INSTALLATION, OPERATION & MAINTENANCE MANUAL

KB SERIES
TOP DISCHARGE
HEAVY DUTY DEWATERING WITH AGITATOR
Electric Submersible Pumps

CAST IRON
Three Phase
230V, 460V, & 575V

KB55
KB75
KB110

KB55H
KB75H
KB110H
KB220

Read this manual carefully before installing, operating or servicing these pump models. Observe all safety information. Failure to comply with instructions may result in personal injury and/or property damage. Please retain these instructions.

Version 5/12/2020

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INTRODUCTION

This Installation, Operation and Maintenance manual provides important information on safety and the proper inspection, disassembly, reassembly and testing of the BJM Pumps® KB Series submersible pump. This manual also contains information to optimize performance and longevity of your BJM Pumps® submersible pump.

The submersible KB Series pumps are designed to pump water based slurry solutions. The KB Series pumps are not explosion-proof. They are not designed to pump volatile or flammable liquids.

Note: Consult chemical resistance chart for compatibility between pump materials and liquid before operating pump.

If you have any questions regarding the inspection, disassembly, re-assembly or testing please contact your **BJM Pumps** distributor, or BJM Pumps, LLC.

Industrial Flow Solutions Operating, LLC
104 John W Murphy Drive
New Haven, CT 06513, USA

Phone: 860-399-5937
Fax: 860-399-7784

Information, including pump data sheets and performance curves, is also available on our web site: www.flowsolutions.com

For assistance with your electric power source, please contact a certified electrician.

Please pay attention to the following alert notifications. They are used to notify operators and maintenance personnel to pay special attention to procedures, to avoid causing damage to the equipment, and to avoid situations that could be dangerous to personnel.
NOTE: Instructions to aid in installation, operation, and maintenance or which clarify a procedure.

⚠ DANGER Immediate hazards that WILL result in severe personal injury or death. These instructions describe the procedure required and the injury which will result from failure to follow the procedure.

⚠ WARNING Hazards or unsafe practices that COULD result in severe personal injury or death. These instructions describe the procedure required, and the injury which could result from failure to follow the procedure.

⚠ CAUTION Hazards or unsafe practices which COULD result in personal injury or product or property damage. These instructions describe the procedure required and the possible damage which could result from failure to follow the procedure.

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SAFETY

Pump installations are seldom identical. Each installation and application can vary due to many different factors. It is the owner/service mechanics responsibility to repair, service, and test to ensure that the pump integrity is not compromised according to this manual.

⚠WARNING Risk of electric shock – this pump has not been investigated for use in swimming pool areas.

⚠ DANGER **Do not pump flammable, inflammable or volatile liquids. Death or serious injury will result.**

⚠WARNING Before attempting to open or service the pump:

1) Familiarize yourself with this manual.
2) Unplug or disconnect the pump power cable to ensure that the pump will remain inoperative.
3) Allow the pump to cool if overheated.

⚠WARNING Do not operate the pump with a worn or damaged electric power cable. Death or serious injury could occur.

⚠WARNING Never attempt to alter the length or repair any power cable with a splice. The pump motor and pump motor and cable must be completely waterproof. Damage to the pump or personal injury may result from alterations.

⚠WARNING After the pump has been installed, make sure that the pump and all piping are secure before operation.

⚠WARNING Do not lift the pump by the power cable piping or discharge hose. Attach proper lifting equipment to the lifting handle (or lifting rings) fitted to the pump. Do not suspend the pump by the power cable.

⚠WARNING Obtain the services of a qualified electrician to troubleshoot, test and/or service the electrical components of this pump.

⚠ CAUTION Pumps and related equipment must be installed and operated according to all national, local and industry standards.

INSPECTION

Review all safety information before servicing pump.

The following are recommended installation practices/procedures for the pump. If there are questions in regards to your specific application, contact your local **BJM Pumps®** distributor or Industrial Flow Solutions Operating, LLC.

PRE-INSTALLATION INSPECTION

1) Check the pump for damage that may have occurred during shipment.
2) Inspect the pump for any cracks, dents, damaged threads, etc.
3) Check power cord (and seal minder cord, if installed) for any cuts or damage.
4) Check for, and tighten any hardware that appears loose.
5) Carefully read all tags, decals and markings on the pump.
6) **Important**: Always verify that the pump nameplate, amps, voltage, phase, and HP ratings match your control panel and power supply.

Warranty does not cover damage caused by connecting pumps and controls to an incorrect power source (voltage/phase supply). Record the model numbers and serial numbers from the pumps and control panel on the front of this instruction manual for future reference. Give it to the owner or affix it to the control panel when finished with the installation.

If anything appears to be abnormal, contact your **BJM Pumps®** distributor or Industrial Flow Solutions Operating, LLC. If damaged, the pump may need to be repaired before use. Do not install or use the pump until appropriate action has been taken.

Lubrication:

No additional lubrication is necessary. The shaft seal and bearings are fully lubricated from the factory. Seal oil should be checked once per year. See table below.

OIL FILL QUANTITY/TYPE

	Qty. oil in seal chamber		
Models	**U.S. fl. oz.**	**C.C.**	**Type of oil**
KB55, 55H, 75, 75H, 110, 110H	49	1450	ISO 32 NSF Food Grade Mineral Oil

PUMP INSTALLATION

KB Series pumps have been evaluated for use with water or water based solutions. Please contact the manufacturer for additional information.

⚠ WARNING **Risk of electric shock.** KB Series pump models do not come with electric plug connectors. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle.

Lifting:

Attach a rope or lifting chain (not included) to the handle (or lifting rings) on the top of the pump.

⚠ CAUTION Do not lift the pump by the power cable or discharge hose/piping. Proper lifting equipment (rope/chain) must be used.

POSITIONING THE PUMP

BJM Pumps®, KB Series pumps are designed to operate fully or partially submerged. Do not run the pump dry. Refer to data sheet for minimum submersion depth for your particular model. Data sheets can be obtained online at www.flowsolutions.com or by calling Industrial Flow Solutions Operating, LLC at 860-399-5937. As a general rule, KB Series top discharge pumps can pump down to a level above the suction screen. Pumping lower than screen will permit air to enter the pump and cavitate, lose prime or become air bound.

⚠ CAUTION

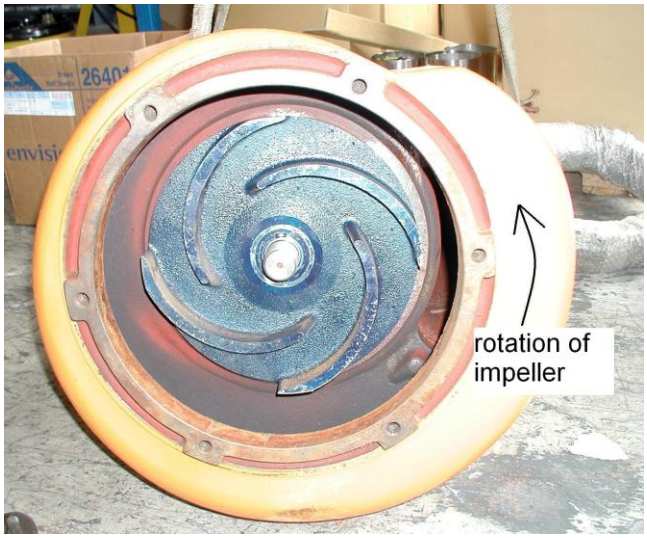
- Do not run pump dry.
- Pump liquid should not exceed a maximum temperature of 104°F.
- Never place the pump on loose or soft ground. The pump may sink, preventing water from reaching the impeller. Place on a solid surface or suspend the pump with a lifting rope/chain. The KB Series pumps are provided with a suction strainer to prevent large solids from clogging the impeller. Any spherical solids which pass through the strainer should pass through the pump.
- For maximum pumping capacity, use the proper size non-collapsible hose or rigid piping. A check valve may be installed after the discharge to prevent back flow when the pump is shut off.

BJMPumps

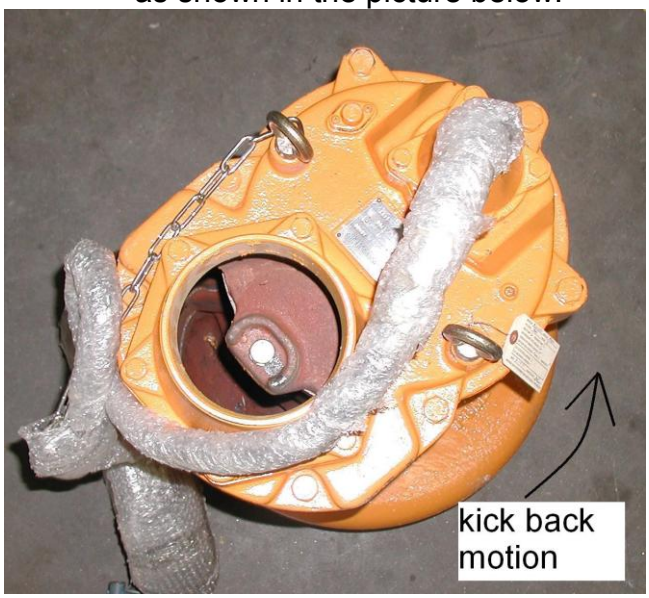
PUMP ROTATION

Two ways to check the correct pump rotation:

1. By looking at the impeller; the rotation of the impeller should be counter clockwise as shown in the picture below.



2. By looking from the top of the pump. Since the impeller cannot be seen, the best way to check the rotation is to check the kick back motion of the pump when the pump just starts. The kick back motion of the pump should be counter clockwise as shown in the picture below.



PUMP OPERATION

⚠ WARNING This pump is designed to handle dirty water that contains some solids. It is not designed to pump volatile or flammable liquids. Do not attempt to pump any liquids which may damage the pump or endanger personnel as a result of pump failure.

⚠ DANGER **Do not operate this pump where explosive vapors or flammable material exist. Death or Serious injury will result.**

TYPICAL MANUAL DEWATERING INSTALLATION

NOTE: Maximum recommended starts should not exceed 10 times per hour.

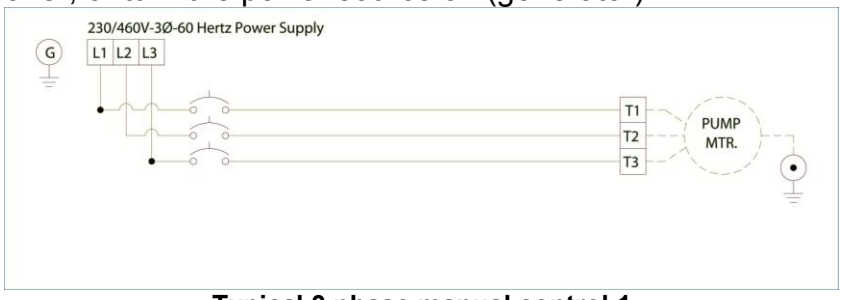
All KB models are provided with a 50' (10m) power cord. NEVER splice the power cable due to safety and warranty considerations. Always keep the plug end dry.
Note: 230V, 460V & 575V three phase units do not have a plug and have to be provided separately.

⚠ WARNING Do not alter the length or repair any power cable with a splice. The pump motor and cable must be completely waterproof. Damage to the pump or personal injury may result from alterations.

For manual operation: 230, 460 & 575 volt: Attach the proper plug or connect directly to the power source or control box. Check the direction of the rotation. Tilt the pump and start it. It should twist in the opposite direction of the arrow (on pump). It is recommended that a Ground Fault Interrupter (GFI) type receptacle (or equivalent) be used.

STOPPING

To stop the pump (manual and automatic mode), disconnect it from the power source, turn off the breaker, or turn the power source off (generator).



Typical 3 phase manual control 1

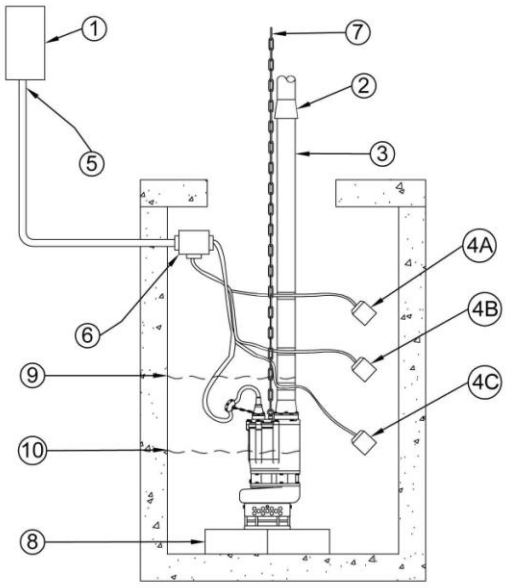
TYPICAL AUTOMATIC DEWATERING INSTALLATION

NOTE: Maximum recommended starts should not exceed 10 times per hour.

Float switches (wired into the pump motor or piggy-back style) are available from the factory as an option.
Note: 230V, 460V & 575V pumps do not have a plug installed.

Three phase pumps need a separate control box with float(s) for automatic operation.

TYPICAL SIMPLEX INSTALLATION WITH CONTROL PANEL AND 3 FLOATS



1) Electrical wiring and protection must be in accordance with National Electrical Code in U.S.A. or Canadian Electrical Code in Canada and state / provincial and local electrical codes.
2) Optional (approx. 50' / 15 meters) : If pumping in a small confined space at high head, it may be beneficial to install a check valve 3' (1 meter) above the discharge of the pump. This will help eliminate backflow and unnecessary running of the pump. For best results use a section of PVC.
3) PVC pipe or rigid hose recommended. Collapsible vinyl hose will work but not as efficiently.
4) Attach float to the pump top or PVC pipe. Never place the float lower than the top of the strainer inlet.
- **4A** - alarm float.
- **4B** - turn on.
- **4C** - turn off.

5) All electrical connections must be kept dry.
6) Wire pump and floats to control panel through a watertight junction box.
7) Always lower the pump by a separate chain. Never lift or lower the pump by the power cord, piggy-back cord or discharge hose.
8) For best results, place the pump on a solid object. This will keep the pump from digging itself into silt, sand and mud.
9) Recommended submergence level.
10) Minimum submergence level.

STOPPING

To stop the pump (manual and automatic mode), unplug it from the power source, turn off the breaker, or turn the power source off (generator).

INTENDED METHODS OF CONNECTION

⚠ CAUTION Use with approved motor control that matches motor input in full load amperes. “UTILLISER UN DÉMARREAR APPROUVÉ CONVENANT AU COURANT Á PLEINE CHARGE DU MOTEUR.”

BJM Pumps has been evaluated for use with water or water based solutions. Please contact the manufacturer for additional information.

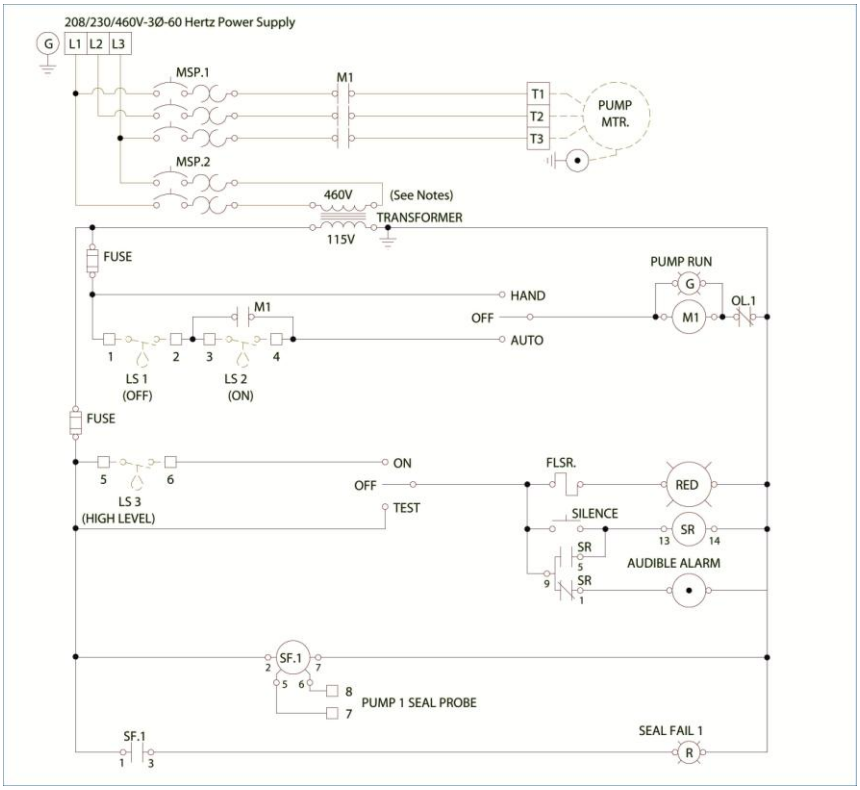
THREE PHASE WIRING INSTRUCTION

⚠WARNING **FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING.**

⚠WARNING **“Risk of electrical shock”** Do not remove power supply cord and strain relief or connect conduit directly to the pump.

⚠WARNING Installation and checking of electrical circuits and hardware should be performed by a qualified licensed electrician.

To automatically operate a non-automatic three phase pump, a control panel is required. Follow the instructions provided with the panel to wire the system. For automatic three phase pumps see automatic three phase wiring diagram.



Typical 3 phase Auto Control 1

Before installing a pump, check the pump rotation to insure that wiring has been connected properly to power source, and that the green lead of power cord (See wiring diagram), is connected to a valid ground, momentarily energize the pump, observing the directions of kick back due to starting torque. Rotation is correct if kick back is in the opposite direction of rotation arrow on the pump casing. If rotation is not correct, switching of any two power leads other than ground will provide the proper rotation.

BJM Pumps® three phase pumps have integral motor overload protection. BJM Pumps® recommends that all three phase pumps using a motor starting device also incorporate motor overload protection. Pumps **must** be installed in accordance with the National Electrical Code and all applicable local codes and ordinances. Pumps are not to be installed in locations classified as hazardous in accordance with National Electrical Code, ANSI/NFPA 70.

Connect pump to a junction box, outlet box, control box, enclosure with a wiring compartment that meets NEC and local codes. The provision for supply connection shall reduce the risk of water entry during temporary, limited submersion and shall comply with the applicable requirements of the Standard for Enclosures for Electrical Equipment, UL 50, or the standard for Metallic Outlet Boxes, UL 514A, and the standard for Motor-Operated Water Pumps. UL 778.

TROUBLE SHOOTING

⚠ WARNING **Disconnect the power source to the pump BEFORE attempting any type of trouble shooting, service or repair.**

PUMP WILL NOT RUN

1. Check power supply (fuses, breaker). Reset power.
2. Blocked impeller. Remove strainer, check and clean.
3. Defective cable or incorrect wiring.
4. Strainer clogged. Check and clean as necessary.
5. Float switch tangled/obstructed. Clean and free float switch from obstruction.
6. Float switch defective. Replace float switch.
7. Pump overheated or temperature of liquid exceeds pump operating temperature.

Warning: Pump will restart automatically when motor over-heat protection switch cools.

PUMP RUNS BUT DOES NOT DELIVER RATED CAPACITY

1. Discharge line clogged, restricted or hose kinked. Check discharge hose/pipe.
2. Worn impeller and/or suction cover. Inspect and replace as necessary.
3. Pump overloaded due to liquid pumped being too thick.
4. Pumping air. Check liquid level and position of pump.
5. Excessive voltage drops due to long cables.
6. Three phase only; pump running backwards, check rotation.

SERVICING YOUR SUBMERSIBLE PUMP

Pump MUST be disconnected from the electric power supply before proceeding to do any service or maintenance**.**
To service or repair your pump, please contact your local **BJM Pumps®** distributor. Service should only be performed by a qualified electrician.

MAINTAINING YOUR PUMP

- Pump must be disconnected from the electric power supply before proceeding to do any service or maintenance**.**
- Pump should be inspected at regular intervals for wear.
- More frequent inspections are required if the pump is used in a harsh environment, such as pumping abrasive solids or high/low PH water.

- Preventative maintenance should be performed to reduce the chance of premature failure.
- Worn impeller wear plates and lip seals should be replaced.
- Cut or cracked power cords must be replaced. **(Never operate a pump with a cut, cracked or damaged power cord.)**
- Seal oil should be checked once per year.
- Maintenance should always be done when taking a pump out of service before storage.

1) Clean pump of dirt and other build up.
2) Check condition of oil around the shaft seals.
3) Check hydraulic parts: check for wear.
4) Inspect power cable. Make sure that it is free of nicks or cuts.

CHANGING SEAL OIL

Changing the seal oil in the KB Series pumps is very easy.

1) Make sure that the pump cable is disconnected from the power source.
2) Lay the pump down on its side.
3) Remove the screws that hold the bottom plate in place.
4) Remove bottom plate.
5) Remove screws holding the suction cover.
6) Remove the suction cover.
7) Remove the impeller.
8) Remove the inspection screw for the oil chamber (pos#50-08). Pour out a small sample of the oil. If it is milky white, or contains water, then the oil and possible, the mechanical seal, should be changed. If an oil change is needed:
9) Remove the screws that hold the oil chamber cover in place & remove the oil.
10) Replace the mechanical seal if necessary.
11) Replace the oil.
12) Reassemble the pump.

CHANGING SEALS*

1) Make sure that the pump cable is disconnected from the power source.
2) Lay the pump down on its side.
3) Remove the oil inspection bolt (pos#50-11) from the oil seal chamber.
4) Drain out all the inside the oil seal chamber.
5) Remove the bolts holding the stand.
6) Remove the stand.
7) Remove the bolts holding the suction cover.
8) Remove the suction cover.
9) Remove the agitator.
10) Remove the impeller, impeller key and shims.

11)Remove the bolts holding the pump housing.
12)Remove the pump housing.
13)Remove the shaft sleeve. Note the shaft sleeve direction.
14)Remove the bolts holding the oil cover.
15)Remove the oil cover.
16)Remove the screws holding the seal retainer.
17)Remove the seal retainer.
18)Remove the mechanical seal.
19)Replace the mechanical seal, lip seal and o-rings.
20)Reassemble the pump.
21)Fill with recommended new oil.
22)Replace the oil inspection bolt o-ring.
23)Secure the oil inspection bolt.

*Note: If there is excessive liquid found in the oil or mechanical seal damaged, please contact BJM Pumps® authorized service centers.

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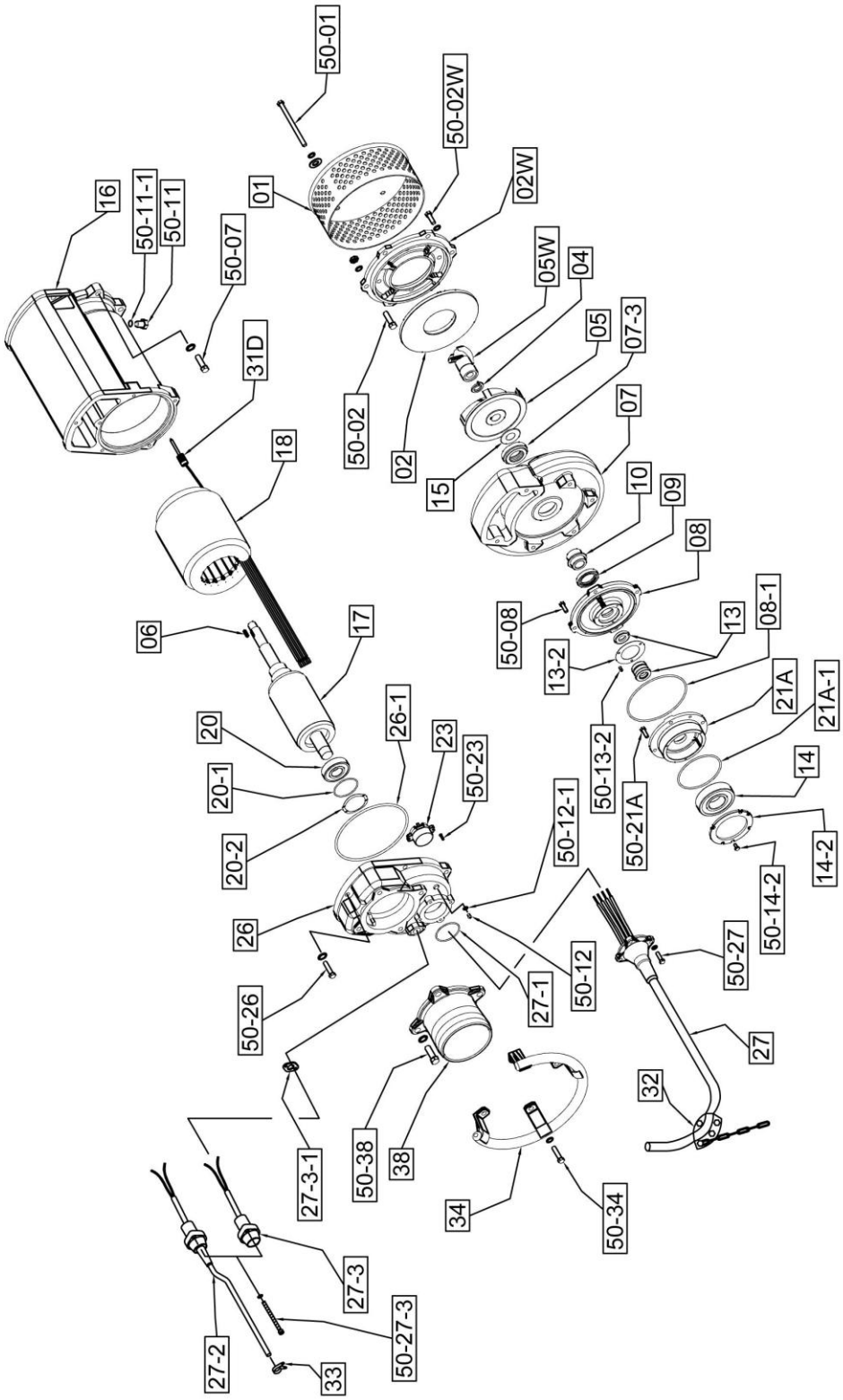
EXPLODED VIEW OF KB55, 55H, 75, 75H, 110, 110H



KB SERIES PARTS LIST

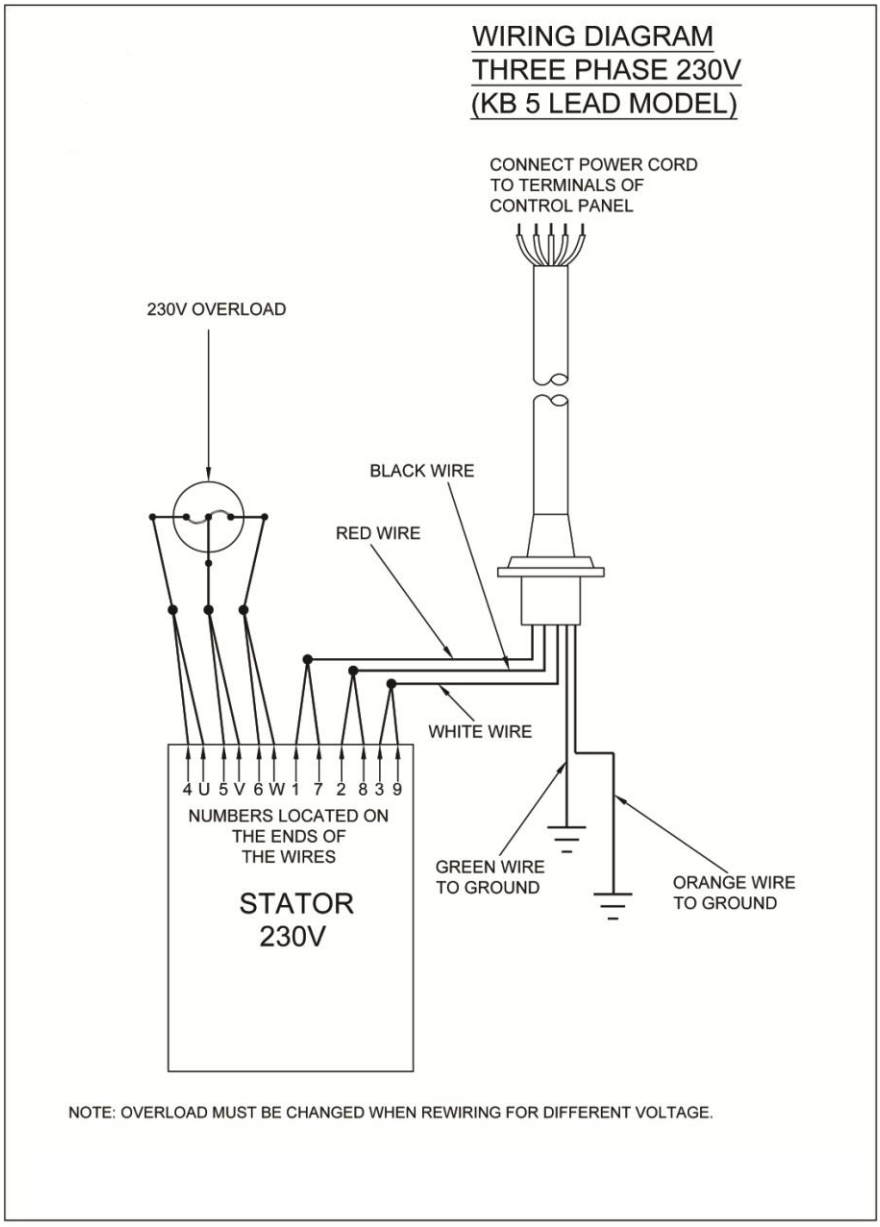
	Pump Model	KB55	KB55H	KB75	KB75H	KB110	KB110H
Pos. No.	**Part Description**	**Item #**	**Item #**	**Item #**	**Item #**	**Item #**	**Item #**
01	Strainer / Stand	202013	202013	202014	202013	202014	202014
02	Wear Plate	202863	202866	202865	202866	202024	202025
02W	Suction Cover	202878	202878	202879	202878	202879	202879
04	Lock Washer	202904	202904	202904	202904	202904	202904
05	Impeller	202924	202925	202926	202927	202928	202929
05W	Agitator	202058	202058	202058	202058	202058	202058
06	Impeller Key	202145	202145	202145	202145	202145	202145
07	Pump Housing	203036	203036	203033	203036	203033	203033
07-3	Pump Housing Sleeve	202182	202182	202182	202182	202182	202182
08	Oil Chamber Cover	202228	202228	202228	202228	202228	202228
08 -1	O-Ring (Kit Only)	Kit	Kit	Kit	Kit	Kit	Kit
09	Lip Seal Buna N	202248	202248	202248	202248	202248	202248
10	Shaft Sleeve	203074	203074	203074	203074	203074	203074
13	Mech. Seals - Set Buna N (Optional)	201016	201016	201016	201016	201016	201016
13	Mech. Seals - Set FKM	201015	201015	201015	201015	201015	201015
13-2	Mech. Seal Retainer	202274	202274	202274	202274	202274	202274
14	Lower Ball Bearing	200963	200963	200963	200963	200962	200962
14-2	Lower Bearing Retainer	202276	202276	202276	202276	202282	202282
15	Impeller Shim Kit (Required)	200478	200478	200478	200478	200478	200478
16	Motor Housing	203078	203078	203079	203078	203080	203080
17	Rotor w/ Shaft, 3 phase	202355	202355	202356	202356	202357	202357
18	Stator 230V/460V, 3 phase, 60Hz	200674	200674	-	-	-	-
18	Stator 460V, 3 phase, 60Hz	-	-	200677	200677	200679	200679
18	Stator 575V, 3 phase, 60 Hz	200676	200676	200678	200678	200680	200680
20	Upper Ball Bearing	200968	200968	200968	200968	200968	200968
20-1	O-Ring (Kit Only)	Kit	Kit	Kit	Kit	Kit	Kit
20-2	Spring Washer	202361	202361	202361	202361	202361	202361
21A	Lower Bearing Housing	202376	202376	202376	202376	202375	202375
21A-1	O-Ring (Kit Only)	Kit	Kit	Kit	Kit	Kit	Kit
23	Overload 230V, 3PH	202394	202394	-	-	-	-

KB SERIES PARTS LIST

23	Overload 460V, 3PH	202393	202393	202394	202394	202398	202398
23	Overload 575V, 3 PH	202391	202391	202393	202393	202394	202394
26	Pump Top Cover	203133	203133	203134	203133	203134	203134
26-1	O-Ring (Kit Only)	Kit	Kit	Kit	Kit	Kit	Kit
27	Power Cord Set (5 lead)	203450	203450	203450	203450	203451	203451
27-1	O-Ring (Kit Only)	Kit	Kit	Kit	Kit	Kit	Kit
27-2	Seal Minder® Cord	201714	201714	201714	201714	201714	201714
27-3	Seal Minder® Cap	201717	201717	201717	201717	201717	201717
27-3-1	O-Ring (Kit Only)	Kit	Kit	Kit	Kit	Kit	Kit
31D	Seal Minder® Probe	202410	202410	202410	202410	202410	202410
32	Power Cable Strain Relief	202506	202506	202506	202506	202500	202500
33	Seal Minder® Cord Line Clip	203163	203163	203163	203163	203163	203163
34	Handle	202527	202527	202528	202527	202528	202528
38	3" NPT Male Coupling Flange	-	202610	-	-	-	-
38	4" NPT Male Coupling Flange	202609	-	-	202609	-	202612
38	6" NPT Male Coupling Flange	-	-	202611	-	202611	-
50-01	Bolt - Strainer / Stand	203241	203241	203225	203241	203225	203225
50-02	Bolt - Wear Plate	203294	203294	203262	203294	203262	203262
50-02W	Bolt - Suction Cover	203262	203262	203262	203262	203262	203262
50-07	Bolt - Pump Housing	203265	203265	203265	203265	203265	203265
50-08	Bolt - Oil Chamber Cover	203229	203229	203229	203229	203229	203229
50-11	Bolt - Oil Inspection	203268	203268	203268	203268	203268	203268
50-11-1	O-Ring (Kit Only)	Kit	Kit	Kit	Kit	Kit	Kit
50-12	Screw - Pressure Test	203218	203218	203218	203218	203218	203218
50-12-1	O-Ring (Kit Only)	Kit	Kit	Kit	Kit	Kit	Kit
50-13-2	Screw - Seal Retainer	203214	203214	203214	203214	203214	203214
50-14-2	Bolt - Bearing Retainer	203219	203219	203219	203219	203219	203219
50-21A	Bolt - Bearing Housing	203229	203229	203229	203229	203229	203229
50-23	Screw - Overload Protector	202700	202700	202700	202700	202700	202700
50-26	Bolt-Top Cover	-	-	203223	-	203223	203223
50-27	Bolt - Power Cord	203229	203229	203229	203229	203229	203229
50-27-3	Screw - Seal Minder Cap	203216	203216	203216	203216	203216	203216
50-34	Bolt - Handle	203222	203222	203222	203222	203222	203222
50-38	Bolt - Discharge Flange	203262	203262	203224	203262	203224	203224

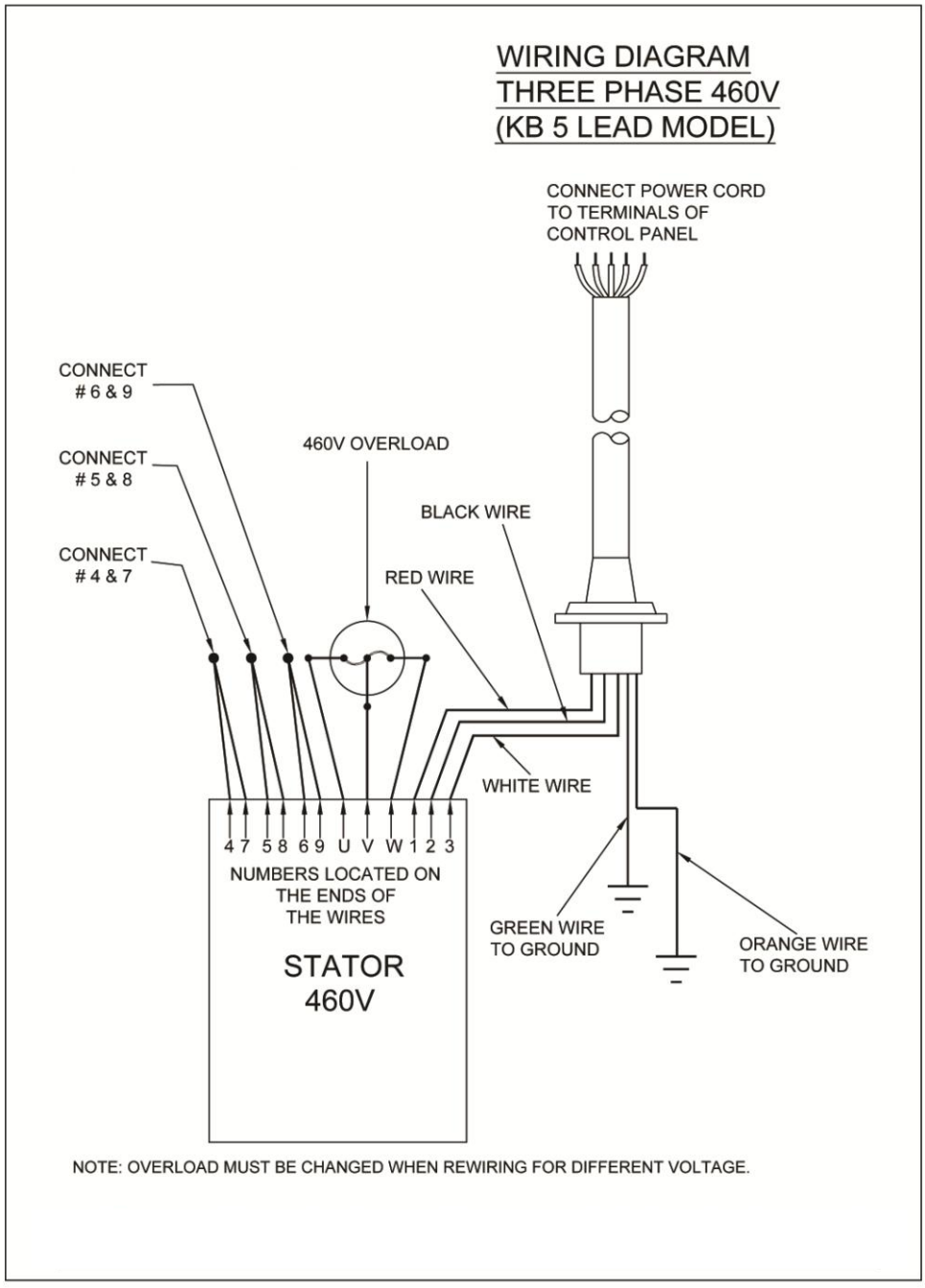
THREE PHASE WIRING DIAGRAMS

230V (5 LEAD)



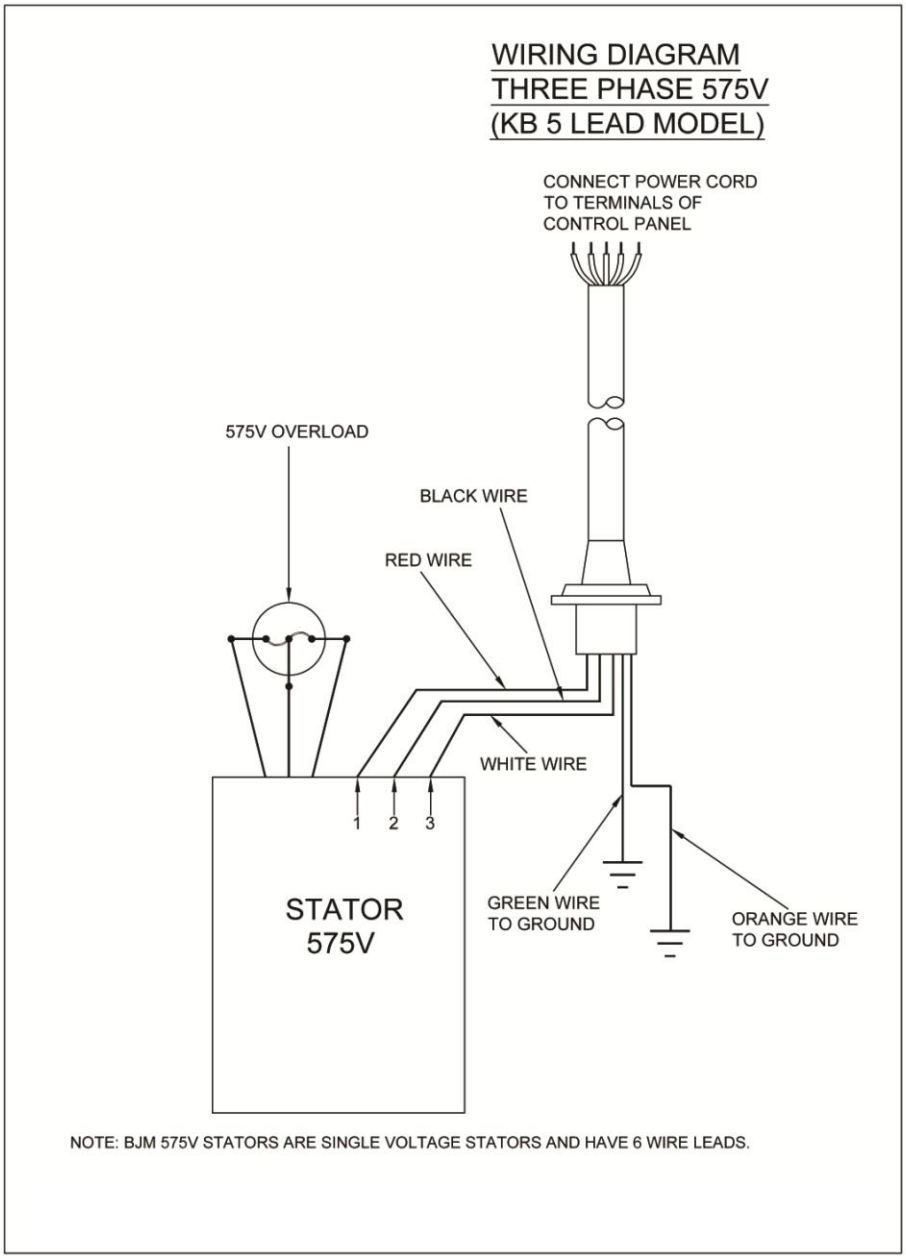
MODELS KB55, 55H, 75, 75H, 110, 110H

460V (5 LEAD)



MODELS KB55, 55H, 75, 75H, 110, 110H

575V (5 LEAD)



MODELS KB55, 55H, 75, 75R, 110, 110H

SEAL MINDER® - THERMAL MOTOR SENSOR SWITCH

Seal Minder®:

Also known as a seal fail circuitry (or moisture detection circuit) is designed to inform the pump operator that there is moisture within the oil chamber. This early warning can allow the operator to schedule repair & inspection on the pump. The **Seal Minder®** is a sensor probe inside the oil chamber. (The oil chamber houses the mechanical seals that are cooled & lubricated by oil). The **Seal Minder,** when properly connect to a control panel, can help indicate seal failure. The **Seal Minder** cord requires a seal fail circuitry in control panel for warning signal.

The open end of the **Seal Minder** circuit cord should be connected to a control panel with an optional seal failure alarm relay circuit or a standalone **Seal Minder** Panel manufactures can incorporate the Seal Minder cord option. BJM Pumps®, an Industrial Flow Solutions Company, has a standalone, **Seal Minder** panel for both simplex (P/N MSP8350A) and duplex (P/N MSP8350B) systems. For more information, contact Industrial Flow Solutions Operating, LLC or visit us online at www.flowsolutions.com

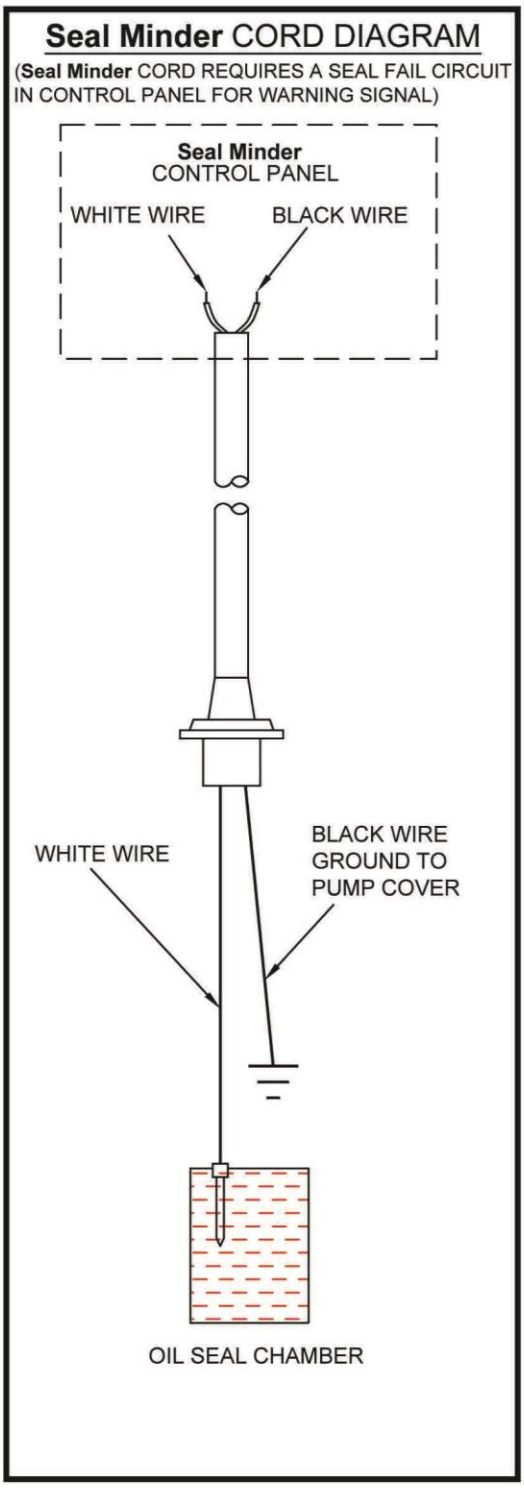
The **Seal Minder** cord has two leads, black and white. Note that the power cable is much larger and has three to five leads, depending on the model. Inside the pump, the black lead is connected to the casing ground, and the white lead is connected to the seal probe that is suspended into the oil chamber. These leads need to be properly connected to the seal failure alarm relay circuit. Most controls that have proceeded this option have a connection terminal point that is clearly marked for these connections. Consult the control panel manual for proper connection instructions.

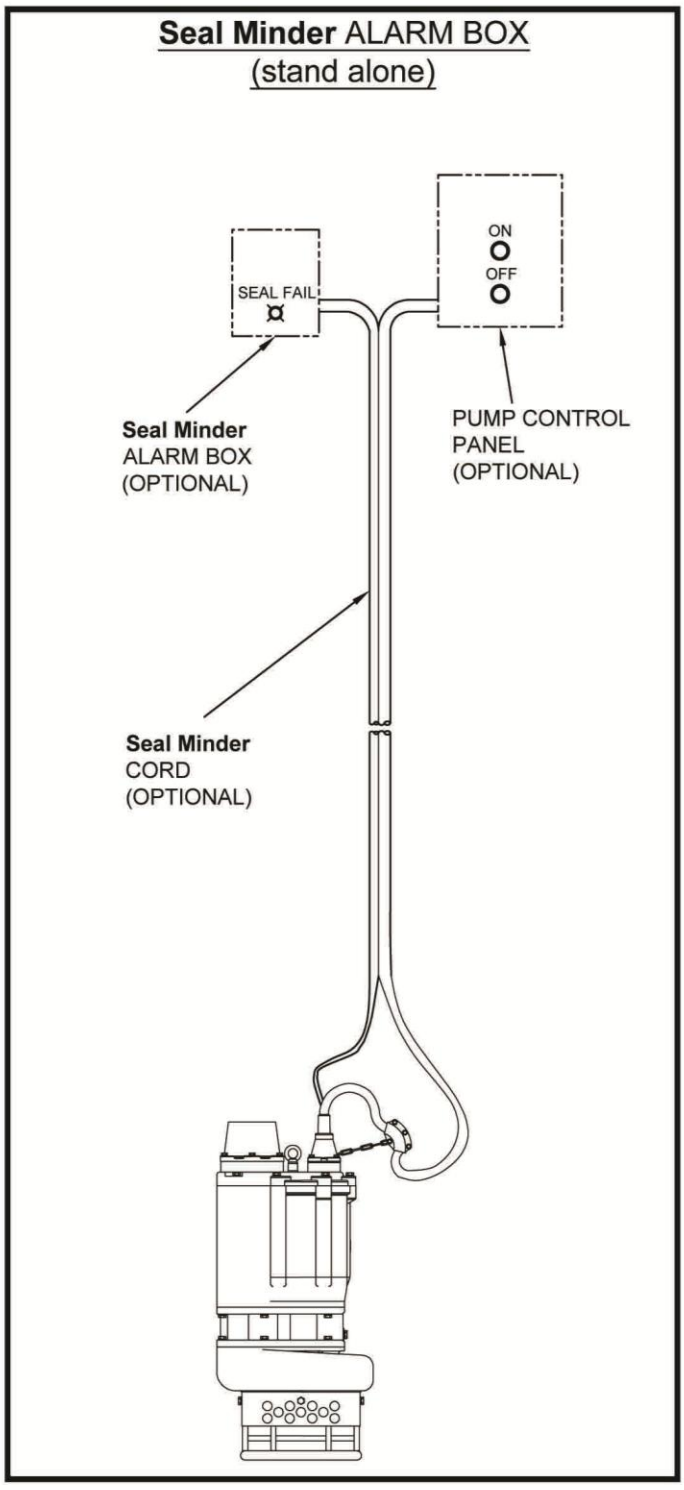
Although highly recommended, the pump does not need a control box with seal fail relay or standalone seal panel to operate.

If the operator does not use the Seal Minder:

1.) The recommended procedure is to take the **Seal Minder** cord off the pump and seal with a **Seal Minder** cap (P/N M02738) and gasket (P/N M05121 for Buna, P/N M05121V for FKM). This should be done by an authorized BJM Pumps® service center or distributor as not to void warranty (detailed instruction sheet available for this procedure).

2.) Alternate method of securing **Seal Minder** cable if not being used: Tape the **Seal Minder** cord to the power cord. Make sure that the cords are taped together in an even run, at about 2’ to 3’ apart. Use electrical tape to tape off the end of the **Seal Minder** cable (do not connect to power source). The taped leads should be kept dry and out of the liquid. (See next page for detailed drawing).





SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Industrial Flow Solutions Operating, LLC
104 John W Murphy Drive
New Haven, CT 06513

WARRANTY AND LIMITATION OF LIABILITY

Unless otherwise expressly authorized in writing, specifying a longer or shorter period, BJM Pumps, LLC warrants for a period of eighteen (18) months from the date of shipment from the Point of Shipment, or one (1) year from the date of installation, whichever occurs first, that all products or parts thereof furnished by BJM Pumps, LLC under the brand name BJM Pumps, hereinafter referred to as the "Product" are free from defects in materials and workmanship and conform to the applicable specification.

BJM Pumps, LLC's liability for any breach of this warranty shall be limited solely to replacement or repair, at the sole option of BJM Pumps, LLC, of any part or parts of the Product found to be defective during the warranty period, provided the Product is properly installed and is being used as originally intended. Any breach of this warranty must be reported to BJM Pumps, LLC or BJM Pumps, LLC's authorized service representative within the aforementioned warranty period, and defective Product or parts thereof must be shipped to BJM Pumps, LLC or BJM Pumps, LLC's authorized representative, transportation charges prepaid. Any cost associated with removal or installation of a defective Product or part is excluded.

IT IS EXPRESSLY AGREED THAT THIS SHALL BE THE SOLE AND EXCLUSIVE REMEDY OF BJM PUMPS, LLC'S DISTRIBUTORS AND CUSTOMERS. UNDER NO CIRCUMSTANCES SHALL BJM PUMPS, LLC BE LIABLE FOR ANY COSTS, LOSS, EXPENSE, DAMAGES, SPECIAL DAMAGES, INCIDENTAL DAMAGES OR CONSEQUENTIAL DAMAGES ARISING DIRECTLY OR INDIRECTLY FROM THE DESIGN, MANUFACTURE, SALE, USE OR REPAIR OF THE PRODUCT, WHETHER BASED ON WARRANTY, CONTRACT, NEGLIGENCE, OR STRICT LIABILITY. IN NO EVENT WILL LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

THE WARRANTY AND LIMITS OF LIABILITY CONTAINED HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY BJM PUMPS, LLC AND EXCLUDED FROM THIS WARRANTY.

BJM Pumps, LLC neither assumes, nor authorizes any person to assume for it, any other warranty obligation in connection with the sale of the Product. This warranty shall not apply to any Product or parts of Product which have (a) been repaired or altered outside of BJM Pumps, LLC's facilities unless such repair was authorized in advance by BJM Pumps, LLC or by its authorized representative; or (b) have been subject to misuse, negligence or accident; or (c) have been used in a manner contrary to BJM Pumps, LLC's instruction.

In any case of products not manufactured and sold under the BJM Pumps, LLC brand name, there is no warranty from BJM Pumps, LLC; however BJM Pumps, LLC will extend any warranty received from BJM Pumps, LLC's supplier of such products.

START-UP REPORT FORM

This form is designed to record the initial installation, and to serve as a guide for troubleshooting at a later date (if needed).

Industrial Flow Solutions Operating, LLC
104 John W Murphy Drive
New Haven, CT 06513

Pump Owner's Name			
Location of Installation			
Person in Charge		Phone( )	
Purchased From			
Model	Serial No		
Voltage	Phase	Hertz	HP
Does impeller turn freely by hand?	☐ Yes ☐ No		
Condition of Equipment	☐ New ☐ Good ☐ Fair ☐ Poor		
Condition of Cable Jacket	☐ New ☐ Good ☐ Fair ☐ Poor		
Rotation: Direction of Impeller Rotation (Use C/W for clockwise, CC/W for counterclockwise): _____ Method used to check rotation (viewed from bottom) _____			
Resistance of cable and Pump Motor (measured at pump control)			
Red-Black_____ ohms	Red-White_____ ohms	White-Black____ohms	
Resistance of ground circuit between control panel and outside of pumps _____ Ohms			
MEG OHM CHECK OF INSULATION Red to ground_____ White to ground_____ Black to ground_____			
Condition of location at start-up	☐ Dry ☐ Wet ☐ Muddy		
Was equipment stored If YES, length of storage:	☐ Yes ☐ No.		
Liquid being pump			
Debris in bottom of station?	☐ Yes ☐ No		
Was debris removed in your	☐ Yes ☐ No		

presence?	
Are guide rails exactly vertical?	☐ Yes ☐ No
Is base elbow installed level?	☐ Yes ☐ No
Liquid level controls: Model_____	
Is control installed away from turbulence?	☐ Yes ☐ No

Operation Check

Tip lowest float (stop float), all pumps should remain off.
Tip second float (and stop float), one pump comes on.
Tip third float (and stop float), both pumps on (alarm on simplex).
Tip fourth float (and stop float), high level alarm on (omit on simplex).

If not on levels controls, describe type of controls	
Does liquid level ever drop below volute top?	☐ Yes ☐ No
Control Panel MFG & model no.	
Number of pumps operated by control panel	

NOTE: At no time should hole be made in top of control panel, unless proper sealing devices are utilized.

Short Circuit protection:		Type:
Number and size of short circuit device(s)		Amp rating:
Overload type:	Size:	Amp rating:
Do protective devices comply with pump motor amp rating?		☐ Yes ☐ No
Are all pump connections tight?		☐ Yes ☐ No
Is the interior of the panel dry?		☐ Yes ☐ No If No, correct moisture problem.

Electrical readings

SINGLE PHASE

Voltage supply at panel line connection, pump off	L1	L2
Voltage supply at panel line connection, pump on	L1	L2
Amperage load connection, pump on	L1	L2

THREE PHASE

Voltage supply at panel line connection, pump off

L1-L2	L2-L3	L3-L1

START-UP REPORT FORM

Voltage supply at panel line connection, pump on		
L1-L2	L2-L3	L3-L1
Amperage load connection, pump on		
L1	L2	L3
FINAL CHECK		
Is pump secured properly?	☐ Yes ☐ No	
Was pump checked for leaks?	☐ Yes ☐ No	
Do check valves operate properly?	☐ Yes ☐ No	
Flow: Does station appear to operate at proper rate?	☐ Yes ☐ No	
Noise level:	Acceptable ☐	Unacceptable ☐
Comments:		
Describe and equipment difficulties during start-up		
Installed by: Company: _____ Person: _____ Date: _____		
Maintained by: Company: _____ Person: _____		
Date and time of start-up_____ Present at start-up: ( ) Engineer's name_____ ( )Contractor's name_____ ( ) Operator's name_____ ( ) others_____		

NOTES:

Industrial Flow Solutions Operating, LLC
104 John W Murphy Drive, New Haven CT 06513
Phone: (860) 399-5937 • Fax: (860) 399-7784
Email: sales@flowsolutions.com • Web Site: www.flowsolutions.com

INSTALLATION, OPERATION & MAINTENANCE MANUAL

KB 220
TOP DISCHARGE
HEAVY DUTY DEWATERING WITH AGITATOR
Electric Submersible Pumps

CAST IRON
Three Phase
460V, & 575V

Read this manual carefully before installing, operating or servicing these pump models. Observe all safety information. Failure to comply with instructions may result in personal injury and/or property damage. Please retain these instructions.

Version 5/12/2020

TABLE OF CONTENTS

INTRODUCTION

This Installation, Operation and Maintenance manual provides important information on safety and the proper inspection, disassembly, reassembly and testing of the BJM Pumps® KB220 Series submersible pump. This manual also contains information to optimize performance and longevity of your BJM Pumps® submersible pump.

The submersible KB220 Series pumps are designed to pump water based slurries. The KB220 Series pumps are not explosion-proof. They are not designed to pump volatile or flammable liquids.

Note: Consult chemical resistance chart for compatibility between pump materials and liquid before operating pump.

If you have any questions regarding the inspection, disassembly, re-assembly or testing please contact your **BJM Pumps®** distributor, or Industrial Flow Solutions Operating, LLC.

Industrial Flow Solutions Operating, LLC
104 John W Murphy Drive
New Haven, CT 06513, USA

Fax: 860-399-7784
Phone: 860-399-5937

Information, including pump data sheets and performance curves, is also available on our web site: www.flowsolutions.com

For assistance with your electric power source, please contact a certified electrician.

Please pay attention to the following alert notifications. They are used to notify operators and maintenance personnel to pay special attention to procedures, to avoid causing damage to the equipment, and to avoid situations that could be dangerous to personnel. ***NOTE: Instructions to aid in installation, operation, and maintenance or which clarify a procedure.***

⚠ DANGER Immediate hazards that WILL result in severe personal injury or death. These instructions describe the procedure required and the injury which will result from failure to follow the procedure.

⚠ WARNING Hazards or unsafe practices that COULD result in severe personal injury or death. These instructions describe the procedure required, and the injury which could result from failure to follow the procedure.

⚠ CAUTION Hazards or unsafe practices which COULD result in personal injury or product or property damage. These instructions describe the procedure required and the possible damage which could result from failure to follow the procedure.

BJMPumps

SAFETY

Pump installations are seldom identical. Each installation and application can vary due to many different factors. It is the owner/service mechanics responsibility to repair, service, and test to ensure that the pump integrity is not compromised according to this manual.

⚠WARNING Risk of electric shock – this pump has not been investigated for use in swimming pool areas.

⚠ DANGER **Do not pump flammable, inflammable or volatile liquids. Death or serious injury will result.**

⚠WARNING Before attempting to open or service the pump:

1) Familiarize yourself with this manual.
2) Unplug or disconnect the pump power cable to ensure that the pump will remain inoperative.
3) Allow the pump to cool if overheated.

⚠WARNING Do not operate the pump with a worn or damaged electric power cable. Death or serious injury could occur.

⚠WARNING Never attempt to alter the length or repair any power cable with a splice. The pump motor and pump motor and cable must be completely waterproof. Damage to the pump or personal injury may result from alterations.

⚠WARNING After the pump has been installed, make sure that the pump and all piping are secure before operation.

⚠WARNING Do not lift the pump by the power cable piping or discharge hose. Attach proper lifting equipment to the lifting handle (or lifting rings) fitted to the pump. Do not suspend the pump by the power cable.

⚠WARNING Obtain the services of a qualified electrician to troubleshoot, test and/or service the electrical components of this pump.

⚠ CAUTION Pumps and related equipment must be installed and operated according to all national, local and industry standards.

INSPECTION

Review all safety information before servicing pump.

The following are recommended installation practices/procedures for the pump. If there are questions in regards to your specific application, contact your local **BJM Pumps®** distributor or Industrial Flow Solutions, Operating LL at 860-399-5937.

PRE-INSTALLATION INSPECTION

1) Check the pump for damage that may have occurred during shipment.
2) Inspect the pump for any cracks, dents, damaged threads, etc.
3) Check power cord (and seal minder cord, if installed) for any cuts or damage.
4) Check for, and tighten any hardware that appears loose.
5) Carefully read all tags, decals and markings on the pump.
6) **Important**: Always verify that the pump nameplate, amps, voltage, phase, and HP ratings match your control panel and power supply.

Warranty does not cover damage caused by connecting pumps and controls to an incorrect power source (voltage/phase supply. Record the model numbers and serial numbers from the pumps and control panel on the front of this instruction manual for future reference. Give it to the owner or affix it to the control panel when finished with the installation.

The KB220 Model pumps are equipped with embedded thermal motor sensor switches and a KB220 Seal Minder®. Both are required to be properly connected to maintain warranty.

If anything appears to be abnormal, contact your **BJM Pumps®** distributor or Industrial Flow Solutions Operating, LLC. If damaged, the pump may need to be repaired before use. Do not install or use the pump until appropriate action has been taken.

Industrial Flow Solutions Operating, LLC Recommended Storage Procedures

Storage Environment

- The storage environment must be between 40°F – 120°F. DO NOT allow the pump to freeze.
- The pump must be stored in a dry location.
- Avoid storing the pump in direct sunlight.

For Storage Periods of 3 Years or Less

- Rotate the impeller shaft by hand every 6 months and again prior to start up
    - Keeps seal faces from sticking
    - Keeps bearing grease from settling
- Check the oil in seal chambers prior to startup to ensure oil is moisture free and has not broken down.

- Megger the motor prior to start up. The reading should be above 100Ω.
- Remove the air check screw on the motor housing. Using and air compressor, pressurize the motor chamber to 13 psi and check for leaks using a spray bottle.
- Repeat this procedure to check the seal chamber for leaks.
- Inspect the power cable for any damage.

For Storage Periods Longer Than 3 Years

- Disassemble the pump and replace all of the O-rings, the Mechanical Seal, Seal Chamber Oil, and the Lip Seal. Replace the Bearings.
- Remove the air check screw on the motor housing. Using an air compressor, pressurize the motor chamber to 13 psi and check for leaks using a spray bottle of soapy water. Repeat this procedure to check the seal chamber for leaks.
- Rotate the impeller shaft by hand prior to startup.

Lubrication:

No additional lubrication is necessary. The shaft seal and bearings are fully lubricated from the factory. Seal oil should be checked once per year. See table below.

BJMPumps

OIL FILL QUANTITY/TYPE

	Qty. oil in seal chamber		
Models	**U.S. fl. oz.**	**C.C.**	**Type of oil**
KB220	71	2100	ISO 32 NSF Food Grade Mineral Oil

PUMP INSTALLATION

KB220 Series pumps have been evaluated for use with water or water based solutions. Please contact the manufacturer for additional information.

⚠WARNING **Risk of electric shock.** KB220 Series pump models do not come with electric plug connectors. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle or control panels.

Lifting:

Attach lifting chain (not included) to the lifting rings on the top of the pump.

⚠ CAUTION Do not lift the pump by the power cable or discharge hose/piping. Proper lifting equipment (chain must be used.

POSITIONING THE PUMP

BJM Pumps®, KB220 Series pumps are designed to operate fully or partially submerged. Do not run the pump dry. Refer to data sheet for minimum submersion depth for your particular model. Data sheets can be obtained online at www.flowsolutions.com or by calling Industrial Flow Solutions Operating, LLC at 860-399-5937. As a general rule, KB220 Series side discharge pumps can pump down to the top of the volute. Pumping lower than the suction screen will permit air to enter the pump and cavitate, lose prime or become air bound.

⚠ CAUTION

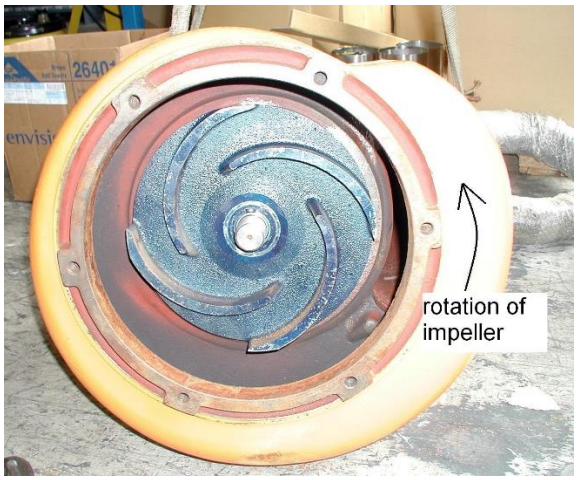
- Do not run pump dry.
- Pump liquid should not exceed a maximum temperature of 104°F.
- Never place the pump on loose or soft ground. The pump may sink, preventing water from reaching the impeller. Place on a solid surface or suspend the pump with a lifting chain. The KB220 Series pumps are provided with a suction strainer to prevent large solids from clogging the impeller. Any spherical solids which pass through the strainer should pass through the pump.

- For maximum pumping capacity, use the proper size non-collapsible hose or rigid piping. A check valve may be installed after the discharge to prevent back flow when the pump is shut off.

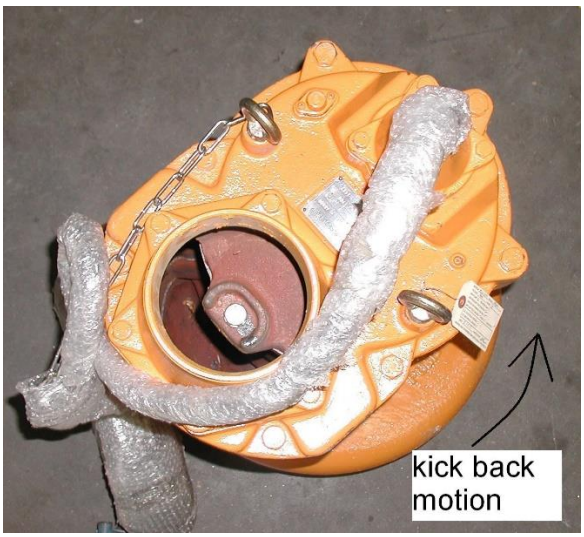
PUMP ROTATION

Two ways to check the correct pump rotation:

1. By looking at the impeller; the rotation of the impeller should be counter clockwise as shown in the picture below.



2. By looking from the top of the pump. Since the impeller cannot be seen, the best way to check the rotation is to check the kick back motion of the pump when the pump just starts. The kick back motion of the pump should be counter clockwise as shown in the picture below.



BJMPumps

PUMP OPERATION

⚠WARNING This pump is designed to handle water and agrated slurry. It is not designed to pump volatile or flammable liquids. Do not attempt to pump any liquids which may damage the pump or endanger personnel as a result of pump failure.

⚠ DANGER **Do not operate this pump where explosive vapors or flammable material exist. Death or Serious injury will result.**

TYPICAL MANUAL DEWATERING INSTALLATION

NOTE: Maximum recommended starts should not exceed 10 times per hour.

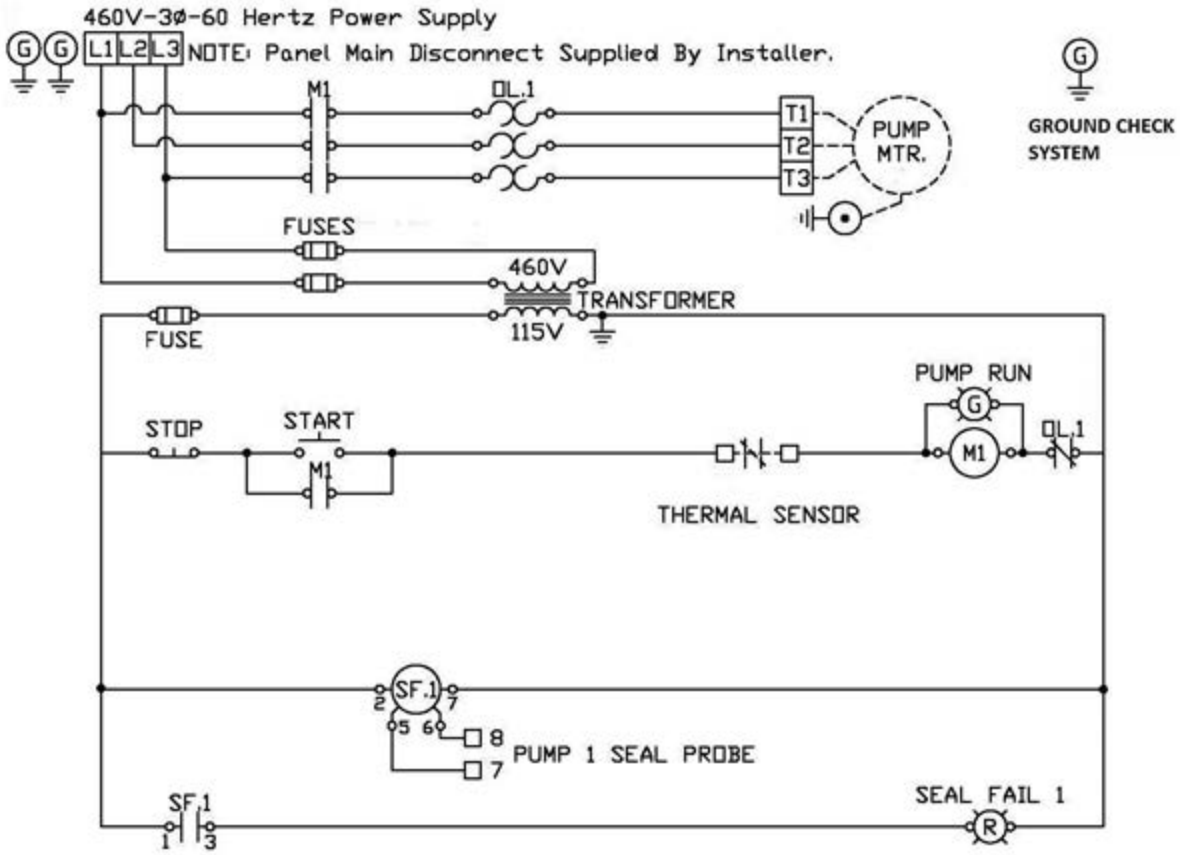
All KB220 models are provided with a 50' (10m) power cable. NEVER splice the power cable due to safety and warranty considerations. Always keep the power lead end dry.
Note: 460 & 575V three phase units do not have a plug.

⚠WARNING Do not alter the length or repair any power cable with a splice. The pump motor and cable must be completely waterproof. Damage to the pump or personal injury may result from alterations.

For manual operation: 460 & 575 volt: Connect directly to a control panel with a properly sized overload. Check the direction of the rotation. Tilt the pump and start it. It should twist in the opposite direction of the arrow (on pump). It is recommended that a Ground Fault Interrupter (GFI) type breaker (or equivalent) be used.

STOPPING

To stop the pump (manual and automatic mode), turn off the breaker/disconnect, or turn the power source off (generator).



Typical 3 phase manual control 1

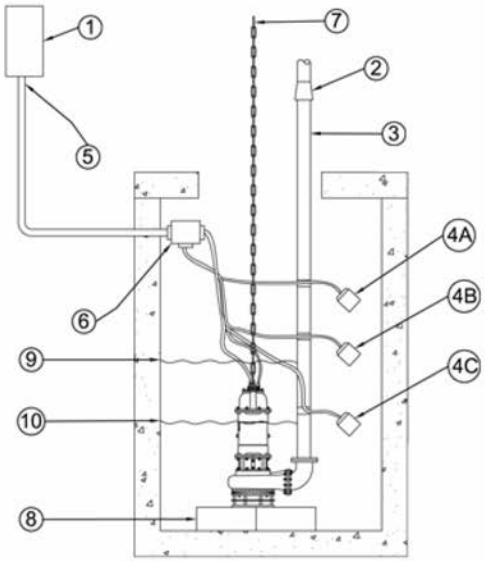
TYPICAL AUTOMATIC DEWATERING INSTALLATION

NOTE: Maximum recommended starts should not exceed 10 times per hour.

Note: 460V & 575V pumps do not have a plug installed.

Three phase pumps need a separate control box with float(s) for automatic operation.

TYPICAL SIMPLEX INSTALLATION WITH CONTROL PANEL AND 3 FLOATS



1) Electrical wiring and protection must be in accordance with National Electrical Code in U.S.A. or Canadian Electrical Code in Canada and state / provincial and local electrical codes.

2) Optional (approx. 50' / 15 meters) : If pumping in a small confined space at high head, it may be beneficial to install a check valve 3' (1 meter) above the discharge of the pump. This will help eliminate backflow and unnecessary running of the pump. For best results use a section of PVC.

3) PVC pipe or rigid hose recommended. Collapsible vinyl hose will work but not as efficiently.

4) Attach float to the pump top or PVC pipe. Never place the float lower than the top of the strainer inlet.

- **4A** - alarm float.
- **4B** - turn on.
- **4C** - turn off.

5) All electrical connections must be kept dry.

6) Wire pump and floats to control panel through a watertight junction box.

7) Always lower the pump by a separate chain. Never lift or lower the pump by the power cord, piggy-back cord or discharge hose.

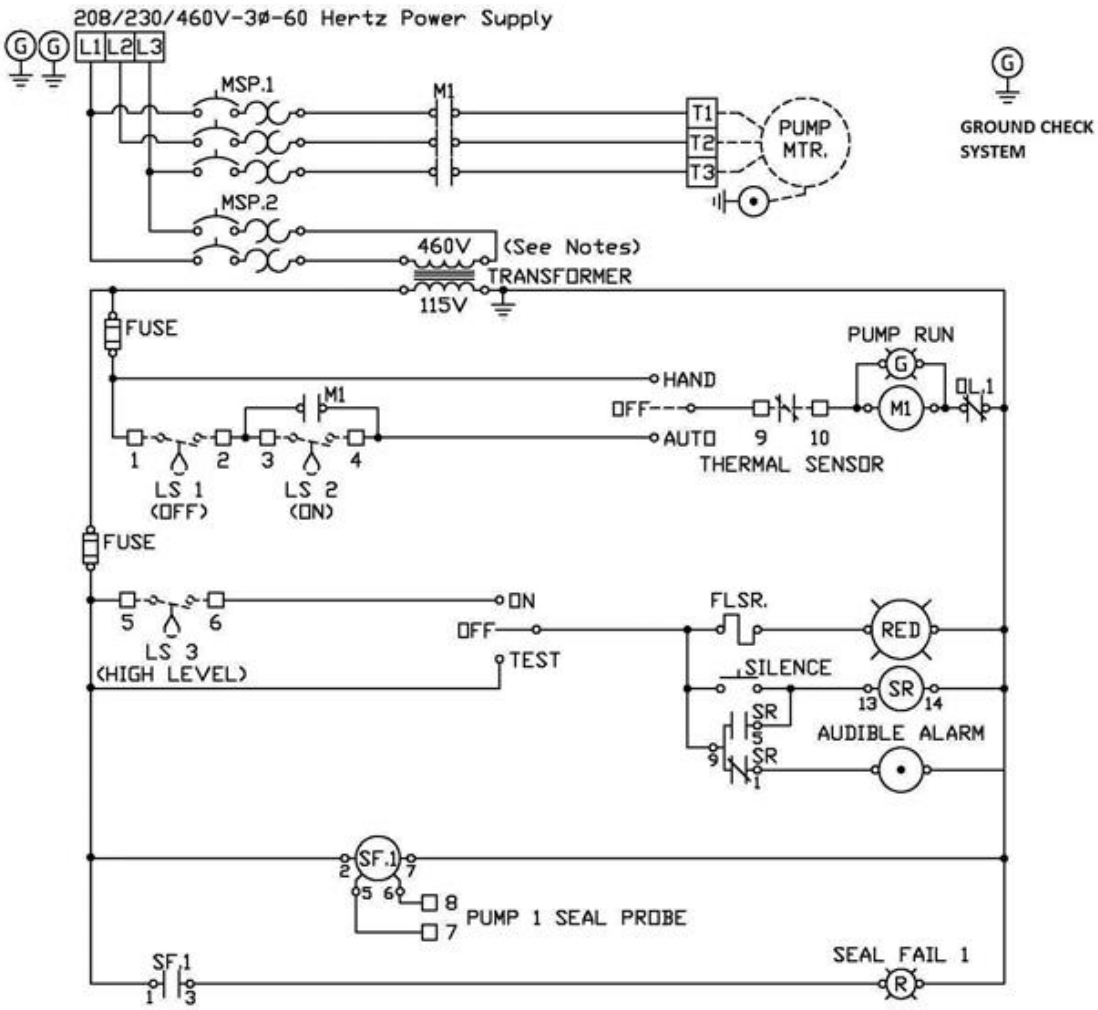
8) For best results, place the pump on a solid object. This will keep the pump from digging itself into silt, sand and mud.

9) Recommended submergence level.

10) Minimum submergence level.

STOPPING

To stop the pump (manual and automatic mode), turn off the breaker/disconnect, or turn the power source off (generator).



Typical 3 phase Auto Control 1

INTENDED METHODS OF CONNECTION

⚠ CAUTION Use with approved motor control that matches motor input in full load amperes. “UTILLISER UN DÉMARREAR APPROUVÉ CONVENANT AU COURANT Á PLEINE CHARGE DU MOTEUR.”

Use with approved motor control that matches motor input in full load amperes with overload element(s) selected or adjusted in accordance with control instructions.

“UTILISER UN DÉMARREUR APPROUVÉ CONVENANT AU COURANT Á PLEINE CHARGE DU MOTEUR ET DON’T LES ÉLÉMENTS THERMIQUES SONT RÉGLÉS OU CHOISIS ONFORMÉMENT AUX INSTRUCTIONS QUI L’ACCOMPAGNENT”

BJM Pumps submersible pumps have been evaluated for use with water or water based solutions. Please contact the manufacturer for additional information.

BJMPumps

THREE PHASE WIRING INSTRUCTION

⚠WARNING **FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING.**

⚠WARNING **"Risk of electrical shock"** Do not remove power supply cable and strain relief or connect conduit directly to the pump.

⚠WARNING Installation and checking of electrical circuits and hardware should be performed by a qualified licensed electrician.

To automatically operate a non-automatic three phase pump, a control panel is required. Follow the instructions provided with the panel to wire the system. For automatic three phase pumps see automatic three phase wiring diagram.

Before installing a pump, check the pump rotation to insure that wiring has been connected properly to power source, and that the green leads of power cable (See wiring diagram), is connected to a valid ground, momentarily energize the pump, observing the directions of kick back due to starting torque. Rotation is correct if kick back is in the opposite direction of rotation arrow on the pump casing. If rotation is not correct, switching of any two power leads other than ground will provide the proper rotation.

The KB220 pumps include thermal motor sensor switches that are embedded in the motor windings. The sensor leads are connected to the start circuit on the motor control panel as shown in the example wiring diagrams. It is recommended that all pumps using a motor starting device incorporate motor overload protection. Pumps **must** be installed in accordance with the National Electrical Code and all applicable local codes and ordinances. Pumps are not to be installed in locations classified as hazardous in accordance with National Electrical Code, ANSI/NFPA 70.

Connect pump to a junction box, outlet box, control box, enclosure with a wiring compartment that meets NEC and local codes. The provision for supply connection shall reduce the risk of water entry during temporary, limited submersion and shall comply with the applicable requirements of the Standard for Enclosures for Electrical Equipment, UL 50, or the standard for Metallic Outlet Boxes, UL 514A, and the standard for Motor-Operated Water Pumps. UL 778.

BJMPumps

TROUBLE SHOOTING

⚠WARNING **Disconnect the power source to the pump BEFORE attempting any type of trouble shooting, service or repair.**

PUMP WILL NOT RUN

1. Check power supply (fuses, breaker). Reset power.
2. Blocked impeller. Remove strainer, check and clean.
3. Defective cable or incorrect wiring.
4. Strainer clogged. Check and clean as necessary.
5. Float switch tangled/obstructed. Clean and free float switch from obstruction.
6. Float switch defective. Replace float switch.
7. Pump overheated or temperature of liquid exceeds pump operating temperature.

Warning: Pump will restart automatically when motor over-heat protection switch cools.

PUMP RUNS BUT DOES NOT DELIVER RATED CAPACITY

1. Discharge line clogged, restricted or hose kinked. Check discharge hose/pipe.
2. Worn impeller and/or suction cover. Inspect and replace as necessary.
3. Pump overloaded due to liquid pumped being too thick.
4. Pumping air. Check liquid level and position of pump.
5. Excessive voltage drops due to long cables.
6. Three phase only; pump running backwards, check rotation.

SERVICING YOUR SUBMERSIBLE PUMP

Pump should be disconnected from the electric power supply before proceeding to do any service or maintenance**.**
To service or repair your pump, please contact your local **BJM Pumps®** distributor.
Service should only be performed by a qualified electrician.

MAINTAINING YOUR PUMP

- Pump should be disconnected from the electric power supply before proceeding to do any service or maintenance**.**
- Pump should be inspected at regular intervals.
- More frequent inspections are required if the pump is used in a harsh environment.

- Preventative maintenance should be performed to reduce the chance of premature failure.
- Worn impellers and lip seals should be replaced.
- Cut or cracked power cables must be replaced. **(Never operate a pump with a cut, cracked or damaged power cable.)**
- Seal oil should be checked once per year.
- Maintenance should always be done when taking a pump out of service before storage.

1) Clean pump of dirt and other build up.
2) Check condition of oil around the shaft seals.
3) Check hydraulic parts: check for wear.
4) Inspect power cable. Make sure that it is free of nicks or cuts.

CHANGING SEAL OIL

Changing the seal oil in the KB Series pumps is very easy.

1) Make sure that the pump cable is disconnected from the power source.
2) Lay the pump down on its side.
3) Remove the screws that hold the bottom plate in place.
4) Remove bottom plate.
5) Remove screws holding the suction cover.
6) Remove the suction cover.
7) Remove the impeller.
8) Remove the inspection screw for the oil chamber (pos#50-08). Pour out a small sample of the oil. If it is milky white, or contains water, then the oil and possible, the mechanical seal, should be changed. If an oil change is needed:
9) Remove the screws that hold the oil chamber cover in place & remove the oil.
10) Replace the mechanical seal if necessary.
11) Replace the oil.
12) Reassemble the pump.

CHANGING SEALS*

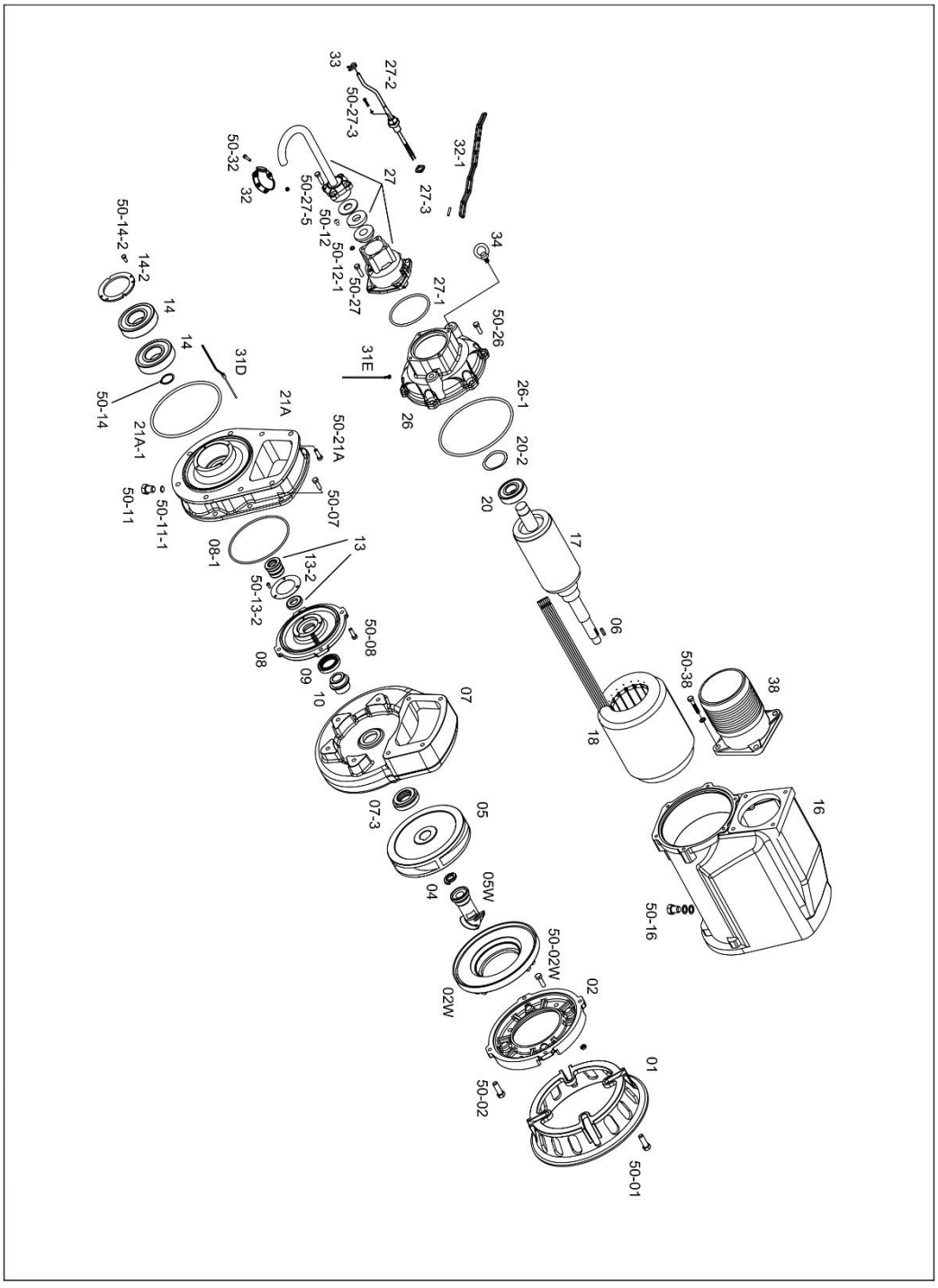
1) Make sure that the pump cable is disconnected from the power source.
2) Lay the pump down on its side.
3) Remove the oil inspection bolt (pos#50-11) from the oil seal chamber.
4) Drain out all the inside the oil seal chamber.
5) Remove the bolts holding the stand.
6) Remove the stand.
7) Remove the bolts holding the suction cover.
8) Remove the suction cover.
9) Remove the agitator.
10) Remove the impeller, impeller key and shims.

11)Remove the bolts holding the pump housing.
12)Remove the pump housing.
13)Remove the shaft sleeve. Note the shaft sleeve direction.
14)Remove the bolts holding the oil cover.
15)Remove the oil cover.
16)Remove the screws holding the seal retainer.
17)Remove the seal retainer.
18)Remove the mechanical seal.
19)Replace the mechanical seal, lip seal and o-rings.
20)Reassemble the pump.
21)Fill with recommended new oil.
22)Replace the oil inspection bolt o-ring.
23)Secure the oil inspection bolt.

*Note: If there is excessive liquid found in the oil or mechanical seal damaged, please contact BJM Pumps® authorized service centers.

BJMPumps

EXPLODED VIEW OF KB 220



BJMPumps

KB220 PARTS LIST

	Pump Model	KB220
Item No.	Part Description	Item #
01	STRAINER, SUCTION, STEEL, KB220	205173
02	COVER, SUCTION, CI, KB220	205175
02W	PLATE, WEAR, CHROME IRON, KB220	205174
04	LOCK WASHER	202918
05	IMPELLER, CLOSED, CHROME IRON, KB22	205176
05W	AGITATOR, DI, KB220	205177
06	IMPELLER KEY	202147
07	HOUSING, PUMP, DI, KB220	205178
07-3	PUMP HOUSING SLEEVE	202182
08	COVER, SEAL CHAMBER, DI, KB220	205179
08-1	O-RING(KIT ONLY)	KIT
09	LIP SEAL, BUNA-N	202251
10	SHAFT SLEEVE	203074
13	MECH. SEAL SET	200419
14	LOWER BEARING-Top	200964
14	LOWER BEARING-Bottom	204209
14-2	LOWER BEARING RETAINER	203076
16	HOUSING, MOTOR, CI, KB220	205181
17	ROTOR, SHAFT ASSY., 30HP, 2 POLE, KB2	205182
18	STATOR, 30HP, 460/3/60, 2 POLE	205183
18	STATOR, 30HP, 575/3/60, 2 POLE	205184
20	UPPER BEARING	200968
20-2	WAVE WASHER	202361
21A	HOUSING, SEAL CHAMBER, CI, KB220	205185
21A-1	O-RING(KIT ONLY)	KIT
26	COVER, TOP, CI, KB220	205186
26-1	O-RING(KIT ONLY)	KIT
27	POWER CABLE ASSY. (5 Lead)	205224
27-1	O-RING(KIT ONLY)	KIT
27-2	SENSOR CABLE ASSY.	205227
27-3	O-RING(KIT ONLY)	KIT
31D	SEAL MINDER® PROBE	204001
31E	GROUND WIRE	203145
32	POWER CABLE STRAIN RELIEF	202496
33	SENSOR CABLE STRAIN RELIEF	202495
34	LIFTING EYE BOLT	203173
38	6" NPT MALE DISCHARGE FLANGE	202611
50-01-1	CAP SCREW, M12-1.75	203258
50-01-2	SPLIT WASHER M12	202905
50-01-3	FLAT WASHER M12	202912
50-02-1	CAP SCREW, M12-1.75	203236
50-02-2	SPLIT WASHER M12	202905
50-02-3	FLAT WASHER M12	202912
50-02W-1	CAP SCREW, M10-1.5	203243
50-02W-2	SPLIT WASHER M10	202909
50-07-1	CAP SCREW, M12-1.75	203236
50-07-2	SPLIT WASHER M12	202905
50-08-1	CAP SCREW, M8-1.25	203294
50-08-2	SPLIT WASHER M8	202902
50-11	OIL PLUG	203268
50-11-1	O-RING(KIT ONLY)	KIT
50-12	OIL PLUG SCREW	203218
50-12-1	O-RING(KIT ONLY)	KIT

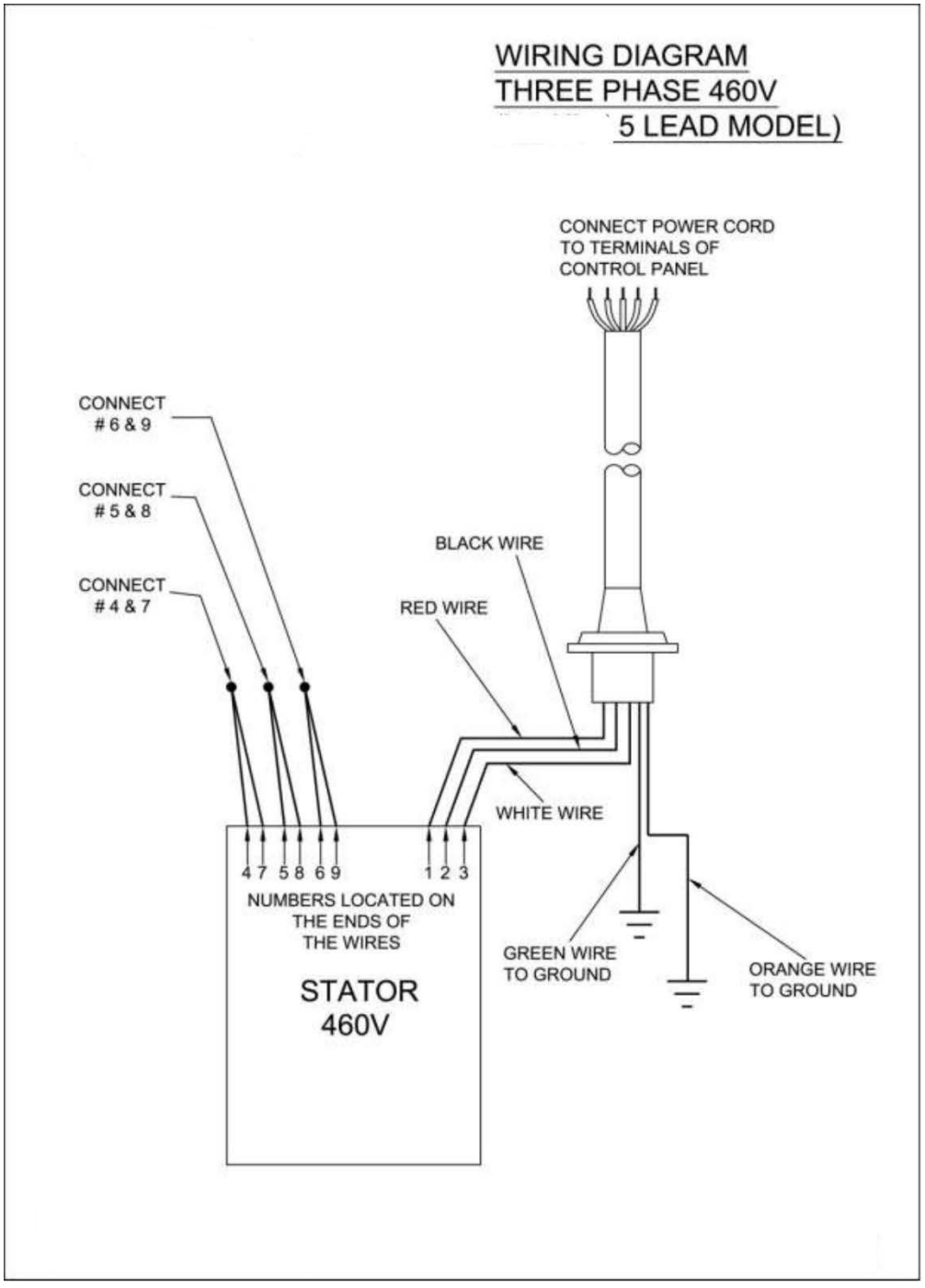
50-13-2	SCREW, M4-0.7	203214
50-14	RING, SNAP, 50MM, STEEL	205180
50-14-2	CAP SCREW, M6-1	203220
50-16	STATOR LOCK BOLT, WASHER, O-RING	202807
50-21A-1	CAP SCREW, M12-1.75	203271
50-21A-2	SPLIT WASHER M12	202905
50-26-1	CAP SCREW, M10-1.5	203243
50-26-1	SPLIT WASHER M10	202909
50-27-1	CAP SCREW, M10-1.5	203262
50-27-2	SPLIT WASHER M10	202909
50-27-3	SCREW, M5-0.8	203216
50-27-4	SPLIT WASHER M5	202915
50-27-5	CAP SCREW, M8-1.25	203229
50-27-6	SPLIT WASHER M8	202902
50-31E-1	SCREW, M4-0.7	203214
50-31E-2	LOCK WASHER	202772
50-32-1	CAP SCREW, M6-1	203256
50-32-2	CAP SCREW, M6-1	201028
50-32-3	FLAT WASHER M6	202901
50-38-1	CAP SCREW, M12-1.75	203236
50-38-2	SPLIT WASHER M12	202905
	O-Ring Kit - Buna	205250
	O-Ring Kit - FKM	205251

BJMPumps

THREE PHASE WIRING DIAGRAM

460V (GGC)

MODEL KB220

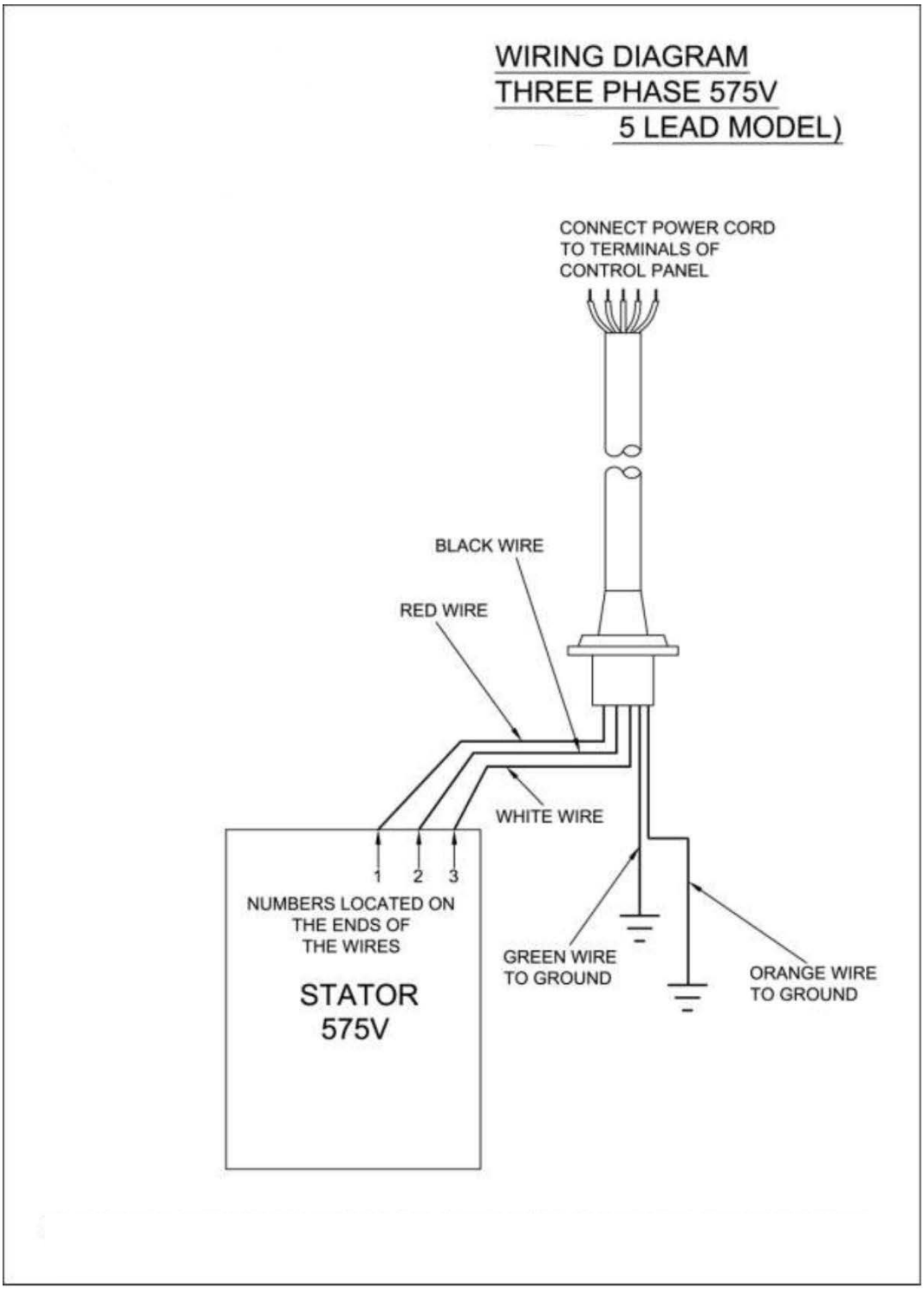


BJMPumps

THREE PHASE WIRING DIAGRAM

575V (GGC)

MODEL KB220



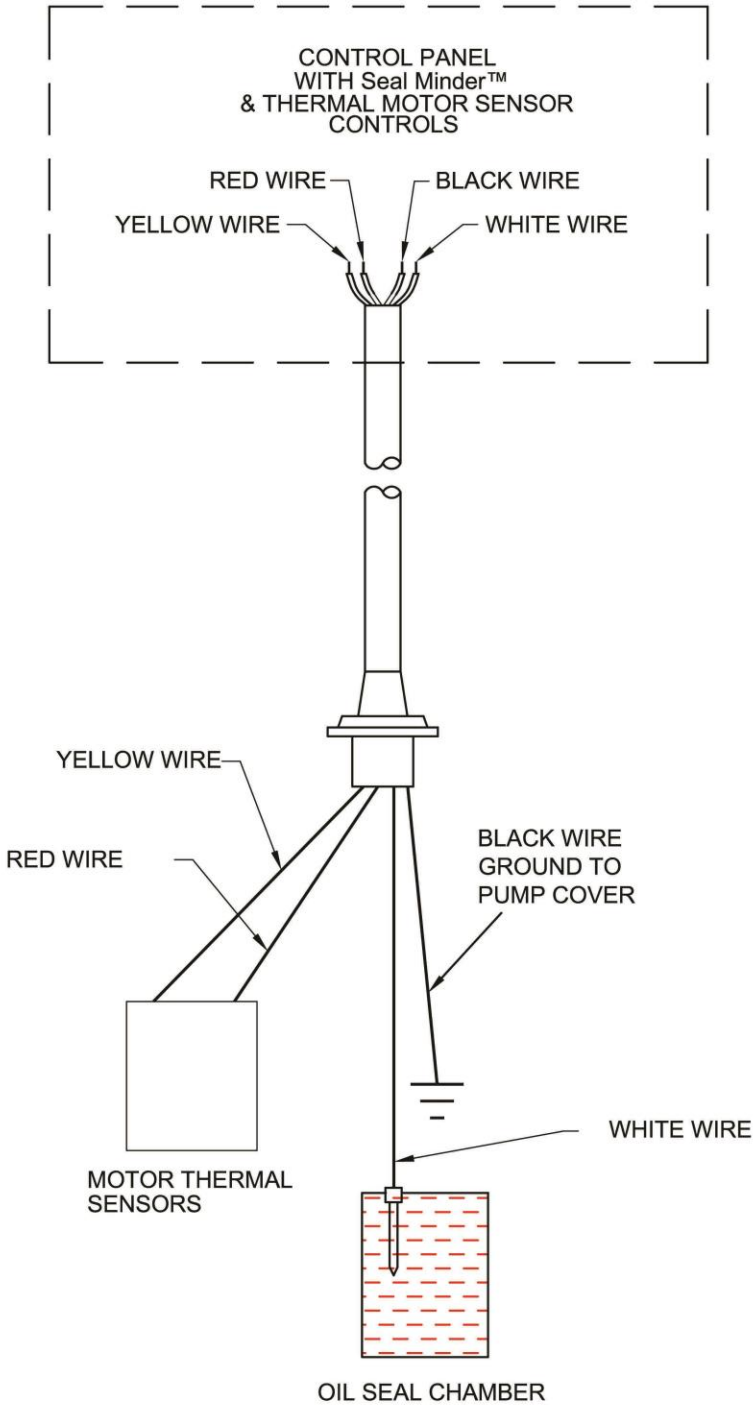
SEAL MINDER® - THERMAL MOTOR SENSOR SWITCH

Seal Minder®:
Also known as a seal failure circuit (or moisture detection circuit) is designed to inform the pump operator that there is moisture within the oil chamber. This early warning can allow the operator to schedule repair & inspection on the pump. The **Seal Minder** sensor probe is inside the oil chamber. (The oil chamber houses the mechanical seals that are cooled & lubricated by oil). The **Seal Minder,** when properly connected to a control panel, can help indicate seal failure. The **Seal Minder** cord requires a seal fail circuit in control panel for warning signal.

Along, with the **Seal Minder**, the KB Series high temperature pumps also feature thermal temperature sensor switches that are embedded into the motor stator windings. Three switches are embedded into the stator windings and wired in series. The leads are connected to the pump control panel through the sensor cable. If the windings would see a temperature above 300 degrees F, then the switch(s) would open and cut power to the pump. Once the temperature dropped below 300 degrees F, the switch(s) would reset allowing the pump to be restarted. This feature is designed to prevent damage to the stator winding and allow for longer pump life.

The sensor cable consists of four leads, two are connected to the **Seal Minder**, and two are connected to the thermal sensor switches located in the stator windings. These four leads run to the pump control panel and connect to the proper connections points for seal alarm and thermal cut off. The black and white wires are for the **Seal Minder** connections and the thermal sensors will be connected to the yellow and red wires. The three phase automatic wiring diagram shown earlier in the manual will give a guide to the connections in the control panel. The manual for the control panel should be consulted for the exact connections.

The sensor cable with **Seal Minder** and thermal sensor switch connections are standard on all KB model pumps. Industrial Flow Solutions Operating, LLC can supply a control with the **Seal Minder** and Thermal sensor switch option. Separate stand alone **Seal Minder** alarm panels are also available. Consult your BJM Pumps® representative for part numbers and ordering details. Industrial Flow Solutions Operating, LLC requires the **Seal Minder** and thermal sensor switches be used. **Failure to connect or misuse of these devices will void warranty.**



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Industrial Flow Solutions Operating, LLC
104 John W Murphy Drive
New Haven, CT 06513, USA

WARRANTY AND LIMITATION OF LIABILITY

Unless otherwise expressly authorized in writing, specifying a longer or shorter period, BJM Pumps, LLC warrants for a period of eighteen (18) months from the date of shipment from the Point of Shipment, or one (1) year from the date of installation, whichever occurs first, that all products or parts thereof furnished by BJM Pumps, LLC under the brand name **BJM Pumps**, hereinafter referred to as the "Product" are free from defects in materials and workmanship and conform to the applicable specification.

BJM Pumps, LLC's liability for any breach of this warranty shall be limited solely to replacement or repair, at the sole option of BJM Pumps, LLC, of any part or parts of the Product found to be defective during the warranty period, provided the Product is properly installed and is being used as originally intended. Any breach of this warranty must be reported to BJM Pumps, LLC or BJM Pumps, LLC's authorized service representative within the aforementioned warranty period, and defective Product or parts thereof must be shipped to BJM Pumps, LLC or BJM Pumps, LLC's authorized representative, transportation charges prepaid. Any cost associated with removal or installation of a defective Product or part is excluded.

IT IS EXPRESSLY AGREED THAT THIS SHALL BE THE SOLE AND EXCLUSIVE REMEDY OF BJM PUMPS, LLC'S DISTRIBUTORS AND CUSTOMERS. UNDER NO CIRCUMSTANCES SHALL BJM PUMPS, LLC BE LIABLE FOR ANY COSTS, LOSS, EXPENSE, DAMAGES, SPECIAL DAMAGES, INCIDENTAL DAMAGES OR CONSEQUENTIAL DAMAGES ARISING DIRECTLY OR INDIRECTLY FROM THE DESIGN, MANUFACTURE, SALE, USE OR REPAIR OF THE PRODUCT, WHETHER BASED ON WARRANTY, CONTRACT, NEGLIGENCE, OR STRICT LIABILITY. IN NO EVENT WILL LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

THE WARRANTY AND LIMITS OF LIABILITY CONTAINED HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY BJM PUMPS, LLC AND EXCLUDED FROM THIS WARRANTY.

BJM Pumps, LLC neither assumes, nor authorizes any person to assume for it, any other warranty obligation in connection with the sale of the Product. This warranty shall not apply to any Product or parts of Product which have (a) been repaired or altered outside of BJM Pumps, LLC's facilities unless such repair was authorized in advance by BJM Pumps, LLC or by its authorized representative; or (b) have been subject to misuse, negligence or accident; or (c) have been used in a manner contrary to BJM Pumps, LLC's instruction.

In any case of products not manufactured and sold under the BJM Pumps, LLC brand name, there is no warranty from BJM Pumps, LLC; however BJM Pumps, LLC will extend any warranty received from BJM Pumps, LLC's supplier of such products.

START-UP REPORT FORM

This form is designed to record the initial installation, and to serve as a guide for troubleshooting at a later date (if needed).

Industrial Flow Solutions Operating, LLC
104 John W Murphy Drive
New Haven, CT 06513, USA

Pump Owner's Name			
Location of Installation			
Person in Charge		Phone( )	
Purchased From			
Model	Serial No		
Voltage	Phase	Hertz	HP
Does impeller turn freely by hand?	☐ Yes ☐ No		
Condition of Equipment	☐ New ☐ Good ☐ Fair ☐ Poor		
Condition of Cable Jacket	☐ New ☐ Good ☐ Fair ☐ Poor		
Rotation: Direction of Impeller Rotation (Use C/W for clockwise, CC/W for counterclockwise): _____ Method used to check rotation (viewed from bottom) _____			
Resistance of cable and Pump Motor (measured at pump control)			
Red-Black_____ ohms	Red-White_____ ohms	White-Black____ohms	
Resistance of ground circuit between control panel and outside of pumps _____ Ohms			
MEG OHM CHECK OF INSULATION Red to ground_____ White to ground_____ Black to ground_____			
Condition of location at start-up	☐ Dry ☐ Wet ☐ Muddy		
Was equipment stored If YES, length of storage:	☐ Yes ☐ No.		
Liquid being pump			
Debris in bottom of station?	☐ Yes ☐ No		

START-UP REPORT FORM

Was debris removed in your presence?	☐ Yes ☐ No
Are guide rails exactly vertical?	☐ Yes ☐ No
Is base elbow installed level?	☐ Yes ☐ No
Liquid level controls: Model_____	
Is control installed away from turbulence?	☐ Yes ☐ No

Operation Check

Tip lowest float (stop float), all pumps should remain off.
Tip second float (and stop float), one pump comes on.
Tip third float (and stop float), both pumps on (alarm on simplex).
Tip fourth float (and stop float), high level alarm on (omit on simplex).

If not on levels controls, describe type of controls

Does liquid level ever drop below volute top?	☐ Yes ☐ No
Control Panel MFG & model no.	
Number of pumps operated by control panel	

NOTE: At no time should hole be made in top of control panel, unless proper sealing devices are utilized.

Short Circuit protection:		Type:
Number and size of short circuit device(s)		Amp rating:
Overload type:	Size:	Amp rating:
Do protective devices comply with pump motor amp rating?		☐ Yes ☐ No
Are all pump connections tight?		☐ Yes ☐ No
Is the interior of the panel dry?		☐ Yes ☐ No If No, correct moisture problem.

Electrical readings

SINGLE PHASE		
Voltage supply at panel line connection, pump off	L1	L2
Voltage supply at panel line connection, pump on	L1	L2
Amperage load connection, pump on	L1	L2

THREE PHASE

Voltage supply at panel line connection, pump off

START-UP REPORT FORM

L1-L2	L2-L3	L3-L1
Voltage supply at panel line connection, pump on		
L1-L2	L2-L3	L3-L1
Amperage load connection, pump on		
L1	L2	L3
FINAL CHECK		
Is pump secured properly?	☐ Yes ☐ No	
Was pump checked for leaks?	☐ Yes ☐ No	
Do check valves operate properly?	☐ Yes ☐ No	
Flow: Does station appear to operate at proper rate?	☐ Yes ☐ No	
Noise level:	Acceptable ☐	Unacceptable ☐
Comments:		
Describe and equipment difficulties during start-up		
Installed by: Company: _____ Person: _____ Date: _____		
Maintained by: Company: _____ Person: _____		
Date and time of start-up _____ Present at start-up: ( ) Engineer's name _____ ( )Contractor's name _____ ( ) Operator's name _____ ( ) others _____		

NOTES:

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