

INTELLIGENT SUBMERSIBLE TURBINE

IST

**The FIRST Submersible Pump Ever
Designed For High Volume Retailers.
The NEW 4HP 4" Diameter Variable
Speed Turbine. When FAST Fueling
Means MORE Sales.**



**THE IST.....
NOW AVAILABLE IN 2 AND 4 HP
WITH FE PETRO'S UNIQUE *MagShell*™**



FE PETRO[®] INC

INTELLIGENT SUBMERSIBLE TURBINE - 2 AND 4 HP

FE Petro introduced the first variable speed submersible pump for the petroleum industry in 1995. Since that time, high volume marketers around the world have realized the benefits of filling cars faster during peak business periods that only variable speed submersibles can deliver. Station size and volumes have

continued to grow. To meet the need of these new high volume retailers, FE Petro is pleased to introduce the new 4 HP Intelligent Submersible Turbine.

Consider these specific features of the IST for your retail operations:

FE PETRO FEATURE

CONSTANT FLOW

Depending on your peak business requirements, marketers now have a choice of either 2 HP or 4 HP models. 2 HP provides constant 10 GPM (38 LPM) for up to 8 fueling positions operating simultaneously, 4 HP for up to 12 positions.



BENEFIT TO YOU

Constant flow means faster fueling times during those daily peak business periods resulting in higher fuel sales.

FE PETRO FEATURE

MEETS EPA "SPITBACK" CONTROL

The IST can be adjusted at installation to perform at maximum per nozzle flow rate of 10 GPM (38 LPM) based on the specifics of your piping/dispensing system. This eliminates over pressurizing the system which results in unnecessarily high hydraulic hammer and the need for other devices to control the 10 GPM maximum allowable flow rate per nozzle.



BENEFIT TO YOU

Performance specific to your system needs and no ongoing cost in maintaining maximum 10 GPM flow rates using flow restriction devices.

FE PETRO FEATURE

MagVFC™

The new *MagVFC* has reduced electrical noise by a factor of 10. A dual 7 segment display shows diagnostic faults. A serial interface is standard to connect to INCON System Sentinel software for remote reporting of pump alarms and sharing other pump/ATG intelligence. The *MagVFC* detects/displays these system conditions:

Pump/system protection features:

- Dry tank. Immediate pump shut down
- Continuous pump run.
- Alarms after 60 minutes with no pumping activity

Service diagnostics:

- Low incoming voltage
- Pump motor failure
- Short circuit detection
- Controller capacitors failing
- Open circuit detection
- Thermal overload in *MagVFC*



BENEFIT TO YOU

For reduced installation cost, shielded power cable is not required. Pump protection extends pump life and extended run fault alerts a condition that may render line leak detection ineffective. Remote reporting of pump alarms and sharing of IST and ATG intelligence further reduces station operating costs.

FE PETRO FEATURE

MagShell™

The *MagShell*™ feature increases the flow area around the motor by 45%.

MagShell™ is constructed of 304 Stainless Steel, then expanded .084" (2.1mm). Result is significantly higher flow rates.

BENEFIT TO YOU

The highest performing 2 and 4 hp submersibles ever offered. Higher flow means faster fill rates during peak business periods, increasing daily throughput and your profit potential.



FE PETRO FEATURE**VARIABLE LENGTH**

Another industry first from FE Petro. Our VL2 pump model fits 94% of all tank diameter and tank bury depth combinations. Our VL1 & VL3 model lengths handle all others.

BENEFIT TO YOU

Pump length is set at the job site by making one simple measurement and setting the pump length. All in about 20 minutes and without affecting the UL listing of the pump.

FE PETRO FEATURE**MANUAL PRESSURE RELIEF**

FE Petro is the only submersible on the market with manual pressure relief, regardless of the type of line leak detection you elect to use, mechanical or electronic.

**BENEFIT TO YOU**

Reducing line pressure to zero prior to servicing filters greatly reduces the possibility of fuel spraying into containment sumps and onto service personnel. Improves safety, the environment, and needless sump sensor alarms.

FE PETRO FEATURE**A RELIABLE CHECK VALVE**

Used for over 12 years, this 2 3/4" (70mm) diameter check valve reduces flow loss, has greater sealing pressure at pump shut off, and is available with several pressure relief settings.

**BENEFIT TO YOU**

Time tested proven performer helps give FE Petro greater flow rates and compatibility with all mechanical and electronic line leak detection in use today. Various pressure relief settings eliminate the need for external check valves for line leak detector compatibility.

FE PETRO FEATURE**SUPERIOR BEARING COOLING**

The IST uses the exclusive FE Petro cooling system. This unique system continually passes over 1 GPM through a fine bronze filter and directly through motor bearings whenever pump is operating.

**BENEFIT TO YOU**

This system has been designed to extend critical bearing and motor life.

FE PETRO FEATURE**VERTICAL DISCHARGE**

Another unique feature of FE Petro. Provides for a simple connection to underground piping.

**BENEFIT TO YOU**

This unique FE Petro feature allows for fewer fittings to connect the pump to the discharge line, and requires less space in the sump.

FE PETRO FEATURE**AIR ELIMINATOR**

The IST uses the standard FE Petro air eliminator which eliminates air through the highest point in the pump head, regardless of the type of line leak detector used.

**BENEFIT TO YOU**

High point air elimination assures air does not pass into discharge piping avoiding various issues related to air in the piping system in the retail meter and leak detection systems.

FE PETRO FEATURE**SIMPLE SERVICING**

If ever required, the pump can be easily removed from the tank by unthreading three bolts. There is no need to disconnect the syphon system, or remove the leak detector from the system to service the IST.

**BENEFIT TO YOU**

This feature reduces the risk of correcting one problem and causing another.

FE PETRO FEATURE**SERIAL COMMUNICATION**

The *MagVFC* incorporates a RS 485 serial communications system for communication and intelligence sharing with INCON fuel management systems.

**BENEFIT TO YOU**

Pump diagnostics is reported within moments to remote monitoring parties, reducing service call time. Serial link allows ATG to control pump preventing water from being pumped, elimination of syphon piping, and other functions designed to reduce station operating costs.

FE PETRO FEATURE**ISO 9001 CERTIFIED****BENEFIT TO YOU**

FE Petro's quality commitment to supply you with a world class product in accordance with internationally recognized quality standards.

ACCESSORIES

IFS: Our intake filter screen option utilizes 316 stainless steel to filter particles .009" (.23mm) and larger. It can significantly reduce dispenser filter changes, reducing maintenance costs by hundreds of dollars per year.

**IST SPECIFICATIONS****Power Requirements:**

- Input power:
 - At 4 hp, 208/230 3 phase 50/60 Hz
 - At 2 hp, 208/230 volt 50/60 Hz, 1 or 3 phase
- *MagVFC* output power: 3 phase variable frequency

Pump Motor:

- 2 HP or 4 HP: 2 stage centrifugal pump
- Maximum liquid viscosity: 70 SSU @ 60 deg F (15.5 deg C)
- Maximum flow rate: 2 hp 110 GPM, 4 hp 140 GPM
- Maximum pressure: 138 feet of head (45 PSI in gasoline)
- Maximum amperage: 2 hp 13 amps, 4 hp 18 amps

Check Valve:

- 2 3/4" (70mm) diameter aluminum/steel construction
- 100% alcohol/gas compatible fluorocarbon seal.

Seal Elastomers:

- Standard seals are viton and compatible with fuel mixtures containing up to 15% ethanol or methanol with gasoline and 20% MTBE, 17% ETBE, or 17% TAME with gasoline, and diesel fuels, avgas, jet fuel or kerosene
- AG models contain "IST" in model number and are for use in fuel mixtures containing any combination of ethanol or methanol and 20% MTBE, 20% ETBE or 17% TAME with gasoline.

Syphon:

- Syphon primer is venture type, capable of 26" (66cm) Hg vacuum
- Syphon check valve is machined aluminum, field repairable

Variable Speed Controller:

- Alternating lead pump and master/slave capability. On demand "auto-start" of additional pumps in manifolded pump applications
- Enclosure size is 12" H x 5" W x 9.25"D (30 cm x 13 cm x 23 cm)
- Operating temperature 40 to 95 deg F (4 to 35 deg C)

Approvals:

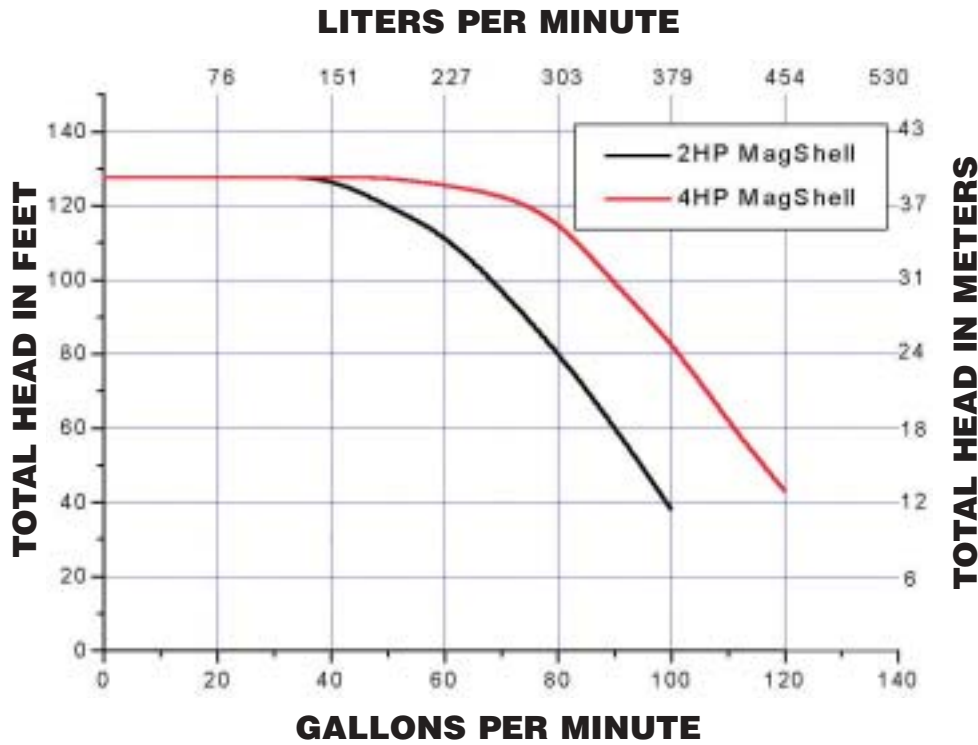
- UL and CUL, others pending

Quality Certification:

- FE Petro is an ISO 9001 Certified manufacturer.

THE INTELLIGENT SUBMERSIBLE PUMP FROM FE PETRO

SINGLE PUMP Performance in 50 or 60Hz

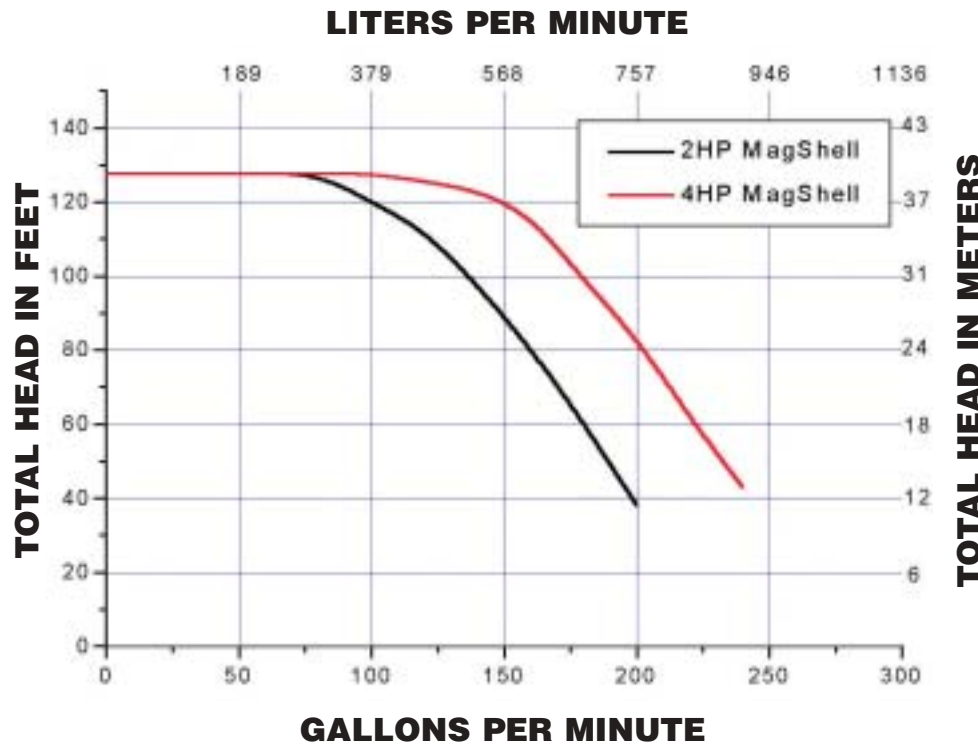


Notes:

Curves shown reflect single pump performance operating on 3 phase input power pumping gasoline (SG.76). Pressure is taken at the discharge manifold outlet.

2hp units can be operated on single phase power supply. Performance on single phase will be slightly lower. 4hp units operate on 3 phase input power only.

DUAL PUMP Performance in 50 or 60Hz



Notes:

Curves shown reflect performance of two pumps of like hp manifolded to a common discharge line. Performance curves are based on 3 phase input power pumping gasoline (SG.76). Pressure is taken at the discharge manifold outlet.

2hp units can be operated on single phase power supply. Performance on single phase will be slightly lower. 4hp units operate on 3 phase input power only.

HOW TO ORDER

MODEL LENGTH = ETD + riser - bottom clearance

DETERMINING MODEL LENGTH

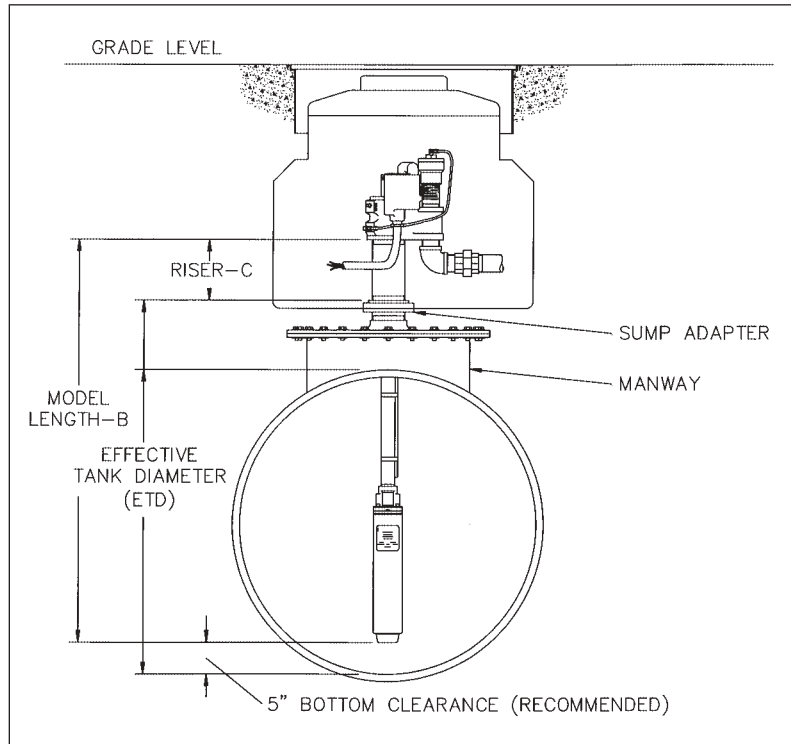
Effective Tank Diameter (ETD) is the combination of any or all of the following:

Tank Diameter (to top of 4" bung)
+ Manway
+ Sump Adapter

Riser to be determined by bury depth

BURY DEPTH	RISER LENGTH	
	MIN.	MAX.
2'	7"	7"
2.5'	7"	11"
3'	7"	17"
4'	7"	29"
5'	7"	41"
6'	7"	53"
7'	7"	65"

Note: Above ground tanks have a minimum riser length of 7".



Note: **IST2 or IST VS4 VL2** can be used in **94%** of all known installations. The following information indicates certain installations where a 2 HP model IST1 or IST3 or 4 HP models IST VS4 VL1 or VL3 is required:

2 HP MODELS: USE IST2 if model length is 89 to 151" (226 CM to 384 CM).
Use IST1 if model length is 58 to 88" (147 CM to 224 CM).
Use IST3 if model length is 151 to 206" (384 CM to 523 CM).

4 HP MODELS: USE IST VS4 VL2 if model length is 96 to 155" (239 CM to 394 CM).
Use IST VS4 VL1 if model length is 63 to 93" (160 CM to 236 CM).
Use IST VS4 VL3 if model length is 156 to 211" (396 CM to 536 CM).

**THE INTELLIGENT SUBMERSIBLE TURBINE
WHEN FAST FUELING MEANS MORE SALES**

FE PETRO^{INC}

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