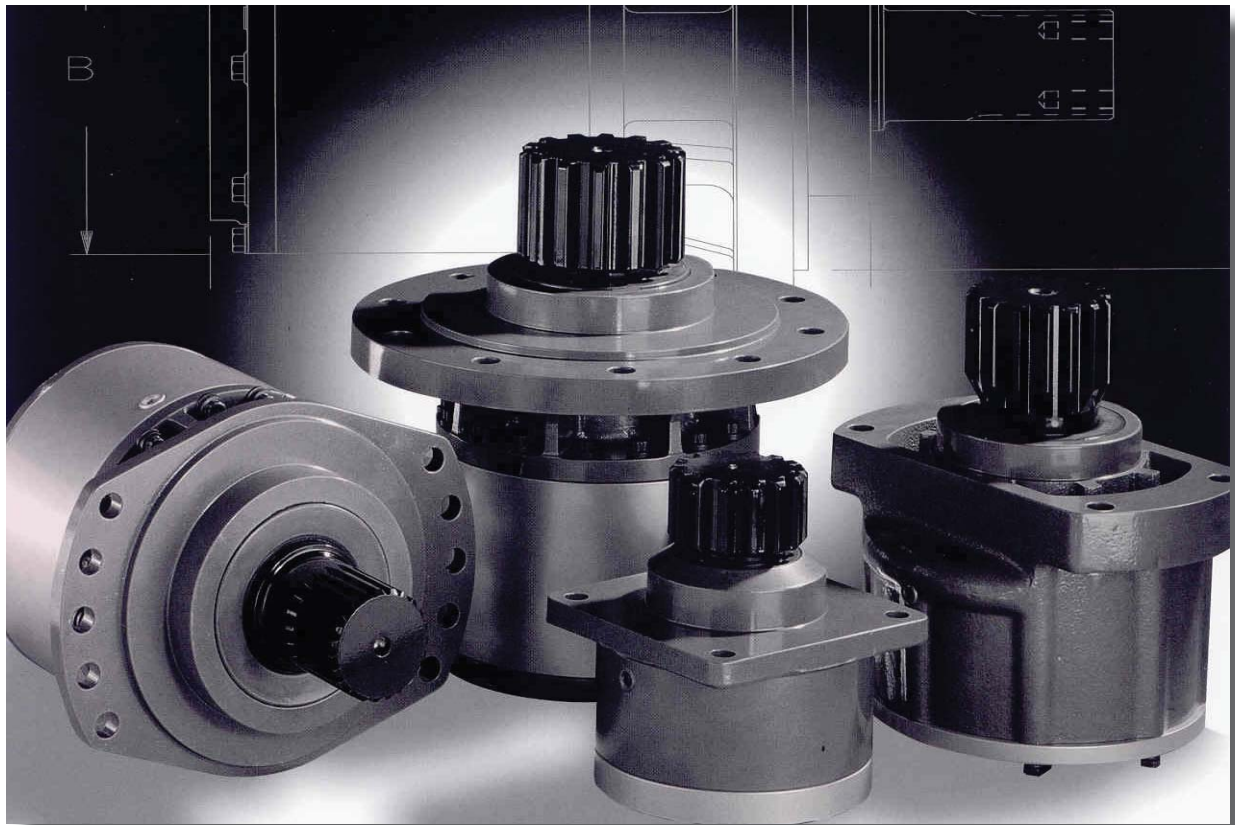




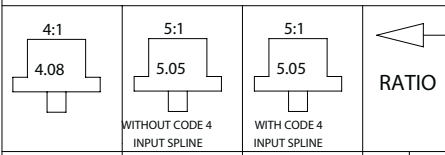
MODEL 50L PLANETARY GEAR DRIVE SERVICE MANUAL



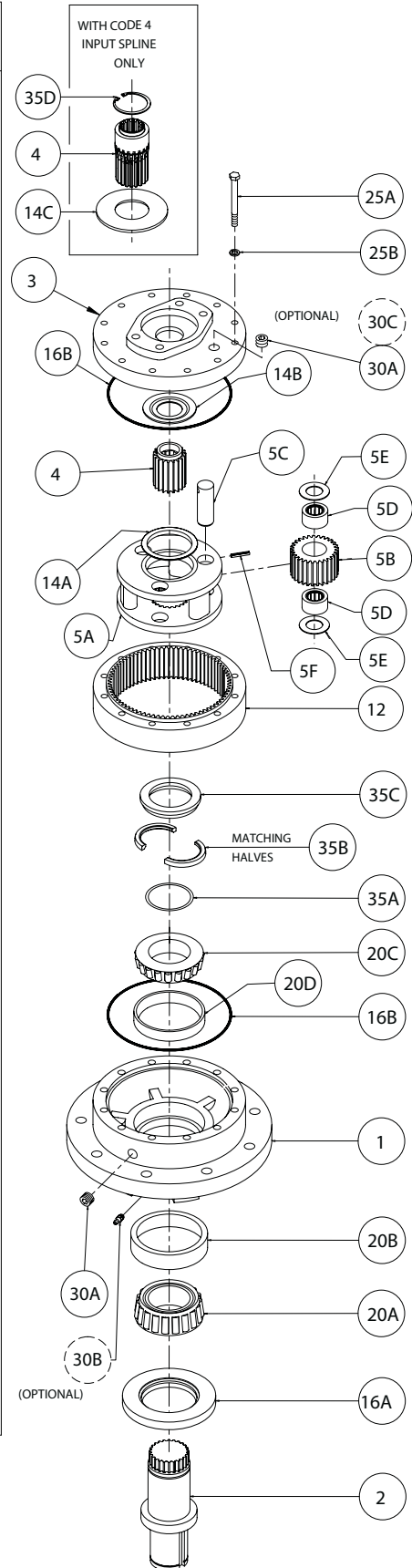
WARNING: While working on this equipment, use safe lifting procedures, wear adequate clothing and wear hearing, eye and respiratory protection.

THIS SERVICE MANUAL IS EFFECTIVE:
S/N: 38489# TO CURRENT
DATE: 12-16-98 TO CURRENT
VERSION: SM50LD2-AB

NOTE: Individual customer specifications (mounting case, output shaft, brake assembly, etc.) may vary from exploded drawing and standard part numbers shown. If applicable, refer to customer drawing for details.

SINGLE PLANETARY

**EFFECTIVE
FROM: S/N 16130 07-01-93
TO: (CURRENT)**

CODE	DESCRIPTION		QTY.	ITEM
	DESCRIPTION	DESCRIPTION		
A	ROUND FLANGE (NO ZERK)			
E	RECTANGULAR FLANGE (NO ZERK)			
F	FLANGLESS (NO ZERK)			
C	CUSTOM			
D1	2" DIA SHAFT-3/8" KEYWAY			
D2	23T 12/24 D.P. SPLINE			
D3	2-1/8" DIA SHAFT-1/2" KEYWAY			
D4	2" DIA SHAFT-1/2" KEYWAY			
F2	2" DIA X .50" KEY (INTERNAL)			
H2	2" HEX SHAFT-13/16 DIA.HOLE			
H3	2-5/8" HEX SHAFT-13/16 DIA.HOLE			
R2	2" DIA AUGER-.562" HOLE			
S1	7" SPINDLE 50L (5) X 1/2-13			
S2	7" SPINDLE 50L (5) X .610 DIA THRU HOLES			
C1	SHAFT-CUSTOM			
A	COVER-SAE 'A'			
B	COVER-SAE 'B' 2-BOLT			
C	COVER-SAE 'C' 4-BOLT			
K	COVER-SAE 'C' 2-BOLT			
2	INPUT GEAR 13T 16/32 DP SPLINE			
3	INPUT GEAR SAE 1"-6B SPLINE			
4	INPUT GEAR 14T 12/24 DP SPLINE			
5	INPUT GEAR 15T 16/32 DP SPLINE			
6	INPUT GEAR 1" DIA X .25 KEY			
CARRIER ASSEMBLY				
	CARRIER			
	PLANET GEAR			
	PLANET SHAFT			
	PLANET BEARING			
	PLANET THRUST WASHER			
	ROLL PIN 3/16 X 7/8			
	SUN GEAR			
	RING GEAR			
	CARRIER THRUST WASHER			
	INPUT THRUST WASHER			
	THRUST WASHER			
	SEAL KIT (1 SEAL, 2 O-RINGS)			
	SEAL-SHAFT			
	O-RING			
	BEARING CONE (OUTER)			
	BEARING CUP (OUTER)			
	BEARING CONE (INNER)			
	BEARING CUP (INNER)			
	HEX CAPSCREW 7/16-20 GR8			
	LOCKWASHER 7/16 MED			
	PIPE PLUG-MAGNETIC 3/8 NPT-SOC HD			
	GREASE FITTING (OPTIONAL) STR. 1/8 NPT			
	AIR VENT 3/8 NPT (OPTIONAL)			
	PIPE PLUG (C & K COVER ONLY) 1/8 NPT			
	SHIM(S)			
	SPLIT RING (MATCHING HALVES)			
	LOCK RING			
	RETAINING RING			



FOR GREASE ZERK OPTION, ADD 'Z' SUFFIX TO BASE P/N

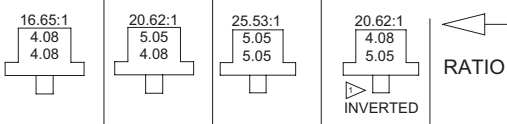
NOTES:

*BEARING PRELOAD DETERMINES QUANTITY OF SHIMS.

S2 - SHAFT REQUIRES STUDS (QTY 5) PART NO. 01-164-0040.

X50LD1-AF,
Page 1 of 1
Effective date 7-16-93
Effective serial # 16130

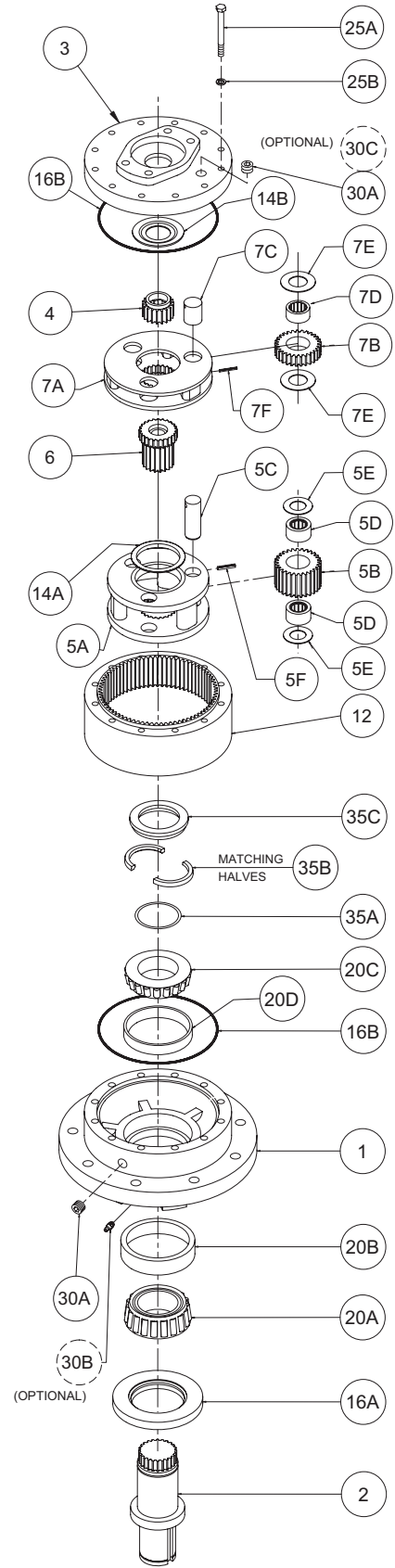
DOUBLE PLANETARY



EFFECTIVE
FROM: S/N 38000 11-01-98
TO: (CURRENT)

CODE	DESCRIPTION				QTY.	ITEM
	BASES	SHAFTS	COVERS	INPUT GEARS		
	50-004-3003				1	1
	50-004-3013					
	50-004-3193					
	50-004-4012L				1	2
	50-004-4022L					
	50-004-4032L					
	50-004-4052L					
	50-004-4212L					
	50-004-4082L					
	50-004-4502L					
	50-004-4312L					
	50-004-4292L					
	50-004-1173				1	3
	50-004-1183					
	50-004-1233					
	50-004-1333					
	85-004-1102	85-004-1062	-		1	4
	85-004-1122	85-004-1112	-			
	85-004-1533		85-004-1533			
	85-004-1542	85-004-1422	-			
	85-004-1582		85-004-1582			
	50-005-2041		50-005-2031		1	5
	50-004-1062		50-004-1052		1	5A
	85-004-1051		85-004-1041		3	5B
		71-004-0121			3	5C
		01-105-0010			6	5D
		85-004-1181			6	5E
		01-153-0210			3	5F
	85-004-1412	85-004-1092	85-004-1072		-	6
	50-005-2011	50-005-2021	50-005-2011		1	7
	50-004-1082	50-004-1072	50-004-1082		1	7A
	85-004-1031	85-004-1021	85-004-1031		3	7B
		81-004-0071			3	7C
		01-105-0410			3	7D
		81-004-1561			6	7E
		01-153-0080			3	7F
		50-004-1023			1	12
		50-004-1011			1	14A
		50-004-1091			1	14B
		85-016-0601			-	16
		01-405-0530			1	16A
		01-402-0560			2	16B
		01-102-0140			1	20A
		01-103-0130			1	20B
		01-102-0150			1	20C
		01-103-0140			1	20D
		01-150-1550			12	25A
		01-166-0340			12	25B
		01-207-0070			2	30A
		01-215-0010			(1)	30B
		01-216-0070			(1)	30C
		01-207-0030			(1)	30D
		50-004-1521			*	35A
		50-004-1452			1	35B
		50-004-1462			1	35C

CODE	DESCRIPTION
A	ROUND FLANGE (NO ZERK)
E	RECTANGULAR FLANGE (NO ZERK)
F	FLANGLESS (NO ZERK)
C	CUSTOM
D1	2"DIA SHAFT-3/8" KEYWAY
D2	23T 12/24 D.P. SPLINE
D3	2-1/8"DIA SHAFT-1/2" KEYWAY
D4	2"DIA SHAFT-1/2" KEYWAY
F2	2"DIA X .50" KEY (INTERNAL)
H2	2"HEX SHAFT-13/16 DIA.HOLE
H3	2-5/8"HEX SHAFT-13/16 DIA.HOLE
S1	7" SPINDLE 50L (5) X 1/2-13
S2	7" SPINDLE 50L (5) X .610 DIA THRU HOLES
C1	SHAFT-CUSTOM
A	COVER-SAE 'A'
B	COVER-SAE 'B' 2-BOLT
C	COVER-SAE 'C' 4-BOLT
K	COVER-SAE 'C' 2-BOLT
2	INPUT GEAR 13T 16/32 DP SPLINE
3	INPUT GEAR SAE 1"-6B SPLINE
4	INPUT GEAR 14T 12/24 DP SPLINE
5	INPUT GEAR 15T 16/32 DP SPLINE
6	INPUT GEAR 1" DIA X .25 KEY
CARRIER ASSEMBLY	
	CARRIER
	PLANET GEAR
	PLANET SHAFT
	PLANET BEARING
	PLANET THRUST WASHER
	ROLL PIN 3/16 X 7/8
	SUN GEAR
CARRIER ASSEMBLY	
	CARRIER
	PLANET GEAR
	PLANET SHAFT
	PLANET BEARING
	PLANET THRUST WASHER
	ROLL PIN 1/8 X 1
	RING GEAR
	CARRIER THRUST WASHER
	INPUT THRUST WASHER
	SEAL KIT (1 SEAL, 2 O-RINGS)
	SEAL-SHAFT
	O-RING
	BEARING CONE (OUTER)
	BEARING CUP (OUTER)
	BEARING CONE (INNER)
	BEARING CUP (INNER)
	HEX CAPSCREW 7/16-20 GR8
	LOCKWASHER 7/16 MED
	PIPE PLUG-MAGNETIC 3/8 NPT-SOC HD
	GREASE FITTING (OPTIONAL) STR. 1/8 NPT
	AIR VENT 3/8 NPT (OPTIONAL)
	PIPE PLUG (C & K COVER ONLY) 1/8 NPT
	SHIM(S)
	SPLIT RING (MATCHING HALVES)
	LOCK RING



NOTES:

1 INVERTED RATIO SUNGEAR IS NOT COUNTERBORED FOR CODE 4 INPUT. MOTOR COMPATIBILITY MUST BE VERIFIED.

2 FOR GREASE ZERK OPTION, ADD 'Z' SUFFIX TO BASE P/N

* BEARING PRELOAD DETERMINES QUANTITY OF SHIMS.

S2 - SHAFT REQUIRES STUDS (QTY 5) PART NO. 01-164-0040.

X50LD2-AE,

Page 1 of 1

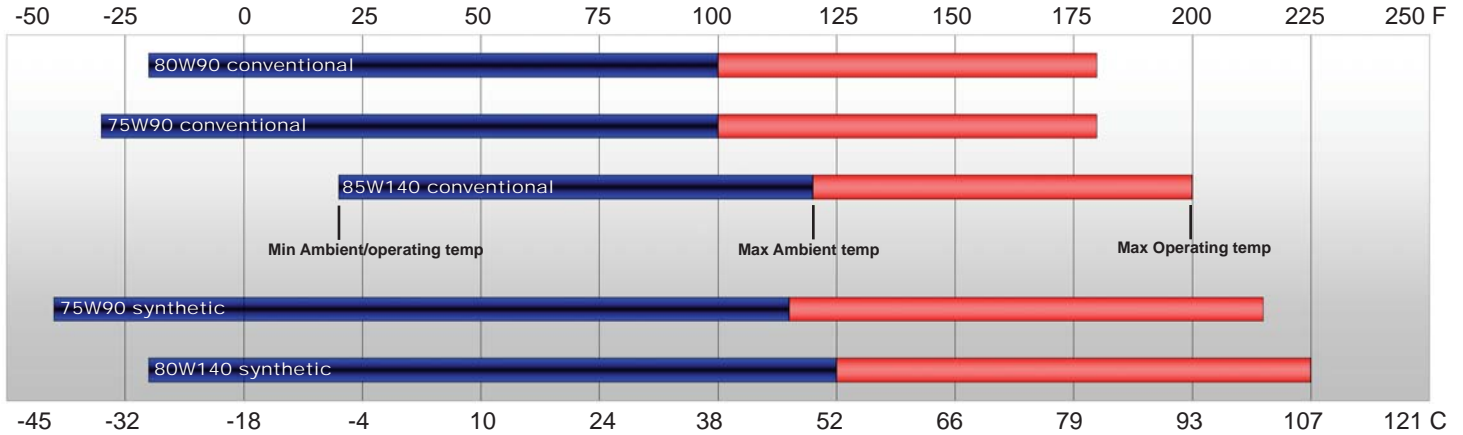
Effective date 12-16-98

Effective serial # 38489

LUBRICATION & MAINTENANCE

Using the chart below, determine an appropriate lubricant viscosity. Use only EP (extreme pressure) or API GL-5 designated lubricants. Change the lubricant after the first 50 hours of operation and at 500 hour intervals thereafter. The gear drive should be partially disassembled to inspect gears and bearings at 1000 hour intervals.







Recommended ambient and operating temperatures for conventional and synthetic gear lubricants



Note: Ambient temperature is the air temperature measured in the immediate vicinity of the gearbox. A Gearbox exposed to the direct rays of the sun or other radiant heat sources will operate at higher temperatures and therefore must be given special consideration. The max operating temp must not be exceeded under any circumstances, regardless of ambient temperature.

If your unit was specified "shaft up" or with a "-Z" option, a grease zerk was provided in the base housing. For shaft-up operation, the output bearing will not run in oil and must be grease lubricated. Use a lithium based or general purpose bearing grease sparingly every 50 operating hours or at regular maintenance intervals. Over-greasing the output bearing should be avoided as it tends to fill the housing with grease and thicken the oil

ESKRIDGE MODEL 50 OIL CAPACITIES

Operating Position	Oil Capacity			Oil Level
	Single stage	Double stage	Triple stage	
 Horizontal Shaft	1.4 pt / 0.7 l	1.6 pt / 0.8 l	1.8 pt / 0.9 l	To horizontal centerline of gear drive 
 Vertical Shaft (Pinion Up)	1.7pt / 0.8 l	2.2 pt /1.0 l	2.7 pt /1.3 l	To side port on gear drive base 
 Vertical Shaft (Pinion Down)	2.2pt / 1.0 l	2.7 pt /1.3 l	3.2 pt /1.6 l	To midway on upper/primary gear set 

ESKRIDGE PART NUMBER INTERPRETATION

Note: All non-custom Eskridge Geardrives are issued a descriptive part number which includes information regarding the Model, means of shaft retention, base style, shaft style, input mounting, input shaft size, overall ratio and various available options. For a detailed breakdown of this information, please refer to Eskridge product specification sheets found at: <http://www.eskridgeinc.com/geardrives/gearprodspecs.html>

Unit Teardown

- 1) Scribe a diagonal line across the outside of the unit from the cover (3) to the base (1) before disassembly to aid in the proper positioning of pieces during reassembly.
- 2) Remove drain plugs (30A) and drain oil from unit. The oil will drain out more quickly and completely if warm.
- 3) Remove the 12 7/16-20 capscrews (25A) and lockwashers (25B) securing the cover.
- 4) Remove the cover (3), thrust washer (14B), and input gear (4). Inspect o-ring (16B); discard if damaged or deformed.
- 5) Lift the planet carrier assembly out of the unit .
- 6) Remove ring gear(s) (12) and subsequent carrier assemblies and thrustwasher (14A). Inspect gear to gear and gear to base O-ring(s) (16B); as before, discard if damaged or deformed.
- 7) The unit is now disassembled into groups of parts. the area(s) requiring repair should be identified by thorough inspection of the individual components after they have been cleaned and dried.

Carrier Assembly Teardown

Rotate planet gears (7B pri/5B sec) to check for abnormal noise or roughness in bearings (7D pri/5D sec). If further inspection or replacement is required, proceed as follows.

- 1) Drive roll pins (7F pri/5F sec) completely into the planet shafts (7C pri/5C sec).
- 2) Slide planet shafts (7C pri/5C sec) out of carrier (7A pri/5A sec).
- 3) Remove planet gears (7B pri/5B sec), washers (7E pri/5E sec) and bearings (7D pri/5D sec) from carrier (7A/5A).
- 4) Inspect the planet gear (7B pri/5B sec), bearing bore and planet shaft (7C pri/5C sec) and bearings (7D pri/5D sec). Check for spalling, bruising or other damage and replace components as necessary.
- 5) Remove roll pins (7F pri/5F sec) from planet shafts (7C pri/5C sec) using a 1/8" (pri) or 3/16" (sec) pin punch.

Carrier Reassembly

- 1) Planet shafts (7C pri/5C sec) should be installed with chamfered end of 1/8"(pri), or 3/16"(sec) roll pin hole towards outside diameter of carrier (7A pri/5A sec); this will ease alignment of holes while inserting roll pins (7F pri/5F sec).
- 2) Drive roll pin (7F pri/5F sec) into the carrier hole and into planet shaft to retain parts. Repeat for remaining planet gears.

Base Subassembly Teardown

- 1) Remove the shaft retainer lock ring (35C) using a heel bar or puller; if using a heel bar, be sure not to pry against the cage of the inner output shaft bearing (20C). Remove the split ring

segments (35B) and shims (35A).

Caution: Since the shaft is no longer positively retained, care should be taken to avoid personal injury. Care should also be taken not to damage it while pressing through base.

Note: Removing the shaft from the base assembly damages the shaft seal. The seal will need to be replaced.

- 2) Place base (1) external side down, supported at the case perimeter. Press output shaft out bottom of base by applying a load to internal end of shaft until it passes through inner shaft bearing cone (20C).
- 3) A gear puller may be used to remove the outer bearing cone (20A) from the shaft (2). If reusing old bearing cone, do not pull on or damage roller cage. If shaft bearings show evidence of wear or damage they should be replaced at this time. Remove the shaft seal (16A) for inspection or replacement.

Note: When installing new shaft bearings, press the bearing cone onto output shaft by pressing on inner race only. DO NOT press on roller cage, as it will damage the bearing.

- 4) Lubricate inner lip of new shaft seal (16A) and slide it onto the shaft (2) until it fits snugly over the shaft seal diameter with the open side toward the interior of the gear drive.
- 5) Inspect inner and outer bearing cups (20D & 20B). If cups are damaged, drive them out using a brass drift and utilizing the bearing knock-out notches in the base (1)

Base Reassembly

- 1) Clean all foreign material from any magnetic oil plugs located on base (1).
- 2) Place base exterior side up on work table.
- 3) Apply a layer of lithium or general purpose bearing grease to the roller contact surface of outer bearing cup (20B).
- 4) Press outer bearing cone (20A) onto the shaft until it seats against the shoulder.
- 5) Place the shaft (2) with the bearing cone (20A) into the base.
- 6) Flip shaft/base assembly, and apply lithium or general purpose bearing grease to roller contact surface of the inner cup (20D), then press inner bearing cone (20C) onto shaft until it seats against inner bearing cup (20D).
- 7) Prior to installation of the shaft seal (16A), the pre-load may result in a rolling torque which varies between 50 to 80 in-lb. The bearing preload should be tailored to your application; a low-speed application may require a high pre-load, while high-speed applications usually benefit from low pre-load. Adding shims (35A) will increase the pre-load on the bearing set. Determine your pre-load requirement and install shims to obtain this pre-load.
- 8) Install the Load-N-Lock™ segments (35B) over the shims

(35A) and into the groove in the shaft (2). Then, install the lock ring (35C) over the segments (35B).

All subassembly service or repairs should be complete at this time. Continue to Unit Reassembly to complete unit buildup..

Unit Reassembly

- 1) Install the secondary carrier assembly (5) onto the output shaft (2); align the splines of the carrier (5A) with the output shaft (2) splines and slide the carrier onto the shaft.
- 2) Lubricate o-rings (16B) and install into the corresponding base (1) and cover (3) pilot(s).

Caution: Hold ring gear(s) by outside diameter or use lifting device to avoid injury.

- 3) Align gear teeth of the ring gear (12) with the gear teeth of the planet gears (5B) and place on base (1), then align mounting holes of ring gear (12) with holes in base (1). Use the scribed line made during disassembly for reference.
- 4) Install the carrier thrust washer (14A) and sun gear (6) into the secondary carrier (5A).
- 5) Install the primary carrier assembly (7).
- 6) Install the input gear (4).
- 7) Install the input thrust washer (14B) Refer to exploded view for details.
- 8) Noting the scribed line made during disassembly, (with lubricated o-ring in place) align and install the cover (3).
- 9) Install and torque the 12 7/16-20 hex-head cap-screws (25A) with lockwashers (25B). The torque for the cap-screws: 80 ft-lb dry, 60 ft-lb if lubricated.
- 10) Using a splined shaft to drive the input gear (4) ensure that the unit spins freely.
- 11) Fill the unit to the proper level, as specified, with recommended gear oil (refer to chart, page 2) after unit is sealed with brake and/or motor.

The gearbox is now ready to use.