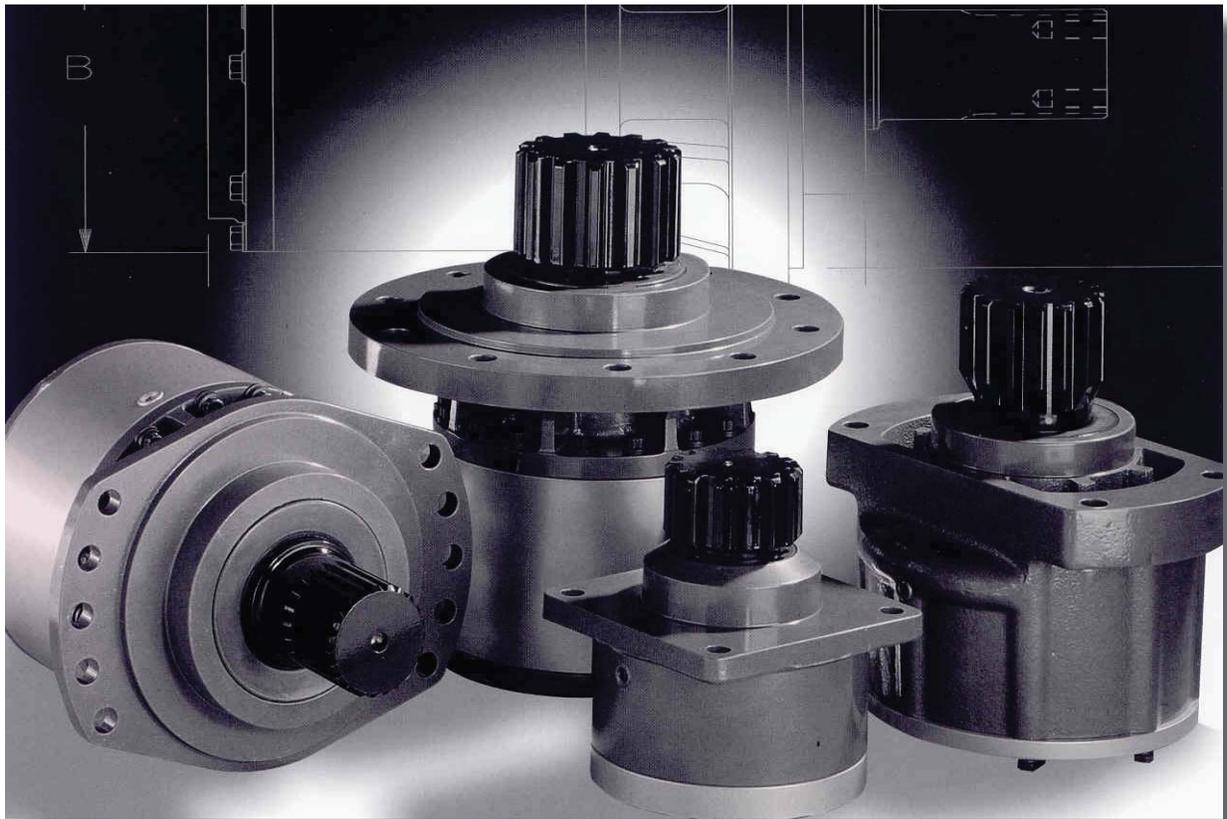




MODEL 50L PLANETARY GEAR DRIVE SERVICE MANUAL



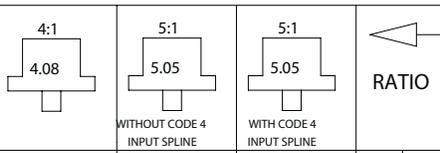
WARNING: While working on this equipment, use safe lifting procedures, wear adequate clothing and wear hearing, eye and respiratory protection.

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.

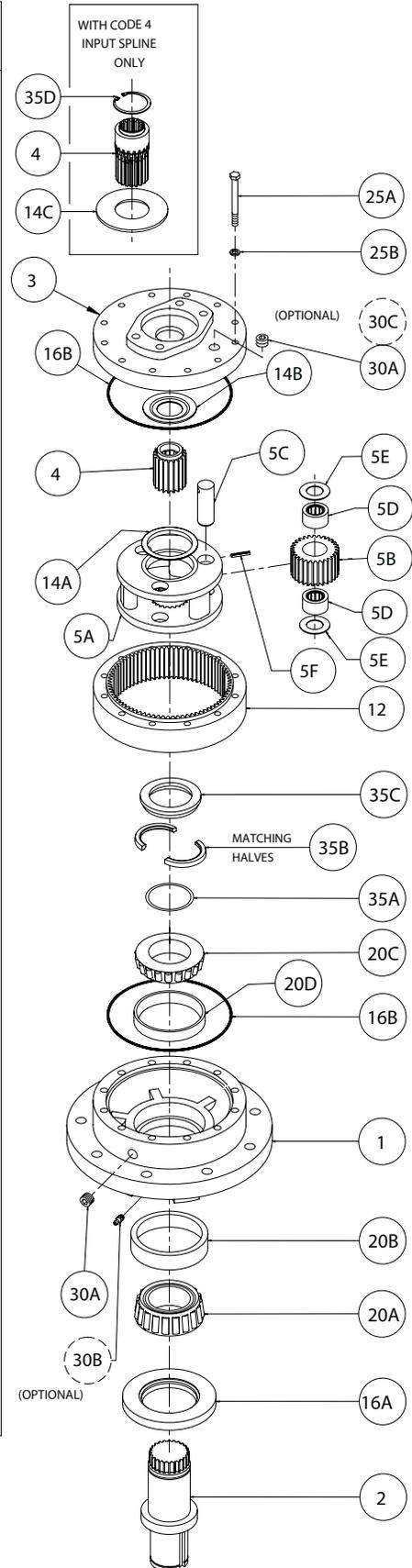
ESKRIDGE MODEL 50L

SINGLE PLANETARY



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

CODE	DESCRIPTION		QTY.	ITEM
	DESCRIPTION	DESCRIPTION		
BASES	50-004-3003		1	1
	50-004-3013			
	50-004-3193			
SHAFTS	50-004-4012L		1	2
	50-004-4022L			
	50-004-4032L			
	50-004-4052L			
	50-004-4212L			
	50-004-4082L			
	50-004-4502L			
	50-004-4092L			
	50-004-4312L			
	50-004-4292L			
COVERS	50-004-1173		1	3
	50-004-1183			
	50-004-1233			
	50-004-1333			
INPUT GEARS	85-004-1382	85-004-1392	1	4
	85-004-1272	85-004-1262		
	85-004-1292	50-004-1112		
	85-004-1562	85-004-1572		
85-004-1592				
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	71-004-0121	3	5C	
01-105-0010	01-105-0010	6	5D	
85-004-1181	85-004-1181	6	5E	
01-153-0210	01-153-0210	3	5F	
-	-	-	6	
50-004-1033	50-004-1023	1	12	
50-004-1011	50-004-1011	1	14A	
50-004-1091	50-004-1091	1	14B	
	81-004-2883	1	14C	
	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	
01-150-1540	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	
	01-160-0350	1	35D	
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,

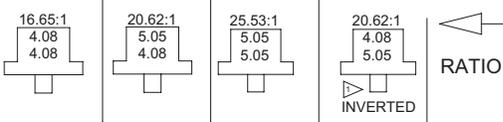
Page 1 of 1

Effective date 7-16-93

Effective serial # 16130

Model 50 service manual, SM50LD2-AB Page 2

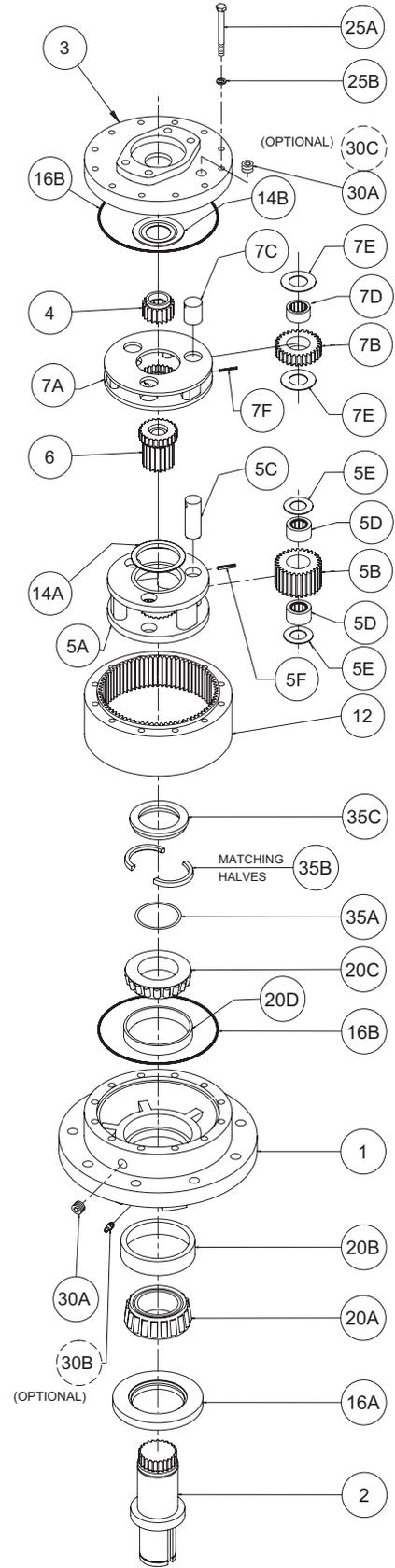
DOUBLE PLANETARY



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

CODE	DESCRIPTION				QTY.	ITEM		
	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER				
BASES	50-004-3003				1	1		
	50-004-3013							
	50-004-3193							
SHAFTS	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							
COVERS	50-004-1173				1	3		
	50-004-1183							
	50-004-1233							
	50-004-1333							
	50-004-1533							
INPUT GEARS	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

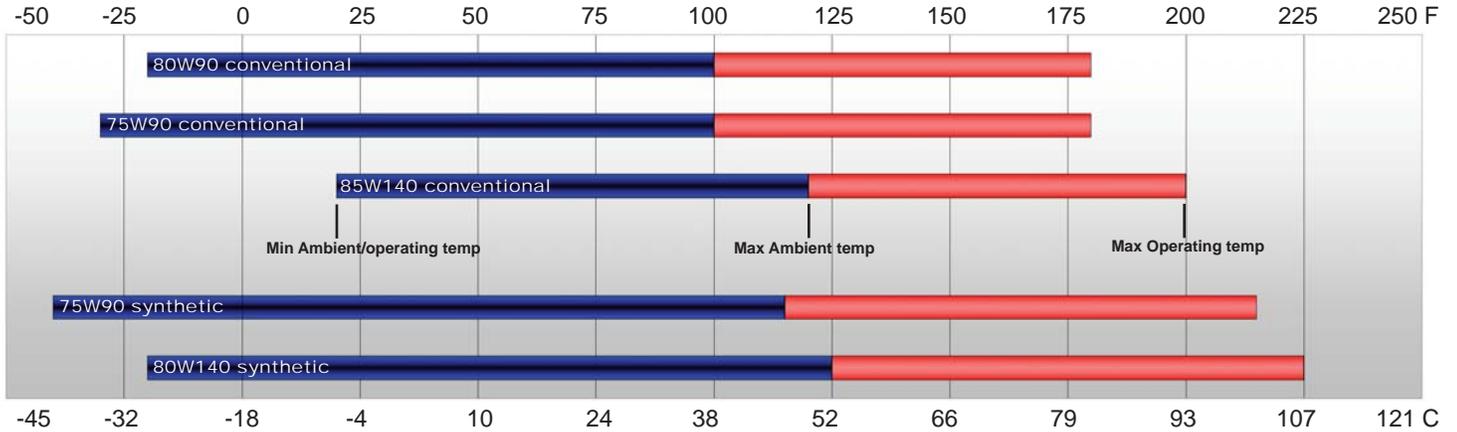
Effective date 12-16-98

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.