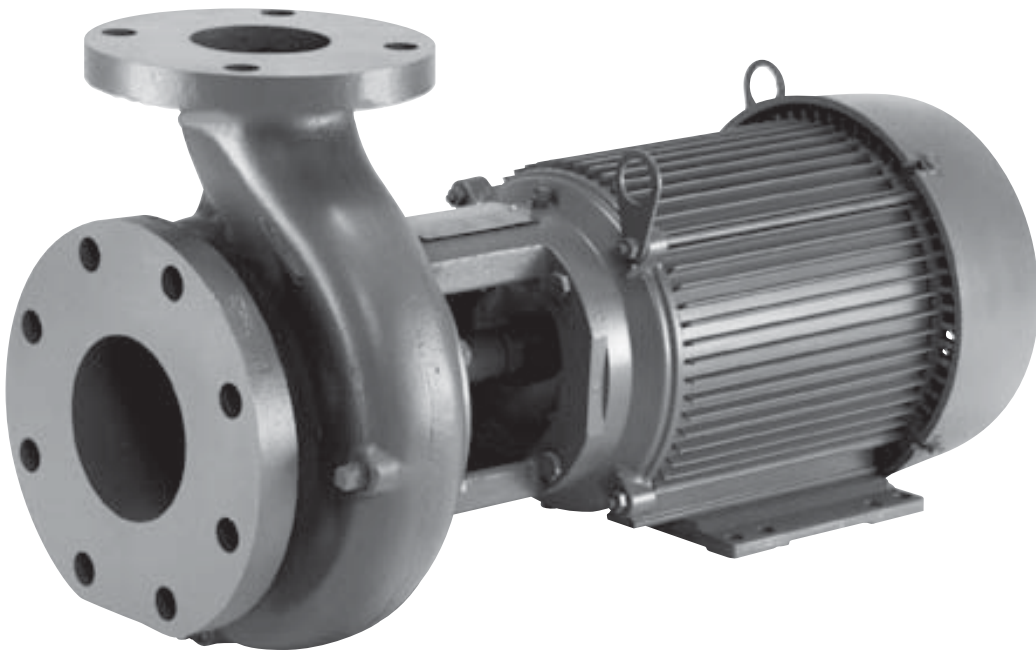


DEMING[®]

INSTALLATION, OPERATION & MAINTENANCE MANUAL MotorMount Centrifugal Pumps

Series: 3132



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[®]

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. 119991-Rev. C

CONTENTS

SAFETY FIRST	3
A. GENERAL INFORMATION.....	4
Receiving	
Storage	
Service Centers	
B. INSTALLATION	4 - 5
Foundation	
Piping	
Wiring / Rotation	
C. OPERATION.....	5
Starting	
Priming	
D. MAINTENANCE	6
Initial Adjustments - Packed Pumps	
Initial Adjustments - Pump with Mechanical Seals	
E. REPAIR	6 - 8
Disassembly	
Reassembly	
F. LOCATING TROUBLE	9
CROSS-SECTION & PARTS LIST	10
WARRANTY & RETURNED GOODS	11

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

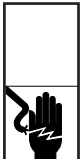


Rotating machinery Amputation or severe laceration can result.



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! 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.



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.

Always wear eye protection when working on pumps.

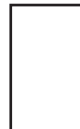


Make sure lifting handles are securely fastened each time before lifting. **DO NOT** operate pump without safety devices in place. Always replace safety devices that have been removed during service or repair. Secure the pump in its operating position so it can not tip over, fall or slide.

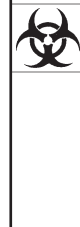
DO NOT exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.



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! 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

1. FOUNDATION

The Motor-Mount pumps can be installed on any sufficiently solid foundation since pump and motor are rigidly aligned. The unit may be installed on a concrete foundation with anchor bolts set in place or securely mounted on a wall in either a horizontal or vertical position with motor above pump. The pump should be located as near the source of supply as possible with a minimum of suction pipe and elbows.

Foundation bolts, of the proper size, should be imbedded in the concrete. A pipe sleeve, about 2½" diameters larger than the bolt, should be used to allow for final positioning of the bolts. See Figure 1.

Position unit on foundation and level using rectangular metal blocks and shims, or wedges having a small taper as shown in Figure 2.

2. PIPING

A foot valve and strainer must be installed on the lower end of the suction pipe to keep pump completely filled with liquid when the pump is used under suction lift conditions. Connect suction pipe to pump, making certain that all connections are airtight. When a foot valve and strainer are used, it is necessary to install a check valve in the discharge line near the pump to prevent possible casing damage due to line shock or surge when the pump stops. A gate valve should also be installed in the discharge line. Connect discharge pipe to pump casing.

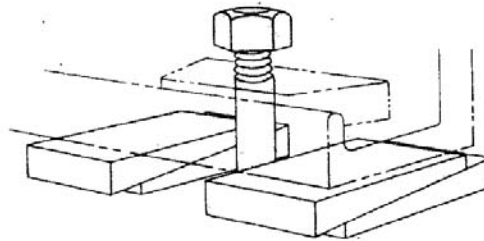


Figure 2. Adjusting Wedges for Mounting

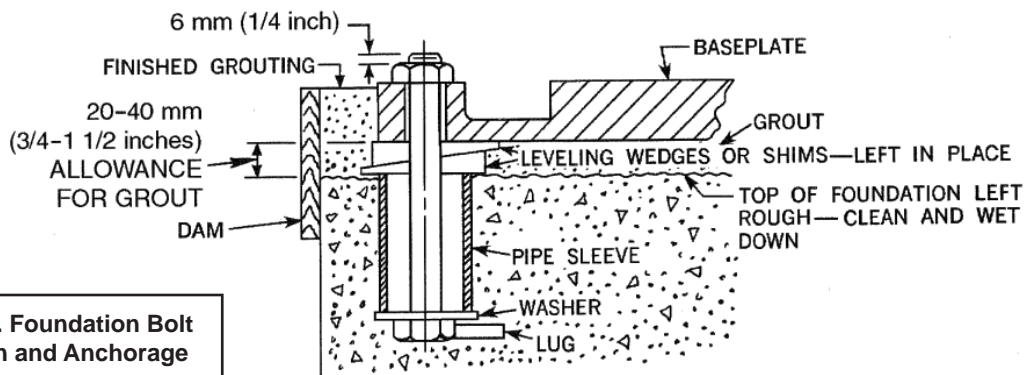


Figure 1. Foundation Bolt Location and Anchorage

It is important that the suction and discharge pipes “line up” naturally with the pump. Do Not “pull” pipes into position with flange bolts or fittings. Both suction and discharge pipes must be supported independently near the pump to eliminate any strain on the pump. Piping should be arranged with as few bends as possible, and, preferably, with long radius elbow whenever possible. Turn shaft to see that it rotates freely. If rotor binds, it indicates a strain on the casing, which must be corrected before operating pump. It may be necessary to shim motor at foundation to assist piping connection line-up.

3. WIRING / ROTATION

Check motor name plate for electrical characteristics. Be sure they are the same as the rating of the electric power available. Connect power lines to motor in accordance with the wiring diagram on the motor. Test rotation by jogging motor. Shaft must rotate in the direction indicated by arrow cast on pump casing.

C - OPERATION

1. STARTING THE PUMP

The following important items should be checked before starting.

- a. Pump and driver securely bolted
- b. Piping complete
- c. Motor properly lubricated. Follow the recommendations found in the Maintenance Section
- d. Open the seal flush valve, if used
- e. Shaft turns freely
- f. Rotation is correct. The pump must rotate in the direction of the arrow on the casing.
- g. Discharge valve. A high or medium head centrifugal pump operating at full speed with the discharge valve closed, requires much less power than when operating at its rated head and capacity with the discharge valve open.

For this reason, it is usually best to have the discharge valve only partially open when starting the pump.



WARNING! - Operating the pump with a closed or partially open discharge valve can result in excessive heat buildup. Such operation should be limited to the shortest practical duration.

Operating the pump at or near shut-off head places greater loads on the shaft and motor than operation at the designed flow rate and head.

- h. Suction valve, if used, must be fully open. Do not use suction valve as a throttling device.
- i. Pump fully primed

Only after these items have been checked should the pump be started.

2. PRIMING

CAUTION: Before starting the pump, the casing and suction line must be filled with liquid, and air-vented through the vent pipe plugs. The pump must not be run until it is completely filled with liquid, because of danger of injuring some of the parts of the pump which depend upon liquid for lubrication.

The discharge gate valve should be closed during priming. Be sure the mechanical seal and power frame are supplied with the proper lubrication. See LUBRICATION.

PRIMING BY SUCTION PRESSURE

When operating with suction pressure (flooded suction), remove the pipe plug at the top of the casing and when pump is filled with liquid, replace plug.

PRIMING WITH FOOT VALVE AND STRAINER

A foot valve and strainer may be installed on the lower end of the suction pipe to keep pump filled with liquid. Incorporate filler pipe in discharge pipe between pump and check valve. Remove pipe plug at top of casing, then fill suction pipe and pump with liquid. When pump is full of liquid, replace plug and close filler pipe.

CAUTION: When a foot valve and strainer are installed on the suction pipe, a spring loaded type check valve **MUST** be installed next to the pump in the discharge piping to prevent pump rupture from water hammer shock.

Priming by means of primer pump or ejector, attached to the pump, will also remove air from suction pipe and pump casing. When pump is filled with liquid, start motor and slowly open discharge gate valve.

3. STARTING

Start the pump. When the pump has reached its designed operating speed slowly open the discharge valve to obtain the desired capacity and pressure.

With the pump running, carefully check for unusual vibration, quiet operation, mechanical seal function and unusually high temperature.



WARNING! - NEVER try to adjust or work on the pump while it is running. Always stop the unit completely before attempting any adjustment.

D. MAINTENANCE

Motor bearings should have periodic attention and lubrication in accordance with motor manufacturer's recommendations. Under ordinary conditions, ball bearings will run from 10°F to 60°F above ambient temperatures. Unless bearing temperature run extremely hot, do not become alarmed.

WARNING! NEVER try to adjust or work on the pump while it is running. Always stop the unit completely before attempting any adjustment.

INITIAL ADJUSTMENTS PACKED PUMPS

After the pump has been started, packing box glands should be tightened to prevent excessive loss of liquid.

In cases where packed pumps are operating with a suction lift over 15 feet, the packing should be lubricated through the stuffing box tap from an external source. See "Packing Box" below.

Packing should not be too tight, as this will result in burning the packing and scoring of the shaft sleeve. The best gland adjustment will allow liquid to drip slowly from the packing box gland. Normal drip rate is from 40 - 60 drips per minute. This will permit proper lubrication of the shaft and dissipate generated heat. The gland must NEVER be tightened to the point where leakage through the stuffing box is completely stopped.

PACKING BOX

Packing must be continuously lubricated. Packed pumps are normally furnished less an external recirculation line. When operating with suction lift and clean liquid, recirculation from the pump discharge to the packing box (or suitable grease) may be used. When lubrication is supplied from an outside source, it should be cool, clear water, light lithium base grease or a compatible lubricating fluid.

PACKING BOX CARE

Before installing new rings of packing, clean the packing box and inspect parts for wear. If the shaft sleeve is worn, replace it; new packing will not do an adequate job on a worn sleeve. Die molded packing rings are preferable. Insert two rings. Twist the rings sideways when installing; DO NOT pull the rings straight out over the shaft. Stagger the joints to minimize leakage.

Tamp each ring in place and then slip the lantern ring into the packing box behind them. Add three more rings behind the lantern ring. Replace the gland and bolts, rotate the shaft, and tighten gland securely. Be sure the lantern ring is positioned to receive lubrication through the orifice in the housing. Tighten nuts securely to seat the packing, rotate the shaft several turns, and then loosen the nuts to "finger-tightness" for starting.

IMPORTANT - Liquid being pumped should drip slowly but constantly through the packing gland. This will prevent overheating, high power consumption, and shaft sleeve damage.

If packing replacement becomes frequent:

- Check motor bearing for excessive wear causing shaft run-out.
- Check packing for proper grade. Also, check whether special packing issued: see pump data card.
- Check shaft sleeve for excessive wear or scoring.
- Check for crystallization of solution and for embedded abrasives in the packing. Method of packing lubrication may not be satisfactory.
- Check recirculating line, if used, as well as relevant fittings, for partial or full blockage.

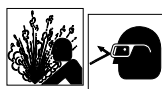
INITIAL ADJUSTMENTS PUMP WITH MECHANICAL SEALS

Mechanical seals are factory-adjusted at the time the pump is assembled and, normally, need no further adjustment in the field. The only prerequisite to operating a pump equipped with a mechanical seal is to make certain the seal chamber is filled with a compatible liquid before starting the pump.

SINGLE SEAL - Pumps with single seals are normally furnished with an external recirculation line. A portion of the liquid being pumped is recirculated from the casing through the seal chamber to serve as a lubricant and coolant. An alternate method is to supply a cool, compatible lubricating liquid from an outside source, to the seal chamber at a pressure 15 to 25 psi above the suction and 1/4 of the differential pressure combined.

DOUBLE SEAL - On double seal applications, the seal chamber must be filled with lubricant or clear, compatible lubricating liquid under pressure. The liquid may be from an outside source or may be from the pump discharge passing through a filter and/or heat exchanger when necessary. Pressure on the box must be 15 to 25 psi above the suction and 1/4 of the differential pressures combined. The liquid must circulate through the outlet and a restriction must be placed in the outlet to assure pressure on the seal chamber.

E - REPAIR



WARNING - If pumping any fluid that could cause bodily injury (hot water, caustic, etc.), always use eye protection and wear protective clothing over all exposed body areas.

REMOVE AND LOCK-OUT POWER TO THE DRIVER WHILE PERFORMING THESE TASKS
Be sure that no one can accidentally restore power while the pump is being serviced.

1. DISASSEMBLY - These instructions apply to the series of pumps in general and may vary slightly on some units. If complete disassembly is not necessary, use only those steps which apply

- a. Close suction and discharge piping valves, drain casing by slowly removing drain plugs (216) in top and bottom of casing (001). Disconnect suction and discharge pipes.
- b. Remove motor and adapter foundation bolts.
- c. Remove capscrews (212) from motor adapter to casing. Remove bypass tube if used.
- d. Remove motor, adapter, impeller assembly away from casing. Once loose, lift assembly clear of casing being careful not to damage impeller.
- e. Remove capscrews (026) and washer (270). Slide impeller (002) and key (032) off shaft.
- f. Remove hex nuts (210) and remove split gland (17) when pump is fitted with packing (13). If pump has mechanical shaft seal (89), remove hex nuts (210) and carefully slide seal gland (251) with seal seat away from packing box cover (11).
- g. Remove the packing box cover from adapter (071). Packing (013) and lantern ring (029) may now be removed.
- h. If pump includes single mechanical shaft seal, scribe a mark at the seal retainer or spring retainer on the shaft sleeve or shaft to aid in reassembly. Remove seal gland gasket.

SINGLE SEAL PUMPS ONLY:

- i. Loosen set screws (K) in spring retainer (E) or seal collar. Remove seal from sleeve.

DOUBLE SEAL PUMPS ONLY:

- j. Remove rotating portion of seal from the sleeve, and stationary seals (A) and gasket (259) from the gland and packing box.

NOTE: For identification of seal pump parts. see table:

PARTS IDENTIFICATION LISTING FOR SEAL TYPES ILLUSTRATED IN FIGURES 2, 3 & 4			
A	Seal (Insert)	J	Shaft Packing
B	Gasket (Outboard)	K	Set Screw
C	Washer (seal ring)	P	Throat Bushing (Opt)
D	Shaft Packing	R	O-ring
E	Spring Retainer	S	Holding Clips* (Types 9T, 9BT)
F	Spring	251	Seal Gland
G	Disc	259	Gasket (inboard)
H	Snap Ring	263	Pipe Plug

(*) Holding clips must be removed after seal is assembled on shaft; see instructions furnished with seal.

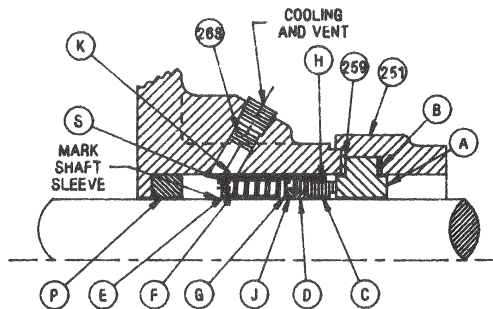


Figure 2 - Single Seal Clamped Seat

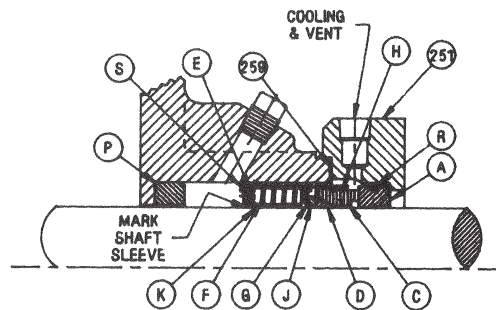


Figure 3 - Single Seal Flexible Mount

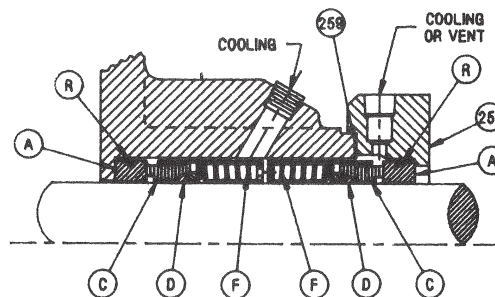


Figure 4 - Double Seal

- k. Press seal stationary member out of seal gland.
 - l. Remove wear rings (025) & (027) from casing and packing box cover. Remove (008) impeller wear rings if supplied.
 - m. Clean and carefully inspect and replace as necessary any worn or damaged shafts, sleeves, bearings, lip seals, or gaskets. Replace mechanical shaft seal worn faces, hardened elastomers or springs with weak tension.
2. REASSEMBLY
- a. Press wear rings (025) & (027) into casing and packing box cover. Press impeller wear rings onto impeller is supplied.
 - b. Reposition the adapter (71) on the motor and replace the cap screws (219).
 - c. Slide the deflector (40) on to the shaft.

STEPS d - h FOR PACKED PUMPS ONLY

- d. Insert the shaft sleeve into the bore of the packing box with the keyway towards the impeller. Insert packing (13) and lantern ring (29) as described under "PACKING BOX CARE" .
- e. Place the entire packing box assembly and shaft sleeve over the shaft and position the packing box cover on the adapter. Line up the keyway in the sleeve with the keyslot in the shaft and replace the impeller key (32).
- f. Replace the cap screws and draw down snug, tightening the packing box cover against the adapter.
- g. Place the sleeve gasket (038) over the end of the shaft. Place the impeller (002) over the end of the shaft with the keyway over the key. The impeller should be tapped into position with a babbitt or rawhide hammer. Replace the impeller gasket (30), impeller washer (270), o-ring (272) and impeller screw (26), and tighten.
- h. Locate split gland (017) and tighten hex nuts (210). Proceed to STEP BB.

STEPS i - k FOR SINGLE SEAL PUMPS ONLY

- i. Before installing new or used seals, inspect and clean all parts. Remove all burrs, nicks, etc., from shaft sleeve.
- j. Lightly oil the inside of the spring retainer or holder (E) and the outside of the sleeve. Slide the rotating portion of the seal over the sleeve.
- k. Line up the spring retainer to the premarked position (see Step H). Tighten the set screws.
- l. Replace the seal gland gaskets (B) and (259). Oil the outer surface of the seal seat (A) and press into the seal gland (251)
- m. Carefully slide the seal gland and the gland gasket (259) over the pump shaft.
- n. Place the shaft sleeve on the shaft and line up the keyway in the sleeve with the keyslot in the shaft. Replace the impeller key (32).
- o. If supplied, replace the throat bushing in the packing box.
- p. Place the packing box cover over the shaft and seal the assembly. Replace cap screws and draw down snug to tighten packing box cover to adapter.

- q. Place the sleeve gasket (038) over the end of the shaft. Place the impeller (002) over the end of the shaft also, with the keyway over the key. Tap impeller into position with a babbitt or rawhide hammer. Replace the impeller gasket (030), impeller washer (270), o-ring (272) and impeller screw (26) and tighten.
- r. Pull the seal gland into place and tighten securely. Proceed to Step BB.

STEPS s - z FOR DOUBLE SEAL PUMPS ONLY

- s. Before installing new or used seals, inspect and clean all parts, remove all burrs, nicks etc., from shaft sleeve.
- t. Oil outer surface of seal seats (A). Press one into the seal gland (251) and one into the packing box cover (011).
- u. Slide the seal gland (251) and gland gasket (259) over the motor shaft.
- v. Place the shaft sleeve on the shaft, lining up the keyway in the sleeve with the key slot in the shaft. Replace the impeller key (032).
- w. Slide the rotating portion of the seal over the shaft sleeve.
- x. Slide the packing box cover over the seal assembly and sleeve. Replace the cap screws and draw down snug to tighten packing box cover to adapter.
- y. Place the sleeve gasket (038) over the end of the shaft. Place the impeller (002) over the end of the shaft also, with the keyway over the key. Tap impeller into position with a babbitt or rawhide hammer. Replace the impeller gasket (030), impeller washer (270), o-ring (272), and impeller screw (26) and tighten.
- z. Pull the seal gland into place and tighten securely. Proceed to STEP AA.

STEPS AA - FF FOR PACKED OR SEAL PUMPS:

- AA. Pump assembly is now ready to reinstall onto casing.
- BB. Place gasket (073) on clean surface of adapter, aligning capscrew holes.
- CC. Using care, insert motor/adapter/impeller assembly into cleaned casing. Insert capscrews (212) and hand tighten to control alignment as pilot on adapter enters casing. Continue tightening capscrews until gasket is firmly seated.

DD. Tighten capscrews (212) evenly and alternately across capscrew circle diameter until all are firmly tightened.

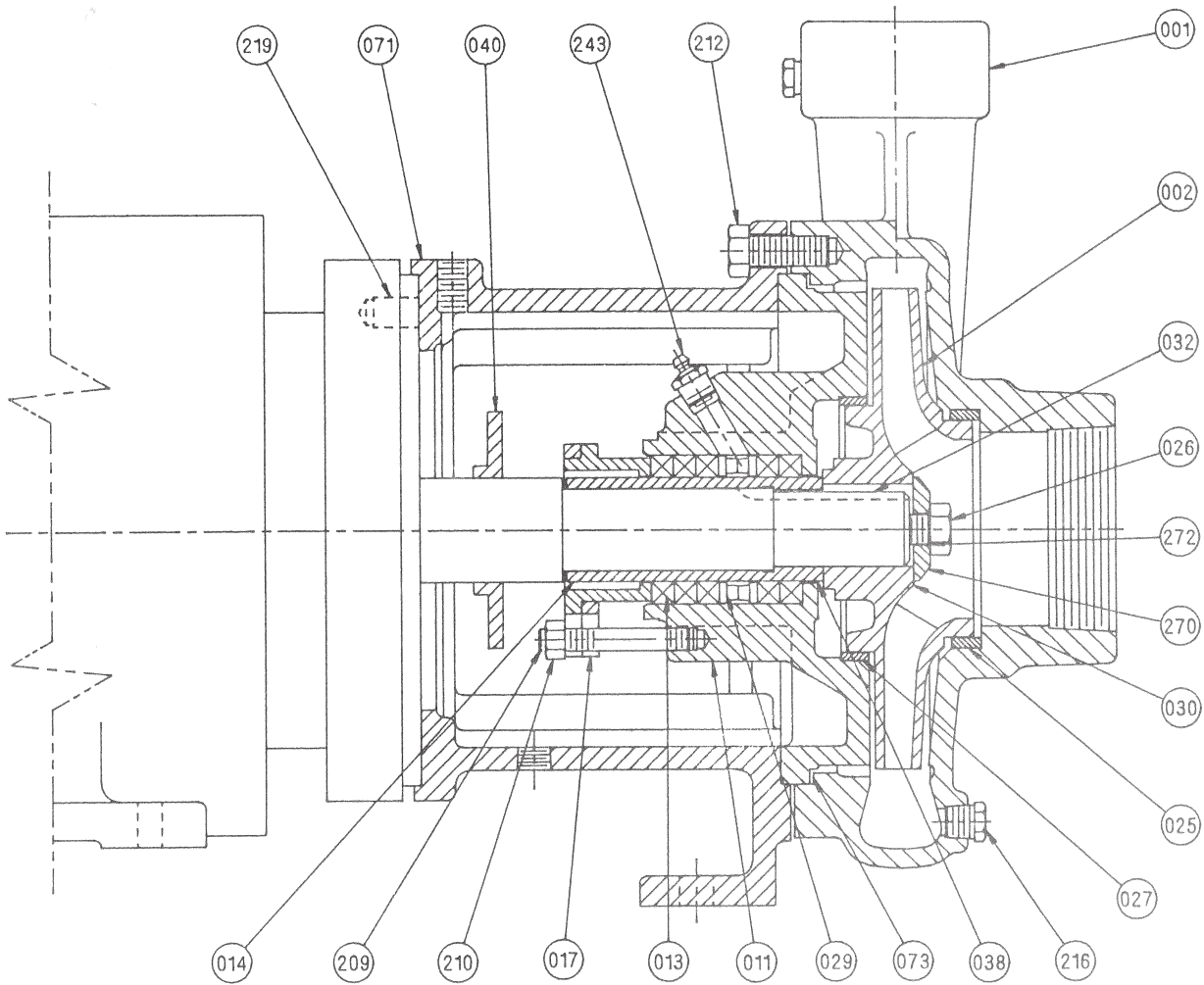
EE. Reinstall drain plugs, replace bypass line (if used). Install motor adapter and frame foot mounting bolts.

NOTE: Model number, pump serial number and part item number are always required to secure correct replacement parts. Refer to the pump serial plate and illustrations in this booklet.

F - LOCATING TROUBLE

1. No Liquid Delivered
 - a. Pump not primed - See Priming
 - b. Speed too low - Check motor speed and nameplate
 - c. Discharge head too high
 - d. Suction lift over 15 ft. Check with vacuum gauge.
 - e. Impeller completely plugged.
 - f. Wrong direction of rotation. Check wiring.
2. Not Enough Liquid Delivered
 - a. Air leaks in suction piping
 - b. Speed too low - Check motor speed
 - c. Discharge head higher than anticipated.
Check discharge valve/system requirements
 - d. Suction lift over 15 ft. Check with vacuum gauge.
 - e. Impeller partially plugged
 - f. Not enough suction head for hot water
 - g. Mechanical defects. Impeller or casing worn or damaged.
 - h. Foot valve too small
 - i. Foot valve not immersed deep enough.
3. Not Enough Pressure
 - a. Speed too low - Check motor speed
 - b. Air or gas in liquid
 - c. Mechanical defects. Impeller or casing worn or damaged.
 - d. Incorrect impeller diameter - Check system requirements
4. Pump Works For A While Then Quits
 - a. Leak in suction line.
 - b. Obstruction in pump or piping
 - c. Suction lift over 15 ft. Check with vacuum gauge.
 - d. Air or gas in liquid
5. Pump Takes Too Much Power
 - a. Speed too high - Compare Pump and motor nameplates
 - b. Head lower than rating - pumps too much liquid.
Check system requirements
 - c. Liquid specific gravity or viscosity greater than expected. Requires large motor.
 - d. Mechanical defects

MODEL 3132



ITEM No.	DESCRIPTION
001	Casing
002	Impeller
011	Packing Box Cover
013	Packing
*014	Shaft Sleeve
017	Split Gland
025	Wear Ring, Casing
*026	Capscrew, Impeller
027	Wear Ring, P.B. Cover
029	Lantern Ring
*030	Impeller Gasket
032	Impeller Key
*038	Sleeve Gasket
040	Deflector

ITEM No.	DESCRIPTION
071	Adapter
*073	Casing Gasket
203	Name Plate
209	Stud, Gland
210	Nut
212	Cap screw
214	Drive screw
216	Pipe Plug (Casing)
219	Cap screw
217	Screw, Cap
243	Fitting, Grease
*270	Impeller Washer
*272	O-ring

(*) Recommended Spare Parts

BARNES®

BARNES®
PRESSURE **PS** SYSTEMS®

CROWN

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.

CRANE®

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, Brampton
Ontario, Canada L6T 2J6
Phone: (905) 457-6223
Fax: (905) 457-2650

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.**