SYSTEM CHARACTERISTICS

Tank Bury Depth: 1.0 - 1.5 m

Tank Diameter: 2.5 - 3.0 m

Line Leak Detection: Electronic

Dispensing System: Conventional auto

Pipework: 1.65" – 1.67" ID Pipework (APT® XP175 or UPP® 50 mm)

Distance from Tank to 1st Dispenser: 15 - 30 m

Distance Between Dispensers: 6 - 10 m

Additional Components: Minimum fittings

Number of Nozzles Operating Simultaneously	Fixed Speed 1.5Hp	Fixed Speed 2.0Hp	Variable Speed 2.0Hp	Variable Speed 4.0Hp	High Pressure Fixed Speed 2.0Hp
1	+	+	38 lpm / nozzle	10 lpm / nozzle	++
2	+	+	38 lpm / nozzle	38 lpm / nozzle	++
3	34-38 lpm / nozzle	+	38 lpm / nozzle	38 lpm / nozzle	++
4	34 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle
5	30 lpm / nozzle	30-34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34 lpm / nozzle
6	26-30 lpm / nozzle	30 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle
7	26 lpm / nozzle	26-30 lpm / nozzle	34 lpm / nozzle	34-38 lpm / nozzle	26-30 lpm / nozzle
8	<26 lpm / nozzle	<26 lpm / nozzle	30-34 lpm / nozzle	34 lpm / nozzle	26 lpm / nozzle

Note: This chart is derived from calculated data and published performance curves, not actual testing. This chart is intended for the purpose of Submersible Turbine Pump selection and is for reference only.

Key: Flow Rates Less Than 30 lpm Optimal Flow Rates + Flow Rates Greater Than 38 lpm ++ Flow Rates Greater Than 38 lpm & Manifold Discharge Pressures up to 3.2 bar

Explanation:

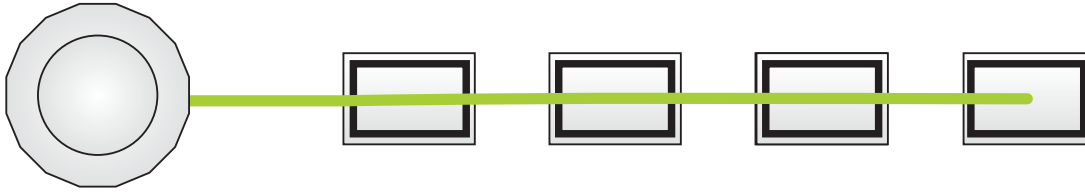
With 8 total nozzles in the system, peak fueling times will typically occur with up to 6 nozzles operating simultaneously. To maintain 6 nozzles operating simultaneously between 30-38 lpm, the recommended **Variable Speed 2.0 Hp** pumps can achieve these desired flow rates without exceeding 38 lpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: STPMVS2 **Biofuel Compatible:** ISTM **Advanced Protection:** ISTAPM

PUMP SELECTION GUIDE

4 DISPENSER, 2" SERIES PIPING CONFIGURATION



SYSTEM CHARACTERISTICS

Tank Bury Depth: 1.0 - 1.5 m

Tank Diameter: 2.5 – 3.0 m

Line Leak Detection: Electronic

Dispensing System: Conventional auto

Pipework: 2.04" – 2.12" ID Pipework (APT® XP200 or UPP® 63 mm)

Distance from Tank to 1st Dispenser: 15 – 30 m

Distance Between Dispensers: 6 – 10 m

Additional Components: Minimum fittings

Number of Nozzles Operating Simultaneously	Fixed Speed 1.5Hp	Fixed Speed 2.0Hp	Variable Speed 2.0Hp	Variable Speed 4.0Hp	High Pressure Fixed Speed 2.0Hp
1	+	+	38 lpm / nozzle	38 lpm / nozzle	++
2	+	+	38 lpm / nozzle	38 lpm / nozzle	++
3	38 lpm / nozzle	+	38 lpm / nozzle	38 lpm / nozzle	++
4	34-38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	++
5	30-34 lpm / nozzle	34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle
6	30 lpm / nozzle	30-34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34 lpm / nozzle
7	26-30 lpm / nozzle	26-30 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30 lpm / nozzle
8	<26 lpm / nozzle	26 lpm / nozzle	34 lpm / nozzle	38 lpm / nozzle	26-30 lpm / nozzle

Note: This chart is derived from calculated data and published performance curves, not actual testing. This chart is intended for the purpose of Submersible Turbine Pump selection and is for reference only.

Key: Flow Rates Less Than 30 lpm Optimal Flow Rates + Flow Rates Greater Than 38 lpm ++ Flow Rates Greater Than 38 lpm & Manifold Discharge Pressures up to 3.2 bar

Explanation:

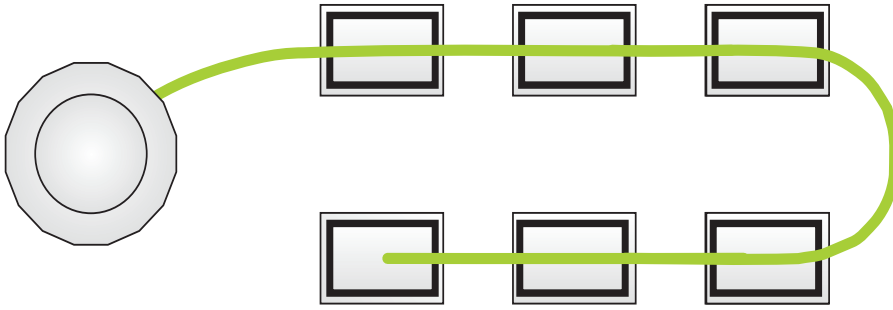
With 8 total nozzles in the system, peak fueling times will typically occur with up to 6 nozzles operating simultaneously. To maintain 6 nozzles operating simultaneously between 30-38 lpm, the recommended **Variable Speed 2.0 Hp** pumps can achieve these desired flow rates without exceeding 38 lpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: STPMVS2 **Biofuel Compatible:** ISTM **Advanced Protection:** ISTAPM

PUMP SELECTION GUIDE

6 DISPENSER, 2" SERIES PIPING CONFIGURATION



SYSTEM CHARACTERISTICS

Tank Bury Depth: 1.0 – 1.5 m

Tank Diameter: 2.5 – 3.0 m

Line Leak Detection: Electronic

Dispensing System: Conventional auto

Pipework: 2.04" – 2.12" ID Pipework (APT® XP200 or UPP® 63 mm)

Distance from Tank to 1st Dispenser: 15 – 30 m

Distance Between Dispensers: 6 – 10 m

Additional Components: Minimum fittings

Number of Nozzles Operating Simultaneously	Variable Speed 2.0Hp	Variable Speed 4.0Hp	2x Manifoldd Variable Speed 2.0Hp	2x Manifoldd Fixed Speed 2.0Hp	2x Manifoldd Hi-PSI Fixed Speed 2.0Hp
1	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
2	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
3	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
4	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
5	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
6	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	++
7	34-38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	++
8	34 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	34 lpm / nozzle	34-38 lpm / nozzle
9	30-34 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle
10	26-30 lpm / nozzle	34 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	30-34 lpm / nozzle
11	26-30 lpm / nozzle	30 lpm / nozzle	34-38 lpm / nozzle	26-30 lpm / nozzle	30-34 lpm / nozzle
12	26 lpm / nozzle	26-30 lpm / nozzle	34-38 lpm / nozzle	26-30 lpm / nozzle	30 lpm / nozzle

Note: This chart is derived from calculated data and published performance curves, not actual testing. This chart is intended for the purpose of Submersible Turbine Pump selection and is for reference only.

Key: Flow Rates Less Than 30 lpm Optimal Flow Rates + Flow Rates Greater Than 38 lpm ++ Flow Rates Greater Than 38 lpm & Manifold Discharge Pressures up to 3.2 bar

Explanation:

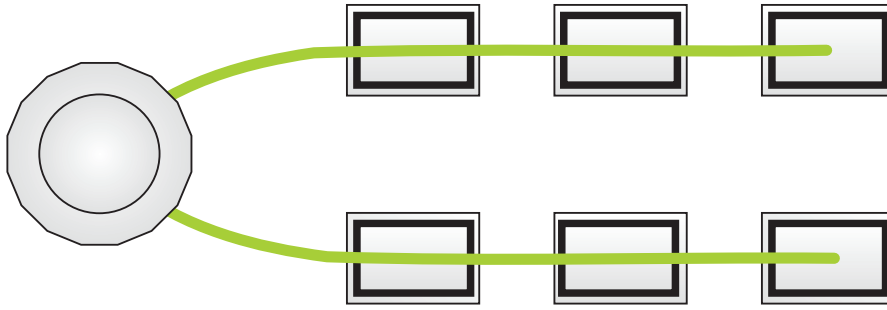
With 12 total nozzles in the system, peak fueling times will typically occur with up to 9 nozzles operating simultaneously. To maintain 8-9 nozzles operating simultaneously between 30-38 lpm, the recommended **Variable Speed 4.0 Hp** or **Manifolded Variable Speed 2.0 Hp** pumps can achieve these desired flow rates without exceeding 38 lpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: STPMVS4 / (2x) STPMVS2 **Biofuel Compatible:** ISTMVS4 / (2x) ISTM **Advanced Protection:** ISTAPMVS4 / (2x) ISTAPM

PUMP SELECTION GUIDE

6 DISPENSER, 1¾" PARALLEL PIPING CONFIGURATION



SYSTEM CHARACTERISTICS

Tank Bury Depth: 1.0 – 1.5 m

Tank Diameter: 2.5 – 3.0 m

Line Leak Detection: Electronic

Dispensing System: Conventional auto

Pipework: 1.65" – 1.67" ID Pipework (APT® XP175 or UPP® 50 mm)

Distance from Tank to 1st Dispenser: 15 – 30 m

Distance Between Dispensers: 6 – 10 m

Additional Components: Minimum fittings and common pipe

Number of Nozzles Operating Simultaneously	Variable Speed 2.0Hp	Variable Speed 4.0Hp	2x Manifoldd Variable Speed 2.0Hp	2x Manifoldd Fixed Speed 2.0Hp	2x Manifoldd Hi-PSI Fixed Speed 2.0Hp
1	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
2	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
3	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
4	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
5	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
6	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
7	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	++
8	34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle
9	30-34 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle
10	30 lpm / nozzle	30-34 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	34 lpm / nozzle
11	26-30 lpm / nozzle	30-34 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	30-34 lpm / nozzle
12	26 lpm / nozzle	26-30 lpm / nozzle	34-38 lpm / nozzle	26-30 lpm / nozzle	30-34 lpm / nozzle

Note: This chart is derived from calculated data and published performance curves, not actual testing. This chart is intended for the purpose of Submersible Turbine Pump selection and is for reference only.

Key: Flow Rates Less Than 30 lpm Optimal Flow Rates + Flow Rates Greater Than 38 lpm ++ Flow Rates Greater Than 38 lpm & Manifold Discharge Pressures up to 3.2 bar

Explanation:

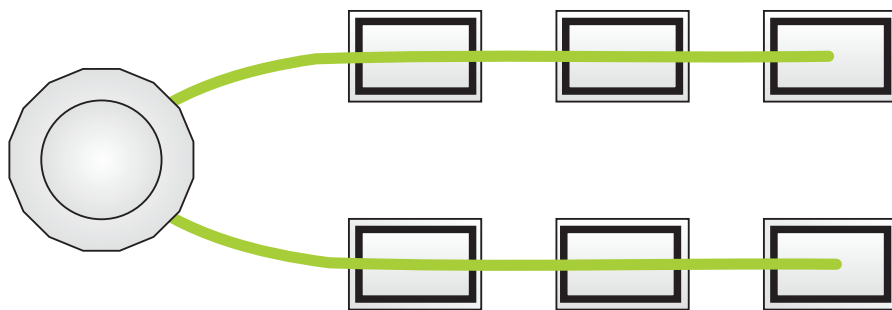
With 12 total nozzles in the system, peak fueling times will typically occur with up to 9 nozzles operating simultaneously. To maintain 8-9 nozzles operating simultaneously between 30-38 lpm, the recommended **Variable Speed 4.0 Hp** or **Manifolded Variable Speed 2.0 Hp** pumps can achieve these desired flow rates without exceeding 38 lpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: STPMVS4 / (2x) STPMVS2 **Biofuel Compatible:** ISTMVS4 / (2x) ISTM **Advanced Protection:** ISTAPMVS4 / (2x) ISTAPM

PUMP SELECTION GUIDE

6 DISPENSER, 2" PARALLEL PIPING CONFIGURATION



SYSTEM CHARACTERISTICS

Tank Bury Depth: 1.0 – 1.5 m

Tank Diameter: 2.5 – 3.0 m

Line Leak Detection: Electronic

Dispensing System: Conventional auto

Pipework: 2.04" – 2.12" ID Pipework (APT® XP200 or UPP® 63 mm)

Distance from Tank to 1st Dispenser: 15 – 30 m

Distance Between Dispensers: 6 – 10 m

Additional Components: Minimum fittings and common pipe

Number of Nozzles Operating Simultaneously	Variable Speed 2.0Hp	Variable Speed 4.0Hp	2x Manifoldd Variable Speed 2.0Hp	2x Manifoldd Fixed Speed 2.0Hp	2x Manifoldd Hi-PSI Fixed Speed 2.0Hp
1	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
2	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
3	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
4	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
5	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
6	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
7	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
8	34-38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	++
9	34 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle
10	30 lpm / nozzle	34 lpm / nozzle	38 lpm / nozzle	34 lpm / nozzle	34-38 lpm / nozzle
11	26-30 lpm / nozzle	30-34 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle
12	26-30 lpm / nozzle	30 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	30-34 lpm / nozzle

Note: This chart is derived from calculated data and published performance curves, not actual testing. This chart is intended for the purpose of Submersible Turbine Pump selection and is for reference only.

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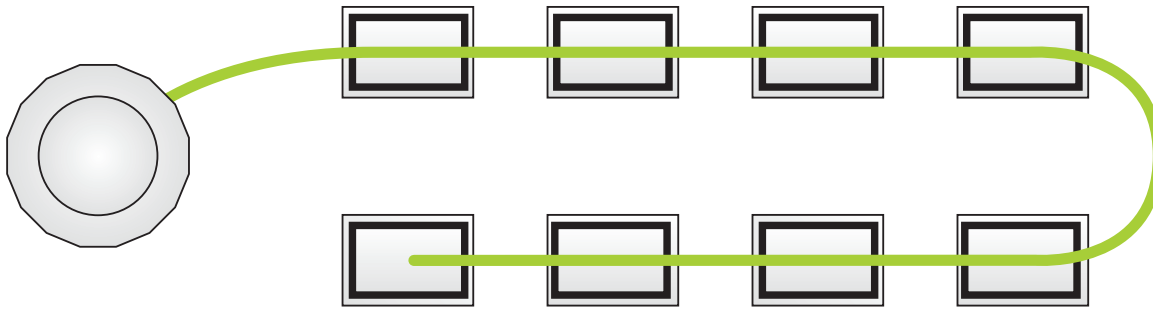
With 12 total nozzles in the system, peak fueling times will typically occur with up to 9 nozzles operating simultaneously. To maintain 8-9 nozzles operating simultaneously between 30-38 lpm, the recommended **Variable Speed 4.0 Hp** or **Manifolded Variable Speed 2.0 Hp** pumps can achieve these desired flow rates without exceeding 38 lpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: STPMVS4 / (2x) STPMVS2 **Biofuel Compatible:** ISTMVS4 / (2x) ISTM **Advanced Protection:** ISTAPMVS4 / (2x) ISTAPM

PUMP SELECTION GUIDE

8 DISPENSER, 2" SERIES PIPING CONFIGURATION



SYSTEM CHARACTERISTICS

Tank Bury Depth: 1.0 – 1.5 m

Tank Diameter: 2.5 – 3.0 m

Line Leak Detection: Electronic

Dispensing System: Conventional auto

Pipework: 2.04" – 2.12" ID Pipework (APT® XP200 or UPP® 63 mm)

Distance from Tank to 1st Dispenser: 15 – 30 m

Distance Between Dispensers: 6 – 10 m

Additional Components: Minimum fittings

Number of Nozzles Operating Simultaneously	Variable Speed 4.0Hp	2x Manifolded Variable Speed 2.0Hp	2x Manifolded Variable Speed 4.0Hp	2x Manifolded Fixed Speed 2.0Hp	2x Manifolded Hi-PSI Fixed Speed 2.0Hp
1	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
2	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
3	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
4	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
5	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
6	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
7	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	++
8	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle
9	34-38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34 lpm / nozzle	34-38 lpm / nozzle
10	30-34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle
11	30-34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	30-34 lpm / nozzle
12	26-30 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	26-30 lpm / nozzle	30-34 lpm / nozzle
13	26-30 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	26-30 lpm / nozzle	30 lpm / nozzle
14	< 26 lpm / nozzle	34-38 lpm / nozzle	34-38 lpm / nozzle	26-30 lpm / nozzle	26-30 lpm / nozzle
15	< 26 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle	< 26 lpm / nozzle	26-30 lpm / nozzle
16	< 26 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle	< 26 lpm / nozzle	< 26 lpm / nozzle

Note: This chart is derived from calculated data and published performance curves, not actual testing. This chart is intended for the purpose of Submersible Turbine Pump selection and is for reference only.

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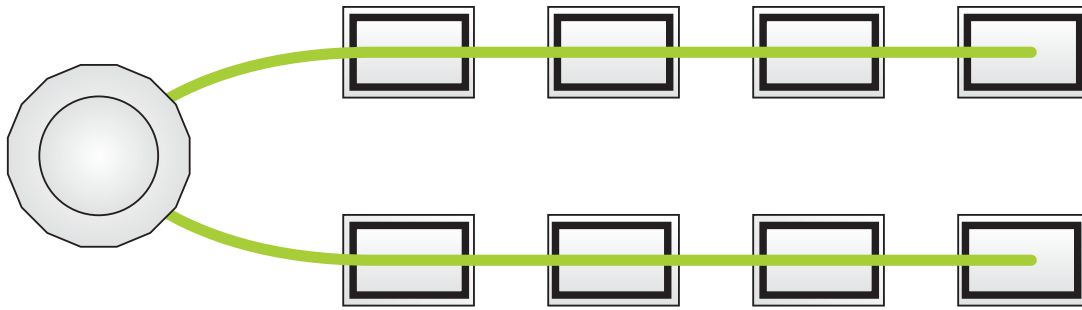
With 16 total nozzles in the system, peak fueling times will typically occur with up to 12 nozzles operating simultaneously. To maintain 10-12 nozzles operating simultaneously between 30-38 lpm, the recommended **Manifolded Variable Speed 2.0 Hp** or **Manifolded Variable Speed 4.0 Hp** pumps can achieve these desired flow rates without exceeding 38 lpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: (2x) STPMVS2 / (2x) STPMVS4 **Biofuel Compatible:** (2x) ISTM / (2x) ISTMVS4 **Advanced Protection:** (2x) ISTAPM / (2x) ISTMVS4

PUMP SELECTION GUIDE

8 DISPENSER, 1¾" PARALLEL PIPING CONFIGURATION



SYSTEM CHARACTERISTICS

Tank Bury Depth: 1.0 – 1.5 m

Tank Diameter: 2.5 – 3.0 m

Line Leak Detection: Electronic

Dispensing System: Conventional auto

Pipework: 1.65" – 1.67" ID Pipework (APT® XP175 or UPP® 50 mm)

Distance from Tank to 1st Dispenser: 15 – 30 m

Distance Between Dispensers: 6 – 10 m

Additional Components: Minimum fittings and common pipe

# Of Nozzles Operating Simultaneously	Variable Speed 4.0Hp	2x Manifolded Variable Speed 2.0Hp	2x Manifolded Variable Speed 4.0Hp	2x Manifolded Fixed Speed 2.0Hp	2x Manifolded Hi-PSI Fixed Speed 2.0Hp
1	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
2	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
3	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
4	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
5	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
6	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
7	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	++
8	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	38 lpm / nozzle
9	34-38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle
10	30-34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	34 lpm / nozzle
11	30 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30 lpm / nozzle	30-34 lpm / nozzle
12	26-30 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	26-30 lpm / nozzle	30 lpm / nozzle
13	26-30 lpm / nozzle	34-38 lpm / nozzle	34-38 lpm / nozzle	26-30 lpm / nozzle	26-30 lpm / nozzle
14	< 26 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle	26 lpm / nozzle	26-30 lpm / nozzle
15	< 26 lpm / nozzle	30-34 lpm / nozzle	34 lpm / nozzle	< 26 lpm / nozzle	26 lpm / nozzle
16	< 26 lpm / nozzle	30-34 lpm / nozzle	30-34 lpm / nozzle	< 26 lpm / nozzle	< 26 lpm / nozzle

Note: This chart is derived from calculated data and published performance curves, not actual testing. This chart is intended for the purpose of Submersible Turbine Pump selection and is for reference only.

Key: Flow Rates Less Than 30 lpm Optimal Flow Rates + Flow Rates Greater Than 38 lpm ++ Flow Rates Greater Than 38 lpm & Manifold Discharge Pressures up to 3.2 bar

Explanation:

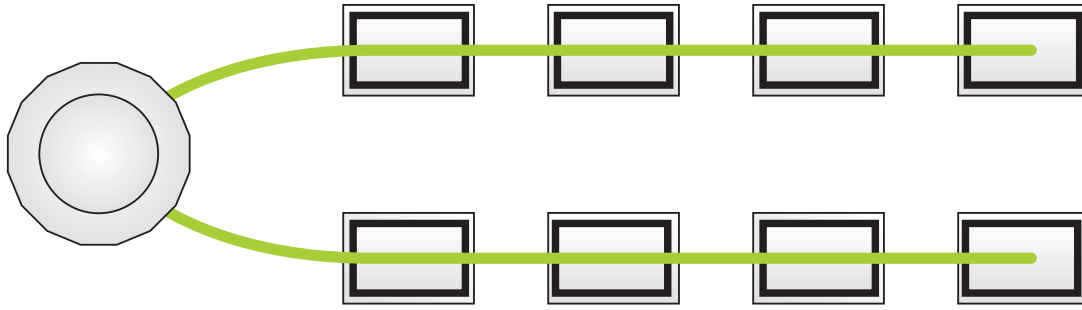
With 16 total nozzles in the system, peak fueling times will typically occur with up to 12 nozzles operating simultaneously. To maintain 10-12 nozzles operating simultaneously between 30-38 lpm, the recommended **Manifolded Variable Speed 2.0 Hp** or **Manifolded Variable Speed 4.0 Hp** pumps can achieve these desired flow rates without exceeding 38 lpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: (2x) STPMVS2 / (2x) STPMVS4 **Biofuel Compatible:** (2x) ISTM / (2x) ISTMVS4 **Advanced Protection:** (2x) ISTAPM / (2x) ISTAPMVS4

PUMP SELECTION GUIDE

8 DISPENSER, 2" PARALLEL PIPING CONFIGURATION



SYSTEM CHARACTERISTICS

Tank Bury Depth: 1.0 – 1.5 m

Tank Diameter: 2.5 – 3.0 m

Line Leak Detection: Electronic

Dispensing System: Conventional auto

Pipework: 2.04" – 2.12" ID Pipework (APT® XP200 or UPP® 63 mm)

Distance from Tank to 1st Dispenser: 15 – 30 m

Distance Between Dispensers: 6 – 10 m

Additional Components: Minimum fittings and common pipe

# Of Nozzles Operating Simultaneously	Variable Speed 4.0Hp	2x Manifoldd Variable Speed 2.0Hp	2x Manifoldd Variable Speed 4.0Hp	2x Manifoldd Fixed Speed 2.0Hp	2x Manifoldd Hi-PSI Fixed Speed 2.0Hp
1	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
2	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
3	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
4	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
5	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
6	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
7	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	+	++
8	38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	++
9	34-38 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle
10	34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	34 lpm / nozzle	34-38 lpm / nozzle
11	30-34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	34-38 lpm / nozzle
12	30-34 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	30-34 lpm / nozzle	30-34 lpm / nozzle
13	26-30 lpm / nozzle	38 lpm / nozzle	38 lpm / nozzle	26-30 lpm / nozzle	30-34 lpm / nozzle
14	26-30 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	26-30 lpm / nozzle	30 lpm / nozzle
15	26-30 lpm / nozzle	34-38 lpm / nozzle	38 lpm / nozzle	26-30 lpm / nozzle	26-30 lpm / nozzle
16	26 lpm / nozzle	34 lpm / nozzle	34-38 lpm / nozzle	26 lpm / nozzle	26-30 lpm / nozzle

Note: This chart is derived from calculated data and published performance curves, not actual testing. This chart is intended for the purpose of Submersible Turbine Pump selection and is for reference only.

Key: Flow Rates Less Than 30 lpm Optimal Flow Rates + Flow Rates Greater Than 38 lpm ++ Flow Rates Greater Than 30 lpm & Manifold Discharge Pressures up to 3.2 bar

Explanation:

With 16 total nozzles in the system, peak fueling times will typically occur with up to 12 nozzles operating simultaneously. To maintain 10-12 nozzles operating simultaneously between 30-38 lpm, the recommended **Manifolded Variable Speed 2.0 Hp** or **Manifolded Variable Speed 4.0 Hp** pumps can achieve these desired flow rates without exceeding 38 lpm flow rates and without high discharge pressures, which can generate hard to squeeze nozzles and hydraulic hammer that can cause accelerated fatigue or wear on the system.

Model Number Options:

Base: (2x) STPMVS2 / (2x) STPMVS4 **Biofuel Compatible:** (2x) ISTM / (2x) ISTMVS4 **Advanced Protection:** (2x) ISTAPM / (2x) ISTMVS4

SUBMERSIBLE TURBINE PUMP SPECIFICATIONS

GENERAL

- The entire pumping assembly shall have UL listing and shall meet all requirements of UL Standard UL 79 as a minimum. Other international safety approvals to be available as applicable.
- The pump discharge head and manifold assembly shall be manufactured from ASTM A48 Class 25 gray iron.
- The pump shall be available in various horsepower sizes of fixed and variable speed designs capable of operating with common single and three-phase incoming power supplies.
- The pump will be manufactured to a proper length as determined by the tank diameter, type and bury depth. An optional variable length (VL) telescopic column pipe feature shall be provided such that the length of the pump is field adjusted at the job site to fit the specific application without impact to safety approvals.
- The pump motor shall have a thermal over-current overload protector with automatic reset.
- The pump motor assembly shall be clearly marked with pertinent information including Model, Horsepower, Voltage, Phase, and other pertinent information as applicable.
- Fixed speed single-phase pump motors shall be a permanent split phase capacitor with internal shunt resistor design, and shall incorporate a 15 µF capacitor for up to 1½ horsepower motors and incorporate a 40 µF capacitor for 2 horsepower motors.
- The pump shall be UL listed for blend concentrations of:

Standard Models	
0% – 10% Ethanol with gasoline	20% MTBE with 80% gasoline
20% ETBE with 80% gasoline	17% TAME with 83% gasoline
AG (Alcohol/Gasoline) Models (including STPAG/IST/STPAP/ISTAP Models)	
Diesel with up to 20% biodiesel, or 100% biodiesel	20% MTBE with 80% gasoline
0% - 85% ethanol and gasoline	17% TAME with 83% gasoline
20% ETBE with 80% gasoline	

- The pumping unit shall not incorporate any flexible diaphragms and all sealing shall be accomplished with O-rings or UL recognized gaskets.
- The pump shall be rated to operate between -40° F (-40° C) and 104° F (40° C) with non-gelled product.
- Franklin Electric shall manufacture the pump with FE PETRO® branding.

SUBMERSIBLE TURBINE PUMP SPECIFICATIONS

INSTALLATION AND MAINTENANCE

- The pump shall have a two or three-wire field connection depending on single or three-phase models and an easy access ground wire terminal, and shall incorporate a wire retainer which will accommodate these wires.
- The pump shall incorporate a port for line pressure testing that shall be sealed with a 1/4" NPT pipe plug.
- The pump head shall be equipped with a manual pressure relief screw to manually drop line pressure to zero by venting line pressure into storage tank. Purpose of this function is to avoid fuel spraying into dispenser and pump containment sumps during any routine service requiring piping to be opened to atmosphere such as filter replacement or leak detector maintenance.
- The pump unit shall have a fully extractable head in order to permit removal of the pump motor assembly without disturbing the discharge piping, product in the pipelines downstream of the check valve, siphoning system with siphon check valve installed, or the electrical wiring.
- During the removal of the extractable portion of the pump, product contained in the discharge manifold of the pump shall drain automatically into the storage tank.
- The pump will be equipped as standard with a 2 3/4" line check valve that incorporates a line relief mechanism with various settings to meet different line leak detection methodologies.
- The line check valve shall be independent of the removable head and shall be easily accessible.

OPERATION

- The pump shall have an air/vapor elimination system that returns air or vapors to the underground storage tank through a tube.
- The pump unit shall contain a built-in expansion relief valve that relieves pressure at or above pumping pressure but below 50 psi as standard. Other pressure relief settings required by electronic line leak detection shall be available.
- The pump motor shall utilize the product being pumped for lubrication of the motor bearings and for cooling the stator, and this fluid shall discharge into the underground storage tank at the top of the motor.
- The pump shall have siphon capability built into the pump as standard.

TOTAL SYSTEM SOLUTIONS™



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