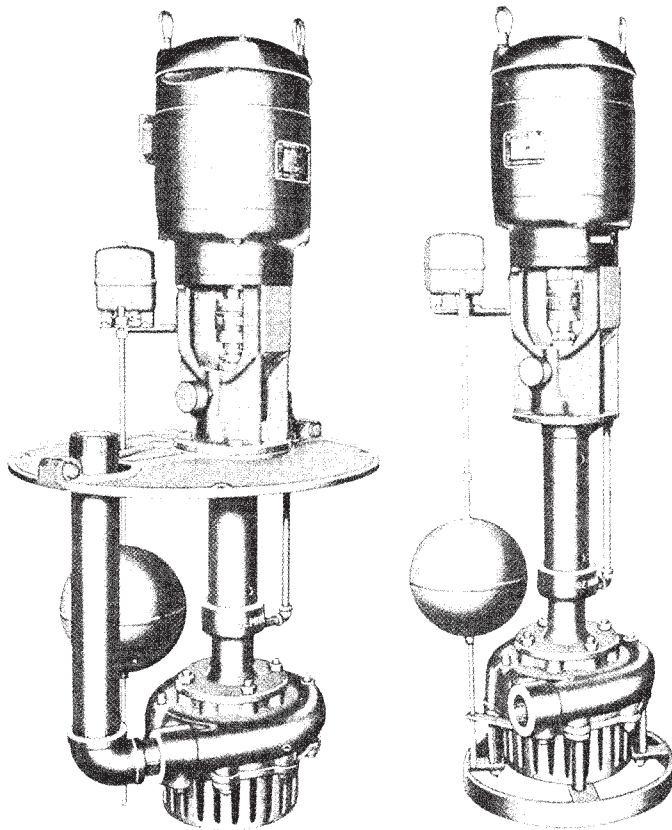


# DEMING®

## INSTALLATION, OPERATION & MAINTENANCE MANUAL Vertical Sump Pump



TYPE A

TYPE B

Series: 4508

**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.*

**CRANE**<sup>®</sup>

A Crane Co. Company

### PUMPS & SYSTEMS

420 Third Street  
Piqua, Ohio 45356  
Phone: (937) 778-8947  
Fax: (937) 773-7157  
www.cranepumps.com

83 West Drive, Bramton  
Ontario, Canada L6T 2J6  
Phone: (905) 457-6223  
Fax: (905) 457-2650

Form No. 120014-Rev. F

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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 hazardous pressure, eruptions or explosions could cause personal injury or property damage.*

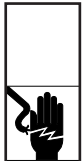


*Rotating machinery Amputation or severe laceration can result.*



*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. Improper grounding voids warranty.



**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.



**CAUTION!** 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 moving parts.



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



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.



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 - GENERAL INFORMATION

### TO THE PURCHASER:

Congratulations! You are the owner of one of the finest pumps on the market today. These pumps are products engineered and manufactured of high quality components. With years of pump building experience along with a continuing quality assurance program combine to produce a pump which will stand up to the toughest applications.

Check local codes and requirements before installation. Servicing should be performed by knowledgeable pump service contractors or authorized service stations.

### RECEIVING:

Upon receiving the pump, it should be inspected for damage or shortages. If damage has occurred, file a claim immediately with the company that delivered the pump. If the manual is removed from the crating, do not lose or misplace.

### STORAGE:

**Short Term** - Pumps are manufactured for efficient performance following long inoperative periods in storage. For best results, pumps can be retained in storage, as factory assembled, in a dry atmosphere with constant temperatures for up to six (6) months.

**Long Term** - Any length of time exceeding six (6) months, but not more than twenty four (24) months. The units should be stored in a temperature controlled area, a roofed over walled enclosure that provides protection from the elements (rain, snow, wind blown dust, etc.), and whose temperature can be maintained between +40 deg. F and +120 deg. F. Pump should be stored in its original shipping container and before initial start up, rotate impeller by hand to assure seal and impeller rotate freely.

### SERVICE CENTERS:

For the location of the nearest Deming Service Center, check your Deming representative or Crane Pumps & Systems Service Department in Piqua, Ohio, telephone (937) 778-8947 or Crane Pumps & Systems Canada, Inc., Bramton, Ontario, (905) 457-6223.

## B - INSTALLATION

After unit is installed and with piping connected and motor in place, rotate pump shaft by hand checking for rubbing or impeller drag. If either is evident, check first for piping strain and correct. Adjust impeller as follows: Bend lockwasher tang (69) free of slot in adjusting nut and back off nut. Loosen set screw in bearing collar. With drift pin in collar hole, strike in opposite direction of shaft rotation. With shaft and impeller resting on suction cover face (9). Tighten bearing collar by pressing against inner ring and turn collar in direction of shaft rotation until engaged. Tighten finger tight. Snug up adjusting nut (66) and tighten one (1) complete turn. With drift pin in bearing collar, strike in direction of rotation to lock. Tighten set screw.

Tighten adjusting nut and bend tang of lockwasher into slot. Rotate shaft by hand checking for rubbing or dragging.

## C - ROTATION

Check motor rotation before making permanent connections to the power supply. Motor should rotate clockwise when looking down on motor.

## D - LUBRICATION

See that motor bearings are supplied with lubricant. The ball bearing and bottom bearing should be periodically greased.

Ball bearings with Lithium soap base, meeting National Grease Institute Grade 2 specifications. Lower bearings with Shell Alvania EP or equal.

## E - DISMANTLING

1. Disconnect discharge line and motor wiring. Remove float and switch.
2. Disconnect discharge pipe from casing (1). Remove base (53), strainer (316), suction head (9), and suction head gasket (73) from casing (1).
3. Unscrew impeller nut (24) and pull impeller (2) from pump shaft (6). Remove Woodruff key (32). Remove casing.
4. By removing motor cap screws, the top half of coupling (42) and the motor (228) can be removed as a unit. Remove coupling spider (48). Remove thrust bearing snap ring.
5. Pump shaft (6), adjusting nut (66), lockwasher (69), thrust bearing (16), and the lower half of coupling (44) can now be removed as a unit from the motor mounting (19), column pipe (101) and support head (9).
6. To replace thrust bearing (16), first mark the shaft where the bearing is located. Then remove the lower half of coupling (44) and the key (46). Bend lockwasher (69) down and remove adjusting nut (66). Loosen bearing collar by turning in the opposite direction of the shaft. Pull the bearing from the shaft. Follow reverse procedure to reassemble.
7. Do not disconnect motor mounting (19) or support head (9) from column pipe (101) unless necessary. If necessary, remove bolts and nuts (247) and split cover plate (53) (Type A only) and unscrew motor mounting (19) from column pipe and note that shims (67) are sometimes required to align motor mounting with float assembly and discharge pipe. These shims must be replaced when reassembling. If grease seal (169) needs replaced, remove it from motor mounting and press in new one.

8. To replace bottom shaft bearing (39), remove grease pipe assembly from support head (9) and unscrew support head. Push bearing and chocker ring (257) from support head and replace worn parts.

## F - ASSEMBLY

1. Screw column pipe into support head (9). Reassemble grease pipe assembly. Screw motor mounting (19) onto column pipe being careful to replace required shims (67) to realign motor mounting (19) with float assembly and discharge pipe. Replace split cover plate (35) (Type A only),
2. Place pump shaft (6) as a unit with lower half of coupling (44), adjusting nut (66), lockwasher (69) and thrust bearing (16) in place through motor mounting (19), column pipe (101), and support head (9). Replace bearing snap ring. Insert Woodruff key (32) in place and replace casing (1).
3. Replace impeller (2) and washer (270) on shaft. Tighten impeller nut (24). Place gasket (73) on casing.

4. Place suction head (9) against casing (1) and fasten strainer (316) to suction head and casing. For Type B pump place nipples (391) over studs (360) and fasten base (53).
5. Check impeller adjustment. Shaft and impeller should rotate freely in casing.
6. Place coupling spider on lower half of coupling. Replace motor and top half of coupling on motor mounting (19). Replace motor cap screws (219).

## G - INTERMEDIATE BEARING ASSEMBLY FOR 6' to 10' SUMPS

Unscrew either column pipe (101) or bottom column pipe (101A) from coupling (306). Unscrew intermediate bearing housing (39A) from coupling and press graph-alloy bearing (99) from housing. Follow reverse procedure to reassemble.

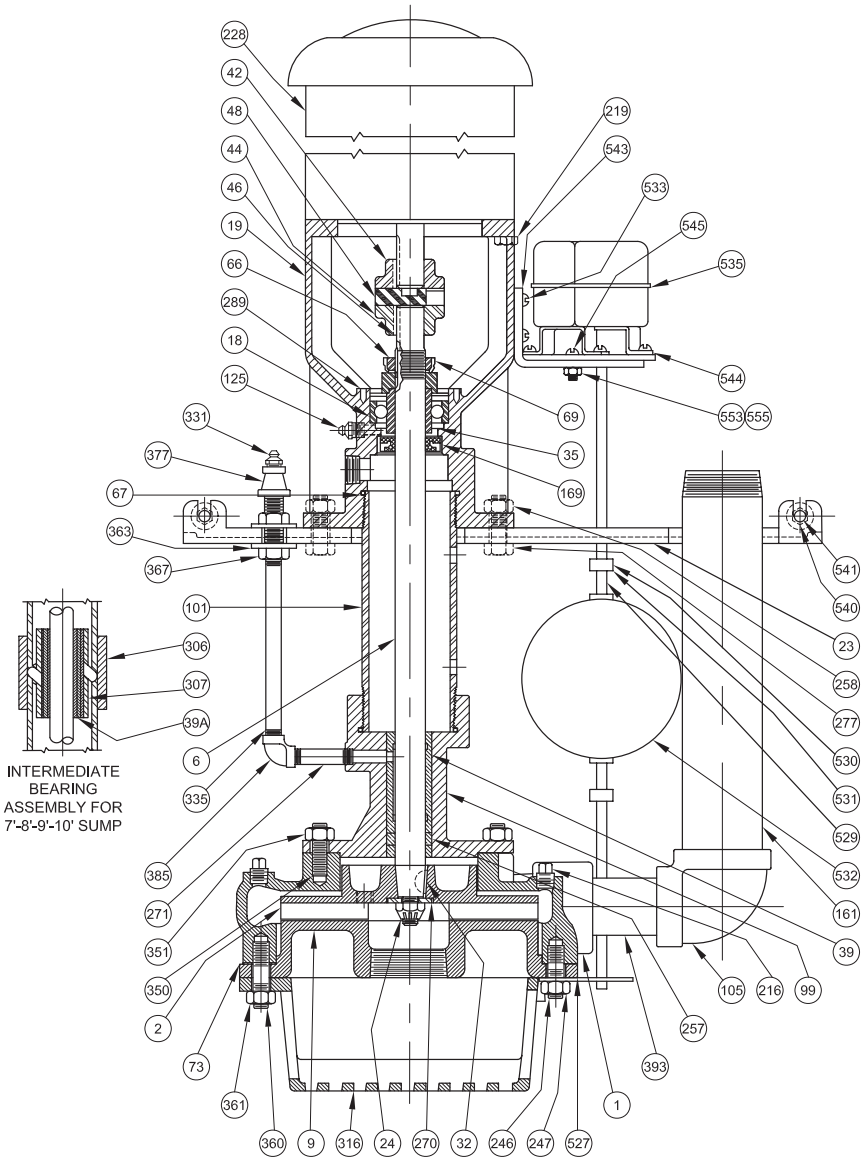
### RETURNED GOODS

**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.**

**FIG: 4508 TYPE A**

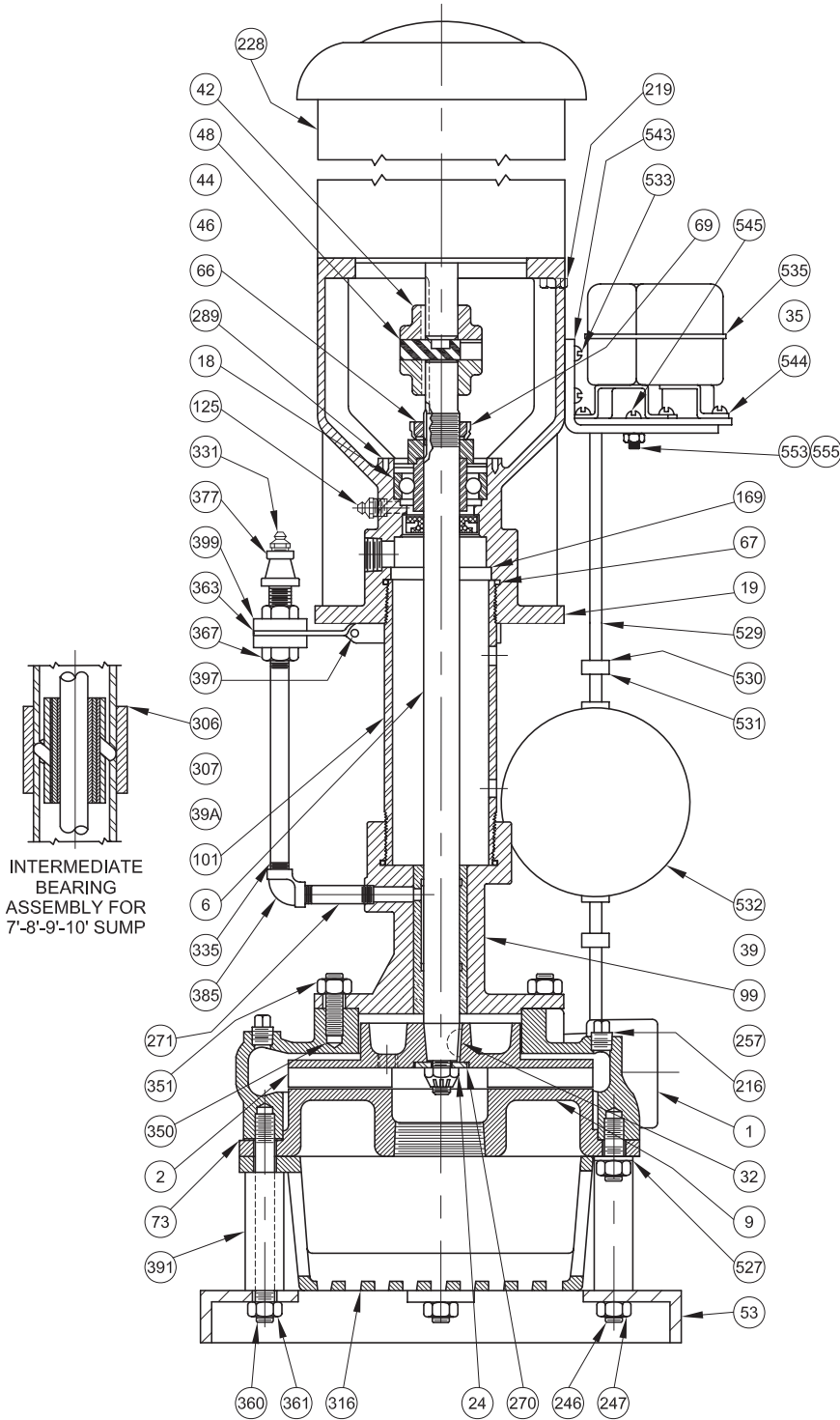


ITEM No.	DESCRIPTION
1	Casing
2	Impeller
6	Shaft
9	Suction Cover
*16	Ball Bearing
19	Frame
23	Cover Plate (Split)
*24	Impeller Nut
32	Impeller Key
35	Bearing Cover
39	Bearing Bushing - Bottom
39A	Bearing Bushing - Intermediate
42	Coupling Half - Driver
44	Coupling Half - Pump
46	Coupling Key
48	Coupling Spider
66	Shaft Adjusting Nut
67	Shim
69	Lockwasher - Bearing
*73	Gasket
99	Bearing Housing
101	Column Housing
101A	Column Pipe - Top
105	Discharge Elbow
125	Grease Fitting
161	Discharge Pipe
169	Lip Seal
216	Pipe Plug
219	Cap Screw - Motor
228	Motor
246	Stud - Suction Cover
247	Hex Nut
*257	Choker Ring
258	Hex Nut
270	Impeller Washer
271	Nipple
277	Cap Screw - Frame
289	Cap Screw
306	Column Pipe Coupling
307	Inter. Bearing Retainer
316	Strainer
331	Grease Fitting
335	Lube Pipe
350	Stud - Casing
351	Hex Nut
360	Stud - Strainer
361	Hex Nut
363	Washer
367	Pipe Nut
377	Reducer
385	Elbow
393	Nipple
527	Float Rod Guide
529	Float Rod
530	Collar
531	Set Screw
532	Float
533	Machine Screw
535	Float Switch
540	Bolt - Split Cover
541	Hex Nut
543	Mounting Bracket
544	Mounting Plate
545	Machine Screw
553	Machine Screw
555	Hex Nut

Type A is furnished with a split plate, complete with a discharge pipe extending through the plate.

(\*) Recommended Spare Parts

**FIG: 4508 TYPE B**



INTERMEDIATE BEARING ASSEMBLY FOR 7'-8'-9'-10' SUMP

Type B is furnished without a split plate and without a discharge pipe, so arranged that the unit can be placed on the floor of the pit.

(\*) Recommended Spare Parts

ITEM No.	DESCRIPTION
1	Casing
2	Impeller
6	Shaft
9	Suction Cover
*16	Ball Bearing
19	Frame
*24	Impeller Nut
32	Impeller Key
35	Bearing Cover
39	Bearing Bushing - Bottom
39A	Bearing Bushing - Intermediate
42	Coupling Half - Driver
44	Coupling Half - Pump
46	Coupling Key
48	Coupling Spider
53	Base
66	Shaft Adjusting Nut
67	Shim
69	Lockwasher - Bearing
*73	Gasket
99	Bearing Housing
101	Column Housing
101A	Column Pipe - Top
125	Grease Fitting
169	Lip Seal
216	Pipe Plug
219	Cap Screw - Motor
228	Motor
246	Stud - Suction Cover
247	Hex Nut
*257	Choker Ring
270	Impeller Washer
271	Nipple
289	Cap Screw
306	Column Pipe Coupling
307	Inter. Bearing Retainer
316	Strainer
331	Grease Fitting
335	Lube Pipe
350	Stud - Casing
351	Hex Nut
360	Stud - Strainer
361	Hex Nut
363	Washer
367	Pipe Nut
377	Reducer
385	Elbow
391	Spacer Nipple
397	Bolt & Nut
399	Lub Pipe Bracket
527	Float Rod Guide
529	Float Rod
530	Collar
531	Set Screw
532	Float
533	Machine Screw
535	Float Switch
543	Mounting Bracket
544	Mounting Plate
545	Machine Screw
553	Machine Screw
555	Hex Nut

BARNES®



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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83 West Drive, Brampton  
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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.**



A Crane Co. Company

# PUMPS & SYSTEMS

## START-UP REPORT

### General Information

Pump Owner's Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Location of Installation: \_\_\_\_\_  
 Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Purchased From: \_\_\_\_\_

### Nameplate Data

Pump Model #: \_\_\_\_\_ Serial #: \_\_\_\_\_  
 Part #: \_\_\_\_\_ Impeller Diameter: \_\_\_\_\_  
 Voltage: \_\_\_\_\_ Phase: \_\_\_\_\_ Ø Hertz: \_\_\_\_\_ Horsepower: \_\_\_\_\_  
 Full Load Amps: \_\_\_\_\_ Service Factor Amps: \_\_\_\_\_  
 Motor Manufacturer: \_\_\_\_\_

### Controls

Control panel manufacturer: \_\_\_\_\_  
 Model/Part number: \_\_\_\_\_  
 Number of pumps operated by control panel: \_\_\_\_\_  
 Short circuit protection? YES\_\_\_ NO\_\_\_ Type: \_\_\_\_\_  
 Number and size of short circuit device(s): \_\_\_\_\_ Amp rating: \_\_\_\_\_  
 Overload Type: \_\_\_\_\_ Size: \_\_\_\_\_ Amp rating: \_\_\_\_\_  
 Do protection devices comply with pump and motor Amp rating? YES\_\_\_ NO\_\_\_  
 Are all electrical and panel entry connections tight? YES\_\_\_ NO\_\_\_  
 Is the interior of the panel dry? YES\_\_\_ NO\_\_\_  
 Liquid level Control Brand and Model: \_\_\_\_\_

### Pre-Startup

#### All Pumps

Type of equipment: NEW\_\_\_ REBUILT\_\_\_ USED\_\_\_  
 Condition of equipment at Start-Up: DRY\_\_\_ WET\_\_\_ MUDDY\_\_\_  
 Was Equipment Stored? YES\_\_\_ NO\_\_\_ Length of Storage: \_\_\_\_\_  
 Liquid being pumped: \_\_\_\_\_ Liquid Temperature: \_\_\_\_\_  
 Supply Voltage/Phase/Frequency matches nameplate? YES\_\_\_ NO\_\_\_  
 Shaft turns freely? YES\_\_\_ NO\_\_\_  
 Direction of rotation verified for 3Ø motors? YES\_\_\_ NO\_\_\_  
 Debris in piping or wet well? YES\_\_\_ NO\_\_\_  
 Debris removed in your presence? YES\_\_\_ NO\_\_\_  
 Pump case/wet well filled with liquid before startup? YES\_\_\_ NO\_\_\_  
 Is piping properly supported? YES\_\_\_ NO\_\_\_

#### Non-Submersible Pumps

Is base plate properly installed / grouted? YES\_\_\_ NO\_\_\_ N/A\_\_\_  
 Coupling Alignment Verified per I&O Manual? YES\_\_\_ NO\_\_\_ N/A\_\_\_  
 Grease Cup/Oil Reservoir Level checked? YES\_\_\_ NO\_\_\_ N/A\_\_\_

**Submersible Pumps**

Resistance of cable and pump motor (measured at pump control):

Red-Black: \_\_\_\_\_ Ohms(Ω) Red-White: \_\_\_\_\_ Ohms(Ω) White-Black: \_\_\_\_\_ Ohms(Ω)

Resistance of Ground Circuit between Control Panel and outside of pump: \_\_\_\_\_ Ohms(Ω)

MEG Ohms check of insulation:

Red to Ground: \_\_\_\_\_ White to Ground: \_\_\_\_\_ Black to Ground: \_\_\_\_\_

**Operational Checks**

Is there noise or vibration present? YES\_\_\_ NO\_\_\_ Source of noise/vibration: \_\_\_\_\_

Does check valve operate properly? YES\_\_\_ NO\_\_\_ N/A\_\_\_

Is system free of leaks? YES\_\_\_ NO\_\_\_ Leaks at: \_\_\_\_\_

Does system appear to operate at design flow rate? YES\_\_\_ NO\_\_\_

Nominal Voltage: \_\_\_\_\_ Phase: 1Ø 3Ø (select one)

Voltage Reading at panel connection, Pump OFF: L1, L2 \_\_\_\_\_ L2, L3 \_\_\_\_\_ L1, L3 \_\_\_\_\_

Voltage Reading at panel connection, Pump ON: L1, L2 \_\_\_\_\_ L2, L3 \_\_\_\_\_ L1, L3 \_\_\_\_\_

Amperage Draw, Pump ON: L1 \_\_\_\_\_ L2 \_\_\_\_\_ L3 \_\_\_\_\_

**Submersible Pumps**

Are BAF and guide rails level / plumb? YES\_\_\_ NO\_\_\_

Is pump seated on discharge properly? YES\_\_\_ NO\_\_\_

Are level controls installed away from turbulence? YES\_\_\_ NO\_\_\_

Is level control operating properly? YES\_\_\_ NO\_\_\_

Is pump fully submerged during operation? YES\_\_\_ NO\_\_\_

**Follow up/Corrective Action Required**

YES\_\_\_ NO\_\_\_

**Additional Comments:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Startup performed by: \_\_\_\_\_ Date: \_\_\_\_\_

**Present at Start-Up**

( ) Engineer: \_\_\_\_\_ ( ) Operator: \_\_\_\_\_

( ) Contactor: \_\_\_\_\_ ( ) Other: \_\_\_\_\_

**All parties should retain a copy of this report for future trouble shooting/reference**



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