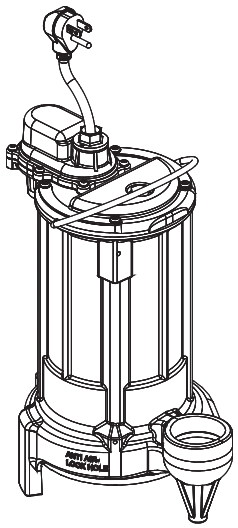
Liberty Pumps®

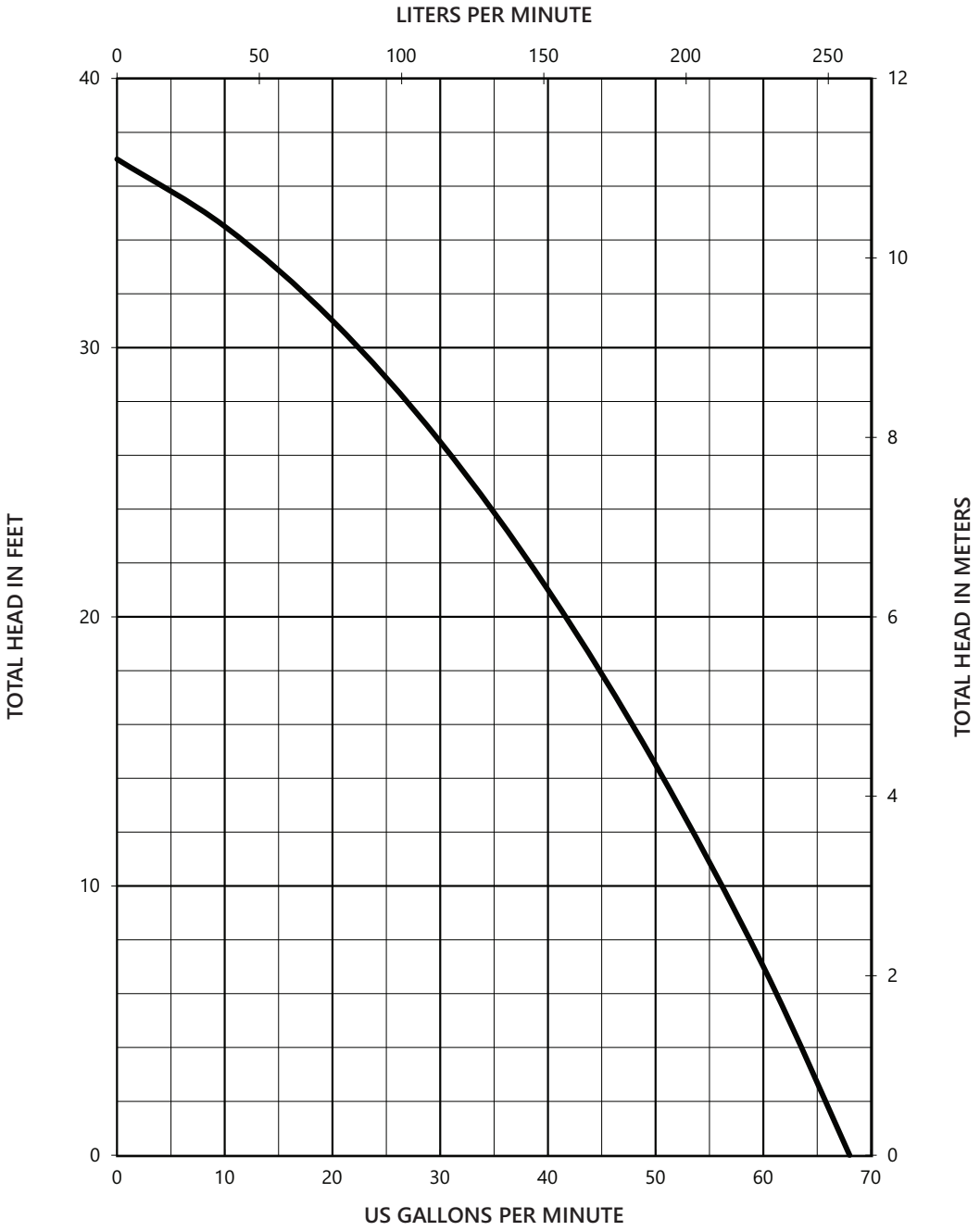
A Family and Employee Owned Company

Pump **Specification**

280-Series

1/2 hp Submersible Effluent Pumps





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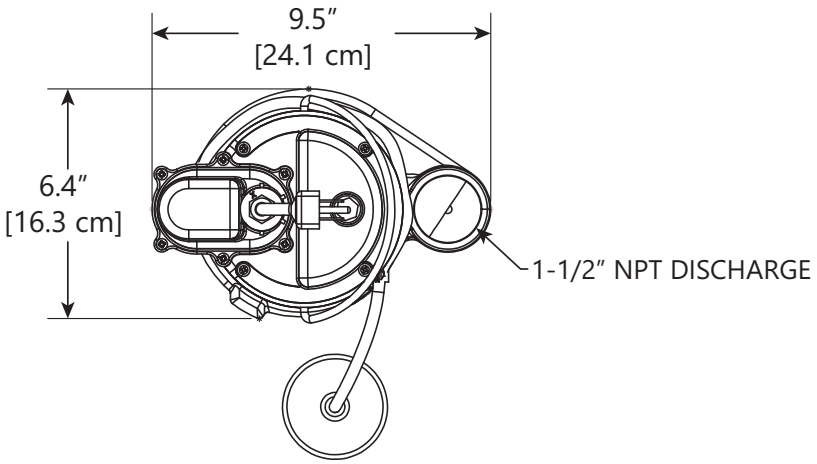
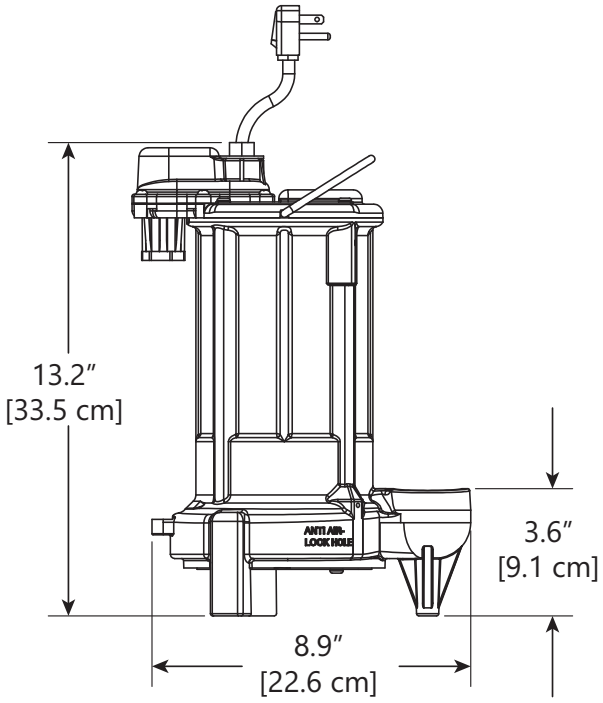
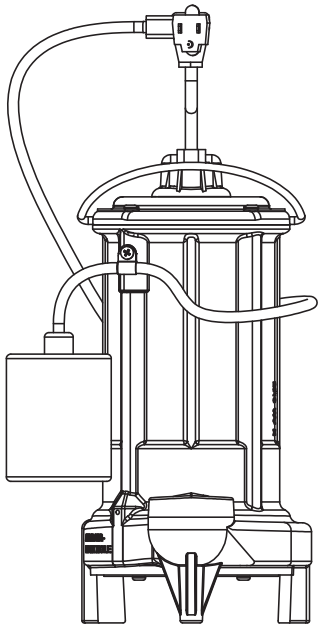
280-Series Dimensional Data



MANUAL VERSION



PIGGYBACK AUTOMATIC SHOWN



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280-Series Electrical Data

MODEL	HP	VOLTAGE	PHASE	FULL LOAD AMPS	LOCKED ROTOR AMPS	THERMAL OVERLOAD TEMP	STATOR WINDING CLASS	CORD LENGTH	DISCHARGE	AUTOMATIC
280	1/2	115	1	8.0	23	105°C / 221°F	B	10′	1-1/2″	NO
280HV	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	10′	1-1/2″	NO
280-2	1/2	115	1	8.0	23	105°C / 221°F	B	25′	1-1/2″	NO
280HV-2	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	25′	1-1/2″	NO
280-3	1/2	115	1	8.0	23	105°C / 221°F	B	35′	1-1/2″	NO
280HV-3	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	35′	1-1/2″	NO
280-5	1/2	115	1	8.0	23	105°C / 221°F	B	50′	1-1/2″	NO
280HV-5	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	50′	1-1/2″	NO
281	1/2	115	1	8.0	23	105°C / 221°F	B	10′	1-1/2″	YES, INTEGRAL FLOAT
281HV	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	10′	1-1/2″	YES, INTEGRAL FLOAT
281-2	1/2	115	1	8.0	23	105°C / 221°F	B	25′	1-1/2″	YES, INTEGRAL FLOAT
281HV-2	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	25′	1-1/2″	YES, INTEGRAL FLOAT
281-3	1/2	115	1	8.0	23	105°C / 221°F	B	35′	1-1/2″	YES, INTEGRAL FLOAT

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MODEL	HP	VOLTAGE	PHASE	FULL LOAD AMPS	LOCKED ROTOR AMPS	THERMAL OVERLOAD TEMP	STATOR WINDING CLASS	CORD LENGTH	DISCHARGE	AUTOMATIC
281HV-3	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	35′	1-1/2″	YES, INTEGRAL FLOAT
281-5	1/2	115	1	8.0	23	105°C / 221°F	B	50′	1-1/2″	YES, INTEGRAL FLOAT
281HV-5	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	50′	1-1/2″	YES, INTEGRAL FLOAT
283	1/2	115	1	8.0	23	105°C / 221°F	B	10′	1-1/2″	YES, PIGGYBACK FLOAT
283HV	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	10′	1-1/2″	YES, PIGGYBACK FLOAT
283-2	1/2	115	1	8.0	23	105°C / 221°F	B	25′	1-1/2″	YES, PIGGYBACK FLOAT
283HV-2	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	25′	1-1/2″	YES, PIGGYBACK FLOAT
283-3	1/2	115	1	8.0	23	105°C / 221°F	B	35′	1-1/2″	YES, PIGGYBACK FLOAT
283HV-3	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	35′	1-1/2″	YES, PIGGYBACK FLOAT
287	1/2	115	1	8.0	23	105°C / 221°F	B	10′	1-1/2″	YES, VERTICAL MAGNETIC FLOAT
287HV	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	10′	1-1/2″	YES, VERTICAL MAGNETIC FLOAT
287-2	1/2	115	1	8.0	23	105°C / 221°F	B	25′	1-1/2″	YES, VERTICAL MAGNETIC FLOAT
287HV-2	1/2	208–230	1	4.0	12.5	105°C / 221°F	B	25′	1-1/2″	YES, VERTICAL MAGNETIC FLOAT

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280-Series Technical Data

IMPELLER	VORTEX ENGINEERED POLYMER
SOLIDS HANDLING SIZE	3/4"
PAINT	POWDER COAT
MAX LIQUID TEMP	
CONTINUOUS DUTY	40°C / 104°F
INTERMITTENT	60°C / 140°F
MAX STATOR TEMP	CLASS B 130°C / 266°F
THERMAL OVERLOAD	105°C / 221°F
POWER CORD TYPE	
10' AND 25'	SJTW
35' AND 50'	SJTOOW
MOTOR HOUSING / VOLUTE	CLASS 25 CAST IRON
SHAFT	STAINLESS
HARDWARE	STAINLESS
O-RINGS	BUNA-N
SEAL	CARBON CERAMIC
WEIGHT	13.6 KG / 30 LBS
CERTIFICATIONS	SSPMA, cCSAus

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280-Series Specifications

1.01 GENERAL

The contractor shall provide labor, material, equipment, and incidentals required to provide _____ (QTY) centrifugal pumps as specified herein. The pump models covered in this specification are 280-Series single-phase pumps. The pump furnished for this application shall be model _____ as manufactured by Liberty Pumps.

2.01 OPERATING CONDITIONS

Each submersible pump shall be rated at 1/2 hp, _____ volts, 1-phase, 60 Hz, 3450 RPM. The unit shall produce _____ GPM at _____ feet of total dynamic head.

The submersible pump shall be capable of handling effluent with 3/4" solids handling capability. The submersible pump shall have a shut-off head of 37 feet and a maximum flow of 62 GPM @ 5 feet of total dynamic head.

The pump shall be controlled with:

_____ A piggyback style on/off float switch

_____ An integrally wired on/off float switch

_____ A vertical mechanical float (VMF) type on/off switch

_____ A NEMA 4X outdoor simplex control panel with three float switches including a high water alarm

_____ A NEMA 1 indoor simplex control panel with three float switches including a high water alarm

_____ A NEMA 4X outdoor simplex control panel with four float switches including a high water alarm

_____ A NEMA 1 indoor simplex control panel with four float switches including a high water alarm

_____ A NEMA 4X outdoor duplex control panel with three float switches including a high water alarm

_____ A NEMA 1 indoor duplex control panel with three float switches including a high water alarm

_____ A NEMA 4X outdoor duplex control panel with four float switches including a high water alarm

_____ A NEMA 1 indoor duplex control panel with four float switches including a high water alarm

3.01 CONSTRUCTION

Each submersible pump shall be equal to the $_{C}$CSA$_{US}$ Certified 280-Series pumps as manufactured by Liberty Pumps, Bergen NY. The castings shall be constructed of class 25 cast iron. The motor housing shall be oil-filled to dissipate heat. Air-filled motors shall not be considered equal since they do not properly dissipate heat from the motor. All mating parts shall be machined and sealed with a Buna-N O-ring. All fasteners exposed to the liquid shall be stainless steel. The motor shall be protected on the top side with sealed cord entry plate with molded pins to conduct electricity eliminating the ability of water to enter internally through the cord. The motor shall be protected on the lower side with a unitized carbon ceramic seal with stainless steel housings and spring. The pump shall be furnished with stainless steel handle.

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4.01 ELECTRICAL POWER CORD

The submersible pump shall be supplied with multiconductor power cord as per ***Electrical Data*** table. It shall be cord type SJTW, or SJTOOW capable of continued exposure to the pumped liquid. The power cord shall be sized for the rated full load amps of the pump in accordance with the National Electric Code. The power cord shall not enter the motor housing directly but will conduct electricity to the motor by means of a watertight compression fitting cord plate assembly with molded pins to conduct electricity. This will eliminate the ability of water to enter internally through the cord by means of a damaged or wicking cord.

5.01 MOTORS

Motors shall be oil-filled, permanent split capacitor, class B insulated NEMA B design, rated for continuous duty. At maximum load the winding temperature shall not exceed 130°C unsubmerged. Since air-filled motors are not capable of dissipating heat they shall not be considered equal. The pump motor shall have an integral thermal overload switch in the windings for protecting the motor. The capacitor circuit shall be mounted internally in the pump.

6.01 BEARINGS AND SHAFT

An upper and lower ball bearing shall be required. The ball bearing shall be a single ball/race type bearing. Both bearings shall be permanently lubricated by the oil that fills the motor housing. The motor shaft shall be made of 300 or 400 series stainless steel and have a minimum diameter of 0.311".

7.01 SEALS

The pump shall have a unitized carbon ceramic seal with stainless steel housings and spring equal to Crane Type 6A. The motor plate/ housing interface shall be sealed with a Buna-N O-ring.

8.01 IMPELLER

The impeller shall be vortex style made of an engineered polymer with pump out vanes on the back shroud to keep debris away from the seal area. It shall be threaded to the motor shaft.

9.01 CONTROLS

All pumps can be supplied with a CSA and UL approved VMF type switch, an integrally wired wide-angle tilt float switch, or piggyback type wide-angle tilt float switch. The piggyback style switches are equipped with a plug that allows the pump to be operated manually without the removal of the pump in the event that a switch becomes inoperable. Manual pumps are operable by means of a pump control panel.

10.01 PAINT

The exterior of the casting shall be protected with powder coat paint.

11.01 SUPPORT

The pump shall have cast iron support legs enabling it to be a freestanding unit. The legs will be high enough to allow 3/4" solids to enter the volute.

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12.01 SERVICEABILITY

Components required for the repair of the pump shall be shipped within a period of 24 hours.

13.01 FACTORY ASSEMBLED TANK SYSTEMS WITH GUIDE RAIL AND QUICK DISCONNECT DISCHARGE

_____ Factory mounted guide rail system with pump suspended by means of bolt-on quick disconnect which is sealed by means of nitrile grommets or O-rings. Discharge piping shall be Schedule 80 PVC and furnished with a PVC check valve and shut-off ball valve. The tank shall be wound fiberglass or roto-molded plastic. An inlet hub shall be provided with fiberglass systems.

_____ Stainless steel guide rail

_____ Zinc plated steel guide rail

_____ Diameter of basin in inches

_____ Height of basin in inches

_____ Distance from top of tank to discharge pipe outlet in inches

_____ Fiberglass cover

_____ Structural foam polymer cover

_____ Steel cover

_____ Simplex system with outdoor panel and alarm

_____ Duplex system with outdoor panel and alarm

_____ Separate outdoor alarm

_____ Remote outdoor alarm

14.01 TESTING

The pump shall have a ground continuity check and the motor chamber shall be hi-potted to test for electrical integrity, moisture content and insulation defects. The motor and volute housing shall be pressurized and an air leak decay test performed to ensure integrity of the motor housing. The pump shall be run at rated voltage to verify current, performance curve and monitor operation.

15.01 QUALITY CONTROL

The pump shall be manufactured in an ISO 9001 certified facility.

16.01 WARRANTY

Standard limited warranty shall be 3 years.

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