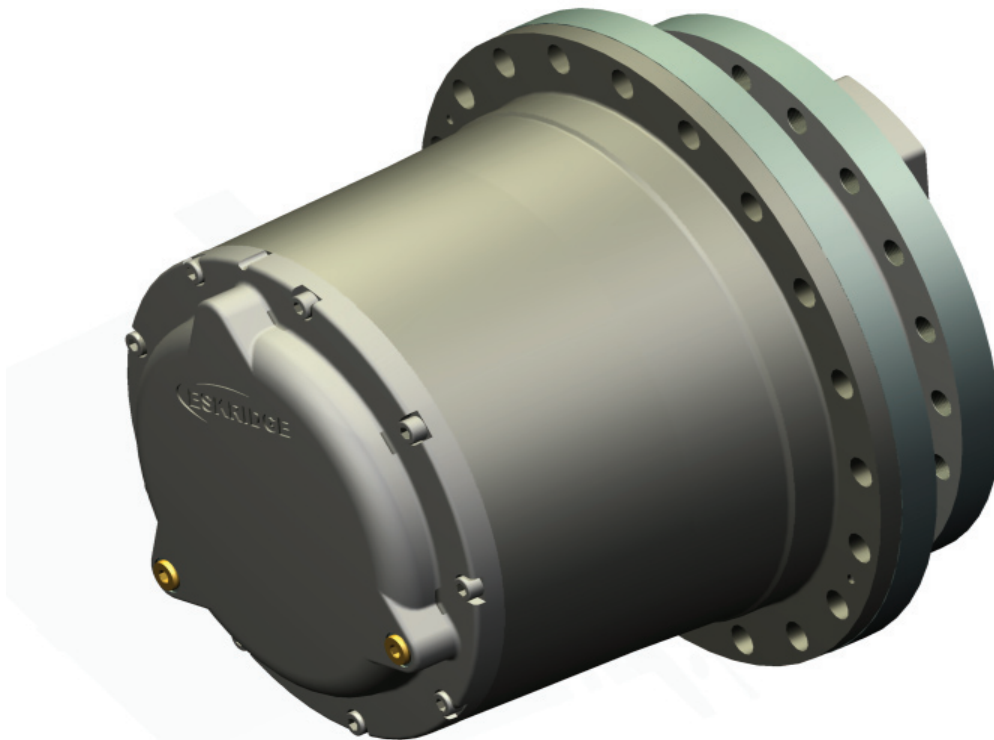




SERVICE MANUAL MODEL 55T FINAL DRIVE



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: 85472 TO CURRENT
DATE: 6-1-09 TO CURRENT
VERSION: SM 55T-AA

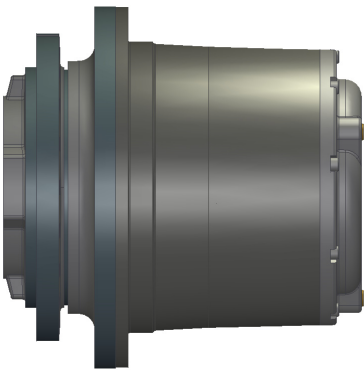
NOTE: Individual customer specifications (spindle mounting, sprocket pilot, brake assembly, etc.) may vary from exploded drawing and standard part numbers shown. If applicable, refer to customer drawing for details.

LUBRICATION & MAINTENANCE

Gearbox nominal operating temperatures are between 122°F and 158°F. Use the chart below to determine the appropriate lubricant viscosity for your application by choosing the highest foreseen temperature and rpm. If the gearbox is operating outside of these temperatures contact Eskridge. In applications with very low output speeds and heavy loading always choose high viscosity oils. Heavy use applications with high continuous loading and temperatures require a polyalphaolefin synthetic lubricant. 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.

Output RPM (n)	Temperature	
	50°C (122°F)	70°C (158°F)
n<5	ISO 320	ISO 460
5<n<20	ISO 220	ISO 320
n>20	ISO 150	ISO 220

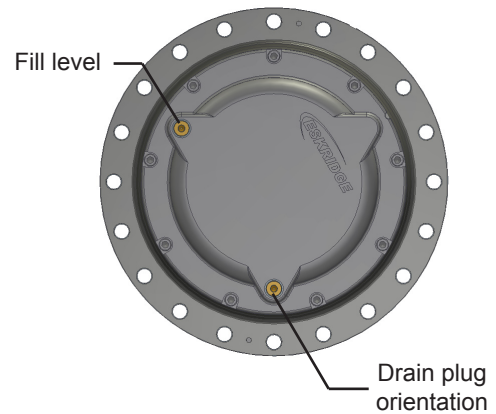
Operating Position



Oil Capacity

6 quarts / 5.5 liters

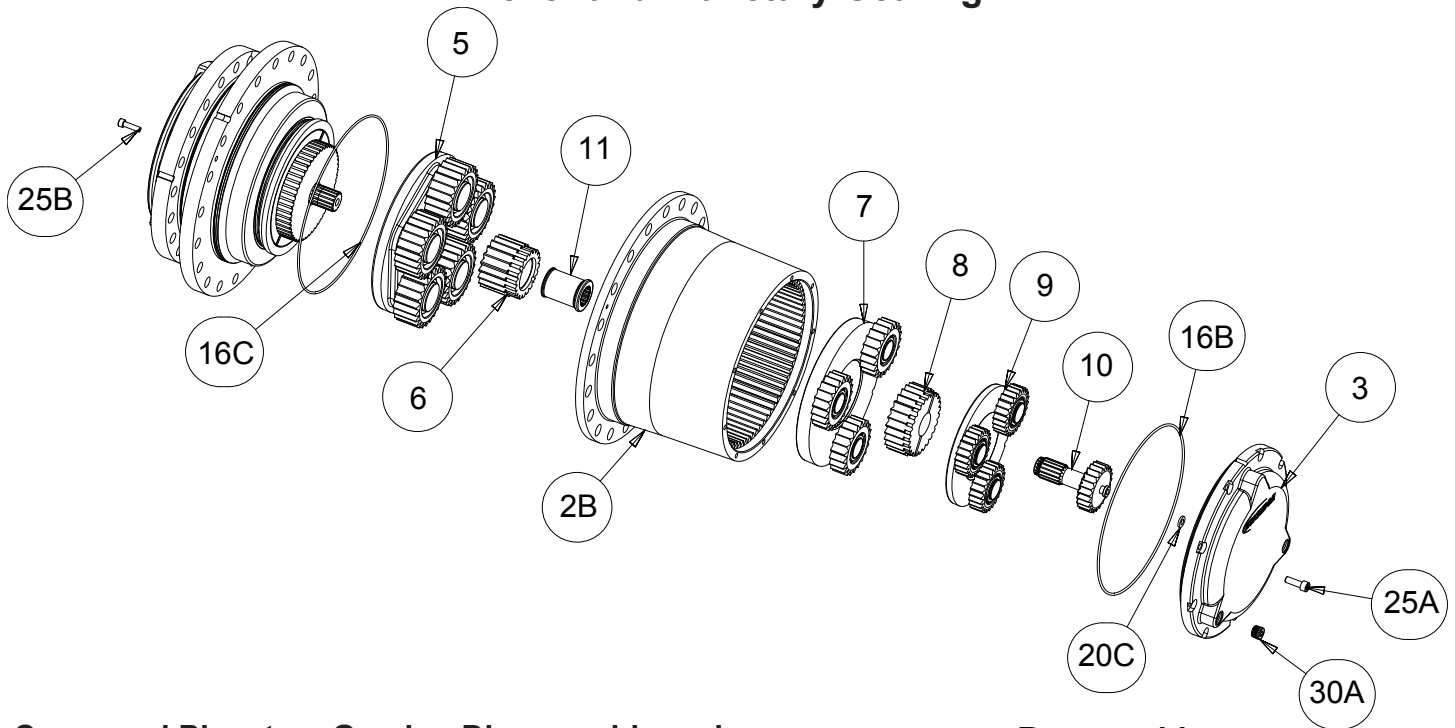
Oil Level



ESKRIDGE SERIAL TAG AND PART NUMBER INTERPRETATION

Note: All standard Eskridge Geardrives are issued a descriptive part number which includes information regarding the Model, spindle style, hub mount, input spline configuration, service brake specifications, overall ratio and various available options. The serial tag, located on the cover, provides all necessary product information to identify the final drives components. For a detailed breakdown of this information, please refer to Eskridge product specification sheets found at: <http://www.eskridgeinc.com/geardrives/gearprodspecs.html>

Cover and Planetary Gearing



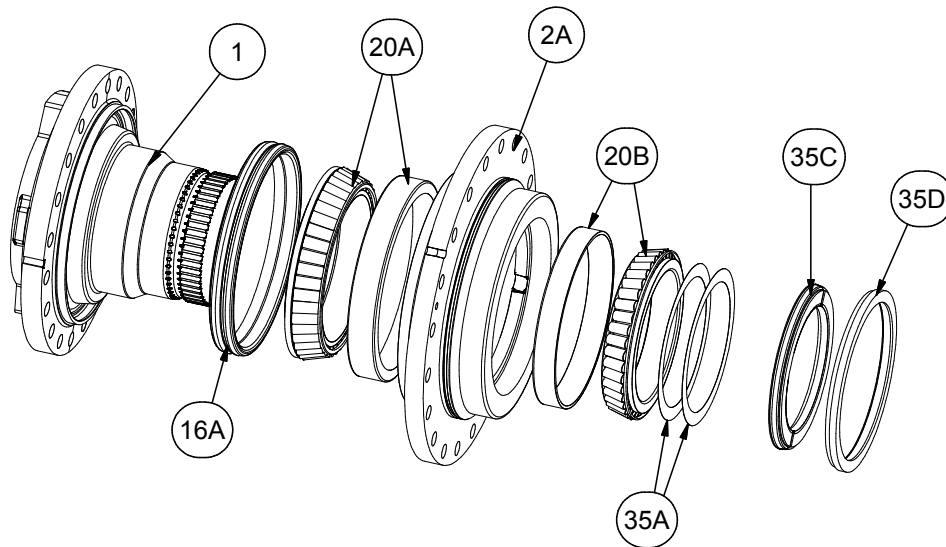
Cover and Planetary Gearing Disassembly and Inspection

- 1) Disconnect brake release line from spindle. Remove hex head cap screws retaining motor to spindle then remove motor. Take out fasteners retaining sprocket to ring gear flange. Orient one cover (3) drain plug (30A) in the downward position and remove both plugs from unit. The oil will drain out more quickly and completely if warm. Remove fasteners retaining final drive to chassis.
- 2) Remove the nine, M10 X 1.25 SHCS (25A) securing the cover (3) to the ring gear (2B). Inspect cover O-ring (16B) and thrust washer (20C) replace if necessary
- 3) Remove sun shaft (10) then take out primary carrier assembly (9).
- 5) Remove secondary sun gear (8) and lift out secondary carrier assembly (7).
- 7) Remove two M8 X 1.25 SHCS (25B) retaining ring gear to bearing carrier. Install two M10 X 1.5 eyebolts into ring/cover mounting location and remove ring gear (2B). Inspect bearing carrier O-ring (16C) and replace if necessary.
- 8) Remove shaft coupler (11) and tertiary sun gear (6) and take off tertiary carrier assembly (5).
- 10) Clean and inspect components, identify any individual components that require repair. Rotate planet gears to ensure planet bearings roll freely and smoothly, replace if necessary. A bill of materials identifying individual components and their subsequent part numbers is provided at the end of this manual

Reassembly

- 1) Install O-ring (16C) onto bearing carrier assembly.
- 2) Place tertiary planet assembly (5) onto spindle splines.
- 3) Install tertiary sun gear (8) and shaft coupler (11).
- 4) Place a thin film of oil onto the ring gear (2B) cover and bearing carrier pilots. Place ring gear over tertiary planet gear set and align the tertiary planet gears with the ring gear teeth. Align ring gear retention fasteners (25B) holes located in the bearing carrier with the threaded holes in the ring gear. Slide ring gear over the bearing carrier pilot and O-ring (16C). Install fasteners (25B) with blue thread retention compound and torque to 20 ft-lbs.
- 5) Align secondary carrier assemblies (7) planet gears with the ring gear and install secondary carrier. Install the secondary sun gear (8) and rotate the carrier until the carrier spline couples with the tertiary sun gear (6).
- 6) Install the primary carrier assembly (9) on the secondary carrier sun gear (8). Install the sun shaft (10) into the shaft coupler (11) and primary gear assembly (9).
- 7) Install cover (3) pilot into the ring pilot (2B) then rotate the cover until the primary gear teeth (9) mesh with the cover gear teeth. Align the cover though holes with the ring gear threaded holes. Place blue thread retention compound onto the fasteners (25A). Install the fasteners and torque them in a crisscross pattern to 37 ft-lbs.
- 8) Place both plug holes in a horizontal position at approximately 2 and 9 o'clock then fill the unit with oil. Install oil fill plugs (30A).

Spindle and Bearing Carrier

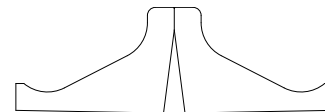


Bearing Carrier and Spindle Disassembly and Inspection

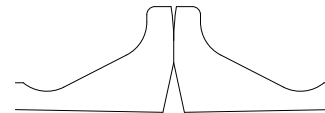
- 1) Remove spindle lock ring (35D) using a heel bar or puller. Don't pry against taper roller bearing cage (20B) when removing the lock ring .
- 2) Remove split ring segments (35C), and shims (35A).

Caution: Since spindle is no longer retained, care should be taken to avoid personal injury. Care should also be taken not to damage spindle when it is pressed through bearing carrier.

- 3) Remove bearing carrier (2A) from spindle (1) by applying a load to the internal end of the spindle until it passes through the internal bearing (20B).
- 4) Use a gear puller to remove the outer bearing cone (20A) from the spindle (2). If reusing the bearing cone do not pull on or damage the bearing cage.
- 5) Clean and inspect inner and outer bearing cups and cones (20A, 20B). If cups are damaged they must be replaced, drive them out using a brass hammer and drift utilizing the bearing knock-out notches in the bearing carrier. If a bearing cup or cone is damaged replaced both components.
- 6) The metal face seal (16A) is design to automatically compensate for wear. The sealing band of a new seal is located at the outer perimeter of the seal surface. As seal wear occurs this contact band will widen and migrate towards the center of the seal. By measuring the distance from the contact band to the inner diameter an estimate of seal life remaining can be obtained. If the distance between the contact band and seal surface internal diameter is less than 50% if the overall sealing surface width, replace seal. Below is an illustration showing the sealing band location for a new and partially worn seal.



New Seal

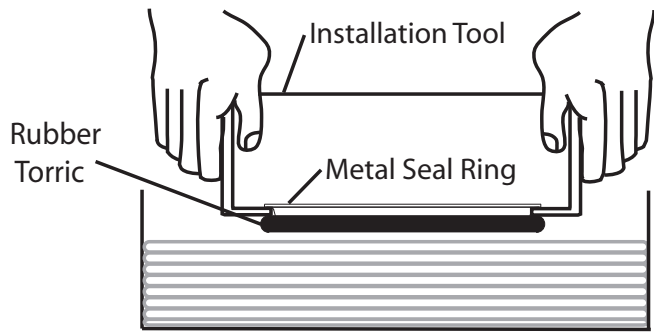


Partially Worn Seal

Reassembly

- 1) Place spindle (1) on table with splined side up. Press outer bearing cone (20A) onto spindle by pressing on bearing cones inner race.
- 2) Apply a thin layer of lithium or general purpose bearing grease to the roller contact surfaces on the bearing cups.
- 3a) Wipe the face of each half of the metal face seal (16A) using a lint-free wipe. No particles of any kind are permissible on the sealing surfaces. (Even a hair is sufficient to hold the seal surfaces apart and cause a leak.) Apply a thin film of oil on the entire seal face of one or both seals using a clean finger or lint-free applicator. Oil must not contact any surfaces other than the sealing faces. (If its necessary to replace metal face seal follow steps 3b-3d If not move onto step 4.)
- 3b) The seal cavities that retain the metal face seal must be free from foreign material (oil, grease, dirt, metal chips dust or lint particles, etc.) before installing the seal. Clean surfaces with a lint-free wipe and a non-petroleum based solvent.
- 3c) Install the seal using special installation tool shown in figure below. Mount the installation tool onto the metal seal ring. Lightly dampen the lower half of the rubber torric with one of the appropriate assembly lubricants outlined below.

Spindle and Bearing Carrier



Approved Assembly Lubricants*

Isopropyl Alcohol

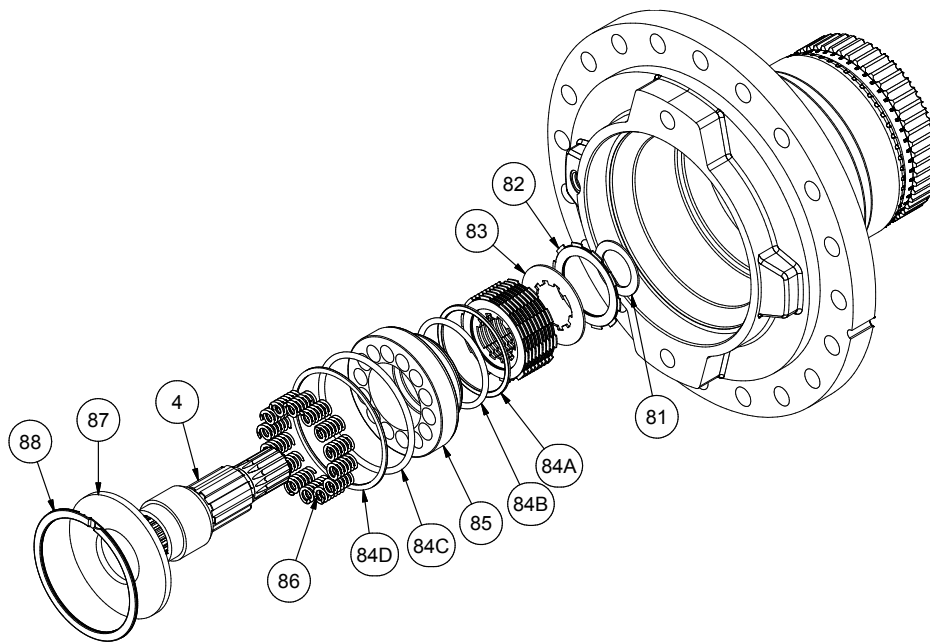
Houghto-Grind 60 CT

Quaker® Solvo Clean 68-RAH

***Do not use Stanosol or any other liquid that leaves an oil film or does not evaporate quickly.**

- 3d) Push seal into housing using even pressure. When the seal is properly seated you will feel it snap into place. Verify the metal face seals sealing surface is parallel to the spindle or bearing carrier housing and the torric O-ring is not budging out.
- 4) Install bearing carrier **(2A)** onto spindle assembly. Place bearing cone onto spindle assembly. Press on the inner race of bearing cone **(20B)** using light pressure until the bearing is seated in the bearing cup.
- 5) Install shims **(35A)** and Load-N-Lock™ halves **(35C)** over shims into the corresponding spindle groove. Then, install the lock ring **(35D)** over the segments **(35C)**. Proper spindle bearing preload will result in a rolling torque which varies between **130-170** in-lb. Add or remove shims to obtain the proper preload.
- 6) The bearing carrier and spindle subassembly service or repair is complete at this time continue unit assembly

Service Brake



Service Brake Disassembly and Inspection

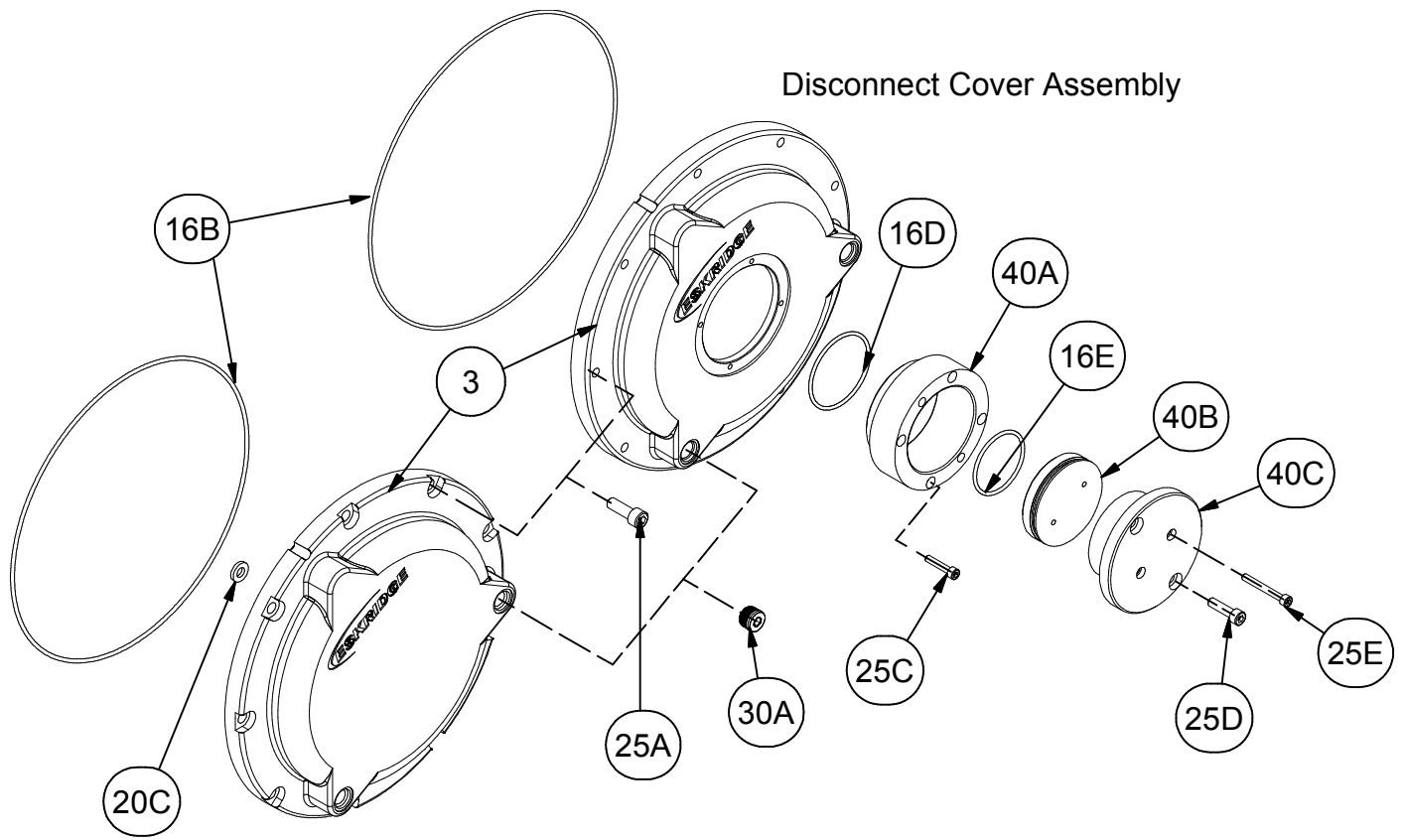
- 1) This final drive is equipped with a spring applied, hydraulic release, multiple disc service brake incorporated into the spindle. In order to disassemble the brake a light load needs to be placed onto the backing plate (87). Apply only enough force on the backing plate (87) to release the load the backing plate is applying to the retaining ring (88). Remove the retaining ring.
- 2) Remove backing plate (87) input shaft (4) and springs (86).
- 3) Apply low pressure air (20-30 PSIG) to the brake release port while holding one hand on top of the piston (85). The air will force the piston out of the spindle. Inspect piston O-rings (84A, 84B, 84C, 84D) for signs of abrasion, extrusion or other damage and replace if necessary. If replacing piston O-rings, be sure O-rings (84B & 84C) are nearest each other with backup rings (84A & 84D) to the outside. The flat side of back-up-ring must be placed next to piston groove wall, with the curved side contacting the O-ring.
- 4) Friction disks (82), separator plates (83) and thrust washer (81) can be removed. Note the arrangement of the friction disks and separator plates. Some final drives will also have a spacer (not shown) and its position also needs recorded.
- 5) Friction disks (82) should be replaced when overall stack height of the friction pack [spacers (not shown), friction disks (82) and separator plates (83)] is less than 1.52 in. If the friction disks are replaced soak the new friction disks in gear box oil prior to installation.
- 6) Clean and inspect the piston (85) bores for scratches or abrasions and replace if necessary.

Reassembly

- 1) Install thrust washer (81), friction disk (82) then separator

plate (83). Continue to install friction disks (82) then separator plates (83) until the complete friction pack is installed. There must always be a friction disc (82) above and below each separator plate (83) Some units will have a spacer (**Not Shown**). If the friction pack was provided with a spacer install the spacer between the last friction disk (82) and the piston (85). Be careful not to contaminate the friction surfaces with dirt, grease or fluid media other than what is specified for your particular gearbox.

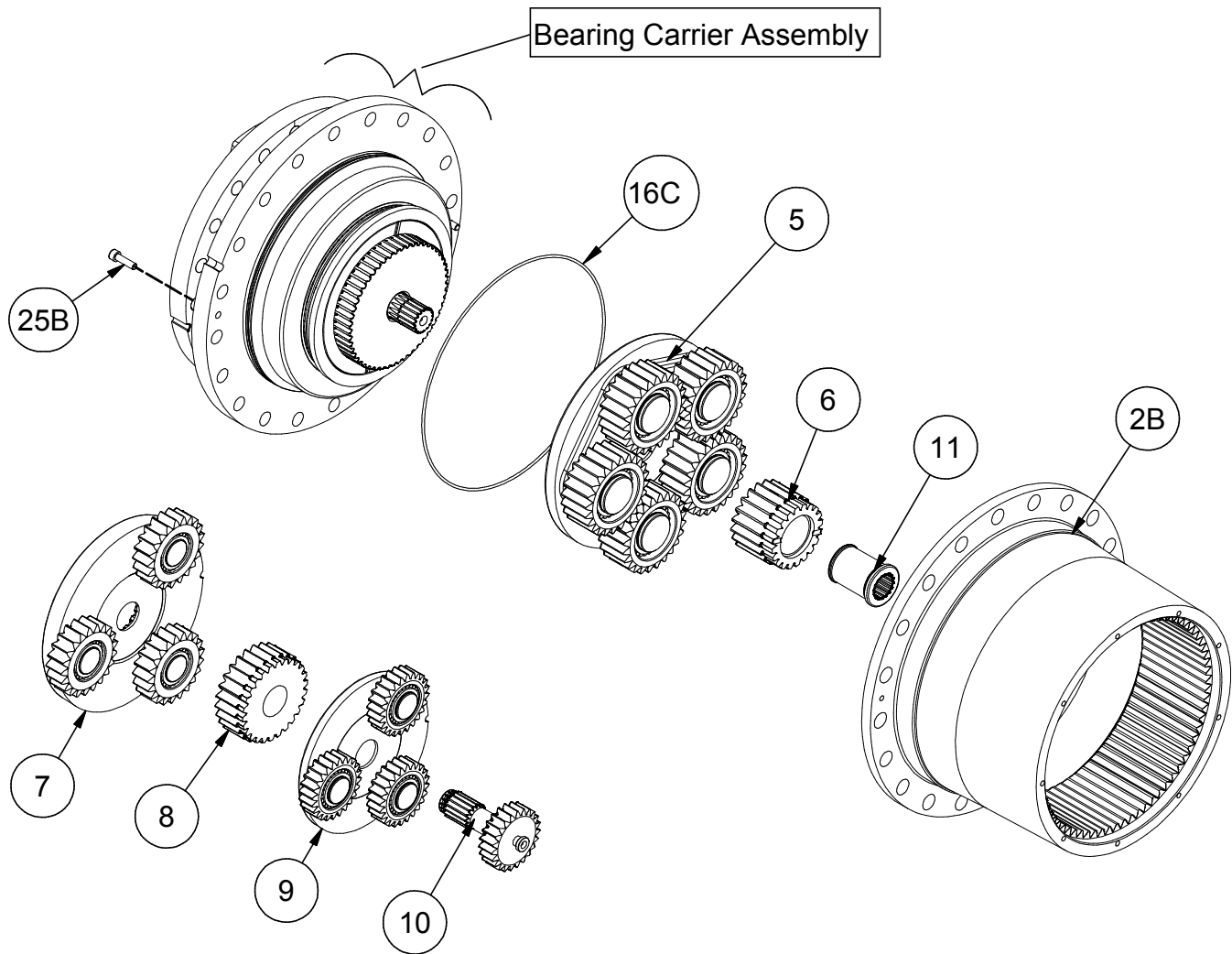
- 2) Lubricate O-rings and bores with silicone based lube or with mineral base oil. Gently slide Piston (85) into spindle. Press down firmly on piston until the piston (85) is firmly seated against the friction pack. Do not use a hammer or mallet to install piston.
- 5) Insert springs (86) into piston (85) evenly or symmetrically spaced.
- 6) Install shaft (4), it may be necessary to rotate shaft in order to align the separator plate splines with the shaft splines.
- 7) Install backing plate (87) then place load onto backing plate and install retaining ring (88).



Standard Cover Assembly

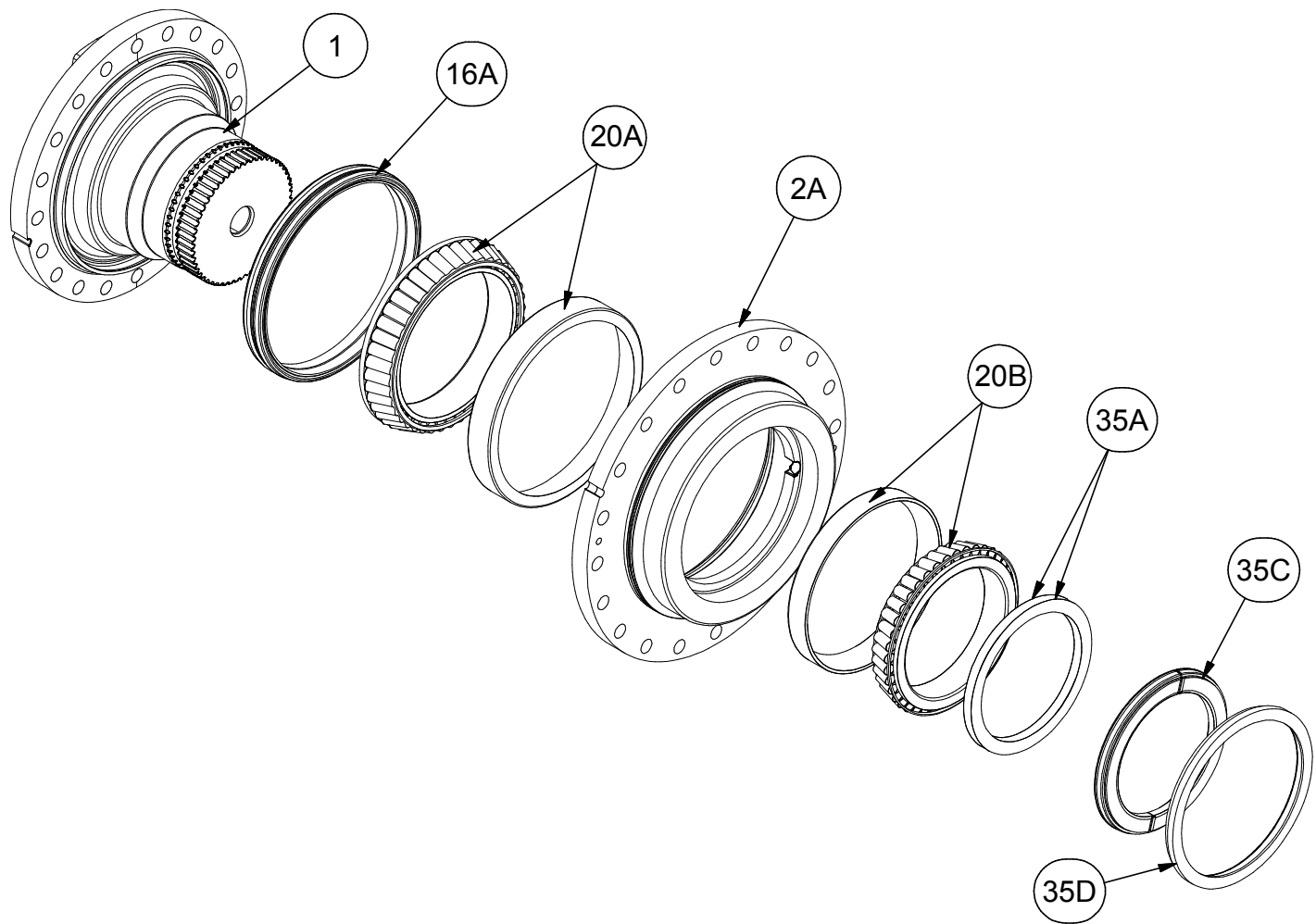
Disconnect Cover Assembly

Cover Bill of Materials			
Item #	QTY	Description	Part Number
3	1	71T Cover With Disconnect	55T-004-2002
		73T Cover With Disconnect	55T-004-2008
		71T Cover W/O Disconnect	55T-004-2001
		73T Cover W/O Disconnect	55T-004-2003
16B	1	O-ring	01-402-0020
16D	1	O-ring	01-402-1003
16E	1	O-ring	01-402-1002
20C	1	Thrustwasher	01-112-0511
25A	9	SHCS M10 X 1.5 X 30MM Class 10.9	01-150-2054
25C	4	SHCS M6 X 1 X 30MM Class 10.9	01-150-2050
25D	2	SHCS M8 X 1.25 X 30MM Class 10.9	01-150-2049
25E	2	SHCS M6 X 1 X 50MM Class 10.9	01-150-2048
30A	2	Hollow Hex Plug	01-208-0060
40A	1	Disconnect Housing	55T-004-1021
40B	1	Disconnect Plug	55T-004-1023
40C	1	Disconnect Plunger	55T-004-1022



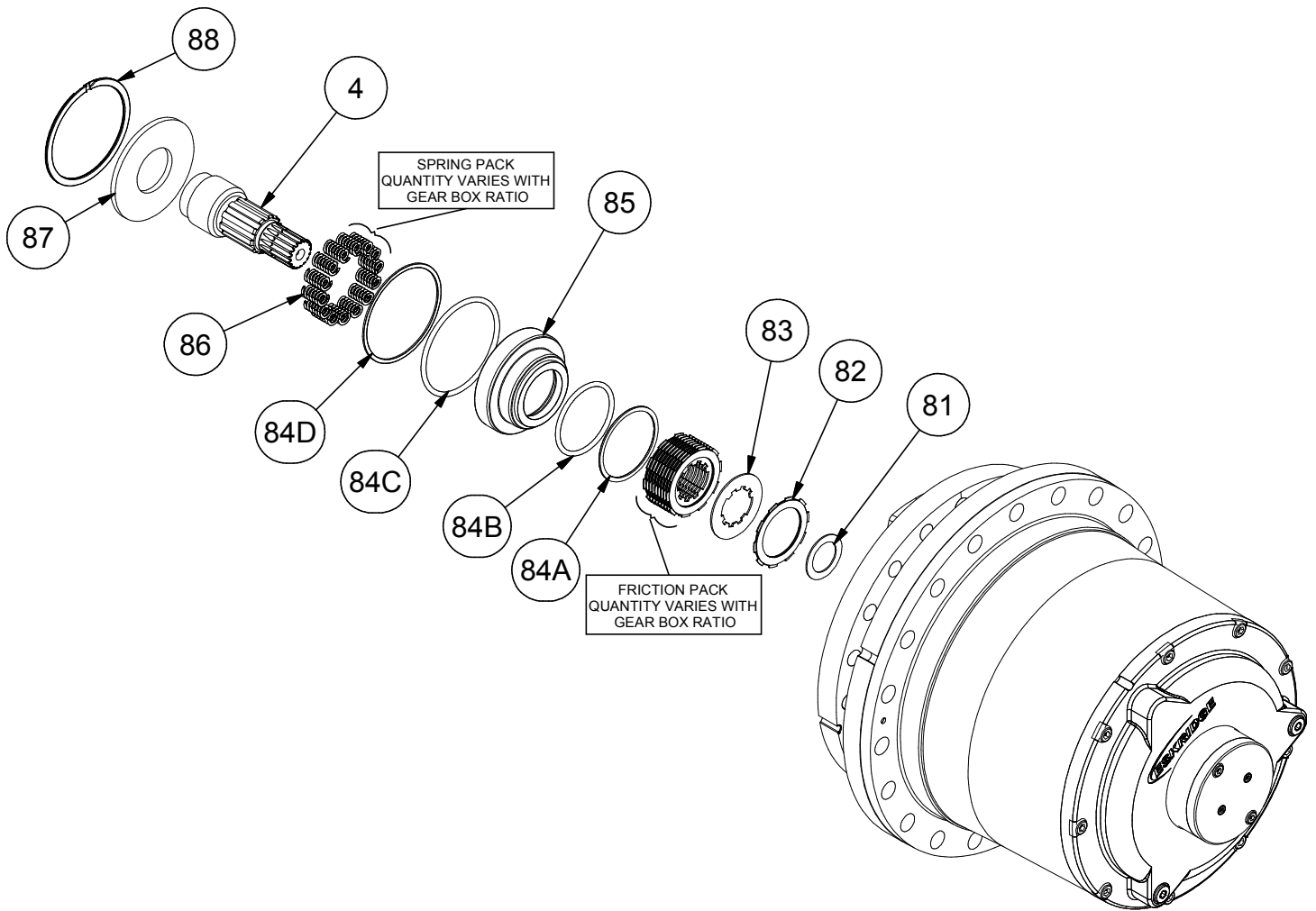
Gear Train Bill of Materials

Item #	QTY	Description	Part Number
2B	1	Ring Gear	55T-004-1035
5	1	Carrier Assembly - Tertiary (4.5:1)	55T-004-0103
6	1	Sun - Tertiary	55T-004-1008
7	1	Carrier Assembly - Secondary (4.46:1)	55T-005-0105
		Carrier Assembly - Secondary (6.29:1)	55T-005-0102
8	1	Sun - Secondary (4.38:1)	55T-004-1029
		Sun - Secondary (6.29:1)	55T-004-1009
9	1	Carrier Assembly - Primary (4.38:1)	55T-005-0104
		Carrier Assembly - Primary (5.64:1)	55T-005-0101
10	1	Sun Shaft - Primary (4.38:1)	55T-004-1030
		Sun Shaft - Primary (5.64:1)	55T-004-1010
11	1	Shaft Coupler	55T-004-1020
16C	1	O-ring	01-402-0950
25B	2	SHCS M8 X 1.25 X 30mm C10.9	01-150-2049



Bearing Carrier Bill of Materials

Item #	QTY	Description	Part Number
1	1	Spindle, 160mm Pilot for Cartridge Motors 40cc - 60cc	55T-004-4003
		Spindle, 190mm Pilot for Cartridge Motors 75cc - 90cc	55T-004-4001
		Spindle, 200mm Pilot for Cartridge Motors 107cc - 125cc	55T-004-4007
2A	1	Bearing Carrier, Pilot 350mm, BC 400mm, 20 XM20 X 1.5	55T-004-3001
16A	1	Metal Face Seal	01-406-0010
20A	1	Tapered Roller Bearing	01-103-0313
20B	1	Tapered Roller Bearing	01-103-0311
35A	*	Shim (* Bearing Load Determines Quantity)	55T-004-1011
35C	1	Split Ring - Load-N-Lock	55T-004-1015
35D	1	Lock Ring - Load-N-Lock	55T-004-1016



Brake Assembly Bill of Materials

Item #	QTY	Description	Part Number
4	1	Brake Shaft, Input 16T DIN 5480-1	55T-004-1033
		Brake Shaft, Input 18T DIN 5480-2	55T-004-1019
		Brake Shaft, Input 21T DIN 5480-3	55T-004-1024
81	1	Thrust Washer	01-112-0230
82	*	Stator (*Brake Holding Torque Determines Quantity)	90-004-1742
83	*	Rotor (*Brake Holding Torque Determines Quantity)	01-288-0020
84A	1	O-ring	01-400-1006
84B	1	Back Up Ring	01-402-0262
84C	1	O-ring	01-402-1007
84D	1	Back Up Ring	01-400-0263
85	1	Piston	55T-004-1034
86	*	Spring (*Brake Holding Torque Determines Quantity)	01-261-0290
87	1	Backing Plate	55T-004-1018
88	1	Internal Retaining Ring	01-160-0811