



**McLAUGHLIN®**

2006 Perimeter Road. Greenville, SC 29605  
Toll Free: 800/435-9340 - Phone: 864/277-5870  
Fax: 864/235-9661 - Website address: [www.mightymole.com](http://www.mightymole.com)  
Email address: [mmole@mightymole.com](mailto:mmole@mightymole.com)

**Parts Manual  
Vermeer/ McLaughlin  
Mud System 230P**

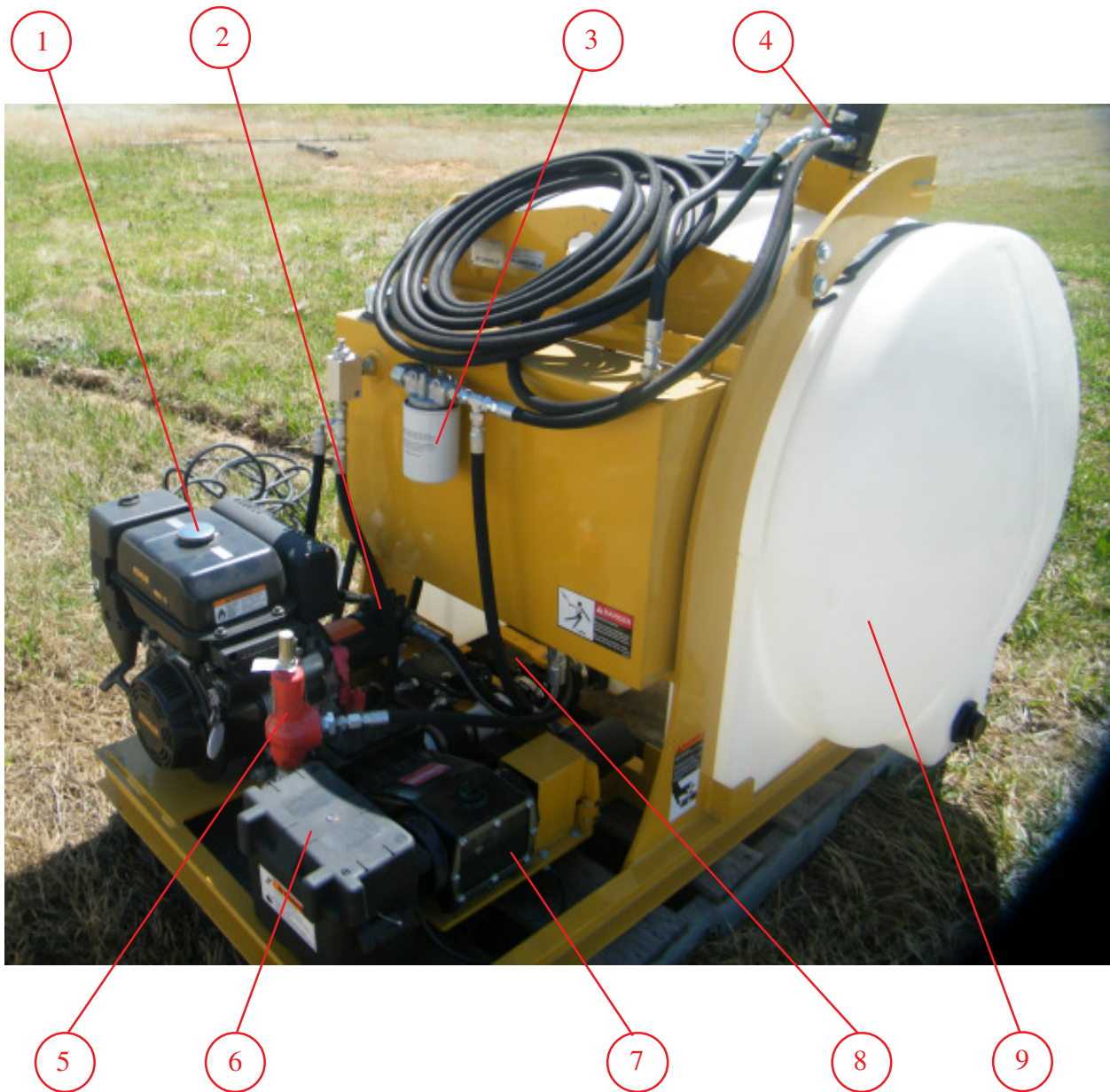
**SN 230P021805100 - 230P071210115**

© 2009 by McLaughlin Group, Inc.

040810

All rights reserved. No part of this manual may be reproduced in any form, or by any means without prior written permission of McLaughlin Group, Inc.

# MUD SYSTEM 230P



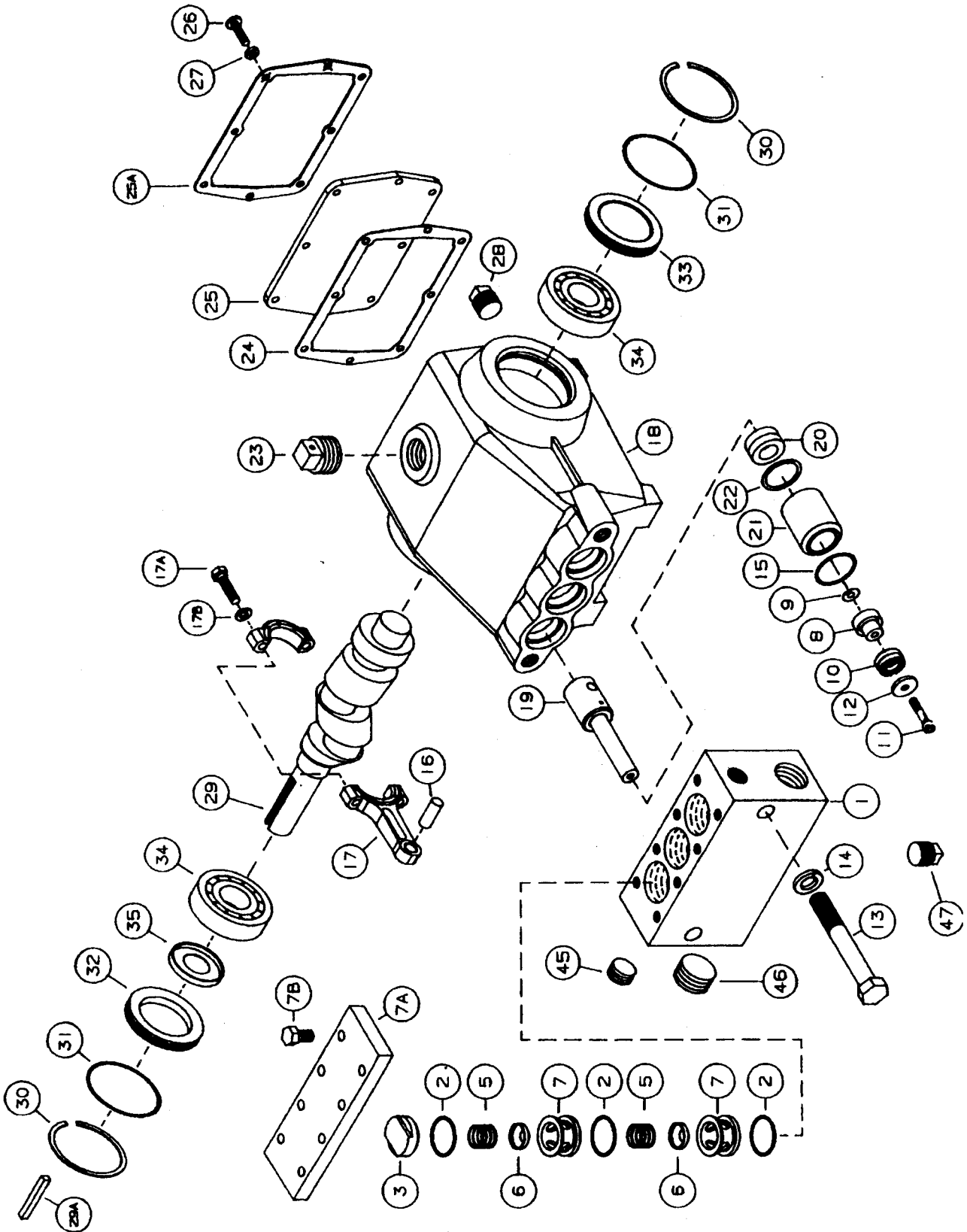
## MUD SYSTEM 230P

Item	Qty	Part No.	Description
1	1	P030200	Engine, Kohler 12HP
2	1	T100160	Pump, Hydraulic
	1	HM00099	Bell Housing
	1	HM00126	Coupling, Hub 1" Bore (for Engine)
	1	HM00130	Coupling, Hub 3/4" Bore (for Hydraulic Pump)
	1	HM00128	Coupling, Insert
3	1	T700080	Filter, Hydraulic Assembly
4	1	T200110	Motor, Hydraulic
	1	8011020	Mixing Motor Extension Arm
	1	8011023	Mixing Motor Mounting Plate
	1	8011024	Mixer Shaft Coupling
	1	8011027	Mixer Shaft
	1	8011028	Mixer Head
	1	8011032	Mixer Shaft Coupling Guard
5	1	8011056	Mud Relief Valve (1000psi / 69 bar)
6	1	X400040	Battery
	1	8040239	Battery Box
7	1	8011035	Pump, Mud
	1	HM00126	Coupling, Hub 1" Bore (for Mud Pump)
	1	HM00126	Coupling, Hub 1" Bore (for Hydraulic Motor)
	1	HM00128	Coupling, Insert
	1	8011031	Guard, Coupling
8	1	8011038	Valve, Hydraulic Flow Control
9	1	8030338	Mixing Tank (230 Gallon / 920 Quart)
	2	8040084	Strap, Mixing Tank
10*	1	8011061	Controller with 50 Ft / 1524 cm Cable w/ Male Connector
11*	1	J200072	Decal Kit Safety McL230P (CE Certified)
	1	J200073	Decal Kit Safety McL230P (Standard)

\*Not Shown

# Mud Pump

**BXM6-15 (22828D006), BXM6-15AB (22828D002), BXM6-15B (22828D304),  
BXM6-15C (22828D303) AND BXM8-10B (22828D300) PARTS DRAWING**



# Mud Pump

## PARTS LIST FOR 22828D303 – BXM6-15C PARTS LIST FOR 22828D304 – BXM6-15B

REF. NO.	PART NO.	DESCRIPTION	QTY. REQ'D.
1	22829D002	Fluid End Body, Steel	1
2	05876A118	"O" Ring	9
3	22830A002	Valve Cap	3
5	22832A000	Spring, Disch. & Suct., Monel	6
6	18317A004	Valve, Disch. & Suct., 440C SST	6
7	22833A002	Valve Seat, Disch. & Suct., 440C SST	6
7A	26278A000	Clamp for Valve Caps	1
7B	19101A018	Screw, 3/8-16 x 1-1/4" Lg.	8
8	22834A004	Piston, Aluminum Bronze	3
9	05059A424	Nylon Gasket	3
10	18922A010	Packing "V" Ring, 1.0" O.D.	3
11	06106A019	Cap Screw, 1/4-20 x 1-1/4" Lg.	3
12	05030A225	Washer, Flat, Aluminum Bronze	3
13	19105A018	Cap Screw, 5/8-11 x 4-1/2" Lg.	2
14	05454A011	Lock Washer, 5/8"	2
15	05876A116	"O" Ring	3
16	22836A000	Wrist Pin	3
17	23837B000	Connecting Link	3
18	22838E000	Crankcase, Cast Iron	1
19	22839B001	Crosshead & Piston Rod	3
20	05710A033	Oil Seal, .625 Shaft Diameter	6
21	22840A001	Cylinder Liner, Ceramic	3
22	05059A420	Nylon Gasket	3
23	17388A000	Fill Plug, Vented	1
24	22841B000	Gasket, Rear Cover	1
25	22842B000	Rear Cover	1
25A	23717B000	Reinforcement Plate	1
26	05028A008	Machine Screw, 1/4-20 x 3/4" Lg.	8
27	05454A001	Lock Washer, 1/4"	8
28	05022A009	Drain Plug, 1/4" NPT	1
29	22843B000	Crankshaft	1
29A	05818A003	Key, 1/4 x 1/4 x 1-1/2"	1
30	10848A024	Retaining Ring for Caps	2
31	05876A117	"O" Ring for Bearing Caps	2
32	22844A000	Bearing Cap, Open	1
33	22844A001	Bearing Cap, Closed	1
34	08565A024	Ball Bearing	2
35	05710A002	Oil Seal for Open Cap	1
45	05022A015	Plug, Pipe, 1/2" NPT	1
46	05022A043	Plug, Pipe, 1" NPT	1
47	05022A009	Plug, Pipe, 1/4" NPT	1

# Mud Pump

**CAUTION: When pumping from a pit or under a suction lift condition, if pump does not prime in a short period, fill the discharge side of fluid end with water to seal discharge valves. If pump still does not prime remove suction hose and fill pump with water. Dry operation will cause heating and wear on cylinders and packing. Be sure that an operating pressure gauge is located on discharge line.**

**B. Starting Unit:**

1. After starting, close discharge valve or gun slowly while watching pressure gauge to make sure relief valve or unloader is operating properly.
2. Adjust relief valve to desired pressure. See regulator instructions.
3. Cycle nozzles or gun on and off to be sure that pressure adjustment and regulator operation is satisfactory.

**LUBRICATION**

Pump-Crankcase must be filled with 2 to 3 pints depending on RPM (See Table) of SAE 30 oil unless ambient temperature exceeds 90 degrees F then SAE 40 should be used. Use only quality grade oils with SAE designation MS, SC or SD. Maintain level at mark on cover for the respected RPM. Foaming or

milky discoloration of oil is an indication of water. Oil should be replaced to preclude possible damage to crankcase and components.

NOTE – Drain oil from crankcase after first 30 hours of operation. It is best to always drain the oil when it is still hot. Refill with new oil as mentioned above. Run pump at full speed under no pressure for 2 or 3 minutes before returning to operation. Thereafter change oil every 300 hours or immediately if water droplets are found in crankcase. Check oil level regularly and add oil as needed.

RPM	OIL LEVEL LOCATION	OIL CAPACITY
800	Add Level Mark.	32 oz.
700	Between Add & Full Mark.	40 oz.
600	Full Mark.	48 oz.

Speeds of 400 to 600 RPM require 48 ounces of oil. For speeds less than 400 RPM consult factory for recommendations.

**Avoid freezing** by draining all water from pump and system in cold weather. This can be done by breaking suction connections and turning crankshaft over 4 or 5 times, or the fluid end can be removed to completely drain cylinders and fluid end.

**SPECIFICATIONS**

TYPE	TRIPLEX – SINGLE ACTING
Rated Capacity GPM @ 800 RPM	8 GPM/12.5 GPM
Pressure Rating: Continuous/Intermittent	1,000 PSI/1,500 PSI
Required BHP @ 800 RPM and Rated Pressure	6.3
Temperature Rating (Maximum)	140 degrees F
Cylinder Bore	1"/1.25"
Stroke	1-1/16"
Suction Size	1 NPT (Bottom)
Discharge	1/2" NPT (Top)
Crankshaft Diameter	1"
Keyway	1/4 x 1/8
Cylinder Material	Alumina Ceramic
Fluid End Material	Steel or Aluminum Bronze
Packing Material	High Acrylic Nitrile
Valve Material	Stainless Steel
Seat Material	Stainless Steel
Piston Material	Aluminum Bronze
Approximate Shipping Weight	50 lbs.
Recommended Regulator	22900B000
Recommended Unloader	19280C000
Recommended Discharge Surge Suppressor	6CU (18250B000)



# Mud Pump

## SERVICE MANUAL

(Caution -- Disconnect electrical leads to motor or remove spark plug leads on engine before processing.)

### CYLINDER & PACKING SERVICE

#### Removal:

Remove 2 cap screws holding fluid end to power end and pull straight forward using care with ceramic cylinders. Do not cock fluid end or drop cylinders. Hold onto cylinder while removing socket head cap screw through cylinder and remove cylinder with packing still inside. Remove packing with a suitable punch being careful not to scratch cylinder. Grease cylinder O.D. when replacing so that it won't corrode in crankcase. When renewing packing, clean all piston parts, new nylon gaskets and O-rings. Ceramic cylinders can be cleaned by soaking in muriatic acid solution to remove build-up of packing material. **CAUTION!! AVOID DIRECT CONTACT WITH MURIATIC ACID. WEAR PROTECTIVE GLOVES AND EYE PROTECTION. IF EXPOSED, FLUSH EXPOSED AREA WITH WATER. CONSULT A PHYSICIAN FOR TREATMENT OF MURIATIC ACID BURNS.** Clean bores in both fluid end and power end. Be sure to replace nylon gasket in crankcase before replacing cylinder. Insert cap screw with lock washer through cup, replace piston, renew gasket and lubricate cup. With the lips of the cup away from the cylinder insert assembly through the cylinder in the end that has a chamfer on the O.D. Make sure the gasket is on the cap screw and insert assembly into crankcase. Care should be used to assure proper seating of cylinder into the machined opening at the rear of the bore. With the cylinder seated properly, the piston assembly adjusted and locked in place to 5-6 ft./lbs., and the O-ring lubricated and in the fluid end, the fluid end can be replaced. Insert cap screws and pull down finger tight. Do not cock fluid end while tightening. Pull evenly by alternately tightening to a final torque of 90-100 ft./lbs.

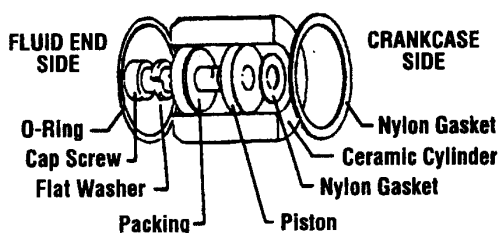


FIG. 1

### VALVE SERVICE

When servicing valves always renew O-rings. Remove valve clamp on top of fluid end for access to valve components. Suction and discharge valves will show a wear pattern on seating surface but need not be replaced unless extreme wear, cracks or erosion is present on valve. All valve components are interchangeable but it is recommended to put them back in the same order as taken out if not renewing the

components. To replace valve components first clean bores to remove corrosion or burrs. Lubricate and replace O-ring in bottom of bore. Then the valve seat. Lubricate and replace O-ring. On the valve make sure the spring is inserted squarely inside the valve and fitted snug on the bottom of the valve seat before putting assembly into fluid end. Repeat for the discharge valve. Position valve cover over each valve assembly, install clamp and tighten bolts evenly to 30 ft.-lb.

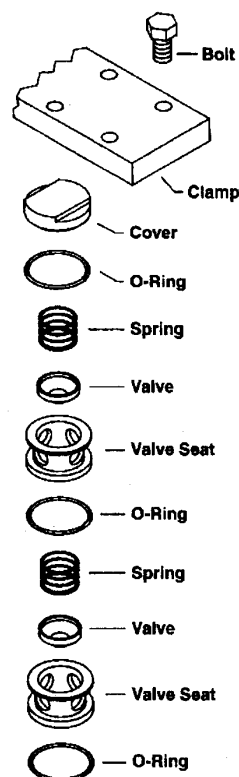


FIG. 2

### SERVICING CRANKCASE PARTS

To remove crankshaft the plungers and cylinders must first be removed, as explained earlier. Drain oil from crankcase and remove rear cover. Remove retainer ring from bearing bore. The connecting link caps should be taken off and the free links pushed toward the water end as far as possible. **BEFORE REMOVAL, BE SURE TO NOTE THE MARKINGS ON THE CONNECTING LINKS AND CAPS. THESE PARTS ARE NOT INTERCHANGEABLE AND MUST BE REASSEMBLED IN THEIR ORIGINAL POSITIONS.** The crankshaft bearings and bearing cap can now be removed by tapping with a hammer against a block of wood on one end of the crankshaft. The crankshaft should be supported so that as the bearings leave the bores the crank does not drop and damage a crank pin. Do not remove bearing from crankshaft unless replacement is necessary. After removing crankshaft, the links and cross-head can be pulled out the crankcase opening.

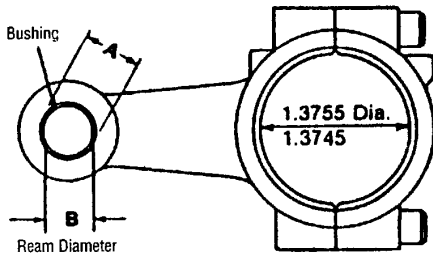
# Mud Pump

## SERVICING CONNECTING LINKS

The connecting links should be checked for bearing wear only if the pump shows signs which might be due to a failing link or during a general overhaul. The link is made of material that has bearing qualities. It does not require a crankshaft bearing and should last many hours if properly cared for.

The wrist pin will slide out as it has a slide fit on both the crosshead and link. When replacing the pin be sure the link operates freely on the crosshead. Torque for the link bolts are not to exceed 144 in./lbs. or 12 ft./lbs.

The following should be done by a qualified machine shop. If the wrist pin hole of the link has a clearance of .004 or more it can be salvaged by drilling and reaming to the dimension in Fig. 3 to accommodate 05806A030 bronze bushing. When drilling and reaming make sure it is parallel to the large diameter of the link. It may be necessary to ream the bushing I.D. to the dimension in Fig. 3 after bushing is installed. It is required to renew the whole link if the clearance between the link and crank becomes greater than .005 or it may be salvaged by machining equal amounts of material where the link and link cap meet but not to exceed .015 each end. Then rebore and rehone to a fine finish in Fig. 3. Also a radius should be machined to the sides to match the crank. The diameters will have to be perpendicular to the machined sides of the link.



Dim. A - Link Ream Dia. .5625 to .5635  
Dim. B - Bushing Ream Dia. .4383 to .4389

FIG. 3

## RECONDITIONING CRANKSHAFTS

When only a very small amount of damage has occurred on the crank pins, such as small surface grooves cut part way round the bearing surface, the crank pins can sometimes be reconditioned for further use. This can be done with emery cloth and polishing until all ridges are completely removed. The final polishing operation should be preformed by using a very fine emery cloth. The procedure can only be followed where the amount of sanding does not reduce the normal

diameter of the crank pin. If the crankshaft cannot be refinished by hand in this manner, it will be necessary to build up the journals then regrind and polish to the original diameter of 1.37275 to 1.37225 in. with a 12 micro finish.

## REPLACING CROSSHEAD SEALS

With the crankshaft and crossheads removed, the worn seals can be pried out. When installing new seals be sure to place them with the lip facing the power end and the metal face toward the water end. After cleaning the cavity and wiping with oil, the seal can be pressed into place with an arbor press or by tapping lightly with a hammer against a block of wood. The seals should be pressed in as shown in cutaway pump view. When returning crossheads through new seals care should be taken not to turn back or damage the lip of the seal. An assembly thimble can be very helpful in this operation. Fig. 4 shows a recommended thimble for installation of oil seals.

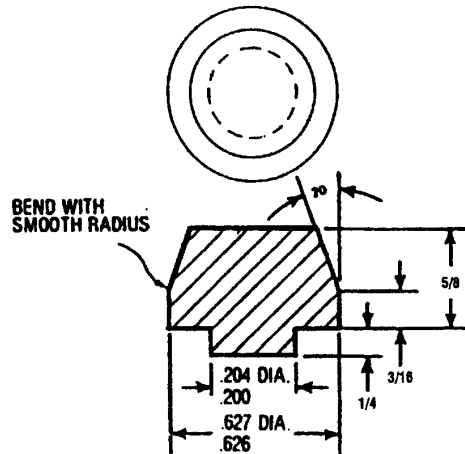


FIG. 4

After replacing the crossheads and links, they should be pushed all the way forward; then the crankshaft can be replaced just as it was removed. All link caps should be tightened in place and free operation of the crank assured before replacing bearing cap and retainer ring. When replacing bearing cap, place a strip of electrical tape over the crankshaft keyway to reduce possibility of seal lip damage. Clean and lubricate all seals and O-rings before replacing.

**CAUTION: Over tightening of rear cover screws could result in fracturing cover. Do not clean rear cover with solvents or harsh chemicals.**



# WARRANTY RETURN GOODS POLICY

## LIMITED WARRANTY

The Manufacturer warrants its products to be free from defects in material and workmanship for a period of twelve months from the date of shipment from the factory. The Manufacturer shall not be responsible for any damage resulting to or caused by its products by reason of installation, improper storage, unauthorized service, alteration of the products, neglect or abuse, or use of the product in a manner inconsistent with its design. The warranty does not extend to any component parts not manufactured by Manufacturer; however, Manufacturer's warranty herein shall not limit any warranties made by manufacturers of component parts which extend to Buyer.

Claims for defects in material and workmanship shall be made in writing to Manufacturer within ten days of discovery of defect. Manufacturer may either send a service representative or have the product returned to its factory at Buyer's expense for inspection. Upon notification of defect, Manufacturer will issue a return goods authorization number to Buyer. The return goods authorization number must accompany the product returned. If judged by the Manufacturer to be defective in material or workmanship, the product will be replaced or repaired at the option of the Manufacturer, free from all charges except authorized transportation. Buyer shall be responsible for all maintenance services consisting of lubrication and cleaning of equipment, replacing expandable parts, making minor adjustments, and performing operating checks, all in accordance with procedures outlined in Manufacturer's maintenance literature.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES AND NO REPRESENTATIONS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, (INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), ARE MADE BY THE MANUFACTURER IN CONNECTION WITH THE MANUFACTURE OR SALE OF ITS PRODUCTS. NO EMPLOYEE, DISTRIBUTOR, OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY ON BEHALF OF MANUFACTURER. THE REMEDIES OF BUYER SET FORTH HEREIN ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER REMEDIES. THE LIABILITY OF MANUFACTURER WHETHER IN CONTRACT, TORT, UNDER ANY WARRANTY, OR OTHERWISE SHALL NOT EXTEND BEYOND ITS OBLIGATION TO REPAIR OR REPLACE, AT ITS OPTION ANY PRODUCT OR PART FOUND BY MANUFACTURER TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP. MANUFACTURER SHALL NOT BE LIABLE FOR COST OF INSTALLATION AND/OR REMOVAL OR BE RESPONSIBLE FOR DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE.

## GENERAL RETURNS OF MERCHANDISE

1. All returns must be pre-authorized
  - A. Please call our parts department for an RGA number
  - B. Please include RGA number on the outside of box
  - C. Include any required paper work or special instructions
  - D. Items returned without an RGA number will not be accepted
2. All returns are subject to a 20% restock charge.
3. Special items are non-returnable
  - A. Non-stock parts
  - B. Custom parts
  - C. If you are unsure about a parts status when ordering, ask your McLaughlin representative if the item fits on of the above conditions.
4. Items must be returned within thirty days of original order date.
5. Items not returned within 30 days from the date of RGA is issued will not be accepted.
6. The item(s) must be in new condition. Used item(s) are not returnable.



