



MAINTENANCE INSTRUCTIONS

The 80 Series drive head has been carefully designed to require a minimum of maintenance. All revolving parts are mounted on anti-friction bearings, and parts which are subject to wear are designed to be replaceable.

Repair work on the driving mechanism should be done in an area relatively free of dust. Refer to the exploded drive head assembly drawing when following the instructions below, and prior to disassembling the mechanism. When making a complete overhaul of the driving mechanism, it is generally good practice to replace all bearings.

REMOVING DRIVE HEAD FROM SCREENER

1. Disconnect the discharge end horizontal drag link from the screen box.
2. Remove cap screw (2) and cover (5) from the top of the crankpin assembly.
3. Remove the lock wire (4) and six cap screws (3) from the clamping sleeve (6).
4. Place three of the removed cap screws in the tapped holes (not shown on drawing) provided in the clamping sleeve (6) and use them as push screws to loosen and remove the sleeve from the housing (8).
5. Lift the screen box assembly up and clear of the drive head.
6. Remove the belt guard and v-belts. Inspect v-belts for wear or deterioration at this time.
7. Remove the drive head from the base of the machine after removing four housing bolts (61), lock washers (60) and nuts (59).
8. Drain the oil from the drive head by removing the pipe plugs (57 and 58) from the bottom of the drive housing.

DISASSEMBLY OF DRIVE HEAD

CRANKPIN ASSEMBLY REMOVAL

1. Remove lock wire (12) and six cap screws (11) from the crank bearing housing (16), and remove the crankpin assembly from the crankshaft. Remove gasket (17).

CRANK BEARING REMOVAL

1. Pull the crankpin assembly out of the crank bearing housing (16).
2. Remove snap ring (14) from the crankpin (10).
3. Press the crankpin out of the crank bearing (13).
4. Replace the crankpin bearing and reassemble in reverse order.

REMOVAL OF PINION SHAFT ASSEMBLY

1. Remove the ROTEX sheave (90) from the pinion shaft (89), by removing lock wire (92) and six cap screws (91).
2. Remove the inspection hole plate (51) by removing six cap screws (55), and lock washers (54). Remove gasket (50).
3. Remove six cap screws (79) and lock washers (78) which bolt the pinion shaft housing (74) to the side of the drive head housing (49).
4. Pull the pinion shaft assembly out of the housing.

Care should be taken at this time not to damage the shims (73). They should be used in reassembly unless new shims are available. If the pinion shaft assembly does not come out easily, drive the assembly out of the drive head housing by tapping from the pinion end with a piece of wood.

DISASSEMBLY OF PINION SHAFT ASSEMBLY

1. Remove cotter pin (65), and the pinion shaft nut (62) from the pinion shaft (89).
2. Remove the five cap screws (87) and lock washers (86) which hold the outer cage (85) to the housing.
3. Drive the pinion shaft (89) out of the housing by tapping from the pinion end.
4. Remove the lock wire (63) and four cap screws (64) which hold the pinion cage (67) to the pinion shaft housing.
5. Remove the lock nuts (70 and 72) and lock washer (71) and spacer (69) from the pinion gear assembly.
6. Drive the pinion gear (66) out of the inboard bearing (68).
7. Remove the inboard bearing (68) from the pinion cage (67).
8. Remove the lock nuts (80 and 82) and lock washer (81) from the pinion shaft.
9. Drive the pinion shaft and outboard bearing (83) out of the outer cage (85).
10. Pull the outboard bearing (83) off the pinion shaft (89).

REMOVAL OF CRANKSHAFT ASSEMBLY

1. Remove eight cap screws (24) and lock washers (25) from the drive head cover (23).
2. By means of the lift yokes (22) on the drive head housing cover, lift the crankshaft assembly straight up and out of the housing.

DISASSEMBLY OF CRANKSHAFT ASSEMBLY

1. Turn the crankshaft assembly upside down and remove lock wire (48) and 3 cap screws (47) at the bottom of the crankshaft, and remove the plate (42).
2. Remove the bearings, balance weights, and spacers by pulling them off the bottom of the crankshaft with the order of their removal as shown on the drawing.
3. The ring gears (28 and 31) are bolted to the two balance weights (27 and 36) and will be removed with the balance weights.

When the drive head has been completely disassembled, all parts should be checked, and worn or damaged parts should be replaced.

DRIVE HEAD ASSEMBLY

After inspecting and replacing worn and damaged parts, the drive head should be reassembled as follows:

CRANKSHAFT ASSEMBLY

1. Press the sealed bearing (26) into position in the top cover (23). Make certain that the *seal is in the "up" position*, that is, at the top of the crankshaft.
2. Care should be taken in inspecting the crankshaft key (19) and keyways in the crankshaft and major weight (27) for damage. Check that the key is a tight fit in both the crankshaft and major weight. Worn parts will require replacement.

3. Press the drive head cover (23) and bearing (26) on the crankshaft.
4. Assemble the gears to the balance weights making sure that the seating surfaces of both the gears and weights are free of dirt, debris, and burrs. Secure the cap screws with lock wire. NOTE: Gears, including the pinion, must be replaced in matched sets only.
5. Install key (19) in the crankshaft keyway by means of two Allen head screws (20).
6. Install the major balance weight (27) on crankshaft.
7. Install spacer (35) on the crankshaft.
8. Install bearing (37) in the minor balance weight (36).
9. Install the minor balance weight (36) and the bearing (37) on the crankshaft.
10. Install spacer (38) and the second bearing (39) on the crankshaft, inside of the minor balance weight housing.
11. Install spacer (40) and bottom rest bearing (41) on the crankshaft. Note that this is a thrust bearing and must be installed in the proper position with the smaller diameter of the inner race against the plate (42), i.e., the side of the outer race which supports the load facing the bottom of the crankshaft.
12. Install the bottom clamp plate (42) on the crankshaft by means of three cap screws (47) and pull up tight. It is essential that this group of parts be assembled without clearance between butting pieces and the bottom cap pulled up as tight as possible. Run lock wire through the drilled head of the cap screws.
13. Using the lift yokes on the drive head cover, suspend the crankshaft assembly from a crane in the upright position. Tap downward on the outer edge of the minor balance weight to ensure it is completely seated on its bottom bearing.

PINION SHAFT ASSEMBLY

1. Check that the pinion shaft key (88) is a tight fit in the keyway of both the pinion shaft (89) and the pinion gear (66). Wear in the key or keyways will require replacement of the worn parts.
2. Mount the outboard bearing (83) and the outer bearing cage (85) on the pinion shaft (89), using the lock nuts (80 and 82) and lock washer (81).
3. Assemble the pinion bearing cage (67), the inboard bearing (68) and the bearing spacer (69) on the pinion gear (66) using lock nuts (70 and 72) and lock washer (71).
4. Bolt the pinion bearing cage (67) to the pinion shaft housing (74) using four cap screws (64). Run lock wire (63) through the drilled heads of the cap screws.
5. Place the key (88) in the pinion shaft keyway and insert the pinion shaft into the pinion shaft housing (74) from the outboard end. Force the pinion shaft and key into the pinion gear.
6. Install and tighten up castle nut (62) and cotter pin (65) on the pinion end of the shaft.
7. Bolt the outer bearing cage (85) to the housing with five cap screws (87) and lock washers (86) with the gasket (84) in place.
8. Mount the oil troughs (75) on the housing (74) using cap screws (77) and run lock wire (76) through the drilled heads of cap screws.

DRIVE HEAD FINAL ASSEMBLY

1. Place the top cover gasket (23A) in position on the drive cover, using Permatex to hold it in place.
2. Place shims (46) in the bottom of the drive housing and install the bottom rest casting (45) using four cap screws (44) and lockwashers. Run lock wire (43) through the drilled heads of the cap screws.

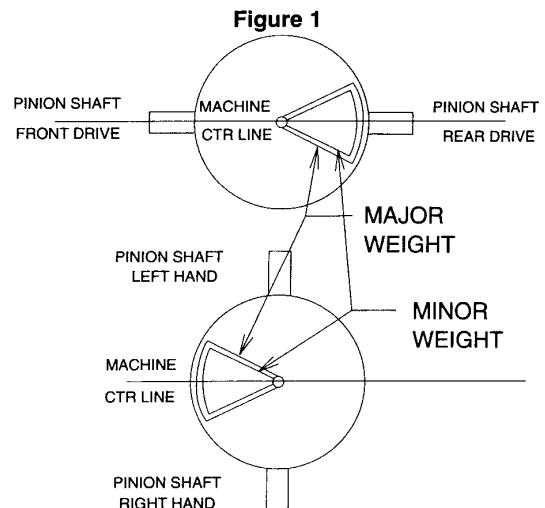
Note: The same thickness of shims which were removed from the drive should be used as a starting point in reassembly.

3. Lower the crankshaft assembly into the drive housing, taking care to guide the bottom thrust bearing (41) into the bottom rest casting (45).
4. Bolt the cover (23) to the housing with eight bolts (24) and lock washers (25). Run a chain through the two lift yokes on the cover. Place a hydraulic jack on top of the crankshaft and jack against the chain in order to seat the bottom crankshaft bearing. While applying pressure with the jack, tap lightly on the cover and underside of the drive housing.
5. The balance weights should be positioned as follows: The two balance weights must be in their correct relationship. The major balance weight is keyed to the crankshaft, and therefore is always in its correct position. The minor balance weight is free to rotate and must be placed in the proper position prior to engaging the pinion and gears.

The positioning of the balance weights in the drive head will depend upon the mounting of the drive head on the screener. Figure 1 shows the correct positioning for each of the four possible drive mountings.

To get the balance weights to move in the proper position, lift the opposite side of the drive head housing and allow the balance weights to swing into their correct position by gravity. When the balance weights are in their proper position, they should be locked in place by means of a wooden wedge placed between the two ring gears. The bevel pinion can then be engaged with the two ring gears.

BALANCE WEIGHT POSITIONS FOR DRIVE HEAD REASSEMBLY



Front or Rear Drive – Balance weights must be positioned one above the other on the center line of pinion shaft, on opposite side of drive from pinion shaft.

Right or Left Hand Drive – Balance weights must be positioned one above the other 90° to center line of pinion shaft.

BACKLASH RANGE

Gear	Measuring on Gear Tooth	Rotex Backlash Kit
Top	.006" - .012"	.019" - .039"
Bottom	.004" - .010"	.013" - .032"

Table 1

SHIM COLOR CODE

Color	Thickness
Green	.003"
Blue	.005"
Brown	.010"
White	.025"

Table 2

6. With shims (73) in place, insert the pinion shaft assembly into the side of the drive head housing, and bolt in place with six bolts (79), and washers (78).

SETTING CLEARANCE BETWEEN GEARS AND PINION

The backlash between the ring gears and pinion should be set to the figures in Table 1, depending on the method being used.

The vertical adjustment for gear alignment is accomplished by means of shims (46) which are placed between the bottom rest casting (45) and the bottom of the housing. The bottom rest casting must be removed by removing four cap screws (44) and lock washers when adding or removing shims (46).

The horizontal adjustment for backlash between the pinion and the gears is accomplished by means of shims (73) between the pinion shaft housing (74) and the drive head housing.

Table 2 shows the color coding for shim thicknesses.

To check the backlash between gears, first lock the pinion shaft by threading a 7/16 NF bolt into one of the sheave mounting holes on the pinion shaft and tightening it down against the pinion housing. If measuring directly on the gear teeth, insert a dial indicator into the drive head housing through the inspection port, so that the indicator probe is in contact with the face of a tooth on the bottom ring gear.

When using the ROTEX Backlash Checking Kit, thread the rod into the tapped hole in the side of the minor weight hub and tighten slightly. The rod should protrude through the inspection port at right angles to the machined face of the inspection port. Mount the magnetic back indicator on the inspection port face with the indicator probe in contact with the threaded rod. NOTE: The threaded rod must not be used to move the weights while taking backlash readings. Doing so will result in highly erroneous readings.

Attempt to move the minor balance weight casting and read the deflection on the dial indicator.

Take a backlash measurement on the upper ring gear by applying the steps listed above to the major weight (see Figure 2). Move the crankshaft and read the deflection on the dial indicator.

Once this has been done, rotate both the minor balance casting and the major balance casting 180 degrees, and then take another reading.

If the readings on the bottom gear are too high or the top gear too low, shims must be added under the lower bearing rest to raise the crankshaft assembly. If the readings on the bottom gear are too low or the top gear too

high, shims must be removed from under the lower bearing rest. Removal or addition of shims under the lower bearing rest requires removal of the pinion and lifting of the crankshaft assembly. NOTE: Changing shims under the bearing rest by .003" will change backlash on each gear by .0015" to .002" when reading directly on the gear tooth. When using the ROTEX Backlash Kit, changing shims by .003" will change backlash readings by .005" to .0065".

If both the upper and lower gear backlash readings must be raised (or lowered), this can be done by changing the number of shims on the pinion housing flange. NOTE: Changing shims by .005" will change the backlash reading on each gear by .001" when reading directly on the gear tooth. When using the ROTEX Backlash Kit, changing shims by .005" will change each backlash reading by .003".

Make sure the weights are set as described in step 5 in the Drive Head Final Assembly Section any time the pinion assembly is removed and installed.

If difficulty is encountered in obtaining suitable clearances, it is frequently because the parts on the crankshaft have not been pulled down tight or the bottom thrust bearing (41) is not seated properly in the bottom rest casting (45). In addition, the cover for the drive head housing should be down tight, and the pinion shaft assembly must be all the way in place and the cap screws down tight when taking measurements.

After the proper clearances have been set, make sure that the drive head cover is bolted down tight, and that the pinion shaft assembly is bolted tightly to the housing.

DRIVE HEAD FINAL ASSEMBLY (CONTINUED)

1. Install the inspection hole plate (51) and gasket (50) on the side of the drive head housing with six cap screws (55) and lock washers (54).
2. Bolt the crankpin housing (16), with the crankpin assembly installed, to the top of the crankshaft (18) with gasket (17) in place. Use 6 cap screws (11) and lock washers, securing them with lock wire.

INSTALLATION OF DRIVE HEAD ON SCREENER

1. Bolt the drive head assembly down tightly on the machine base, with 4 cap screws (61) lock washers (60) and nuts (59).
2. Lower the screen box on the crankpin (10) with the felt seal (9) in place in the crankpin housing (8).
3. Bolt the clamping sleeve (6) in the crankpin housing (8) with six cap screws (3). Make certain that the mating surfaces of the clamping sleeve (6) and the crankpin (10) are in good condition to insure a tight fit along the entire surface. Run lock wire (4) through the drilled heads of the cap screws.
4. Install cover (5) and cover bolt (2).
5. Reconnect the discharge end drag link assembly to the screen box.
6. Install the ROTEX sheave (90) on the pinion shaft with 6 cap screws (91).
7. Install V-belts and belt guard.
8. Add two gallons of ISO Grade 100 anti-wear hydraulic oil to the drive head through filler spout (56) and replace the dipstick (52).

START-UP OF MACHINE

Start the machine up slowly. If there is excessive vibration, recheck the balance weights to make sure they are properly set. If there is no vibration and the drive head seems to be running quietly, allow the machine to run for two or three minutes. Then, shut the machine down and check the drive head for excessive temperatures, particularly the felt seal (9) in the crankpin housing (8). If this seal is too tight, excessive heat will be generated.

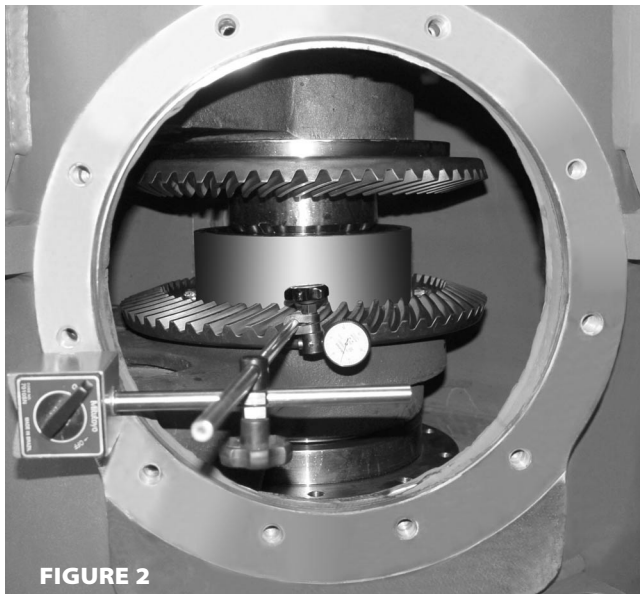


FIGURE 2

LUBRICATION – DRIVE HEAD

Location:

Filler spout (56) located at bottom of drive head.

Oil:

ISO grade 100 hydraulic oil with anti-wear additives and rust and oxidation inhibitors. Nominal viscosity to be 100 cSt @ 40°C; 465 SUS @ 100°F.

Quantity:

Two gallons (7.6 liters) after draining oil from bottom of drive head housing. Drain oil by removing three pipe plugs (57) on bottom of drive head housing (49).

Check oil level on dipstick (56A). Note that an overfilled condition can cause leakage around the pinion shaft (89).

Oil Change Interval:

Every 4000 operating hours.

LUBRICATION – CRANKPIN BEARING

Location:

Grease at single fitting located on top of crankpin.

Grease:

Extreme pressure multipurpose type with NLGI No. 2 rating (Nominal base oil viscosity: 166 cSt@40°C; 875 SUS @ 100°F, with a minimum viscosity index of 95).

NOTE: FOR BEARING OPERATING TEMPERATURES MORE THAN 140°F (60°C) THE BASE OIL VISCOSITY MUST NOT BE LESS THAN 40 cSt AT THE BEARING OPERATING TEMPERATURE.

Quantity:

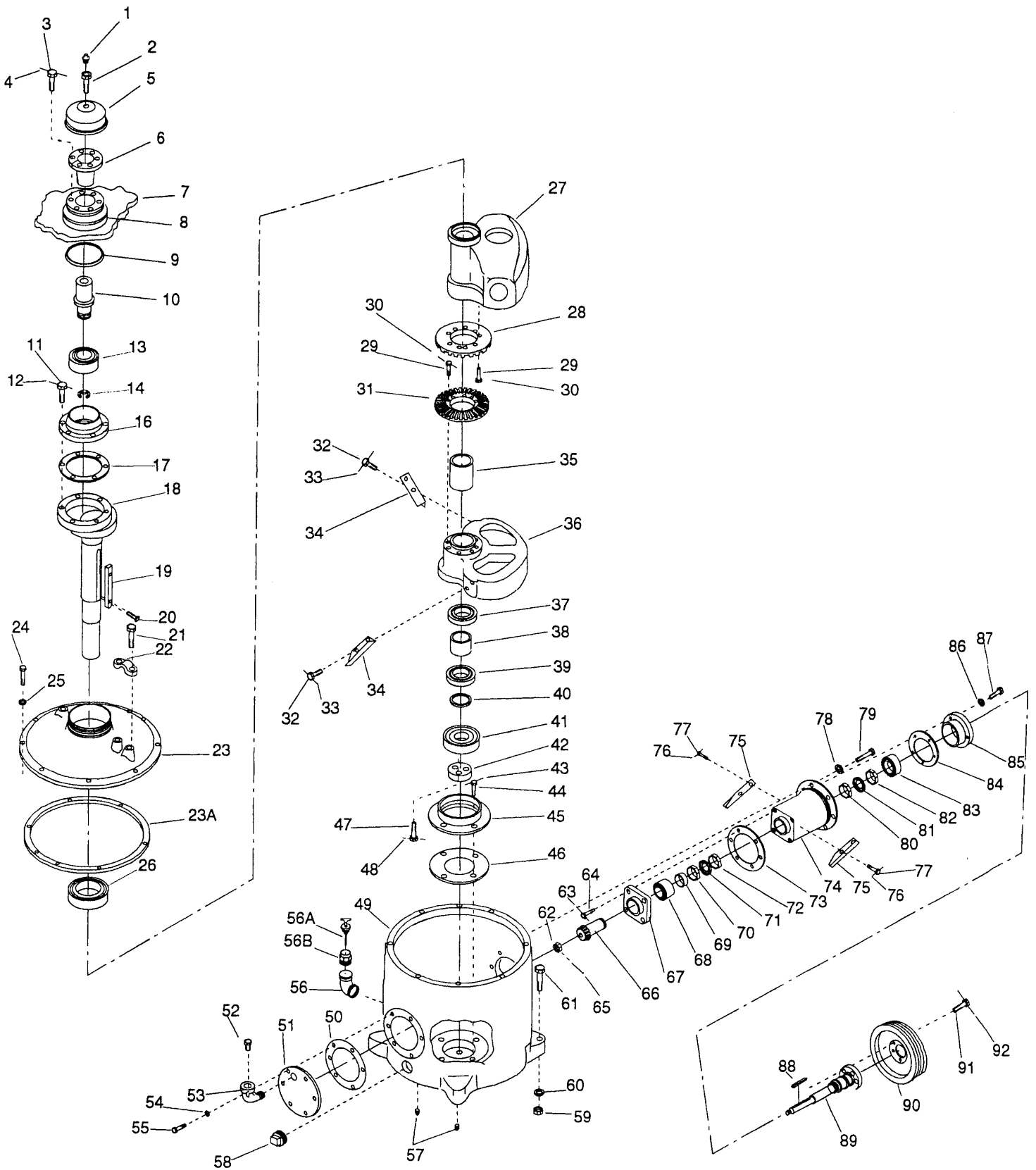
6 grams or approximately 6 pumps from a standard lever-type grease gun.

Interval:

Every 1000 operating hours.

NOTE: THE LUBRICANTS AND SERVICE INTERVALS SPECIFIED ARE FOR NORMAL OPERATION IN AREAS BETWEEN 40°F AND 140°F (4°C-60°C). UNDER SEVERE OPERATING CONDITIONS, OR IF BEARING TEMPERATURES ARE MORE THAN 140°F (60°C), CONSULT ROTEX.

80 SERIES DRIVE HEAD ASSEMBLY



80 SERIES DRIVE HEAD ASSEMBLY PARTS LIST

PARTS LIST

Item	Part No.	Qty.	Description	Item	Part No.	Qty.	Description
1*	8784	1	Grease Fitting	41	8992	1	Bearing, SKF 7412
2*	16974	1	Crankpin Cover Bolt	42	8625	1	Clamp Plate
3*	6437	6	5/8 x 1-1/2" NF Cap Screw DH	43	6408	1	Lock Wire — 38"
4*	6408	1	Lock Wire — 22"	44	6429	4	5/8 x 1-3/4" NF Cap Screw DH
5*	15177	1	Crankpin Cover	45	27338	1	Lower Brg. Rest-Mach.
6*	18783	1	Clamping Sleeve	46	79082	1	Shim Set (Shims as Req'd)
7*	—	1	Head End Plate—Box Frame	47	6437	3	5/8 x 1-1/2" NF Cap Screw DH
8*	18784	1	Crankpin Housing—Bx/Fr	48	6408	1	Lock Wire — 15"
9*	11393	1	3/8 x 7/16" Felt	49	27337	1	Drive Housing Mach.
10*	131989	1	Crankpin	50	75212	1	Shim (Part of set #79076)
11	7694	6	1/2 x 1-1/4" NF Cap Screw DH	51	8799	1	Inspection Plate
12	6408	1	Lock Wire — 33"	52	123573	1	Breather Vent
13*	24438	1	Bearing, SKF 22310—CJ/C3/W33	53	126139	1	1/4 x 90° Street Elbow
14*	133491	1	Snap Ring	54	6406	6	5/8" Lock Washer
16	27335	1	Crank Bearing Housing Machined	55	2473	6	5/8 x 1-1/4" NF Cap Screw
17	9005	1	Gasket-Crankpin Housing	56	5549	1	1-1/4" Street Elbow
18	13177	1	Crankshaft Assembly	56A	119962	1	Dipstick
19	8044	1	Crankshaft Key	56B	119963	1	1-1/4" Male Adapter
20	98837	2	5/16 x 5/8" NC Socket Head Screw	57	2471	3	1/2" Pipe Plug
21	2512	4	5/8 x 1-1/2" NF Cap Screw	58	8990	1	1-1/4" Pipe Plug
22	27262	2	Mach Lift Yoke	59*	16403	4	7/8" NC Nut
				60*	4411	4	7/8" Lock Washer
				61*	91499	4	7/8 x 6" Cap Screw
				62	4849	1	33987-S18 Castle Nut
				63	6408	1	Lock Wire — 23"
				64	6426	4	1/2 x 1-1/2" NF Cap Screw DH
				65	2825	1	1/8 x 1-1/4" Cotter Pin
				66**	6409	1	Pinion Gear
				67	27264	1	Pinion Bearing Cage Mach.
				68	8993	1	Bearing, SKF 5208
				69	8820	1	Bearing Spacer
				70	6415	1	Bearing Lock Nut
				71	6416	1	Bearing Lock Washer
				72	6415	1	Bearing Lock Nut
				73	79076	1	Shim Set (Shims as Req'd)
				74	35493 or 30309	1	Pinion Shaft Housing Mach-Long or Pinion Shaft Housing Mach-Short
				75	8617 27266	1	Oil Trough-RH Oil Trough-LH
				75A	4063	4	Lock Washer
				76	6408	1	Lock Wire — 20"
				77	8075	4	5/16 x 5/8" NF Cap Screw DH
				78	6406	6	5/8" Lock Washer
				79	2706	6	5/8 x 1-3/4" NF Cap Screw
				80	6415	1	Lock Nut
				81	6416	1	Lock Washer
				82	6415	1	Lock Nut
				83	8993	1	Bearing, SKF 5208
				84	5682	1	Gasket
				85	9757 5501 9765 or 8642	1	Outer Bearing Cage } Long Collar 5/16" Soc. Hd. Scr. }
				86	3600	5	3/8" Lock Washer
				87	6411	5	3/8 x 1-1/4" NF Cap Screw DH
				88	6417	1	Pinion Key
				89	9758 or 8630	1	Pinion Shaft - Long or Pinion Shaft - Short
				90*	19862	1	ROTEX Sheave
				91*	9002	6	7/16" NF Cap Screw DH
				92*	6408	1	Lock Wire — 20"

23	27261	1	Drive Head Cover Mach.
23A	75757	1	Cover Gasket
24	2919	8	1/2 x 1-1/2" NF Cap Screw
25	4038	8	1/2" Lock Washer
26†	31581	1	Bearing, NSK 6218DUCE
27	27256	1	Major Bal Wght Mach with Lead
28**	6410†	1	Spiral Bevel Ring Gear
29	24982	18	3/8" x 1-1/4" NF Socket HD DH
30	6408	1	Lock Wire — 21"
31**	6410†	1	Spiral Bevel Ring Gear
32	9004	4	1/2 x 3/4" NF Cap Screw DH
33	6408	1	Lock Wire — 18"
34	8614 35670	1	Oil Slinger-RH Oil Slinger-LH
35	8624	1	Spacer - Crankshaft
36	27258	1	Minor Bal Wght Mach with Lead
37	1674	1	Bearing, SKF 6212
38	8622	1	Spacer - Crankshaft
39	1674	1	Bearing, SKF 6212
40	8623	1	Spacer - Crankshaft

*These items are not part of the drive head assembly and must be ordered separately.

**Supplied in matched sets only

†Position with seal on top