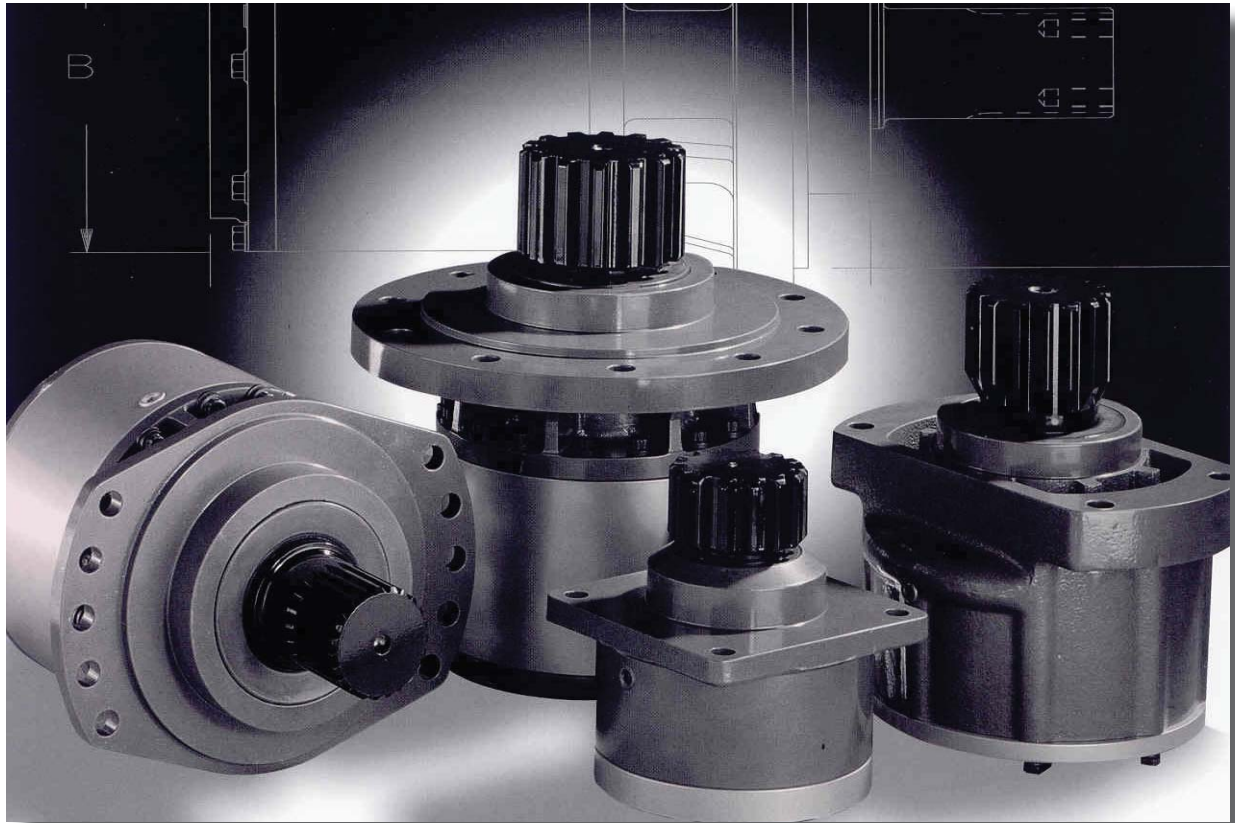


ESKRIDGE

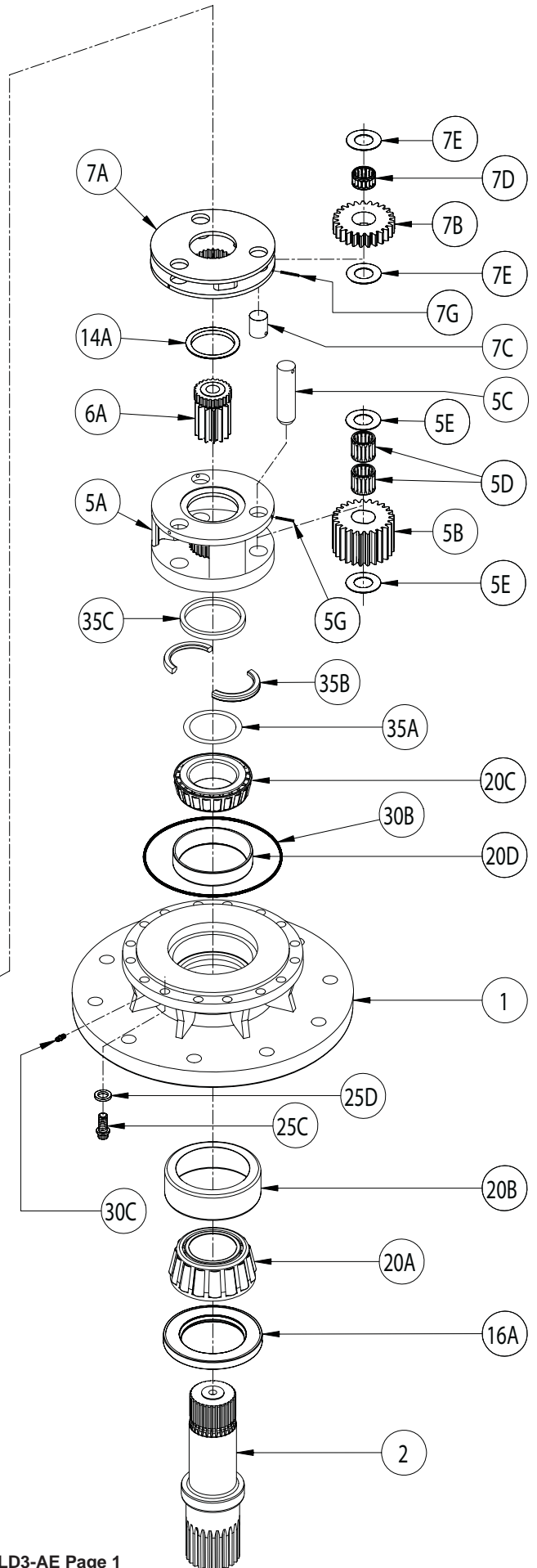
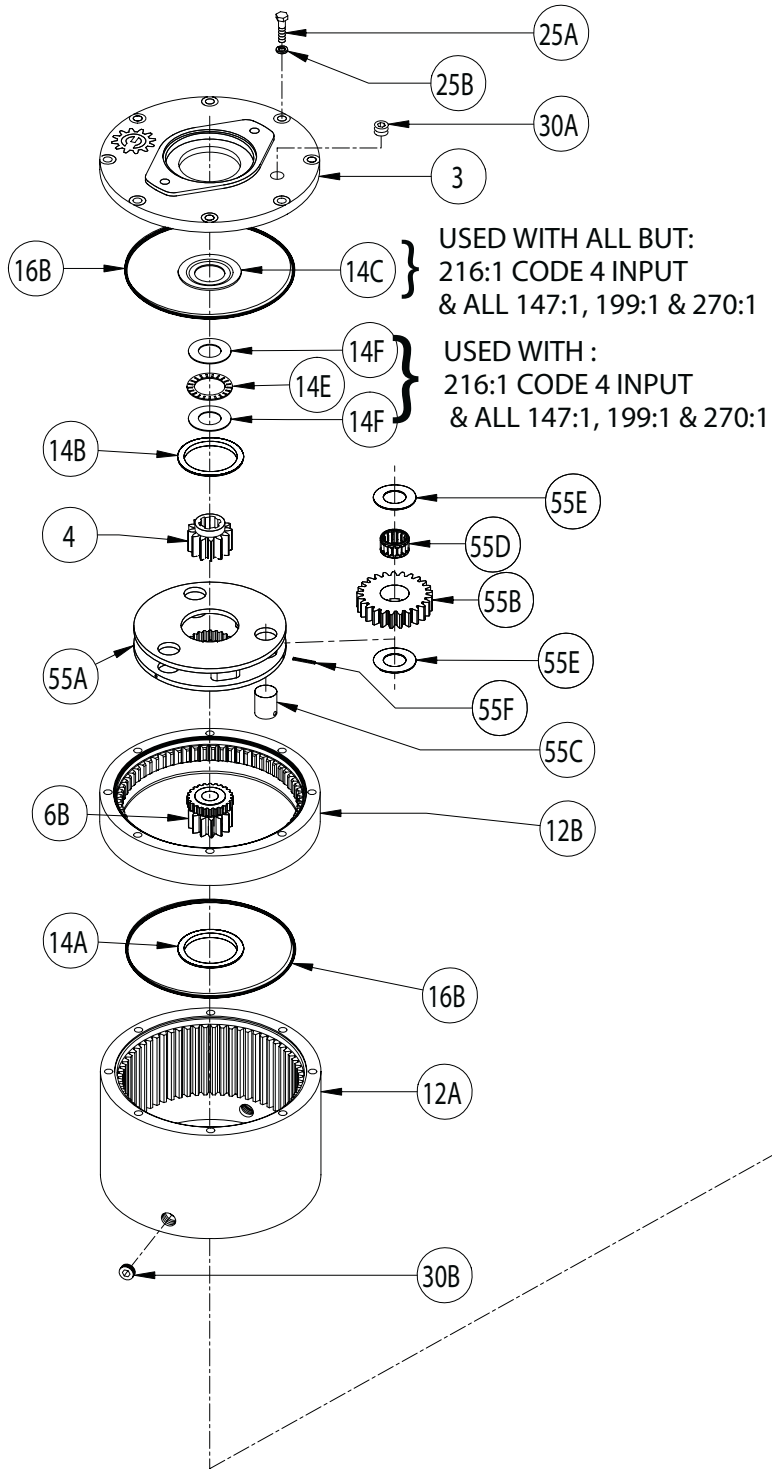
MODEL 130L TRIPLE PLANETARY GEAR DRIVE SERVICE MANUAL



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: 43176 TO CURRENT
DATE: 10/01/99 TO CURRENT
VERSION: SM130LD3-AE

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.



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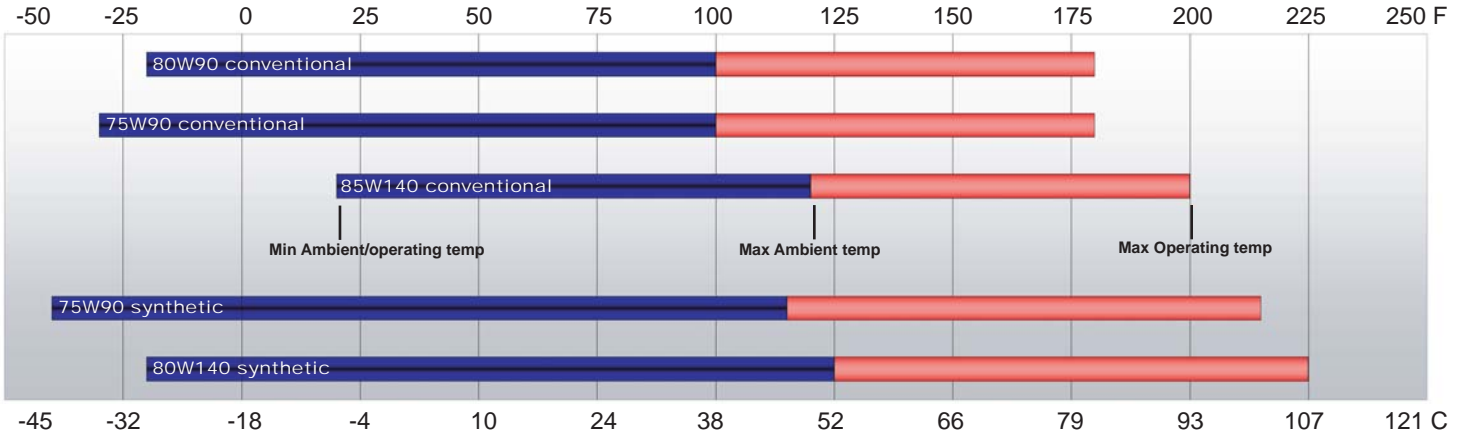
ITEM	QTY	DESCRIPTION	86:1		117.2:1		147:1		159:1		199:1		216:1		216:1		270:1		
			4.42	4.42	4.42	4.42	6.00	4.42	7.50	4.42	6.00	6.00	7.50	6.00	6.00	6.00	6.00	7.50	6.00
MODEL 130L TRIPLE PLANETARY RATIOS													W/CODE 4		W/O CODE 4				
BASE	1	A - ROUND FLANGE	81-004-0342																
		B - SQUARE FLANGE	81-004-0592																
		E - RECTANGULAR FLANGE	81-004-3072																
		F - FLANGELESS	81-004-1142																
		Q - ECCENTRIC	13-004-3072																
C1- CUSTOM																			
OUTPUT SHAFT	2	D1 23 T 8/16 DP SPL 2.25" LG	81-004-1392L																
		D2 3.000" DIA, 5/8" SQ KEY	81-004-0992L																
		D3 23 T 8/16 DP SPL 1.22" LG	81-004-1412L																
		D4 23 T 8/16 DP SPL 2.72" LG	81-004-0942L																
		D5 3.500" DIA, 7/8" SQ KEY	81-004-1152L																
C1 CUSTOM																			
COVER	3	SAE 'A' 2 & MOD. 4 BOLT	13-004-1192	13-004-1222	13-004-1192	13-004-1222		13-004-1192	13-004-1222										
		SAE 'A' 2 & MOD. 4 BOLT W/ CODE 4	13-004-1252	13-004-1222	13-004-1252	13-004-1222	13-004-1222												
		SAE 'B' 2 BOLT	13-004-1182	13-004-1232	13-004-1182	13-004-1232													
		SAE 'B' 2 & 4 BOLT W/ CODE 4	13-004-1202	13-004-1322	13-004-1202	13-004-1232	13-004-1232												
		SAE 'C' 2 BOLT & 4 BOLT		13-004-1242	13-004-1212	13-004-1242													
INPUT GEAR	4	CODE 2 - INPUT 13 T 16/32 DP	13-004-1292	13-004-1312	13-004-1292	13-004-1312													
		CODE 3 - INPUT SAE 1"-6B	13-004-1322	13-004-1472	13-004-1322	13-004-1472													
		CODE 4 - INPUT 14 T 12/24 DP	13-004-1372	13-004-1382	13-004-1342	13-004-1342	13-004-1362	13-004-1352											
		CODE 5 - INPUT 15 T 16/32 DP			13-004-1452	13-004-1452	13-004-1802												
5	(1)	CARRIER ASSY-SECONDARY	13-005-2001		13-005-2011	13-005-2001													
5A	1	CARRIER (SEC)	13-004-1062		13-004-1072	13-004-1062													
5B	3	PLANET GEAR (SEC)	13-004-1082		13-004-1092	13-004-1082													
5C	3	PLANET SHAFT (SEC)			81-004-0061														
5D	6	BEARING - CAGE & ROLLER			01-105-0500														
5E	6	THRUST WASHER - PLANET			81-004-1561														
5G	3	ROLL PIN - SEC. PL. 3/16 X 7/8			01-153-0210														
6	-	SUN GEARS																	
6A	1	SUN GEAR	13-004-1142	13-004-1142	13-004-1142	13-004-1152	13-004-1142	13-004-1152	13-004-1152	13-004-1152	13-004-1152	13-004-1152	13-004-1152	13-004-1152	13-004-1152	13-004-1152	13-004-1152		
6B	1	MULTI SUN GEAR	13-004-1162	13-004-1172	13-004-1162	13-004-1172	13-004-1172	13-004-1172	13-004-1172	13-004-1172	13-004-1172	13-004-1172	13-004-1172	13-004-1172	13-004-1172	13-004-1172	13-004-1172		
7	(1)	CARRIER ASSY-PRIMARY	13-005-2021		13-005-2041	13-005-2041													
7A	1	CARRIER (PRI)	13-004-1032		13-004-1052	13-004-1032	13-004-1052												
7B	3	PLANET GEAR (PRI)	13-004-1102		13-004-1122	13-004-1102	13-004-1122												
7C	3	PLANET SHAFT (PRI)			13-004-1021														
7D	3	BEARING - CAGE & ROLLER			01-105-0590														
7E	6	THRUST WASHER - PLANET			81-004-1561														
7G	3	ROLL PIN - PRI. PL. 1/8 X 7/8			01-153-0180														
12	-	RING GEARS																	
12A	1	PRI RING GEAR			81-004-2362														
12B	1	MULTI RING GEAR			13-004-1132														
14	--	THRUST WASHERS & THRUST BRGS																	
14A	2	CARRIER THRUST WASHER			81-004-2711														
14B	1	CARRIER THRUST WASHER			81-004-2711														
14C	1	INPUT FORM WASHER	81-004-2701		81-004-2701														
14D	1	THRUST WASHER SGL PL	01-112-0030																
14E	1	BEARING			01-112-0220														
14F	2	THRUST RACE			01-112-0230														
16	(1)	SEAL KIT	13-016-2061 CONTAINS ITEMS 16A, 16B																
16A	1	SHAFT SEAL	01-405-0270																
16B	3	O-RING	01-402-0420																
20	---	OUTPUT SHAFT BEARINGS																	
20A	1	OUTER CONE	01-102-0020																
20B	1	OUTER CUP	01-103-0020																
20C	1	INNER CONE	01-102-0030																
20D	1	INNER CUP	01-103-0030																
25	---	HARDWARE																	
25A	8	BOLTS - COVER	01-150-1670																
25B	8	LOCKWASHERS - COVER	01-166-0010																
25C	16	BOLTS - RING	01-150-1460																
25D	16	HARD WASHERS - RING	01-166-0120																
30	---	PLUGS /GREASE ZERK																	
30A	1	PLUG - COVER	01-207-0070																
30B	2	PLUG - RING	01-207-0041																
30C	1	1/4 NPT (SOC. HD.)	01-207-0020																
		GREASE FITTING	01-215-0040																
35		MISCELLANEOUS																	
35A	*	SHIMS	80-004-1151 (* QUANTITY DETERMINED BY PRELOAD REQUIRED AND PART STACK-UP)																
35B	1	SPLIT RING	81-004-8101																
35C	1	LOCK RING	81-004-8111																
55	(1)	CARRIER ASSY-(PRI)-MULTIPLE	13-005-2021	13-005-2021	13-005-2041	13-005-2021	13-005-2041	13-005-2031	13-005-2031	13-005-2041	13-005-2031	13-005-2031	13-005-2041	13-005-2031	13-005-2031	13-005-2041	13-005-2041		
55A	1	CARRIER (PRI)	13-004-1032	13-004-1032	13-004-1052	13-004-1032	13-004-1052	13-004-1042	13-004-1042	13-004-1042	13-004-1042	13-004-1042	13-004-1042	13-004-1042	13-004-1042	13-004-1052	13-004-1052		
55B	3	PLANET GEAR (PRI)	13-004-1102	13-004-1102	13-004-1122	13-004-1102	13-004-1122	13-004-1112	13-004-1112	13-004-1112	13-004-1112	13-004-1112	13-004-1112	13-004-1112	13-004-1112	13-004-1122	13-004-1122		
55C	3	PLANET SHAFT (PRI)	13-004-1021																
55D	3	BEARING - PRI. PL. ROLLER	01-105-0590																
55E	6	SPACER WASHER - PLANET	13-004-1592																
55F	3	ROLL PIN - PRI. PL. 1/8 X 7/8	01-153-0180																

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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 130L OIL CAPACITIES

Operating Position	Oil Capacity	Oil Level
 Horizontal Shaft Single/Double stage 4.1 pints / 1.9 l	 To horizontal centerline of gear drive	
 Vertical Shaft (Pinion Up) 6.9 pints / 3.25 l	 To side port on gear drive base	
 Vertical Shaft (Pinion Down) 6.9 pints / 3.25 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 (30B) and drain oil from unit. The oil will drain out more quickly and completely if warm.
- 3) Remove the 8 3/8-16 cap-screws (25A) and lockwashers (25B).
- 4) Remove the cover (3), thrust washer(s)/bearing(s) (14C or 14E & 14F OR 14B, 14C, 14D & 35D), and input gear (4). Inspect o-ring (16B); discard if damaged or deformed.
- 5) Lift the top planet carrier (55) assembly out of the unit .
- 6) Remove the multi-ring gear (12B) and inspect O-ring (16B). Again, replace if damaged or deformed.
- 7) Remove the cup washer (14A) and the middle planet carrier assembly (7).
- 8) Remove the cup washer (14A) and the secondary carrier assembly (5). Remove ring gear (12A), if necessary by removing the 16 1/2-13 12-point cap-screws (25C & 25D). Inspect the gear to base O-ring (16B); as before, discard if damaged or deformed.
- 9) 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

Note for the carrier sets, Stage I refers to the top-most carrier set (nearest the motor), Stage II refers to the next lower and Stage III refers to the “bottom” (nearest the output shaft).

Rotate planet gears (55F Stg I/7B Stg II/5B Stg III) to check for abnormal noise or roughness in bearings (55D Stg I/7D Stg II/5D Stg III). If further inspection or replacement is required, proceed as follows.

- 1) Drive roll pins (55F Stg I/7F Stg II/5F Stg III) completely into the planet shafts (55C Stg I/7C Stg II/5C Stg III).
- 2) Slide planet shafts (55C Stg I/7C Stg II/5C Stg III) out of carrier (55A Stg I/7A Stg II/5A Stg III).
- 3) Remove planet gears (55B Stg I/7B Stg II/5B Stg III), washers (55E Stg I/7E Stg II/5E Stg III) and bearings (55D Stg I/7D Stg II/5D Stg III) from carrier (55A Stg I/7A Stg II/5A Stg III).
- 4) Inspect the planet gear (55B Stg I/7B Stg II/5B Stg III), bearing bore and planet shaft (55C Stg I/7C Stg II/5C Stg III) and bearings (55D Stg I/7D Stg II/5D Stg III). Check for spalling, bruising or other damage and replace components as necessary.
- 5) Remove roll pins (55F Stg I/7F Stg II/5F Stg III) from planet shafts (55C Stg I/7C Stg II/5C Stg III) using a 1/16 pri/ 3/16 sec inch pin punch.

Carrier Reassembly

- 1) Insert the bearings (55D Stg I/7D Stg II/5D Stg III) into the planet gears (55B Stg I/7B Stg II/5B Stg III). Place a planet washer (55E Stg I/7E Stg II/5E Stg III) on top and bottom of planet gear and slide into carrier (55A Stg I/7A Stg II/5A Stg III).
- 2) Planet shafts (55C Stg I/7C Stg II/5C Stg III) should be installed with chamfered end of 1/16 pri/3/16 sec inch roll pin hole towards out-side diameter of carrier (55A Stg I/7A Stg II/5A Stg III); this will ease alignment of holes while inserting roll pins (55F Stg I/7F Stg II/5F Stg III).
- 3) Drive roll pin (55F Stg I/7F Stg II/5F Stg III) into the carrier hole and into planet shaft to retain parts. Repeat for remaining planet gears.

Base Subassembly Teardown

- 1) Remove the 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 and the seal will need to be replaced.

- 2) Place base (1) external side down, on a plate or table. 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. Remove the shaft seal (16A) for inspection or replacement.
- 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 inside of the gear drive.

Note: Press bearing cone onto output shaft by pressing on inner race only. DO NOT press on roller cage, as it may damage bearing.

- 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 (1) 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 **(20A)** into the base **(1)**.
- 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 **(2)** 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 350 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.

Install the Load-N-Lock™ segments (35B) over the shims (35A) and into the groove in the shaft (2). Finally, install the lock ring (35C) over the segments (35B).

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

Unit Reassembly

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

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

- 3) Align gear teeth of secondary ring gear **(12A)** with the gear teeth of the planet gears **(5B)** and place on base., then align mounting holes of ring gear with holes in base **(1)**. Use the scribed line made during disassembly for reference.
- 4) Install and torque the 16 1/2-13 12-point-head cap-screws **(25C)** with hard washers **(25B)**. The torque for the cap-screws: **110 ft-lb dry, 90 ft-lb** if the fasteners are lubricated.
- 5) Install the sun gear **(6A)** into the secondary carrier assembly and insert one of the cup washers **(14A)** into the center of the carrier. Install the mid-primary carrier assembly **(7)** onto the sun **(6A)** splines.
- 6) Install the multi-sun gear **(6B)** into the mid-primary carrier assembly **(7)** and install a cup washer **(14A)** into the center of the carrier **(7A)**.
- 7) Lubricate O-ring **(16B)** and install on the multi-primary ring gear **(12B)**.
- 8) Install the input gear **(4)** into the top primary carrier assembly **(55)**.
- 9) Install the thrust bearing set **(Either 14C or 14E & 14F or 14B,**

14C, 14D & 35D) Refer to exploded view for details.

- 10) Noting the scribed line made during disassembly, (with lubricated o-ring in place) align and install the cover **(3)**. Install the 8 3/8-16 hex-head cap-screws and lockwashers **(25A and 25B)**. Tighten to a torque of **45 ft-lb dry, 35 ft-lb** if the fasteners are lubricated.
- 11) Using a splined shaft to drive the input gear **(4)** ensure that the unit spins freely.
- 12) Fill the unit to the proper level, as specified, with recommended gear oil (refer to chart, page 3) after unit is sealed with brake and/or motor.

The gearbox is now ready to use.