# 50 SERIES
# LIGHTWEIGHT DRIVE HEAD

**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: 151000 TO CURRENT**
**DATE: 9-1-2016 TO CURRENT**
**VERSION: SMD50LW-AA**

**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.

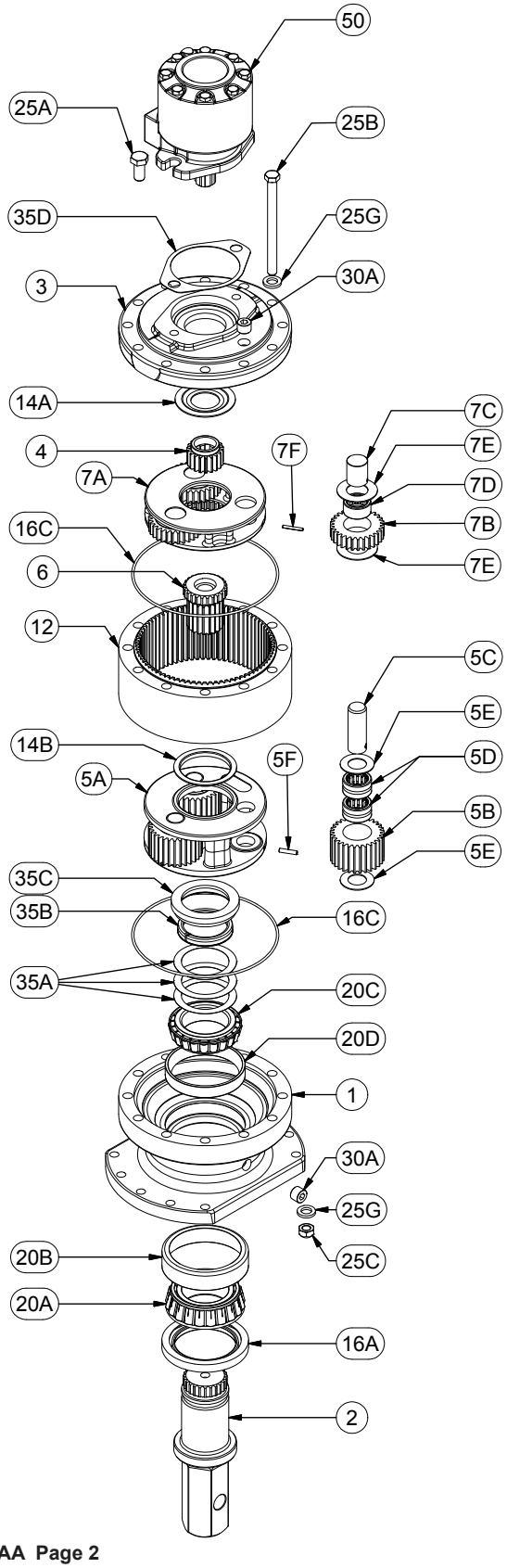
ESKRIDGE

# STANDARD

5025-13F134
EFFECTIVE FROM: SN-151000 09-01-16

| PARTS LIST | | | | |
|---|---|---|---|---|
| GROUP | ITEM | QTY | PART NUMBER | DESCRIPTION |
| | 1 | 1 | 50-004-3385 | BASE - D50 - ALUMINUM |
| | 2 | 1 | 50-004-4693 | SHAFT - D50 - 2" HEX |
| | 3 | 1 | 50-004-1643 | COVER - D50 - SAE 'A' 2-BOLT |
| | 4 | 1 | 85-004-1112 | INPUT GEAR |
| 5 | - | (1) | 50-005-2031 | CARRIER ASSY. SEC |
| | 5A | 1 | 50-004-1052 | CARRIER - SEC. (5.05:1) |
| | 5B | 3 | 85-004-1041 | PLANET GEAR - SEC |
| | 5C | 3 | 71-004-0121 | PLANET SHAFT (PRIMARY) |
| | 5D | 6 | 01-105-0010 | BEARING |
| | 5E | 6 | 85-004-1181 | PLANET WASHER |
| | 5F | 3 | 01-153-0210 | ROLL PIN (3/16 DIA X 7/8 LG) |
| | 6 | 1 | 85-004-1072 | SUN GEAR |
| 7 | - | (1) | 50-005-2021 | CARRIER ASSY |
| | 7A | 1 | 50-004-1072 | CARRIER - PRI (5.05:1) |
| | 7B | 3 | 85-004-1021 | PLANET GEAR - PRI. |
| | 7C | 3 | 81-004-0071 | PLANET SHAFT |
| | 7D | 3 | 01-105-0410 | PLANET BEARING |
| | 7E | 6 | 81-004-1561 | THRUST WASHER-PLANET. |
| | 7F | 3 | 01-153-0080 | ROLL PIN |
| | 12 | 1 | 50-004-1023 | RING GEAR |
| 14 | - | - | - | THRUST WASHERS |
| | 14A | 1 | 50-004-1091 | THRUST WASHER-INPUT |
| | 14B | 1 | 50-004-1011 | THRUST WASHER SEC. CUP |
| 16 | - | (1) | 85-016-0601 | SEAL KIT |
| | 16A | 1 | 01-405-0530 | SEAL |
| | 16C | 2 | 01-402-0560 | O-RING |
| 20 | - | - | - | OUTPUT SHAFT BEARINGS |
| | 20A | 1 | 01-102-0140 | BEARING CONE |
| | 20B | 1 | 01-103-0130 | BEARING CUP |
| | 20C | 1 | 01-102-0150 | BEARING CONE |
| | 20D | 1 | 01-103-0140 | BEARING CUP |
| 25 | - | - | - | HARDWARE |
| | 25A | 2 | 01-150-1390 | HEX CAP SCREW |
| | 25B | 12 | 01-150-1560 | HEX HEAD CAP SCREW |
| | 25C | 12 | 01-158-0413 | NUT - NYLOCK |
| | 25G | 24 | 01-166-0120 | FLATWASHER - HDN (1/2 X 7/8 X 1/8) |
| 30 | - | - | - | PLUGS & FITTINGS |
| | 30A | 2 | 01-207-0070 | PIPE PLUG (3/8 MAGNETIC) |
| 35 | - | - | - | MISCELLANEOUS |
| | 35A | * | 50-004-1521 | SHIM |
| | 35B | 1 | 50-004-1452 | SPLIT RING |
| | 35C | 1 | 50-004-1462 | LOCK RING |
| | 35D | 1 | 90-004-1081 | GASKET - (SAE 'A' 2-BOLT) |
| | 50 | 1 | 01-304-1340 | MOTOR |

*QUATITY DEPENDANT UPON DESIRED BEARING PRELOAD
X5025-13F134 ECN: REV: A 09-01-16 HWP



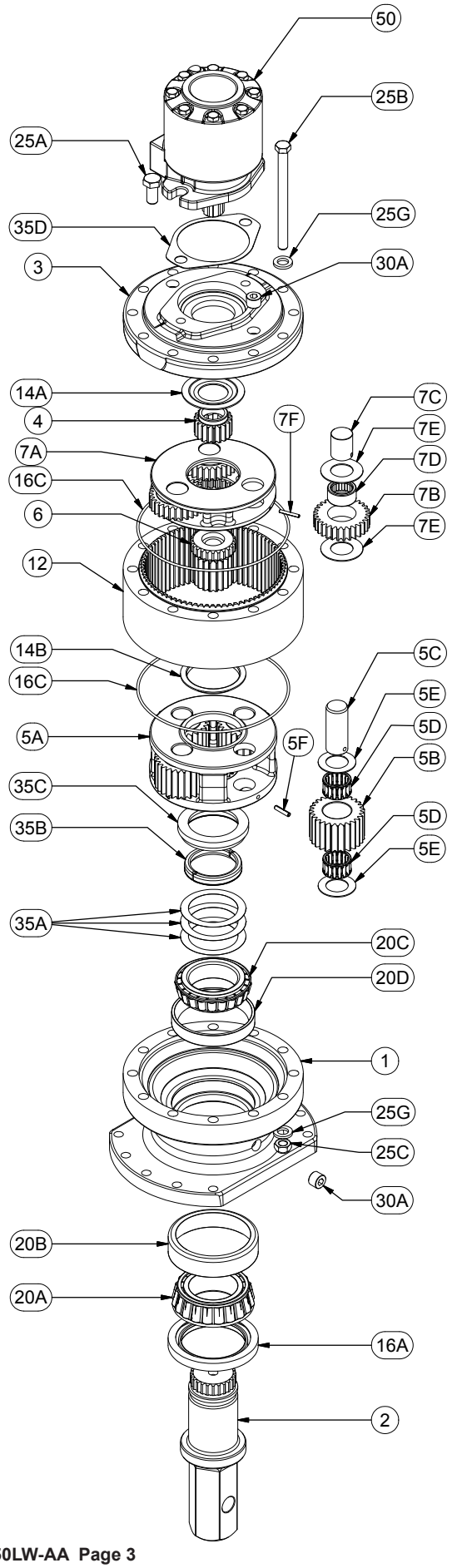
ESKRIDGE

## STANDARD

5425-13F135
EFFECTIVE FROM: SN-151000 09-01-16

| PARTS LIST | | | | |
|---|---|---|---|---|
| GROUP | ITEM | QTY | PART NUMBER | DESCRIPTION |
| | 1 | 1 | 50-004-3385 | BASE - D50 - ALUMINUM |
| | 2 | 1 | 50-004-4693 | SHAFT - D50 - 2" HEX |
| | 3 | 1 | 50-004-1643 | COVER - D50 - SAE 'A' 2-BOLT |
| | 4 | 1 | 85-004-1112 | INPUT GEAR |
| 5 | - | (1) | 50-005-2163 | CARRIER ASSY |
| | 5A | 1 | 50-004-1640 | CARRIER - SECONDARY (5.05:1) |
| | 5B | 4 | 85-004-1670 | PLANET GEAR - SEC. (5.05:1) |
| | 5C | 4 | 25-004-1031 | PLANET SHAFT (PRIMARY) |
| | 5D | 8 | 01-105-0590 | BEARING |
| | 5E | 8 | 50-004-1644 | THRUST WASHER - PLANETS |
| | 5F | 4 | 01-153-0210 | ROLL PIN (3/16 DIA X 7/8 LG) |
| | 6 | 1 | 85-004-1669 | SUN GEAR - 70 (5.05:1) |
| 7 | - | (1) | 50-005-2021 | CARRIER ASSY |
| | 7A | 1 | 50-004-1072 | CARRIER - PRI (5.05:1) |
| | 7B | 3 | 85-004-1021 | PLANET GEAR - PRI. |
| | 7C | 3 | 81-004-0071 | PLANET SHAFT |
| | 7D | 3 | 01-105-0410 | PLANET BEARING |
| | 7E | 6 | 81-004-1561 | THRUST WASHER-PLANET. |
| | 7F | 3 | 01-153-0080 | ROLL PIN |
| | 12 | 1 | 50-004-1023 | RING GEAR |
| 14 | - | - | - | THRUST WASHERS |
| | 14A | 1 | 50-004-1091 | THRUST WASHER-INPUT |
| | 14B | 1 | 50-004-1011 | THRUST WASHER SEC. CUP |
| 16 | - | (1) | 85-016-0601 | SEAL KIT |
| | 16A | 1 | 01-405-0530 | SEAL |
| | 16C | 2 | 01-402-0560 | O-RING |
| 20 | - | - | - | OUTPUT SHAFT BEARINGS |
| | 20A | 1 | 01-102-0140 | BEARING CONE |
| | 20B | 1 | 01-103-0130 | BEARING CUP |
| | 20C | 1 | 01-102-0150 | BEARING CONE |
| | 20D | 1 | 01-103-0140 | BEARING CUP |
| 25 | - | - | - | HARDWARE |
| | 25A | 2 | 01-150-1390 | HEX CAP SCREW |
| | 25B | 12 | 01-150-1560 | HEX HEAD CAP SCREW |
| | 25C | 12 | 01-158-0413 | NUT - NYLOCK |
| | 25G | 24 | 01-166-0120 | FLATWASHER - HDN (1/2 X 7/8 X 1/8) |
| 30 | - | - | - | PLUGS AND FITTINGS |
| | 30A | 2 | 01-207-0070 | PIPE PLUG (3/8 MAGNETIC) |
| 35 | - | - | - | MISCELLANEOUS |
| | 35A | * | 50-004-1521 | SHIM |
| | 35B | 1 | 50-004-1452 | SPLIT RING |
| | 35C | 1 | 50-004-1462 | LOCK RING |
| | 35D | 1 | 90-004-1081 | GASKET - (SAE 'A' 2-BOLT) |
| | 50 | 1 | 01-304-1350 | MOTOR |

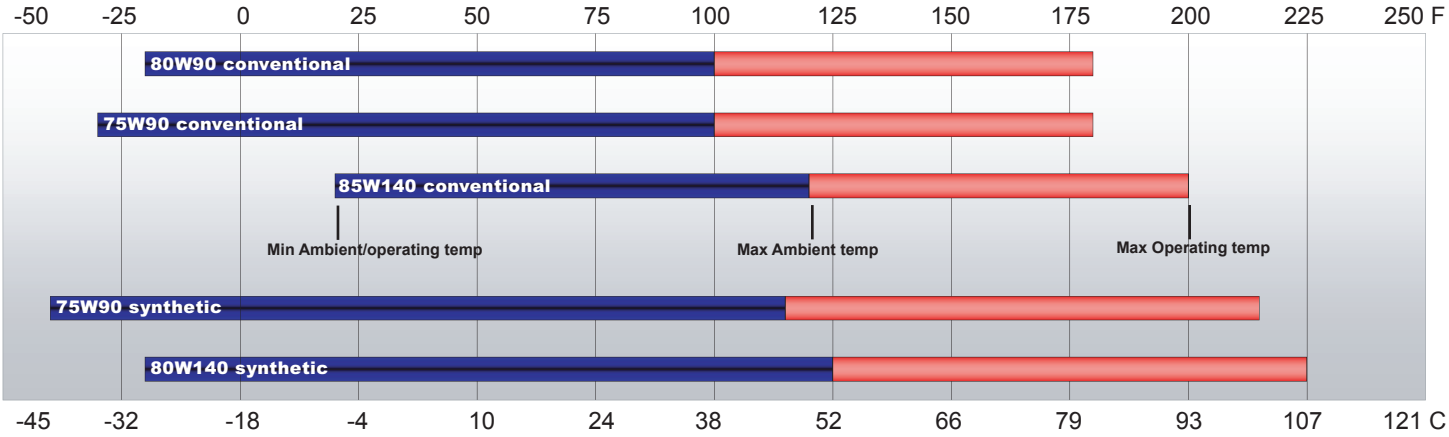
*QUANTITY DEPENDENT UPON DESIRED BEARING PRELOAD
X 5425-13F135 ECN: - REV: A 09-01-16 HWP



# 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 vicintiy 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

# OIL CAPACITIES

| Operating Position | Oil Capacity | | Oil Level |
|---|---|---|---|
| | 5025 | 5425 | |
| Horizontal Shaft | | | To horizontal centerline of gear drive |
| Vertical Shaft (Pinion Down) | 2.25 pints / 1.06 L | 2.00 pints / .95 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 motor **(50)** 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 motor cap screws **(25A)** and motor **(50)**. Inspect motor gasket **(35D)** and discard if damaged.

4) Remove cover bolts **(25B)**, washers **(25G)**, and locknuts **(25C)**.

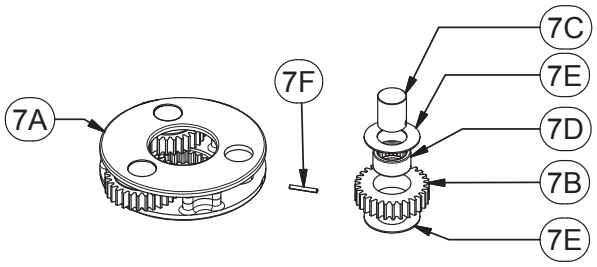
5) Remove the cover **(3)**, thrust washer **(14A)**, and input gear **(4)**. Inspect o-ring **(16C)**. Discard o-ring if damaged or deformed.

6) Remove primary planet carrier assembly **(7)** and thrust washer **(14B)** from the unit. Lift out sun gear **(6)** and remove ring gear **(12)**. Inspect o-ring **(16C)**. Discard o-ring if damaged or deformed. Remove secondary planet carrier assembly **(5)**.

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.

## Primary Carrier Subassembly

(Items 7A, 7B, 7C, 7D, 7E, 7F)




Disassembly

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

2) Drive roll pins **(7F)** completely into planet shafts **(7C)**.

3) Slide planet shafts **(7C)** out of carrier **(7A)**.

4) Remove planet gears **(7B)**, washers **(7E)**, and bearings **(7D)** from carrier **(7A)**.

5) Inspect the planet gear **(7B)** bearing bores, planet shafts **(7C)**, and bearings **(7D)**. Check for spalling, bruising or other damage and replace components as necessary.

6) Use a pin punch to remove roll pins **(7F)** from planet shafts **(7C)**.

Reassembly

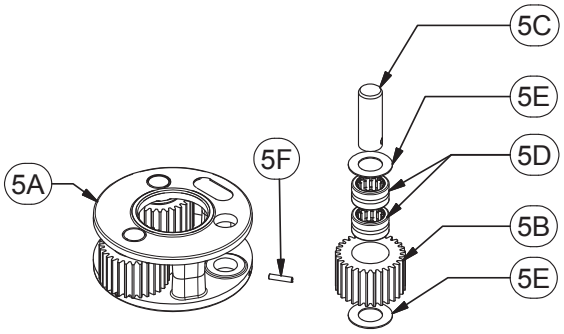
1) Insert bearing (**7D**) into planet gear (**7B**). Place a planet washer (**7E**) on top and bottom of planet gear and slide into carrier (**7A**).

2) Intall planet shafts **(7C)** with chamfered end of roll pin hole toward outside diameter of carrier **(7A)**. This will aid in alignment of holes while inserting roll pin **(7F)**.

3) Drive roll pin **(7F)** into carrier **(7A)** hole and into planet shaft **(7C)** until flush with outside diameter of carrier. Repeat for remaining planet gears.

## Secondary Carrier Subassembly

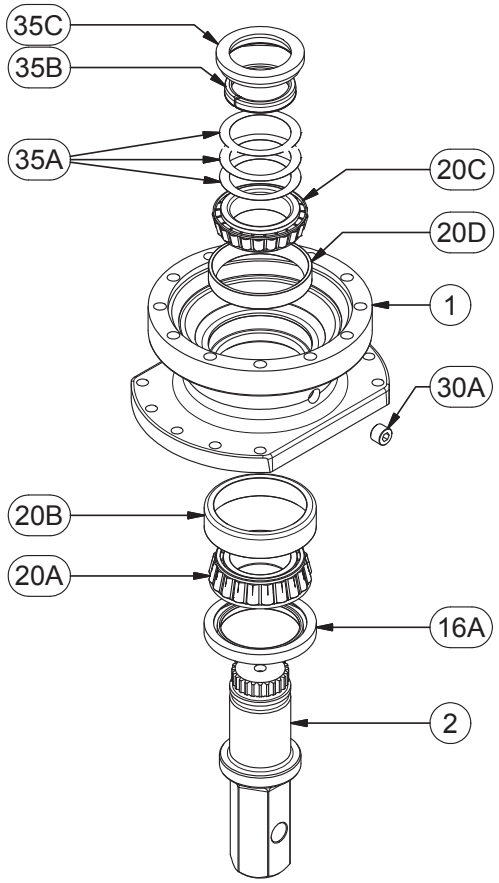
(Items 5A, 5B, 5C, 5D, 5E, 5F)




The procedure to disassemble, inspect, and reassemble the Secondary Carrier Subassembly is the same as for the Primary Carrier Subassembly.

## Base Subassembly

(Items 1, 2, 16A, 20A, 20B, 20C, 20D, 30A, 35A, 35B, 35C)




Disassembly

1) Remove the lock ring **(35C)** using a heel bar or puller.Be careful not to pry against the bearing cage **(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 the shaft 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)** with output shaft **(2)** down, as shown, on a plate or table. Press output shaft through bottom of base by applying load to top end (internal end) of shaft until it passes through inner shaft bearing cone **(20C)**.

3) A gear puller may be used to remove outer bearing cone **(20A)** from the shaft **(2)**. If reusing old bearing cone, do not pull on or damage roller cage. Remove shaft seal **(16A)**.

4) Inspect inner and outer bearing cups **(20B & 20D)**. if cups are damaged, drive them out of base **(1)** using a brass drift.

Reassembly

1) Place base **(1)** output side up, opposite shown, on work table.

2) Apply a layer of lithium or general purpose bearing grease to roller contact surface of outer bearing cup **(20B)**.

3) Press outer bearing cone **(20A)** onto the shaft **(2)** until it seats against the shoulder.

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

4) Place the shaft **(2)** with the bearing cone **(20A)** into the base **(1)**.

5) Flip shaft/base assembly, and apply lithium or general purpose bearing grease to roller contact surface of the inner cup **(20D)**. Press inner bearing cone **(20C)** onto shaft **(2)** until it seats against inner bearing cup.

6) Prior to installation of the shaft seal **(16A)**, the bearing preload may result in a rolling torque which varies between 50 and 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. Determine your pre-load requirement and install shims to obtain this pre-load.

7) Install the Load-N-Lock™ segments **(35B)** over the shims **(35A)** and into the groove in the shaft **(2).** 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 secondary carrier assembly **(5)** onto output shaft **(2)**. Align the splines of the carrier **(5A)** with the output shaft splines and slide the carrier onto the shaft.

2) Lubricate o-ring **(16C)** and install on base **(1)** pilot.

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

3) Align gear teeth of ring gear **(12)** with the gear teeth of the planet gears **(5B)** and place on base **(1)**. Align mounting holes of ring gear with holes in base. Use the scribed line made during disassembly for reference.

4) Install thrust washer **(14B)** and sun gear **(6)**.

5) Install primary carrier assembly **(7)**. Align planet gear **(7B)** teeth with ring gear **(12)** teeth, then align carrier **(7A)** spline teeth with sun gear **(6)** spline teeth.

6) Install the input gear **(4)** and thrust washer **(14A)**.

7) Lubricate o-ring **(16C)** and install on cover **(3)** pilot.

8) Noting the scribed line made during disassembly, align and install cover **(3)**. Install the hex-head capscrews **(25B)**, washers **(25G)**, and locknuts **(25C)**. **Tighten the capscrews to 80 ft-lb dry or 60 ft-lb if lubricated**. Be careful to tighten capscrews evenly and incrementally. The o-rings can get pinched and leak if the joints get tightened at an angle.

9) Using a splined shaft to drive the input gear **(4)** ensure that the unit spins freely.

10) Install pipe plugs **(30A)**, using pipe sealant on threads.

11) Fill the unit to the proper level, as specified, with recommended gear oil (refer to chart, page 3).

12) Install motor **(50)** using the two capscrews **(25A)**.

**The drive head is now ready to use.**