



INSTALLATION, OPERATION & MAINTENANCE MANUAL

KZE (R) SERIES HEAVY DUTY AGITATOR SIDE DISCHARGE Electric Submersible Pumps

CAST IRON/CHROME IRON

**Three Phase
460V, & 575V**

KZE370
KZE750
KZE150

KZE550
KZE 930

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.

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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® KZE Series submersible pump. This manual also contains information to optimize performance and longevity of your **BJM Pumps®** submersible pump.

The submersible KZE Series pumps are designed to pump water and water based slurries. The KZE 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, 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.

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 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) 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 cable (and seal minder cable, 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 KZE Model pumps are equipped with embedded thermal motor sensor switches and a **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.

Lubrication:

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

OIL FILL QUANTITY/TYPE

Models	Qty. oil in seal chamber		
	U.S. fl. oz.	C.C.	Type of oil
KZE150	155	4600	ISO 32 NSF Food Grade Mineral Oil
KZE370	213	6400	ISO 32 NSF Food Grade Mineral Oil
KZE550	380	11,400	ISO 32 NSF Food Grade Mineral Oil
KZE750	380	11,400	ISO 32 NSF Food Grade Mineral Oil
KZE930	380	11,400	ISO 32 NSF Food Grade Mineral Oil

PUMP INSTALLATION

KZE 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.** KZE 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:

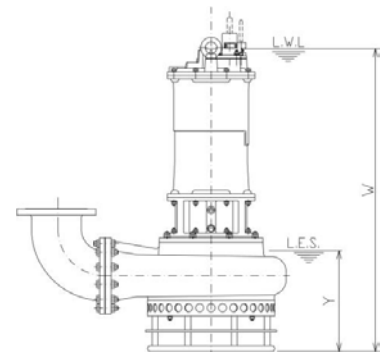
Attach lifting chain (not included) to the lifting rings on the top of the pump.

⚠ 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® KZE 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, KZE 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 (see chart below).

Model	KZE 150	KZE 370	KZE 550	KZE750	KZE930
Y inch	(13)	(17 3/8)	(17 3/8)	(17 3/8)	(17 3/8)
W inch	(44 1/2)	(51 3/4)	(55)	(55)	(55)



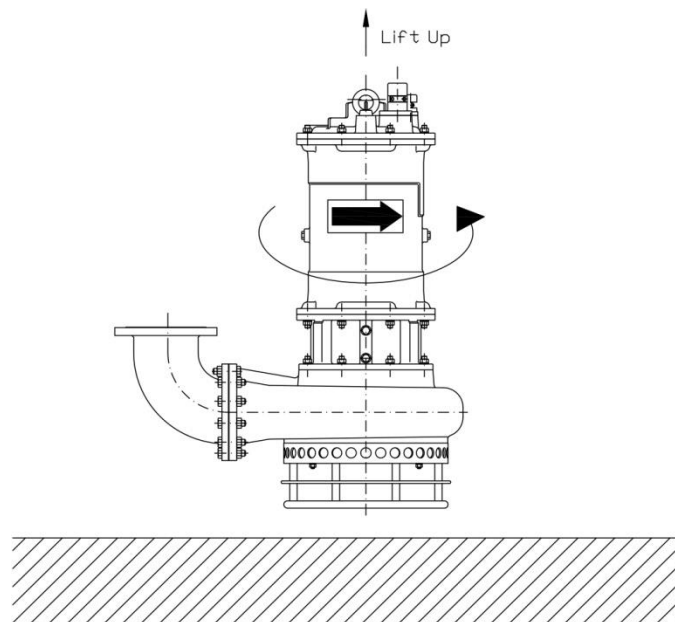
⚠ CAUTION

- 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 KZE 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 seen from the bottom.
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 water and ag-rated 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 KZE models are provided with a 50' (10m) GGC power cable. NEVER splice the power cable due to safety and warranty considerations. Always keep the power lead end dry.

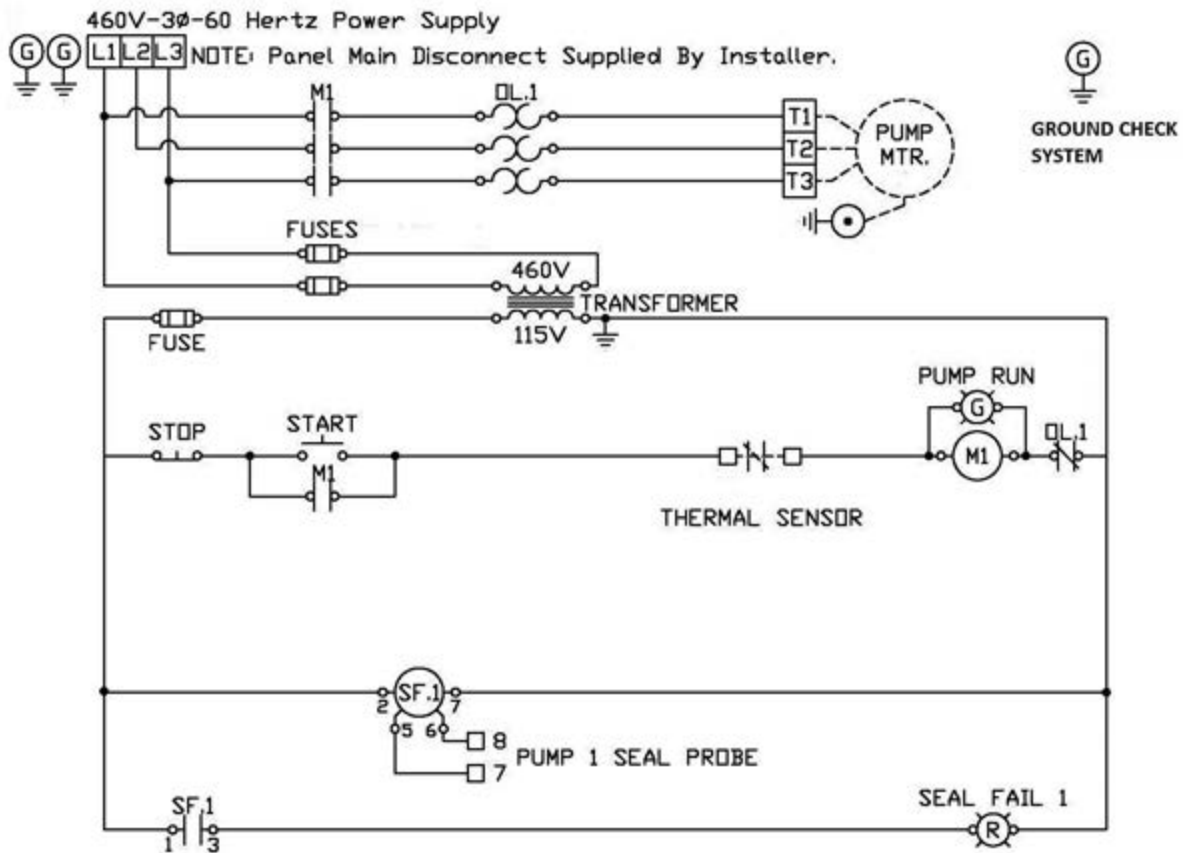
Note: 460 & 575V three phase units do not have a plug.

⚠ 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 the power source or control box. KZE model pumps are supplied with two grounding wires and a ground check wire; two green for grounding to the panel; the other is green with a yellow stripe and is to be used for grounding check systems. 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

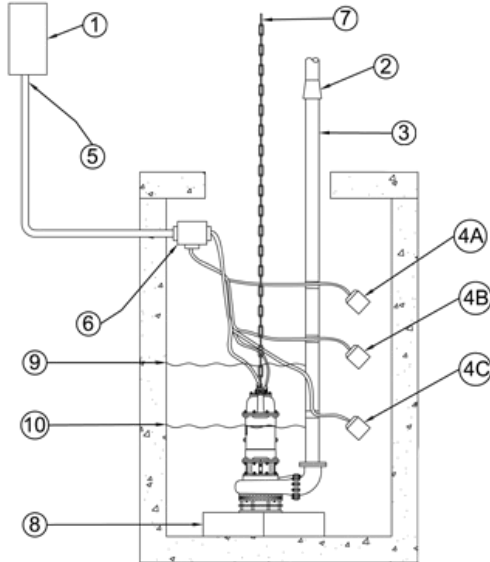
TYPICAL AUTOMATIC DEWATERING INSTALLATION

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.

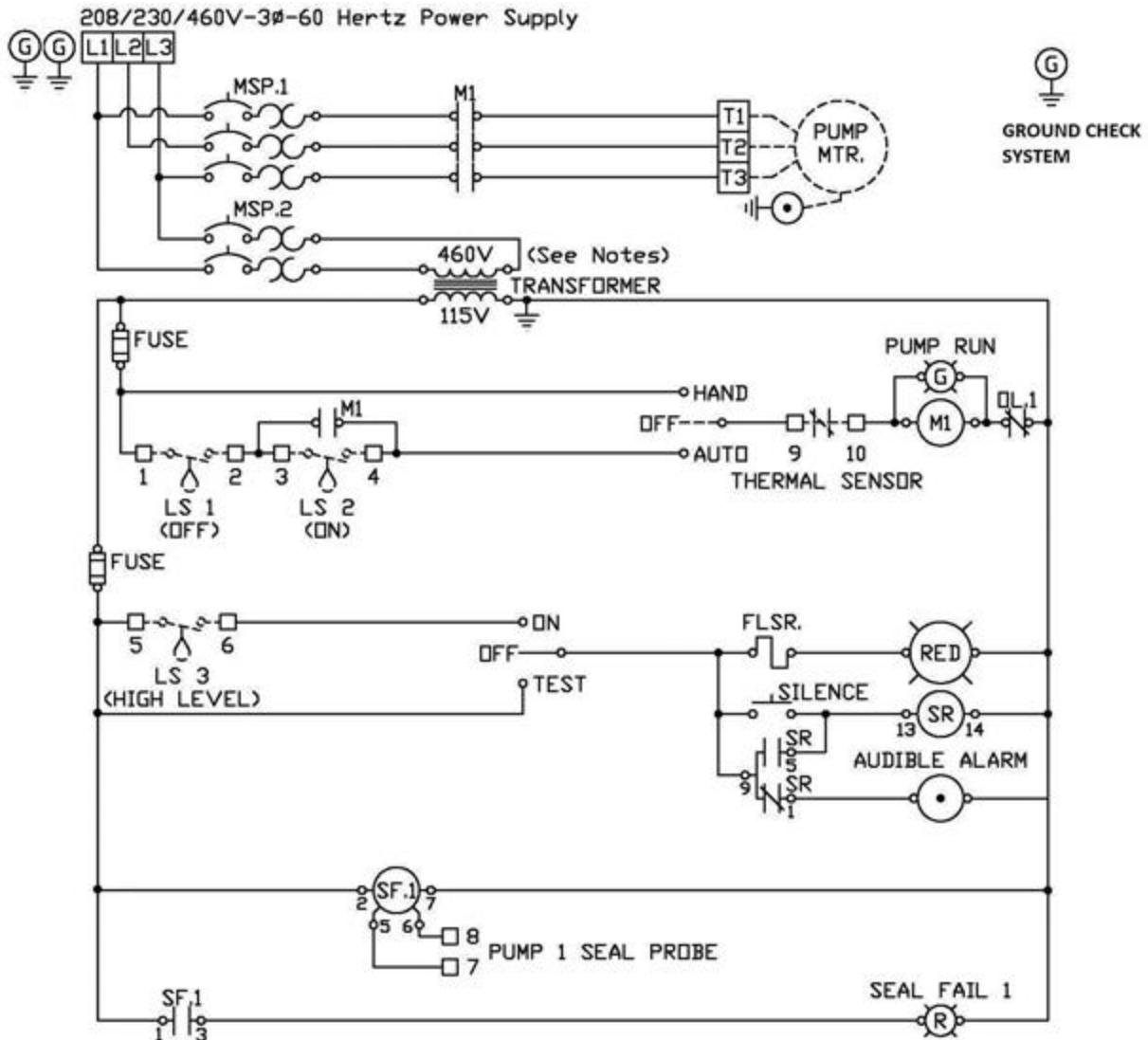
8) For best results, place the pump on a solid object. This will keep the pump from digging itself into silt, sand and mud.

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. "UTILISER UN DÉMARREUR APPROUVÉ CONVARIANT AU COURANT À PLEINE CHARGE DU MOTEUR."

BJM Pumps® submersible pumps have 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 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 KZE 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.



TROUBLE SHOOTING



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

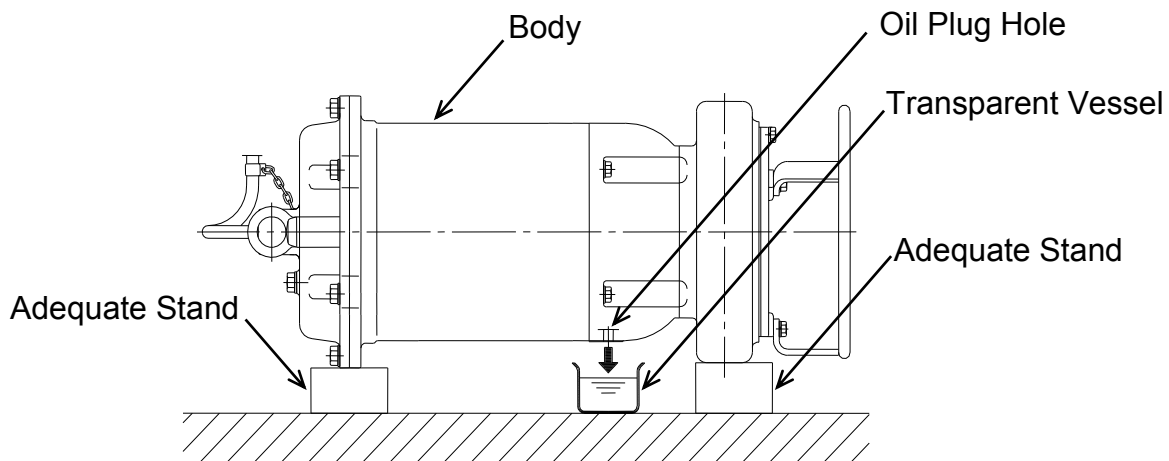
- Pump should be disconnected from the electric power supply before proceeding to do any service or maintenance.
- Pump should be inspected at regular intervals.
- More frequent inspections are required if the pump is used in a harsh environment.

- 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 MECHANICAL SEAL COOLING OIL

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

- 1) Disconnect the pump power cable from the power source.
- 2) Pull the pump from the sump and lay it on its side as shown in the illustration below.
- 3) Remove the oil fill/drain screw, and drain the oil contents into a catch container. If there was water or the oil appeared milky, the mechanical seal should be inspected and possibly changed.
- 4) Place the pump back into an upright position.
- 5) Fill the proper and type of oil back into the seal chamber.

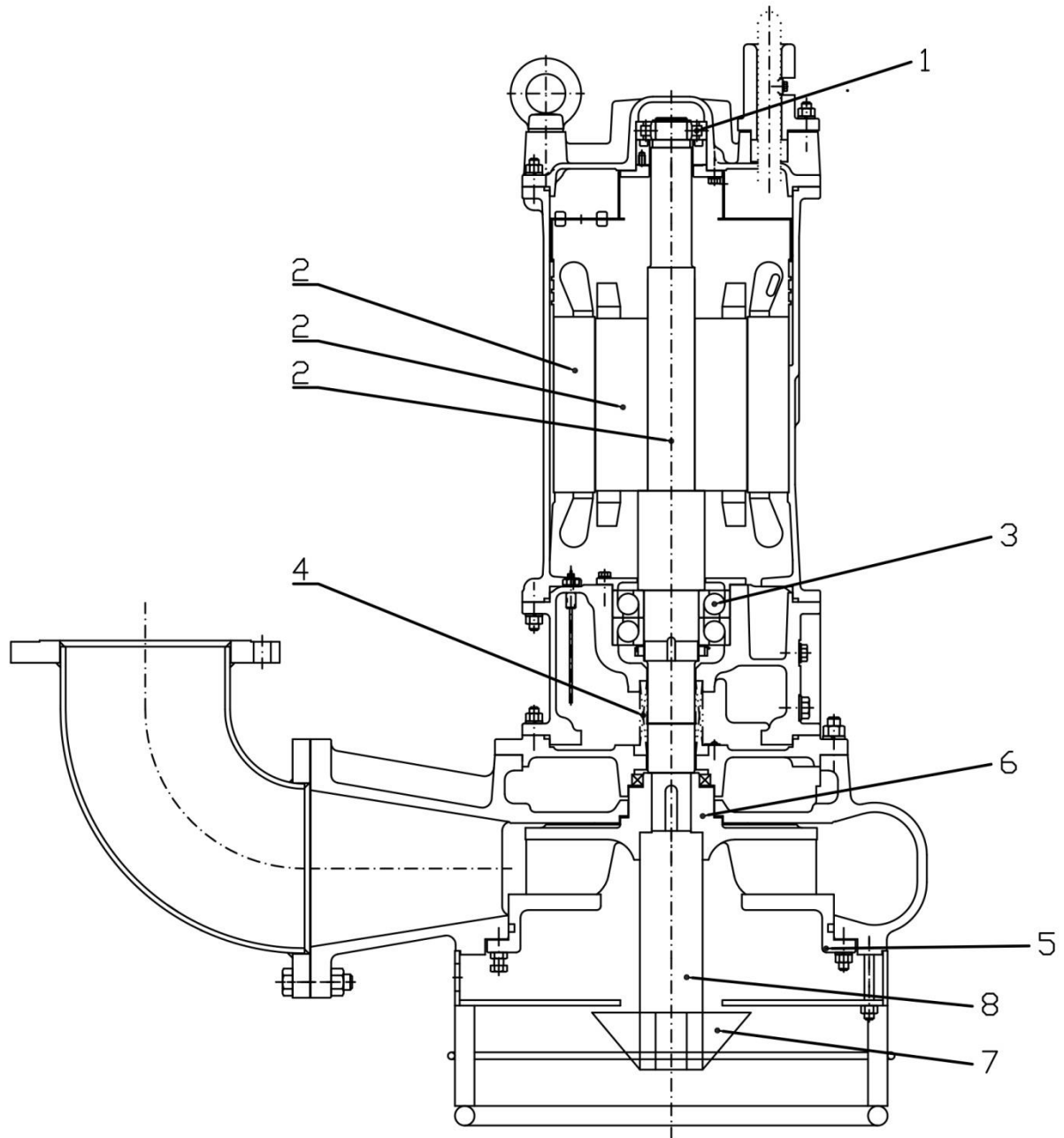


CHANGING MECHANICAL SEALS*

- 1) Follow instructions 1 through 4 in the “Changing Mechanical Seal Cooling Oil” section of this manual
- 2) With the pump properly supported on its side, begin to remove the following components:
 - a. Strainer/ stand
 - b. Wear plate
 - c. Agitator (note this will need to be heated to 400°F break the bond of the thread locking compound)
 - d. Impeller
 - e. Volute case
 - f. Seal chamber cover
- 3) Once the seal chamber cover has been removed, carefully remove the old mechanical seals. Clean the chamber to remove all old oil, water and any debris that may be present.
- 4) Inspect the shaft to insure that no damage has occurred and that a slightly rough micro finish of approximately 100 rms is present. Use 220 wet and dry sand paper to scuff the shaft axially to gain the proper finish.
- 5) Lubricate the new upper stationary mechanical seal with the new seal chamber oil,, and push into position with a non marring pushing tool (clean PVC pipe works well).
- 6) Repeat the previous step for the lower stationary mechanical seal located in the seal cover.
- 7) Lubricate the shaft with seal chamber oil. Place the upper rotating seal face onto the shaft and push with a seal pushing tool that pushes on the bellows. Push into place until the rotating face is in contact with the stationary face.
- 8) Place the spring into position on the upper rotating seal.
- 9) Lubricate the shaft with seal chamber oil. Place the lower rotating seal face on the shaft facing outward. Push with a seal pushing tool that pushes on the outer edge of the seal without contacting the face. Push down until the lower rotating face is at the approximate locating.
- 10) Check the O-ring on the seal cover and replace if necessary.
- 11) Carefully replace the seal cover by slowly pushing down on the rotating seal assembly until the seal cover is fully in position.
- 12) Replace the seal cover retaining fasteners and torque to the proper specification.
- 13) Rebuild the pump in the opposite manner it was disassembled. Properly torque all fasteners.

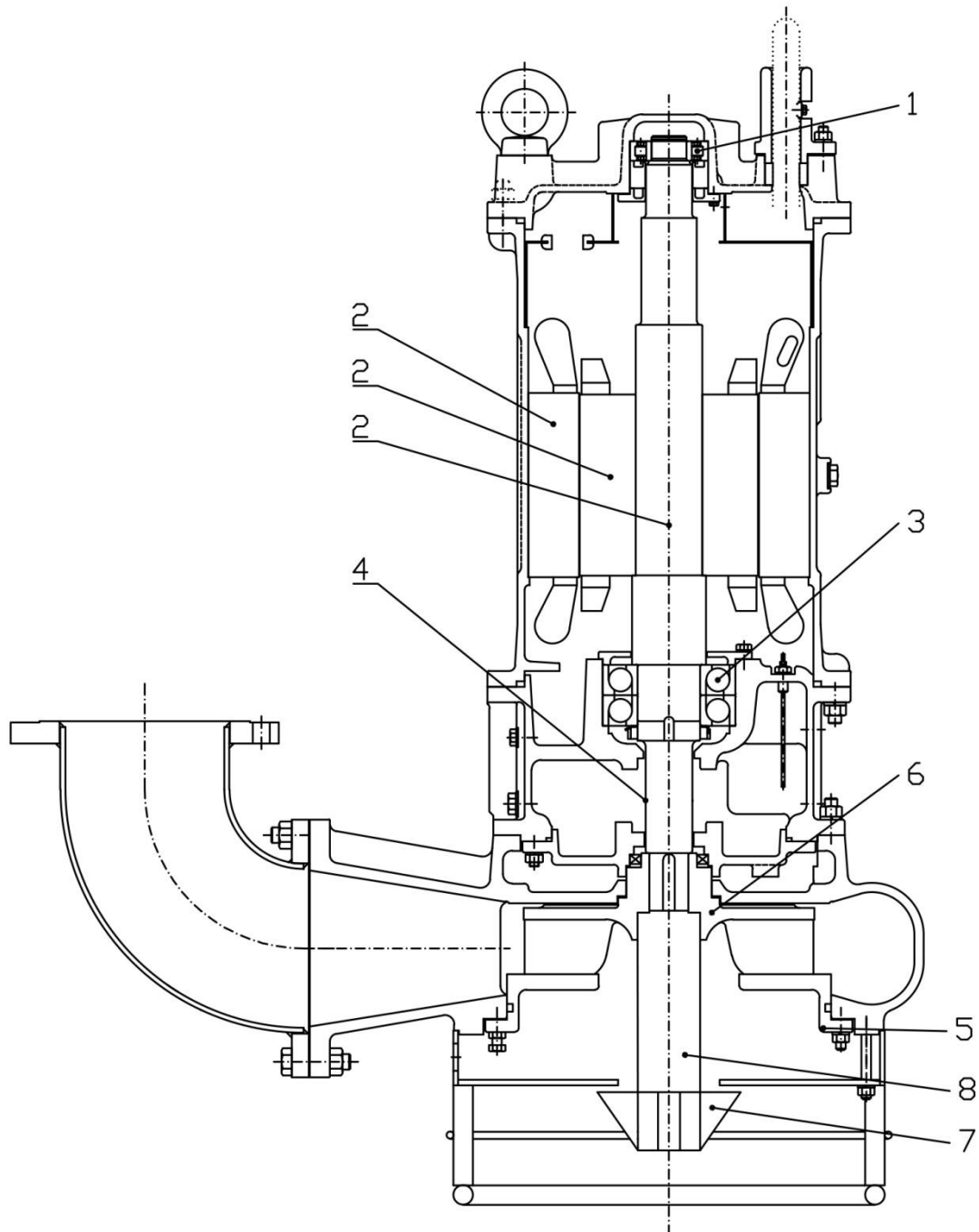
*Note: If there is excessive liquid found in the oil or mechanical seal damaged, please contact **BJM Pumps®** authorized service centers.

EXPLODED VIEW OF KZE 150/370



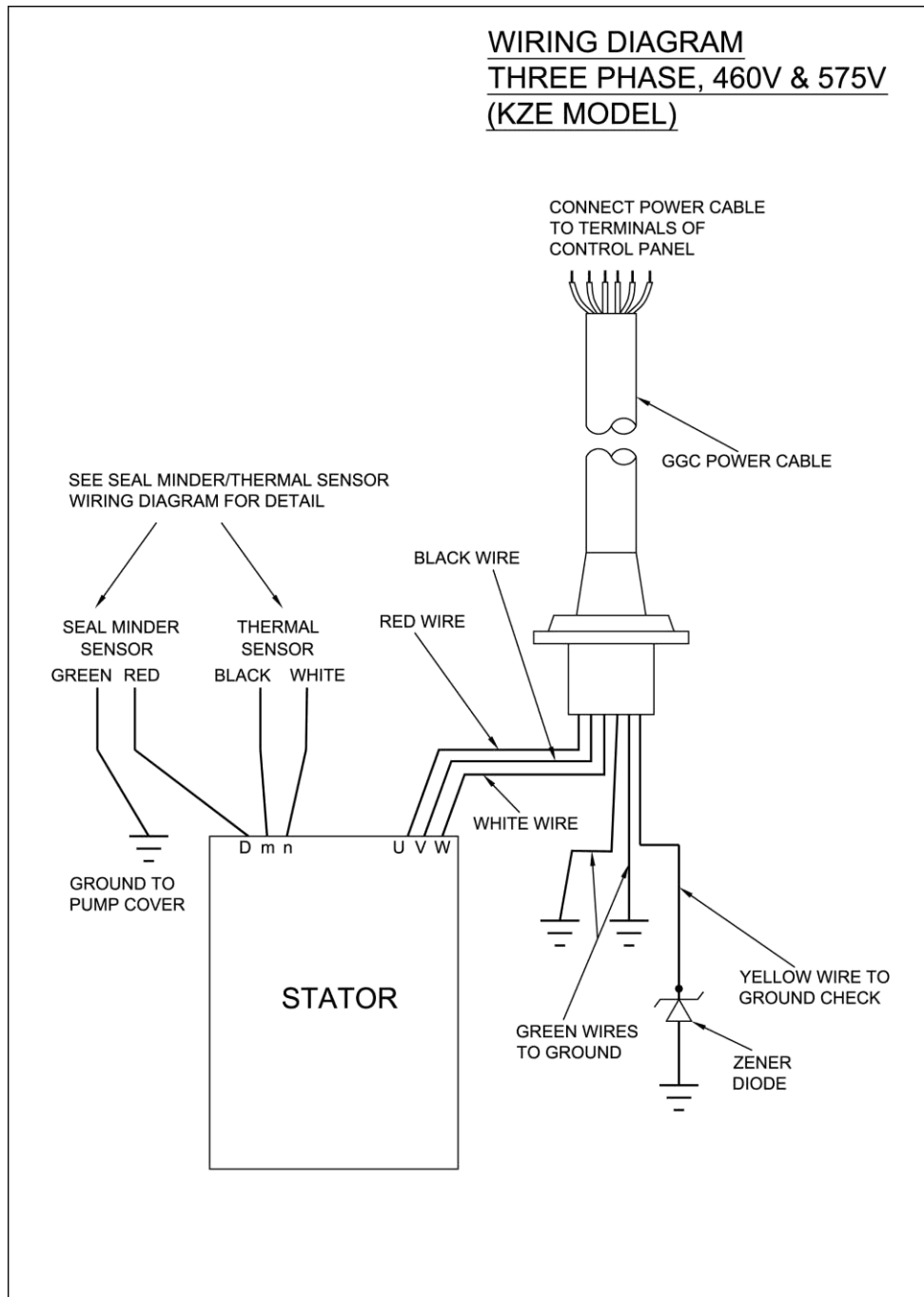
Revision 12/14/15

EXPLODED VIEW OF KZE 550/750/930



REVISION 12-14-15

	Pump Model	KZE150	KZE370	KZE550	KZE750	KZE930
Pos. No.	Part Description	Item #	Item #	Item #	Item #	Item #
1	Bearing, Upper	204750	203935	203945	203935	203935
2	Stator, Rotor 460/3/60	204751	203937	203947	204697	204699
2	Stator, Rotor 575/3/60	204752	203938	203948	204698	204700
2	Stator, Rotor Shaft 460/3/60	204753	203939	203949	204701	204703
2	Stator, Rotor Shaft 575/3/60	204754	203940	203950	204702	204704
3	Bearing, Lower	204755	203941	203951	203951	203951
4	Seal, Double Mech, Buna, Si-Si	204756	203942	203952	204705	204706
5	Cover, Suction, Wear Plate	204757	203943	203953	204707	204708
6	Impeller, High Chrome	204758	203944	203954	204709	204710
7	Agitator	202984	203453	203453	204474	204474
8	Adaptor, Agitator	204759	203460	203461	203461	203461
	O-ring Kit, Buna N	204760	203936	203946	204711	204711

THREE PHASE WIRING DIAGRAM
460V/575V (GGC)

MODELS KZE150, 370, 550, 750 & 930



SEAL MINDER® - THERMAL MOTOR SENSOR SWITCH

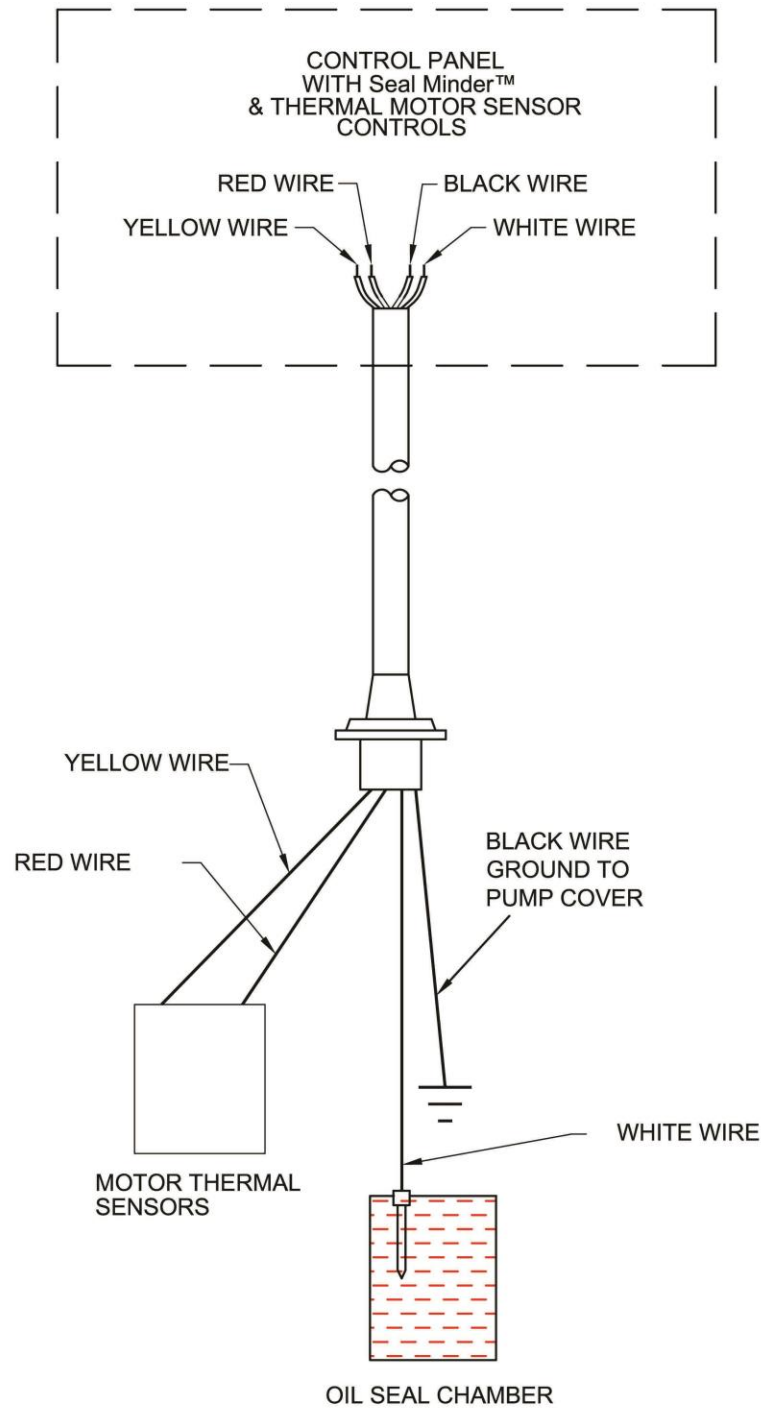
Seal Minder®:

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 KZE 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 KZE model pumps. BJM Pumps® 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,® epresentative 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

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?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Condition of Equipment	<input type="checkbox"/> New <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor		
Condition of Cable Jacket	<input type="checkbox"/> New <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> 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	<input type="checkbox"/> Dry <input type="checkbox"/> Wet <input type="checkbox"/> Muddy		
Was equipment stored	<input type="checkbox"/> Yes <input type="checkbox"/> No.		
If YES, length of storage:			
Liquid being pump			
Debris in bottom of station?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Was debris removed in your	<input type="checkbox"/> Yes <input type="checkbox"/> No		

START-UP REPORT FORM

presence?		
Are guide rails exactly vertical?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is base elbow installed level?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Liquid level controls: Model _____		
Is control installed away from turbulence?	<input type="checkbox"/> Yes	<input type="checkbox"/> 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?	<input type="checkbox"/> Yes	<input type="checkbox"/> 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?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are all pump connections tight?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the interior of the panel dry?	<input type="checkbox"/> Yes	<input type="checkbox"/> 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

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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?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Was pump checked for leaks?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Do check valves operate properly?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Flow: Does station appear to operate at proper rate?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Noise level:	Acceptable <input type="checkbox"/>	Unacceptable <input type="checkbox"/>
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 _____		

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