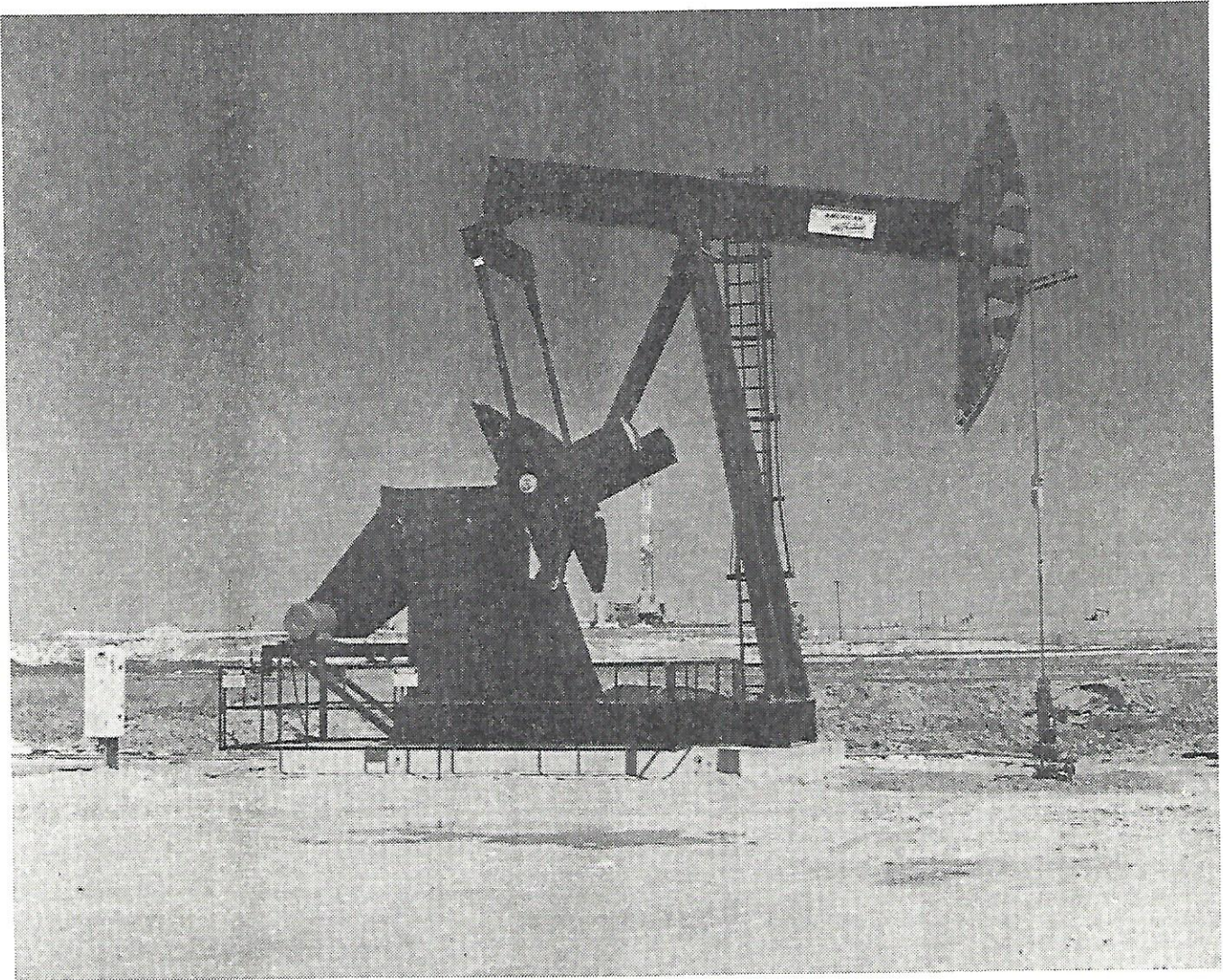

DISASSEMBLY AND ASSEMBLY PROCEDURES FOR D912G REDUCER



AMERICAN INTERNATIONAL MANUFACTURING CORPORATION

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DISASSEMBLY PROCEDURE FOR D912G REDUCER

1. Remove the sheave and QD hub from the high speed pinion.
2. Remove the cranks from the low speed shaft.
3. Remove the cover from the reducer. Visually inspect the internal parts of the reducer for excessive wear.
4. Drain the oil from the reducer, by removing the drain plug at bottom rear of the reducer.
5. Remove the left and right oil troughs from the reducer.
6. Remove the brake drum from the brake assembly.

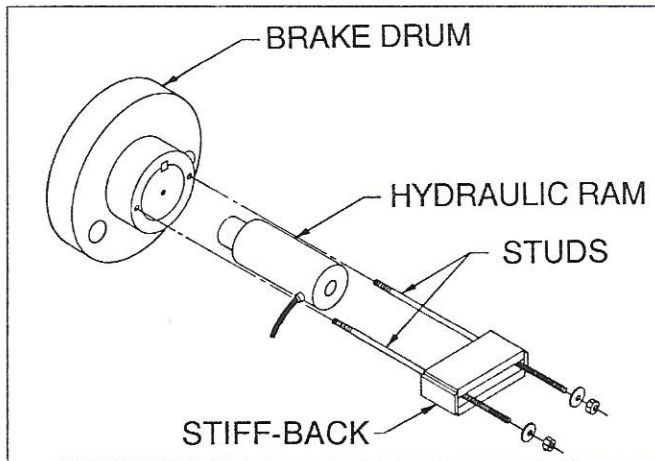


Fig.1, Removing Brake Drum

- A. Remove the brake lever return spring from the brake lever.
- B. Rotate the brake drum until the tapped holes in the hub are horizontal.
- C. Loop 1/4" chain around the brake drum hub with a double wrap and hook the chain back to itself. Use hoisting equipment to catch the drum when it is removed from the high speed pinion.
- D. Screw two studs into the tapped holes in the brake drum hub to a depth of 1" minimum.
- E. Install stiff-back tool on studs in drum with nuts and flat washers. Position stiff-back to seat on hollow spindle hydraulic ram.
- F. Center the hydraulic ram on the stiff-back and the high speed pinion.
- G. Engage the hydraulic pump to pull the drum off the shaft.

NOTE

At this time a visual inspection can be made of the condition of brake shoes. If brake shoes are oily or severely worn, the brake shoes should be replaced. To remove the shoes see below.

7. Changing brake shoes. (See brake item list, page 10)
 - A. Take off the shoe return spring using spring pliers.
 - B. Remove the two shoe hold down springs from the middle of brake backbone. This is done by grasping shoe hold down cup with standard pliers. Then hold shoe hold down spring pin in place from rear, compressing spring and turning shoe hold down cup 1/4 turn.

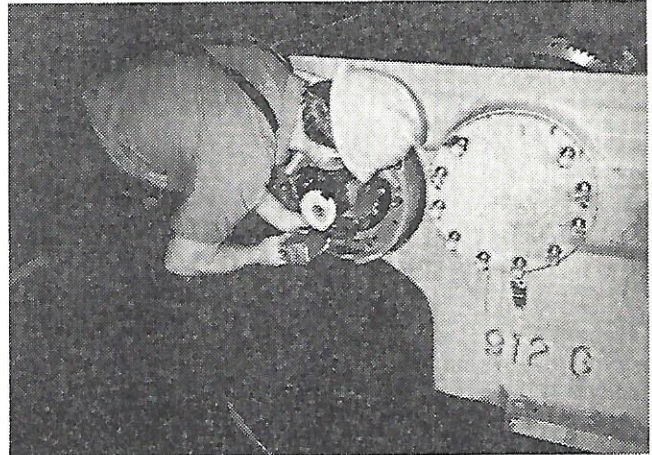


Fig. 2, Remove Brake Assembly

- C. Remove the shoe return springs.
 - D. Remove the shoes, adjusting star wheel, shoe to shoe spring and adjusting link from the backing plate.
8. Remove the brake assembly.
 - A. Remove the brake centering harness and brake mounting bolts.
 - B. Remove the brake assembly from the right side of the high speed pinion.
 9. Remove the intermediate speed bearing housing.
 - A. Remove the mounting bolts from the bearing housing.
 - B. Hook a chain in the mounting holes. Remove the bearing housing. This will allow the intermediate pinion to drop down, so support by the high speed gear to prevent damage.

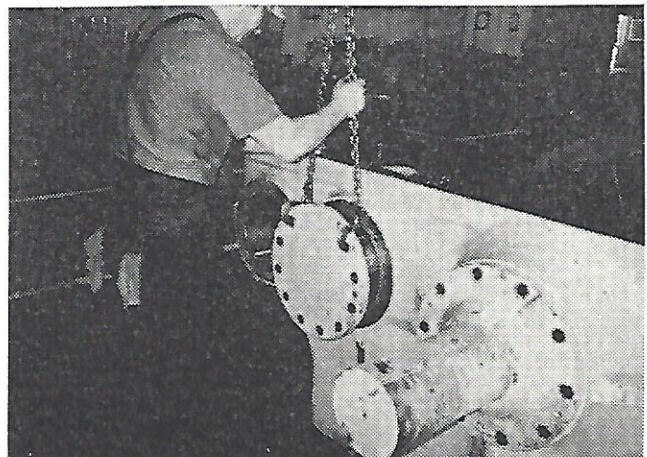


Fig.3. Removing Intermediate Bearing Housing

10. Remove the high speed bearing housings and pinion.
 - A. Remove the bolts holding the sheave side high speed bearing housing to the reducer.
 - B. Start two puller bolts into the tapped holes in the bearing housing.
 - C. Remove the bearing housing two thirds (2/3) of the way, until it just passes the bearing inner rase. This is done by screwing in the puller bolts. (The puller bolts must be screwed in evenly to assure that the bearing housing does not bind.)

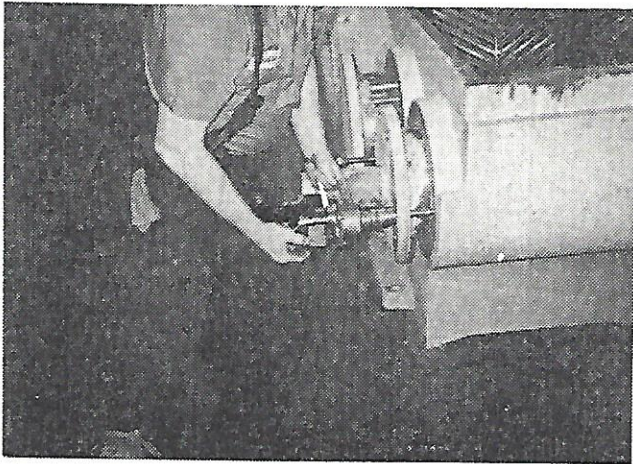


Fig.4, Removing Bearing Housing

- D. Remove the bolts holding the brake side high speed bearing housing to the reducer.
- E. Start two puller bolts into the tapped holes in the bearing housing. Support the bearing housing with hoisting equipment to catch bearing housing once it is removed.
- F. Remove the bearing housing by screwing in the puller bolts. (The puller bolts must be screwed in evenly to assure that the bearing housing does not bind.)
- G. Remove the high speed pinion .

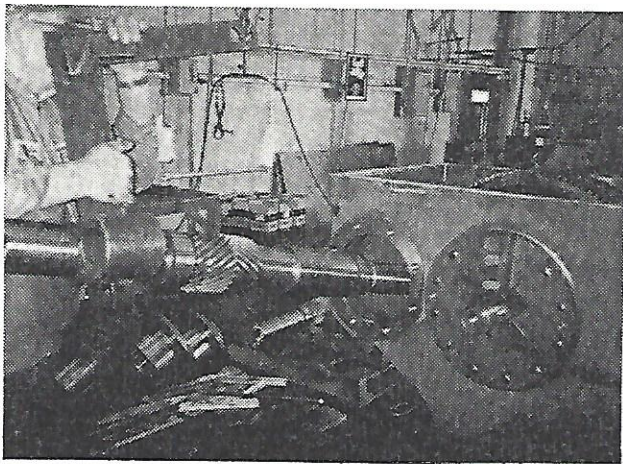


Fig.5, Removing High Speed Pinion

- H. Remove the sheave side high speed bearing housing from the reducer.
11. Remove the low speed bearing housings.
 - A. Place two (2) rubber pads under the low speed gear.
 - B. Remove the mounting bolts from the bearing housings.
 - C. Hook a chain in the mounting holes. Remove the bearing housings. This will allow the low speed shaft to drop down and rest the low speed gear on the rubber pads.
 14. Press the low speed shaft out of the low speed gear using an appropriate press with a tube spacer over the low speed shaft. See figure 1, page 9.
 15. Remove the low speed gear from the gear case.
 16. Move the high speed gear and intermediate speed pinion to the low speed end of the gear case, tilt, and lift out.

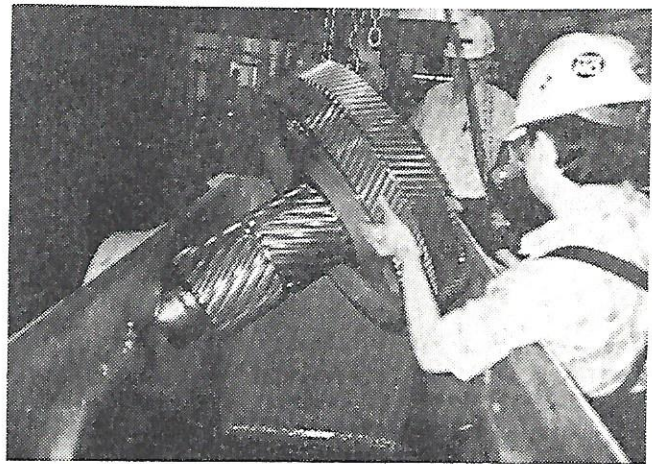


Fig.6, Removing Intermediate Speed Pinion

ASSEMBLY PROCEDURES FOR D912G REDUCER

1. Preparation of Gear Case
 - A. Wash the gear case thoroughly with high pressure washer using detergent with rust inhibitor, and dry with compressed air.
 - B. Inspect the gear case for defects, and deburr the bearing housing bore edges and faces as needed.

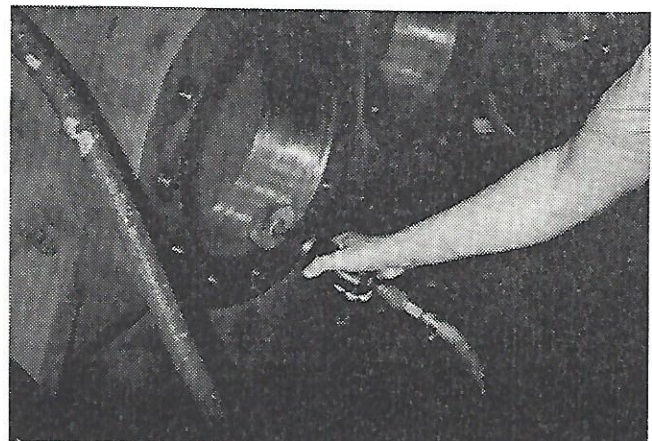


Fig.7, Deburr Edges

- C. Apply pressing compound to the threads of the pipe plugs. Install pipe plugs in gear case and tighten.
- D. Place two (2) rubber pads in the bottom of the gear case to cushion the low speed gear.

2. Preparation of Bearing Housings

- A. Wash the bearing housings thoroughly with high pressure washer using detergent with rust inhibitor, and dry with compressed air.
- B. Wipe clean all finished surfaces with a clean, dry, lint free cloth or rag.
- C. Inspect each bearing housing, and deburr the bearing bores and faces of the housings.
- D. Place the bearing outer race over housing bore, and start race entry into bore by taping around the edge of the race. Once the race has been started into the bore, complete race entry by pressing the race completely into housing.
- E. Install felt in the outer groove of the low and high speed bearing housings.
- F. Install snap rings into the intermediate and high speed bearing housings, to retain the bearings in position.
- G. Check oil entry and drain holes for proper location, and make sure the holes go all the way through and are clear of obstructions or residue.
- H. Install the o-rings on the bearing housings, over the machined pilot OD. The low speed bearing housing has a groove in the OD, to install the o-ring in. On intermediate and high speed housings, the o-ring goes against the face at the end of the pilot OD.

3. Preparation of Intermediate Speed Pinion

- A. Wash the pinion thoroughly with high pressure washer, using detergent with rust inhibitor, and dry with compressed air.
- B. Inspect the pinion surface for defects or handling damage, and deburr the starting diameter edge for the gear; and any damaged or burred edges on the pinion teeth.
- C. Install intermediate speed gear key in the intermediate speed pinion keyway and deburr key edges.
- D. Apply pressing compound to intermediate speed pinion on gear press area.

4. Preparation of High Speed Gear

- A. Wash the high speed gear thoroughly with high pressure washer, using detergent with rust inhibitor, and dry with compressed air.
- B. Deburr starting press edge of bore, and edges of keyway.
- C. Apply pressing compound to inside of bore.

5. Pressing High Speed Gear on Intermediate Speed Pinion

- A. Insert intermediate speed pinion into high speed gear bore and line up key in intermediate speed pinion and keyway in high speed gear.

NOTE

Gear must be directionally oriented before pressing. The apex of the gear and pinion must be in the same direction.

- B. Press on high speed gear, to shoulder on intermediate speed pinion.
- C. Fit is .004" to .008" tight, and should be verified before pressing.

6. Installing Bearing Races - High Speed and Intermediate Speed Pinions

- A. Heat inner races to 275 degrees F (149 degrees C) in temperature controlled electric oven.
- B. Using heat resistant gloves, install bearing races on each end of the pinions.
- C. Let the bearing cool to touch before trying to assemble further.

NOTE

Use caution to avoid injury - Do not touch bearing races or pinion while hot!

7. Preparation of Low Speed Shaft

- A. Wash the low speed shaft thoroughly with high pressure washer, using detergent with rust inhibitor, and dry with compressed air.
- B. Deburr starting press diameter edge for low speed gear installation area.

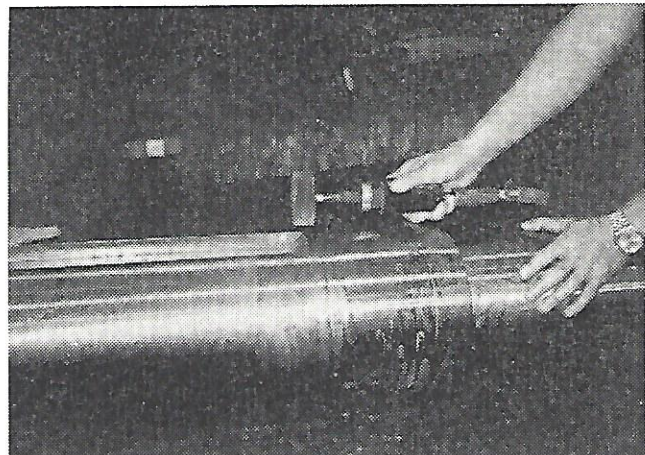


Fig.8, Deburr Diameter

- C. Deform low speed gear key-seat in low speed shaft to provide a backstop for key, to prevent key moving too far in while pressing.

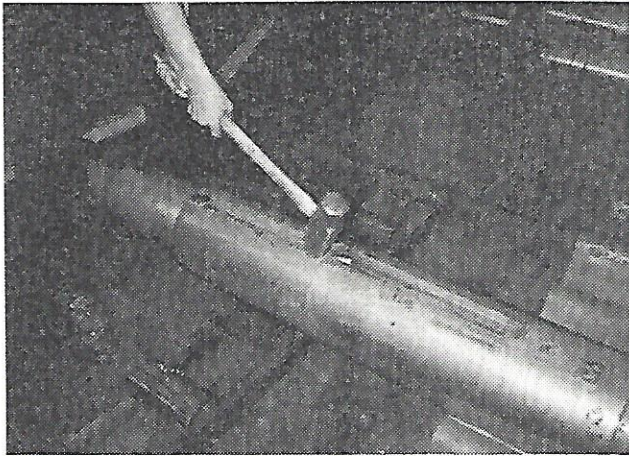


Fig.9, Deform Low Speed Key Seat

- D. Install low speed gear key in low speed shaft and deburr key edges as needed.
- E. Apply pressing compound to OD of low speed gear press area.
- F. Don't install bearing races on low speed shaft at this time.

8. Preparation of Low Speed Gear

- A. Wash the low speed gear thoroughly with high pressure washer, using detergent with rust inhibitor, and dry with compressed air.
- B. Deburr, starting edge of low speed gear bore and keyway edges. Assure that the low speed gear key will pass completely through the low speed gear.
- C. Apply pressing compound to inside of low speed gear bore.

9. Installing Intermediate Speed Pinion Assembly

- A. Lift high speed gear with chain through holes in gear web.
- B. Directionally orient high speed gear for proper gear teeth meshing with high speed pinion.
- C. Tilt and lower the intermediate speed pinion assembly into gear case at low speed end and move to intermediate speed bore in gear case.
- D. With the intermediate speed pinion in place install the assembly and disassembly bracket.

10. Pressing Low Speed Shaft Into Low Speed Gear

- A. Place low speed gear into gear case, resting on rubber pads, properly oriented to permit meshing with intermediate speed pinion.
- B. Start low speed shaft into low speed gear.
- C. Line up low speed shaft key with low speed gear keyway.
- D. Press on using press tube. (See figure 1, page 9) Fit is .004" to .008" and should be verified before pressing.

- E. Wipe off excess pressing compound with shop towel.
- F. Heat bearing inner races to 275 degrees F (149 degrees C) in temperature controlled electric oven.
- G. Using heat resistant gloves, install bearing races tight against shoulder.

NOTE

Use caution to avoid injury - Do not touch bearing races or shaft while hot!

NOTE

For correct assembly, after cooling, no more than a .002" shim must go between bearing race and low speed shaft bearing shoulder.

11. Installing Low Speed Bearing Housings

- A. Lift low speed gear until low speed shaft is centered in low speed bores.
- B. Remove rubber pads from bottom of gear case.
- C. Install low speed guide sleeve on shaft end.

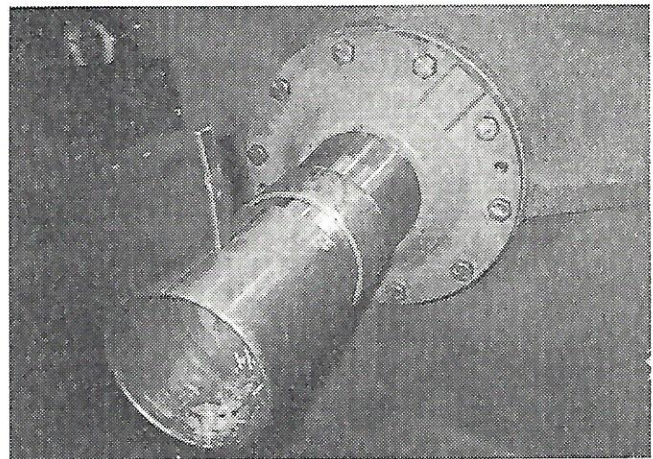


Fig.10, Install Guide Sleeve

- D. Install the wiper pin, wiper spring and wiper into the bearing housings.

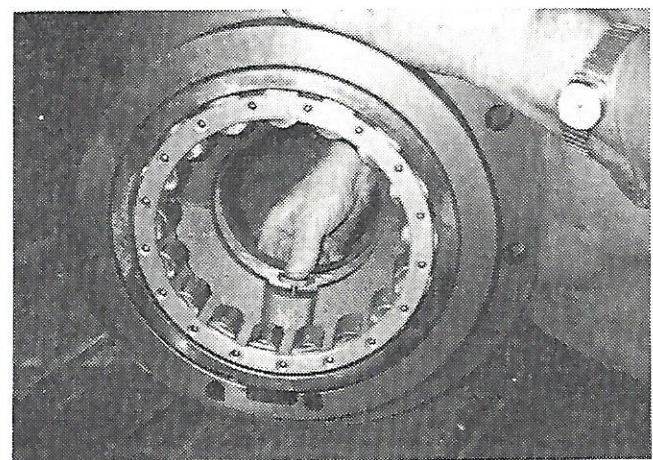


Fig.11, Install Wiper

E. Holding down wiper install bearing housing.

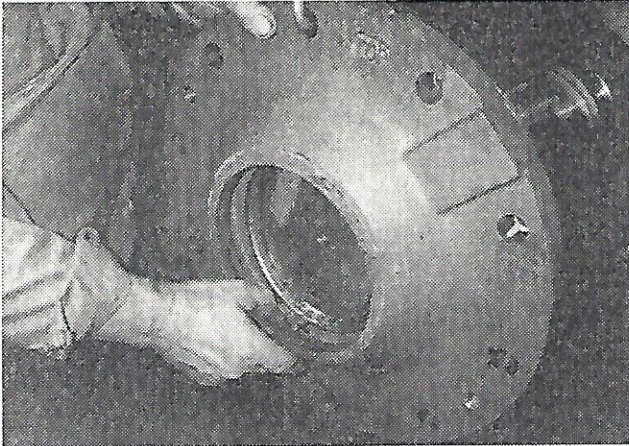


Fig. 12, Installing Low Speed Bearing Housing

- F. Remove guide sleeve and install on other end of low speed shaft.
- G. Place shim pack on low speed bearing housing. While holding down the wiper, install the bearing housing.
- H. Install all bolts in bearing housings and torque.
- J. Check end play of low speed shaft for .010" minimum, .020" maximum.
- K. Adjust shim pack if necessary — removing or adding shims to obtain required end play.

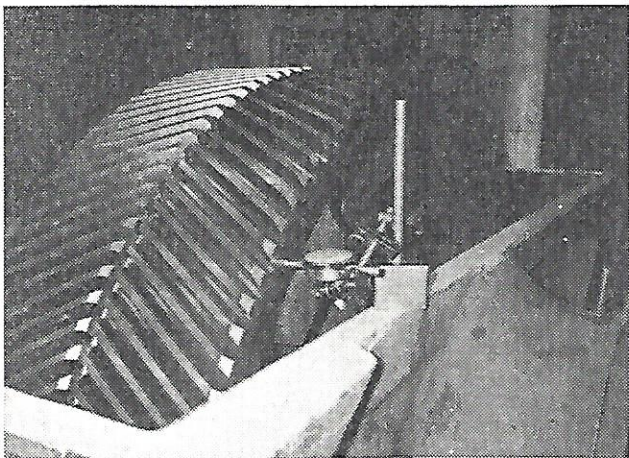


Fig.13, Check End Play

12. Installing Intermediate Speed Bearing Housings

- A. Lift up high speed gear until intermediate speed pinion is centered in intermediate speed bores.
- B. Remove the assembly and disassembly brackets.
- C. Apply Rectorseal #2 to faces of intermediate speed faces.

D. Install intermediate speed bearing housings over intermediate speed pinion ends, and against gear case intermediate speed bore faces.

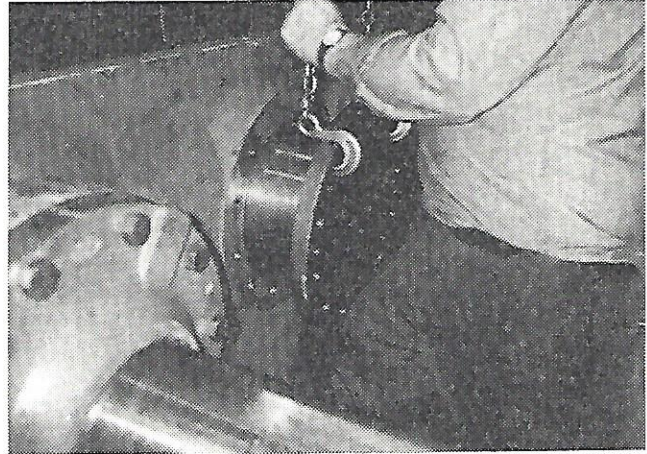


Fig.14, Installing Intermediate Speed Bearing Housing

E. Install bolts in intermediate speed bearing housings, and torque.

13. Installing High Speed Pinion and High Speed Bearing Housings

- A. Apply Rectorseal #2 to the face of the sheave side gear case.
- B. Start the sheave side bearing housing into the gear case one third (1/3) of the way.
- C. Place high speed pinion into gear case through the brake side high speed bore and into the sheave side high speed bearing housing.
- D. Lift up high speed pinion until high speed pinion is meshed with high speed gear.
- E. Start brake side high speed bearing housing onto end of high speed pinion.
- F. Apply Rectorseal #2 to face of the brake side gear case.

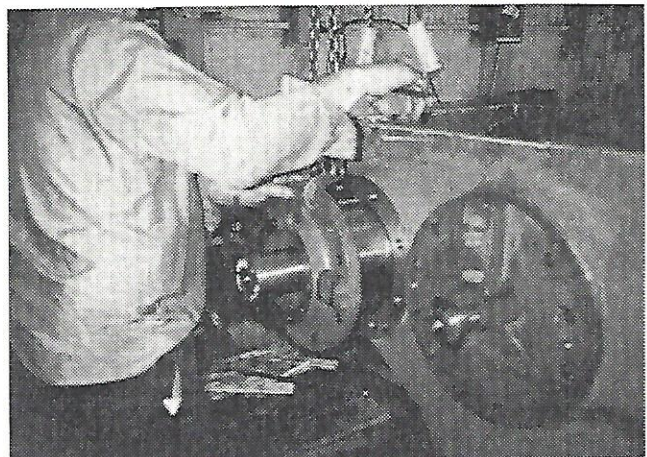


Fig.15, Install High Speed Bearing Housing

- G. Install brake side high speed bearing housing over high speed pinion, and against gear case high speed bore faces.
- H. Press the sheave side of high speed bearing housing against the gear case high speed bore faces.
- J. Install bolts in high speed bearing housings and torque.

14. Installing Oil Troughs

- A. Place oil troughs in gear case and install bolts.
- B. Check oil spouts from trough to low speed bearing for proper positioning for correct oiling.
- C. Adjust oil spouts if necessary.

15. Test Oiling System

- A. Fill gear case with oil to oil level plug. (Approximately 100 US gallons)
- B. Operate in both directions of rotation for a minimum of ten minutes.

16. Installing Gear Case Cover

- A. Turn gear case cover upside down on work table.
- B. Check gasket surface of gear case cover for flatness — rework any damaged areas.
- C. Apply gasket glue to gasket surface of gear case covers.
- D. Install gasket and let glue set.
- E. Lightly grease gasket on gear case contact surface.
- F. Install gear case cover on gear case.
- G. Tighten bolts to compress gasket to 3/16" thickness.

17. Installation of Bendix Brake

- A. Install the brake assembly.
- B. Replace the brake centering harness, and torque the mounting bolts to 85 ft. lbs.
- C. Replace the brake lever return spring.

NOTE

Brake assembly has been pre-set at the factory. Little, if any adjustment should be required. If adjustment is required, normally, adjusting brake shoes will take care of the problem.

18. Installation of Brake Drum

- A. Screw 1" stud into tapped hole in end of high speed pinion.
- B. Lubricate the shaft with silicone spray.
- C. Loop sling around the brake drum and hoist drum into position.
- D. Place square key in brake drum keyway.

NOTE

It may be necessary to rotate the high speed pinion to line up keyways.

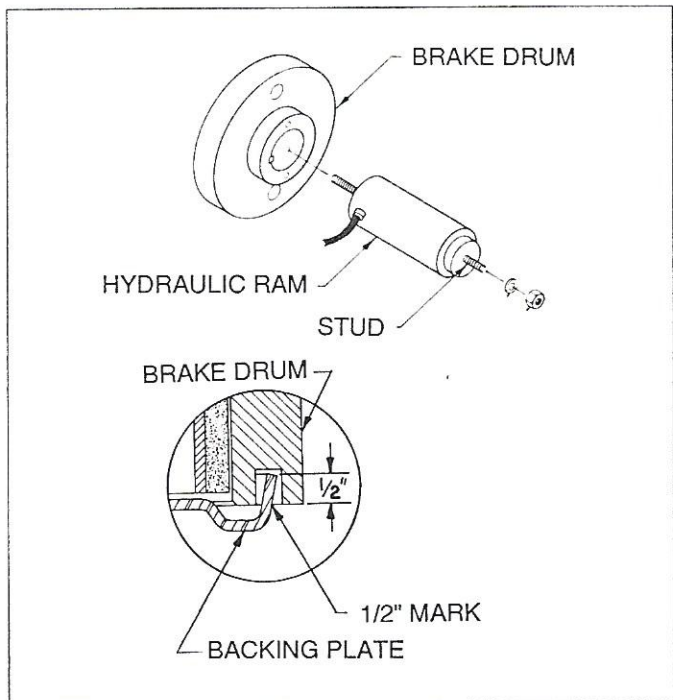


Fig.16, Installing Brake Drum

- E. Be certain that drum keyway and shaft keyway are exactly lined up, and start the hub onto pinion.
- F. Slide hollow spindle ram over stud with ram pointing outward. Install flat washer and nut onto 1" stud.
- G. Be certain brake linings are positioned correctly to avoid being damaged when drum is pressed on.
- H. Put a 1/2" mark on backing plate to be used as a reference point. Using hydraulic pump, press drum on until edge of brake's steel backing plate enters groove in brake drum 1/2".
- J. Release hydraulic pressure and back nut off. Rotate drum to be sure that it does not drag on back plate.
- K. Remove the ram and stud.

19. Adjusting brake shoes

- A. Rotate brake drum until star adjusting wheel is visible through access hole.
- B. Turn star wheel to expand brake shoes until they bear lightly against brake drum.

20. Installation of Brake Pawl (If Required)

- A. Clean and dry bore in pawl, pawl mounting OD on intermediate speed bearing housing.
- B. Apply grease to pawl mounting OD on intermediate speed bearing housing. Install pawl over pawl mounting OD.
- C. Install pawl washer and bolt to retain pawl in position, and torque.
- D. Install shipping bolt that locks pawl in released position, and torque.

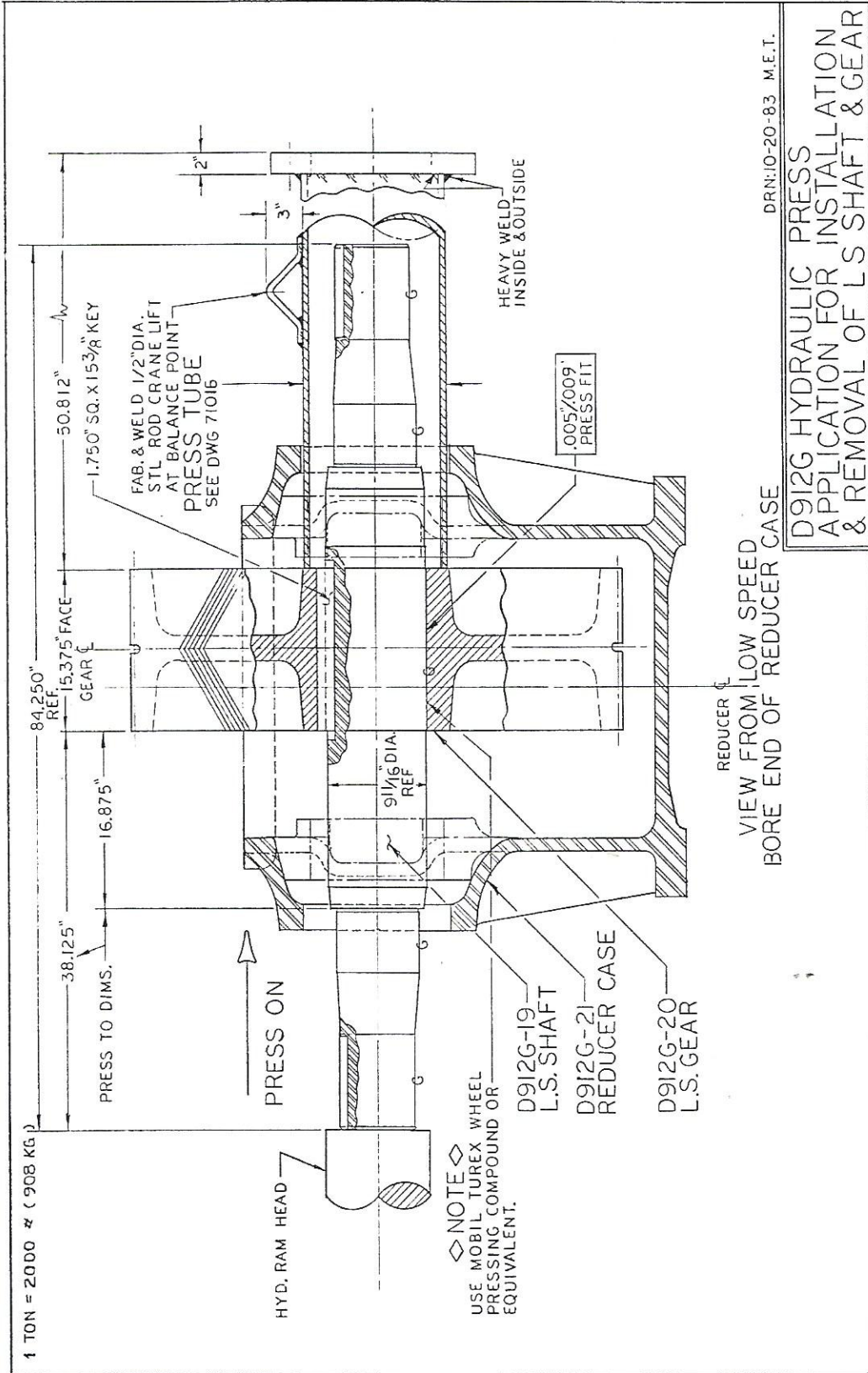
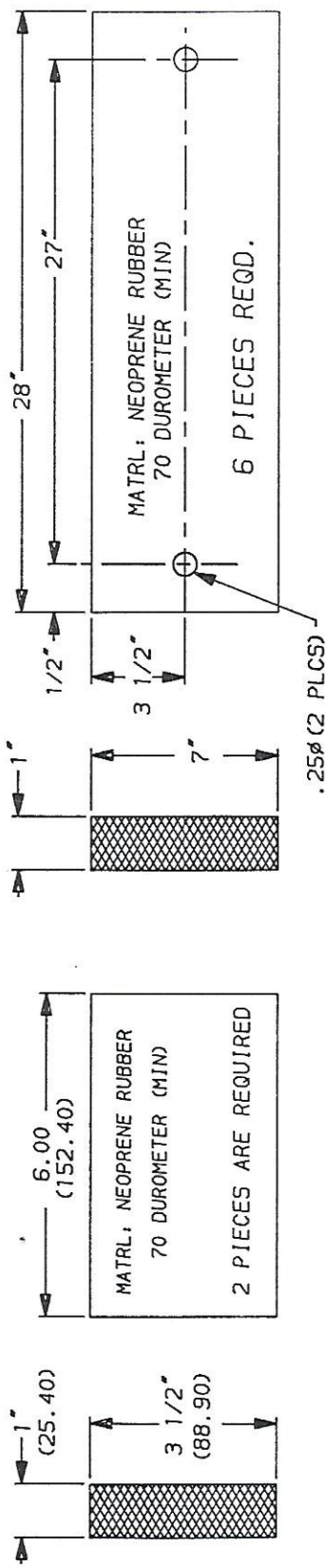
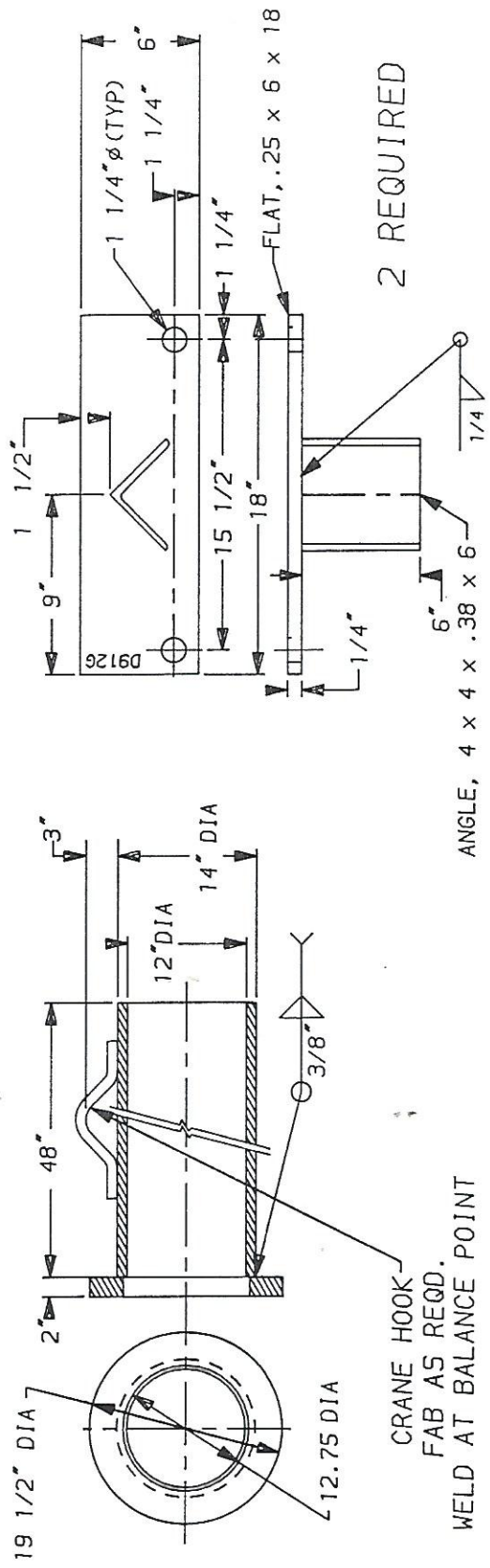


FIGURE 1



SNAP-RING PLIERS TRUARC #3



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