

**INSTALLATION AND OPERATING  
INSTRUCTIONS  
48 SERIES  
RANGER GEAR REDUCTION UNIT**



**RANGER, INC.  
12624 Cypress Creek Drive  
Eads, TN 38028  
Phone (800) 264-4115  
Fax (901) 867-5351**

## GEAR REDUCTION OPERATION

**Gear reduction units attached to the pumps and well as separate are not filled with gear lube.** Ranger provides a bottle of gear lube with each gear box. Before starting pump, add part of the contents of the bottle to the gear box – to the open petcock (J). The oil level should be maintained to the petcock level. Note: Refer to assembly drawing for position of petcock, oil cup, and pipe plugs.

The input shaft of the gear reducer can be turned to any position within 360°. To change the position to match the motor shaft height, loosen the six hex head cap screws (W) and rotate the gear case. If the input shaft cannot be moved to the correct position and reinstall the cap screws. In some cases it may be necessary to remove and rotate the cover plate (S) 90° to accommodate the correct positioning. If the gear case requires a 180° rotation you will have to switch the oil cup (K) with the opposite side pipe plug (L) and will also have to switch the petcock (J) with the opposite side pipe plug (L). This is to ensure that the oil cup is close to the top and the petcock is close as possible to the bottom of the unit. Align the pump and motor coupling according to the coupling manufacturer's instructions. A periodic check of coupling alignment is required.

### SERVICE INSTRUCTIONS

The gear lube should be clean and free from sludge and foreign matter and should be changed at regular intervals. To drain the gear lube, place a container under the pipe plug (L) and remove. It is suggested that you use Ranger gear lube to refill the unit sold in 12 fluid oz. bottles, or you may substitute with and Exxon SGO 75W-90 synthetic gear oil or equivalent oil. It is recommended that the initial lube change be made after 50 hours of operation. Change lube every four months or 1000 hours, whichever comes first. If severe conditions exist such as rapid temperature, excessive dust or damp environment, change oil more often. The oil cup (K) functions as a filler cup and also as a breather for the gear box. Do not allow the filler cup to become clogged with foreign material.

### TO DISASSEMBLE GEAR REDUCTION UNIT

1. **WARNING: Be certain that the driver is locked out to prevent starting go the pump accidentally.**
2. Move the driver (motor/engine) and remove the coupling from the gear box input shaft.
3. Remove key (H) and hex head cap screws (A) and pry off bearing retainer (C).
4. Slide pinion shaft (I) out of gear case (M).
5. Remove hex head cap screws (W) and remove gear case cover (M).
6. Remove retaining ring (O) and pull off drive gear (P) off. (Drive gear may require removal with a gear puller.)
7. Examine parts for wear and replace as needed. To change gear ratio's use the same procedures to remove gears and replace with different ratio. The three ratios available fit the same assembly. The number of teeth is different for each ratio, and must be replaced in pairs. The number of teeth is marked on the drive gear and marked on the end of the pinion shaft. (See Ranger Bulletin for ratio's available and additional information.)

## TO ASSEMBLE GEAR REDUCTION UNIT

1. Place drive key (DD) in pump shaft keyway. Install drive gear (P) on drive shaft (EE) and position in place with retaining ring (O).
2. Fasten gear case (M) to cover plate (S) including gasket (Q), using six cap screws (W). Be sure washers (U) and lock washers (V) are in place.
3. Press bearing (G) onto pinion shaft (I). Install retaining ring (F) onto pinion shaft including gaskets (D). Install pinion gear into gear case (M) by sliding pinion shaft into needle bearing (N) and mesh the gears together at the same time.
4. Slide bearing retainer © with the lip seal (E) installed into place. Use four cap screws (A) and washers (B) to secure retainer.
5. Install the key (H) to the gear box output shaft and assemble coupling and reconnect to the driver.
6. Refill gearbox with oil. Use Ranger furnished oil, or Exxon GO 75W-90 synthetic gear oil or equivalent oil.

## TO REMOVE BALL BEARING FROM PUMP

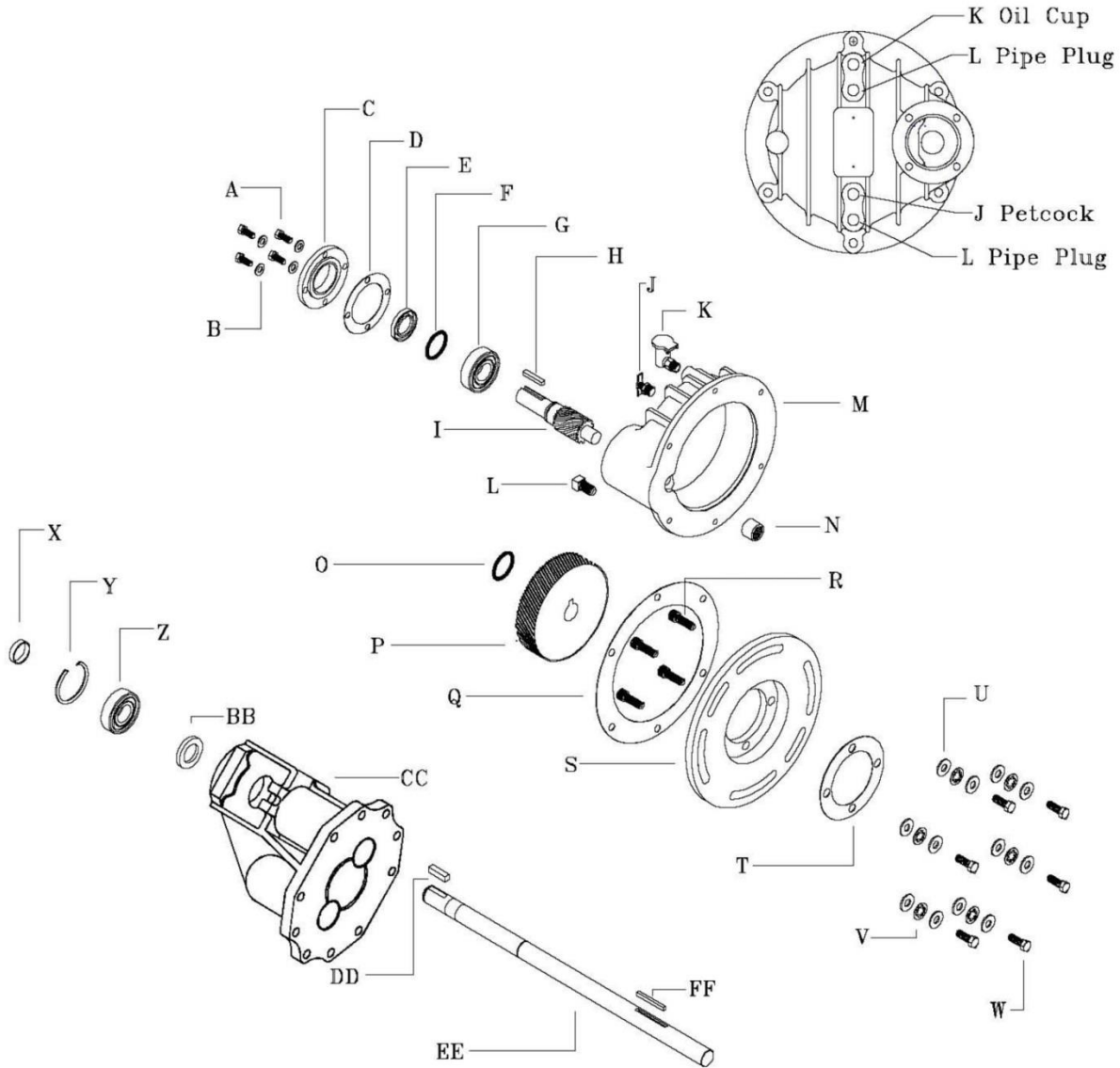
1. The drive plate (CC) should be removed for the case (09). Note: Refer to Operation Manual, Page 13. After the drive gear (P) has been removed from the pump shaft, remove the key (DD) and spacer ring (BB). (The spacer ring is slip fit and should come off easily.)
2. If the pump has a mechanical seal, remove the mechanical seal retainer plate (25) and locknuts (06). Note: Refer to Operation Manual, Page 13 and 15. If the pump is packed boxed, the gland nuts (06) do not have to be removed to push the drive shaft free. Note: Refer to Operation Manual, Page 13.
3. Remove the bearing retainer (Y). Remove the shaft and the bearing together from the drive plate assembly.
4. Remove bearing from shaft using a press or puller.
5. Use a flat screwdriver to remove the lip seal (BB) from the drive plate assembly.

## TO INSTALL BALL BEARING IN DRIVE PLATE

1. Slide drive shaft (EE) into the drive plate assembly (CC).  
**Mechanical Seal:** *If the pump has a mechanical seal, install the seal and retaining ring (16) on the drive shaft first. Install shaft from the ball bearing end of drive plate.*  
**Packing:** *If the pump has packing, slide the drive shaft through the packing and packing gland. Further slide the drive shaft through drive plate to expose the ball bearing seal of shaft.*
2. Slide lip seal over drive shaft below the ball bearing seat.
3. Press lip seal (BB) into drive plate assembly (CC).
4. Support the pump end of the shaft and the drive plate. Press the ball bearing (Z) onto drive shaft (EE). Slide the drive shaft and the ball bearing into drive plate assembly (CC). Install the retainer (Y). Slide the spacer (X) on the drive shaft.
5. See instructions under "to assemble gear reduction" to proceed further.

**RANGER, INC.**  
**48 SERIES**  
**GEAR REDUCTION UNIT**

GRI-010712



A	B60-312075	Hex Head Cap Screw	Q	210F-02U	GASKET
B	W01C-312	Lock Washer	R	B50-050125	Cap Screw
C	211G-01U	Bearing Retainer	S	207G-02U	Cover
D	240F-01U	Gasket	T	223F-02U	Gasket
E	256B-113175	Lip Seal	U	W00C-050	Washer
F	203C-118E	Retaining Ring	V	W01C-0500	Lock Washer
G	204C-118244	Ball Bearing	W	B60-050125	Cap Screw
H	05C-252515	Key	X	55C-02G	Spacer
I	233C-__G__	Pinion	Y	203C-251I	Retainer
J	73B-025NPT	Petcock	Z	204C-138283	Ball Bearing
K	74C-025NPT0502	Oil Cup			
L	P40-025NPT	Pipe Plug	BB	56B-144251	Lip Seal
M	209G-02U	Gear Case	CC	12_-02G	Drive Plate Assem
N	204C-100150	Needle Bearing	DD	05C-383813	Key
O	203C-137ST	Retaining Ring	EE	31C- G	Shaft

# WARNING

## DO NOT DISCARD THIS MANUAL

READ INSTALLATION, OPERATION, AND MAINTENANCE MANUAL BEFORE INSTALLING, PERFORMING MAINTANANCE, OR OPERATING A RANGER PUMP.

ATTACH THIS MANUAL TO THE PUMP IF YOU ARE INSTALLING THE PUMP, BUT WILL NOT BE THE OPERATOR.