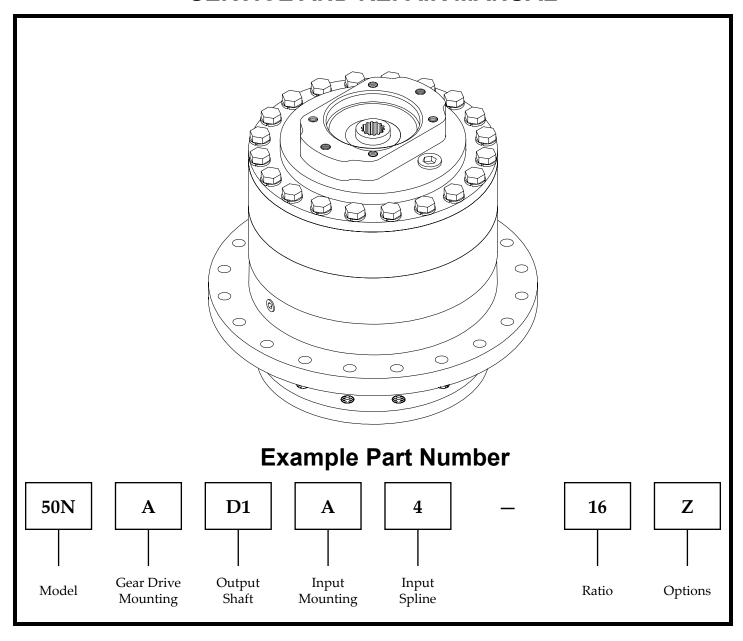


# 50N PLANETARY GEAR DRIVE SERVICE AND REPAIR MANUAL



THIS SERVICE MANUAL IS EFFECTIVE

FROM: ..... S/N 16401, JULY 1993

TO:.....CURRENT REF: ...... SM50ND2-AG

#### **50N MODEL SERVICE MANUAL**

#### SINGLE/DOUBLE STAGE PLANETARY GEAR DRIVE

This manual will assist in disassembly and assembly of the above model planetary geardrives. Item numbers, indicated in parentheses throughout this manual, refer to the exploded parts breakdown drawing. Individual customer specifications (mounting case, output shaft, brake assembly, etc.) may vary from exploded drawing and standard part numbers shown. If applicable, refer to individual customer drawing for details.

For any spare or replacement parts, contact your distributor or equipment manufacturer. Always try to have available the geardrive unit part number, serial number and date code on the serial tag. This information may be necessary for verification of any component part numbers. Component part numbers and/or manufacturing lot numbers may be stamped on individual parts. This information may also be helpful in identifying replacement components.

#### **LUBRICATION & MAINTENANCE**

Change the oil after the first 50 hours of operation. Oil should be changed at 500 hour intervals thereafter. Use a GL-5 grade EP 80/90 gear oil (EP = "Extreme Pressure"). The geardrive should be partially disassembled to inspect gears and bearings at 1000 hour intervals.

If your unit was <u>specified</u> "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 base or general purpose bearing grease sparingly every 50 operating hours or at regular maintenance intervals. Over-greasing the output bearing tends to fill the housing with grease and thicken the oil.

Stage	Operating Position	Oil Capacity	Oil Level
Single	Horizontal Shaft	1.25 pints 0.60 liters	To horizontal centerline of gear drive
	Vertical Shaft	2.00 pints 1.00 liters	To midway on upper/primary gear set
Double	Horizontal Shaft	1.50 pints 0.70 liters	To horizontal centerline of gear drive
	Vertical Shaft	2.50 pints 1.20 liters	To midway on upper/primary gear set

 $\Lambda$ 

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

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### **Disassembly Procedure**

All parts should be inspected as they are removed from unit. Scribe across mounting case (1), ring gear (2), and cover (3) joints on outside of gearbox to assure proper orientation of oil fill and drain plugs, motor mounting, etc., as the unit is reassembled.

- Remove hydraulic motor and Eskridge Brake from gearbox. Drain oil.
- 2) Remove the twelve 7/16 x 3" hex cap screws (27) and 7/16 lockwashers (31), which retain cover (3) and ring gear (2) to mounting case (1).
- 3) Lift cover (3) off of unit and remove input gear (12) and input thrust washer (26).
- 4) Remove primary planetary assembly (includes items 6,8,14,17,25 and 30).
- 5) Remove secondary planetary assembly (includes items 5,7,13,15,16,24, and 29).
- 6) Place unit on a press table with the output shaft (4) protruding downward through a hole in the table. Unit should be supported only by mounting case (1). The only thing retaining output shaft (4) at this point is the locknut (22) and lockwasher (23). Bend lockwasher tab out of locknut slot. Use a spanner wrench to loosen locknut. Take locknut and lockwasher completely off of output shaft.

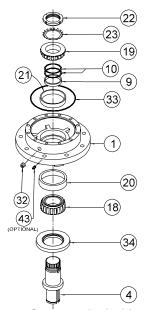
CAUTION: Locknut is no longer retaining output shaft. Take precautions if the unit is moved because the shaft may fall out.

7) With output shaft down through centerhole in press table and unit supported by case, press shaft out by applying press load to top end of shaft (threaded end) until it passes through inner shaft bearing (19). Outer shaft bearing (18) will come out of unit attached to shaft. Set aside the spacer (9) and shims (10) until needed in UNIT ASSEMBLY.

CAUTION: Care should be taken not to injure feet or damage output shaft during this procedure.

#### **Output Shaft Subassembly**

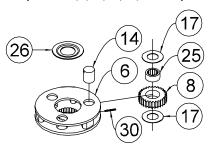
(ITEMS 4,18,34) (See exploded drawing for larger view)



- 1) If outer bearing cone (18) needs to be replaced, it will need to be pressed off of output shaft. Also inspect inner bearing cone (19). Shaft was pressed through inner bearing cone during shaft removal procedure; it is located in mounting case seated inside the inner bearing cup (21). In some instances, outer bearing cone (18) may need to be removed if shaft seal (34) is to be replaced. If outside diameter of output shaft (external end opposite bearing) is smaller than the inside diameter of seal, then shaft seal may be replaced without removing bearing cone.
- Lubricate inner lip of new shaft seal (34) and turn until open side of seal is up. Slide seal onto output shaft until it fits snug over shaft seal diameter.
- 3) Press outer bearing cone (18) onto output shaft (4). With small end of bearing cone pointing upward, start over threaded end of shaft and press until bearing is seated tightly against shoulder. If the original bearing was removed only to replace shaft seal, it may be reused.

NOTE: Press only on inner race of bearing cone. DO NOT press on outer roller cage of bearing or it will damage bearing.

### \*Primary Planetary Subassembly (ITEMS 6,8,14,17,25, and 30)



Rotate primary planet gears (8) to check for any abnormal noises or roughness in the primary planet bearings (25). At the same time, inspect planet gears for any damage or worn teeth. If replacement or further inspection is required, proceed as follows.

 Remove primary planet shafts (14) by pressing them out, thus sheering off roll pins.

NOTE: Support primary carrier (6) only while pressing planet shafts.

- 2) Slide planet gears **(8)** and primary planet washers **(17)** from carrier **(6)**.
- 3) If any of the primary planet bearings **(25)** need replacing, press them out of planet gears.
- 4) Check primary planet shafts (14) for any abnormal wear, especially ones in which bearings needed to be replaced. If any abnormal wear is found, replace planet shaft.
- 5) Punch remainder of sheared-off roll pins from carrier and planet shafts. New roll pins are always required if they are sheared off.
- Press new primary planet bearings (25) into planet gears, if required.
- 7) With a primary planet washer (17) on both sides of planet gear and bearing installed, slide gear into carrier (6) and insert primary planet shaft (14) through carrier, planet gear, and washers. During planet shaft installation, align roll pin

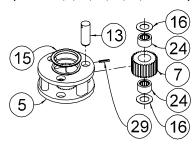
Steps marked with an asterisk (\*) apply only to double stage (planetary) models.

hole in planet shaft with the roll pin hole in outside diameter of carrier.

NOTE: Inserting a 1/8" diameter punch in roll pin hole of planet shaft will help in the alignment of holes between planet shaft and carrier during step #7.

- 8) Once holes are properly aligned, drive a roll pin (30) through primary carrier and into planet shaft to retain parts. Use a drift to drive roll pin flush to carrier and to prevent striking planet gear teeth.
- Repeat same process for remaining gears.

## Secondary Planetary Subassembly (ITEMS 5,7,13,15,16,24, and 29)



Follow same procedures as that for the Primary Planetary Subassembly, only substitute item numbers as indicated. Secondary carrier (5), secondary planet gear (7), secondary planet shaft (13), carrier cup washer (15), secondary planet washer (16), secondary planet bearing (24), secondary roll pin (29).

## Case Subassembly (ITEMS 1,20,21, and 32)

- Inspect inner and outer bearing cups (20,21). If cups are damaged, cups and case (1) may need replacement. Contact Eskridge, inc. if you have questions.
- Clean all foreign material from magnetic oil plug (32) located on side of mounting case (1). Add a small amount of pipe thread compound to pipe plug before installing it back into case.

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

### **Unit Reassembly**

- Start with case assembly (1). Turn case upside down and position on press table. Case pilot diameter should be pointing upward with outer bearing cup (20) exposed. Apply a layer of lithium bearing grease to bearing cup surface.
- Invert output shaft assembly (4), threaded side down, and carefully lower into case (1) until the shaft's outer bearing cone (18) is seated against outer bearing cup (20).
- 3) Press shaft seal (34) into case until it is flush with bottom of pilot diameter. Use a press fixture, if possible, to avoid distorting seal. If press fixture is not available, a hammer and flat-ended drift may be used by tapping outer edge of seal lightly and alternating sides.
- Stand unit assembly upright on output shaft.

CAUTION: The only thing holding output shaft and case to-

gether at this point is the tightness in fit of the shaft seal. Securely and cautiously turn unit upright, not allowing case and shaft to separate.

- 5) While holding output shaft (4) with one hand, rotate case (1) to be certain it turns freely and smoothly. The slight resistance felt, if any, is due to shaft seal load (drag) on output shaft.
- 6) Install bearing spacer (9) over threaded end of output shaft (4). Spacer should slide all the way down to outer bearing cone (18), where it will rest. Follow spacer with bearing shims (10). The same number (quantity) of shims removed from unit during disassembly should be returned. Shims will sit directly on top of bearing spacer.

NOTE: Quantity of shims (10) may vary from unit to unit. Bearing preload, set at the factory, determines quantity of shims.

- Apply a layer of lithium bearing grease to inner bearing cup (21) surface.
- 8) Install inner bearing cone (19) (small end down) over threaded end of output shaft. Press bearing on slowly until it is just seated against bearing cup (21). With a slight press load still applied, rotate case (1) by hand to ensure roller bearings are rotating evenly and smoothly. Inner bearing cone (19) may require additional press load to reach proper bearing preload. If roller bearings are seated properly, continue on to set and check bearing preload.

SHAFT BEARING PRELOAD: Proper shaft bearing preload is achieved when torque required to rotate case is 50 to 80 in-lbs. This rolling torque is equal to a force of approximately 11 to 18 lbs if pulling on mounting case flange to rotate case (1). This may be determined by feel or by using a fish scale or similar measuring device to check rolling torque. Once preload is set, relieve press load and continue to step #9.

- 9) Install a new retaining ring (22) onto output shaft.
- 10) Lightly grease a new o-ring (33) and install it into o-ring groove in case (1). Assemble ring gear (2) to case (1). Refer back to scribe marks made across external joints of gearbox prior to Disassembly Procedure. Line up scribe marks between ring gear and case to give correct hole alignment.

NOTE: Be certain that o-ring (33) stays seated in groove during step #10.

- lnstall secondary carrier assembly into unit. Carrier assembly should be installed with hub side down (24 tooth spline). Rotate carrier assembly back and forth to mesh secondary planet gear teeth (7) with ring gear (2) teeth. Once teeth mesh, let secondary carrier slide down until it contacts with output shaft spline. The carrier splined hub (5) should spline onto output shaft (4). Carrier hub will rest on top of retaining ring (22) when splines are fully engaged. Check to be certain carrier cup washer (15) is installed.
- \*12) Install secondary sungear (11) in secondary carrier assembly.
  Install cup washer (15) on top of carrier assembly.
- \*13) Install primary carrier assembly into unit, splined hub down.
- 14) Insert input gear into unit so that teeth mesh with primary planet gears (8). Put input thrust washer (26) over top of input gear.
- 15) Fill unit with GL-5 grade EP 80/90 gear oil, referring to the Oil Capacity Chart shown on Page 2 of this manual.

16) Grease a new o-ring (33) and install it into bottom of cover (3). Refer back to scribe marks made across external joints prior to Disassembly Procedure. Line up scribe marks between cover and ring gear (2) so that orientation of motor mount holes and oil plug are back to their original positions.

NOTE: Be certain o-ring (33) stays seated in cover during step 16.

17) Install all twelve of the 7/16 lockwashers (31) and the 7/16 hex capscrews (27) and torque to 70 ft-lbs.

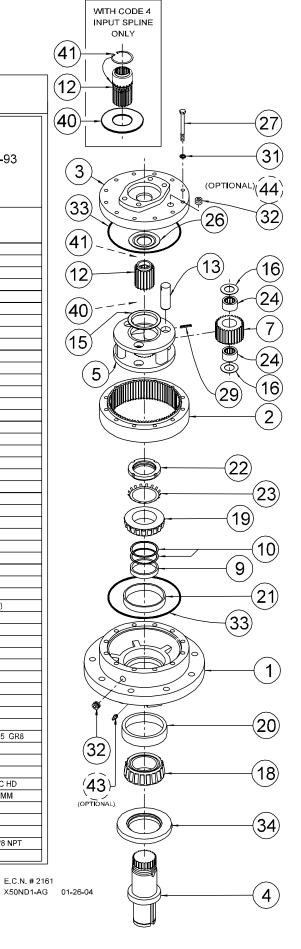
THE GEARBOX IS NOW READY FOR USE.

### **50N Single Stage Exploded View Drawing**

		SKRID	GE M	0[	DEI	_ 5	50N		
	SIN	SINGLE PLANETARY					EFFECTIVE		
	4:1	5:1 5.05 WITHOUT CODE 4	5:1 5.05 WITH CODE 4	RATIO					FROM: S/N 16130 07-01-93 TO: (CURRENT)
	PART NUMBER	INPUT SPINE PART NUMBER	INPUT SPINE PART NUMBER	QTY.	ITEM	CODE	DESCRIPTION		
П	50-004-3003	50-004-3003	50-004-3003			A	ROUND FLANGE (NO ZERK)		
V BASES	50-004-3013	50-004-3013	50-004-3013	1		Е	RECTANGULAR FLANGE (NO ZERK)		
\\\\	50-004-3193	50-004-3193	50-004-3193	'	1	F	FLANGLESS (NO ZERK)		
$\Box$					igsquare	С	сиѕтом		
	50-004-1033	50-004-1033	50-004-1023	1	2	<u> </u>	RING GEAR		
RS	50-004-1173 50-004-1183	50-004-1173 50-004-1183	50-004-1173 50-004-1183			A	COVER SAE IRI 2 ROLT		
COVERS	50-004-1183	50-004-1163	50-004-1183	1	3	С	COVER-SAE 'B' 2-BOLT COVER-SAE 'C' 4-BOLT		
ŏ	50-004-1333	50-004-1333	50-004-1333			К	COVER-SAE 'C' 2-BOLT		
	85-004-4012	85-004-4012	85-004-4012			-	2"DIA SHAFT-3/8" KEYWAY		
	85-004-4022	85-004-4022	85-004-4022			D2	23T 12/24 D.P. SPLINE		
l s	85-004-4062	85-004-4062	85-004-4062			-	2-1/8"DIA SHF-1/2" KEYWAY		
SHAFTS	85-004-4292	85-004-4292	85-004-4292	1	4				
SH	85-004-4092	85-004-4092	85-004-4092			H2	2"HEX SHAFT 13/16" DIA.HOLE		
ш	50-004-1062	50-004-1052	50-004-1052		5	C1	SHAFT-CUSTOM CARRIER-SECONDARY		
	-	-	-	_	6		CARRIER-PRIMARY		
	85-004-1051	85-004-1041	85-004-1041	3	7		PLANET GEAR-SEC.		
	-	ı	-	-	8		PLANET GEAR-PRI.		
	85-004-1221	85-004-1221	85-004-1221	*	10		SHIM(S)		
	-	-	-	-	11		SUN GEAR-SECONDARY		
ပ္သ	85-004-1552	25.004.1000				1	INPUT GEAR 21T 20/40 DP SPLINE		
GEARS	85-004-1382 85-004-1272	85-004-1392 85-004-1262				3	INPUT GEAR 13T 16/32 DP SPLINE INPUT GEAR SAE 1"-6B SPLINE		
ΠG	85-004-1292	05-004-1202	50-004-1112	1	12	4	INPUT GEAR14T 12/24 DP SPLINE		
INPUT	85-004-1562	85-004-1572				5	INPUT GEAR 15T 16/32 DP SPLINE		
	85-004-1592					6	INPUT GEAR 1" DIA X .25 KEY		
	71-004-0121	71-004-0121	71-004-0121	3	13		PLANET SHAFT-SECONDARY		
	-	-	-	-	14		PLANET SHAFT-PRIMARY		
	50-004-1011 85-004-1181	50-004-1011 85-004-1181	50-004-1011 85-004-1181	6	15 16		THRUST WASHER-SEC CUP THRUST WASHER-SEC.PLANET (GEAR)		
	- 50-004-1161	- 00-004-1101	- 00-004-1101	-	17		THRUST WASHER-SEC.PLANET (GEAR)  THRUST WASHER-PRI.PLANET (GEAR)		
	01-102-0140	01-102-0140	01-102-0140	1	18		BEARING CONE (OUTER)		
	01-102-0150	01-102-0150	01-102-0150	1	19		BEARING CONE (INNER)		
	01-103-0130	01-103-0130	01-103-0130	1	20		BEARING CUP (OUTER)		
	01-103-0140	01-103-0140	01-103-0140	1	21		BEARING CUP (INNER)		
	01-104-0070	01-104-0070	01-104-0070	1	22		NUT - BEARING		
	01-104-0080 01-105-0010	01-104-0080 01-105-0010	01-104-0080 01-105-0010	6	23		LOCKWASHER - BEARING BEARING-SEC.PLANET		
	-	-	-	-	25		BEARING-PRI.PLANET		
	50-004-1091	50-004-1091	50-004-1091	1	26		THRUST WASHER-INPUT		
	01-150-1540	01-150-1540	01-150-1550	12	27		HEX CAPSCREW 7/16-20 X 3, 4.5 GR8		
	01-153-0210	01-153-0210	01-153-0210	3	29		ROLLPIN-SECONDARY 3/16 X 7/8		
	-	-	-	-	30		ROLLPIN-PRIMARY 1/8 X 1		
	01-166-0340	01-166-0340	01-166-0340	12	31	-	LOCKWASHER 7/16 MED PIPE PLUG-MAGNETIC 3/8 NPT-SOC HD		
	01-207-0070 01-402-0560	01-207-0070 01-402-0560	01-207-0070 01-402-0560	2	32		PIPE PLUG-MAGNETIC 3/8 NPT-SOC HD  O-RING 167 MM X 3 MM		
	01-405-0530	01-405-0530	01-402-0500	1	34		SEAL-SHAFT		
			81-004-2883	1	40		THRUST WASHER		
			01-160-0350	1	41		RETAINING RING		
	01-215-0010	01-215-0010	01-215-0010	(1)	43		GREASE FITTING (OPTIONAL) STR. 1/8 NPT		
	01-216-0070	01-216-0070	01-216-0070	(1)	44	1	AIR VENT 3/8 NPT (OPTIONAL)		

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

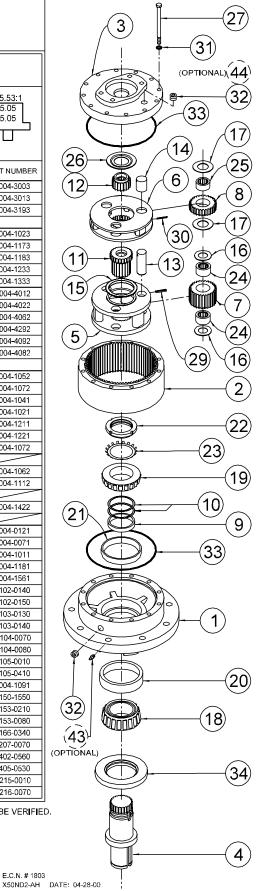
\* BEARING PRELOAD DETERMINES QUANTITY OF SHIMS.



#### 50N Double Stage Exploded View Drawing

#### ESKRIPGE MODEL 50N DOUBLE PLANETARY **EFFECTIVE** FROM: S/N 16130 07-01-93 4 08 5.05 4.08 4.08 5.05 5.05 TO: (CURRENT) **RATIO** INVERTED DESCRIPTION ITEM QTY PART NUMBER PART NUMBER PART NUMBER PART NUMBER 50-004-3003 50-004-3003 50-004-3003 50-004-3003 ROUND FLANGE (NO ZERK) 50-004-3013 50-004-3013 50-004-3013 50-004-3013 RECTANGULAR FLANGE (NO ZERK) Ε 50-004-3193 FLANGLESS (NO ZERK) 50-004-3193 50-004-3193 50-004-3193 CUSTOM 50-004-1023 50-004-1023 50-004-1023 50-004-1023 2 RING GEAR 50-004-1173 50-004-1173 50-004-1173 50-004-1173 COVER-SAE 'A COVER-SAE 'B' 2-BOLT 50-004-1183 50-004-1183 50-004-1183 50-004-1183 В 3 50-004-1233 50-004-1233 50-004-1233 50-004-1233 COVER-SAE 'C' 4-BOLT 50-004-1333 50-004-1333 50-004-1333 50-004-1333 COVER-SAE 'C' 2-BOLT 85-004-4012 85-004-4012 85-004-4012 85-004-4012 D1 2"DIA SHAFT-3/8" KEYWAY 2"DIA SHAFT-23T SPLINE 85-004-4022 85-004-4022 85-004-4022 85-004-4022 D3 2-1/8"DIA SHF-1/2" KEYWAY 85-004-4062 85-004-4062 85-004-4062 85-004-4062 4 85-004-4292 85-004-4292 85-004-4292 85-004-4292 D4 2"DIA SHAFT-1/2" KEYWAY 85-004-4092 85-004-4092 85-004-4092 85-004-4092 2"HEX SHAFT-.813 DIA.HOLE 85-004-4082 85-004-4082 85-004-4082 85-004-4082 2"DIA AUGER-.562"HOLE C1 SHAFT-CUSTOM 50-004-1062 CARRIER-SECONDARY 5 50-004-1062 50-004-1052 50-004-1052 CARRIER-PRIMARY 6 50-004-1082 50-004-1072 50-004-1082 50-004-1072 3 PLANET GEAR-SEC 85-004-1051 85-004-1051 85-004-1041 85-004-1041 PLANET GEAR-PRI 8 3 85-004-1031 85-004-1021 85-004-1031 85-004-1021 SPACER-BEARING 9 85-004-1211 85-004-1211 85-004-1211 85-004-1211 1 SHIM(S) 10 85-004-1221 85-004-1221 85-004-1221 85-004-1221 SUN GEAR-SECONDARY 11 85-004-1412 85-004-1092 85-004-1072 85-004-1072 INPUT GEAR 21T 20/40 DP SPLINE 85-004-1402 85-004-1402 INPUT GEAR 13T 16/32 DP SPLINE 85-004-1102 85\_004\_1062 85-004-1062 2 3 INPUT GEAR SAE 1"-6B SPLINE 85-004-1122 85-004-1112 85-004-1112 12 85-004-1533 4 INPUT GEAR14T 12/24 DP SPLINE 85-004-1533 5 INPUT GEAR 15T 16/32 DP SPLINE 85-004-1542 85-004-1422 85-004-1422 85-004-1582 85-004-1582 6 INPUT GEAR 1" DIA X .25 KEY PLANET SHAFT-SECONDARY 13 3 71-004-0121 71-004-0121 71-004-0121 71-004-0121 PLANET SHAFT-PRIMARY 14 81-004-0071 81-004-0071 81-004-0071 81-004-0071 15 50-004-1011 50-004-1011 50-004-1011 THRUST WASHER-SEC CUP 50-004-1011 THRUST WASHER-SEC.PLANET (GEAR) 16 6 85-004-1181 85-004-1181 85-004-1181 85-004-1181 THRUST WASHER-PRI.PLANET (GEAR) 17 81-004-1561 81-004-1561 81-004-1561 81-004-1561 BEARING CONE (OUTER) 18 01-102-0140 01-102-0140 01-102-0140 01-102-0140 BEARING CONE (INNER) 19 01-102-0150 01-102-0150 01-102-0150 01-102-0150 20 01-103-0130 01-103-0130 01-103-0130 01-103-0130 BEARING CUP (OUTER) BEARING CUP (INNER) 21 01-103-0140 01-103-0140 01-103-0140 01-103-0140 LOCKNUT - BEARING 22 01-104-0070 01-104-0070 01-104-0070 01-104-0070 23 LOCKWASHER - BEARING 01-104-0080 01-104-0080 01-104-0080 01-104-0080 BEARING-SEC.PLANET 24 6 01-105-0010 01-105-0010 01-105-0010 01-105-0010 BEARING-PRI.PLANET 25 3 01-105-0410 01-105-0410 01-105-0410 01-105-0410 26 THRUST WASHER-INPUT 50-004-1091 50-004-1091 50-004-1091 50-004-1091 HEX CAPSCREW 7/16-20 X 4.5 GR8 27 12 01-150-1550 01-150-1550 01-150-1550 01-150-1550 ROLLPIN-SECONDARY 3/16 X 7/8 29 01-153-0210 01-153-0210 3 01-153-0210 01-153-0210 ROLLPIN-PRIMARY 30 3 01-153-0080 01-153-0080 01-153-0080 01-153-0080 1/8 X 1 LOCKWASHER 7/16 **ME**D 31 12 01-166-0340 01-166-0340 01-166-0340 01-166-0340 PIPE PLUG-MAGNETIC 3/8 NPT-SOC HD 32 2 01-207-0070 01-207-0070 01-207-0070 01-207-0070 O-RING 167 MM X 3 MM 33 2 01-402-0560 01-402-0560 01-402-0560 01-402-0560 34 01-405-0530 01-405-0530 01-405-0530 01-405-0530 SEAL-SHAFT GREASE FITTING (OPTIONAL) STR. 1/8 NPT 43 (1) 01-215-0010 01-215-0010 01-215-0010 01-215-0010 AIR VENT 3/8 NPT (OPTIONAL) 44 (1) 01-216-0070 01-216-0070 01-216-0070 01-216-0070 INVERTED RATIO SUNGEAR IS NOT COUNTERBORED FOR CODE 4 INPUT. MOTOR COMPATIBILITY MUST BE VERIFIED.

SEAL KIT (P/N 85-016-0601) INCLUDES (2 EA.) O-RINGS AND (1 EA.) SEAL.



E.C.N. # 1803

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

BEARING PRELOAD DETERMINES QUANTITY OF SHIMS.

### **Eskridge Product Warranty**

ESKRIDGE, INC. ("Eskridge") warrants to its original purchaser ("Customer") that new component parts/units ("Units") sold by Eskridge will be free of defects in material and workmanship and will conform to standard specifications set forth in Eskridge sales literature current at the time of sale or to any custom specifications acknowledged by written Customer approval of drawings, SUBJECT TO THE FOLLOWING QUALIFICATIONS AND LIMITATIONS:

- 1. Prior to placing Units in service, the Customer shall provide proper storage such that foreign objects (e.g., rain or debris) cannot enter any Units via entry ports which are normally closed during operation.
- 2. The Customer must notify Eskridge in writing of any claim for breach of this warranty promptly after discovery of a defect. The warranty period shall commence when a unit is placed in service and shall expire upon the earlier of
  - a. the expiration of twelve (12) months from the date of Commencement of Service (as defined in Paragraph 4)
  - b. the completion of one thousand (1000) hours of service of the Units
  - c. the expiration of six (6) months after the expiration of any express warranty relating to the first item of machinery or equipment in which the Units are installed or on which it is mounted, or
  - d. the installation or mounting of the Units in or on an item of machinery or equipment other than the first such item in which the Units are installed or on which the Units are mounted.
- 3. Units shall be deemed to have been placed in service (the "Commencement of Service") at the time the machinery or equipment manufactured or assembled by the Customer and in which the Units are installed or on which the Units are mounted is delivered to the Customer's dealer or the original end-user, which ever receives such machinery or equipment first.
- 4. This warranty shall not apply with respect to Units which, upon inspection by Eskridge, show signs of disassembly, rework, modifications, lack of lubrication or improper installation, mounting, use or maintenance.
- 5. Eskridge makes no warranty in respect to hydraulic motors mounted on any Units. Failure of any such motor will be referred to the motor manufacturer.
- 6. Claims under this warranty will be satisfied only by repair of any defect(s) or, if repair is determined by Eskridge in its sole, absolute and uncontrolled discretion to be impossible or impractical, by replacement of the Units or any defective component thereof. No cash payment or credit will be made for defective materials, workmanship, labor or travel. IN NO EVENT SHALL ESKRIDGE BE LI-ABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR NATURE, FOR WHICH DAMAGES ARE HEREBY EXPRESSLY DISCLAIMED.
- 7. From time to time, Eskridge may make design changes in the component Units manufactured by it without incorporating such changes in the component Units previously shipped. Such design changes shall not constitute an admission by Eskridge of any defects or problems in the design of previously manufactured component Units.
- 8. All freight charges on Units returned for warranty service are the responsibility of the Customer.

#### **Warranty Return Policy**

- 1. Any part/Unit(s) returned to Eskridge must be authorized by Eskridge with an assigned return (CSR) number.
- 2. All Units shall be returned freight prepaid.
- 3. Any Units qualifying for warranty will be repaired with new parts free of charge (except for freight charges to Eskridge as provided above).
- 4. If Units are found to be operable, you have two options:
  - The Units can be returned to you with a service charge for inspection, cleaning, and routine replacement of all rubber components and any other Units that show wear;
  - b. We can dispose of the Unit(s) at the factory if you do not wish it to be returned.

**NOTE:** Any order of Units by customer shall only be accepted by Eskridge subject to the terms stated herein. Any purchase order forms used by Customer (to accept this offer to sell) which contain terms contrary to, different from, or in addition to the terms herein shall be without effect, and such terms shall constitute material alteration of the offer contained herein under K.S.A 84-2-207 (2)(b), and shall not become part of the contract regarding the sale of the Units.

The foregoing warranty is the sole warranty made by Eskridge with respect to any Units and is in lieu of any and all other warranties, expressed or implied. There are no warranties which extend beyond the description on the face hereof without limiting the generality of the foregoing, Eskridge expressly disclaims any implied warranty of merchantability or fitness for any particular purpose, regardless of any knowledge Eskridge may have of any particular use or application intended by the purchaser. The suitability or fitness of the Units for the customer's intended use, application or purpose and the proper method of installation or mounting must be determined by the customer.

### **ESKRIDGE PRODUCTS**

### **Planetary Gear Drives**

SERIES	MODELS	TORQUE RATING (IN-LB) MAX. INTERMITTENT
20	20B, 20P, 20LB, 20LP	20,000
28	28B, 28P, 28M, 28LB, 28LP	50,000
50	50K/L, 50LG, 50N	50,000
65	60B, 60E, 60L	60,000
100	100E	100,000
105	105E	100,000
130	130	130,000
150	150	150,000
250	250K/L, 251K/L, 252K/L, 253K/L	250,000
600	600K/L	600,000
1000	100K/L	1,000,000

### **Multiple Disc Brakes**

SERIES	FEATURES	TORQUE RATING (IN-LB)
90B	SAE B	TO 4,800
90BA	SAE B, ADJUSTABLE TORQUE	TO 4,800
92B	SAE B, LOW PROFILE	TO 2,800
93	FOR NICHOLS MOTORS	TO 6,100
95C	SAE C	TO 12,000
95W	SAE C WHEEL MOUNT	TO 21,000
98D	SAE D	TO 25,000

### Planetary Auger Drives, Anchor Drives & Diggers

SERIES	MODELS	TORQUE RATING (FT-LB)
D50	1500, 2500 & 5000	1,500 - 5,000
76	BA & BC, 2-SPEED	8,000 - 12,500
77	BA, BC & BD	6,000 - 12,500
78	35 & 48, 2-SPEED	9,000 - 12,500
75	38 & 51, 2-SPEED	16,500 - 20,000
D600	D600	50,000
D1000	D1000	83,000

