

BARNES[®]

INSTALLATION & OPERATION MANUAL



THE BARNES[®] OIL SENSOR SWITCH

IMPORTANT!

Read all instructions in this manual before operating pump.

As a result of Crane Pumps & Systems, Inc., constant product improvement program, product changes may occur. As such Crane Pumps & Systems reserves the right to change product without prior written notification.

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1995,1997,1998,1/2004, 4/05, 1/06, 3/06, 9/06, 12/06, 2/07

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SAFETY FIRST!

Please Read This Before Installing Or Operating Pump.

This information is provided for **SAFETY and to PREVENT EQUIPMENT PROBLEMS**. To help recognize this information, observe the following symbols:



IMPORTANT! Warns about hazards that can result in personal injury or Indicates factors concerned with assembly, installation, operation, or maintenance which could result in damage to the machine or equipment if ignored.

CAUTION ! Warns about hazards that can or will cause minor personal injury or property damage if ignored. Used with symbols below.

WARNING ! Warns about hazards that can or will cause serious personal injury, death, or major property damage if ignored. Used with symbols below.



Hazardous fluids can cause fire or explosions, burns or death could result.



Extremely hot - Severe burns can occur on contact.



Biohazard can cause serious personal injury.



Hazardous fluids can cause pressure, eruptions or explosions could cause personal injury or property damage.



Rotating machinery Amputation or severe laceration can result.



Hazardous voltage can shock, burn or cause death.

Only qualified personnel should install, operate and repair pump. Any wiring of pumps should be performed by a qualified electrician.



WARNING ! - To reduce risk of electrical shock, pumps and control panels must be properly grounded in accordance with the National Electric Code (NEC) or the Canadian Electrical Code (CEC) and all applicable state, province, local codes and ordinances.

WARNING! - To reduce risk of electrical shock, always disconnect the pump from the power source before handling or servicing. Lock out power and tag.



WARNING! Operation against a closed discharge valve will cause premature bearing and seal failure on any pump, and on end suction and self priming pump the heat build may cause the generation of steam with resulting dangerous pressures. It is recommended that a high case temperature switch or pressure relief valve be installed on the pump body.



CAUTION ! Never operate a pump with a plug-in type power cord without a ground fault circuit interrupter.



CAUTION! Pumps build up heat and pressure during operation-allow time for pumps to cool before handling or servicing.



WARNING! - DO NOT pump hazardous materials (flammable, caustic, etc.) unless the pump is specifically designed and designated to handle them.



Do not block or restrict discharge hose, as discharge hose may whip under pressure.



WARNING! - DO NOT wear loose clothing that may become entangled in the impeller or other moving parts.



WARNING! - Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.



Always wear eye protection when working on pumps.



Make sure lifting handles are securely fastened each time before lifting. **DO NOT** operate pump without safety devices in place. Always replace safety devices that have been removed during service or repair. Secure the pump in its operating position so it can not tip over, fall or slide.



DO NOT exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.

DO NOT remove cord and strain relief. Do not connect conduit to pump.



WARNING! Cable should be protected at all times to avoid punctures, cut, bruises and abrasions - inspect frequently. Never handle connected power cords with wet hands.



WARNING! To reduce risk of electrical shock, all wiring and junction connections should be made per the NEC or CEC and applicable state or province and local codes. Requirements may vary depending on usage and location.

WARNING! Submersible Pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.



WARNING! Products Returned Must Be Cleaned, Sanitized, Or Decontaminated As Necessary Prior To Shipment, To Insure That Employees Will Not Be Exposed To Health Hazards In Handling Said Material. All Applicable Laws And Regulations Shall Apply.



Bronze/brass and bronze/brass fitted pumps may contain lead levels higher than considered safe for potable water systems. Lead is known to cause cancer and birth defects or other reproductive harm. Various government agencies have determined that leaded copper alloys should not be used in potable water applications. For non-leaded copper alloy materials of construction, please contact factory.



IMPORTANT! - Crane Pumps & Systems, Inc. is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

A) Installation Instructions:

The BOSS control and alarm system is designed to monitor and control in oil/water environments and provides a convenient location for all wiring required for an indoor simplex pump application. The BOSS employs a receptacle to accept one 120 VAC pump plug in the 120 VAC model.

In normal operation the pump will turn on and off with the water level activating the probes (5" pumping range). If water gets high enough to activate the High Water probe, a red indicator light will illuminate and activate auxiliary contacts. If the oil level reaches the High Oil float, a red indicator light will illuminate and activate the auxiliary contacts.

The BOSS features:

- NEMA 1 rated for indoor use
- Factory-installed 10ft. power cord (20ft. power cord available)
- The BOSS panel with LED indicators for:
 - High Water Indicator (red)
 - High Oil Indicator (red)
 - Pump Run Indicator (green)
 - Power Indicator (green)
- Factory-installed Oil Water Switch includes:
 - High Oil Float
 - High Water Probe
 - Start Probe
 - Stop Probe
 - Reference Probe
- Entire system is UL and cUL Listed to meet and/or exceed industry safety standards



CAUTION: *Inspect the probes, panel, and wiring every two weeks for possible damages that could impair the performance of the product. Replace the product immediately if any damage is found or suspected.*



ELECTRICAL SHOCK HAZARD: *Disconnect power before installing or servicing this product. A qualified service person must install and service this product according to applicable electrical and plumbing codes.*



EXPLOSION OR FIRE HAZARD: *Do not use this product with flammable liquids. Do not install in hazardous locations as defined by National Electrical Code, ANSI/NFPA 70.*



CAUTION: *Failure to follow these precautions could result in serious injury or death. Replace product immediately if switch cable becomes damaged or severed. Keep these instruction with warranty after installation. This product must be installed in accordance with National Electric Code, ANSI/NFPA 70 so as to prevent moisture from entering or accumulating with boxes, conduit bodies, fittings, float housing, or cable.*

B) Installing the BOSS control panel:

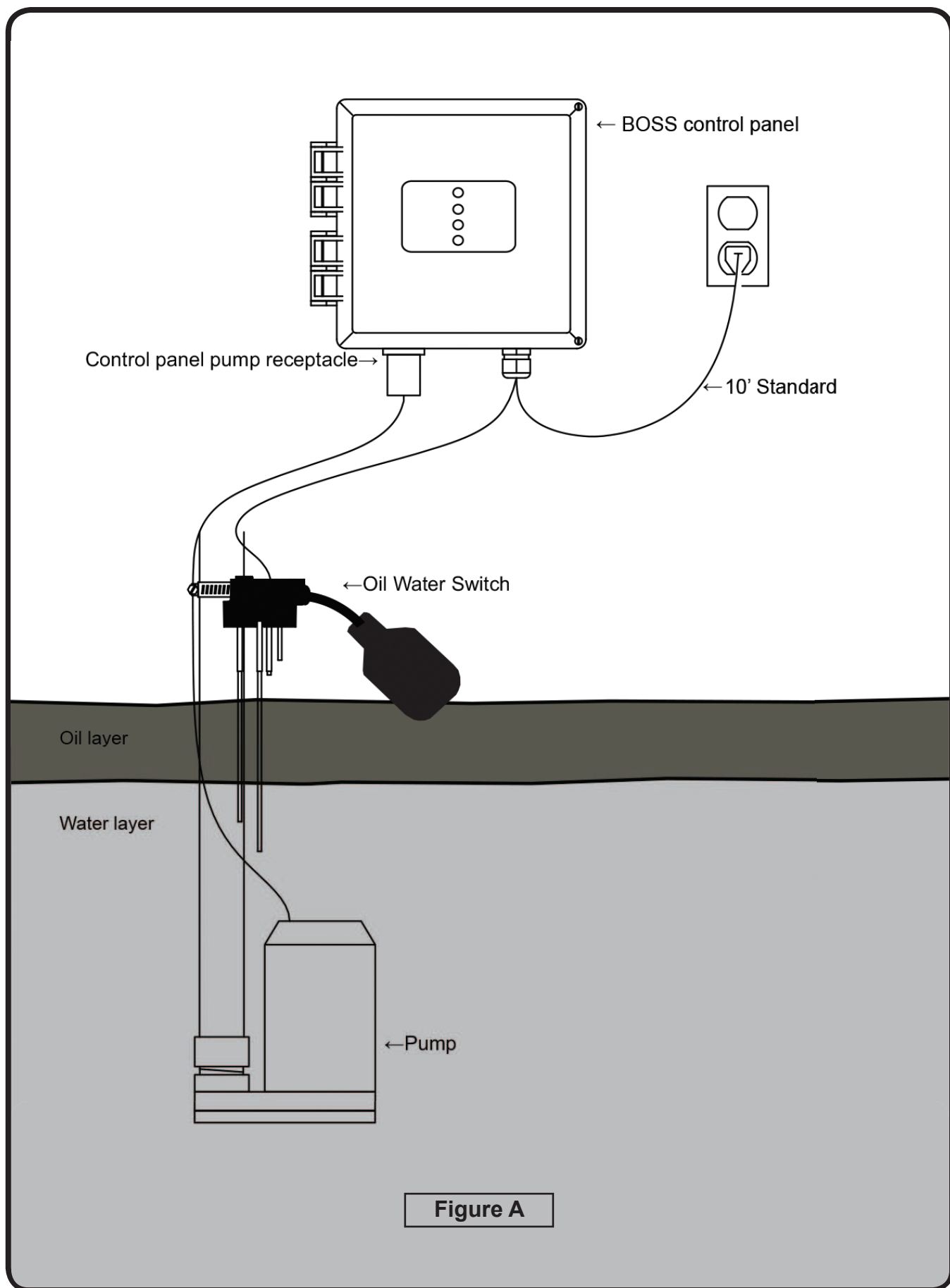
1. Determine desired location to mount the BOSS control panel (Figure A).
2. Attach the mounting flanges to the control panel enclosure. Mount panel at the desired location making sure the mounting location of the control panel is within 10ft. of electrical receptacle and the Oil Water Switch mounting location.
3. Plug power cord into electrical receptacle only when ready for testing. Verify the green 'power' light illuminates.
4. Make sure to test the BOSS (see page 7).

C) Installing the Oil Water Switch:



CAUTION: *The Oil Water Switch cable needs to run in separate conduit from the pump and power lines.*

1. Determine the proper position for the oil water switch (Figure B).
2. Position the Oil Water Switch at the appropriate location on the pipe and secure the switch as shown (Figure B).
3. Tighten all hose clamps using a screw driver. Over-tightening may result in damage to the plastic parts. NOTE: All hose clamp components are made of 18-8 stainless steel material.





CAUTION: Do not splice the Oil Water Switch cable. Doing so could cause the system to fail.

D) Testing the BOSS:

Remove oil from pit prior to testing. **NOTE:** Dispose of oil in accordance with state and local codes.

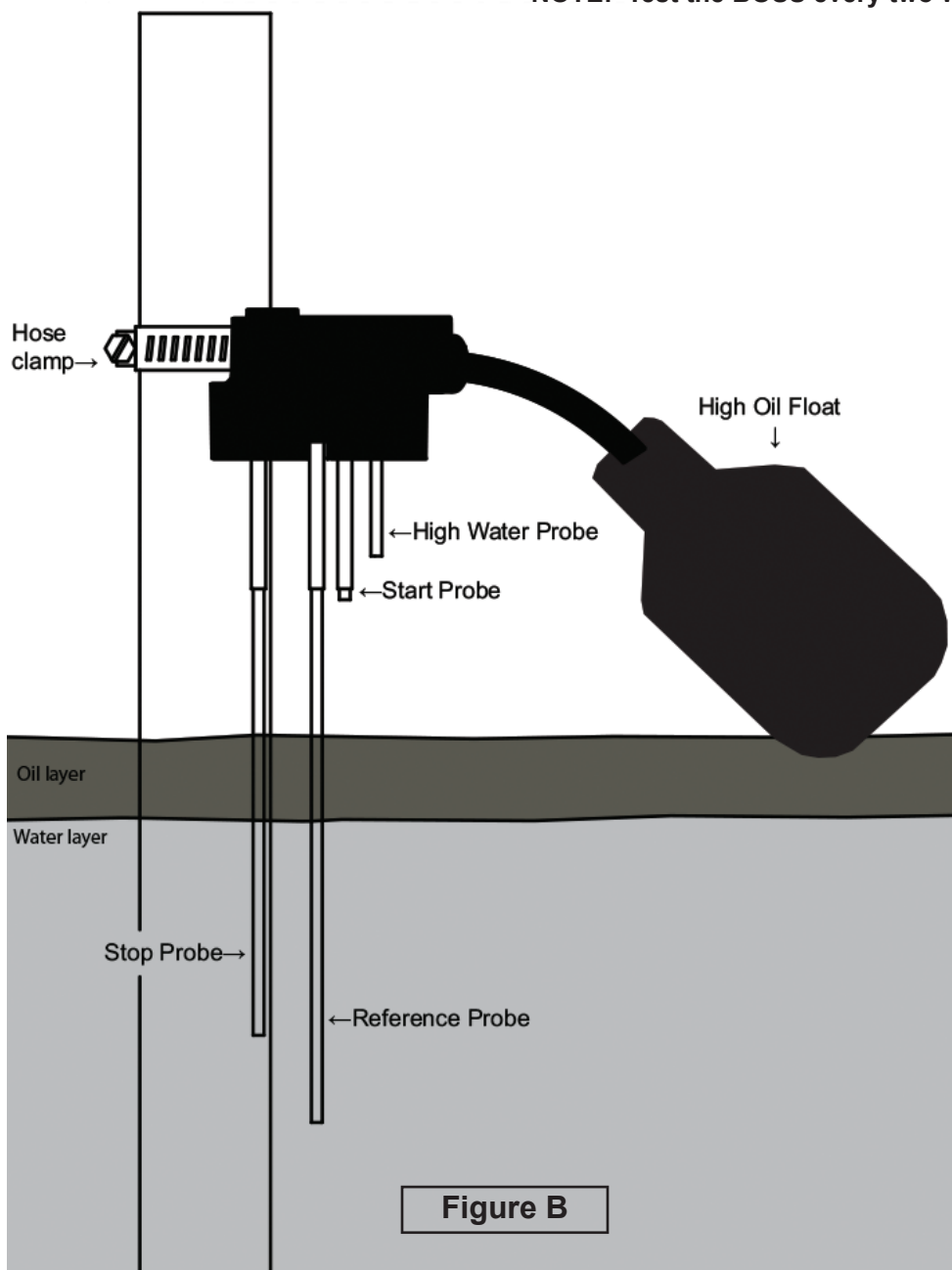
Verify the green “power on” indicator on panel is illuminated.

Manually tip the “High Oil Float” up and verify that the Red “High Oil” indicator on the panel illuminates.

Unplug pump power from receptacle on panel, then fill sump pit with water until Red “High Water” indicator on panel illuminates. If using auxiliary contacts, they will be in alarm condition.

Plug pump power into panel. Pump will run until water drops below “Stop” probe. If using auxiliary contacts, they will automatically return to normal state.

NOTE: Test the BOSS every two weeks.



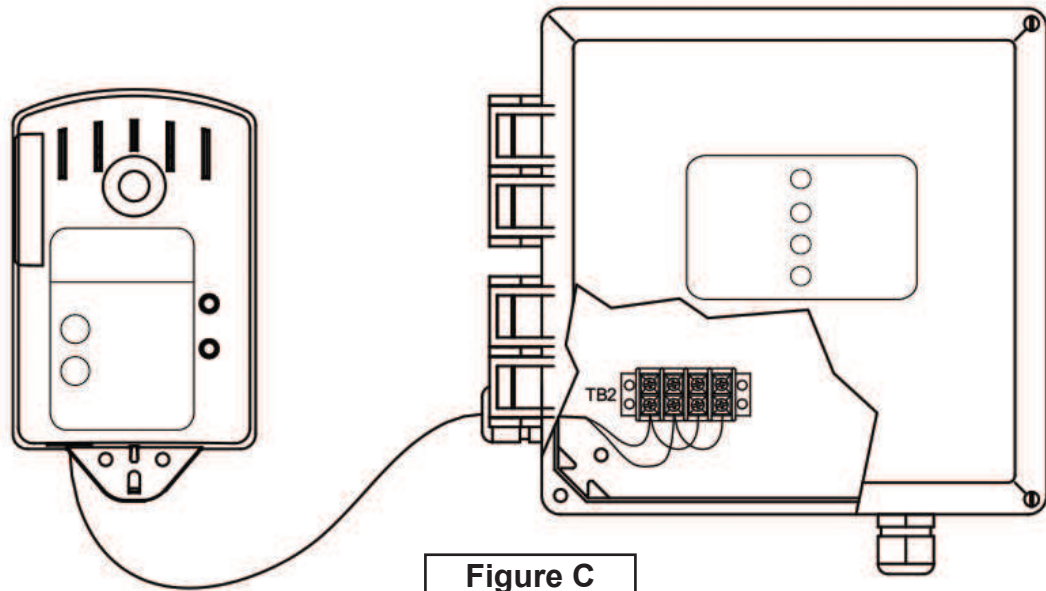


Figure C

E) Installing the Alarm Switch

1. Insert screw (supplied) at desired wall location. **NOTE: Screw is to be located over wall stud or used with a wall anchor sized for a #8 x 1.25" self tapping screw.**
2. Hang alarm using keyhole on back of enclosure. Install second screw in mounting flange located on bottom of alarm.
3. Make sure power to alarm is disconnected.
4. Bring cable leads from oil water switch back to alarm (see Figure C) and wire according to Figure D. **NOTE: When used with a pump application, connect alarm to a circuit separate from the pump circuit. This allows the alarm to operate if the pump circuit fails.**
5. Open battery door and install 9 VDC alkaline battery (not included). Battery must be installed for backup alarm to function. **NOTE: The green power on light does not come on when unit is on battery power.**
6. Plug the alarm in to apply primary power. Verify that the green "power on" light illuminates.
7. Press "silence" button to silence the horn. The horn will silence while the red "alarm" light stays on. (Unit will only be in alarm state if the BOSS system is in alarm state)
8. Press "test" button. The "alarm" light and horn will activate.
9. Test unit once a week. Replace battery every 12 months and after each alarm condition to ensure proper operation. If battery is low, low battery chirp feature will cause the horn to

chirp approximately once per minute. Replace battery when this happens.

10. Using the provided cable clasp, secure cord outlet as shown in Figure E. Use existing receptable faceplate screw and supplied washer.
11. Test the unit once per week to insure proper operation.

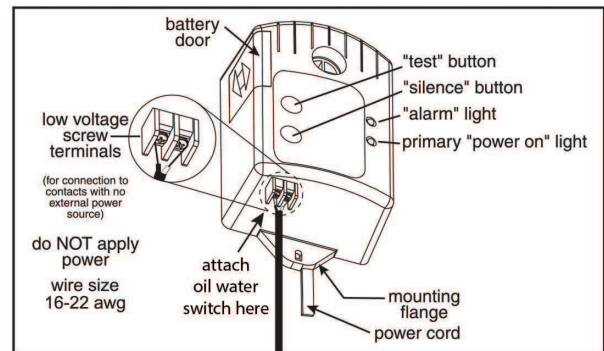


Figure D

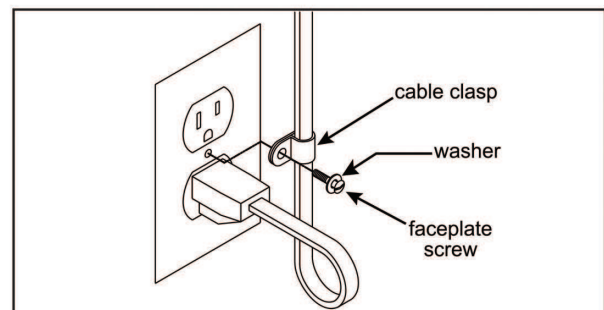


Figure E

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

BARNES®**BARNES®**
PRESSURE **PS** SYSTEMS**burks®****WEINMAN®****DEMING®****PROSSER®**

Limited 24 Month Warranty

Crane Pumps & Systems warrants that products of our manufacture will be free of defects in material and workmanship under normal use and service for twenty-four (24) months after manufacture date, when installed and maintained in accordance with our instructions. This warranty gives you specific legal rights, and there may also be other rights which vary from state to state. In the event the product is covered by the Federal Consumer Product Warranties Law (1) the duration of any implied warranties associated with the product by virtue of said law is limited to the same duration as stated herein, (2) this warranty is a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against us, until the ultimate consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURE OR AUTHORIZED REPAIR STATION, SUCH PRODUCTS AND/OR PARTS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE.** Unless expressly stated otherwise, guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on a product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing if a conflict arises between the results of field testing conducted by or for user, and laboratory tests corrected for field performance, the latter shall control. **RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDATIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PERFORMANCE AND NO SUCH WARRANTY IS GIVEN.**

This warranty shall not apply when damage is caused by (a) improper installation, (b) improper voltage (c) lightning (d) excessive sand or other abrasive material (e) scale or corrosion build-up due to excessive chemical content. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts. Neither will we accept charges incurred by others without our prior written approval.

This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and/or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the application and use of the product. **UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO TRAVEL EXPENSES, RENTED EQUIPMENT, OUTSIDE CONTRACTOR FEES, UNAUTHORIZED REPAIR SHOP EXPENSES, LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND/OR WORKMANSHIP AND/OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.

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IMPORTANT!
WARRANTY REGISTRATION

Your product is covered by the enclosed Warranty.
To complete the Warranty Registration Form go to:

<http://www.cranepumps.com/ProductRegistration/>

If you have a claim under the provision of the warranty, contact your local
Crane Pumps & Systems, Inc. Distributor.

RETURNED GOODS
RETURN OF MERCHANDISE REQUIRES A "RETURNED GOODS AUTHORIZATION".
CONTACT YOUR LOCAL CRANE PUMPS & SYSTEMS, INC. DISTRIBUTOR.



**Products Returned Must Be Cleaned, Sanitized,
Or Decontaminated As Necessary Prior To Shipment,
To Insure That Employees Will Not Be Exposed To Health
Hazards In Handling Said Material. All Applicable Laws
And Regulations Shall Apply.**