SERVICE MANUAL
50 SERIES DIGGER MODELS

Example Part Number

50	05	2	1	F	54
Model	Ratio	Shaft	Bail Boss	Motor Supplier	Motor Number

THIS SERVICE MANUAL IS EFFECTIVE:
S/N: 58670 TO CURRENT
DATE: 9-2003 TO CURRENT
VERSION: SMD50L-AC

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.

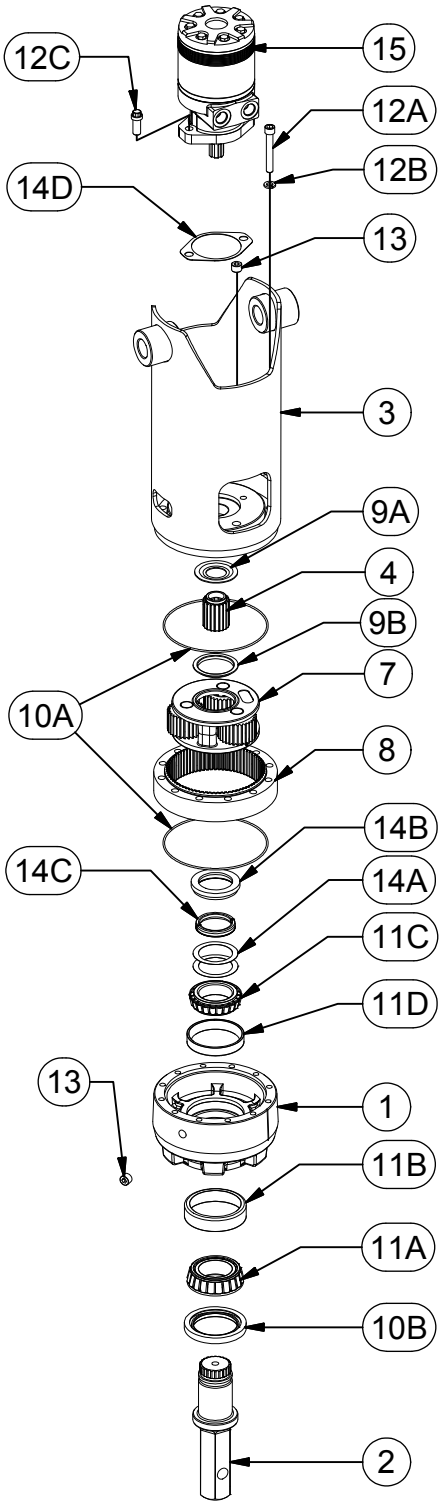
Single Stage Exploded View Drawing

5005-21F55

EFFECTIVE
FROM: S/N 83000 (DATE) 04-26-10
TO: (CURRENT)

MODEL D50 DIGGER WITH INTEGRAL BAIL

ITEM	QTY	DESCRIPTION	PART NO.
1	1	BASE - INTEGRAL BAIL	50-004-3303
2	1	OUTPUT SHAFT - 2" HEX .516 HOLE	50-004-4082L
3	1	BAIL ASSEMBLY 1-1/4" BAIL BOSSES	50-005-2132
		BAIL ASSEMBLY 1" BAIL BOSSES	50-005-2142
4	1	INPUT GEAR	85-004-1262
7	1	CARRIER ASSEMBLY- SECONDARY	50-005-2031
8	1	RING GEAR	50-004-1033
9		THRUST WASHERS & BEARINGS	
9A	1	THRUST WASHER - INPUT	50-004-1091
9B	1	THRUST WASHER - SEC. CUP	50-004-1011
10		SEALS & O-RINGS	
10A	2	O-RING	01-402-0560
10B	1	OUTPUT SHAFT SEAL	01-405-0530
11		OUTPUT SHAFT BEARINGS	
11A	1	OUTER CONE	01-102-0140
11B	1	OUTER CUP	01-103-0140
11C	1	INNER CONE	01-102-0150
11D	1	INNER CUP	01-103-0130
12		HARDWARE	
12A	12	SHCS (7/16-20 X 3.0) GR8	01-150-1830
12B	12	LOCKWASHER (7/16)	01-166-0340
12C	2	12 PT CBORE CS (1/2-13 X 1.25 GR8)	01-150-1460
13	2	PIPE PLUG (3/8 NPT MAGNETIC	01-207-0070
14		MISCELLANEOUS	
14A	*	SHIM	50-004-1521
14B	1	LOCK RING	50-004-1462
14C	1	SPLIT RING MODEL 50	50-004-1452
14D	1	GASKET	90-004-1081
15	1	MOTOR	01-304-0550



NOTES:

*BEARING PRELOAD DETERMINES QUANTITY OF SHIMS.
SEAL KIT (PN 85-016-0601) INCLUDES (2 EA.) ORINGS AND (1 EA.) SEAL

X5005-21F55aa ECN ----- DATE: 04-20-10 HWP

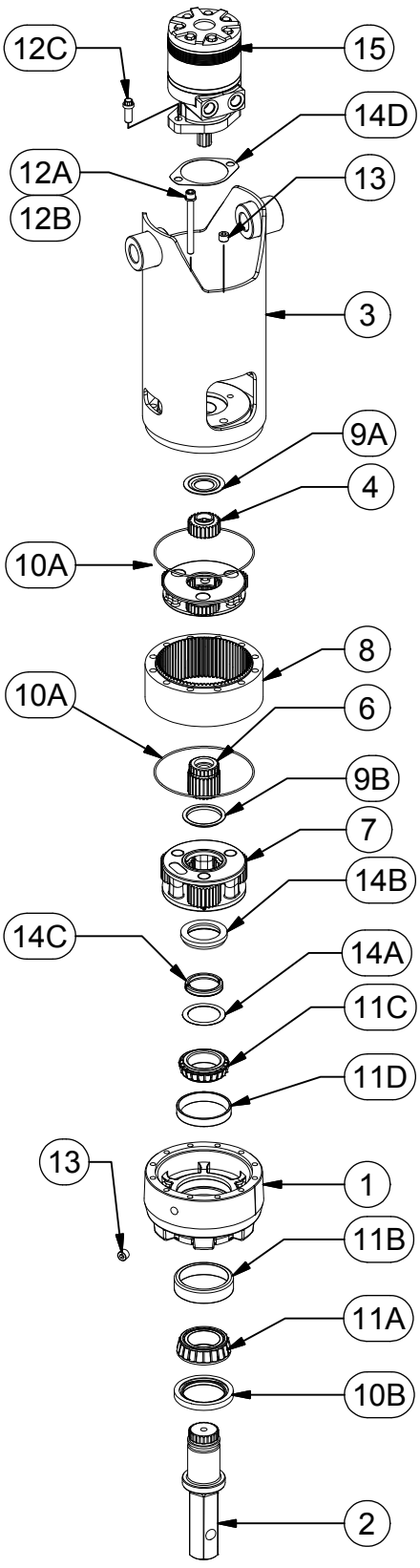
Double Stage Exploded View Drawing

5016-21F54

EFFECTIVE
FROM: S/N 83000 (DATE) 04-26-10
TO: (CURRENT)

MODEL D50 DIGGER WITH INTEGRAL BAIL

ITEM	QTY	DESCRIPTION	PART NO.
1	1	BASE - INTEGRAL BAIL	50-004-3303
2	1	OUTPUT SHAFT - 2" HEX .516 HOLE	50-004-4082L
3	1	BAIL ASSEMBLY 1-1/4" BAIL BOSSES	50-005-2132
		BAIL ASSEMBLY 1" BAIL BOSSES	50-005-2142
4	1	INPUT GEAR	85-004-1122
5	1	CARRIER ASSEMBLY- PRIMARY	50-005-2011
6	1	SUN GEAR	85-004-1412
7	1	CARRIER ASSEMBLY- SECONDARY	50-005-2041
8	1	RING GEAR	50-004-1023
9		THRUST WASHERS & BEARINGS	
9A	1	THRUST WASHER - INPUT	50-004-1091
9B	1	THRUST WASHER - SEC. CUP	50-004-1011
10		SEALS & O-RINGS	
10A	2	O-RING	01-402-0560
10B	1	OUTPUT SHAFT SEAL	01-405-0530
11		OUTPUT SHAFT BEARINGS	
11A	1	OUTER CONE	01-102-0140
11B	1	OUTER CUP	01-103-0140
11C	1	INNER CONE	01-102-0150
11D	1	INNER CUP	01-103-0130
12		HARDWARE	
12A	12	SHCS (7/16-20 X 4-1/2 GR8	01-150-1820
12B	12	LOCKWASHER (7/16)	01-166-0340
12C	2	12 PT CBORE CS (1/2-13 X 1.25 GR8)	01-150-1460
13	2	PIPE PLUG (3/8 NPT MAGNETIC	01-207-0070
14		MISCELLANEOUS	
14A	*	SHIM	50-004-1521
14B	1	LOCK RING	50-004-1462
14C	1	SPLIT RING MODEL 50	50-004-1452
14D	1	GASKET	90-004-1081
15	1	MOTOR	01-304-0540



NOTES:

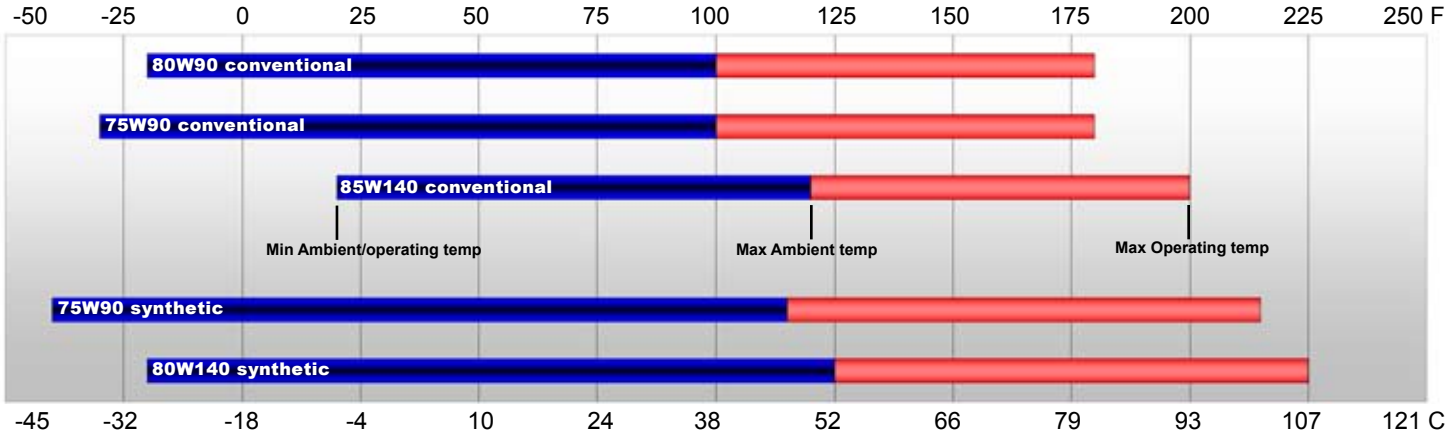
*BEARING PRELOAD DETERMINES QUANTITY OF SHIMS.
SEAL KIT (PN 85-016-0601) INCLUDES (2 EA.) ORINGS AND (1 EA.) SEAL

X5016-21F54ab ECN 3393 DATE: 11-15-11 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 auger 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

ESKRIDGE MODEL D50 OIL CAPACITIES

Operating Position	Oil Capacity			Oil Level
	Single stage	Double stage	Triple stage	
Horizontal Shaft	-		-	To horizontal centerline of auger drive
Vertical Shaft (Pinion Down)	2 pints / 0.95 liters	2.5 pints / 1.18 liters		To midway on upper/ primary gear set

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

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/diggers/diggerprodspecs.html

Unit Disassembly Procedure

There are two types of model D50 units: single planetaries without a primary carrier and double planetaries with a primary planet carrier. The differences in disassembling single stage and double stage gearboxs are clearly defined throughout this manual.

All parts should be inspected as they are removed from unit.

1) Scribe across base **(1)**, ring gear **(8)** and cover/ bail assembly **(3)** joints on outside of gearbox to assure proper orientation of oil fill and drain plugs, motor mounting, etc., as the unit is reassembled.

2) Remove hydraulic motor **(15)** from auger drive. Drain oil.

3) Remove the twelve 7/16 x 4-1/2" socket head cap screws **(12A)** and 7/16 lockwashers **(12B)**, which retain cover/bail assembly **(3)** and ring gear **(8)** to base **(1)**.

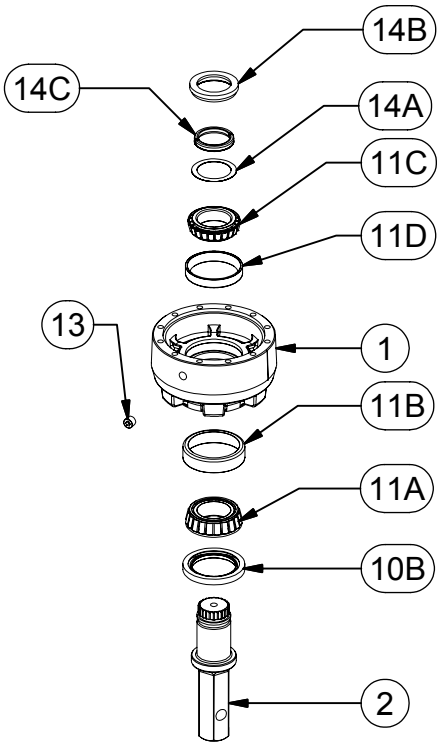
4) Lift cover / bail assembly **(3)** off of unit.

Single stage: Remove input gear **(4)**, input thrust washer **(7A, 7B)** carrier assembly **(7)** and ring gear **(8)**.

Double Stage: Remove input gear **(4)**, input thrust washer **(9A)** primary carrier assembly **(5).** Remove secondary sun **(6)** thrust washer **(9B)** and secondary carrier **(7)**.

5) The gearing is now disassembled and area(s) requiring repair or service should be identified by thorough inspection of the parts after they have been washed in solvent. Rotate planet gears to check for any abnormal noises or roughness in the primary planet bearings. At the same time, inspect planet gears for any damage or worn teeth. Replace carrier assembly if any problems are found in the carrier assembly.

Base Subassembly



Disassembly

1) Place unit on a press table with the output shaft **(2)** protruding downward through a hole in the table; unit should be supported only by the base **(1)**. The only thing retaining output shaft **(2)** is the locking ring **(14B)** and split ring segments **(14C)**. Remove the locking ring **(14B)** by prying upward, split ring segments **(14C)** and shims **(14A).**

CAUTION: The Load-n-lock assembly is no longer retaining output shaft. Take precautions if the unit is moved as the shaft may fall out.

2) With output shaft down through centerhole in press table and unit supported by base, press shaft out by applying press load to top end of shaft **(internal end)** until it passes through inner shaft bearing **(11C)**. Outer shaft bearing **(11A)** and seal **(10B)** will come out of unit attached to shaft.

3) Inspect inner and outer bearing cups **(11B & 11D)**. If cups are damaged remove and replace both bearing cups and cones.

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

4) If outer bearing cone **(11A)** needs to be replaced, it will need to be pressed off of output shaft. Also inspect inner bearing cone **(11C)**. If any one bearing component needs replaced replace the both the cup and cone as a set.

NOTE: When installing or removing bearings, press only on inner race of bearing cone. DO NOT press on outer roller cage of bearing or it will damage bearing.

5) Clean all foreign material from magnetic oil plug **(13)** located on bottom of base **(1)**. Add a small amount of pipe thread compound to pipe plug before installing it back into base.

Unit Reassembly

1) Start with base **(1)**. Turn base upside down and position on press table. Base should be pointing upward with outer bearing cup **(11B)** exposed. Apply a layer of lithium bearing grease to bearing cup surface.

2) Invert output shaft **(2, load-n-lock retainer groove end down)** and carefully lower into base **(1)** until the shaft's outer bearing cone **(11A)** is seated against outer bearing cup **(11B)**.

3) Press shaft seal **(10B)** into base 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.

4) Stand base assembly upright on output shaft.

CAUTION: The only thing holding output shaft and base together at this point is the tightness in fit of the shaft seal. Securely and cautiously turn unit upright, not allowing base and shaft to separate.

5) While holding output shaft **(2)** with one hand, rotate base **(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) Apply a layer of lithium bearing grease to inner bearing cup **(11D)** surface.

7) Install inner bearing cone **(11C, small end down)** over inter-

nal end of output shaft. Press bearing on slowly until it is just seated against bearing cup **(11D)**. With a slight press load still applied, rotate base **(1)** by hand to ensure roller bearings are rotating evenly and smoothly. Inner bearing cone **(11C)** 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 base is 50 to 80 in-lbs. This rolling torque is equal to a force of approximately 11 to 18 lbs if pulling on base flange to rotate base (1). This may be determined by feel or by using a fish scale or similar measuring device to check rolling torque.

8) Install shims **(14A)** over internal end of output shaft **(2)**. Shims should slide all the way down to outer bearing cone **(11C)**, where they will rest. The same number (quantity) of shims removed from unit during disassembly should be returned. Follow shims with split ring segments **(14C)**. Segments will sit directly on top of bearing shims.

NOTE: Quantity of shims (14A) may vary from unit to unit. Bearing preload, set at the factory, determines quantity of shims.

9) Install the locking ring **(14B)** onto output shaft.

10) Lightly grease a new o-ring **(10A)** and install it into o-ring groove in base **(1)**. Assemble ring gear **(8)** to base **(1)**. Refer back to scribe marks made across external joints of gear drive prior to Disassembly Procedure. Line up scribe marks between ring gear and base to give correct hole alignment.

NOTE: Be certain that o-ring (10A) stays seated in groove during Step 10.

11) Install 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 **(8)** teeth. Once teeth mesh, let secondary carrier slide down until it contacts with output shaft spline. The carrier splined hub should spline onto output shaft. Carrier hub will rest on top of locking ring **(14B)** when splines are fully engaged.

12) Install the carrier cup washer **(9B)**.

Single stage: Install input gear **(4)**, input thrust washer **(9A)**.

Double Stage: Install secondary sun gear **(6)** primary carrier assembly **(5)** input gear **(4)**, and input thrust washer **(9A)**.

13) Grease a new o-ring **(10A)** and install it into bottom of cover/bail assembly **(3)**. Refer back to scribe marks made across external joints prior to Disassembly Procedure. Line up scribe marks between cover/bail assembly and ring gear **(8)** so that orientation of motor mount holes and oil plug are back to their original positions.

NOTE: Be certain o-ring (10A) stays seated in cover/bail assembly during Step 13.

14) Install all twelve of the 7/16 lockwashers **(12B)** and the 7/16 hex capscrews **(12A)** and torque to 70 ft-lbs.

15) Fill unit with oil per the capacity and lubricant recommendations posted on page 4.

16) Install motor **(15)** with gasket **(14D)**, using hex head cap screws **(12C)** and torque bolts to 55 ft-lbs.

THE AUGER DRIVE IS NOW READY FOR USE.*