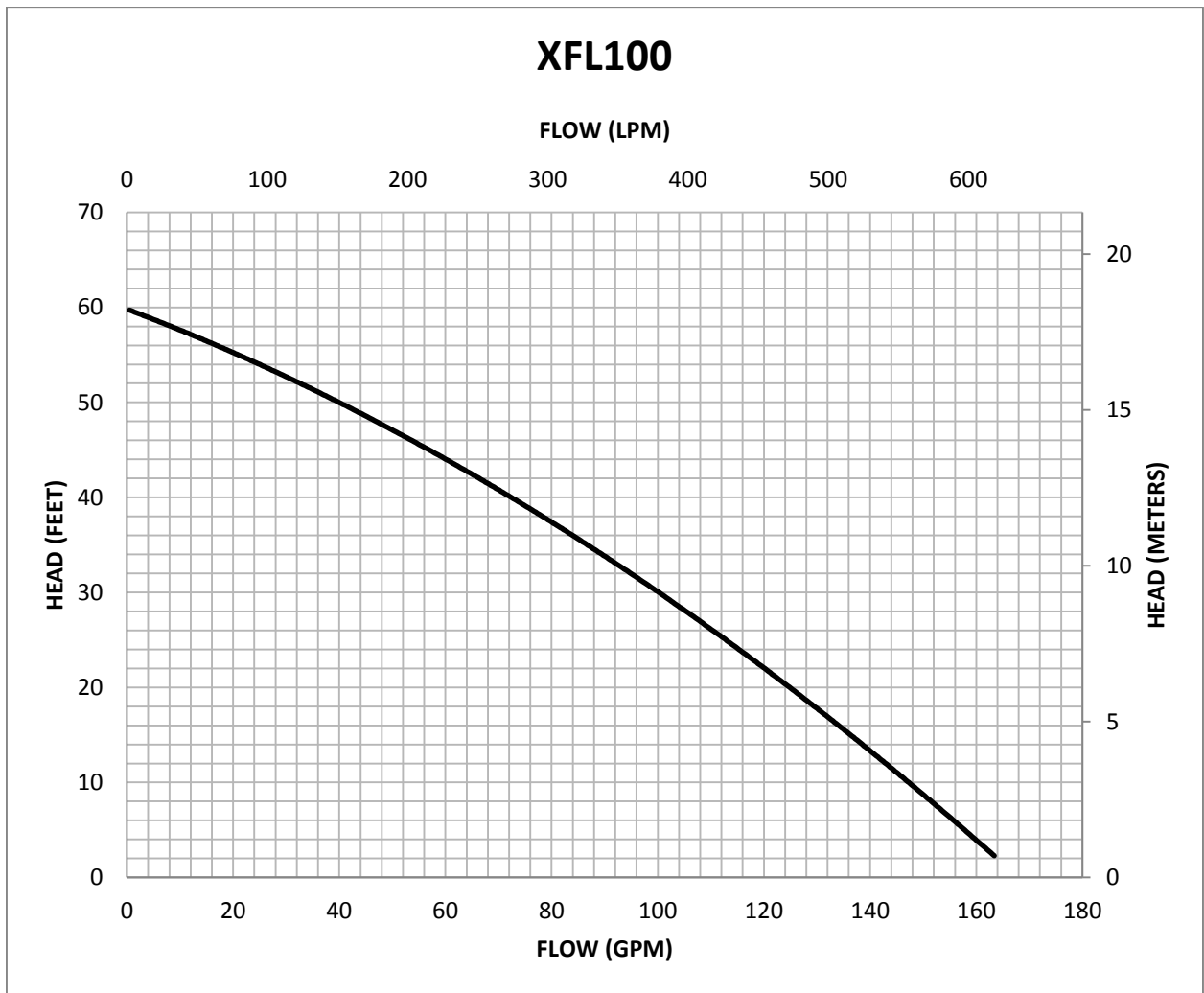
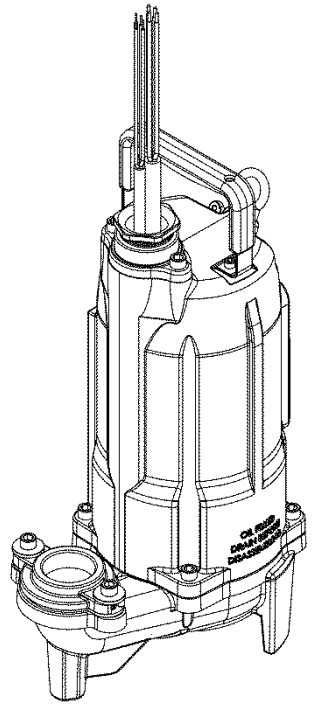


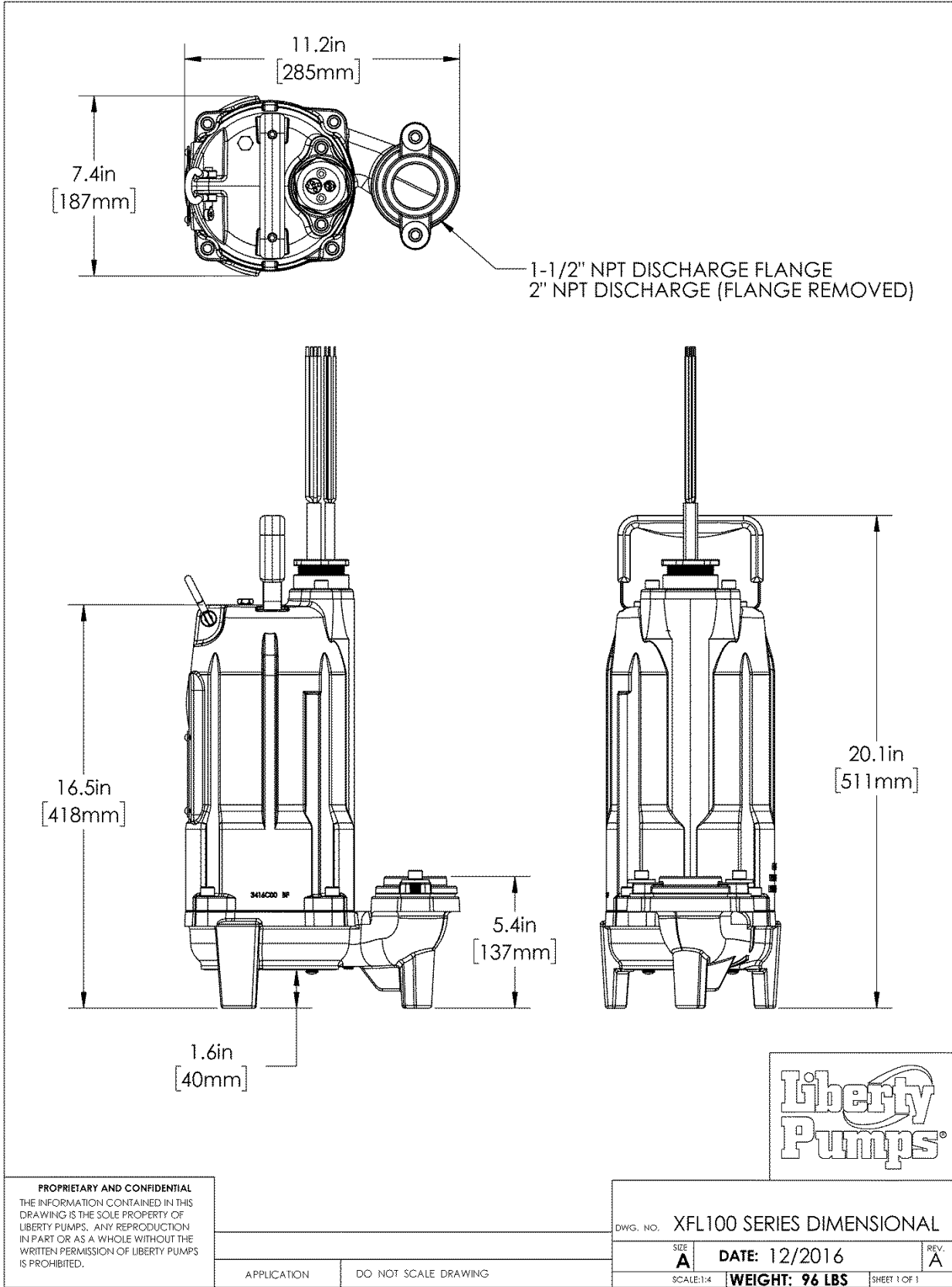


# Pump Specifications

**XFL100 Series**  
**1 HP Submersible Effluent Pump**  
**For Hazardous Locations:**  
**Class 1, Division 1, Groups C & D;**  
**Class 1, Zone 1, Groups IIA & IIB**



## XFL100-Series Dimensional Data



## XFL100-Series Electrical Data

MODEL	HP	IMPELLER	VOLTAGE	PHASE	FULL LOAD AMPS	LOCKED ROTOR AMPS	THERMAL OVERLOAD TEMP	STATOR WINDING CLASS	CORD LENGTH (FT)	DISCHARGE NPT
XFL102M-2	1	CAST IRON	208/230	1	11.5	39	120°C/239°F	F	25	1-1/2" & 2"
XFL102M-3	1	CAST IRON	208/230	1	11.5	39	120°C/239°F	F	35	1-1/2" & 2"
XFL102M-5	1	CAST IRON	208/230	1	11.5	39	120°C/239°F	F	50	1-1/2" & 2"
XFL103M-2	1	CAST IRON	208/230	3	8	33.5	105°C/221°F	F	25	1-1/2" & 2"
XFL103M-3	1	CAST IRON	208/230	3	8	33.5	105°C/221°F	F	35	1-1/2" & 2"
XFL103M-5	1	CAST IRON	208/230	3	8	33.5	105°C/221°F	F	50	1-1/2" & 2"
XFL104M-2	1	CAST IRON	440-480	3	4	30	105°C/221°F	F	25	1-1/2" & 2"
XFL104M-3	1	CAST IRON	440-480	3	4	30	105°C/221°F	F	35	1-1/2" & 2"
XFL104M-5	1	CAST IRON	440-480	3	4	30	105°C/221°F	F	50	1-1/2" & 2"
XFL105M-2	1	CAST IRON	575	3	3	12.8	105°C/221°F	F	25	1-1/2" & 2"
XFL105M-3	1	CAST IRON	575	3	3	12.8	105°C/221°F	F	35	1-1/2" & 2"
XFL105M-5	1	CAST IRON	575	3	3	12.8	105°C/221°F	F	50	1-1/2" & 2"
XFL102BM-2	1	BRONZE	208/230	1	11.5	39	120°C/239°F	F	25	1-1/2" & 2"
XFL102BM-3	1	BRONZE	208/230	1	11.5	39	120°C/239°F	F	35	1-1/2" & 2"
XFL102BM-5	1	BRONZE	208/230	1	11.5	39	120°C/239°F	F	50	1-1/2" & 2"
XFL103BM-2	1	BRONZE	208/230	3	8	33.5	105°C/221°F	F	25	1-1/2" & 2"
XFL103BM-3	1	BRONZE	208/230	3	8	33.5	105°C/221°F	F	35	1-1/2" & 2"
XFL103BM-5	1	BRONZE	208/230	3	8	33.5	105°C/221°F	F	50	1-1/2" & 2"
XFL104BM-2	1	BRONZE	440-480	3	4	30	105°C/221°F	F	25	1-1/2" & 2"
XFL104BM-3	1	BRONZE	440-480	3	4	30	105°C/221°F	F	35	1-1/2" & 2"
XFL104BM-5	1	BRONZE	440-480	3	4	30	105°C/221°F	F	50	1-1/2" & 2"
XFL105BM-2	1	BRONZE	575	3	3	12.8	105°C/221°F	F	25	1-1/2" & 2"
XFL105BM-3	1	BRONZE	575	3	3	12.8	105°C/221°F	F	35	1-1/2" & 2"
XFL105BM-5	1	BRONZE	575	3	3	12.8	105°C/221°F	F	50	1-1/2" & 2"

LIBERTY PUMPS CONTROL INFORMATION				
PUMP MODEL	CAPACITOR	SIMPLEX PANEL	DUPLEX PANEL	CAP KIT
XFL102	40µF	ISS24LC1=3-5	ISD24LC2=3-5	K001585
XFL103	N/A	ISS34=3-191-5	ISD34=3-191-5	N/A
XFL104	N/A	ISS34=3-171-5	ISD34=3-171-5	N/A
XFL105	N/A	ISS54=3-151-5	ISD54=3-151-5	N/A

Note: Liberty Pumps ISS and ISD Series control panels include intrinsically safe float circuits for use with pumps in hazardous locations

## XFL100-Series Technical Data

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IMPELLER	7 VANE CLASS 25 CAST IRON OR BRONZE
SOLIDS HANDLING SIZE	3/4"
PAINT	POWDER COAT
MAX LIQUID TEMP	40°C 104°F
MIN LIQUID DEPTH	9 IN.
MAX STATOR TEMP	130°C 266°F
THERMAL OVERLOAD	Single Phase: 120°C/239°F
	Three Phase: 105°C 221°F
POWER CORD TYPE	SOOW
MOTOR HOUSING	CLASS 30 CAST IRON
VOLUTE	CLASS 30 CAST IRON
SHAFT	STAINLESS
HARDWARE	STAINLESS
O RINGS	BUNA - N
MECHANICAL SEAL UPPER	UNITIZED - SILICON CARBIDE / SILICON CARBIDE
MECHANICAL SEAL LOWER	2 PIECE – SILICON CARBIDE / SILICON CARBIDE
MIN BEARING LIFE	50,000 HRS
WEIGHT	96 LBS

## XFL100-Series Specifications

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### 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 Series XFL100 single phase or three 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 \_\_\_\_ hp \_\_\_\_ volts \_\_\_\_ phase 60 Hz. 3450 RPM. The unit shall produce \_\_\_\_ G.P.M. at \_\_\_\_ feet of total dynamic head.

The submersible pump shall be capable of handling residential effluent with 3/4" solid handling capability. The submersible pump shall have the following hydraulic performance:

XFL100: a shut-off head of 60 feet and a maximum flow of 155 GPM @ 5 feet of total dynamic head.

The pump shall be controlled with:

\_\_\_\_\_ A NEMA 4X outdoor simplex control panel with three float switches and a high water alarm.

\_\_\_\_\_ A NEMA 1 indoor simplex control panel with three float switches and a high water alarm.

\_\_\_\_\_ A NEMA 4X outdoor duplex control panel with three float switches and a high water alarm.

\_\_\_\_\_ A NEMA 1 indoor duplex control panel with three float switches and a high water alarm.

\_\_\_\_\_ A NEMA 4X outdoor duplex control panel with four float switches and a high water alarm.

\_\_\_\_\_ A NEMA 1 indoor duplex control panel with four float switches and a high water alarm.

\*Note: Control panels must include intrinsically safe float circuits when pumps are installed in hazardous locations.

### 3.01 CONSTRUCTION:



Each centrifugal effluent pump shall be equal to the c<sup>US</sup> certified XFL100 Series pumps manufactured by Liberty Pumps, Bergen NY. The castings shall be constructed of class 30 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 Buna-N O-rings. All fasteners exposed to the liquid shall be stainless steel. The upper and lower bearing of the motor shall be capable of handling all radial and thrust loads. The pump is protected with a dual seal configuration with an oil cavity between the two seals. A leak sensor is housed in this chamber to detect the presence of water and will activate an alarm at the control panel indicating service is required. Both seals are silicon carbide / silicon carbide with stainless steel housings and spring, however the lower seal is of a two piece design to facilitate service.

### 4.01 ELECTRICAL POWER CORD

The submersible pump shall be supplied with 25, 35, or 50 feet of a multi-conductor cord of type SOOW The power cord shall be sized for the rated full load amps of the pump in accordance with the National Electric Code. A separate control cord SOOW of equal length will also exit the pump. Both cords are located within a casting configured for 1-1/2" conduit if the application requires. The cords are secured with a rubber seal ring and potted – the individual strands are exposed to the epoxy to prevent any wicking through the conductors.

### 5.01 MOTORS

Single phase motors shall be oil filled, permanent split capacitor, class F insulated, NEMA B design, and rated for continuous duty. Three phase motors shall be oil filled, class F insulated, NEMA B design, and rated for continuous duty. At maximum load the winding temperature shall not exceed 130 degrees C unsubmerged. Since air filled motors are not capable of dissipating heat they shall not be considered equal. Single phase pump motors shall have an integral thermal / current overload switch in the windings for protecting the motor. A capacitor is required and shall be mounted in the control panel. Three phase motors shall have a thermal overload device mounted on the windings which is connected to a motor control relay located in the control panel.

### 6.01 BEARINGS AND SHAFT

Upper and lower ball bearings shall be required. The bearings shall be a single ball / race type bearing. Both bearings shall be permanently lubricated by the oil which fills the motor housing. The motor shaft shall be made of 300 series stainless steel and have a minimum diameter of .625".

### 7.01 SEALS

The pump shall have two shaft seals with an oil chamber between them. A leak detection probe is positioned in the oil chamber and continuously monitors for water that would indicate the lower seal has failed. The lower seal is a two piece design and can be serviced in the field. The upper is a unitized design, both seals are silicon carbide / silicon carbide seal faces with stainless steel housings and spring. All other seals are of an O-ring design of Buna-N material.

### 8.01 IMPELLER

The impeller shall be a class 25 cast iron or bronze, with pump out vanes on the back shroud to keep debris away from the seal area. It shall be threaded onto the motor shaft.

### 9.01 CONTROLS

All the XFL100 series pumps require a control panel. Single phase units utilize a Permanent Split Capacitor, PSC, type motor and require a specific run capacitor. Three phase motor are equipped with a thermal overload that must be connected in the control panel to protect against overheating. Control panels must include intrinsically safe float circuits when pumps are installed in hazardous locations.

### 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 free standing unit. The legs will be high enough to allow 3/4" solids to enter the volute.

### 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

\_\_\_\_\_ Guide factory mounted rail system with pump suspended by means of bolt on quick disconnect which is sealed by means of nitrile grommets or O-rings. The Discharge piping shall be schedule 80 PVC and furnished with a check valve and PVC shut-off ball valve. The Tank shall be wound fiberglass or rotomolded plastic. An inlet hub shall be provided with the fiberglass systems.

\_\_\_\_\_ Stainless steel Guide Rail

\_\_\_\_\_ Zinc plated steel Guide Rail

\_\_\_\_\_ "diameter of basin size

\_\_\_\_\_ "height of basin size

\_\_\_\_\_ "distance from top of tank to discharge pipe outlet

\_\_\_\_\_ Fiberglass cover

\_\_\_\_\_ Structural foam polymer cover

\_\_\_\_\_ Steel cover

\_\_\_\_\_ Simplex System with Outdoor panel and alarm

\_\_\_\_\_ Duplex System with Outdoor panel and alarm

\_\_\_\_\_ Simplex System with Indoor panel and alarm

\_\_\_\_\_ Duplex System with Indoor 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 is performed to ensure integrity of the motor enclosure. The pump shall be run, voltage and current monitored, and evaluated for noise or other malfunction.

### 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.