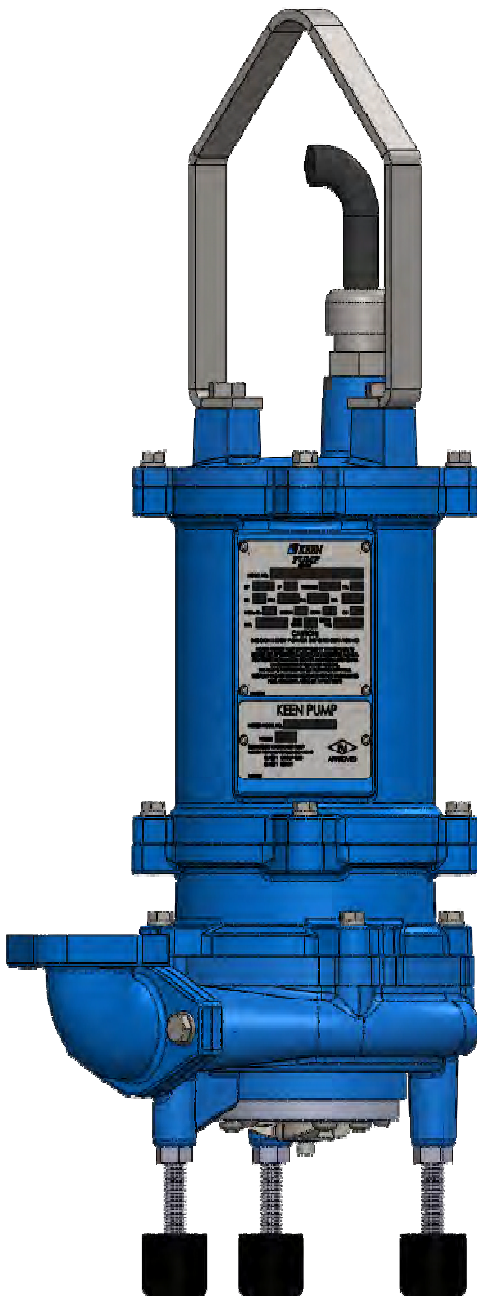


# KHGS(X)2

HIGH PRESSURE GRINDER PUMPS

**PATENT  
PENDING**

63/440,977

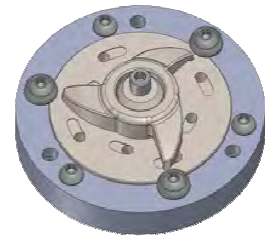


• INDUSTRY LEADING DESIGN

- High Head, 195 Feet Shut-Off
- Lower Amperage Draw (17.7 MAX)
- Precision Fit, For Optimal Grinding

• HIGH PERFORMANCE SLICING

- Adjustable "Slicer / Grinder" Assembly
- Maintains High Performance
- No Shims
- Unique Slicing Action Shreds "Flushables"
- Heat-Treated, All Stainless Steel Construction



"Slicer"

• HIGHEST QUALITY CONSTRUCTION

- FM 3615 Listed "Explosion-Proof"
- Class 1, Div. 1, Groups C & D
- Grit Resistant Silicon Carbide Seals With Viton Elastomers
- 3 Bearing Design

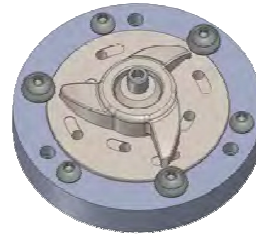


## Features and Benefits

# KHGS(X)2

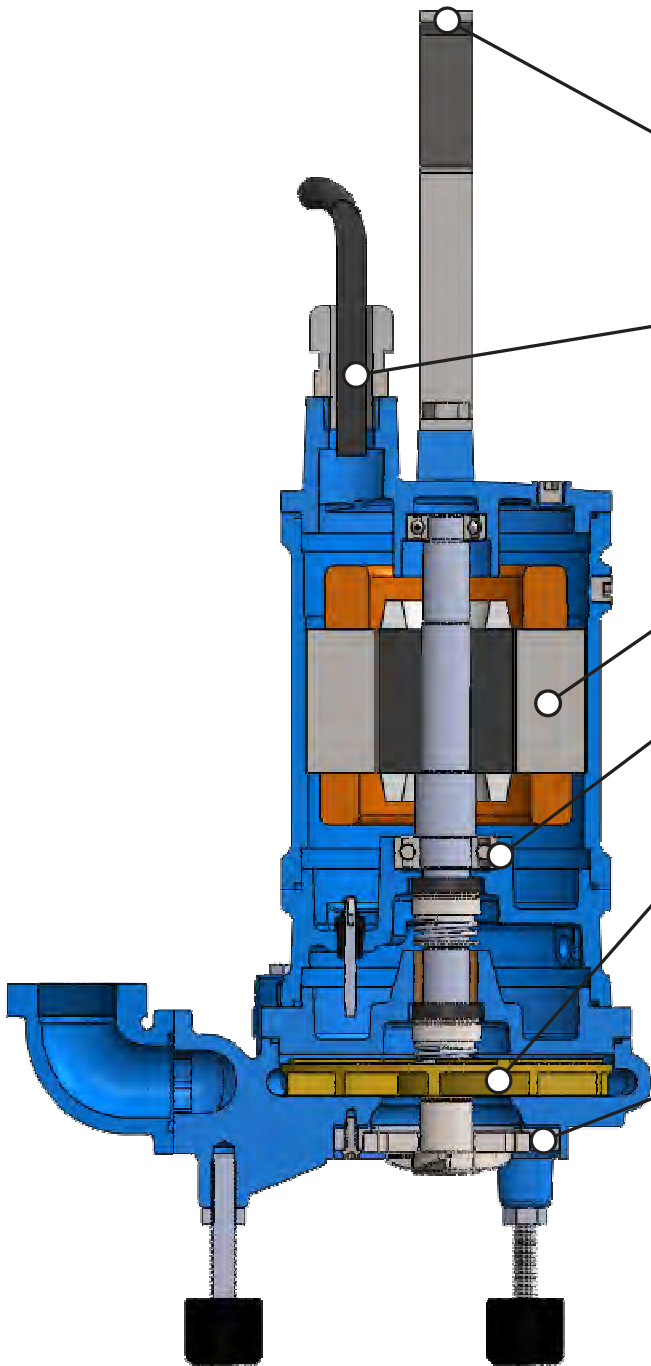
**PATENT  
PENDING**

63/440,977



### "Slicer" Cutter

- Preventing Jamming on Solids



STAINLESS STEEL LIFT HANDLE

EPOXY-POTTED CORD ENTRY

- Triple-Barrier Moisture Protection

HIGH-TORQUE MOTOR OIL-COOLED  
FOR SUPERIOR HEAT DISSIPATION

SUPERIOR DUAL MECHANICAL SEALS -  
SILICON CARBIDE w/ VITON® ELASTOMERS

1-STAGE BRONZE IMPELLER

ADVANCED CUTTING SYSTEM

- Highly Efficient Solids-Slicing
- User-Friendly Field Service
- Hardened Stainless Steel

ADJUSTABLE SLICER ASSEMBLY

- Maintains Precision Clearances For Optimal Shredding Of Solids
- **No Shims**



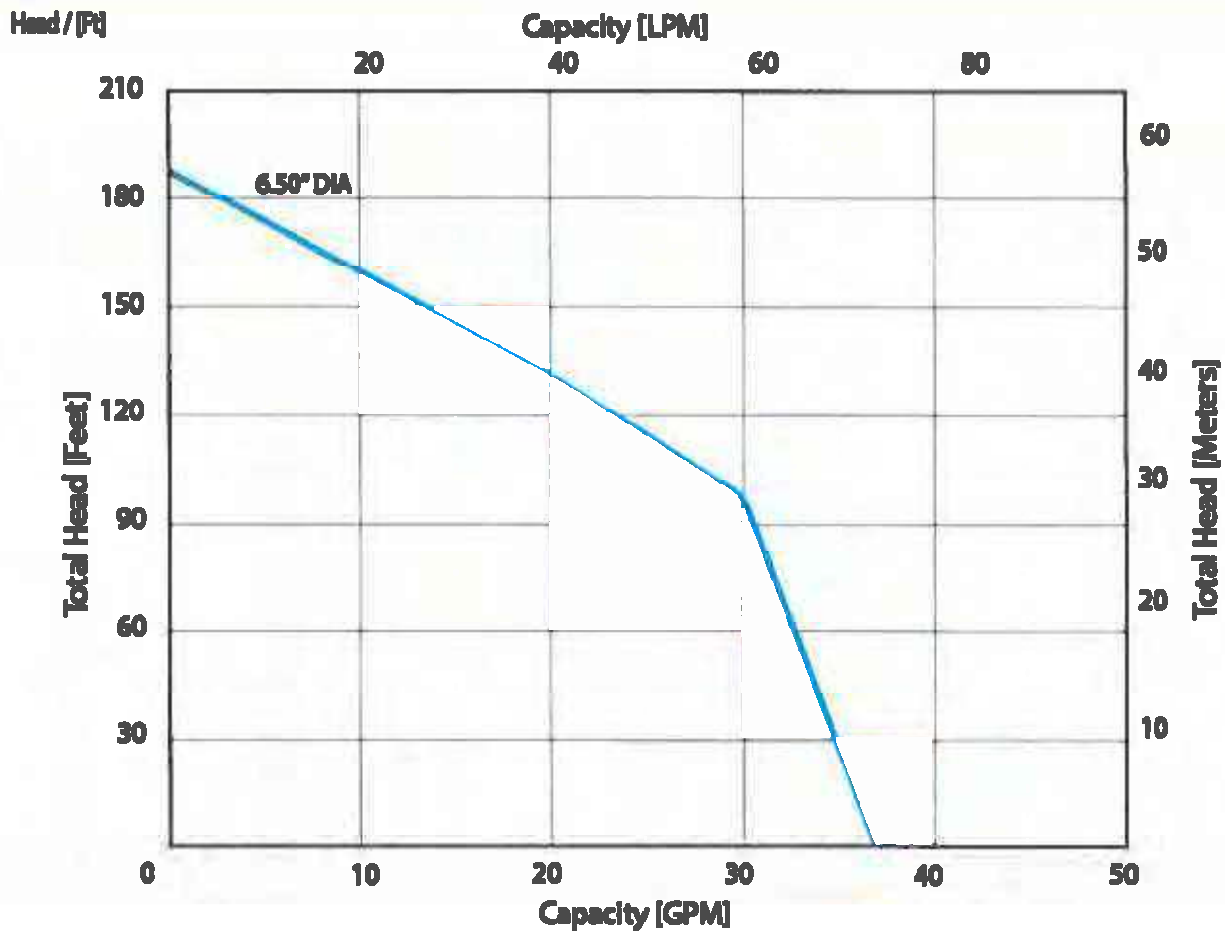
471 US HWY 250 East · Ashland, Ohio 44805  
419.207.9400 fax 419.207.8031  
[www.keenpump.com](http://www.keenpump.com)



## 2HP SUBMERSIBLE GRINDER PUMP

<b>GENERAL</b>		<b>MOTOR DATA</b>	
Pump Model	<b>KHGS(X)2</b>	HP / Power Supply	2HP / 1 $\phi$ , 60 Hz
<b>PUMP DATA</b>		Start / Run Amps 240V	19.5 Amps
Date	02/2023	Full Load Amps 208V	20.9 Amps
Discharge Flange	1-1/4" NPT		
Grinder Construction	Stainless Steel		
Grinder Hardness	58 - 60 Rockwell		
Impeller Type	Semi - Open	Poles / Rated Speed	2 P / 3450 rpm
<b>Single Phase/ Three Phase</b>	<b>START KIT SK-KGS Includes: Start &amp; Run Capacitors, Relay, and Mounting Hardware</b>	Insulation Class	H Class
		Start Capacitor	216 ufd, 250 VAC
		Run Capacitor	50 ufd, 370 VAC

### PERFORMANCE CURVE



<b>MODEL</b>	<b>HP</b>	<b>Phase</b>	<b>Volts</b>
KHGS2-2081	2	1	208
KHGS2-2401	2	1	240
KHGS2-2083	2	3	208
KHGS2-2303	2	3	230
KHGS2-4603	2	3	460



\* Performance with clear water and ambient temp 20°C (68°F)



Pump Model:KHGS(X)2

**Physical Data:**

<b>Discharge Size</b>	1-1/4" NPT
<b>Impeller Type</b>	Balanced, Semi-Open
<b>Power/Control Cable Length</b>	30' Standard
<b>Paint</b>	Blue, Powder Coat Paint Finish

**Motor Construction:**

<b>Motor Type</b>	Enclosed Submersible Oil Filled
<b>NEMA Insulation Code</b>	Class F
<b>Service Factor</b>	1.0
<b>Motor Protection</b>	Thermal Sensors Embedded in the Windings
<b>Maximum Stator Temperature</b>	266°F (130°C)
<b>Power Cord (1 Phase)</b>	12-5 SOOW - 600V, 90° C
<b>Power Cord (3 Phase)</b>	14-7 SOOW - 600V, 90° C
<b>Std. Third Party Approval</b>	FM3615

**Materials of Construction:**

<b>Cord Entry</b>	Cast Iron, ASTM A48, Class 35
<b>Motor Housing</b>	Cast Iron, ASTM A48, Class 35
<b>Bearing Housing</b>	Cast Iron, ASTM A48, Class 35
<b>Volute</b>	Cast Iron, ASTM A48, Class 35
<b>Impeller</b>	(85-5-5-5) Bronze
<b>Shaft</b>	ANSI 400 Stainless Steel
<b>Rotating "Axial" Slicer</b>	440 SST Hardened 58-60 Rockwell C
<b>Stationary "Axial" Slicer</b>	440 SST Hardened 58-60 Rockwell C
<b>Inboard Mechanical Seal</b>	Silicon Carbide / Silicon Carbide, Viton® Elastomers
<b>Outboard Mechanical Seal</b>	Silicon Carbide / Silicon Carbide, Viton® Elastomers
<b>Fasteners</b>	ANSI 18-8 or 304 Stainless Steel
<b>O-Rings</b>	Nitrile Rubber
<b>Upper Bearing</b>	Conrad Style Single Row Deep Groove Ball Bearing 100,000 Hours, L-10
<b>Lower Bearing</b>	Conrad Style Single Row Deep Groove Ball Bearing 100,000 Hours, L-10
<b>Sleeve Bearing</b>	Bronze, Sintered



Pump Model: **KHGS(X)2**

**Thermal Data:**

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

**Electrical Data:**

<b>RPM</b>	<b>3450</b>			
<b>Electrical Ratings</b>	Heat Sensor	24VDC 5AMPS	115VAC 5AMPS	230VAC 5AMPS
	Seal Fail	300VAC 5mAMPS		
<b>Voltage Tolerance</b>	± 10%			
<b>External Start Kit</b>	Start Capacitor = 216 ufd, 250 VAC			
	Run Capacitor = 50 ufd, 370 VAC			

<b>Model High Head (Slicer)</b>	<b>HP</b>	<b>Volts</b>	<b>Phase</b>	<b>NEC Code</b>	<b>Service Factor</b>	<b>Full Load Amps</b>	<b>Start Amps</b>	<b>Full Load KW</b>	<b>Full Load KVA</b>
KHGS2-2081	2	208	1	G	1.0	18.9	92.8	5.51	5.51
KHGS2-2401		240				20.9	85.8	5.88	5.88
KHGS2-2083	2	208	3	H	1.0	10.7	59.5	4.37	5.46
KHGS2-2303		230				10.0	59.5	4.37	5.46
KHGS2-4603		460				5.1	32.0	5.01	2.95



## SPECIFICATIONS

### 2 HP Grinder Pumps

### Model Nos. KHGS(X)2

**Pump Model** – Pump shall be of the semi-open, centrifugal type, **KHGS2** (High Head), with an integrally built-in grinder unit and submersible type motor. **KHGSX2 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, a 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 30, 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 O-rings 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 bronze and threaded onto an AISI 416 stainless steel shaft. The impeller shall be of the semi-open 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.

**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 underneath 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. Clearance between rotary slicer and stationary plate shall be controlled by an adjustable design. No shims permitted.



**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. Standard construction of secondary seal shall be silicon / carbide. The seal face shall be lapped to a flatness of one light band. Dual electrodes with 330k ohm resistor 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 electronic relay for operating the motor will be found in the control box. Major motor operating temperature must not exceed Class B ratings.

The stator winding shall be of the open type with Class F 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 has lesser than a T-4 rating, shall be considered not equal.**

**Oil Filled Motor** ensures industry-low operating temperatures. **Air-filled motors, which do not have the superior heat dissipating capabilities of oil-filled motors, shall not be considered 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.

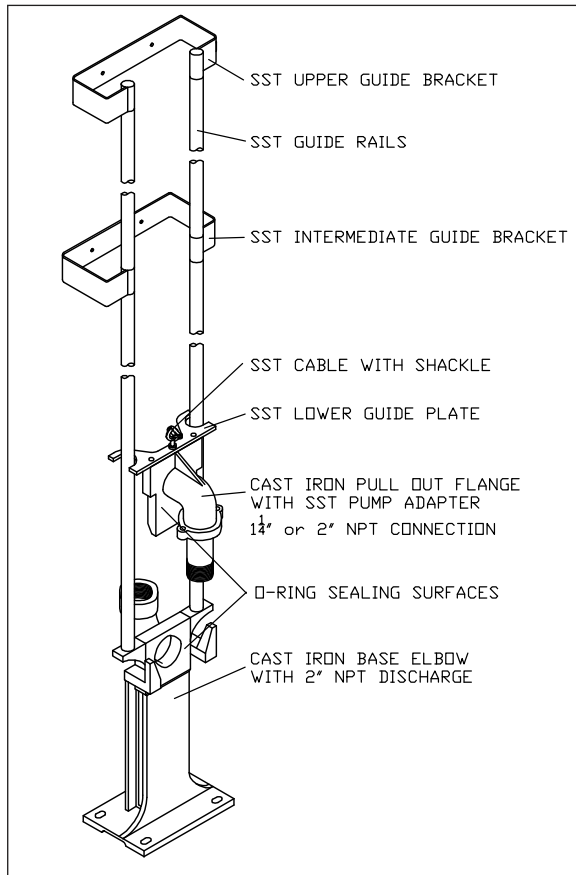
**Bearings / Shaft** - The motor shall have two heavy-duty ball bearings and one sleeve bearing to support the pump shaft, taking radial and thrust loadings. Bearings shall be designed to an ABEC<sup>®</sup> System 1 or better. The upper bearing shall be a Conrad type, single row, deep groove ball bearing designed to adequately handle the required radial loads. The lower bearing shall be a single-row angular contact 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 protection from the pumped liquid by an oil filled seal housing incorporating 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.

# KL1 & KL1CV

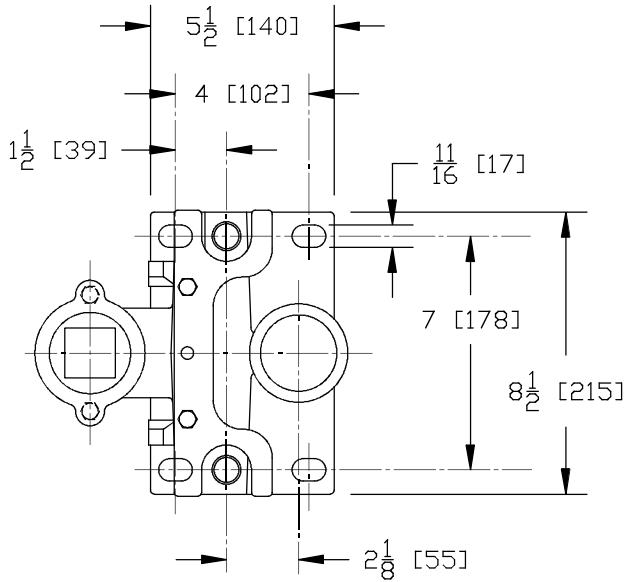
## KEEN 2hp Grinder Liftout



- 1-1/4" NPT Pump Connection
- 2" NPT Female Vertical Discharge
- 3/4" or 1" Guide Rails
- Stress-Free Rail System
- Durable Cast Iron Base and Lift-Out Flange
- Stainless Steel Pump Adapter
- Stainless Steel Guide Plate

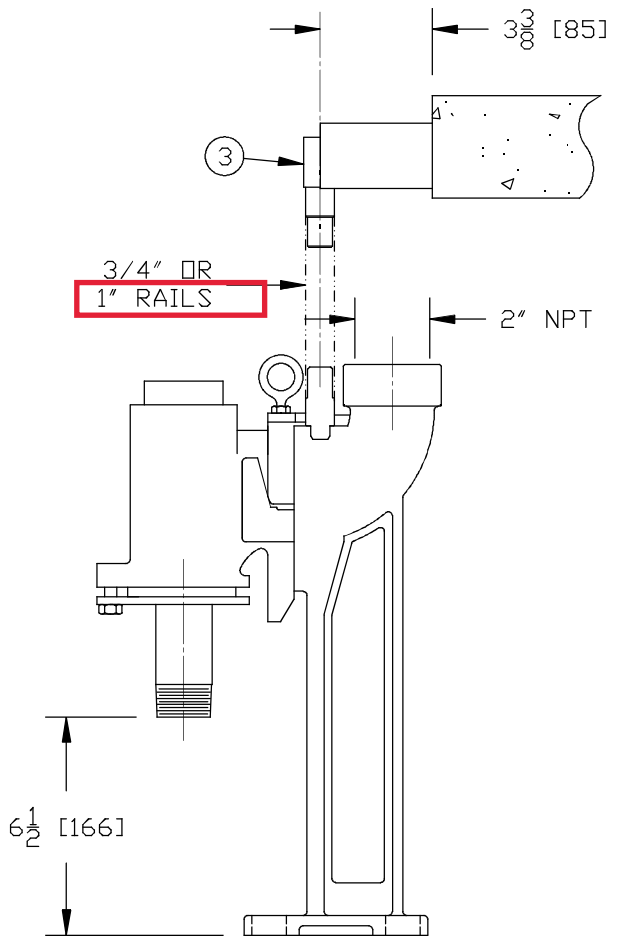
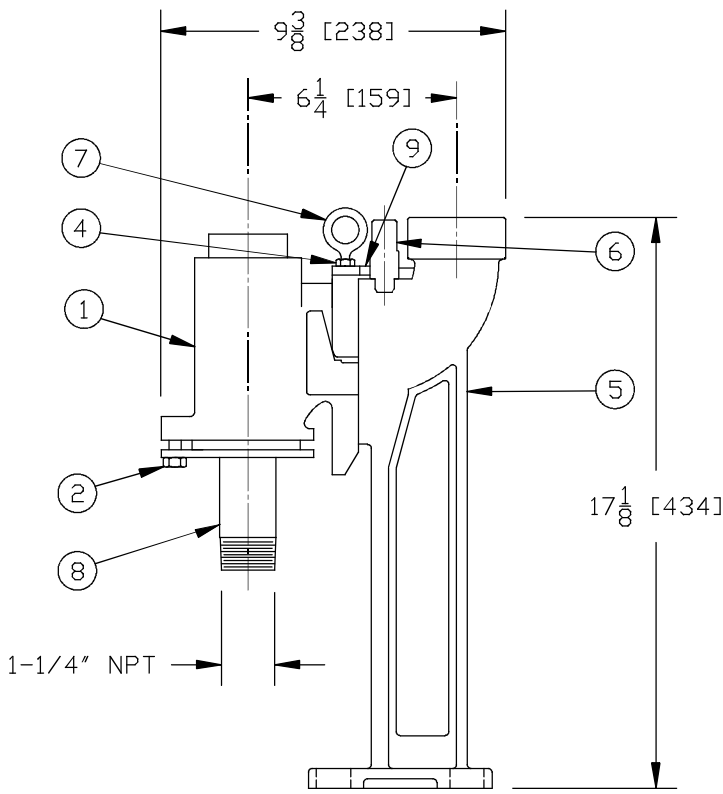
- Base elbow provides quick and easy installation and removal of vertical discharge 1 or 2HP Grinder Pumps
- Quick-connect stainless steel pump adapters
- Taper-base arms support liftout elbow and pump
- Positive O-ring sealing face
- Automatic sealing pulls mating faces together
- Carries 100% pump load - no stress on rails





PART	DESCRIPTION	QTY
1	FLANGE W/BALL VALVE	1
2	SCREW, CAP	2
3	ASSY, UPPER RAIL GUIDE	1
4	SCREW, CAP	2
5	ELBOW, BASE	1
6	PIN, RAIL	2
7	BOLT, EYE	1
8	ADAPTER, PIPE	1
9	PLATE, GUIDE	1

**MATERIAL**  
 ELBOW/FLANGE: CLASS 30 IRON  
 PAINT: POWDER COAT BLUE  
 GUIDE PLATE: SST  
 PIPE ADAPTER: SST  
 RAIL PIN: SST  
 FASTENERS: SST



NOTE: ALL DIMENSIONS FOR REFERENCE ONLY

A	SE	02/01/2016
REV	INITIALS	DATE

		KEEN PUMP CO. 471 US HWY 250 EAST ASHLAND, OHIO 44805	PHONE: 419-207-9400 FAX: 419-207-8031
<b>TITLE</b> KL1CV KEEN 1-1/4" PUMP L/O W-CHECK VALVE			
<b>SCALE</b> NTS		<b>DWG. #</b> KN-136	<b>REV.</b> A
<b>DWG. BY</b> SE	<b>DATE</b> 12/17/11		

# KP-CF(M)

## KEEN Control Duty Floats

3 FLOATS SUPPLIED FOR SIMPLEX UNITS



**“KP-CF10”** (12 Ft. Lg)  
 Mercury Float.....CONTROL PILOT DUTY  
 Narrow Angle Operation  
 Normally Open w/Cord (10’,15’,20’,30’,50’ Options)  
 18/2 SJOW-A Cord w/External Weight  
 2 Amp @ 120VAC

**“KP-CF10M”** (12 Ft. Lg)  
 Mechanical Float.....CONTROL PILOT DUTY  
 Narrow Angle Operation  
 Normally Open w/Cord (10’,15’,20’,30’,50’ Options)  
 18/2 SJOW-A Cord w/External Weight  
 2 Amp @ 120VAC

**Construction: (All Floats)**

<b><i>Outer Shell</i></b>	ABS (Acrylonitril Butadiene Styrene), rated 105 deg. C, ultrasonically welded
<b><i>Mercury Switch</i></b>	Hermetically welded and sealed canister pressurized pure argon gas for mercury Provides clean, spark extinguishing atmosphere for long life
<b><i>Mechanical Switch</i></b>	Snap-action switch, steel ball in switching tube
<b><i>Cord</i></b>	Flexible SJOW in lengths to 50’ Epoxy potted and bonded to float for watertight seal
<b><i>Weights</i></b>	Provided (attached) with all float controls

# Stainless Steel Series Control Panels

## Single Phase

- Simplex
- Duplex

## Features:

- Stainless Steel Enclosure
- 3R and 4X Ratings
- Lockable
- Mounting Feet
- Optional UL508A and UL698A Label
- Start Kit (Capacitors & Relay)
- Pump and Control Circuit Breakers
- Exterior Alarm Light
- Labeled Terminal Blocks for Quick and Easy Field Connections
- Plug-In Style Relays
- Seal Fail Circuit & Light
- Pump Run Light
- "Push To Run" Button
- HOA Pump Selector Switch
- Alternator with Selector Switch on Duplex Models
- Permanent and Separate Wiring Diagrams



# KEEN PUMP

## STAINLESS STEEL SERIES

Simplex Control Panel

Single Phase

3 Floats – Capacitors in Panel

### Technical Specifications

A NEMA 4X stainless steel control panel shall be furnished with each pumping unit / basin package.

The control panel enclosure shall be fabricated from stainless steel.

The enclosure shall be of one piece, NEMA 4X stainless steel, weatherproof construction with smooth, rounded corners and shall be constructed to have a smooth exterior and interior. The enclosure shall be fitted with a closed cell neoprene gasket cover. The enclosure shall have back panel mounting provisions.

The cover shall be hinged with heavy-duty corrosion resistant stainless steel hinges. The cover shall be lockable.

The enclosure shall be provided with external mounting feet on the top and bottom of the enclosure. These mounting feet shall be of stainless steel and welded as an integral part of the enclosure.

The back panel shall be a minimum of .080" aluminum and held in place by (4) #10 screws, which will mate to four (4) threaded standoffs, which are molded into the enclosure.

The panel shall include a double pole, main disconnect circuit breaker, control circuit breaker, I.E.C. rated motor contactor and overload, start and run capacitors, plug-in control relay, pump hand-off-auto switch, red alarm light, audible alarm, alarm silence switch, enclosed wire way, terminal blocks, ground lug and all necessary wiring. Terminal strips must have a minimum 3" clearance to the inside wall of the enclosure for ease of wiring.

The control panel shall be fitted with a red lexan alarm light. The light shall remain solidly illuminated for moisture detection in the lower seal chamber of the pump. The alarm light shall flash, indicating a high water alarm condition in the basin. The light shall be approximately 3" high by 2" diameter, mounted on the top surface of the enclosure, visible from all 360-degree direction. The bulb shall be 40-watt minimum high intensity-medium base type. The bulb or lens shall be easily replaced by removing a threaded setscrew and locking washer on the interior of the panel. The lens shall be mounted on top of the enclosure with a neoprene gasket.

The alarm condition will produce a bright glowing alarm light and audible buzzer. The audible buzzer can be silenced by means of the silence switch inside the front panel. The red indicator light will remain illuminated as long as the alarm condition persists. Both flashing alarm light and audible buzzer will stop when the water level drops to normal operating conditions.

All internal wiring shall be neatly assembled within an enclosed wire way. Each wire shall be a different color or stripe (except for ground), and all incoming wires shall terminate in the terminal block. All wires shall be 14GA. Type TEW rated for 105 degrees Celsius.

A schematic diagram shall be permanently fastened to the inside of the enclosure.

The control panel shall be UL508A or UL698A listable as an assembly.

provide 12GA wire within the panel based on the amperage

# **SCHEMATIC & SUBMITTAL DATA**

**SIMPLEX CONTROL PANEL,**

**MODEL KCG-18-21S-B-O**

**240 VOLT – 1 PHASE – 2-HP**

**FOR**

**HALIFAX-1**

## **KEEN PUMP**

**This submittal is based upon our interpretation of the specifications supplied, and written and / or signed approval of this submittal will be required before production can begin.**

### **Acknowledgement**

\_\_\_\_\_ **Signature**                      \_\_\_\_\_ **Company**

\_\_\_\_\_ **Print Name**

\_\_\_\_\_ **Date**

**SUBMITTED 6/15/23**

# SPECIFICATIONS

## ELECTRICAL NOTES:

- INCOMING POWER.....240V – 1 PHASE – 4 WIRE SERVICE
- CONTROL POWER..... 115V – 1 PHASE
- MOTOR HORSEPOWER..... 2-HP
- MOTOR FULL LOAD AMPS.... 20.9 FLA
- TOTAL PANEL AMPS..... 30 AMPS

Comment #14, panel shall  
be rated for 30 AMPS.

## CONTROL PANEL NOTES:

1. The control panel will be provided with back panel with circuit breakers, contactors & overloads, Specific Capacitors & Start Relay, relays, ground lugs and terminal blocks.
2. The alarm light will be mounted to the top of the control panel enclosure.
3. The alarm silence push button will be mounted to the right side of the control panel enclosure.
4. The audible Alarm Buzzer will be mounted to the right side of the control panel enclosure.
5. The control panel components will be labeled.
6. The electrical control panel will be Stainless Steel sized to fit all required components, UL listed with Rain Cover.
7. Optional Upgraded components include; “-B ETM/Hour Meter,” “-O Stainless Steel Enclosure.”
8. ETM/Hour Meter, H.O.A. switches and Lights/Visual Indicators are Internally mounted except for Center/Top Mounted Alarm Light.

# OPERATIONS

## **SPECIAL NOTES:**

- The alarm test switch (Mounted internally) labeled “ON-OFF-TEST”, allows personnel to test the audible and visual exterior alarms when the switch is placed in the “TEST” position.
- If Seal Leak Light is illuminated the Pump Seal has allowed water contamination to enter the pump, service should be contacted.

## **MOTOR CONTROL:**

### **Manual Mode:**

- Place the “Hand-Off-Auto” selector switch (Mounted internally) in the “Hand” position to test the pump motor will run & check for Rotation at start up.

### **Auto Mode:**

- Place the “Hand-Off-Auto” selector switch in the “Auto” position.
- When the liquid level in the wet well rises to the “off” and “on” levels, the lead pump will run.
- The pump will stop when the liquid level drops below the “off” level.

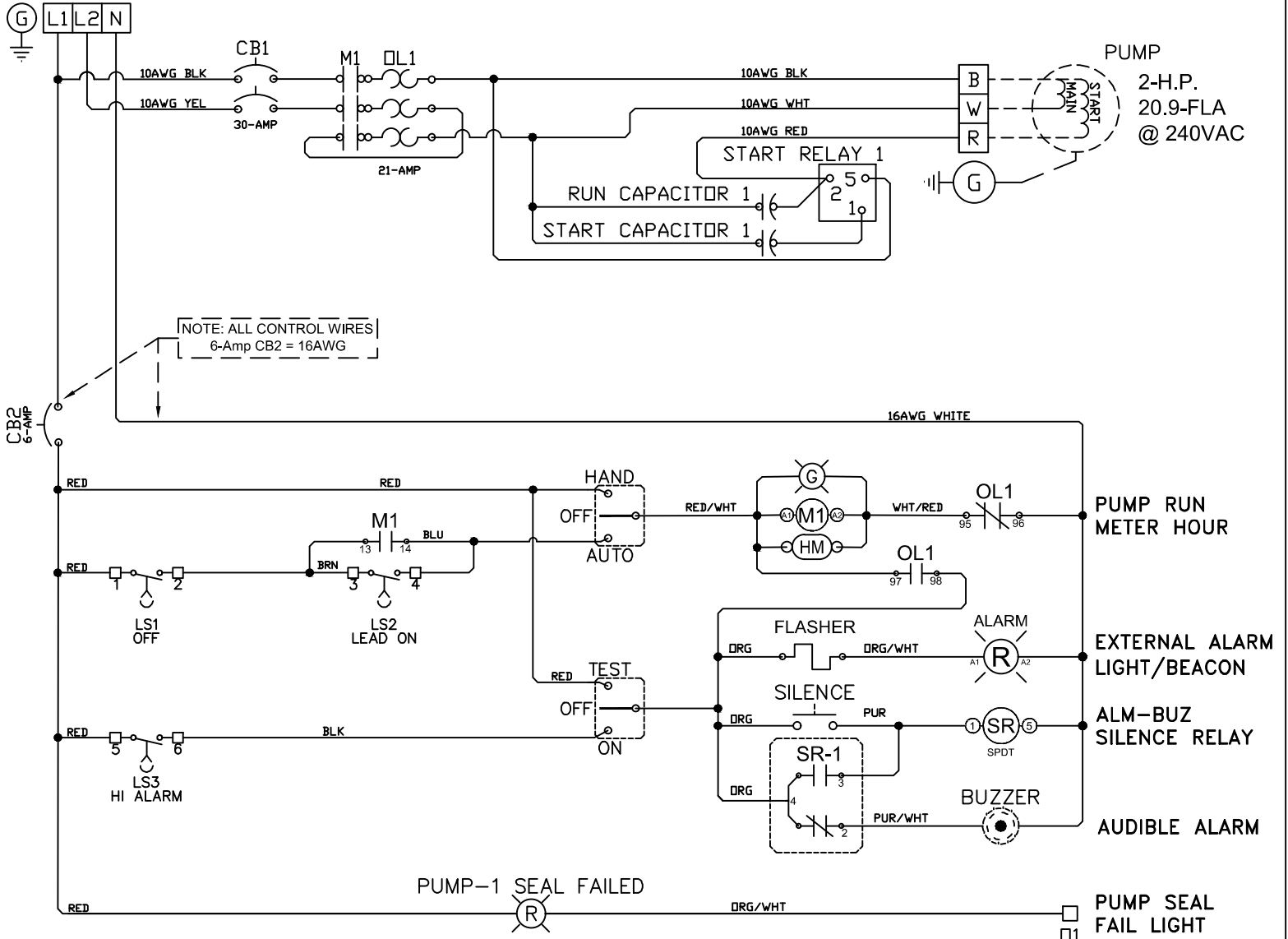
## **Alarm:**

**High Level:** The liquid rises above the “high” level.

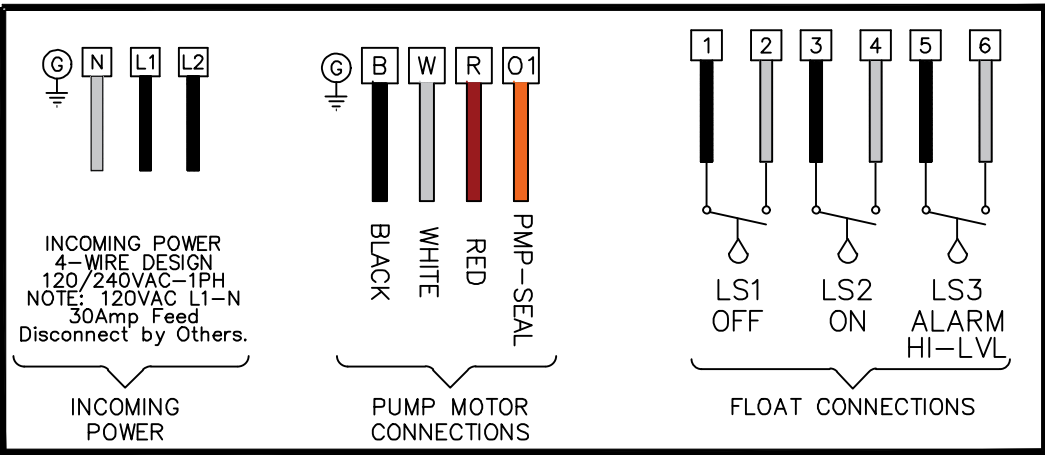
- The audible exterior alarm will sound and can be shut off by pressing the silence button.
- The visual exterior alarm light will indicate alarm even when Silence Button has been depressed.
- The audible and visual alarm will reset automatically when the liquid level falls below the “high alarm” level.

End of Submittal, page 3 of 3

120/240V-1Ø-4 WIRE SERVICE @ 30-AMPS DISCONNECT BY OTHERS.



NOTE: ALL CONTROL WIRES 6-Amp CB2 = 16AWG



Install in accordance with the National Electrical Code (NEC) or Canadian Electrical Code (CEC), and any applicable local codes, based on the installation location.

- NOTES:
- 1.) Float Switches MUST be rated to a minimum of 2 AMPS at 115 Volts.
  - 2.) TORQUE ALL WHITE 3/8" Wiring Terminals 18-20in/lbs.
  - 3.) TORQUE ALL BLACK Terminal Blocks to 16 in/lbs.
  - 4.) TORQUE ALL Aluminum 2"x3/8" Ground Terminals as follows Torque to 20 in/lbs. and 4-6AWG to 31in/lbs.
  - 5.) USE 60C COPPER WIRE ONLY MINIMUM FOR LESS THAN 100 AMPS. USE 70°C COPPER WIRE FOR MINIMUM FOR 100 AMPS OR GREATER.
  - 6.) ——— LINES INDICATE NOT SUPPLIED IN PANEL.
  - 7.) ALL PENETRATIONS MUST MEET THE ENCLOSURE TYPE RATING INDICATED ON THE "UL" LABEL.

**KEEN PUMP CO.**  
 471 US HWY. 250 East  
 ASHLAND, OH. 44805  
 (419) 207-9400  
 Fax 419-903-8031

CHANGES	TOLERANCES	DRAWN BY	WIRED BY	DATE
A	—	MEM		15-Jun-23
B	—	MATERIAL SPECIFICATIONS: AS NOTED; THIS DOCUMENT IS THE PROPERTY OF KEEN PUMP CO. ITS USE OR REPRODUCTION IS AUTHORIZED ONLY FOR RESPONDING TO A REQUEST FOR QUOTATION FROM KEEN PUMP CO.FOR THE PERFORMANCE OF WORK FOR KEEN PUMP COMPANY. USE FOR ANY OTHER PURPOSE SHALL BE IN ACCORDANCE WITH SUCH TERMS AS MAY BE AGREED.		
C	—			
D	—			
E	—			
F	—			
F	—			

**SCHEMATIC, ELECTRICAL**  
 120/240-VAC, 1- Phase, 4 Wire  
 30-Amp Feed,  
 2-HP Simplex Pump

SCALE: FULL      DRAWING NUMBER: **KCG-18-21S-B-O**

SHEET 1 OF 2



BOM for KCG-18-21S-B-O after 5/10/23 (230 Volt 1-Phase 4 Wire SIMPLEX - 3 Float Design panel) With "Options -B, -O" RELEASED 5/10/23 MEM					
Quantity	KEEN Pump DESC.	Part Number	Description		
1	BOX	CP-A1816-CSS	Control Box; STAINLESS STEEL ~ 18x16x8	Built in China w Shawn Help	
1	BOX-PNL	K0778-1-??	Aluminum Back Panel; 16.5x13 Control Box, Duplex	Built in China w Shawn Help	
1	BRKT	K0778-1-10	4-HOLE; TOGGLE/LIGHT BRACKET MOUNT	Built in China w Shawn Help	
1	GND	KCPP-029	TERMINAL, GROUND 4-14AWG 7-HOLE WITH 5 CIRCUITS	NSI 4-14-717	<a href="https://nsi-sales.com/mc.htm">https://nsi-sales.com/mc.htm</a>
1	CAP/CB BRKT	K0778-1-04	Mounting Bracket, CIRCUIT-BREAKER ABOVE Capacitors	Built in China w Shawn Help	
1	CAP	K0778-1-06	Capacitor Mounting Bracket	Built in China w Shawn Help	
1	RELAY CAPs	K0569-1-01	RELAY, START, COIL VOLTAGE 502, PICKUP MIN/MAX: 325/345, DROP OUT MAX 135V	Electrica RVA6AQ3D or MARS II 168 (19168)	<a href="https://www.marsdelivers.com/item/19168/MARS-168-RELAY/">https://www.marsdelivers.com/item/19168/MARS-168-RELAY/</a>
1	START CAPs	K0408-1-02	CAPACITOR, START 216-259 MFD, 250V	BMI 092A216B250BD4A	<a href="https://www.amazon.com/250-Grainger-Capacitor-Rep-lacement-092A216B250CD6A/dp/B00TQZ8NUE">https://www.amazon.com/250-Grainger-Capacitor-Rep-lacement-092A216B250CD6A/dp/B00TQZ8NUE</a>
1	RUN CAPs	K0341-1-01	CAPACITOR, RUN, 50 MFD, 370 VAC	MARS CAPACITOR 12225	<a href="https://www.marsdelivers.com/item/12225/50-MFD-370V-ROUND/">https://www.marsdelivers.com/item/12225/50-MFD-370V-ROUND/</a>
1	CB1	KCPP-200	25A, 2-Pole, 415Vac, Circuit Breaker. DIN MOUNT S.E. D-Curve, UL489	S.E. M9F43225	<a href="https://www.se.com/us/en/product/M9F43225/">https://www.se.com/us/en/product/M9F43225/</a>
1	CB2	KCPP-201	6A, 1-Pole, 120/240 Vac, Miniature Breaker; DIN MOUNT UL489	S.E. M9F43106	<a href="https://www.se.com/us/en/product/M9F43106/">https://www.se.com/us/en/product/M9F43106/</a>
1	Mx	KCPP-021	Contact, IEC, 32-Amp, 2Aux (1NO - 1NC) 120v coil	S.E. LC1D32G7	<a href="https://www.se.com/us/en/product/LC1D32G7/">https://www.se.com/us/en/product/LC1D32G7/</a>
1	Olx	KCPP-006S	Overload Relay with 1-Phase Sensitivity 12 - 18A; class-10 SET @ 18Amps	S.E. LRD21	<a href="https://www.se.com/us/en/product/LRD21">https://www.se.com/us/en/product/LRD21</a>
1	HM	K0778-1-28	BRACKET, DUPLEX ETM/HOUR METER MOUNTING "Option B"	Built in China w Shawn Help	
1	HM	KCP-083	METER, ELAPSED TIME, Mount in D-F Door "Option B"	TRU-METER 722-0004	<a href="https://us.rs-online.com/product/trumeter/722-0004/70115355/?keyword=722-0004">https://us.rs-online.com/product/trumeter/722-0004/70115355/?keyword=722-0004</a>
2	TOGGLE SWITCHES	KCPP-030	TOGGLE SWITCH; (MOMENTARY "TEST-HAND" / OFF / AUTO) (UL Listed)	INGRAM EZ-03-79652-L-1D	<a href="https://www.ingramproducts.com/products/alarms/al-arm-lights/toggle-switch-ez-03-79652">https://www.ingramproducts.com/products/alarms/al-arm-lights/toggle-switch-ez-03-79652</a>
1	Red "SEAL FAIL" Lights	KCPP-044	RED - Snap-fit Neon-Incandescent Panel Mounted light 1/4" tab (UL Listed)	Solico 3050-4-11-38310	<a href="https://spemco.com/3050-3-11-38310-125-volt-neon-red-round-solico-indicator-light/">https://spemco.com/3050-3-11-38310-125-volt-neon-red-round-solico-indicator-light/</a>
1	Green "RUN" Lights	KCPP-045	GREEN - Snap-fit Neon-Incandescent Panel Mounted light 1/4" tab (UL Listed)	Solico 3050-4-11-38340	<a href="https://spemco.com/3039-3-11-38340-solico-28-volt-green-incandescent-round-indicator-light-spade-terminals/">https://spemco.com/3039-3-11-38340-solico-28-volt-green-incandescent-round-indicator-light-spade-terminals/</a>
1	FLASHER	KCPP-031	FLASHER; 120VAC / 75FPM	ingram SSF150	<a href="https://us.rs-online.com/product/ssac-symcom-inc/fs126rc/70067719/">https://us.rs-online.com/product/ssac-symcom-inc/fs126rc/70067719/</a>
1	EXTERNAL ALARM Light	R15-SM	LIGHT, RED ALARM, 15W MED. (INCLUDES LENS, 15W BULB, GASKET AND SOCKET) (UL Listed)		
1	SILENCE	KCPP-063	22mm Flush Push Button, Non-Illuminated, FULL PB, (UL Listed)	RS-Pro 71266239	<a href="https://us.rs-online.com/product/rs-pro/1450612/71266239/?keyword=71266239">https://us.rs-online.com/product/rs-pro/1450612/71266239/?keyword=71266239</a>
1	SR	KCPP-041	RELAY, SR RJ2S C-A120 120VAC 12A 9K401 (SOCKET SJ15-05B)	IDEC RJ2S-C-A120	<a href="https://us.rs-online.com/product/idec-corporation/rj2s-c-a120/70172782">https://us.rs-online.com/product/idec-corporation/rj2s-c-a120/70172782</a>
1	SR	KCPP-041S	SOCKET, RELAY SJ2S-05BW 120VAC 12A 9K401 (RELAY RJ15-CA120)	IDEC SJ2S-05BW	<a href="https://us.rs-online.com/product/idec-corporation/sj2s-05bw/70229911/">https://us.rs-online.com/product/idec-corporation/sj2s-05bw/70229911/</a>
1	ALM-BUZ	ALM-BUZ	ALARM-BUZZER PEIZO (UL Listed, IP65 & 95db or better.)		<a href="https://www.ingramproducts.com/products/floyd-bell-120vac-continuous">https://www.ingramproducts.com/products/floyd-bell-120vac-continuous</a>
1	Term-Block	KCPP-146	13 pcs set - Sectional Terminal Block black		
0.2	WW	KCP-139-3	Wire Way	RS-Pro 71768629	<a href="https://us.rs-online.com/product/rs-pro/1369152/71768629/?keyword=71768629">https://us.rs-online.com/product/rs-pro/1369152/71768629/?keyword=71768629</a>
2	DIN-CLAMP	KCPP-112	Clamp, DIN RAIL, Plastic Screw Down for DIN Rail.	S.E. 9080MHA10	<a href="https://www.se.com/us/en/product/9080MHA10/terminal-block-linery-screw-down-end-clamp-for-35-mm-din-mounting-track/">https://www.se.com/us/en/product/9080MHA10/terminal-block-linery-screw-down-end-clamp-for-35-mm-din-mounting-track/</a>
0.2	DIN-Rail	KCPP-087	2m / 78.74" Length, 35mm DIN Rail, Galvanized Steel, Pre-punched/Perf.	Standard DIN Rail Perf 35mm x 7.5mm	<a href="https://us.rs-online.com/product/altech-corp/2511120-1m/70077221/">https://us.rs-online.com/product/altech-corp/2511120-1m/70077221/</a>



**KEEN PUMP CO.**  
 471 US HWY. 250 East  
 ASHLAND, OH. 44805  
 (419) 207-9400  
 Fax 419-903-8031

CHANGES	TOLERANCES	DRAWN BY	WIRED BY	DATE
A	DECIMALS .XXX = ± 0.005	MEM		15-Jun-23
B	.XX = ± 0.010	MATERIAL SPECIFICATIONS: AS NOTED; THIS DOCUMENT IS THE PROPERTY OF KEEN PUMP CO. ITS USE OR REPRODUCTION IS AUTHORIZED ONLY FOR RESPONDING TO A REQUEST FOR QUOTATION FROM KEEN PUMP CO. FOR THE PERFORMANCE OF WORK FOR KEEN PUMP COMPANY. USE FOR ANY OTHER PURPOSE SHALL BE IN ACCORDANCE WITH SUCH TERMS AS MAY BE AGREED.		
C	FRACTIONAL			
D	X/X = ± 1/64			
E	ANGLES			
F	X° = ± 1/2°			

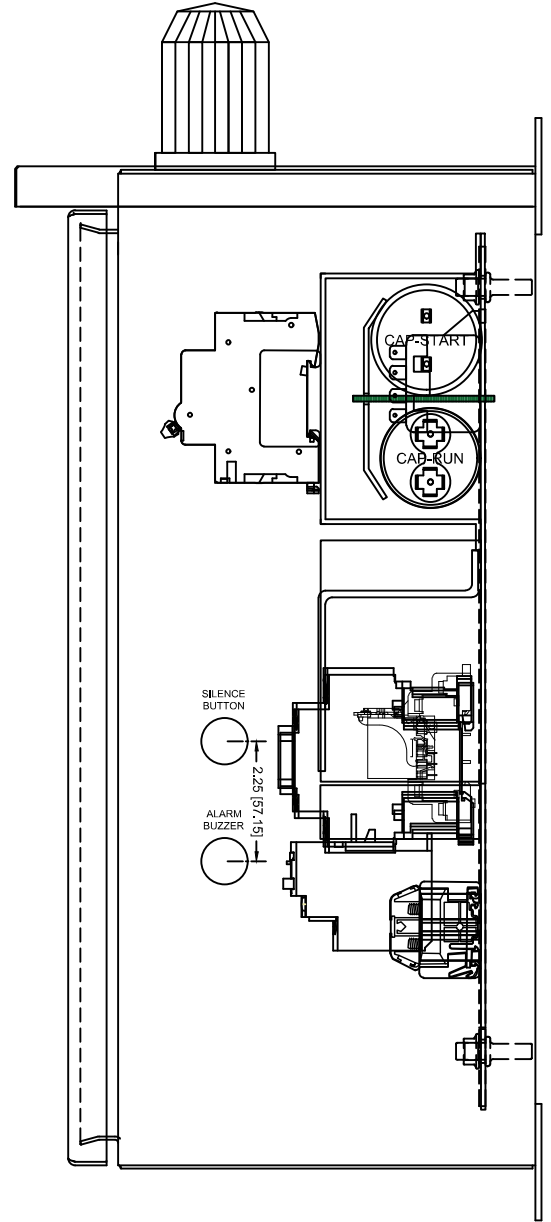
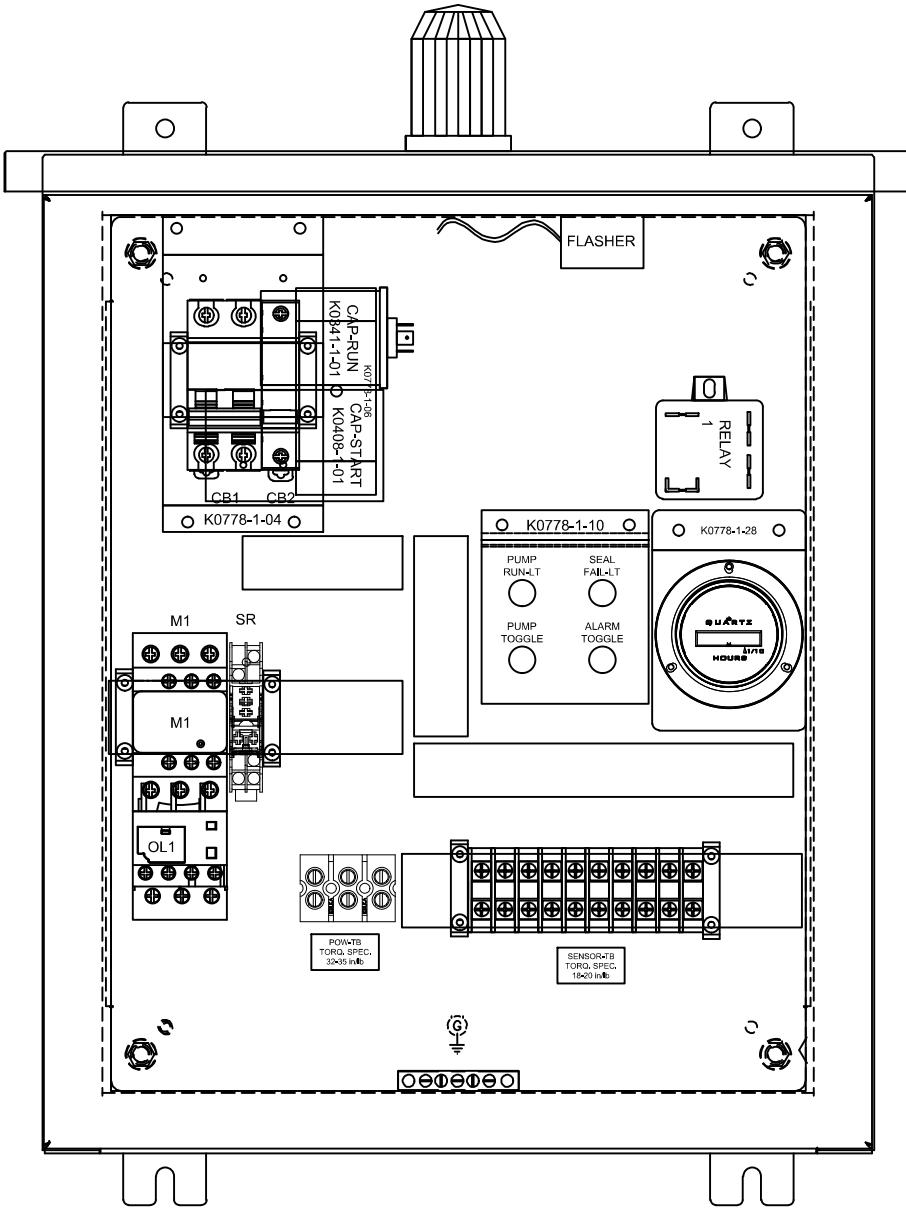
SCHEMATIC, ELECTRICAL

BOM for  
2-HP Simplex Pumps

SCALE: DRAWING NUMBER

FULL **KCG-18-21S-B-O**

SHEET 2 OF 2



NOTE: Dimensions shown are not 100% precise they can vary some are shown for reference only at this time for quote/build process. all Dim are +/- .25" in size and +/- .5" in placement on panel. Panel Dimensions are +.5" -0".

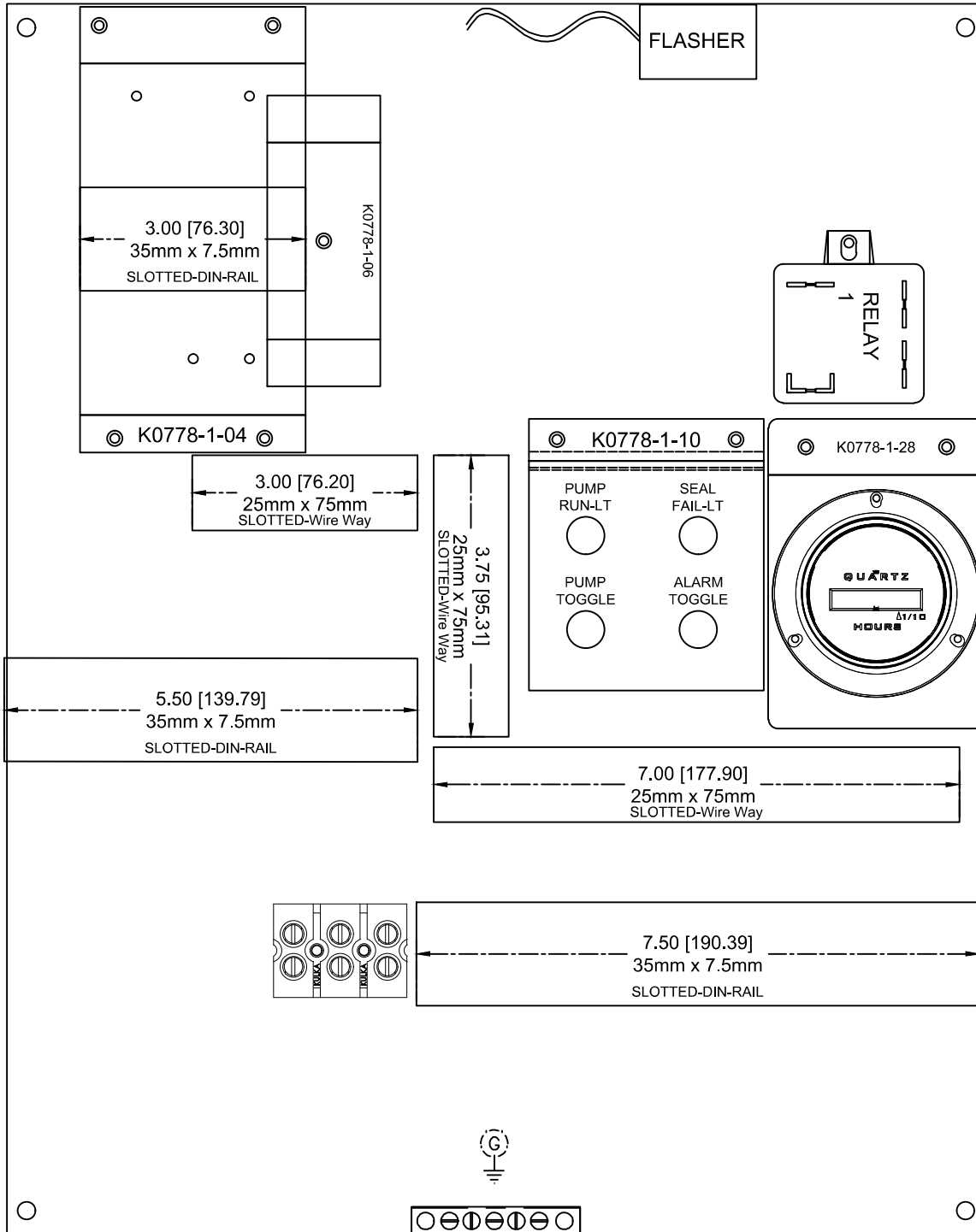
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CHANGES	TOLERANCES	DRAWN BY	WIRED BY	DATE
A	DECIMALS .XXX = ± 0.005	MEM		15-Jun-23
B	.XX = ± 0.010	MATERIAL SPECIFICATIONS: AS NOTED;		
C	FRACTIONAL			
D	X/X = ± 1/64	THIS DOCUMENT IS THE PROPERTY OF KEEN PUMP CO. ITS USE OR REPRODUCTION IS AUTHORIZED ONLY FOR RESPONDING TO A REQUEST FOR QUOTATION FROM KEEN PUMP CO. FOR THE PERFORMANCE OF WORK FOR KEEN PUMP COMPANY. USE FOR ANY OTHER PURPOSE SHALL BE IN ACCORDANCE WITH SUCH TERMS AS MAY BE AGREED.		
E	ANGLES			
F	X° = ± 1/2°			

SCHEMATIC, ELECTRICAL  
 120/240-VAC, 1- Phase, 4 Wire  
 BOX LAYOUT  
 2-HP Simplex Pump

SCALE: DRAWING NUMBER  
 FULL **KCG-18-21D-B-O**

SHEET 1 OF 2



NOTE: Dimensions shown are not 100% precise they can vary some are shown for reference only at this time for quote/build process. all Dim are +/- .25" in size and +/- .5" in placement on panel. Panel Dimensions are +.5" -0".

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A	DECIMALS .XXX = ± 0.005	MEM		15-Jun-23
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C				
D	X/X = ± 1/64			
E	ANGLES X° = ± 1/2°			
F				

SCHEMATIC, ELECTRICAL	
120/240-VAC, 1- Phase, 4 Wire	
2-HP Simplex Pump BACK PANEL	
SCALE	DRAWING NUMBER
FULL	KCG-18-21S-B-O
SHEET 2 OF 2	

# Product data sheet

Specifications



## Miniature circuit breaker (MCB), Multi9 C60N, 2P, 25A, D curve, 10kA (IEC/EN 60947-2)

M9F12225

**Product availability : Stock - Normally stocked in distribution facility**

**Price\* : 207.00 USD**

### Main

Range	Multi9
Product name	Multi9 C60
Product or Component Type	Miniature circuit-breaker
Device short name	C60N
Device Application	Distribution
Poles description	2P
Number of protected poles	2
Line Rated Current	25 A 122 °F (50 °C) EN/IEC 60947-2
Network type	DC AC
Trip unit technology	Thermal-magnetic
Curve code	D
Breaking capacity	20 kA Icu <= 125 V DC EN/IEC 60947-2 10 kA Icu 415 V AC 50/60 Hz between phases EN/IEC 60947-2 20 kA Icu 240 V AC 50/60 Hz between phases EN/IEC 60947-2 6 kA Icu 440 V AC 50/60 Hz between phases EN/IEC 60947-2
Utilisation category	Category A EN/IEC 60947-2
Suitability for isolation	Yes EN/IEC 60947-2
Standards	EN/IEC 60947-2
Product certifications	EAC KC CCC

### Complementary

Network Frequency	50/60 Hz
[Ue] rated operational voltage	240 V AC 50/60 Hz between phases 415 V AC 50/60 Hz between phases 440 V AC 50/60 Hz between phases <= 125 V DC
Magnetic tripping limit	12 x In +/- 20 % AC 17 x In +/- 20 % DC
[Ics] rated service breaking capacity	7.5 kA 75 % EN/IEC 60947-2 - 415 V AC 50/60 Hz 16 kA 75 % EN/IEC 60947-2 - 240 V AC 50/60 Hz 4.5 kA 75 % EN/IEC 60947-2 - 440 V AC 50/60 Hz 20 kA 100 % EN/IEC 60947-2 - <= 125 V DC

\* Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

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<b>Limitation class</b>	3
<b>[Ui] rated insulation voltage</b>	500 V AC 50/60 Hz EN/IEC 60947-2
<b>[Uimp] rated impulse withstand voltage</b>	6 kVEN/IEC 60947-2
<b>Contact position indicator</b>	Yes
<b>Control Type</b>	Toggle
<b>Local signalling</b>	ON/OFF indication
<b>Mounting Mode</b>	Clip-on
<b>Mounting Support</b>	DIN rail
<b>9 mm pitches</b>	4
<b>Height</b>	3.19 in (81 mm)
<b>Width</b>	1.42 in (36 mm)
<b>Depth</b>	2.83 in (72 mm)
<b>Net Weight</b>	0.53 lb(US) (0.24 kg)
<b>Color</b>	Gray
<b>Mechanical durability</b>	20000 cycles
<b>Electrical durability</b>	10000 cycles
<b>Provision for padlocking</b>	Padlockable
<b>Connections - terminals</b>	Tunnel type terminal top or bottom) 0.00...0.04 in <sup>2</sup> (1...25 mm <sup>2</sup> ) - rigid Tunnel type terminal top or bottom) 0.00...0.04 in <sup>2</sup> (1...25 mm <sup>2</sup> ) - flexible Tunnel type terminal top or bottom) 0.00...0.04 in <sup>2</sup> (1...25 mm <sup>2</sup> ) - flexible with ferrule
<b>Wire stripping length</b>	0.55 in (14 mm) top or bottom
<b>Tightening torque</b>	17.70 lbf.in (2 N.m) top or bottom
<b>Earth-leakage protection</b>	Separate block

## Environment

<b>Heat dissipation</b>	6.2 W 415 V - 25 A
<b>IP degree of protection</b>	IP20 conforming to IEC 60529 IP40 (modular enclosure) conforming to IEC 60529
<b>Pollution degree</b>	3 EN/IEC 60947-2
<b>Overvoltage category</b>	IV
<b>Tropicalisation</b>	2 IEC 60068-1
<b>Relative humidity</b>	95 % 131 °F (55 °C)
<b>Ambient air temperature for operation</b>	-22...158 °F (-30...70 °C)
<b>Ambient Air Temperature for Storage</b>	-40...176 °F (-40...80 °C)

## Ordering and shipping details

<b>Category</b>	00908-C60N SUPPLEMENTARY PROTECTORS
<b>Discount Schedule</b>	DE2
<b>GTIN</b>	3606480576775
<b>Returnability</b>	No
<b>Country of origin</b>	BG

## Packing Units

<b>Unit Type of Package 1</b>	PCE
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<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	1.42 in (3.6 cm)
<b>Package 1 Width</b>	2.95 in (7.5 cm)
<b>Package 1 Length</b>	3.35 in (8.5 cm)
<b>Package 1 Weight</b>	7.62 oz (216.0 g)
<b>Unit Type of Package 2</b>	BB1
<b>Number of Units in Package 2</b>	6
<b>Package 2 Height</b>	3.15 in (8.0 cm)
<b>Package 2 Width</b>	3.43 in (8.7 cm)
<b>Package 2 Length</b>	8.66 in (22.0 cm)
<b>Package 2 Weight</b>	2.96 lb(US) (1.341 kg)
<b>Unit Type of Package 3</b>	S03
<b>Number of Units in Package 3</b>	72
<b>Package 3 Height</b>	11.81 in (30.0 cm)
<b>Package 3 Width</b>	11.81 in (30.0 cm)
<b>Package 3 Length</b>	15.75 in (40.0 cm)
<b>Package 3 Weight</b>	36.55 lb(US) (16.579 kg)

## Offer Sustainability

<b>Sustainable offer status</b>	Green Premium product
<b>REACH Regulation</b>	<a href="#">REACH Declaration</a>
<b>EU RoHS Directive</b>	Compliant <a href="#">EU RoHS Declaration</a>
<b>Mercury free</b>	Yes
<b>China RoHS Regulation</b>	<a href="#">China RoHS declaration</a> Product out of China RoHS scope. Substance declaration for your information.
<b>RoHS exemption information</b>	<a href="#">Yes</a>
<b>WEEE</b>	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.
<b>Halogen content performance</b>	Halogen free product

## Recommended replacement(s)

# Product data sheet

Specifications



## Miniature circuit breaker (MCB), Multi9 C60SP, 1P, 6A, C curve, 10kA (UL1077), 10kA (IEC/EN 60947-2)

M9F22106

**Product availability : Stock - Normally stocked in distribution facility**

**Price\* : 101.00 USD**

### Main

Range	Multi9
Product name	Multi9 C60
Product or Component Type	Miniature circuit-breaker
Device short name	C60SP
Device Application	Distribution
Poles description	1P
Number of protected poles	1
Line Rated Current	6 A 77 °F (25 °C) EN/IEC 60947-2
Network type	AC DC
Trip unit technology	Thermal-magnetic
Curve code	C
Breaking capacity	10 kA AIR 277 V AC UL 1077 14 kA AIR 240 V AC UL 1077 14 kA AIR 120 V AC UL 1077 10 kA AIR 65 V DC UL 1077 10 kA AIR 277 V AC CSA C22.2 No 235 14 kA AIR 240 V AC CSA C22.2 No 235 14 kA AIR 120 V AC CSA C22.2 No 235 10 kA AIR 65 V DC CSA C22.2 No 235 3 kA Icu 415 V AC EN/IEC 60947-2 10 kA Icu 240 V AC EN/IEC 60947-2 20 kA Icu 60 V DC EN/IEC 60947-2 3 kA Icu 415 V AC GB 14048.2 10 kA Icu 240 V AC GB 14048.2 20 kA Icu 60 V DC GB 14048.2
Suitability for isolation	Yes EN/IEC 60947-2
Standards	EN/IEC 60947-2 GB 14048.2 UL 1077 CSA C22.2 No 235
Product certifications	IEC CCC UR CSA

### Complementary

[Ue] rated operational voltage	240 V AC 50/60 Hz 415 V AC 50/60 Hz
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60 V DC

<b>Magnetic tripping limit</b>	8.5 x In +/- 20 % AC 12 x In +/- 20 % DC
<b>[Ics] rated service breaking capacity</b>	2.25 kA 75 % EN/IEC 60947-2 - 415 V AC 7.5 kA 75 % EN/IEC 60947-2 - 240 V AC 20 kA 100 % EN/IEC 60947-2 - 60 V DC 2.25 kA 75 % GB 14048.2 - 415 V AC 7.5 kA 75 % GB 14048.2 - 240 V AC 20 kA 100 % GB 14048.2 - 60 V DC
<b>[Ui] rated insulation voltage</b>	500 V AC EN/IEC 60947-2
<b>[Uimp] rated impulse withstand voltage</b>	6 kVEN/IEC 60947-2
<b>Contact position indicator</b>	Yes
<b>Control Type</b>	Toggle
<b>Local signalling</b>	ON/OFF indication
<b>Mounting Mode</b>	Clip-on
<b>Mounting Support</b>	DIN rail
<b>9 mm pitches</b>	2
<b>Height</b>	3.19 in (81 mm)
<b>Width</b>	0.71 in (18 mm)
<b>Depth</b>	2.83 in (72 mm)
<b>Color</b>	Gray
<b>Mechanical durability</b>	20000 cycles
<b>Electrical durability</b>	10000 cycles
<b>Provision for padlocking</b>	Padlockable
<b>Connections - terminals</b>	Tunnel type terminal top or bottom) 0.00...0.04 in <sup>2</sup> (1...25 mm <sup>2</sup> ) AWG 18...AWG 8) - rigid Tunnel type terminal top or bottom) 0.00...0.02 in <sup>2</sup> (1...16 mm <sup>2</sup> ) AWG 18...AWG 8) - flexible with ferrule Tunnel type terminal top or bottom) 0.00...0.02 in <sup>2</sup> (1...16 mm <sup>2</sup> ) AWG 18...AWG 8) - flexible
<b>Wire stripping length</b>	0.55 in (14 mm) top or bottom
<b>Tightening torque</b>	22.13 lbf.in (2.5 N.m) top or bottom
<b>Earth-leakage protection</b>	Without

## Environment

<b>IP degree of protection</b>	IP20 conforming to IEC 60529 IP40 (modular enclosure) conforming to IEC 60529
<b>Pollution degree</b>	3 EN/IEC 60947-2
<b>Tropicalisation</b>	2 IEC 60068-1
<b>Relative humidity</b>	95 % 131 °F (55 °C)
<b>Operating altitude</b>	0...6561.68 ft (0...2000 m)
<b>Ambient air temperature for operation</b>	-22...158 °F (-30...70 °C)
<b>Ambient Air Temperature for Storage</b>	-40...176 °F (-40...80 °C)

## Ordering and shipping details

<b>Category</b>	00948-M9 GEN 2 CB UL1077 / IEC
<b>Discount Schedule</b>	DE2
<b>GTIN</b>	3606481168221
<b>Returnability</b>	Yes
<b>Country of origin</b>	FR



## Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	2.95 in (7.5 cm)
Package 1 Width	0.71 in (1.8 cm)
Package 1 Length	3.35 in (8.5 cm)
Package 1 Weight	3.95 oz (112 g)
Unit Type of Package 2	BB1
Number of Units in Package 2	12
Package 2 Height	3.15 in (8 cm)
Package 2 Width	3.46 in (8.8 cm)
Package 2 Length	8.86 in (22.5 cm)
Package 2 Weight	3.06 lb(US) (1.389 kg)
Unit Type of Package 3	S03
Number of Units in Package 3	144
Package 3 Height	11.81 in (30 cm)
Package 3 Width	11.81 in (30 cm)
Package 3 Length	15.75 in (40 cm)
Package 3 Weight	37.83 lb(US) (17.16 kg)

## Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	<a href="#">REACH Declaration</a>
EU RoHS Directive	Compliant <a href="#">EU RoHS Declaration</a>
Mercury free	Yes
China RoHS Regulation	<a href="#">China RoHS declaration</a> Product out of China RoHS scope. Substance declaration for your information.
RoHS exemption information	<a href="#">Yes</a>
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.
Halogen content performance	Halogen free product

## Recommended replacement(s)

# Product data sheet

Specifications



IEC contactor, TeSys Deca, nonreversing, 25A, 15HP at 480VAC, up to 100kA SCCR, 3 phase, 3 NO, 120VAC 50/60Hz coil, open

LC1D25G7

Product availability : Stock - Normally stocked in distribution facility

Price\* : 181.20 USD

## Main

Range of Product	TeSys Deca
Product or Component Type	Contactors
Device short name	LC1D
Contactors application	Motor control Resistive load
Utilisation category	AC-3 AC-4 AC-1 AC-3e
Poles description	3P
[Ue] rated operational voltage	Power circuit <= 690 V AC 25...400 Hz Power circuit <= 300 V DC
[Ie] rated operational current	25 A 140 °F (60 °C) <= 440 V AC AC-3 power circuit 40 A 140 °F (60 °C) <= 440 V AC AC-1 power circuit 25 A 140 °F (60 °C) <= 440 V AC AC-3e power circuit
[Uc] control circuit voltage	120 V AC 50/60 Hz

## Complementary

Motor power kW	5.5 kW 220...230 V AC 50/60 Hz AC-3) 11 kW 380...400 V AC 50/60 Hz AC-3) 11 kW 415...440 V AC 50/60 Hz AC-3) 15 kW 500 V AC 50/60 Hz AC-3) 15 kW 660...690 V AC 50/60 Hz AC-3) 5.5 kW 400 V AC 50/60 Hz AC-4) 5.5 kW 220...230 V AC 50/60 Hz AC-3e) 11 kW 380...400 V AC 50/60 Hz AC-3e) 11 kW 415...440 V AC 50/60 Hz AC-3e) 15 kW 500 V AC 50/60 Hz AC-3e) 15 kW 660...690 V AC 50/60 Hz AC-3e)
Maximum Horse Power Rating	3 hp 230/240 V at AC 50/60 Hz for 1 phase 2 hp 115 V at AC 50/60 Hz for 1 phase 7.5 hp 230/240 V at AC 50/60 Hz for 3 phase 15 hp 460/480 V at AC 50/60 Hz for 3 phase 20 hp 575/600 V at AC 50/60 Hz for 3 phase 7.5 hp 200/208 V at AC 50/60 Hz for 3 phase
Compatibility code	LC1D
Pole contact composition	3 NO
Contact compatibility	M2

\* Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

<b>Protective cover</b>	With
<b>[Ith] conventional free air thermal current</b>	10 A 140 °F (60 °C) signalling circuit 40 A 140 °F (60 °C) power circuit
<b>Irms rated making capacity</b>	140 A AC signalling circuit IEC 60947-5-1 250 A DC signalling circuit IEC 60947-5-1 450 A 440 V power circuit IEC 60947
<b>Rated breaking capacity</b>	450 A 440 V power circuit IEC 60947
<b>[Icw] rated short-time withstand current</b>	240 A 104 °F (40 °C) - 10 s power circuit 380 A 104 °F (40 °C) - 1 s power circuit 50 A 104 °F (40 °C) - 10 min power circuit 120 A 104 °F (40 °C) - 1 min power circuit 100 A - 1 s signalling circuit 120 A - 500 ms signalling circuit 140 A - 100 ms signalling circuit
<b>Associated fuse rating</b>	10 A gG signalling circuit IEC 60947-5-1 63 A gG ≤ 690 V type 1 power circuit 40 A gG ≤ 690 V type 2 power circuit
<b>Average impedance</b>	2 mOhm - Ith 40 A 50 Hz power circuit
<b>Power dissipation per pole</b>	3.2 W AC-1 1.25 W AC-3 1.25 W AC-3e
<b>[Ui] rated insulation voltage</b>	Power circuit 690 V IEC 60947-4-1 Power circuit 600 V CSA Power circuit 600 V UL Signalling circuit 690 V IEC 60947-1 Signalling circuit 600 V CSA Signalling circuit 600 V UL
<b>Overvoltage category</b>	III
<b>Pollution degree</b>	3
<b>[Uimp] rated impulse withstand voltage</b>	6 kV IEC 60947
<b>Safety reliability level</b>	B10d = 1369863 cycles contactor with nominal load EN/ISO 13849-1 B10d = 20000000 cycles contactor with mechanical load EN/ISO 13849-1
<b>Mechanical durability</b>	15 Mcycles
<b>Electrical durability</b>	1.65 Mcycles 25 A AC-3 ≤ 440 V 1.4 Mcycles 40 A AC-1 ≤ 440 V 1.65 Mcycles 25 A AC-3e ≤ 440 V
<b>Control circuit type</b>	AC 50/60 Hz
<b>Coil technology</b>	Without built-in suppressor module
<b>Control circuit voltage limits</b>	0.3...0.6 Uc -40...158 °F (-40...70 °C) drop-out AC 50/60 Hz 0.8...1.1 Uc -40...140 °F (-40...60 °C) operational AC 50 Hz 0.85...1.1 Uc -40...140 °F (-40...60 °C) operational AC 60 Hz 1...1.1 Uc 140...158 °F (60...70 °C) operational AC 50/60 Hz
<b>Inrush power in VA</b>	70 VA 60 Hz 0.75 68 °F (20 °C)) 70 VA 50 Hz 0.75 68 °F (20 °C))
<b>Hold-in power consumption in VA</b>	7.5 VA 60 Hz 0.3 68 °F (20 °C)) 7 VA 50 Hz 0.3 68 °F (20 °C))
<b>Heat dissipation</b>	2...3 W 50/60 Hz
<b>Operating time</b>	12...22 ms closing 4...19 ms opening
<b>Maximum operating rate</b>	3600 cyc/h 140 °F (60 °C)
<b>Connections - terminals</b>	Control circuit screw clamp terminals 1 0.00...0.01 in <sup>2</sup> (1...4 mm <sup>2</sup> ) flexible without cable end Control circuit screw clamp terminals 2 0.00...0.01 in <sup>2</sup> (1...4 mm <sup>2</sup> ) flexible without cable end Control circuit screw clamp terminals 1 0.00...0.01 in <sup>2</sup> (1...4 mm <sup>2</sup> ) flexible with cable end Control circuit screw clamp terminals 2 0.00...0.00 in <sup>2</sup> (1...2.5 mm <sup>2</sup> ) flexible with cable end Control circuit screw clamp terminals 1 0.00...0.01 in <sup>2</sup> (1...4 mm <sup>2</sup> ) solid without cable end Control circuit screw clamp terminals 2 0.00...0.01 in <sup>2</sup> (1...4 mm <sup>2</sup> ) solid without cable end Power circuit screw clamp terminals 1 0.00...0.02 in <sup>2</sup> (2.5...10 mm <sup>2</sup> ) flexible without cable end Power circuit screw clamp terminals 2 0.00...0.02 in <sup>2</sup> (2.5...10 mm <sup>2</sup> ) flexible without cable end Power circuit screw clamp terminals 1 0.00...0.02 in <sup>2</sup> (1...10 mm <sup>2</sup> ) flexible with cable end Power circuit screw clamp terminals 2 0.00...0.01 in <sup>2</sup> (1.5...6 mm <sup>2</sup> ) flexible with cable end Power circuit screw clamp terminals 1 0.00...0.02 in <sup>2</sup> (1.5...10 mm <sup>2</sup> ) solid without cable end Power circuit screw clamp terminals 2 0.00...0.02 in <sup>2</sup> (2.5...10 mm <sup>2</sup> ) solid without cable end
<b>Tightening torque</b>	Control circuit 15.05 lbf.in (1.7 N.m) screw clamp terminals flat Ø 6 mm Control circuit 15.05 lbf.in (1.7 N.m) screw clamp terminals Philips No 2

Power circuit 22.13 lbf.in (2.5 N.m) screw clamp terminals flat Ø 6 mm  
 Power circuit 22.13 lbf.in (2.5 N.m) screw clamp terminals Philips No 2  
 Control circuit 15.05 lbf.in (1.7 N.m) screw clamp terminals pozidriv No 2  
 Power circuit 22.13 lbf.in (2.5 N.m) screw clamp terminals pozidriv No 2

<b>Auxiliary contact composition</b>	1 NO + 1 NC
<b>Auxiliary contacts type</b>	Mechanically linked 1 NO + 1 NC IEC 60947-5-1 Mirror contact 1 NC IEC 60947-4-1
<b>Signalling circuit frequency</b>	25...400 Hz
<b>Minimum switching voltage</b>	17 V signalling circuit
<b>Minimum switching current</b>	5 mA signalling circuit
<b>Insulation resistance</b>	> 10 MOhm signalling circuit
<b>Non-overlap time</b>	1.5 ms on de-energisation between NC and NO contact 1.5 ms on energisation between NC and NO contact
<b>Mounting Support</b>	Rail Plate

## Environment

<b>Standards</b>	CSA C22.2 No 14 EN 60947-4-1 EN 60947-5-1 IEC 60947-4-1 IEC 60947-5-1 UL 508 IEC 60335-1
<b>Product Certifications</b>	UL BV RINA GOST DNV LROS (Lloyds register of shipping) CCC GL CSA UKCA
<b>IP degree of protection</b>	IP20 front face IEC 60529
<b>Protective treatment</b>	THIEC 60068-2-30
<b>Climatic withstand</b>	IACS E10 exposure to damp heat IEC 60947-1 Annex Q category D exposure to damp heat
<b>Permissible ambient air temperature around the device</b>	-40...140 °F (-40...60 °C) 140...158 °F (60...70 °C) with derating
<b>Operating altitude</b>	0...9842.52 ft (0...3000 m)
<b>Fire resistance</b>	1562 °F (850 °C) IEC 60695-2-1
<b>Flame retardance</b>	V1 conforming to UL 94
<b>Mechanical robustness</b>	Vibrations contactor open 2 Gn, 5...300 Hz) Vibrations contactor closed 4 Gn, 5...300 Hz) Shocks contactor closed 15 Gn for 11 ms) Shocks contactor open 8 Gn for 11 ms)
<b>Height</b>	3.35 in (85 mm)
<b>Width</b>	1.77 in (45 mm)
<b>Depth</b>	3.62 in (92 mm)
<b>Net Weight</b>	0.82 lb(US) (0.37 kg)

## Ordering and shipping details

<b>Category</b>	22354-CTR, TESYS D, OPEN, 9-38A AC
<b>Discount Schedule</b>	I12
<b>GTIN</b>	3389110349733
<b>Returnability</b>	Yes
<b>Country of origin</b>	ID

## Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	1.97 in (5.000 cm)
Package 1 Width	3.74 in (9.500 cm)
Package 1 Length	4.53 in (11.500 cm)
Package 1 Weight	14.57 oz (413.000 g)
Unit Type of Package 2	S02
Number of Units in Package 2	20
Package 2 Height	5.91 in (15.000 cm)
Package 2 Width	11.81 in (30.000 cm)
Package 2 Length	15.75 in (40.000 cm)
Package 2 Weight	18.78 lb(US) (8.517 kg)
Unit Type of Package 3	P06
Number of Units in Package 3	320
Package 3 Height	29.53 in (75.000 cm)
Package 3 Width	31.50 in (80.000 cm)
Package 3 Length	23.62 in (60.000 cm)
Package 3 Weight	318.07 lb(US) (144.272 kg)

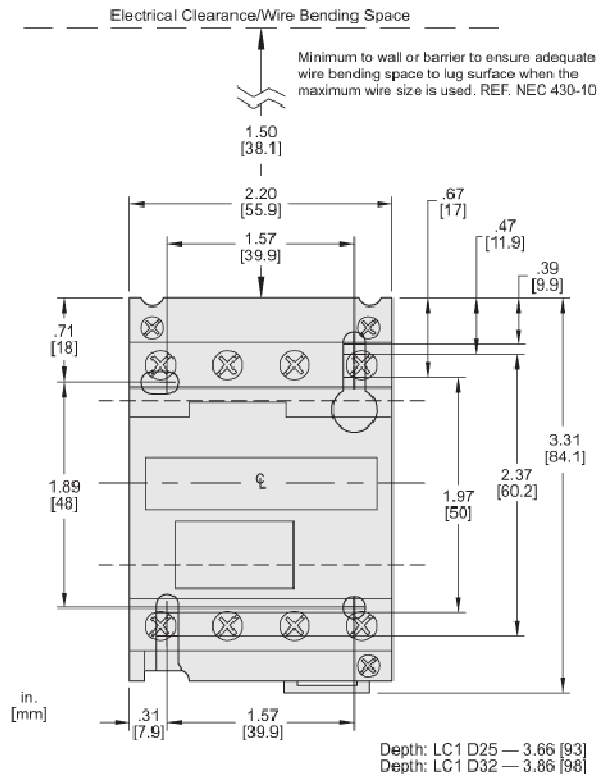
## Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Antimony oxide & Antimony trioxide, which is known to the State of California to cause cancer. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>
REACH Regulation	<a href="#">REACH Declaration</a>
REACH free of SVHC	Yes
EU RoHS Directive	Compliant <a href="#">EU RoHS Declaration</a>
Toxic heavy metal free	Yes
Mercury free	Yes
China RoHS Regulation	<a href="#">China RoHS declaration</a> Pro-active China RoHS declaration (out of China RoHS legal scope)
RoHS exemption information	<a href="#">Yes</a>
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Circularity Profile	<a href="#">End of Life Information</a>
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.
PVC free	Yes

## Contractual warranty

Warranty	18 months
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**Approximate Dimensions**



**Recommended replacement(s)**

# Product data sheet

Specifications



## TeSys Deca, thermal overload relay, 16 to 24 A, class 10A

LRD22

Product availability : Stock - Normally stocked in distribution facility

Price\* : 62.00 USD

### Main

Range	TeSys TeSys Deca
Product name	TeSys LRD TeSys Deca
Product or Component Type	Differential thermal overload relay
Device short name	LRD
Relay application	Motor protection
Product Compatibility	LC1D25 LC1D32 LC1D38
Network type	DC AC
Thermal overload class	Class 10A IEC 60947-4-1
Thermal protection adjustment range	16...24 A
[Ui] rated insulation voltage	Power circuit 600 V CSA Power circuit 600 V UL Power circuit 690 V IEC 60947-4-1

### Complementary

Network Frequency	0...400 Hz
Mounting support	Plate, with specific accessories Rail, with specific accessories Under contactor
Tripping threshold	1.14 +/- 0.06 Ir IEC 60947-4-1
Auxiliary contact composition	1 NO + 1 NC
[Ith] conventional free air thermal current	5 A signalling circuit
Permissible current	1.5 A 240 V AC-15 signalling circuit 0.1 A 250 V DC-13 signalling circuit
[Ue] rated operational voltage	690 V AC 0...400 Hz power circuit IEC 60947-4-1
Associated fuse rating	4 A gG signalling circuit 4 A BS signalling circuit
[Uimp] rated impulse withstand voltage	6 kV
Phase failure sensitivity	Tripping current 130 % of Ir on two phase, the last one at 0

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<b>Control type</b>	Red push-button stop Blue push-button reset
<b>Temperature compensation</b>	-4...140 °F (-20...60 °C)
<b>Connections - terminals</b>	Control circuit screw clamp terminals 2 0.00...0.00 in <sup>2</sup> (1...2.5 mm <sup>2</sup> ) flexible without cable end Control circuit screw clamp terminals 2 0.00...0.00 in <sup>2</sup> (1...2.5 mm <sup>2</sup> ) flexible with cable end Control circuit screw clamp terminals 2 0.00...0.00 in <sup>2</sup> (1...2.5 mm <sup>2</sup> ) solid Power circuit screw clamp terminals 1 0.00...0.02 in <sup>2</sup> (1.5...10 mm <sup>2</sup> ) flexible without cable end Power circuit screw clamp terminals 1 0.00...0.01 in <sup>2</sup> (1...6 mm <sup>2</sup> ) flexible with cable end Power circuit screw clamp terminals 1 0.00...0.02 in <sup>2</sup> (1.5...10 mm <sup>2</sup> ) solid
<b>Tightening torque</b>	Control circuit 15.05 lbf.in (1.7 N.m) screw clamp terminals Power circuit 22.13 lbf.in (2.5 N.m) screw clamp terminals
<b>Height</b>	2.60 in (66 mm)
<b>Width</b>	1.77 in (45 mm)
<b>Depth</b>	2.76 in (70 mm)
<b>Net Weight</b>	0.27 lb(US) (0.124 kg)

## Environment

<b>Climatic withstand</b>	IACS E10
<b>IP degree of protection</b>	IP20 conforming to IEC 60529
<b>Ambient air temperature for operation</b>	-4...140 °F (-20...60 °C) without derating IEC 60947-4-1
<b>Ambient Air Temperature for Storage</b>	-76...158 °F (-60...70 °C)
<b>Flame retardance</b>	V1 conforming to UL 94
<b>Mechanical robustness</b>	Vibrations 6 Gn IEC 60068-2-6 Shocks 15 Gn for 11 ms IEC 60068-2-7
<b>Dielectric strength</b>	1.89 kV 50 Hz IEC 60947-1
<b>Standards</b>	EN/IEC 60947-4-1 EN/IEC 60947-5-1 UL 60947-4-1 UL 60947-5-1 CSA C22.2 No 60947-4-1 CSA C22.2 No 60947-5-1 GB/T 14048.4 GB/T 14048.5 EN 50495

<b>Product Certifications</b>	IEC UL CSA CCC EAC BV RINA DNV-GL LROS (Lloyds register of shipping) ATEX INERIS UKCA
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## Ordering and shipping details

<b>Category</b>	22347-CONTACTOR,D-LINE,OVERLOADS-NEW
<b>Discount Schedule</b>	I12
<b>GTIN</b>	3389110346848
<b>Returnability</b>	Yes
<b>Country of origin</b>	FR

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	1.97 in (5.0 cm)



<b>Package 1 Width</b>	2.99 in (7.6 cm)
<b>Package 1 Length</b>	3.46 in (8.8 cm)
<b>Package 1 Weight</b>	5.04 oz (143.0 g)
<b>Unit Type of Package 2</b>	S02
<b>Number of Units in Package 2</b>	24
<b>Package 2 Height</b>	5.91 in (15.0 cm)
<b>Package 2 Width</b>	11.81 in (30.0 cm)
<b>Package 2 Length</b>	15.75 in (40.0 cm)
<b>Package 2 Weight</b>	8.23 lb(US) (3.731 kg)
<b>Unit Type of Package 3</b>	P06
<b>Number of Units in Package 3</b>	384
<b>Package 3 Height</b>	31.50 in (80.0 cm)
<b>Package 3 Width</b>	31.50 in (80.0 cm)
<b>Package 3 Length</b>	23.62 in (60.0 cm)
<b>Package 3 Weight</b>	165.18 lb(US) (74.924 kg)

## Offer Sustainability

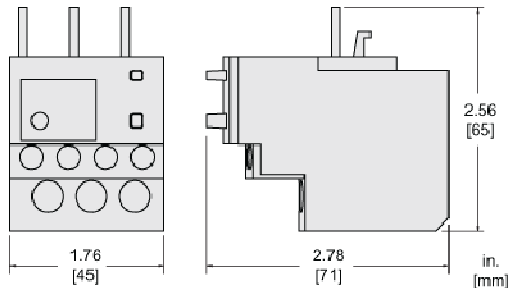
<b>Sustainable offer status</b>	Green Premium product
<b>California proposition 65</b>	WARNING: This product can expose you to chemicals including: Antimony oxide & Antimony trioxide, which is known to the State of California to cause cancer. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>
<b>REACH Regulation</b>	<a href="#">REACH Declaration</a>
<b>EU RoHS Directive</b>	Compliant <a href="#">EU RoHS Declaration</a>
<b>Mercury free</b>	Yes
<b>China RoHS Regulation</b>	<a href="#">China RoHS declaration</a> Product out of China RoHS scope. Substance declaration for your information.
<b>RoHS exemption information</b>	Yes
<b>Environmental Disclosure</b>	<a href="#">Product Environmental Profile</a>
<b>Circularity Profile</b>	<a href="#">End of Life Information</a>
<b>WEEE</b>	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.

## Contractual warranty

<b>Warranty</b>	18 months
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**Approximate Dimensions**

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**Recommended replacement(s)**

# +65°C AC Motor Start Capacitors

## Features-

- Plastic Case, Moisture and Oil Resistant
- Voltages from 110 VAC- 330 VAC
- 091A Meets EIA Type 1 Specifications
- 092A Meets EIA Type 2 Specifications
- UL Recognized Capacitors

## General Specifications-

### Operating Temperature:

-40 to +65°C

### Voltage Range:

110 - 330 VAC

### Capacitance Range:

21 - 1280 $\mu$ F

### Capacitance Tolerance:

-0%/+20%

### Operating Frequency:

50 - 60Hz

### Case Size:

8 Standard Sizes from

1.437" x 2.750" - 2.562" x 4.365"

### Termination:

¼" Quick Disconnect Terminals (Std.)

### Performance Specifications:

Meets Requirements of EIA-463-A

091A Meets Type 1, Heavy Duty,  
Specifications

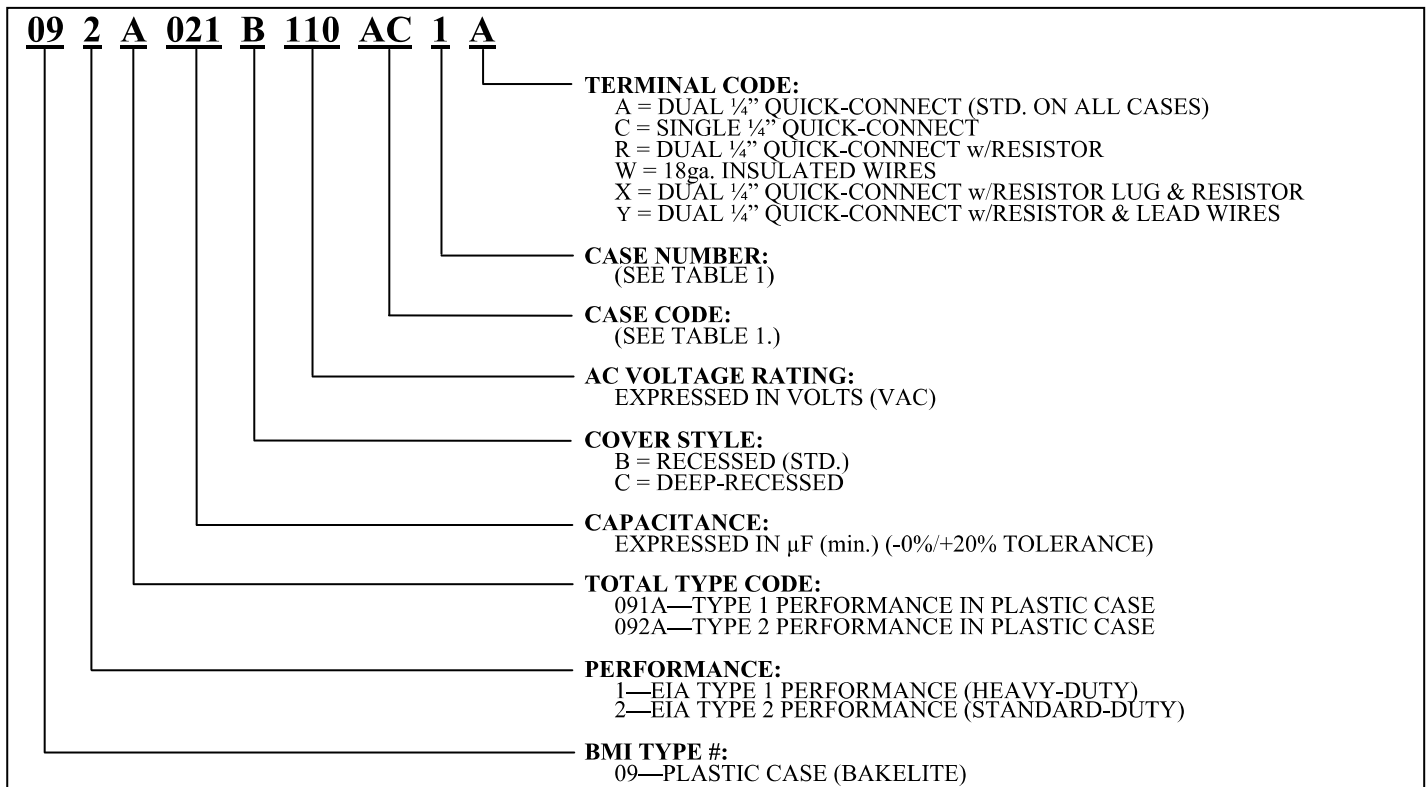
092A Meets Type 2, Standard Duty,  
Specifications.



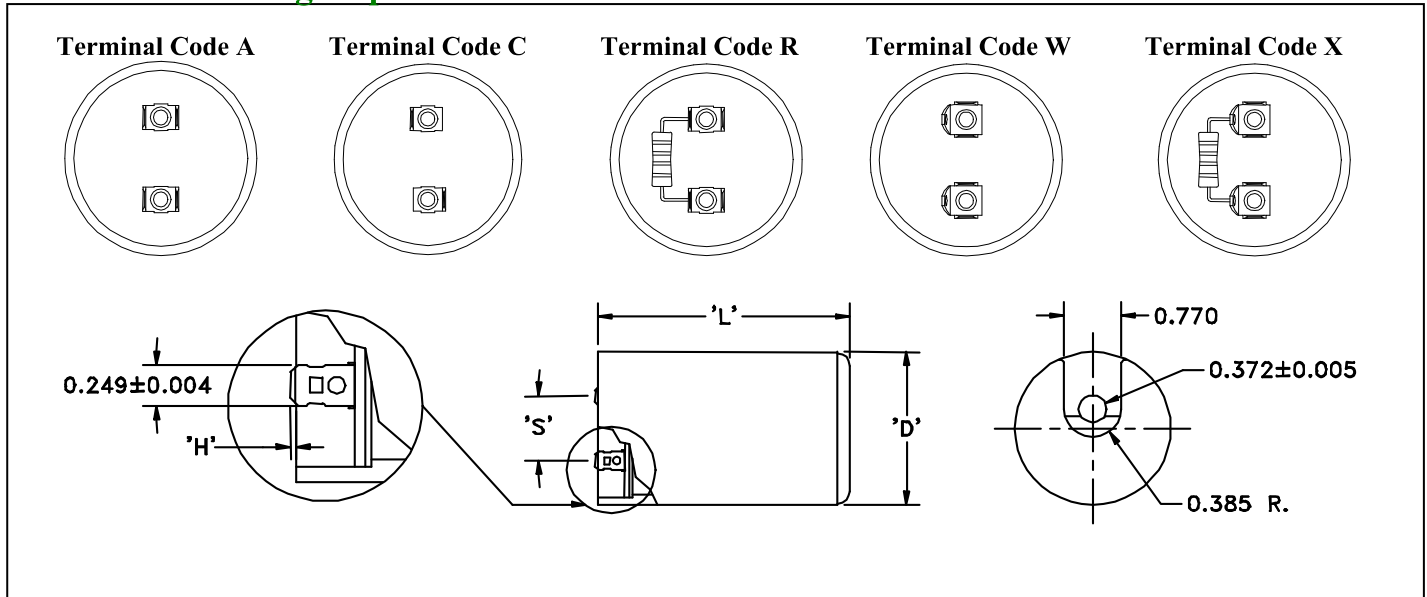
## Product Description:

BMI's type 091A and 092A AC Motor Start units are non-polarized aluminum electrolytic capacitors designed for intermittent AC duty. These capacitors are used in starting fractional horsepower, single-phase electric motors, as well as in gear motor applications. The capacitors are housed in rugged plastic cases, which require no added insulation. Mounting hardware, end caps and brackets are available to facilitate mounting. Units can be supplied with bleeder resistors and lead wires if required.

## PART NUMBER BREAK-DOWN:



## AC Motor Starting Capacitor Dimensions



**Table 1. Case Dimensions (in.)**

CASE CODE	CASE NUMBER	'D' ± 0.020	'L' ± 0.020	'S'	'H'
AC	1	1.437	2.750	0.500 nom	0.025 max
AD	2	1.437	3.365	0.500 nom	0.025 max
AE	3	1.437	4.365	0.500 nom	0.025 max
BD	4	1.812	3.365	0.625 nom	0.025 max
BE	5	1.812	4.365	0.625 nom	0.025 max
CD	6	2.062	3.365	0.875 nom	0.025 max
CE	7	2.062	4.365	0.875 nom	0.025 max
DE	8	2.562	4.365	0.875 nom	0.025 max

## STANDARD RATINGS FOR TYPE 091A EIA TYPE 1

Capacitance ( $\mu\text{F}$ )		Catalog Number	Case Code	Optional Case Code(s)
min.	max.			
<b>110 VOLTS AC</b>				
21	25	091A021B110AC1A	1	-
25	30	091A025B110AC1A	1	-
30	36	091A030B110AC1A	1	-
36	43	091A036B110AC1A	1	-
43	52	091A043B110AC1A	1	-
47	56	091A047B110AC1A	1	-
53	64	091A053B110AC1A	1	-
64	77	091A064B110AC1A	1	-
72	86	091A072B110AC1A	1	-
88	106	091A088B110AC1A	1	-
108	130	091A108B110AC1A	1	-
124	149	091A124B110AC1A	1	-
130	156	091A130B110AC1A	1	-
145	174	091A145B110AC1A	1	-
161	193	091A161B110AC1A	1	-
189	227	091A189B110AD2A	2	-
216	259	091A216B110AD2A	2	-
233	280	091A233B110AD2A	2	-
243	292	091A243B110BD4A	4	2,3
270	324	091A270B110BD4A	4	2,3
324	389	091A324B110BD4A	4	3
340	408	091A340B110BD4A	4	3
378	454	091A378B110BD4A	4	-
400	480	091A400B110BD4A	4	-
430	516	091A430B110BD4A	4	-
460	552	091A460B110BD4A	4	-
540	648	091A540B110CE7A	7	4,5,6
590	708	091A590B110CE7A	7	-
645	774	091A645B110CE7A	7	-
708	850	091A708B110DE8A	8	7
815	978	091A815B110DE8A	8	-
<b>125 VOLTS AC</b>				
21	25	091A021B125AC1A	1	-
25	30	091A025B125AC1A	1	-
30	36	091A030B125AC1A	1	-
36	43	091A036B125AC1A	1	-
43	52	091A043B125AC1A	1	-
47	56	091A047B125AC1A	1	-
53	64	091A053B125AC1A	1	-
64	77	091A064B125AC1A	1	-
72	86	091A072B125AC1A	1	-
88	106	091A088B125AC1A	1	-
108	130	091A108B125AC1A	1	-
124	149	091A124B125AC1A	1	-
130	156	091A130B125AC1A	1	-
145	174	091A145B125AD2A	2	-
161	193	091A161B125AD2A	2	-
189	227	091A189B125AD2A	2	1
216	259	091A216B125BD4A	4	2,3
233	280	091A233B125BD4A	4	2,3
243	292	091A243B125BD4A	4	2,3
270	324	091A270B125BD4A	4	2,3
324	389	091A324B125BE5A	5	-

## STANDARD RATINGS FOR TYPE 091A EIA TYPE 1

Capacitance ( $\mu\text{F}$ )		Catalog Number	Case Code	Optional Case Code(s)
min.	max.			
<b>125 VOLTS AC (CONTINUED)</b>				
340	408	091A340B125BE5A	5	4
378	454	091A378B125BE5A	5	4
400	480	091A400B125BE5A	5	4
430	516	091A430B125CE7A	7	4,5,6
460	552	091A460B125CE7A	7	4,5,6
540	648	091A540B125DE8A	8	4,5,6,7
645	774	091A645B125DE8A	8	7
<b>165 VOLTS AC</b>				
21	25	091A021B165AC1A	1	-
25	30	091A025B165AC1A	1	-
30	36	091A030B165AC1A	1	-
36	43	091A036B165AC1A	1	-
43	52	091A043B165AC1A	1	-
47	56	091A047B165AC1A	1	-
53	64	091A053B165AC1A	1	-
64	77	091A064B165AC1A	1	-
72	86	091A072B165AC1A	1	-
88	106	091A088B165AD2A	2	1
108	130	091A108B165AD2A	2	-
124	149	091A124B165BD4A	4	3
130	156	091A130B165BD4A	4	3
145	174	091A145B165BD4A	4	3
161	193	091A161B165BD4A	4	-
189	227	091A189B165BD4A	4	-
216	259	091A216B165BE5A	5	-
233	280	091A233B165BE5A	5	-
243	292	091A243B165BE5A	5	-
270	324	091A270B165BE5A	5	-
324	389	091A324B165BE5A	5	-
340	408	091A340B165CE7A	7	-
378	454	091A378B165DE8A	8	-
400	480	091A400B165DE8A	8	-
<b>220 VOLTS AC</b>				
21	25	091A021B220AC1A	1	-
25	30	091A025B220AC1A	1	-
30	36	091A030B220AC1A	1	-
36	43	091A036B220AD2A	2	1
43	52	091A043B220AD2A	2	1
47	56	091A047B220AD2A	2	1
53	64	091A053B220BD4A	4	2,3
64	77	091A064B220BD4A	4	2,3
72	86	091A072B220BD4A	4	3
88	106	091A088B220BD4A	4	-
108	130	091A108B220BE5A	5	-
124	149	091A124B220BE5A	5	-
130	156	091A130B220BE5A	5	-
145	174	091A145B220CE7A	7	-
161	193	091A161B220DE8A	8	7
189	227	091A189B220DE8A	8	7
216	259	091A216B220DE8A	8	-
233	280	091A233B220DE8A	8	-
243	292	091A243B220DE8A	8	-
270	324	091A270B220DE8A	8	-

## STANDARD RATINGS FOR TYPE 091A EIA TYPE 1

Capacitance ( $\mu\text{F}$ )		Catalog Number	Case Code	Optional Case Code(s)
min.	max.			
<b>250 VOLTS AC</b>				
21	25	091A021B250AC1A	1	-
25	30	091A025B250AC1A	1	-
30	36	091A030B250AD2A	2	1
36	43	091A036B250AD2A	2	1
43	52	091A043B250BD4A	4	1,2,3
47	56	091A047B250BD4A	4	2,3
53	64	091A053B250BD4A	4	2,3
64	77	091A064B250BD4A	4	-
72	86	091A072B250BD4A	4	-
88	106	091A088B250BE5A	5	4
108	130	091A108B250BE5A	5	4
124	149	091A124B250CE7A	7	4,5,6
130	156	091A130B250DE8A	8	5,6,7
145	174	091A145B250DE8A	8	6,7
161	193	091A161B250DE8A	8	7
189	227	091A189B250DE8A	8	7
216	259	091A216B250DE8A	8	7
233	280	091A233B250DE8A	8	7
270	324	091A270B250DE8A	8	7
<b>330 VOLTS AC</b>				
21	25	091A021B330AD2A	2	-
25	30	091A025B330AD2A	2	-
30	36	091A030B330BD4A	4	3
36	43	091A036B330BD4A	4	2,3
43	52	091A043B330BD4A	4	-
47	56	091A047B330BD4A	4	-
53	64	091A053B330BE5A	5	4
64	77	091A064B330BE5A	5	-
72	86	091A072B330BE5A	5	-
88	106	091A088B330CE7A	7	-
108	130	091A108B330DE8A	8	7
124	149	091A124B330DE8A	8	7
130	156	091A130B330DE8A	8	7
145	174	091A145B330DE8A	8	7
161	193	091A161B330DE8A	8	7
189	227	091A189B330DE8A	8	7

## STANDARD RATINGS FOR TYPE 092A EIA TYPE 2

Capacitance (μF)		Catalog Number	Case Code	Optional Case Code(s)
min.	max.			
<b>110 VOLTS AC</b>				
21	25	092A021B110AC1A	1	-
25	30	092A025B110AC1A	1	-
30	36	092A030B110AC1A	1	-
36	43	092A036B110AC1A	1	-
43	52	092A043B110AC1A	1	-
47	56	092A047B110AC1A	1	-
53	64	092A053B110AC1A	1	-
64	77	092A064B110AC1A	1	-
72	86	092A072B110AC1A	1	-
88	106	092A088B110AC1A	1	-
108	130	092A108B110AC1A	1	-
124	149	092A124B110AC1A	1	-
130	156	092A130B110AC1A	1	-
145	174	092A145B110AC1A	1	-
161	193	092A161B110AC1A	1	-
189	227	092A189B110AC1A	1	-
216	259	092A216B110AD2A	2	-
233	280	092A233B110AD2A	2	-
243	292	092A243B110AD2A	2	-
270	324	092A270B110AD2A	2	-
324	389	092A324B110BD4A	4	2,3
340	408	092A340B110BD4A	4	3
378	454	092A378B110BD4A	4	3
400	480	092A400B110BD4A	4	-
430	516	092A430B110BD4A	4	-
460	552	092A460B110BD4A	4	3
540	648	092A540B110BE5A	5	-
590	708	092A590B110BE5A	5	-
645	774	092A645B110CE7A	7	-
708	850	092A708B110CE7A	7	5,6
720	864	092A720B110CE7A	7	-
800	960	092A800B110CE7A	7	-
815	978	092A815B110CE7A	7	5,6
829	995	092A829B110CE7A	7	-
850	1020	092A850B110DE8A	8	7
1000	1200	092A1000B110DE8A	8	-
1020	1224	092A1020B110DE8A	8	7
1175	1410	092A1175B110DE8A	8	7
1280	1536	092A1280B110DE8A	8	-
<b>125 VOLTS AC</b>				
21	25	092A021B125AC1A	1	-
25	30	092A025B125AC1A	1	-
30	36	092A030B125AC1A	1	-
36	43	092A036B125AC1A	1	-
43	52	092A043B125AC1A	1	-
47	56	092A047B125AC1A	1	-
53	64	092A053B125AC1A	1	-
64	77	092A064B125AC1A	1	-
72	86	092A072B125AC1A	1	-
88	106	092A088B125AC1A	1	-
108	130	092A108B125AC1A	1	-
124	149	092A124B125AC1A	1	-



## STANDARD RATINGS FOR TYPE 092A EIA TYPE 2

Capacitance ( $\mu$ F)		Catalog Number	Case Code	Optional Case Code(s)
min.	max.			
<b>125 VOLTS AC (CONTINUED)</b>				
130	156	092A130B125AC1A	1	-
145	174	092A145B125AC1A	1	-
161	193	092A161B125AC1A	1	-
189	227	092A189B125AD2A	2	-
216	259	092A216B125AD2A	2	-
233	280	092A233B125AD2A	2	-
243	292	092A243B125AD2A	2	3
270	324	092A270B125AD2A	2	3
324	389	092A324B125BD4A	4	3
340	408	092A340B125BD4A	4	3
378	454	092A378B125BD4A	4	3
400	480	092A400B125BD4A	4	3
430	516	092A430B125BD4A	4	3
460	552	092A460B125BD4A	4	3
540	648	092A540B125BE5A	5	4
590	708	092A590B125CE7A	7	5,6
645	774	092A645B125CE7A	7	-
708	850	092A708B125CE7A	7	5,6
720	864	092A720B125CE7A	7	-
800	960	092A800B125CE7A	7	-
815	978	092A815B125CE7A	7	-
829	995	092A829B125DE8A	8	-
850	1020	092A850B125DE8A	8	-
1000	1200	092A1000B125DE8A	8	-
1020	1224	092A1020B125DE8A	8	7
1175	1410	092A1175B125DE8A	8	7
<b>165 VOLTS AC</b>				
21	25	092A021B165AC1A	1	-
25	30	092A025B165AC1A	1	-
30	36	092A030B165AC1A	1	-
36	43	092A036B165AC1A	1	-
43	52	092A043B165AC1A	1	-
47	56	092A047B165AC1A	1	-
53	64	092A053B165AC1A	1	-
64	77	092A064B165AC1A	1	-
72	86	092A072B165AC1A	1	-
88	106	092A088B165AC1A	1	-
108	130	092A108B165AD2A	2	-
124	149	092A124B165AD2A	2	-
130	156	092A130B165BD4A	4	2,3
145	174	092A145B165BD4A	4	2,3
161	193	092A161B165BD4A	4	2,3
189	227	092A189B165BD4A	4	2,3
216	259	092A216B165BD4A	4	3
233	280	092A233B165BE5A	5	3,4
243	292	092A243B165BE5A	5	3,4
270	324	092A270B165BE5A	5	3,4
324	389	092A324B165BE5A	5	4
340	408	092A340B165CE7A	7	5,6
378	454	092A378B165CE7A	7	5,6
400	480	092A400B165DE8A	8	5,6,7
460	552	092A460B165DE8A	8	5,6,7
540	648	092A540B165DE8A	8	7

## STANDARD RATINGS FOR TYPE 092A EIA TYPE 2

Capacitance ( $\mu\text{F}$ )		Catalog Number	Case Code	Optional Case Code(s)
min.	max.			
<b>165 VOLTS AC (CONTINUED)</b>				
590	708	092A590B165DE8A	8	7
645	774	092A645B165DE8A	8	-
708	850	092A708B165DE8A	8	7
720	864	092A720B165DE8A	8	-
800	960	092A800B165DE8A	8	-
815	978	092A815B165DE8A	8	-
829	995	092A829B165DE8A	8	-
850	1020	092A850B165DE8A	8	-
<b>220 VOLTS AC</b>				
21	25	092A021B220AC1A	1	-
25	30	092A025B220AC1A	1	-
30	36	092A030B220AC1A	1	-
36	43	092A036B220AC1A	1	-
43	52	092A043B220AD2A	2	-
47	56	092A047B220AD2A	2	-
53	64	092A053B220AD2A	2	-
64	77	092A064B220BD4A	4	2,3
72	86	092A072B220BD4A	4	3
88	106	092A088B220BD4A	4	3
108	130	092A108B220BD4A	4	-
124	149	092A124B220BE5A	5	-
130	156	092A130B220BE5A	5	-
145	174	092A145B220CE7A	7	5,6
161	193	092A161B220CE7A	7	5,6
189	227	092A189B220CE7A	7	-
216	259	092A216B220DE8A	8	7
233	280	092A233B220DE8A	8	7
243	292	092A243B220DE8A	8	7
270	324	092A270B220DE8A	8	7
324	389	092A324B220DE8A	8	7
340	408	092A340B220DE8A	8	-
378	454	092A378B220DE8A	8	-
400	480	092A400B220DE8A	8	-
430	516	092A430B220DE8A	8	-
<b>250 VOLTS AC</b>				
21	25	092A021B250AC1A	1	-
25	30	092A025B250AC1A	1	-
30	36	092A030B250AD2A	2	-
36	43	092A036B250AD2A	2	-
43	52	092A043B250AD2A	2	-
47	56	092A047B250AD2A	2	-
53	64	092A053B250BD4A	4	2,3
64	77	092A064B250BD4A	4	2,3
72	86	092A072B250BD4A	4	3
88	106	092A088B250BE5A	5	3,4
108	130	092A108B250BE5A	5	-
124	149	092A124B250BE5A	5	-
130	156	092A130B250BE5A	5	-
145	174	092A145B250CE7A	7	-
161	193	092A161B250CE7A	7	-
189	227	092A189B250DE8A	8	-
216	259	092A216B250DE8A	8	-
233	280	092A233B250DE8A	8	-

## STANDARD RATINGS FOR TYPE 092A EIA TYPE 2

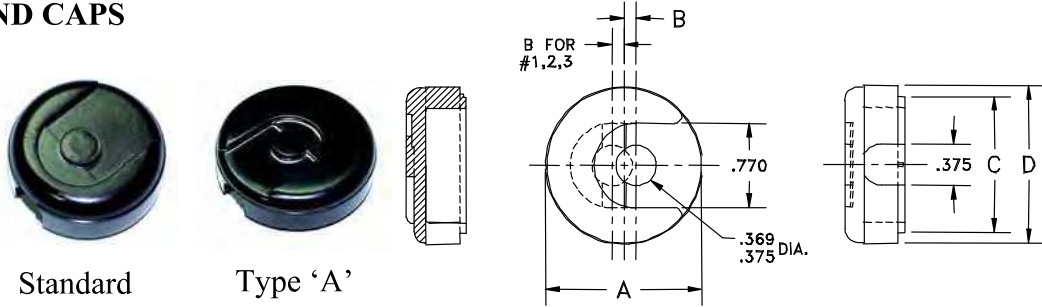
Capacitance ( $\mu\text{F}$ )		Catalog Number	Case Code	Optional Case Code(s)
min.	max.			
<b>250 VOLTS AC (CONTINUED)</b>				
243	292	092A243B250DE8A	8	-
270	324	092A270B250DE8A	8	-
324	389	092A324B250DE8A	8	-
340	408	092A340B250DE8A	8	-
378	454	092A378B250DE8A	8	-
400	480	092A400B250DE8A	8	-
430	516	092A430B250DE8A	8	-
<b>330 VOLTS AC</b>				
21	25	092A021B330AD2A	2	1
25	30	092A025B330AD2A	2	1
30	36	092A030B330BD4A	4	1,2,3
36	43	092A036B330BD4A	4	2,3
43	53	092A043B330BD4A	4	3
47	56	092A047B330BD4A	4	3
53	64	092A053B330BE5A	5	3,4
64	77	092A064B330BE5A	5	-
72	86	092A072B330BE5A	5	-
88	106	092A088B330CE7A	7	5,6,7
108	130	092A108B330DE8A	8	7
124	149	092A124B330DE8A	8	7
130	156	092A130B330DE8A	8	7
145	174	092A145B330DE8A	8	7
161	193	092A161B330CE7A	8	-
189	227	092A189B330DE8A	8	-
216	259	092A216B330DE8A	8	-
233	280	092A233B330DE8A	8	-
243	292	092A243B330DE8A	8	-
270	324	092A270B330DE8A	8	-

# AC MOTOR START MOUNTING ACCESSORIES

## TERMINALS

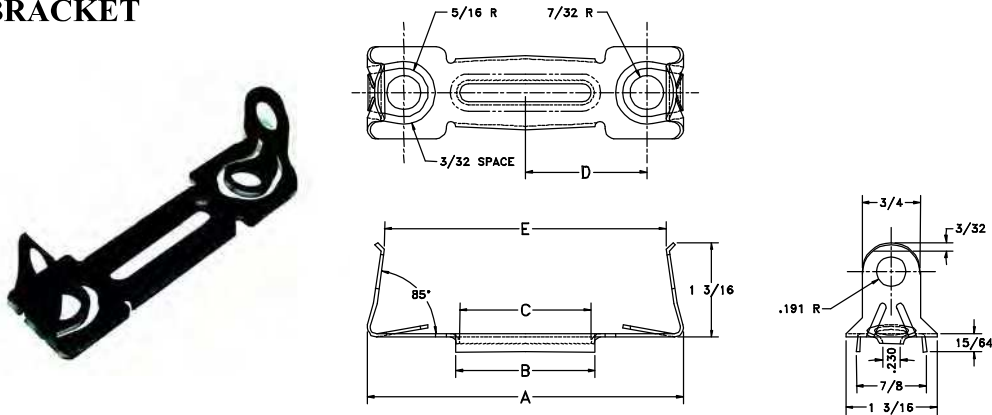


## END CAPS



Case #	P/N	Dia.	'A', ±0.010	'B', ±0.003	'C', ±0.005	'D', ±0.003
1,2,3	670400 0074	1 <sup>7</sup> / <sub>16</sub>	1.437	0.080	1.093	1.241
4&5	670400 0075	1 <sup>13</sup> / <sub>16</sub>	1.812	0.110	1.468	1.611
6&7	670400 0076	2 <sup>1</sup> / <sub>16</sub>	2.062	0.235	1.718	1.866
8	670400 0102C	2 <sup>9</sup> / <sub>16</sub>	2.562	0.485	2.218	2.366

## BRACKET



Case #	P/N	'A'	'B'	'C'	'D'	'E'
1	670036 0941	3.375	1.171	1.062	1.258	3.015
2,4,6	670036 0943	4.050	1.812	1.703	1.578	3.656
3,5,7,8	670036 0944	5.050	2.718	2.000	2.078	4.656

All dimensions ±0.015".

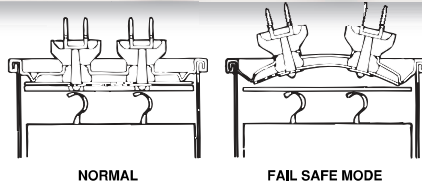
Material—0.042" Spring Steel.  
Finish—Black Parkerize.



# Motor Run Capacitors

MARS SERIES **120**

COMPONENT



PHYSICAL INTERRUPTER

## Single Section Run Capacitors

Capacitor accessories on page C9.

### Features:

- MARS offers the widest selection of ratings in the industry
- Non-PCB capacitors. Physical interrupter makes our capacitors safe
- Perfect for general replacements—smallest dimensions available
- UL and CSA listings available

Single Section 370 Volt Oval			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12002	2	A	1.500
12003	3	A	1.500
12004	4	A	1.500
12005	5	A	1.500
12006	6	A	1.500
12007	7.5	A	2.375
12008	10	A	2.625
12009	12.5	A	3.000
12010	15	A	3.750
12012	17.5	A	3.750
12014	20	C	2.375
12015	25	C	2.625
12017	30	C	2.625
12018	35	C	3.000
12021	40	C	3.750
12023	45	C	3.750
	50	C	3.750
12024	55	C	4.250
12087	60	C	4.750
12011	65	C	4.750
12089	70	C	4.750
12090	80	D	3.750

Single Section 370 Volt Round			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12092	2	M	2.000
12093	3	M	2.000
12094	4	M	2.000
12095	5	M	2.000
12096	6	M	2.000
12097	7.5	M	2.000
12098	10	M	2.000
12099	12.5	M	2.000
12210	15	M	2.375
12211	16	M	2.375
12212	17.5	M	2.375
12214	20	M	2.625
12215	25	M	3.000
12217	30	M	3.000
12218	35	M	3.750
12221	40	M	3.750
12223	45	N	3.375
12225	50	N	3.750
12226	55	N	3.750
12227	60	N	4.750
12128	65	N	4.750
12229	70	N	4.750
12199	80	N	4.750
12116	100	P	4.750

Single Section 440 Volt Oval			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12026	2	A	1.500
12019	2.5	A	1.500
12027	3	A	2.000
12028	4	A	2.000
12029	5	A	2.375
12030	6	A	2.375
12031	7.5	A	2.625
12032	10	A	3.750
12033	12.5	A	3.750
12034	15	C	2.375
12036	17.5	C	2.375
12037	20	C	2.625
12040	25	C	3.000
12041	30	C	3.750
12043	35	C	3.750
12045	40	C	4.750
12048	45	C	4.750
12049	50	C	4.750
12050	55	C	4.750
12051	60	D	3.750
12052	65	D	3.750
12130	70	D	3.750
12135	75	D	3.750
12140	80	D	4.750

Single Section 440 Volt Round			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12102	2	M	2.000
12103	3	M	2.000
12104	4	M	2.000
12105	5	M	2.000
12106	6	M	2.000
12107	7.5	M	2.000
12232	10	M	2.375
12233	12.5	M	2.375
12234	15	M	2.625
12236	17.5	M	2.750
12237	20	M	3.000
12240	25	M	3.750
12241	30	N	3.375
12243	35	N	3.750
12245	40	N	3.750
12248	45	N	4.750
12251	50	P	3.375
12252	55	P	3.750
12254	60	P	3.750
12258	70	P	4.750
12259	80	P	4.750
12068	90	P	4.750

Base Dimensions on p.C7

\*Capacitors may be put in different case sizes occasionally, but will not be larger than those stated.





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# HLR3800-3G3D POTENTIAL TYPE MOTOR STARTING RELAY

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## 1.Applicable scope & Type description

### 1 、 Applicable scope

HLR3800-3G3D Potential type Motor starting relay single-phase motor (compressor) the starting relay mainly uses in exchanging 50/60HZ, the voltage to the 277V control circuit and the nominal current to the 16A power circuit, through starts the electric capacity, the starting single-phase motor (compressor). Is suitable in the air conditioning, the refrigerator and so on industry machine electric appliance equipment and so on domestic electric appliances and water pump.



## 2、Type and meaning

<b>HL</b>	<b>R</b>	<b>3800</b>	<b>-</b>	<b>3</b>		<b>G</b>	<b>3</b>	<b>D</b>
Hongli Electric	RelayType	"Y" :Individual Box Pack "-" :Factory Bulk Pack	Coil Number	A: Expressedt 60HZ not have symbolized: Expresses 50HZ		Operating characteristics	Operating Position	Terminal: configu

## 2.Product explanation and major technique parameter

- ★ Fixed isolation voltage  $U_i$  : 600V
- ★ Fixed working voltage  $U_e$  : AC 277V
- ★ Fixed operating current:  $I_e=16A$  ,  $I_{th}=35A$
- ★ Normal connection and breaking current: 35A 、 Breaking current ability: 96A
- ★ Mechanical life > 1,000,000 times
- ★ Electricity life > 100,000 times
- ★ Coil working voltage scope: 70% ~ 110% $U_s$
- ★ Product coil working voltage  $U_s=AC$  170 ~ 502V

★ The relay winding (cold clean criticality) can attract reliably in AC 170 ~ 502V gathers, the released voltage is not lower than AC 40V.

### 3.Conforms To The Standard

Conforms To National Standard And International Standard	1、Conforms To IEC 60730; GB14048.5,UL508 Standard。	
	2、Approved By ISO9001 System Certification(SGS)、CCC, TUV, CE, UL and Safe Certification	
	CCC Certification Number: <b>2005010303156716</b>	TUV Certification Number : <b>B 05 06 56608 001</b>
	UL Files Number: <b>E251539</b>	CE Certification Number : <b>N8N 05 06 56608 002</b>

### 4.Technology Data

Part No.	Continuous Coil Voltage (V)	pick-up (V)		Drop-out (V) Max.
		Min.	Max.	
HLR3800-7AD3D	168	140	153	45
HLR3800-	395	262	290	140

5AN3D				
HLR3800-2AF3D	332	171	184	90
HLR3800-5AI3D	395	204	233	130
HLR3800-4AP3D	420	300	328	121
HLR3800-6AQ3D	502	314	342	135
HLR3800-3AG3D	375	180	195	105

### 5.Specification

HLR3800 Series Potential Relay

[DownLoad PDF DataSheet](#)

You may also like

Sale

# Toggle Switch - EZ-03-79652



Price:

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[\(/upload/images/products/toggles/EZ-03-79652.jpg\)](/upload/images/products/toggles/EZ-03-79652.jpg) *For orders of 10 or more call to order.*

## Product Details:

- SPDT Toggle Switch: on-off-on
- Quick Connect Terminals
- 20A-125VAC, 10A-250VAC
- 3/4 HP 125VAC

Individual items are available at the price listed; call to take advantage of our quantity discounts.

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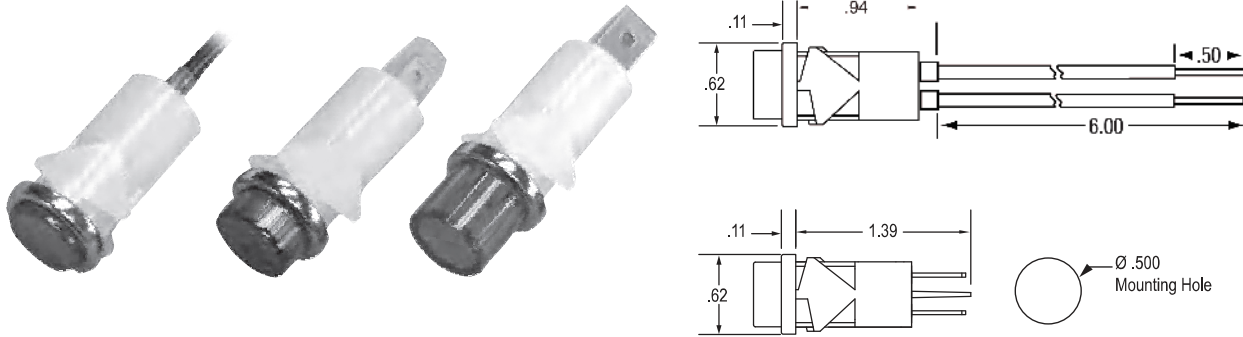
# Series 68

## Features

- Snap fits into .500" panel hole
- LED, incandescent, and neon illumination
- Many lens styles available
- Splashproof
- 480/600 volt

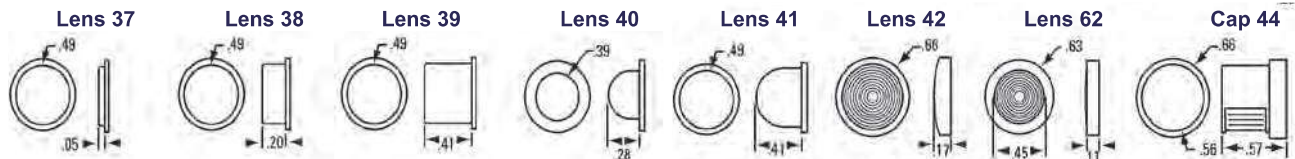
## Specifications

- Body Material: Polycarbonate
- Lens Material: Polycarbonate
- Bezel Material: Stainless Steel or Plated Brass
- Wire Gauge: 20 ga.
- Wire Strip: 1/2"
- Panel Thickness: .030" to .093"
- Certifications: Contact Us



Series	Lamp			Termination		Base		Bezel		Lens						
<b>XX</b>	<b>XX</b>			<b>X</b>		<b>X</b>		<b>X</b>		<b>XXX</b>				<b>X</b>		<b>0</b>
68	<u>Voltage</u>	<u>Type</u>	<u>Code</u>	<u>Style</u>	<u>Code</u>	<u>Color</u>	<u>Code</u>	<u>Finish</u>	<u>Code</u>	<u>Style</u>	<u>Code</u>	<u>Color</u>	<u>Plain</u>			
	2	LED	10	6" wire	1	N/A	0	None	0	Cylinder Translucent	371	Red	1			
	6	LED	11	.187 Tabs	3			<b>Stainless</b>	1	<b>Cylinder Diamond</b>	373	Amber	2			
	14	LED	12	.250 Tabs	4			Bright	2	Cylinder Translucent	381	Clear	3 <sup>1</sup>			
	28	LED	13					Black	3	<b>Cylinder Diamond</b>	383	Green	4			
	125	LED	15 <sup>3</sup>							Cylinder Rings	386	Blue	5			
	250	LED	16 <sup>3</sup>							Cylinder Diamond	393	White	6			
	6	INCAND	32							<b>Small Dome Lines</b>	405					
	14	INCAND	35							Large Dome Translucent	411					
	28	INCAND	39							Large Dome Lines	415					
	125	NEON	50							Semi Dome Rings	426 <sup>2</sup>					
	250	NEON	52							Flush Lens w/Tapered Bezel	626 <sup>4</sup>	<u>Color</u>	<u>Marked</u>			
										Cap, Black (F1C) Transparent	444 <sup>2</sup>	Red	A			
	2	ViviBright LED	60									Amber	B			
	6	ViviBright LED	61									Clear	C <sup>1</sup>			
	14	ViviBright LED	62									Green	D			
	28	ViviBright LED	63									Blue	E			
	125	ViviBright LED	65 <sup>3</sup>									White	F			
	250	ViviBright LED	66 <sup>3</sup>													
	Custom		XX													

White is Translucent  
Clear is Transparent



**Additional Options Available:**  
Contact sales@solico.com

1. Clear lens has white LED
2. Bezel not available
3. Wire Leads only
4. Bright Bezel only, use code 2

## 722 Series

### Electromechanical Hour Meter



The Redington Model 722 provides an AC Hour Meter with an operating range of 90-264VAC 50/60 Hz. You no longer require two separate meters, one for 115VAC and one for 230VAC. Models are available in the standard industry housings, 2-Hole Rectangular, Flush-Rectangular, Flush-Round and 3-Hole Round. Its quartz time base insures accurate long-term time keeping. The Totally Sealed case protects against the environment and provides years of reliable service. All models are NEMA 4X,12 rated when mounted with optional gasket.

#### Key Features

- Operating voltage 90-264VAC 50/60Hz
- Totally Sealed
- UL/cUL Recognized, CE & RoHS Compliant
- 6 Figure, 99999.9
- Quartz accuracy
- Options include:
  - Wire leads
  - Gasket kit (for NEMA 4X, 12 rating)
  - Custom lens
  - Terminals up, down, straight

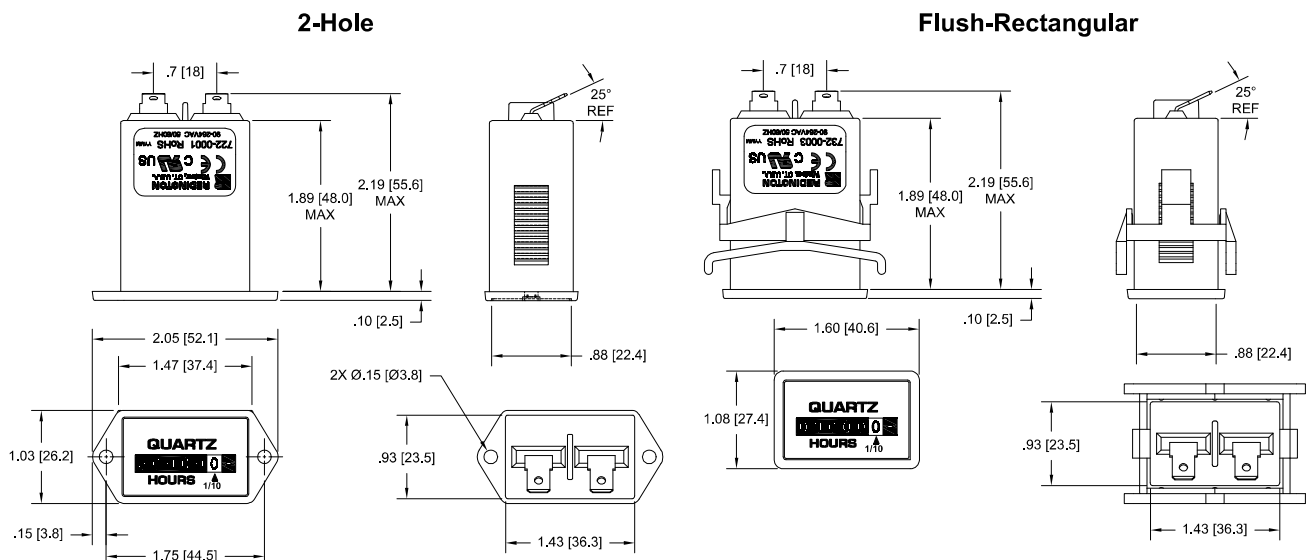
#### Applications

- Medical Equipment
- Control Panels
- Office Equipment
- Test Equipment
- Generators

## Specification

<b>Figures</b>	6 - digits, 0.14" [3.6mm] 99999.9 Hours and indicator - white on black Decimal - black on white
<b>Reset</b>	Non-reset
<b>Voltage</b>	90-264VAC
<b>Frequency</b>	50/60Hz
<b>Power</b>	1 watt max.
<b>Mount</b>	Clip or mounting holes
<b>Terminations</b>	1/4" [6.3mm] spade terminals
<b>Weight</b>	~2 oz [57 g]
<b>Accuracy</b>	± 0.02% over entire range
<b>Case Material</b>	Black polymer
<b>Lens Material</b>	Polymer
<b>Approvals</b>	UL/cUL Recognized, CE & RoHS Compliant, SAE & NEMA 4X, 12 Compliant
<b>Environmental</b>	Totally Sealed
<b>Front Panel</b>	NEMA 4X, 12 rated with optional gasket
<b>Temp. Range</b>	-40°F to +185°F [-40°C to + 85°C]
<b>Humidity</b>	95% (SAE J1378)
<b>Vibration</b>	10-80 Hz. 20g max. (SAE J1378)
<b>Shock</b>	55g @ 9 - 13msec (SAE J1378)

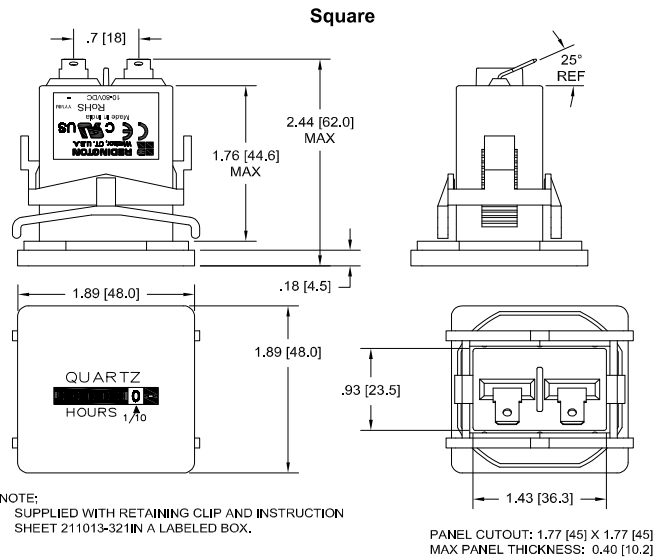
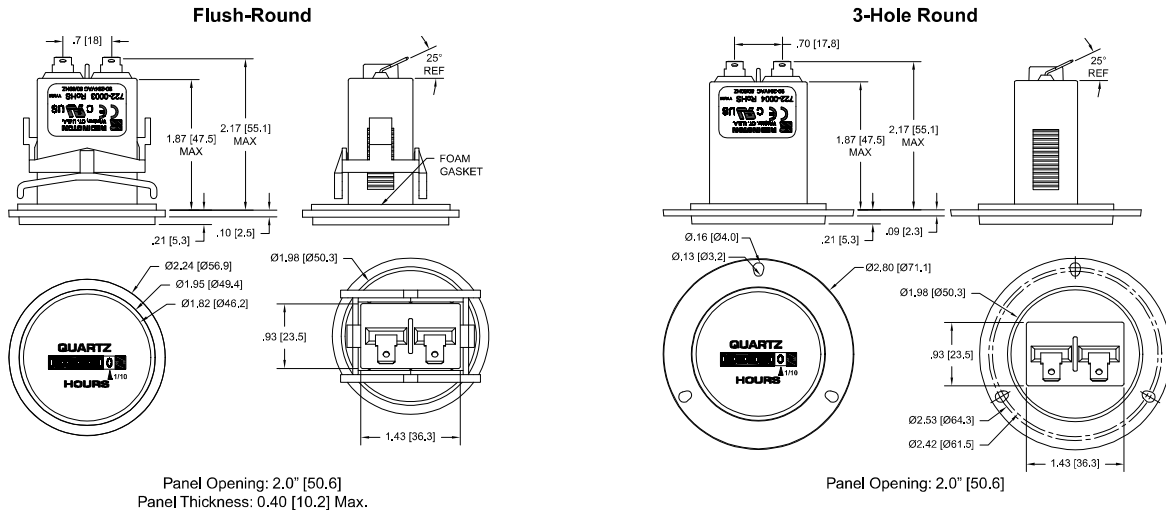
## Dimensions



Panel Opening: 1.45" X 0.95" [36.8 X 24.1]

Panel Opening: 1.45" X 0.95" [36.8 X 24.1]  
Panel Thickness: 0.03 to 0.63 [0.76 to 16.00]





## Part Numbers

- 722-0001 2-Hole Rectangular, 90-264VAC 50/60Hz, ¼" [6.3mm] spade terminals, hours & 1/10's
- 722-0002 Flush-Rectangular, 90-264VAC 50/60Hz, ¼" [6.3mm] spade terminals, hours & 1/10's
- 722-0003 Flush-Round, 90-264VAC 50/60Hz, ¼" [6.3mm] spade terminals, hours & 1/10's
- 722-0004 3-Hole Round, 90-264VAC 50/60Hz, ¼" [6.3mm] spade terminals, hours & 1/10's
- 722-0030 Square 1.9", 90-264VAC 50/60Hz, ¼" [6.3mm] spade terminals, hours & 1/10's
- 5003-010 NEMA 4X, 12 Gasket for Model 722-0001
- 5003-009 NEMA 4X, 12 Gasket for Model 722-0002
- 5003-008 NEMA 4X, 12 Gasket for Model 722-0003
- 5003-011 NEMA 4X, 12 Gasket for Model 722-0004



Product Category
Relays
General Purpose Relays
For Control Panel
G2RV-ST
<b>MY-GS</b>
G2RV-SR
MY
LY
G2R-[ ]-S (S)
G7T
MK-S
MM
MMK

Product Category
Cautions
Item A to Z Index
Correction Notice

Miniature Power Relays

## MY-GS

Mechanical Indicators Added as a Standard Feature to Our Best-selling MY General-purpose Relays



Item list of MY-GS

Related Contents

Common (4)

General Purpose Relays (2)

Features	Lineup	Specifications	Dimensions	Catalog
----------	--------	----------------	------------	---------

last update: April 1, 2021

### Model Number Structure

### Model Number Legend


MY □ □ □ - □ □ -GS DC24

1 2 3      4                      5

- Number of Poles  
2: 2 poles  
4: 4 poles
- Latching Lever  
Blank: Without latching lever  
L: With latching lever
- LED Operation Indicator  
Blank: Built-in mechanical indicators  
N: LED operation indicator and built-in mechanical indicators
- Coil Surge Absorption  
Blank: Standard models  
D2: Models with built-in diodes  
CR: Models with built-in CR circuits
- Operating Coil Voltage  
Display Example: DC24

### List of Models

### Miniature Power Relays (MY-GS)

Category	Number of poles	Contact structure	Plug-in (octal pins) terminals		
				With operation indicator	
					With latching lever
Standard models	2	Single	MY2-GS	MY2N-GS	MY2IN-GS
	4		MY4-GS	MY4N-GS	MY4IN-GS
Models with built-in diodes for coil surge absorption	2		---	MY2N-D2-GS	MY2IN-D2-GS
	4		---	MY4N-D2-GS	MY4IN-D2-GS
Models with built-in CR circuits for coil surge absorption	2		---	MY2N-CR-GS	MY2IN-CR-GS
	4		---	MY4N-CR-GS	MY4IN-CR-GS

## Ordering Information

## Main unit

## Standard model without operation indicator

Number of poles	Model	Rated voltage (V)
2	MY2-GS	12, 24, 48, 100/110, 110/120, 200/220, 220/240 VAC 6, 12, 24, 48, 100/110 VDC
4	MY4-GS	12, 24, 48, 100/110, 110/120, 200/220, 220/240 VAC 6, 12, 24, 48, 100/110 VDC

## Standard model with operation indicator

Number of poles	Model	Rated voltage (V)
2	MY2N-GS	12, 24, 48, 100/110, 110/120, 200/220, 220/240 VAC 6, 12, 24, 48, 100/110, 220 VDC
4	MY4N-GS	12, 24, 48, 100/110, 110/120, 200/220, 220/240 VAC 6, 12, 24, 48, 100/110, 220 VDC

## Standard model with operation indicator and latching lever

Number of poles	Model	Rated voltage (V)
2	MY2IN-GS	12, 24, 48, 100/110, 110/120, 200/220, 220/240 VAC 6, 12, 24, 48, 100/110, 220 VDC
4	MY4IN-GS	12, 24, 48, 100/110, 110/120, 200/220, 220/240 VAC 6, 12, 24, 48, 100/110, 220 VDC

## Models with built-in diodes for coil surge absorption with operation indicator

Number of poles	Model	Rated voltage (V)
2	MY2N-D2-GS	12, 24, 48, 100/110, 220 VDC
4	MY4N-D2-GS	12, 24, 48, 100/110, 220 VDC

## Models with built-in diodes for coil surge absorption with operation indicator and latching lever

Number of poles	Model	Rated voltage (V)
2	MY2IN-D2-GS	12, 24, 48, 100/110, 220 VDC
4	MY4IN-D2-GS	12, 24, 48, 100/110, 220 VDC

## Models with built-in CR circuits for coil surge absorption with operation indicator







Number of poles	Model	Rated voltage (V)
2	MY2N-CR-GS	100/110, 110/120, 200/220, 220/240 VAC
4	MY4N-CR-GS	100/110, 110/120, 200/220, 220/240 VAC

## Models with built-in CR circuits for coil surge absorption with operation indicator and latching lever

Number of poles	Model	Rated voltage (V)
2	MY2IN-CR-GS	100/110, 110/120, 200/220, 220/240 VAC
4	MY4IN-CR-GS	100/110, 110/120, 200/220, 220/240 VAC

## Options (order separately)

## Front-mounting Sockets

Number of Pins	Applicable Relay Model	Terminal Type	Mounting Method	Appearance	Model	Hold-down Clips
8	MY2-GS MY2N-GS MY2IN-GS MY2N-D2-GS MY2IN-D2-GS MY2N-CR-GS MY2IN-CR-GS	Screw terminal Finger protection structure *1 (Screw size M3)	DIN Track or screw mounting		PYFZ-08-E	PYC-A1 *3
		Screw terminal Finger protection structure *1 (Screw size M3)	DIN Track or screw mounting		PYF08A-N	PYC-A1 *3
		Push-In Plus Terminal (Integrated Socket with release lever)	DIN Track or screw mounting *2		PYF-08-PU	---
14	MY4-GS MY4N-GS MY4IN-GS MY4N-D2-GS MY4IN-D2-GS MY4N-CR-GS MY4IN-CR-GS	Screw terminal Finger protection structure *1 (Screw size M3)	DIN Track or screw mounting		PYFZ-14-E	PYC-A1 *3
		Screw terminal Finger protection structure *1 (Screw size M3)	DIN Track or screw mounting		PYF14A-N	PYC-A1 *3
		Push-In Plus Terminal (Integrated Socket with release lever)	DIN Track or screw mounting *2		PYF-14-PU	---

\*1. In the finger protection type (PYFZ-[]-E, and PYF[]A-N), the terminal cover is integrated into the Socket.



Round terminals cannot be used.

Use forked terminals or ferrules instead.

\*2. There are screw mounting holes in the DIN hooks on the PYF-[]-PU. Pull out the DIN hook tabs to mount the Sockets with screws.



\*3. Model number of the applicable Mounting Bracket. Sold in sets of two.

## Back-mounting Sockets

Number of Pins	Applicable Relay Model	Terminal Type	Appearance	Model	Hold-down Clips
8	PY08-02	PCB terminals		PY08-02	PYC-P
14	PY14-02	PCB terminals		PY14-02	

## Socket accessories

## Mounting Bracket

Appearance *1	Model	Weight *2	Application
	PYC-A1	Approx. 0.54 g	For joining the Socket and Relay
	PYC-P	Approx. 1.4 g	For joining the Socket and Relay

\*1. Describes the appearance when the Relay, Socket, and Mounting Bracket have been combined together.

\*2. The PYC-A1 includes two Mounting Brackets in one set. The weight specified above is the weight of one Mounting Bracket.

last update: April 1, 2021



# PB-120-A



Price:

**\$23.75**

[View Cart \(/viewcart\)](/viewcart)

Quantity:

-  +

[Add to Cart](#)

PB-120-A

(/upload/images/products/alarms/pb-120a.jpg)

*\*For orders of 10 or more call to order.*

## Product Details:

- Warble Tone Piezo Buzzer
- 40-125 VAC
- 95 db @ 2 ft, 85 db @ 10 ft
- NEMA 4X Gasket Included
- 1/4" Quick Connect Terminals
- Volume Control Cover Available
- NITW--Industrial Control Panel Components

Individual items are available at the price listed; call to take advantage of our quantity discounts.

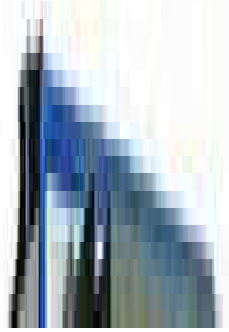
## Related Products



[\(/products//10-sm\)](/products//10-sm)  
**10-SM** (</products//10-sm>)



[\(/products//8x8-enclosures\)](/products//8x8-enclosures)  
**8x8 Enclosures** (</products//8x8-enclosures>)



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**IS Relay, 2 chan., 120VAC, surface  
mnt, 10K Ohm sense**  
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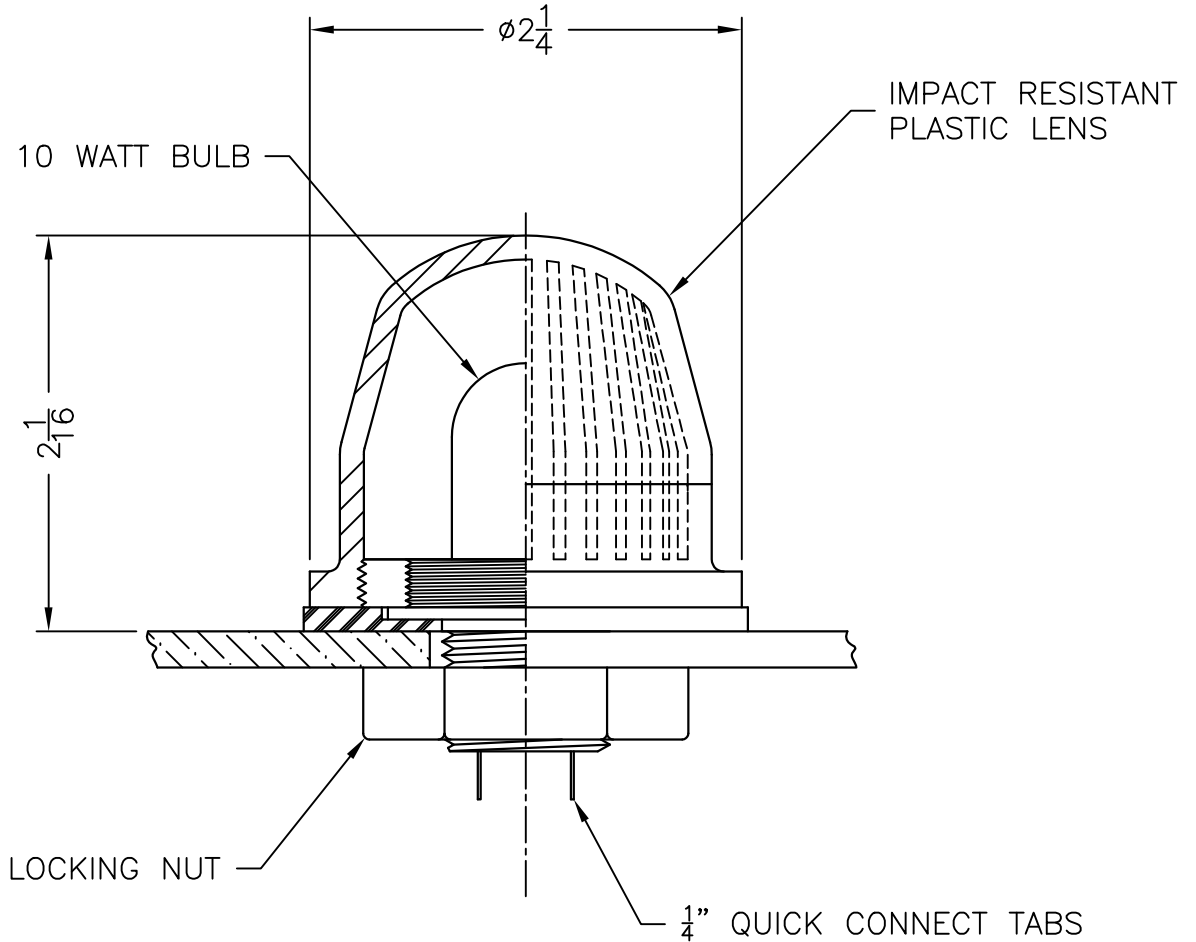
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**Toggle Switch - EZ-03-79652M**  
[\(/products//toggle-switch-ez-  
03-79652m\)](/products//toggle-switch-ez-03-79652m)



\*10-SM SERIES

PAGE  
1

MOUNTING TYPE: SINGLE  $\phi \frac{7}{8}$  HOLE.



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**AC/DC**  
EQUIPMENT CO.

ASS'Y, 10-SM  
LENS

SCALE: PART NO.

FULL

LENS ASS'Y

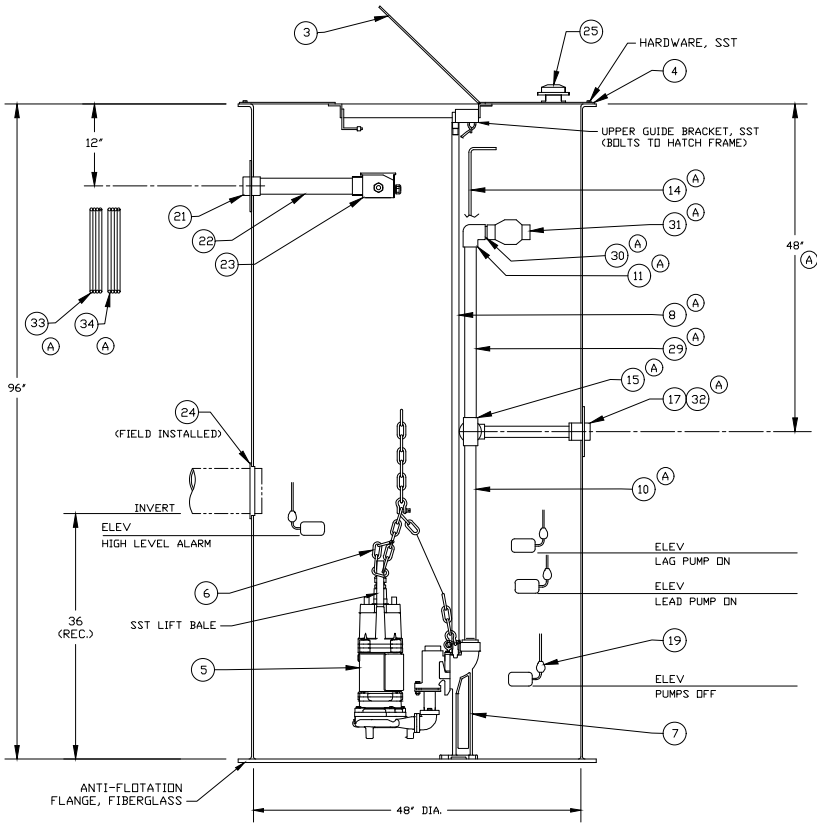
CHANGES	TOLERANCES	DRAWN BY	DATE
F	DECIMALS	A.M.	01/30/04
E	.XXX = $\pm 0.005$	MATERIAL SPECIFICATION:  AS NOTED	
D	.XX = $\pm 0.010$		
C	FRACTIONAL		
B	X/X = $\pm 1/64$		
A	ANGLES		
	X' = $\pm 1/2'$		



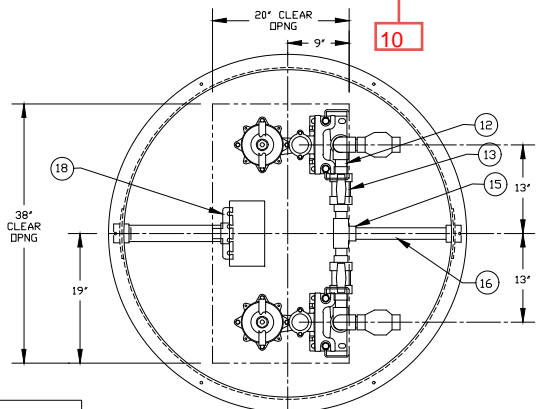


**FIBERGLASS DUPLEX UNITS**  
**QUANTITY (8) KEEN 48" DIAMETER X 96"**  
**DEPTH PRE-PACKAGED SYSTEMS**





BILL OF MATERIAL			
1	KCGS-18-21D-B-D	CONTROL PANEL	1
2	B4896SDA	BASIN	1
3	C48HSA-KLI-SAFE-2V	COVER	1
4	GASK-BCVR	BASIN GASKET	13 Ft
5	KHGL2-2401	GRINDER PUMP	2
6	K-8CP-KL1	CHAIN ASSEMBLY	2
7	KLICV	LIFT-OUT ASSEMBLY	2
8	PIPE100A021	PIPE 1" X 78" CUT SST	4
9	8X125T80	REDUCING BUSHING	2
10	PIPE125A054	PIPE 1-1/4" X 31-1/2" TDE PVC80	2
11	90EL125S	ELBOW 1-1/4" PVC	2
12	PIPE125A008	PIPE 1-1/4" X 4" CUT PVC	4
13	BV125P	TRUE UNION 1-1/4" PVC	2
14	EHVSSA014	EXTENSION HANDLE	2
15	TEE125S	TEE 1-1/4" PVC	3
16	PIPE125A328	PIPE 1-1/4" X 16-1/8" TDE PVC	1
17	DF1503S	DISCHARGE FLANGE SST	1
18	KP-4FB	FLOAT BRACKET SST	1
19	KP-CF30M	CONTROL FLOAT	4
20	1214	RELIEF BUSHING	4
21	CF200P	CONDUIT FLANGE 2" NPT	1
22	PIPE200A198	PIPE 2" X 16-1/2" TDE PVC80	1
23	DJB-KG2-1-POLY	JUNCTION BDX	1
24	KP-4ADP	FLEX HUB 4"	1
25	MV2KT	MUSHROOM VENT 2"	1
26	SPT-EH-001 (NOT SHOWN)	EXTENSION HANDLE SUPPORT	2
27	CRADLE (NOT SHOWN)	SHIPPING CRADLE (2 IN KIT)	1
28	SEALERRIBBON (NOT SHOWN)	REBBER SEALER	2 Ft
29	PIPE125A066	PIPE 1-1/4" X 28" CUT PVC80	2
30	PIPE125A210	PIPE 1-1/4" X 3-1/4" CUT PVC80	2
31	ASV125	ANTI-SIPHON 1-1/4" PVC	2
32	BI50X125T80	REDUCER BUSHING	1
33	K0884-1-02	WIRE 12/5 DIRECT BURIAL	50 Ft
34	K0884-1-01	WIRE 18/6 DIRECT BURIAL	50 Ft



APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

TO CUSTOMER: EXAMINE THIS DRAWING CAREFULLY. VERIFY ALL DIMENSIONS, LOCATIONS, AND ELEVATIONS FOR ACCURACY. SIGN AND DATE AT LINE. ANY MODIFICATIONS OR CHANGES TO THIS DRAWING OR FINISHED PRODUCT, AFTER IT HAS BEEN SIGNED, MAY RESULT IN ADDITIONAL CHARGES AND SHIPPING DELAYS. NO JOB WILL BE STARTED UNTIL CONFIRMATION THROUGH SIGNATURE. CONFIRMATION THROUGH SIGNATURE RELEASES ORDER FOR PRODUCTION.

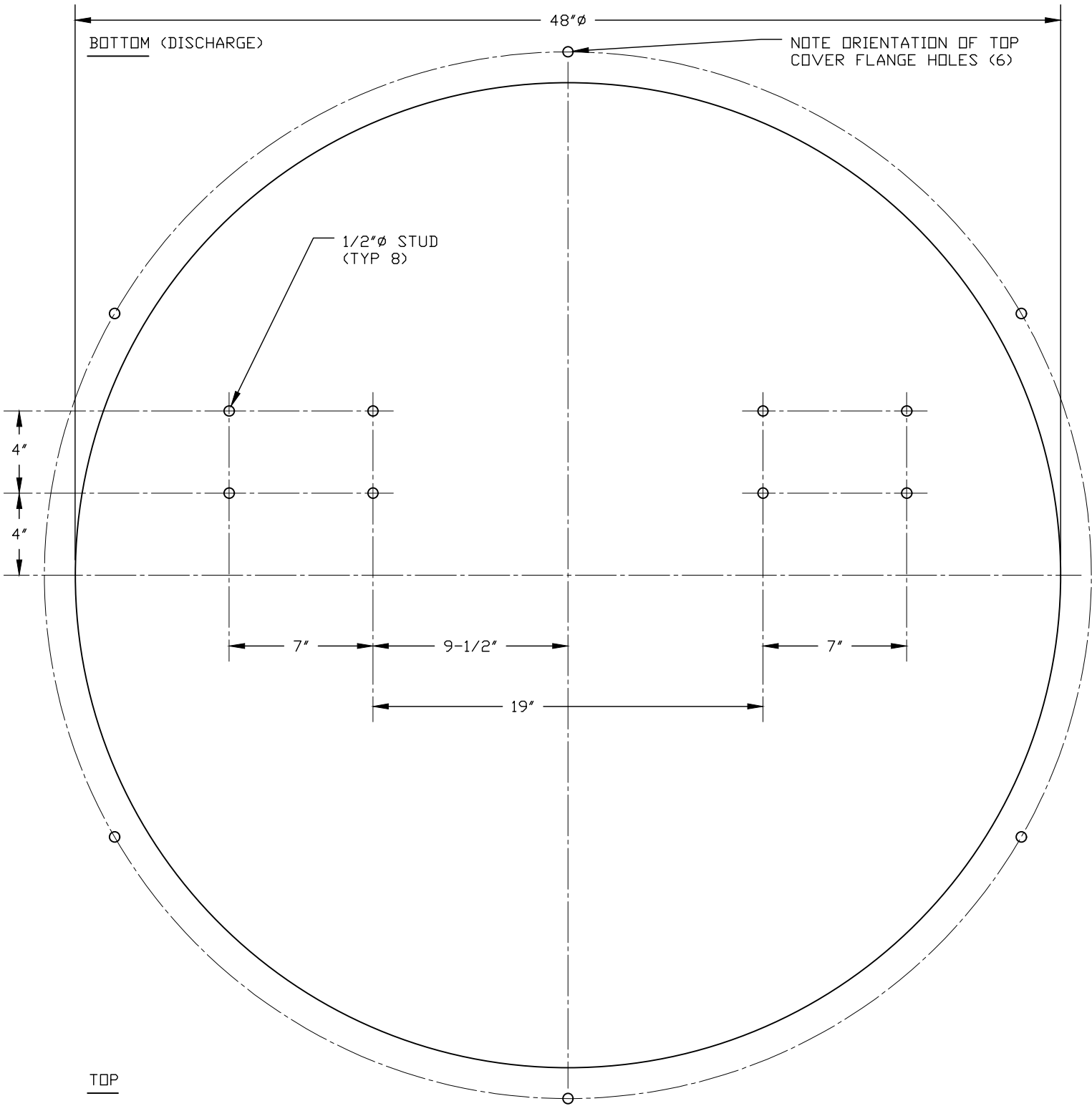
**KEEN PUMP COMPANY** KEEN PUMP CO.  
471E ST. ROUTE 250 EAST PHONE: 419-207-9400  
ASHLAND, OHIO 44805 FAX: 419-207-8031

TITLE	BASIN ASSY 48" DIA KHGL2-2401 DUPLEX KLICV ALUM CVR		
SCALE	NTS	DWG. #	REV
DWG. BY	DLM	DATE	05-09-23
		KN-276_37752	A

NOTE: ALL DIMENSIONS FOR REFERENCE ONLY	
A	ADD ANTI-SIPHON, ADD DIRECT LINE WIRE, CHG DISCH TO 1-1/2", CHG GUIDE TO 1"
REV	DESCRIPTION DATE

BALLIST WEIGHT REQUIREMENTS:  
48" X 96" = 3.1 YARDS OF CONCRETE

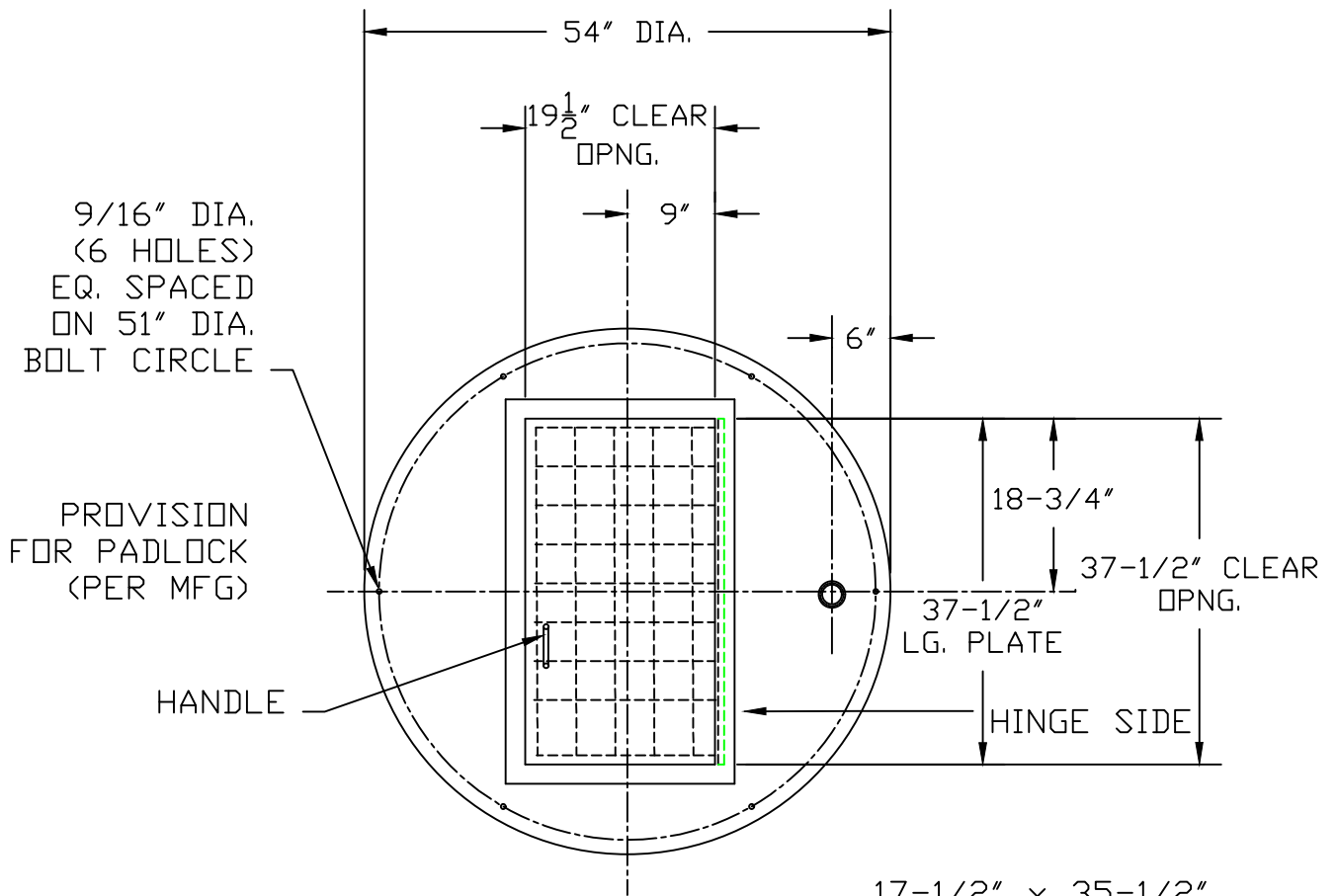
NOTE: MINIMUM LENGTH OF STUDS  
 (FROM INSIDE BOTTOM TO  
 END OF STUD TO BE 1-3/4")



NOTE: ALL DIMENSIONS FOR REFERENCE ONLY

REV	INITIALS	DATE

		KEEN PUMP CO. 471E ST ROUTE 250 EAST ASHLAND, OHIO 44805	PHONE: 419-207-9400 FAX: 419-207-8031
TITLE STUDB, 48" DIA DUP KL1 (4" OFFSET) ALUM CVR MANIFOLD DISCH ONLY			
SCALE NTS		DWG. # KN-267	REV. 0
DWG. BY DLM	DATE 03-18-22		



9/16" DIA.  
(6 HOLES)  
EQ. SPACED  
ON 51" DIA.  
BOLT CIRCLE

PROVISION  
FOR PADLOCK  
(PER MFG)

HANDLE

DOOR SUPPORT AS  
REQ'D

ARM BRACKET

17-1/2" x 35-1/2"  
SAFETY GRATE  
(FIXED TO HINGE  
SIDE)

2" NPT  
COUPLING  
(PER MFG)

5" MIN.  
CLEARANCE

37-1/2" LG. X  
6" WD. X  
1/4" THICK

NOTE: COVER TO BE DESIGNED  
FOR 300 PSF LIVE LOAD

PART NUMBER	MATERIAL
C48HSA-KL1-SAFE-2V	ALUMINUM

MATERIAL: COVER, HATCH (ALUMINUM AND STEEL.  
TREADPLATE) HARDWARE (SST)

NOTE: ALL DIMENSIONS FOR  
REFERENCE ONLY

REV	INITIALS	DATE



KEEN PUMP CO.

471E STATE ROUTE 250 EAST  
ASHLAND, OHIO 44805

PHONE: 419-207-9400  
FAX: 419-207-8031

TITLE		DWG. # / PART NO.	REV.
COVER; 48 DIAMETER WITH ACCESS 38x20, KL1 DUP.		C48HSA-KL1-SAFE-2V	0
SCALE		DWG. # / PART NO.	REV.
NTS		C48HSA-KL1-SAFE-2V	0
DWG. BY	DATE		
K THOMAN	11/13/20		

# TANK VENTS

Tank Vents provide excellent venting of sewer gasses and vacuum relief. The epoxy sealed stainless steel screen eliminates insects from entering the pump station.

## TANK VENTS:

<u>ITEM</u>	<u>DESCRIPTION</u>
MV2KT	2" VENT
MV3KT	3" VENT
MV4KT	4" VENT



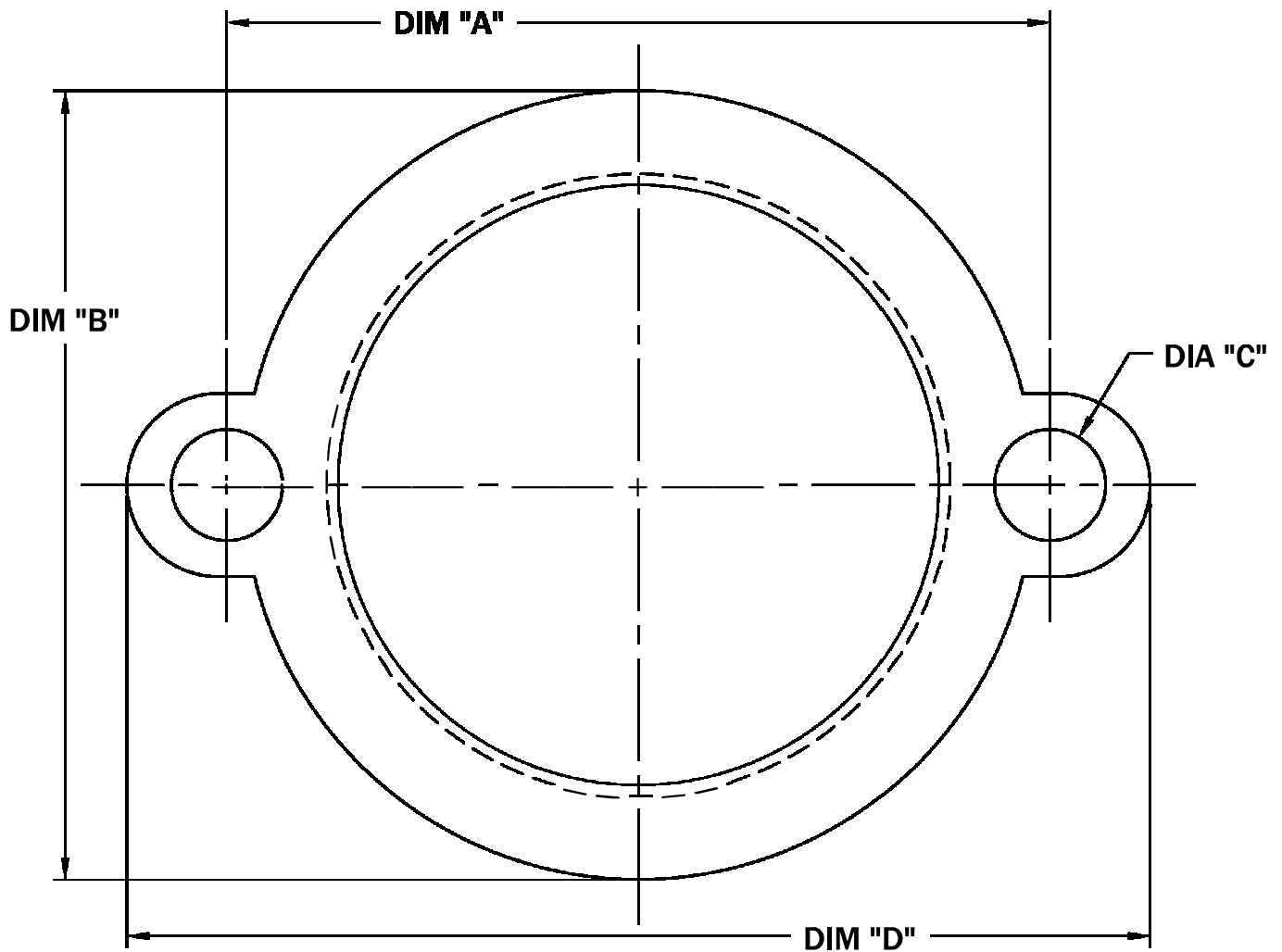
## KIT INCLUDES:

- Powder coated steel vent
- SCH80 PVC close nipple
- Fiberglass flange

**NOTE: FOR DIMENSIONS ON TANK VENTS:  
SEE TANK VENT SPECIFICATION SHEET.  
SEE BELOW FOR MOUNTING FLANGE DIMENSIONS.  
CLOSE NIPPLES ARE SCHEDULE 80 PVC.**

**TANK VENT KIT**

PAGE  
1



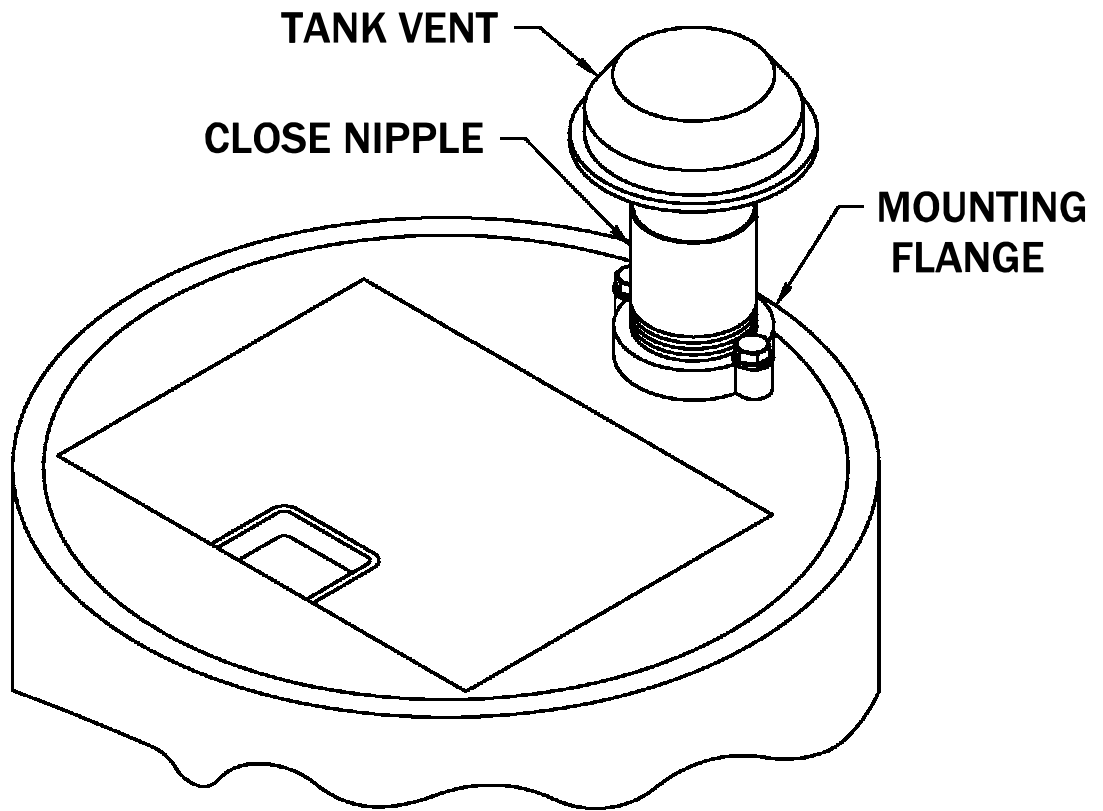
NPT SIZE	DIM. "A"	DIM. "B"	DIA. "C"	DIM. "D"	THICKNESS
2"	4 5/8"	4 1/8"	1/2"	5 13/16"	11/16"
3"	4 5/8"	4 7/16"	5/8"	5 3/4"	63/64"
4"	5 3/4"	5 7/16"	5/8"	6 7/8"	1 7/32"

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CHANGES	TOLERANCES	DRAWN BY	DATE	SPECIFICATION SHEET DIMENSIONAL DATA	
F	DECIMALS .xxx = ±.005 .xx = ±.010 FRACTIONAL x/x = ±.1/64 ANGLES x° = ±1/2°	D. MIDDLETON	03/22/04	SCALE:	PART NO.
E		MATERIAL SPECIFICATION:  AS NOTED		FULL	TANK VENT KIT
D					
C					
B					
A					

**FEATURES: RIGID WELDED STEEL CONSTRUCTION WITH DURABLE POWDER COAT FINISH.  
EPOXY SEALED BRONZE SCREEN PREVENTS INSECTS FROM ENTERING BASIN OR TANK.  
MOUNTING FLANGE AND CLOSE NIPPLE ARE MADE FOR UV RESISTANT THERMOPLASTIC TO PREVENT CORROSION.  
ALL FLANGES ARE TWO BOLT MOUNTING DESIGN FOR QUICK AND EASY INSTALLATION.**



**TYPICAL MOUNTING**



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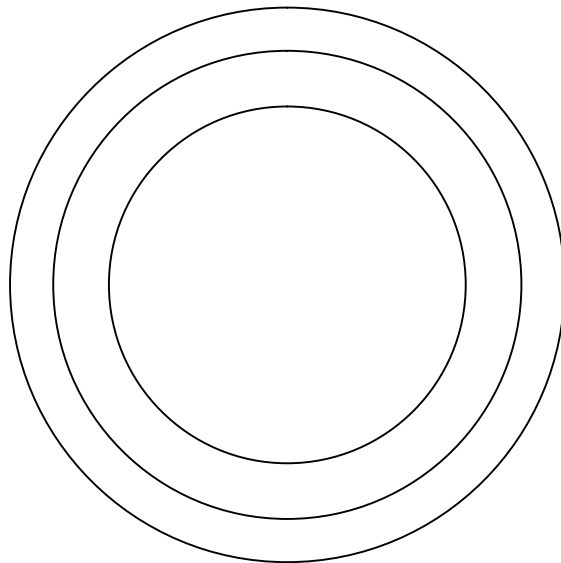
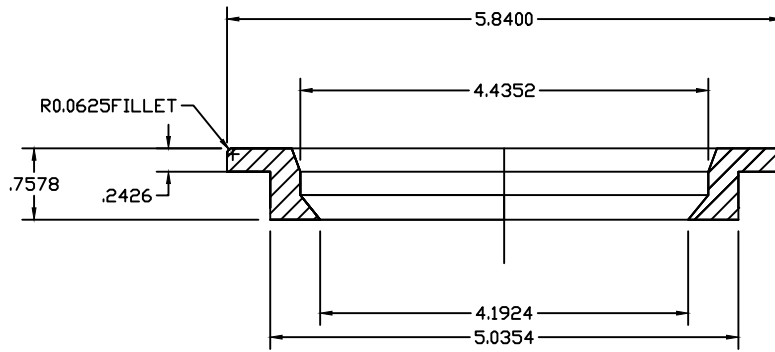
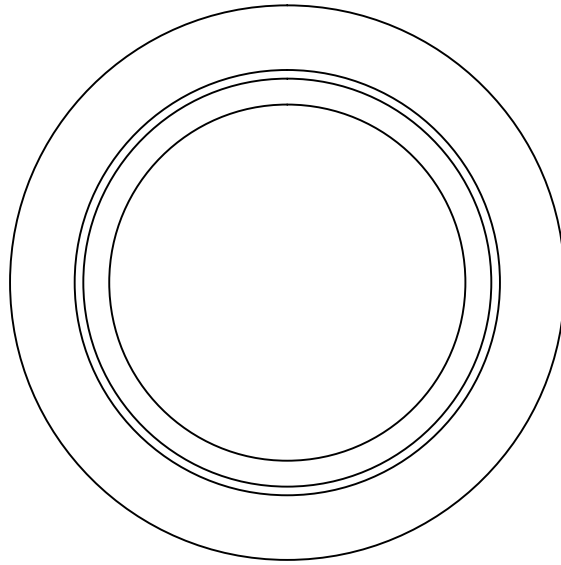
CHANGES	TOLERANCES	DRAWN BY	DATE	SPECIFICATION SHEET DIMENSIONAL DATA	
F	DECIMALS	D. MIDDLETON	03/22/04	SCALE:	PART NO.
E	.XXX = ±.005	MATERIAL SPECIFICATION:  AS NOTED		FULL	TANK VENT KIT
D	.XX = ±.010				
C	FRACTIONAL				
B	X/X = ±.1/64				
A	ANGLES X' = ±1/2'				

PART/PRINT NO.  
GA-400AAF40

PART DESCRIPTION  
ADAPTAFLEX 4" SCH40 (OS)

REVISION  
003

DATE  
1/6/03



4" SCH40 ADAPTAFLEX

DRAWN  
M.Olivarez

MATERIAL  
NEOPRENE

TOLERANCE  
+/- .025 UNLESS SPECIFIED OTHERWISE

SIGNATURE





# TRUE UNION 2000 STANDARD BALL VALVES



## Sample Engineering Specification

All thermoplastic ball valves shall be True Union 2000 Standard type manufactured to ASTM F 1970 and constructed from PVC Type I, ASTM D 1784 Cell Classification 12454 or CPVC Type IV, ASTM D 1784 Cell Classification 23447. All O-rings shall be EPDM or FKM. All valves shall have Safe-T-Shear® stem with O-ring stem seal. All handles shall be polypropylene. All union nuts shall have Buttress threads. All seal carriers shall be Safe-T-Blocked®. All EPDM valves shall be certified by NSF® International for use with potable water. All 1/2" - 2" valves shall be pressure rated to 235 psi, all 2-1/2" - 4" and all flanged valves to 150 psi for water @ 73°F, as manufactured by Spears® Manufacturing Company.

## Features – PVC, CPVC

Economical, low profile quarter-turn shutoff valve is excellent for general purpose and many O.E.M applications. PVC and CPVC valves are available in IPS sizes 1/2" through 4" with socket, regular thread, SR threaded (Special Reinforced), flanged or spigot end connectors.

- Chemical & Corrosion Resistant PVC or CPVC Construction
- Interchangeable with all True Union 2000 Valves, Mates with Union 2000 Pipe Unions
- High Impact Polypropylene Handle
- Schedule 80 Full-Bore Design
- Strong, Buttress Thread Union Nuts
- Spears® Single O-ring Safe-T-Shear® Stem Design
- Spears® Safe-T-Blocked® Seal Carrier
- Replaceable PTFE/HDPE Floating Seat Design
- EPDM or FKM O-rings
- Sizes 1/2" - 2" pressure rated to 235 psi @ 73°F
- Sizes 2-1/2" - 4" and all flanged pressure rated to 150 psi @ 73°F
- EPDM valves NSF® Certified for Potable Water use
- Suitable for Vacuum Service
- Assembled with Silicone-Free, Water Soluble Lubricants
- Manufactured to ASTM F 1970

## Quick-View Valve Selection Chart

Valve Size	O-ring Material	PVC Part Number <sup>1</sup>					Pressure Rating
		Socket	Threaded	SR Threaded	Flanged	Spigot	
1/2	EPDM	3629-005	included	3621-005SR	3623-005	3627-005	235 psi Non-Shock Water @ 73°F
	FKM	3639-005	included	3631-005SR	3633-005	3637-005	
3/4	EPDM	3629-007	included	3621-007SR	3623-007	3627-007	
	FKM	3639-007	included	3631-007SR	3633-007	3637-007	
1	EPDM	3629-010	included	3621-010SR	3623-010	3627-010	
	FKM	3639-010	included	3631-010SR	3633-010	3637-010	
1-1/4	EPDM	3629-012	included	3621-012SR	3623-012	3627-012	(Flanged 150 psi Non-Shock) Water @ 73°F
	FKM	3639-012	included	3631-012SR	3633-012	3637-012	
1-1/2	EPDM	3629-015	included	3621-015SR	3623-015	3627-015	
	FKM	3639-015	included	3631-015SR	3633-015	3637-015	
2	EPDM	3629-020	included	3621-020SR	3623-020	3627-020	
	FKM	3639-020	included	3631-020SR	3633-020	3637-020	
2-1/2	EPDM	3622-025	3621-025	3621-025SR	3623-025	3627-025	150 psi Non-Shock Water @ 73°F
	FKM	3632-025	3631-025	3631-025SR	3633-025	3637-025	
3	EPDM	3622-030	3621-030	3621-030SR	3623-030	3627-030	
	FKM	3632-030	3631-030	3631-030SR	3633-030	3637-030	
4	EPDM	3622-040	3621-040	3621-040SR	3623-040	3627-040	
	FKM	3632-040	3631-040	3631-040SR	3633-040	3637-040	

<sup>1</sup>: For CPVC valve, add the letter "C" to the part number (e.g., 3629-005C, 3621-005CSR)

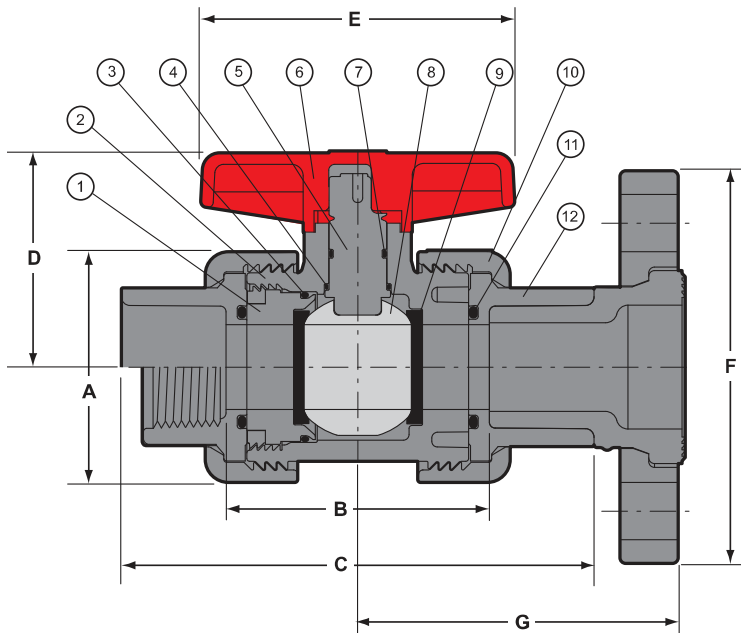
## Optional Accessories\*

- Retro-Fit End Connector Sets for Valve Replacement
- Split-Nut Repair Kits for Union Nut Replacement
- Supplemental End Connectors
- Round Safety Handles
- Stem Extension Kits
- Square Operator Nuts
- Multi Mount Valve/ Actuation Mounting Kits
- Mini-Mount Actuation Mounting Kits

\* See "BALL VALVE ACCESSORIES" section for details of individual products.

**NOT FOR DISTRIBUTION OF COMPRESSED AIR OR GASES**

# TRUE UNION 2000 STANDARD BALL VALVES



## Replacement Parts

No.	Component	Qty.	Material
1	Seal Carrier	1	PVC/CPVC
2	Body	1	PVC/CPVC
3	Carrier O-ring	1	EPDM/FKM
4	Stem Bearing 1,2	1	PP
5	Stem	1	PVC/CPVC
6	Handle	1	PP
7	Stem O-ring	1	EPDM/FKM
8	Ball	1	PVC/CPVC
9	Seat	2	PTFE/HDPE
10	Union Nut	2	PVC/CPVC
11	End Connector O-ring	2	EPDM/FKM
12	End Connector	2	PVC/CPVC

1: O-Ring up to 2"

2: PTFE Thrust Bearing: 2-1/2", 3" & 4"

## Dimensions, Weights, Operating Torque & Cv Values

Nominal Size	A	B <sup>1</sup>		C			D	E	F	G	Approx. Wt. (Lbs.)		Oper. <sup>2</sup> Torque (in. lbs.)	Cv Values <sup>3</sup>	
		Soc/Thd	Spigot	Socket	Thread	Spigot					PVC	CPVC		Soc/Thd/Spig	Flanged
1/2	1-7/8	2-7/16	2-7/8	4-3/16	3-13/16	4-5/8	1-5/8	2-1/2	3-1/2	2-31/32	.33	.35	12	29	18
3/4	2-1/4	2-3/4	3-1/4	4-3/4	4-1/4	5-1/4	2	3	3-7/8	3-5/16	.51	.54	20	63	39
1	2-1/2	2-7/8	3-1/2	5-1/8	4-11/16	5-3/4	2-5/16	3-7/16	4-1/4	3-5/8	.71	.75	25	120	73
1-1/4	3-1/16	3-1/4	3-13/16	5-3/4	5-3/16	6-5/16	2-13/16	3-9/16	4-5/8	3-31/32	1.12	1.17	35	243	151
1-1/2	3-1/2	3-1/2	4	6-1/4	5-7/16	6-3/4	3-1/16	3-7/8	5	4-3/8	1.47	1.53	45	357	223
2	4-1/4	4-3/4	5-13/16	7-3/4	6-3/4	8-1/4	3-3/4	5	6	5-1/4	2.62	2.75	94	599	395
2-1/2	6-3/16	7	7-13/16	10-1/2	8-1/2	11-3/8	5-7/8	7-5/8	7	6	7.42	7.70	120	856	579
3	6-3/16	7	7-13/16	10-11/16	9-3/4	11-9/16	5-7/8	7-5/8	7-1/2	6-13/16	7.46	7.81	120	1416	974
4	7-5/8	7-1/2	8-1/4	12-1/16	10-1/4	12-3/4	6-3/4	6-3/4	9-1/16	7-1/2	12.35	12.48	336	2865	1952

1: Valve Lay Length

2: Torque required at valve maximum internal pressure rating, 5ft/sec. Flow velocity; due to adjustment differences during installation, actual valves may vary.

3: Gallons per minute at 1 psi pressure drop. Valves calculated from laying length, based on derivative of Hazen-Williams equation with surface roughness factor of C=150.

## Temperature Pressure Rating

System Operating Temperature °F (°C)		100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)	
Valve Pressure Rating psi (MPa)	1/2" - 2"	PVC	235 (1.62)	211 (1.45)	150 (1.03)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	
		CPVC	235 (1.62)	219 (1.51)	170 (1.17)	145 (1.00)	130 (.90)	110 (.76)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)
	2-1/2" - 4"	PVC	150 (1.03)	135 (.93)	110 (.76)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
		CPVC	150 (1.03)	140 (.97)	130 (.90)	120 (.83)	110 (.76)	100 (.70)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)

**NOT FOR DISTRIBUTION OF COMPRESSED AIR OR GASES**

# ANTI-SIPHON VALVE

The Anti-Siphon Valve protects the pump station and sewer systems when negative pressure events occur. The Anti-Siphon Valve allows air to draw into the pipe, eliminating the negative pressure.

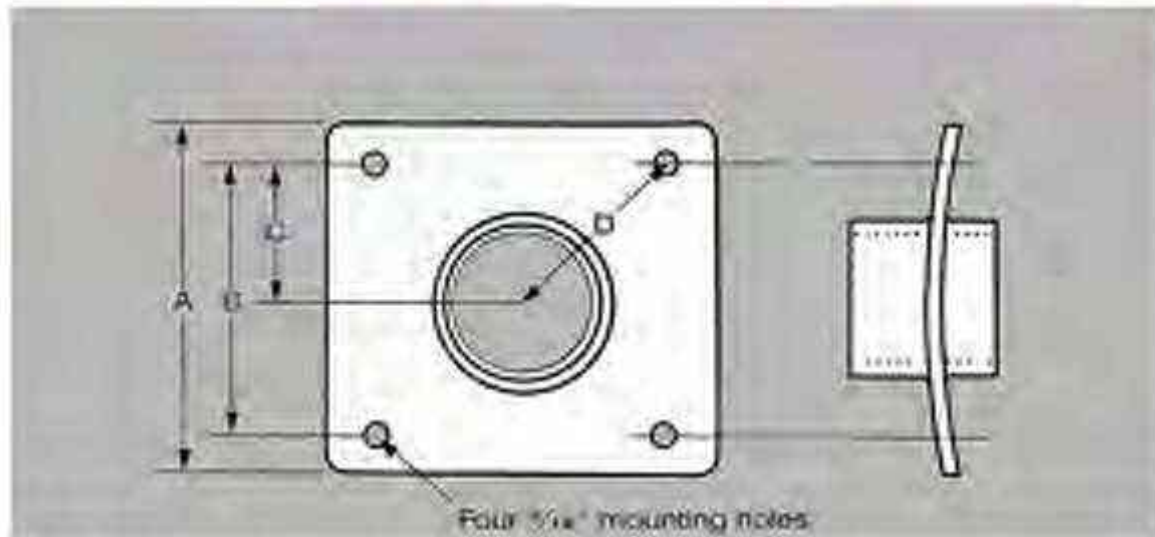
## TECHNICALS:

- 150 PSI rated
- PVC construction
- EPDM flapper valve
- 140 F rated
- NSF/ANSI 61 listed



PART NUMBER	A (INCHES)	B (INCHES)	WEIGHT (LBS)	IPS CONNECTION
ASV125	5.32	3.16	0.55	1 1/4" IPS
ASV150	5.45	3.16	0.60	1 1/2" IPS
ASV200	4.23	0.95	0.95	2" IPS

## STAINLESS STEEL FULL COUPLING

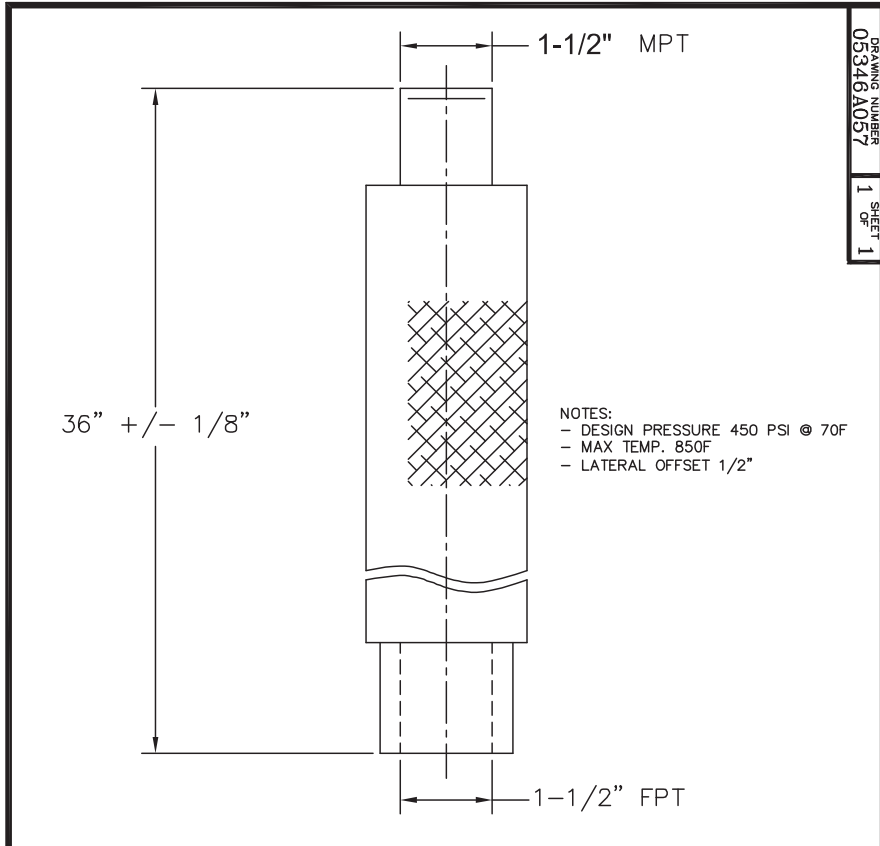


CONSTRUCTED FROM STAINLESS STEEL (RECOMMENDED FOR DISCHARGE CONNECTION) COUPLINGS INCLUDE GASKET, NUTS, BOLTS, AND WASHERS.

SIZE	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
A	6"	6"	6"	6"	10"	10"
B	4 3/8"	4 3/8"	4 3/8"	4 3/8"	8 1/2"	8 1/2"
C	2 3/16"	2 3/16"	2 3/16"	2 3/16"	5"	5"
D	3 1/4"	3 1/4"	3 1/4"	3 1/4"	6"	6"


### INSTALLATION INSTRUCTIONS

- 1) FIND LOCATION WHERE CENTER OF COUPLING WILL BE POSITIONED ON BASIN.
- 2) DRILL OR CUT HOLE IN BASIN TO ACCEPT OUTSIDE DIAMETER OF THE COUPLING BEING INSTALLED.
- 3) PLACE THE COUPLING ON THE BASIN WALL AND DRILL MOUNTING HOLES IN BASIN WALL TO MATCH COUPLING PLATE.
- 4) APPLY GASKET TO BACK OF PLATE AND MOUNT ON BASIN.
- 5) INSERT NUTS, BOLTS, WASHERS, AND THEN TIGHTEN IN PLACE.



DRAWING NUMBER  
05346A057  
1 OF 1  
SHEET 1

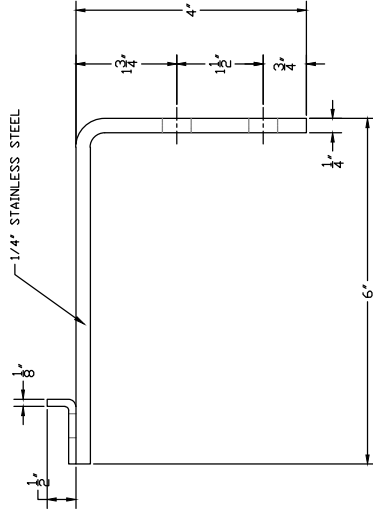
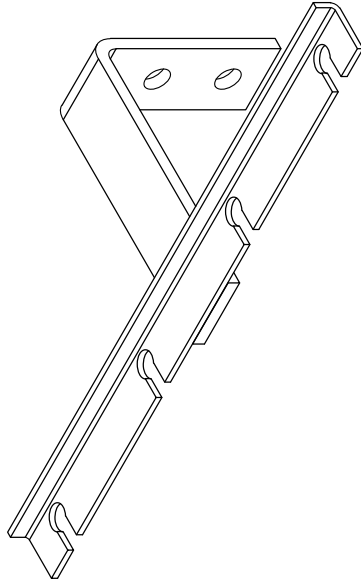
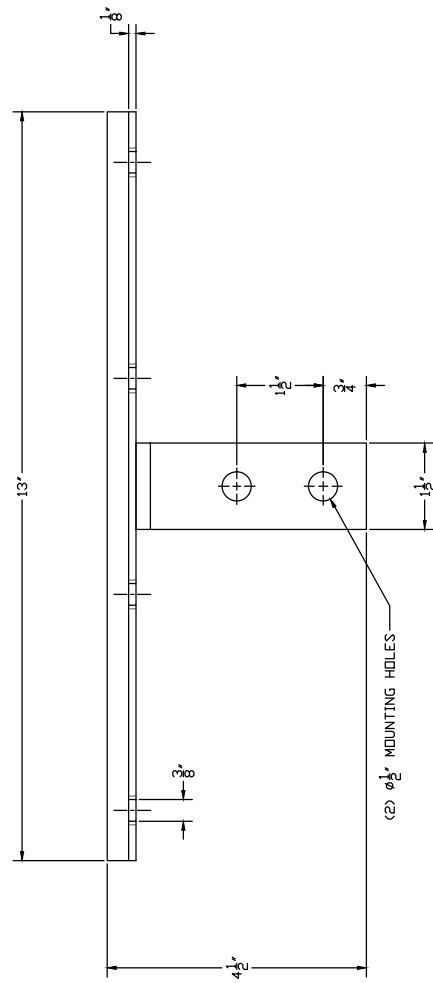
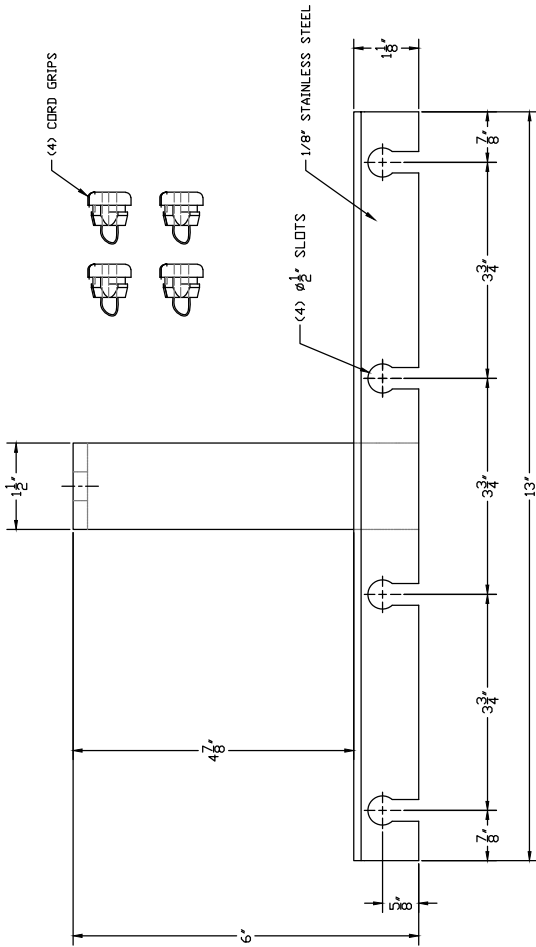
NOTES:  
 - DESIGN PRESSURE 450 PSI @ 70F  
 - MAX TEMP. 850F  
 - LATERAL OFFSET 1/2"

				MATERIAL: T-304 SST	
				HEAT TREAT: -	
				<small>COMPANY CONFIDENTIAL: INFORMATION CONTAINED HEREIN IS CONFIDENTIAL, IT IS THE PROPERTY OF PENTAIR PUMP GROUP. IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF PENTAIR PUMP GROUP.</small>	
A	REL12-0044	02/13/12	RELEASE FOR PRODUCTION	WRM	
REV.	LOG NO.	DATE	REVISION DESCRIPTION	BY	
<small>UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES</small> * DECIMAL *                      * FRACTIONAL * 2 PLACE .XX ± .010"            UP TO 12" ± 1/32" 3 PLACE .XXX ± .005"        12" & UP ± 1/16" ANGLES ± 0° 30'                ANGLES ± 2' FINISH = 125 RMS				DO NOT SCALE DRAWING	DRAWN BY: WRM    DATE: 02/13/12    CHECKED BY: 1    SHEET OF 1 PART NUMBER: 05346A057    SIZE: A    DRAWING NUMBER: 05346A057    REV: A

PART/PRINT NO.  
4FB

PART DESCRIPTION  
4-HOLE T-TYPE STAINLESS STEEL BRACKET

DATE  
11/18/19



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AK INDUSTRIES INC.  
2055 PIDCO DR.  
PLYMOUTH, IN. 46563  
PHONE:(574) 936-6022

DRAWN BY:  
A.HARTUNG

CHECKED BY:  
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REVISION #:  
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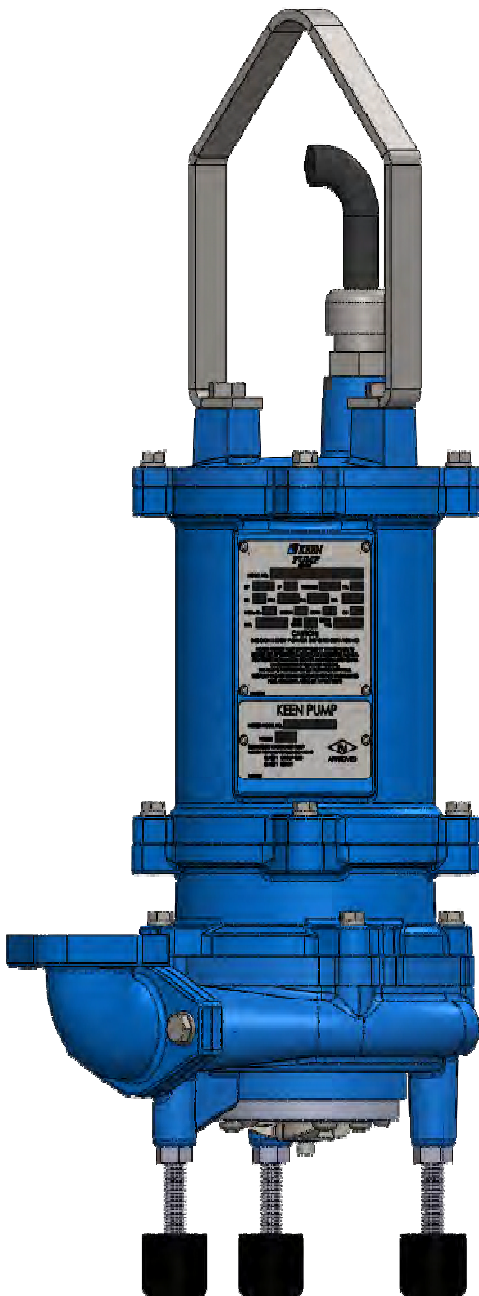
SIGNATURE:

# KHGS(X)2

HIGH PRESSURE GRINDER PUMPS

**PATENT  
PENDING**

63/440,977

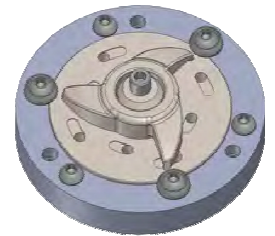


• INDUSTRY LEADING DESIGN

- High Head, 195 Feet Shut-Off
- Lower Amperage Draw (17.7 MAX)
- Precision Fit, For Optimal Grinding

• HIGH PERFORMANCE SLICING

- Adjustable "Slicer / Grinder" Assembly
- Maintains High Performance
- No Shims
- Unique Slicing Action Shreds "Flushables"
- Heat-Treated, All Stainless Steel Construction



"Slicer"

• HIGHEST QUALITY CONSTRUCTION

- FM 3615 Listed "Explosion-Proof"
- Class 1, Div. 1, Groups C & D
- Grit Resistant Silicon Carbide Seals With Viton Elastomers
- 3 Bearing Design

