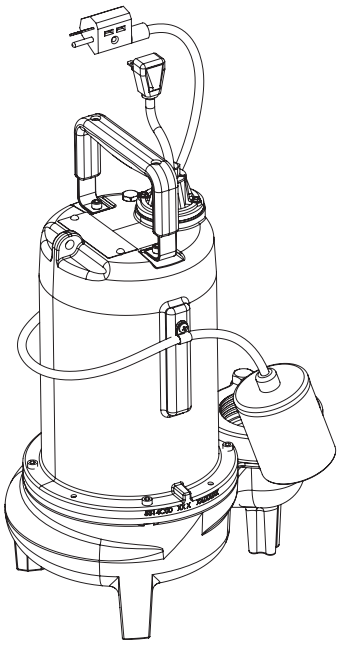
Liberty Pumps®

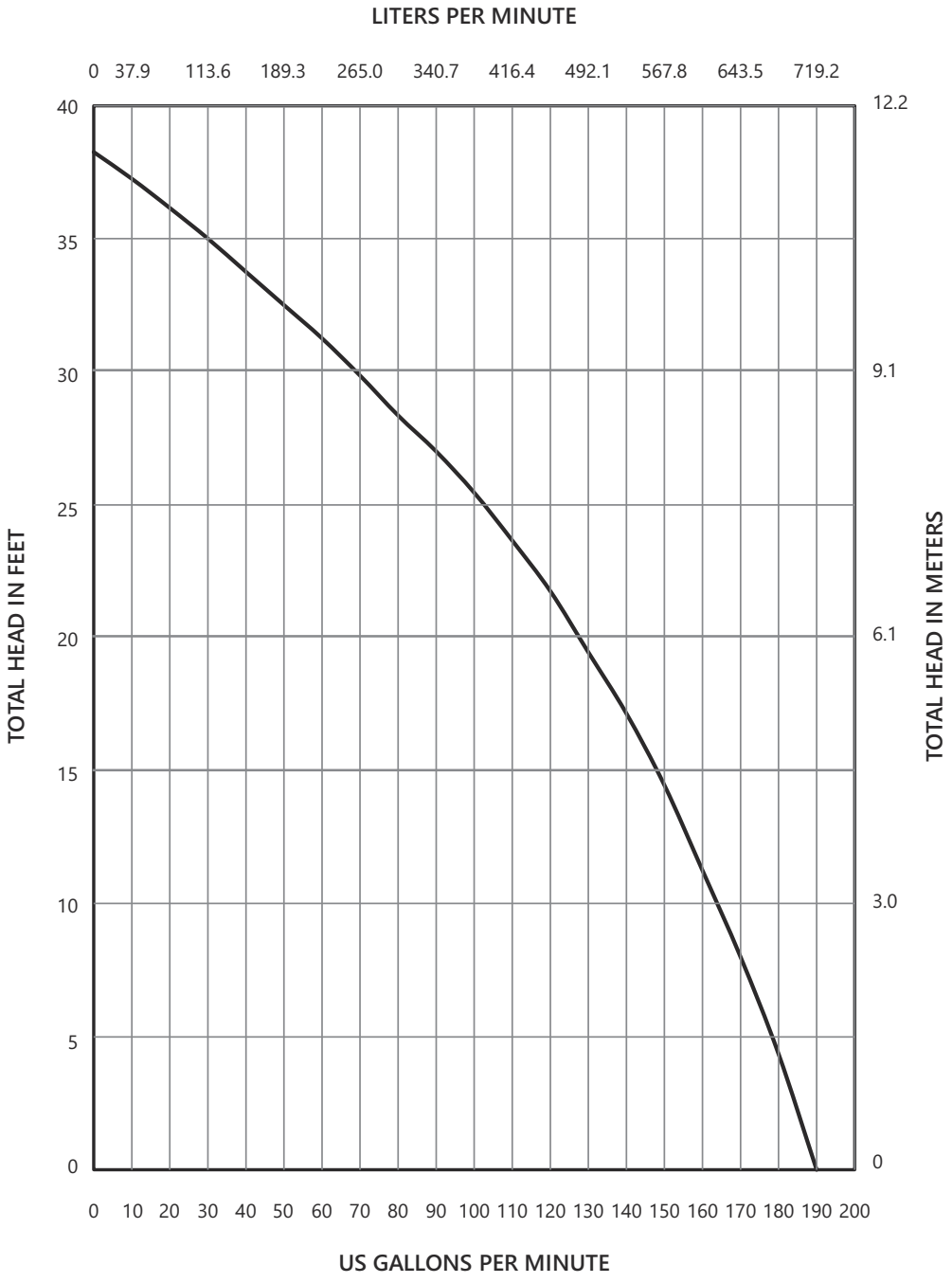
A Family and Employee Owned Company

Pump **Specification**

LE100-Series

1 hp Submersible Sewage Pumps





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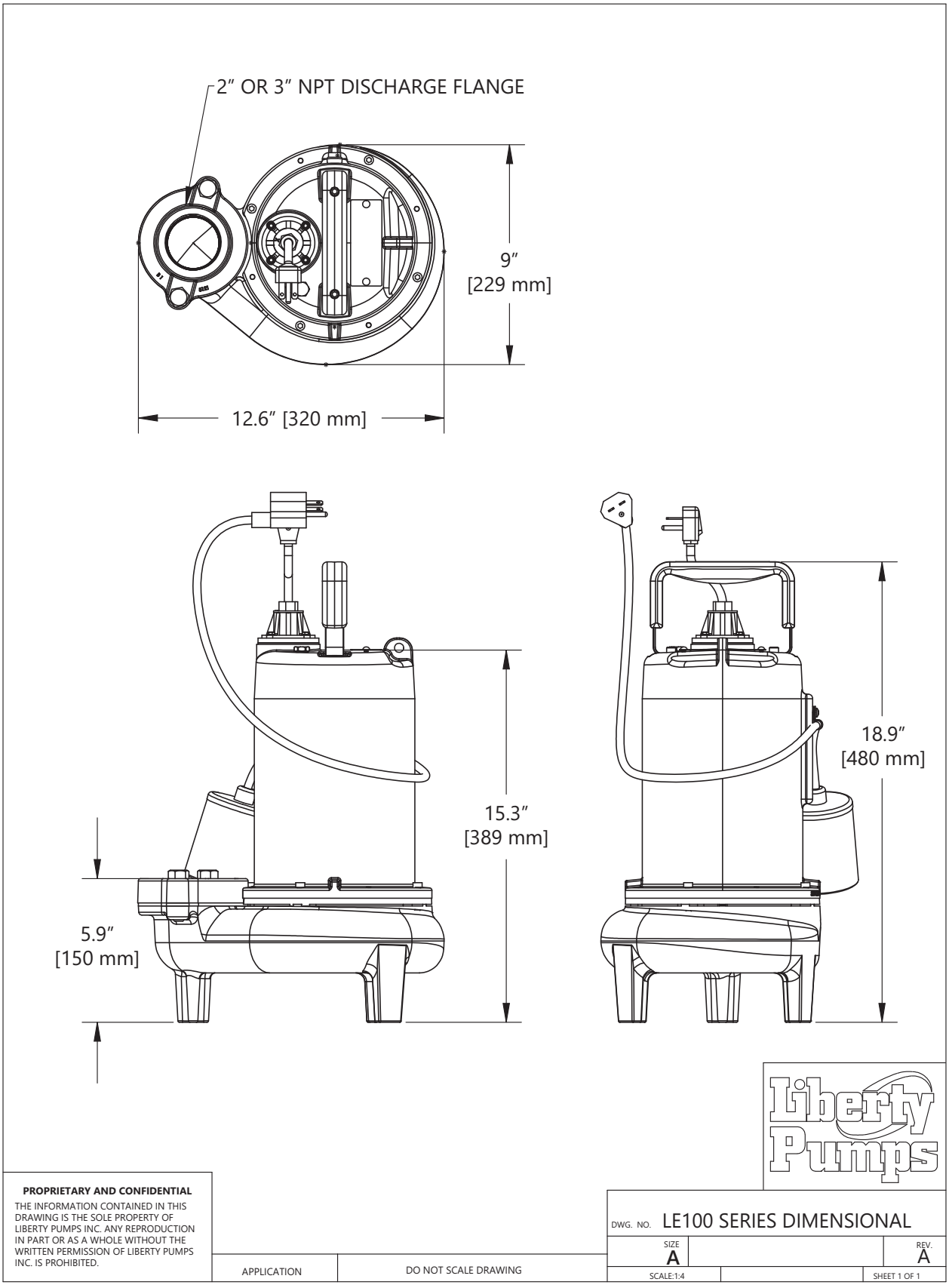
LE100-Series Dimensional Data



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LE100-Series Electrical Data

MODEL	HP	VOLTAGE	PHASE	SF	FULL LOAD AMPS	LOCKED ROTOR AMPS	THERMAL OVERLOAD TEMP	STATOR WINDING CLASS	CORD LENGTH [FT]	DISCHARGE	AUTOMATIC
LE102A2	1	208–230	1	1.00	8	22.3	105°C	B	10	2" FLANGED	YES
LE102A2-2	1	208–230	1	1.00	8	22.3	105°C	B	25	2" FLANGED	YES
LE102A2-3	1	208–230	1	1.00	8	22.3	105°C	B	35	2" FLANGED	YES
LE102M2	1	208–230	1	1.00	8	22.3	105°C	B	10	2" FLANGED	NO
LE102M2-2	1	208–230	1	1.00	8	22.3	105°C	B	25	2" FLANGED	NO
LE102M2-3	1	208–230	1	1.00	8	22.3	105°C	B	35	2" FLANGED	NO
LE102A3	1	208–230	1	1.00	8	22.3	105°C	B	10	3" FLANGED	YES
LE102A3-2	1	208–230	1	1.00	8	22.3	105°C	B	25	3" FLANGED	YES
LE102A3-3	1	208–230	1	1.00	8	22.3	105°C	B	35	3" FLANGED	YES
LE102M3	1	208–230	1	1.00	8	22.3	105°C	B	10	3" FLANGED	NO
LE102M3-2	1	208–230	1	1.00	8	22.3	105°C	B	25	3" FLANGED	NO
LE102M3-3	1	208–230	1	1.00	8	22.3	105°C	B	35	3" FLANGED	NO
LE103M2-2	1	208–230	3	1.00	5.3	18.3	N/A	B	25	2" FLANGED	NO
LE103M2-3	1	208–230	3	1.00	5.3	18.3	N/A	B	35	2" FLANGED	NO
LE103M3-2	1	208–230	3	1.00	5.3	18.3	N/A	B	25	3" FLANGED	NO
LE103M3-3	1	208–230	3	1.00	5.3	18.3	N/A	B	35	3" FLANGED	NO
LE104M2-2	1	440–480	3	1.00	2.5	9.2	N/A	B	25	2" FLANGED	NO
LE104M2-3	1	440–480	3	1.00	2.5	9.2	N/A	B	35	2" FLANGED	NO
LE104M3-2	1	440–480	3	1.00	2.5	9.2	N/A	B	25	3" FLANGED	NO
LE104M3-3	1	440–480	3	1.00	2.5	9.2	N/A	B	35	3" FLANGED	NO
LE105M2-2	1	575	3	1.00	1.9	7.1	N/A	B	25	2" FLANGED	NO
LE105M2-3	1	575	3	1.00	1.9	7.1	N/A	B	35	2" FLANGED	NO
LE105M3-2	1	575	3	1.00	1.9	7.1	N/A	B	25	3" FLANGED	NO
LE105M3-3	1	575	3	1.00	1.9	7.1	N/A	B	35	3" FLANGED	NO

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LE100-Series Control Panel Information

PUMP SERIES	SX-SERIES SIMPLEX PANEL NEMA 1	SX-SERIES SIMPLEX PANEL NEMA 4X	AE-SERIES DUPLEX PANEL NEMA 1	AE-SERIES DUPLEX PANEL NEMA 4X	IPS-SERIES SIMPLEX PANEL	IPD-SERIES DUPLEX PANEL
LE102	SXL21=3	SXL24=3	AE21L=3 or AE21L=4	AE24L=3 or AE24L=4	IPS-24L	IPD-24L
LE103	N/A	SX34=3-171	N/A	AE34=3-171 or AE34=4-171	IPS-34-171	IPD-34-171
LE104	N/A	SX34=3-141	N/A	AE34=3-141 or AE34=4-141	IPS-34-141	IPD-34-141
LE105	N/A	SX54=3-121	N/A	AE54=3-121 or AE54=4-121	IPS-54-121	IPD-54-121

LE100-Series Technical Data

IMPELLER	2 VANE, SEMI-OPEN, CLASS 25 CAST IRON
SOLIDS HANDLING SIZE	2"
PAINT	POWDER COATING
MAX LIQUID TEMP	40°C / 104°F CONTINUOUS DUTY
MAX STATOR TEMP	130°C / 266°F
THERMAL OVERLOAD	105°C / 221°F (**1-PHASE**)
POWER CORD TYPE	SJTW (**1-PHASE**)
	SEOOW (**3-PHASE)**
MOTOR HOUSING	CLASS 25 CAST IRON
VOLUTE	CLASS 25 CAST IRON
SHAFT	STAINLESS
HARDWARE	STAINLESS
O-RINGS	BUNA-N
MECHANICAL SEAL	CARBON CERAMIC (**1-PHASE)**
	UNITIZED GRAPHITE IMPREGNATED SILICON CARBIDE (**3-PHASE)**
MIN BEARING LIFE	50,000 HRS
WEIGHT	29 KG / 64 LBS
CERTIFICATIONS	SSPMA, cCSAus

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LE100-Series Specifications

1.01 GENERAL

The contractor shall provide labor, material, equipment, and incidentals required to provide ___1___ (QTY) centrifugal sewage pumps as specified herein. The pump models covered in this specification are LE100-Series single or three-phase sewage pumps. The pump furnished for this application shall be model ___LE102M2-2___ as manufactured by Liberty Pumps.

2.01 OPERATING CONDITIONS

Each submersible pump shall be rated at 1 hp, ___230___ volts, ___single___ phase, 60 Hz, 1725 RPM. The unit shall produce _____ GPM at _____ feet of total dynamic head.

The submersible pump shall be capable of handling residential sewage with 2" solids handling capability. The submersible pump shall have a shut-off head of 39 feet and a maximum flow of 160 GPM @ 12 feet of total dynamic head.

The pump shall be controlled with:

_____ A piggyback style ON/OFF float switch

__X__ 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 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 centrifugal sewage pump shall be equal to the C SP US Certified LE100-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 carbon ceramic (1-phase) or unitized graphite impregnated silicon carbide (3-phase) hard face seal with stainless steel housings and spring. The upper and lower bearing shall be capable of handling all radial thrust loads. The pump shall be furnished with a stainless steel handle.

4.01 ELECTRICAL POWER CORD

The submersible pump shall be supplied with 10, 25 or 35 feet of multi-conductor power cord, as per ***Electrical Data*** table. It shall be cord type SJTW (1-phase) or SEOOW (3-phase), 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 cable 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.

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5.01 MOTORS

Single-phase motors shall be oil-filled, permanent split capacitor, class B insulated NEMA B design, rated for continuous duty. Three-phase motors shall be oil-filled, 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. Single-phase pump motors shall have an integral thermal overload switch in the windings for protecting the motor. Three-phase motors shall be used with an appropriate controller with integral overload protection. The capacitor circuit shall be mounted internally in the pump on single-phase units.

6.01 BEARINGS AND SHAFT

An upper radial and lower thrust bearing shall be required. The bearings 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 0.625".

7.01 SEALS

Single-phase pumps shall have a carbon ceramic seal with stainless steel housings and spring equal to Crane Type 6A. Three-phase pumps shall have unitized graphite impregnated silicon carbide hard face seals. The motor plate/housing interface shall be sealed with a Buna-N O-ring.

8.01 IMPELLER

The impeller shall be a class 25 iron 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 single-phase units can be supplied with CSA and UL approved automatic wide angle tilt float switches. The switches shall be equipped with piggyback style 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 2" 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.

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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. The discharge piping shall be Schedule 80 PVC and furnished with a check valve and a PVC shut-off ball valve. The tank shall be wound fiberglass or roto-molded 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

_____ Separate indoor alarm

_____ Remote indoor 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, voltage current monitored, and checked 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.

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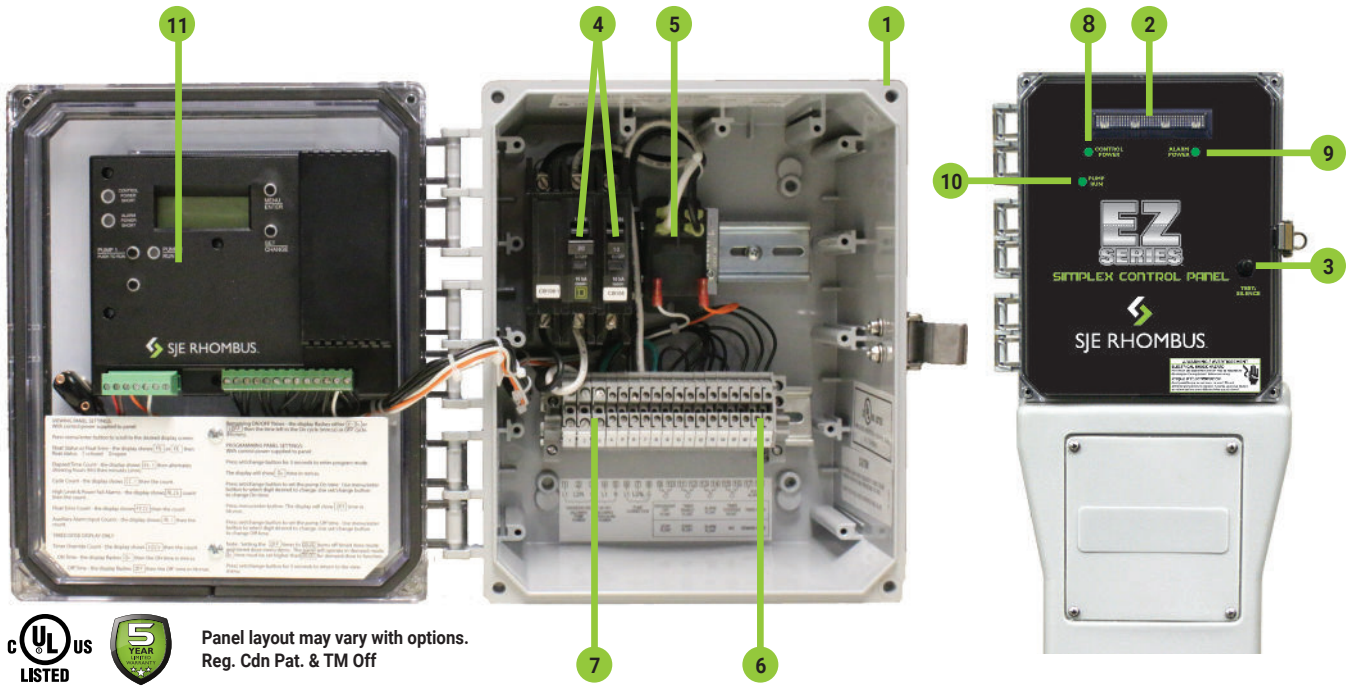
EZ SERIES® SINGLE PHASE SIMPLEX

Single Phase, Simplex Demand Dose or Timed Dose Float Controlled System for Pump Control and System Monitoring



c UL us LISTED

5 YEAR LIMITED WARRANTY

Panel layout may vary with options.
Reg. Cdn Pat. & TM Off

The EZ Series® simplex control panel is designed to control one 120, 208, 240 VAC single phase pump in water and sewage installations.

The EZ Series® simplex control panel features a backlit LCD display on the inside of the front cover for programming and system monitoring, including: float status, elapsed time pump run, cycle counter, alarm counts (high water/power fail), float error count, auxiliary alarm counter, timer override count (TD only).

The panel configuration can be easily converted in the field to either a timed dose or demand dose.

Optional mounting post has removable access door for easy wiring. The post can be mounted in the ground directly, over a 4x4, or conduit. This panel is available with optional duo alarm for local code compliance; and optional EZconnex® float connection system.

COMPONENTS

1. Enclosure base measures 10 x 8 x 6 inches (25.4 x 20.32 x 15.24 cm); NEMA 4X enclosure (ultraviolet stabilized thermoplastic with removable mounting feet for outdoor or indoor use) includes locking latch as standard
2. Red alarm beacon provides visual check of alarm condition
3. Exterior Alarm Test/Silence switch allows horn and light to be tested and horn to be silenced in an alarm condition; alarm automatically resets once alarm condition is cleared
4. Two circuit breakers: one for pump power; another for control and alarm power
5. Power relay controls pump by switching electrical lines
6. Float connection terminal block with auxiliary alarm contact
7. Incoming control/alarm power & pump power terminal block
8. Control Power indicator light
9. Alarm Power indicator light
10. Pump Run indicator light
11. Simplex controller (touch safe housing) for pump control:
    a. Backlit LCD display shows system information including: pump elapsed time (hh:mm), pump events (cycles), and alarm condition (counts)
    b. Menu/Enter button used for viewing panel settings
    c. Set/Change button used for programming panel settings
    d. Pump Push To Run momentary switch - pump activates when pressed
    e. Control and Alarm Power - shorted condition indicators
12. Alarm horn provides audio warning of alarm condition (83 to 85 decibel rating - located inside panel on cover, not shown)

Note: Options, voltage, and amp range selected may change enclosure size and component layout.

Note: Schematic/Wiring Diagram and Pump Specification Label are located inside the panel.

SJE RHOMBUS®

9500047K Rev 07/23

EZ Series® - Single phase, simplex demand dose or timed dose float controlled system for pump control and system monitoring.

EZS	2	1	W	1	1	4	H	3A6A8AC10E15A
CONTROL PANEL	MODEL TYPE	ALARM PACKAGE	ENCLOSURE RATING	STARTING DEVICE	PUMP FULL LOAD AMPS	PUMP DISCONNECTS	FLOAT SWITCH APPLICATION	OPTIONS (LISTED BELOW)

CONTROL PANEL	✓	EZS		
MODEL TYPE		1	Simplex Timed Dose (includes Options 3A6A8AC10E15A as standard)	
		2	Simplex Demand Dose (includes Option 3A6A8AC10E15A as standard)	
ALARM PACKAGE	✓	1	Alarm Package (includes test/silence switch, fuse, red light, & horn)	
ENCLOSURE RATING	✓	W	Weatherproof, NEMA 4X (engineered thermoplastic)	
STARTING DEVICE		1	120/208/240V	
		9	120V only	
PUMP FULL LOAD AMPS		0	0 - 7 FLA	
		1	7 - 15 FLA	
		2	15 - 20 FLA	
PUMP DISCONNECTS	✓	4	Circuit Breaker(s) 120V (select STARTING DEVICE Option 9 above)	
			Circuit Breaker(s) 120/208/240V (select STARTING DEVICE Option 1 above)	
FLOAT SWITCH APPLICATION		H	Floats - Pump Down (select Option 17 below) Timed dose = timer enable and alarm / Demand dose = stop, start, and alarm	
		E	EZconnex® Float Switch System (select Option 33, 35 or 36 below)	Timed Dose
				Demand Dose
		X	No Floats	Timed Dose
				Demand Dose

PRICING WORKSHEET

EZS Simplex Base Price	_____
Alarm Package	_____
Enclosure Rating	_____
Starting Device	_____
Pump Full Load Amps	_____
Pump Disconnects	_____
Float Switch Application	_____
Total Options	_____
TOTAL LIST PRICE	_____

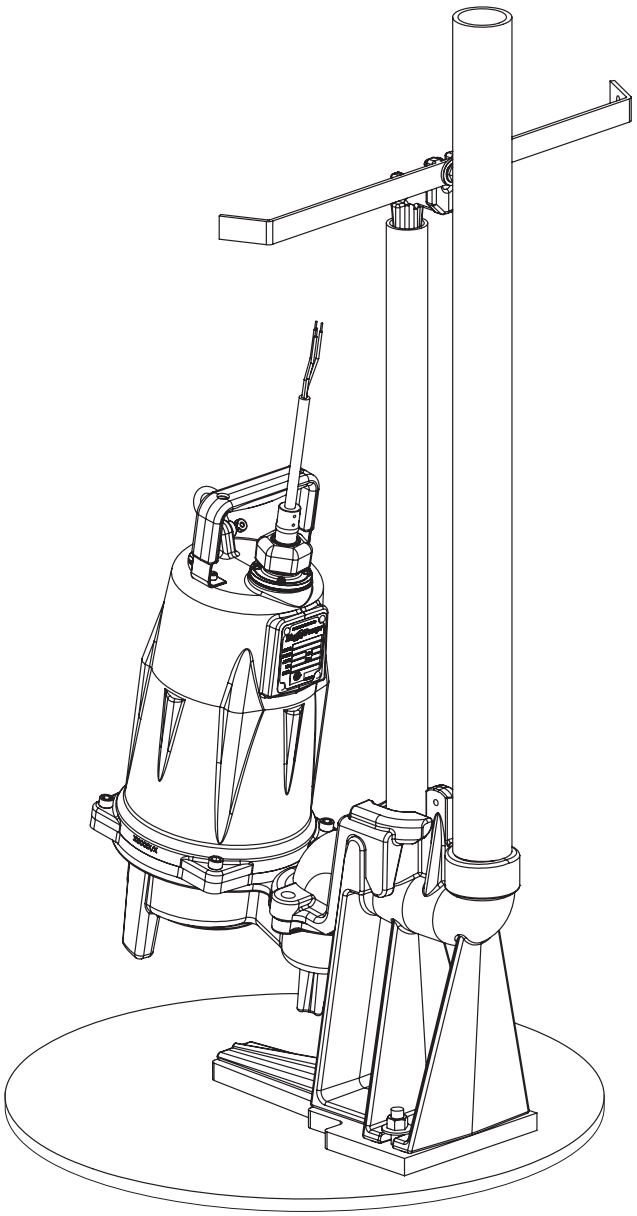
	OPTIONS	DESCRIPTION
	1J	Duo Alarm Inputs
✓	**3A**	**Alarm Flasher (Included as standard)**
	4A	Redundant Off (Timed Dose Float Panel Only) (must also select Option 4D if floats are required)
	4D	Redundant Off Float (must also select Option 4A and Option 17)
✓	**6A**	**Auxiliary Alarm Contact, Form A (Included as standard)**
✓	**8AC**	**Display Board - Includes: ETM Counter, Events (Cycles) Counter, Alarm Counter (included as standard)**
✓	**10E**	**Lockable Latch - NEMA 4X (included as standard)**
	10P	Mounting Post (Factory installed with 2.5" cord seal)
✓	**15A**	**Control/Alarm Circuit Breaker (Included as standard)**
	16A	10' Cord in Lieu of 20' Cord (per Float)
	16B	15' Cord in Lieu of 20' Cord (per Float)
	16C	30' Cord in Lieu of 20' Cord (per Float)
	16D	40' Cord in Lieu of 20' Cord (per Float)
	17C	Sensor Float® / Internally Weighted (per Float) - Mercury
	17D	Sensor Float® / Externally Weighted (per Float) - Mercury
X	17G	SJE MilliAmpMaster™ / Pipe Clamp (per Float) - Mechanical
	17H	SJE MilliAmpMaster™ / Externally Weighted (per Float) - Mechanical
	17J	Sensor Float® / Pipe Clamp (per Float) - Mercury

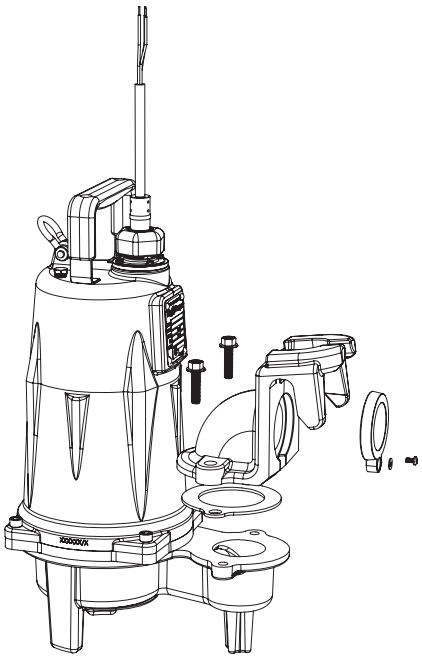
	OPTIONS	DESCRIPTION
	18A	Timer Override Float (Timed Dose Float Panel Only)
	22G	2 1/2" Hub Installed with 6 Hole Cord Seal
	33D ■	EZconnex® 3-Port, 25', with 10' Floats (3) / Pipe Clamp
	33E ■	EZconnex® 3-Port, 50', with 10' Floats (3) / Pipe Clamp
	33G ■	EZconnex® 3-Port, 25', with 20' Floats (3) / Pipe Clamp
	33H ■	EZconnex® 3-Port, 50', with 20' Floats (3) / Pipe Clamp
	35D ■	EZconnex® 4-Port, 25', with 10' Floats (4) / Pipe Clamp (Timed Dose Only)
	35E ■	EZconnex® 4-Port, 50', with 10' Floats (4) / Pipe Clamp (Timed Dose Only)
	35G ■	EZconnex® 4-Port, 25', with 20' Floats (4) / Pipe Clamp (Timed Dose Only)
	35H ■	EZconnex® 4-Port, 50', with 20' Floats (4) / Pipe Clamp (Timed Dose Only)
	36D ■	EZconnex® 3-Port, 25', with 10' Floats (2) / Pipe Clamp, Sealing Plug
	36E ■	EZconnex® 3-Port, 50', with 10' Floats (2) / Pipe Clamp, Sealing Plug
	36G ■	EZconnex® 3-Port, 25', with 20' Floats (2) / Pipe Clamp, Sealing Plug
	36H ■	EZconnex® 3-Port, 50', with 20' Floats (2) / Pipe Clamp, Sealing Plug

■ EZconnex® mechanically-activated, narrow angle float switches with quick release connections

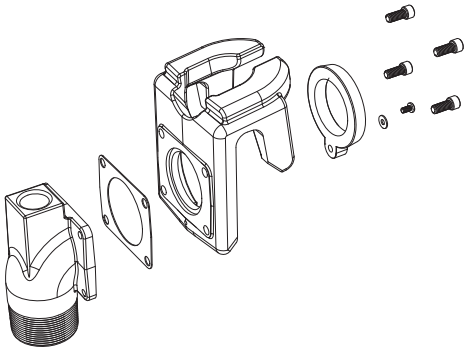
Part #	Pre-configured Panels for Easy Ordering
1030771	EZS21W114X3A6A8AC10E15A
1052607	EZS11W114H3A6A8AC10E15A17G

2” Discharge Guide Rail System





The GR22-LE and GR22-FL have a flanged claw that mounts directly to pump. They also have a 2” FNPT threaded port for optional nipple connection.



The GR22-S has a 2” FNPT detachable threaded nipple.

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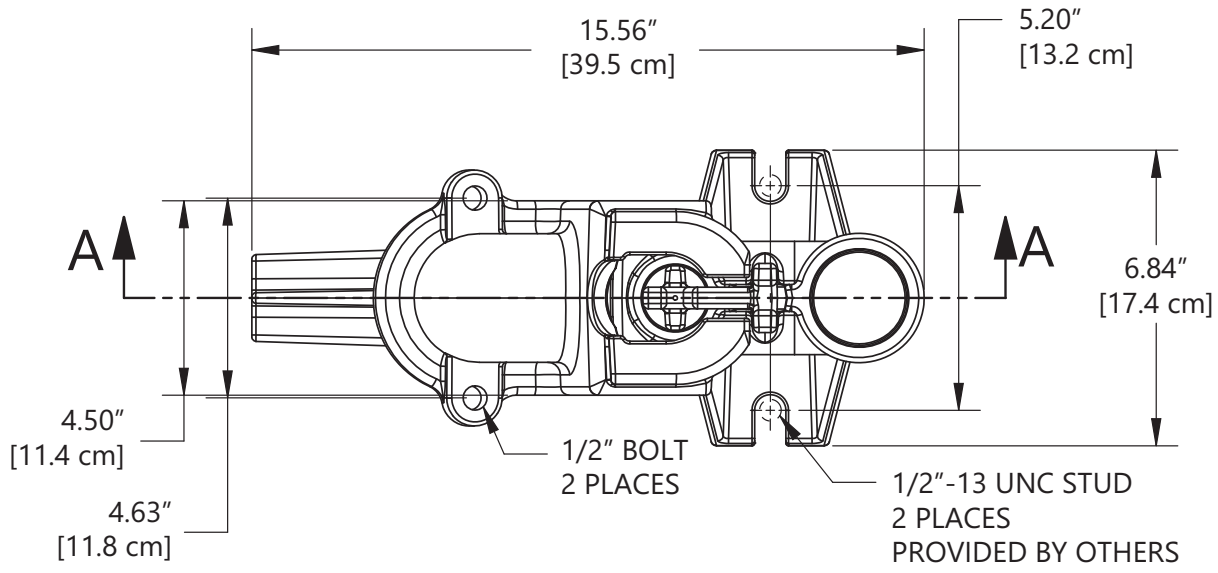
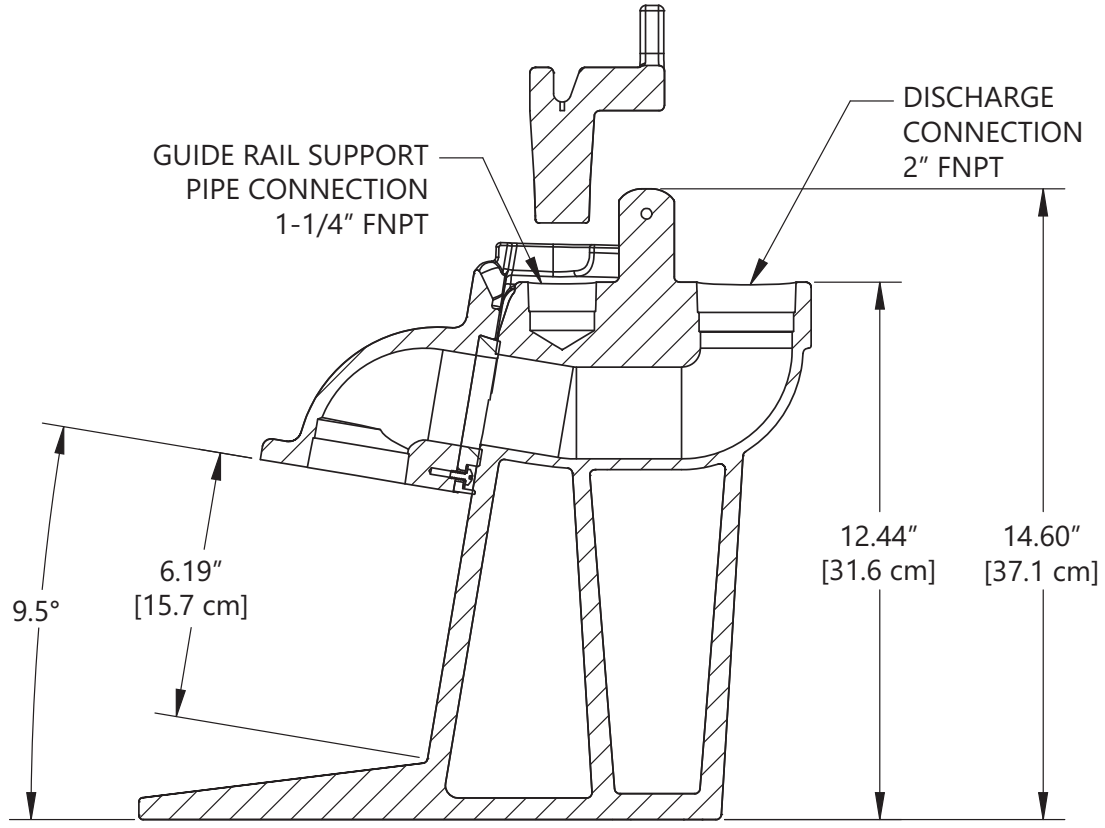
GR22-LE-Series Dimensional Data





MODEL	WEIGHT
GR22-LE	39 LBS
GR22NS-LE	41 LBS

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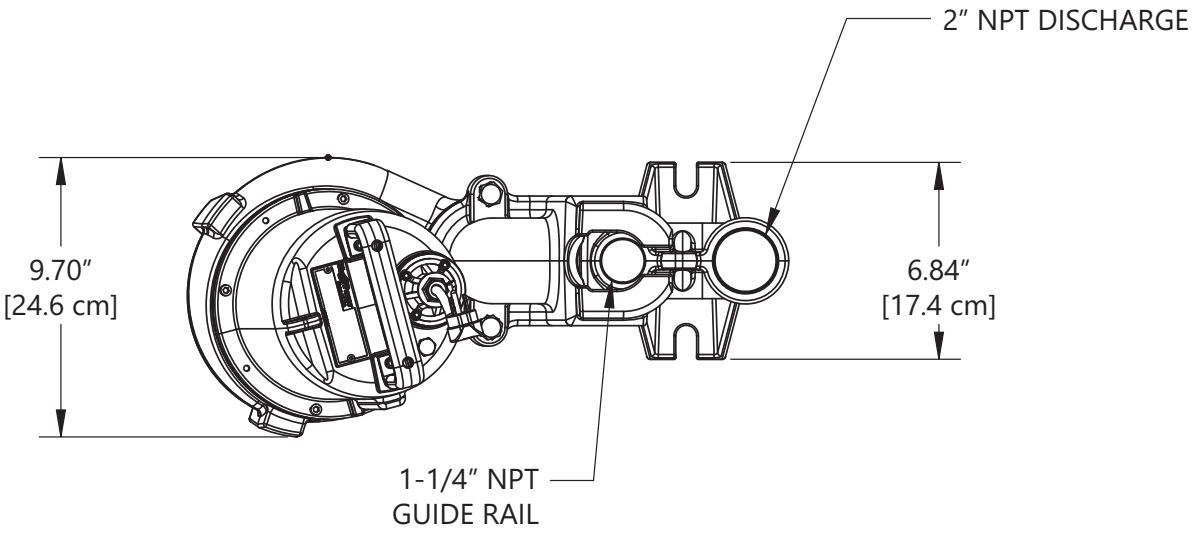
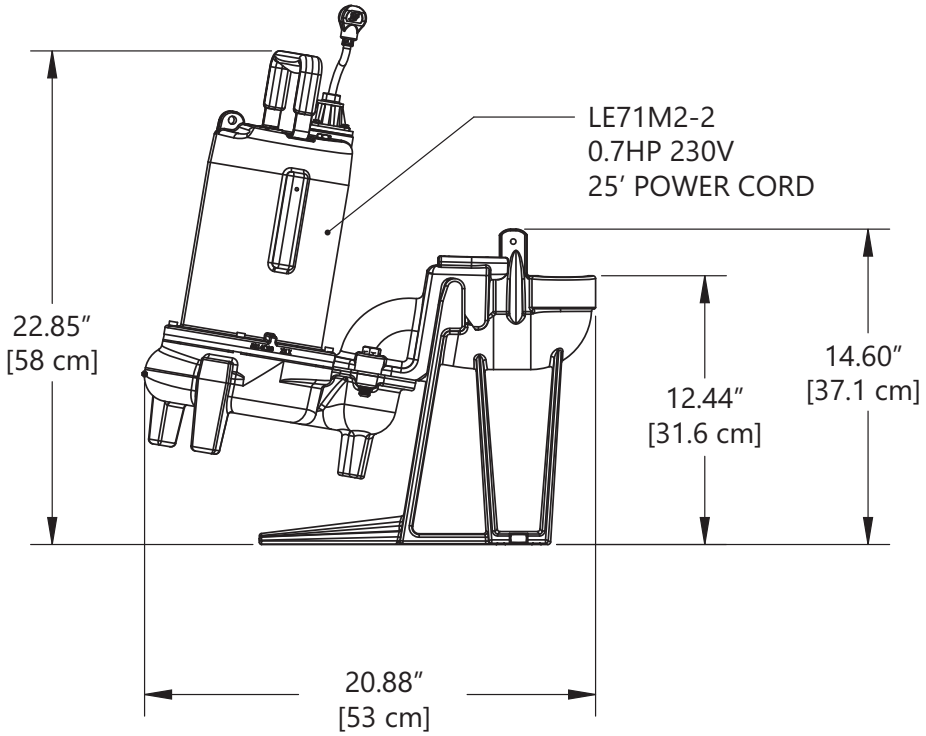
GR22-LE-Series Dimensional Data





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GR22-Series Technical Data

MODEL	GR22-SERIES *FOR STANDARD APPLICATIONS*	GR22NS-SERIES *FOR HAZARDOUS LOCATIONS*
GUIDE RAIL BASE	CLASS 25 GRAY CAST IRON	CLASS 25 GRAY CAST IRON
DISCONNECT	CLASS 25 GRAY CAST IRON	BRONZE
GUIDE RAIL	ACCEPTS STANDARD 1-1/4" NPT PIPE (pipe not included)	ACCEPTS STANDARD 1-1/4" NPT PIPE (pipe not included)
DISCHARGE PIPE	ACCEPTS STANDARD 2" NPT PIPE (pipe not included)	ACCEPTS STANDARD 2" NPT PIPE (pipe not included)
PAINT	POWDER COAT	POWDER COAT (except disconnect)
HARDWARE	STAINLESS STEEL	STAINLESS STEEL
SEALING GROMMET	BUNA-N	BUNA-N
PUMP INTERFACE	**GR22-FL:** FITS FL50, FL60, FLH60, FL70, FL100, FL150, AND FL200-SERIES PUMPS, PLUS 2" FEMALE THREADS ALLOW USE WITH OTHER PUMPS.	**GR22NS-FL:** FITS XFL50, XFL70, XFL100, AND XFL150-SERIES PUMPS, PLUS 2" FEMALE THREADS ALLOW USE WITH OTHER PUMPS.
	GR22-LE: FITS LE70, LE100, LEH100, LEH150 AND LEH200-SERIES PUMPS, PLUS 2" FEMALE THREADS ALLOW USE WITH OTHER PUMPS.	**GR22NS-LE:** FITS XLE50, XLE70, XLE100, AND XLE150-SERIES PUMPS, PLUS 2" FEMALE THREADS ALLOW USE WITH OTHER PUMPS.
	GR22-S: FITS LE40 AND LE50 SERIES, AND PRG-SERIES; THE DETACHABLE THREADED NIPPLE ALLOWS THIS RAIL TO BE USED WITH ALMOST ANY PUMP WITH A 2" NPT THREADED DISCHARGE.	N/A
MAXIMUM PUMP WEIGHT	113 KG / 250 LBS	113 KG / 250 LBS

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