KG(X)2(HZ)

2HP DUAL SEAL GRINDER PUMP, 1 OR 3 PHASE

OPTIONS-SL-SLICER CUTTER

HZ-HORIZONTAL DISCHARGE

X- EXPLOSION PROOF (FM3615)

(Class 1, Div. 1, Groups C & D Hazardous Location)

"Radial"Cutter (STANDARD)

"Slicer" (OPTION)

The Keen Pump KG(X)2 series centrifugal grinder pumps easily handle residential, and light commercial sanitary waste; such as small offices and single family homes.

The KG(X)2 grinder pump retrofits into many existing competitor pump installations. The KG(X)2 pump operates with the same control panel and installation piping / rail system.

The recessed vortex impeller design of the KG(X)2 grinder pump provides trouble-free, non-overloading operation over the entire performance curve. The KG(X)2 pump produces capacities to 43 gpm with heads to 106 feet.

THE KG(X)2 SERIES PUMP FEATURES:

- Interchangeable into Competitor Installations
- Dual Silicon-Carbide Shaft Seals
- Pressed-In Motor with Internal Overload Protection
- 3-Bearing Shaft Support
- Internal Moisture Detection
- Strong 2hp Motor, 1 Phase (208, or 240 Volt)
- 3 Phase Motor (208, 230 or 460 Volt)
- True "Explosion Proof" Service
- FM 3615 Listed

1. WATERTIGHT CABLE ENTRANCE
Agency-approved, watertight strain relief cord grip with compression grommet protects outer cord jacket. Epoxy-filled inner cord cap provides anti-wicking moisture protection to the motor even if the power cable is cut or damaged. Stainless steel cord grip.

2. MODULAR PUMP DESIGN
Commonality of parts across the Keen product line minimizes the amount of parts required for servicing. Heavy-duty ASTM A48, Class 35 cast iron components.

3. STRONG MOTOR
Powerful high-torque motor for reliable pump operation. Pressed stator securely holds motor and efficiently transfers heat. Class N insulation with overload protection in oil-filled chamber for cool operation and long motor life.

4. 3-BEARING SUPPORT
Motor / Pump shaft securely held with upper and lower ball bearing plus additional sleeve bearing in lower seal chamber. Long 100,000 hour B-10 bearing life.

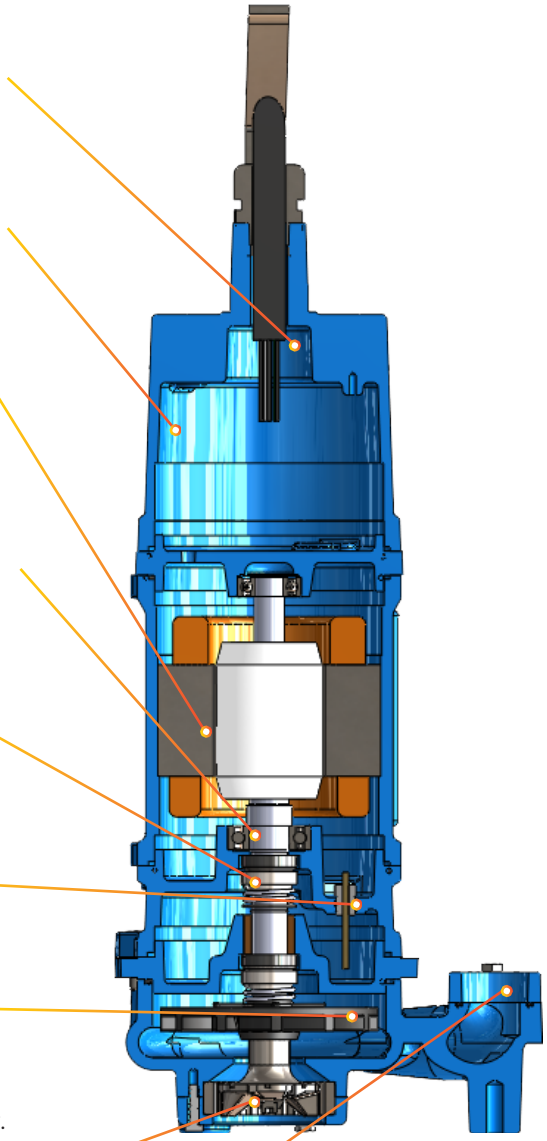
5. DOUBLE MECHANICAL SEAL PROTECTION
Dual silicon carbide mechanical shaft seals provide twice the moisture protection for the motor. Dual seals are housed in a secondary oil-filled seal chamber. Tougher silicon carbide seals better handle sand, grit and abrasive materials.

6. MOISTURE DETECTION
Seal leak probe signals alarm in control panel for scheduled maintenance.

7. NON-OVERLOADING HYDRAULIC DESIGN
The recessed centrifugal impeller allows 100% performance curve operation from shut-off to maximum flow without damage to the pump or system. The recessed vortex impeller is out of the passageway of fluid flow, eliminating concerns of blockage or wear.

8. PROVEN GRINDER ASSEMBLY
Hardened (Rockwell 56-60) stainless steel grinder assembly has 30+ years proven field experience. The reversible grinder ring and grinder impeller effectively reduce solids into a fine slurry, easily passable in a piping system without concerns of clogging. Highly efficient 16,600 cuts/second.

9. EASY PIPING CONNECTION
Removable 1-1/4”NPT connection flange for simple and easy connection to discharge piping.

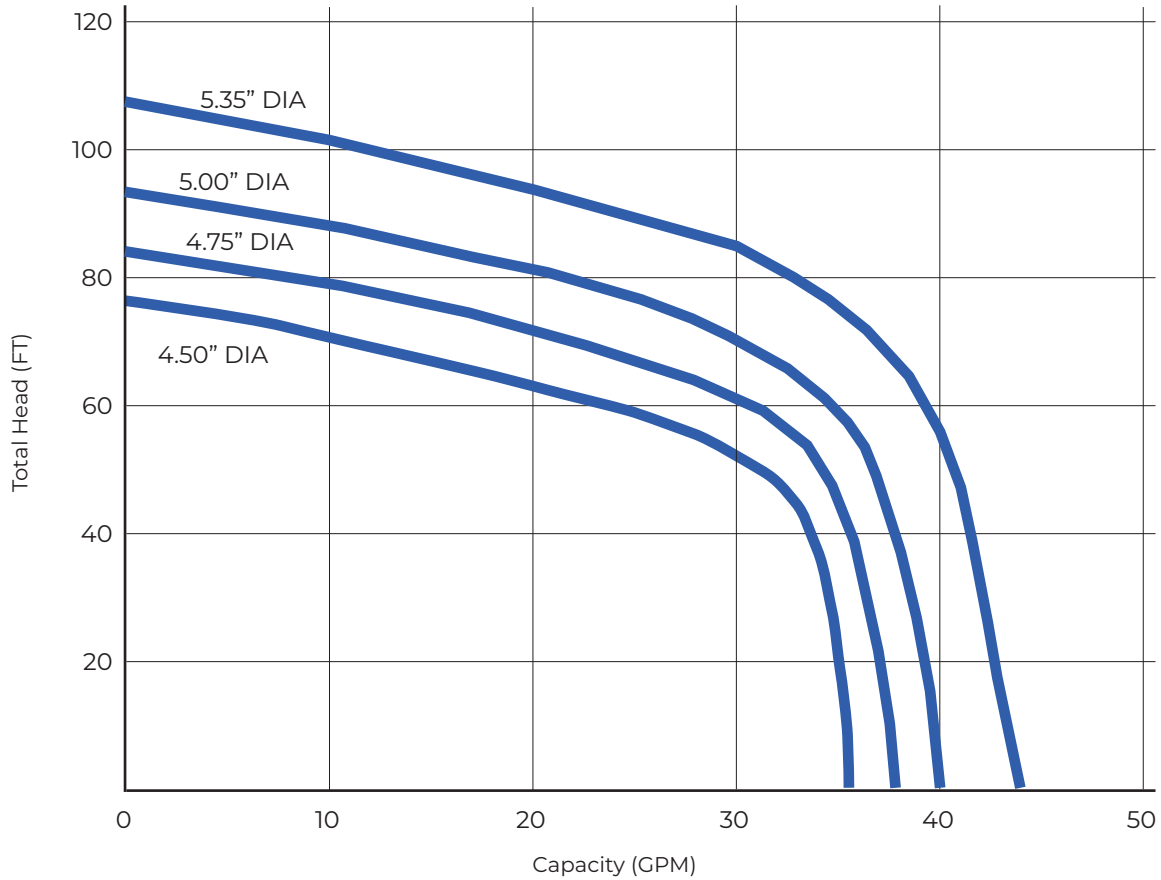


2HP SUBMERSIBLE GRINDER PUMP

GENERAL	KG(X)2(HZ)
Pump Model	
PUMP DATA	
Date	09/2022
Discharge Flange	1-1/4" NPT, Vertical
Grinder Ring	26 Slots
Impeller Type / Std. Dia.	Recessed / 5.35" Dia.
SINGLE PHASE	START KIT SK-2A includes: Start & Run Capacitors, Relay, and Mounting Hardware

MOTOR DATA	
HP / Power Supply	2HP / 1 ϕ , 60 Hz
Full Load Amps 208V	15.5 Amps
Full Load Amps 240V	14.5 Amps
Poles / Rated Speed	2P / 3450 rpm
Insulation Class	N Class
Start Capacitor	216 ufd, 250 VAC
Run Capacitor	25 ufd, 370 VAC

PERFORMANCE CURVE

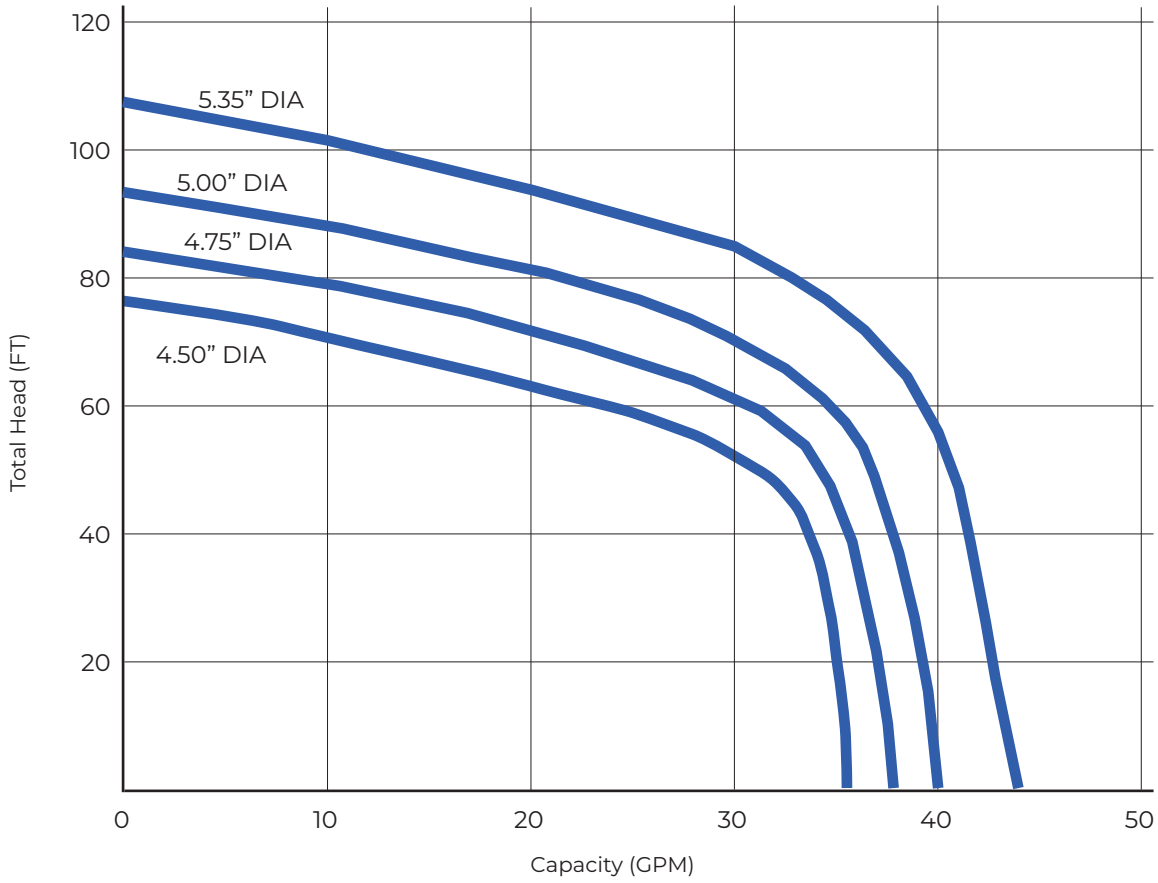


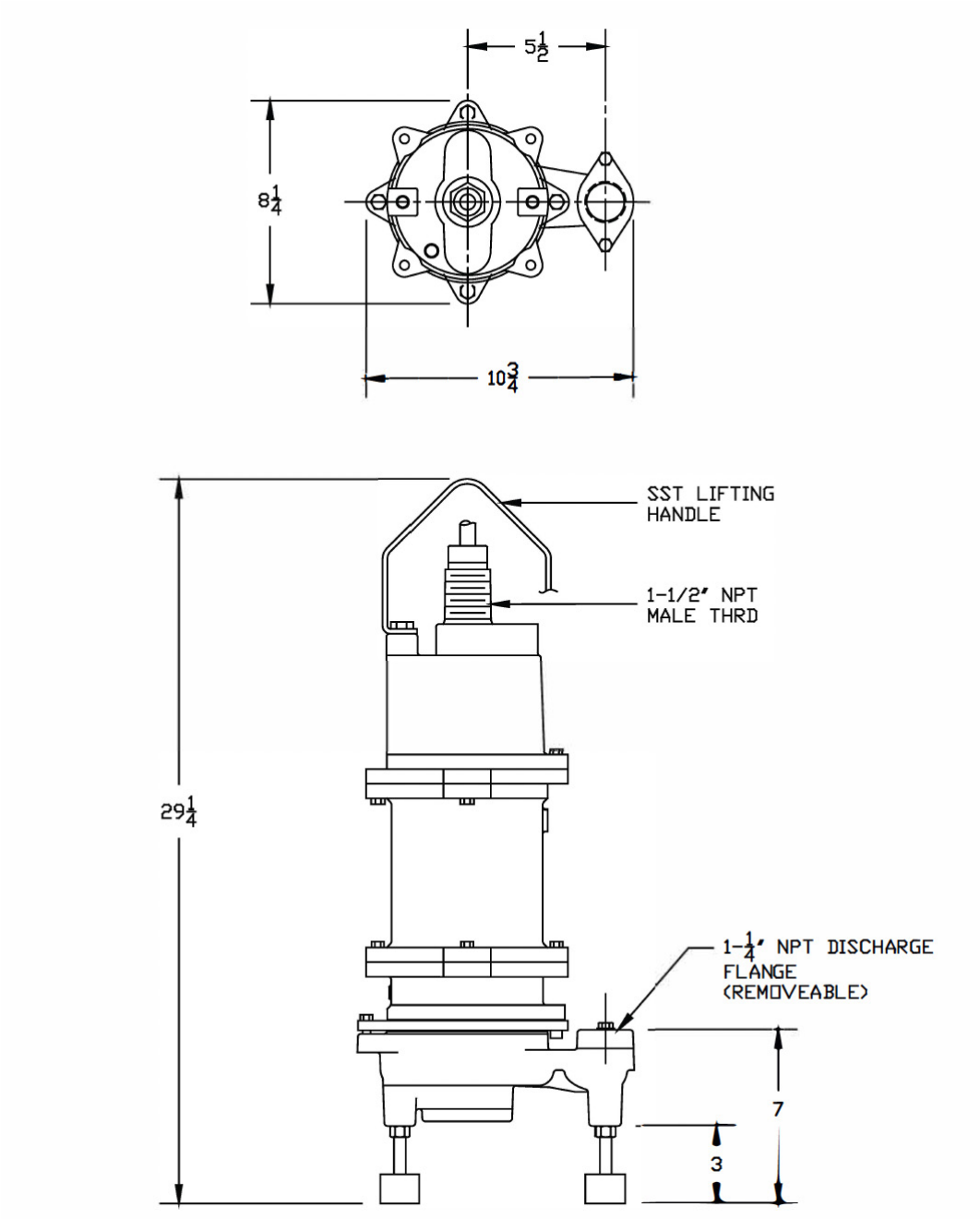
2HP SUBMERSIBLE GRINDER PUMP

GENERAL	KG(X)2(HZ)
Pump Model	
PUMP DATA	
Date	09/2022
Discharge Flange	1-1/4” NPT, Vertical
Grinder Ring	26 Slots
Impeller Type	Recessed / 5.35” Dia.
Three Phase	

MOTOR DATA	
HP / Power Supply	2HP / 3 ϕ , 60 Hz
Full Load Amps 208V	10 Amps
Full Load Amps 230V	9 Amps
Full Load Amps 460V	4.5 Amps
Poles / Rated Speed	2 P / 3450 rpm
Insulation Class	N Class

PERFORMANCE CURVE




5 1/2
8 1/4
10 3/4
SST LIFTING HANDLE
1-1/2" NPT MALE THRD
29 1/4
1-1/4" NPT DISCHARGE FLANGE (REMOVEABLE)
7
3

PHYSICAL DATA	
Discharge Size	1-1/4" NPT or 2-Bolt Flange Vertical
Impeller Type	Balanced, Recessed Vortex
Power/Control Cable Length	30' Standard
Paint	Blue, Powder Coat Paint Finish

MOTOR CONSTRUCTION	
Motor Type	Enclosed Submersible Oil Filled
NEMA Insulation Code	Class N
Service Factor	1.2
Motor Protection	Thermal Sensors Embedded in the Windings
Maximum Stator Temperature	266°F (130°C)
Power Cord (Phase 1)	12-5 SOOW - 600V, 90° C
Power Cord (Phase 3)	14-7 SOOW - 600V, 90° C
Std. Third Party Approval	FM3615

MATERIALS OF CONSTRUCTION	
Cord Entry	Cast Iron, ASTM A48, Class 35
Motor Housing	Cast Iron, ASTM A48, Class 35
Bearing Housing	Cast Iron, ASTM A48, Class 35
Volute	Cast Iron, ASTM A48, Class 35
Impeller	Ductile Iron, ASTM A536, Grade 65-45-12
Shaft	ANSI 400 Stainless Steel
*Opt. Rotating "Axial" Slicer	440 SST Hardened 58-60 Rockwell C
*Opt. Stationary "Axial" Slicer	440 SST Hardened 58-60 Rockwell C
Rotating "Radiall" Cutter	440 SST Hardened 58-60 Rockwell C
Stationary "Radiall" Cutter	440 SST Hardened 58-60 Rockwell C
Inboard Mechanical Seal	Silicon Carbide / Silicon Carbide, Viton® Elastomers
Outboard Mechanical Seal	Silicon Carbide / Silicon Carbide, Viton® Elastomers
Fasteners	ANSI 18-8 or 304 Stainless Steel
O-Rings	Fluorocarbon
Upper Bearing	Conrad Style Single Row Deep Groove Ball Bearing 100,000 Hours, L-10
Lower Bearing	Conrad Style Single Row Deep Groove Ball Bearing 100,000 Hours, L-10
Sleeve Bearing	Bronze, Sintered

THERMAL DATA		
Maximum Liquid		140° F (60° C)
Maximum Stator		266° F (130° C)
Heat Sensor	Open:	275° F (135° C) Max. / 257° F (125° C) Min.
	Closed:	205° F (96° C) Max. / 154° F (68° C) Min.
Oil Flash Point		390° F (199° C)

ELECTRICAL DATA				
RPM	3450			
Electrical Ratings	Heat Sensor	24VDC, 5AMPS	115VAC, 5AMPS	230VAC, 5AMPS
	Seal Fail	300VAC 5mAMPS		
Voltage Tolerance	± 10%			
External Start Kit	Start Capacitor = 216 ufd, 250 VAC			
	Run Capacitor = 25 ufd, 370 VAC			

MODEL (SLICER)	MODEL (RADIAL CUTTER)	HP	VOLTS	PHASE	NEC CODE	SERVICE FACTOR	FULL LOAD AMPS	START AMPS	FULL LOAD KW	FULL LOAD KVA
KG2-2081SL	KG2-2081	2	208	1	G	1.0	15.5	72	4.68	4.68
KG2-2401SL	KG2-2401		240				14.5	54	3.80	3.80
KG2-2083SL	KG2-2083	2	208	3	H	1.0	10	33	4.50	4.50
KG2-2303SL	KG2-2303		230				9	31	3.78	3.78
KG2-4603SL	KG2-4603		460				4.5	15	4.38	4.38

2 HP GRINDER PUMPS

MODEL NO. KG(X)2(HZ)

PUMP MODEL – Pump shall be of the centrifugal type, KG(X)2(HZ) with an integrally built-in grinder unit and submersible type motor. KG(X)2(HZ) series pump and motor assembly shall be FM3615 listed for Class 1, Division 1, Groups C & D hazardous location service.

OPERATING CONDITIONS – The pump shall have a non-overloading maximum capacity of __ GPM, and maximum total dynamic head of ___ feet, and shall use a motor rated at 2 HP and 3450 RPM. The grinder unit shall be capable of macerating all material in typical domestic and commercial sewage, including reasonable amounts of foreign objects such as sanitary napkins, disposable diapers, thin rubber, sanitary wipes, floor pads, small wood, plastic and the like to fine slurry that will easily pass through the pump and 1-1/4" NPT discharge.

CONSTRUCTION – Major pump components shall be of gray cast iron, ASTM A-48, Class 35, with smooth surfaces devoid of blowholes or other irregularities. All exposed nuts or bolts shall be 304 stainless steel. All metal surfaces coming into contact with the pumpage, other than stainless steel, shall be protected by a factory applied powder coat paint finish to the exterior of the pump.

Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with O-rings, designed and constructed to meet FM3615 for Class 1, Division 1, Groups C & D standards. Fittings will be the result of controlled compression of rubber Orings in two planes and O-ring contact of four sides (rabbet joint construction) without the requirement of a specific torque limit. No secondary sealing compounds, elliptical O-rings, grease, or other devices shall be used.

PUMP IMPELLER – Pump impeller shall be ductile iron and threaded onto a stainless steel shaft. The impeller shall be of the recessed vortex type to provide an unobstructed passage through the volute for the ground solids. Impeller must be dynamically balanced to specification ISO 1940G 6.3 standard.

RADIAL CUTTER GRINDER CONSTRUCTION – Provided as a proven cutting method, both grinder impeller and shredding ring shall be of 440 stainless steel hardened to 58-60 Rockwell C. The grinder assembly shall consist of a grinder impeller and shredding ring mounted directly below the volute passage. The grinder impeller is threaded to a stainless steel shaft, locked with a stainless steel screw and washer. The shredding ring shall be secured by a retaining ring which is bolted into the cast iron volute for easy removal. All grinding of solids shall be from the action of the grinder impeller against the shredding ring. There shall be 24,000 cuts / second. Note: Model number to REMOVE "SL" if specifying radial cutter construction Ex. KG2 (Standard flow pump, non-explosion proof).

OPTIONAL: SLICER GRINDER CONSTRUCTION – Maceration is accomplished by a combination of a rotary slicer and stationary slicer plate. Rotary slicer shall consist of (3) blades which protrude away from the inlet. Rotary slicer shall be bolted to shaft within close tolerance of grinding slicer plate. The stationary slicer plate shall consist of engineered-shaped holes for optimum cutting of debris. A slicer plate shall contain grooved slots to eject pump media away from underside of rotary cutter. Slicer plate shall be fastened with countersunk head screws that are flush with surface of plate. Pumps with protruded or exposed head fasteners shall be considered not equal. Both rotary slicer and slicer plate shall be 440C stainless steel hardened to 58-60 Rockwell C.

SEALS – Type 21, domestic manufactured, dual mechanical seal construction mounted in tandem, shall protect the motor. Standard construction of primary seal shall be silicon / carbide with Viton® elastomers. Standard construction of secondary seal shall be silicon / carbide with Viton® elastomers. The seal face shall be lapped to a flatness of one light band. Dual electrodes with 330k ohm resistor (FM models only) shall be mounted in the seal chamber to detect water entering the chamber through the lower seal. Water in the chamber shall cause a red light to turn on at the control box. This signal shall not stop the motor, but shall act as a warning only, indicating service is required. Lip seal arrangements shall not be considered equal.

MOTOR – The pump motor construction shall be per NEMA MG-1 1.15 standard and shall be of the submersible type, rated 2 HP, 3450 RPM. The motor shall be for 60 Hz, 208, or 240 volt, single-phase operation. Three-phase operation shall be 208, 230 or 460 volt. Single-phase motors shall be capacitor start, capacitor run type for high starting torque. Start & run capacitors, and starting switch for operating the motor will be found in the control box. Major motor operating temperature must not exceed Class N ratings.

The stator winding shall be of the open type with Class N insulation. Any other construction shall not be considered equal. The stator shall be pressed into the cast iron motor housing. Winding housing shall be filled with clean, high dielectric oil that lubricates bearings and seals, transferring heat from windings and rotor to the outer cast housing. Maximum skin temperature of motor assembly shall not exceed a T-4 rating per FM3615 standards. Any motor assembly T-code per FM3615 standard that exceeds a T-4 rating shall be considered not equal.

Single-phase motors shall have automatic reset overload protection attached to the top end of the motor windings to stop the motor if the motor winding temperature reaches 130 degrees C. The high temperature shut-off will cause the pump to cease operation, should a control failure cause the pump to run in a dry wet well. The overload shall automatically reset when the motor cools to a safe operating temperature. Three-phase motors contain temperature sensors with (2) two wires for attachment to the control panel.

BEARINGS / SHAFT – The motor shall have two heavy-duty ball bearings and one sleeve bearing to support the pump shaft, taking radial and thrust loadings. Bearings shall be designed to an ABEC® System 1 or better. The upper bearing shall be a Conrad type, single-row, deep groove ball bearing designed to adequately handle the required radial loads. The lower bearing shall be a single-row, deep groove ball bearing designed to adequately compensate for the axial loads and radial forces. Bearings shall be designed to deliver a minimum L-10 bearing life of 100,000 hours when operation is within the limitations of the manufacturer's performance curve. The bearings shall be lubricated in oil and will not require maintenance as described in ANSI/HI 1.4-2010 A.6.

POWER CORD – The motor power cord shall be 12 Ga. Type SOOW, UL listed, CSA approved cable. The cable jacket shall be sealed at the motor entrance by means of an agency-approved rubber compression washer and compression nut. An epoxy-filled cord cap seals the outer cable jacket and individual leads to prevent water from entering the motor housing. Compression fittings with quick disconnect molded pins shall not be considered equal. Cord shall withstand a pull strain to meet FM requirements.

MOISTURE PROBE – Rotor and stator in the motor housing shall be separated and protected from the pumped liquid by an oil filled seal housing incorporated two type 21, Silicon Carbide upper and lower mechanical seals. The seal housing shall be equipped with a moisture sensing probe installed between the seals, and the sensing of moisture in the seal chamber shall be automatic, continuous, and not require the pump to be stopped or removed from the wetwell.