

DIXIE GRINDERS INC. **GEARBOX MANUAL**

1-1 DESCRIPTION

The Ratio of the Gearboxes described in this manual are

7.54A OR 7.54B Gearbox 7.53846 : 1
4.84A OR 4.84B Gearbox 4.84211 : 1

1-2 LUBRICATION

Lubricate the outer seal every 8 hours of operation. The lubrication fitting (Item 30) is located behind the adapter plate on the top front of the gearbox. Use a U.S.D.A. approved grease, three pumps (.1 oz) with conventional manual grease gun. This should be done while the machine is in operation. Excessive lubrication may push the oil seal out.

The outer seal protects the inner seal, bearings, and gears from contamination. **IMPORTANT.** Instruct clean up people to stay away from this seal with high pressure sprays. This seal can be replaced without complete disassembly of the gearbox, see section 1-4.



KNOW YOUR MACHINE

READ OPERATING & SERVICE INSTRUCTIONS BEFORE INSTALLING PARTS OR SERVICING MACHINE IN ANY MANNER. BE SURE THAT MACHINE IS STOPPED AND ALL POWER IS OFF AND LOCKED OUT. THIS INCLUDES ELECTRICAL, HYDRAULIC, AIR, STEAM, ETC. FAILURE TO FOLLOW THIS RULE, OR TO PRACTICE SAFE OPERATING PROCEDURES CAN RESULT IN SEVERE PHYSICAL INJURY.

1-3 OIL LEVEL

Oil level should be maintained at the upper oil level plug (Item 38). If oil is dirty or murky, inspect the oil seals and replace them if necessary.

Change gearbox lubricant every 1,000 hours of operation, or every 3 months.

Drain oil by removing the lower plug (Item 38) and remove inspection cover (Item 1). Check gear condition and location. If the gear is rubbing the case, this indicates thrust bearing failure and the gearbox must be completely disassembled and inspected. If visual inspection finds no defects, replace drain plug. Pour in 6 quarts kerosene and 2 quarts of any typical motor oil. With no load, (feedscrew removed from the grinder) run gearbox for ten minutes. Drain gearbox. If kerosene and motor oil flush is dirty, a second flush is necessary. When flush is clean, fill with AGMA 4 EP Gear Oil, 8 quarts.

Note: All major oil companies have AGMA 4 EP rated gear oils, accept no substitutions. Automotive additives are not necessary or recommended. The AGMA 4 EP gear oil has Extreme Pressure additives that have improved film strength over conventional oils.

Remove breather vent from inspection cover and wash out breather (Item 2). Use a small amount of Aviation Form-A-Gasket Liquid Sealant to seal breather vent into the inspection cover and to seal inspection cover to the gearbox.

1-4 MAIN SHAFT OUTER SEAL REPLACEMENT

Remove the grinder hopper. The outer seal (Item 25) is located in the bore of the adapter plate (Item 40 or 41). You can change the seal by using a hooked tool, grasp the outside of the seal and pull it out. Caution, stay away from the wear collar (Item 22), a scratch on the wear collar will make it necessary to replace the wear collar which requires complete disassembly. The adapter plate can be removed for easier seal replacement. Note the position of the outer seal and the direction of the lip. The seal lip should face outwards, away from the gearbox.

2-1 MAIN SHAFT INNER SEAL REPLACEMENT

Remove the hopper and the adapter plate. Use a hooked tool and a flat screwdriver to pry the seal (Item 23) from the inner oil seal carrier (Item 24). Caution, stay away from the wear collar (Item 22), a scratch on the wear collar will make it necessary to replace it which requires complete disassembly.

Gently tap the new inner seal (Item 23) into the inner oil seal carrier (Item 24). If the inner oil seal carrier moves inward, remove the seal and inner oil seal carrier and apply a coat of Aviation Form-A-Gasket Liquid Sealant to the outside of the inner oil seal carrier. With the seal installed in the inner oil seal carrier place a small amount of oil on the seal lip, the spring loaded lip is towards the inside, gently tap the inner oil seal carrier into the gearbox housing. The inner oil seal carrier and seal should be flush with the gearbox face when properly installed. Install a new seal (Item 25) into the adapter plate (Item 40 or 41). Note the lip faces out. Replace the gearbox to adapter plate gasket (Item 26) and mount the adapter plate. Torque adapter plate cap screws to 600 FT-LB dry or 460 FT-LB lubricated.

Let stand a few hours to accommodate gasket creep, check cap screw torque and install locks (Item 44) if using (Item 40) adapter plate.

2-2 PINION SHAFT SEAL REPLACEMENT

If it is necessary to replace the Pinion shaft seal (Item 6), remove the drive pulleys and belt guard.

Check for bearing play when pulleys are removed. If any movement is noted, bearings should be replaced, see section 2-3 Remove the pinion shaft seal carrier (Item 5). Inspect the pinion shaft, if any grooving of the shaft is observed, install a speedi sleeve (Item 42) to the pinion shaft. If the shaft is deeply grooved, use a powdered metal epoxy filler and install the speedi sleeve before the filler hardens. See directions provided with the speedi sleeve. Fill the keyseat with a small wood or plastic key, fill only the keyseat making the shaft appear round to the speedi sleeve. The sleeve is very thin, and pressing over the open keyseat will damage it and will cause rapid seal failure.

Install a new seal in the pinion seal carrier. Apply Aviation Form-A-Gasket Liquid Sealant to mounting face of seal carrier, wrap the pinion shaft with one layer of masking tape to protect seal lip from the keyway and install carrier. Tighten bolts and reassemble grinder.



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2-3 GEARBOX REBUILDING

When it is necessary to rebuild the gearbox because of bearing wear, main shaft wear, wear collar wear, the following steps are recommended.

We recommend removing the gearbox from the machine for rebuilding. The extra time required to remove the gearbox is saved by ease of gearbox rebuilding.

Remove the adapter plate locks (Item 44), adapter plate cap screws (Item 43), adapter plate (Item 40), and gasket (Item 26). If you have a 3 point adapter plate, remove adapter plate cap screw (Item 46), adapter plate (Item 41), and gasket (Item 26).

Remove caps (Item 4), (Item 5), and (Item 7).

Tighten nuts on guide pins (Item 3), this raises/loosens the pins.

Bend tab forward on tab washer (Item 11) and remove locknut (Item 10). Then remove tab washer (Item 11).

Remove all housing bolts (Item 32) and nuts (Item 33).

Pry halves apart by using a 1/2" dia. rod in the pry holes provided at ends of gearbox housing.

Remove stud oilers and nuts (Items 31), or (Item 31-A and Item 31-B). Remove inspection cover (Item 1).

Remove upper half of gearbox.

Remove mainshaft seal (Item 23), and inner oil seal carrier (Item 24).

Remove lock wire (Item 16) and loosen set screws (Item 15) on bull gear (Item 14).

Remove pinion shaft and bearings. Press off old bearings, clean and inspect the shaft. Press on new bearings (Item 8). If necessary add speedi sleeve, (see section 2-2).

Remove bull gear with main shaft.

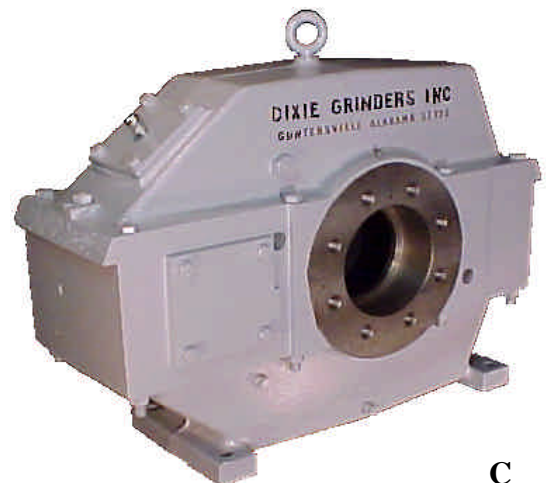
Remove pilot bearing (Item 12), and retaining ring (Item 13).

Press main shaft (Item 21) from bull gear (Item 14). Remove spacer collar (Item 18) from mainshaft. Press bearing cone (Item 20) and wear collar (Item 22) from mainshaft.

Clean and inspect all items. If the male spline on mainshaft is worn, replace mainshaft. If wear on the Timken bearings (Item 19 & 20) is noticed, we recommend replacing all bearings and the wear collar at rebuilding.

Inspect the gears. Wear is most obvious on the pinion teeth. Uneven wear indicates early bearing failure on probably the pulley side of the pinion shaft. Minor pitting is not cause for alarm. However, if noticeable steps appear on gears they probably should be replaced. Except in extreme emergencies, gears should be changed in sets.

Make sure grease channel under fitting (Item 30) and bearing oil trough holes are cleaned thoroughly.



3-1 GEARBOX ASSEMBLY

Install a new wear collar (Item 22) on the main shaft (Item 21). If a press is not available, heat the wear collar to not more than 300°F and it will drop onto the main shaft. The Timken cone bearing can be pressed or heated and dropped on the main shaft also. Heat the bearing to a maximum of 300°F ! An infrared lamp, oven, or hot oil bath can be used, never use an acetylene torch!

Install the spacer collar (Item 18) and the Timken bearing cup (Item 19).

Fit key (Item 17) to bull gear (Item 14). Fit the key (Item 17) to the mainshaft keyseat (Item 21), making sure the key does not extend past the retaining ring groove. With the key in the shaft, install mainshaft assembly in bull gear.

Install retaining ring (Item 13).

Install rear main shaft bearing (Item 12). No heating should be required on this bearing. Install tab washer (Item 11) and lock nut (Item 10).

Set mainshaft-bull gear assembly into housing. Tighten lock nut (Item 10) until Timken cup (Item 19) and rear main shaft bearing (Item 12) contact shoulders of the bearing bores.

Press pinion bearings (Item 8) onto pinion shaft. If no press is available, heat bearing to a maximum of 225°F with an infrared lamp, oven, or hot oil bath, do not use an acetylene torch!

Set pinion assembly into lower gearbox half, place pinion seal carrier (Item 5) and bearing cover (Item 7) in place with lower 2 bolts only.

Install inner oil seal (Item 23) into inner oil seal carrier (Item 24). Tap seal flush into ring, the spring loaded lip goes to the inside, toward the bearing. Coat the outside of the inner oil seal carrier with Aviation Form-A-Gasket Liquid Sealant and wipe seal lips with oil and install seal over wear collar (Item 23) until ring is about half way into gearbox bore.

Tighten set screws (Item 15), to 100 FT LB torque. Install lock wire (Item 16). Rotate bull gear 3 to 4 turns, and check for noise. Turn gear clockwise while facing main shaft. Any nicks or imperfections should be noted and corrected. Protect bearings if any filing, or sanding is performed.

Inspect gearbox cover to make sure mating surfaces are clean, and all holes have been cleaned.

Install inspection cover (Item 1) and install cap screws finger tight. Loosen lock nut (Item 10) and on the threaded end of the shaft give the shaft a good rap with a hammer, do not damage threads. This loosens both bearings so the top can be installed.

Coat the mating surface of the lower gear box half with Aviation Form-A-Gasket Liquid Sealant only, not silicone caulking! Silicone caulking plugs up the oil slots! Put a dab of sealant on top of each bearing, and lower the top half onto the lower half of the gearbox.

Rap with rubber mallet on the top half to seal onto the bearings and mating surface. Tap inner oil seal carrier, with seal in place, flush with gearbox face.

Drop the taper pins with the nuts loose into the holes, and give them a light tap. Install housing bolts (Item 32) with nuts (Item 33), and snug only.

Snug lock nut (Item 10), then tighten housing bolts and nuts (Item 32 & 33). Starting at the center and working in a circle, torque bolts and nuts to 150 FT-LB. Lightly tighten nuts on taper pins (Item 43). If pin loosens, loosen the nut, tap pin down, and lightly tighten nut again.

Torque lock nut (Item 10) to 100 FT-LB, using P# 10214 lock nut wrench. Tap the spline end of the main shaft, and check lock nut torque. If torque drops, reset and repeat. When tapping no longer drops torque, loosen lock nut and torque to 15-20 FT-LB. Secure lock nut with tabbed washer (Item 11) by bending tab into slot of lock nut.

CAUTION!

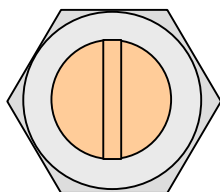
Failure to secure lock nut with tabbed washer can result in gearbox failure.

Install bearing covers using sealant to coat mating surface.

Wrap pinion shaft with masking tape to protect seal from the keyway. Install seal in pinion shaft seal carrier, lip facing inside. Lubricate the seal lip. Apply sealant to mating surface, install the pinion shaft seal carrier. Tighten all covers.

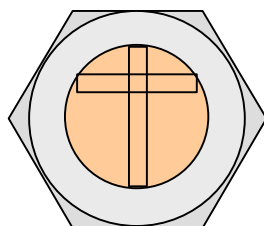
With flat screwdriver install stud oilers (Item 31) until they contact the bullgear. Back up oiler 1/2 turn, then continue to back up until slot is vertical. Note the high volume oilers, (Item 31-A and 31-B) are backed up until the slot forms a T. See below

ITEM 31



PART #
2096

ITEM 31-A & 31-B



PART # 10254 3/4-16 TPI
PART # 10255 5/8-18 TPI

Turn nut after placing sealant on nut face and stud body. Tighten nut maintaining vertical position of slot.

Secure plugs (Item 38) with sealant and tighten. Remove inspection cover (Item 1) and install breather vent (Item 2), again use sealant on mating thread.

Pour in 8 quarts of AGMA 4 EP gear oil. Apply sealant to inspection cover and mount cover on gearbox, tighten bolts.

Install outer seal (Item 25) in adapter plate (Item 40 or 41), lip facing out. Oil lip of seal. Install new gearbox to adapter plate gasket (Item 26), and mount adapter plate. Torque adapter plate cap screws to 600 FT-LB dry or 460 FT-LB lubricated. Let stand a few hours to accommodate gasket creep and check cap screw torque.

Install locks (Item 44) into adapter plate. Replace adapter plate to hopper gasket (Part Number 1152) and reassemble grinder unit, if using (Item 40) adapter plate.

If using 3 point adapter plate (Item 41), install bolts (Item 47) with flat washer (Item 52) before mounting adapter plate. Torque adapter plate cap screws (Item 46) with lock washer (Item 45) to 600 FT-LB dry or 460 FT-LB lubricated. Let stand a few hours to accommodate gasket creep and check cap screw torque.

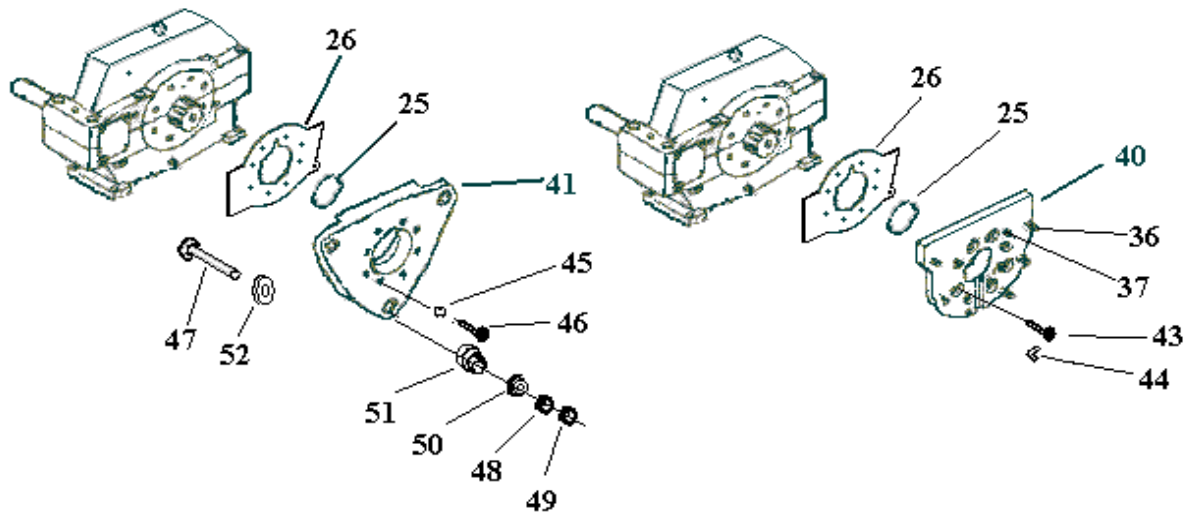
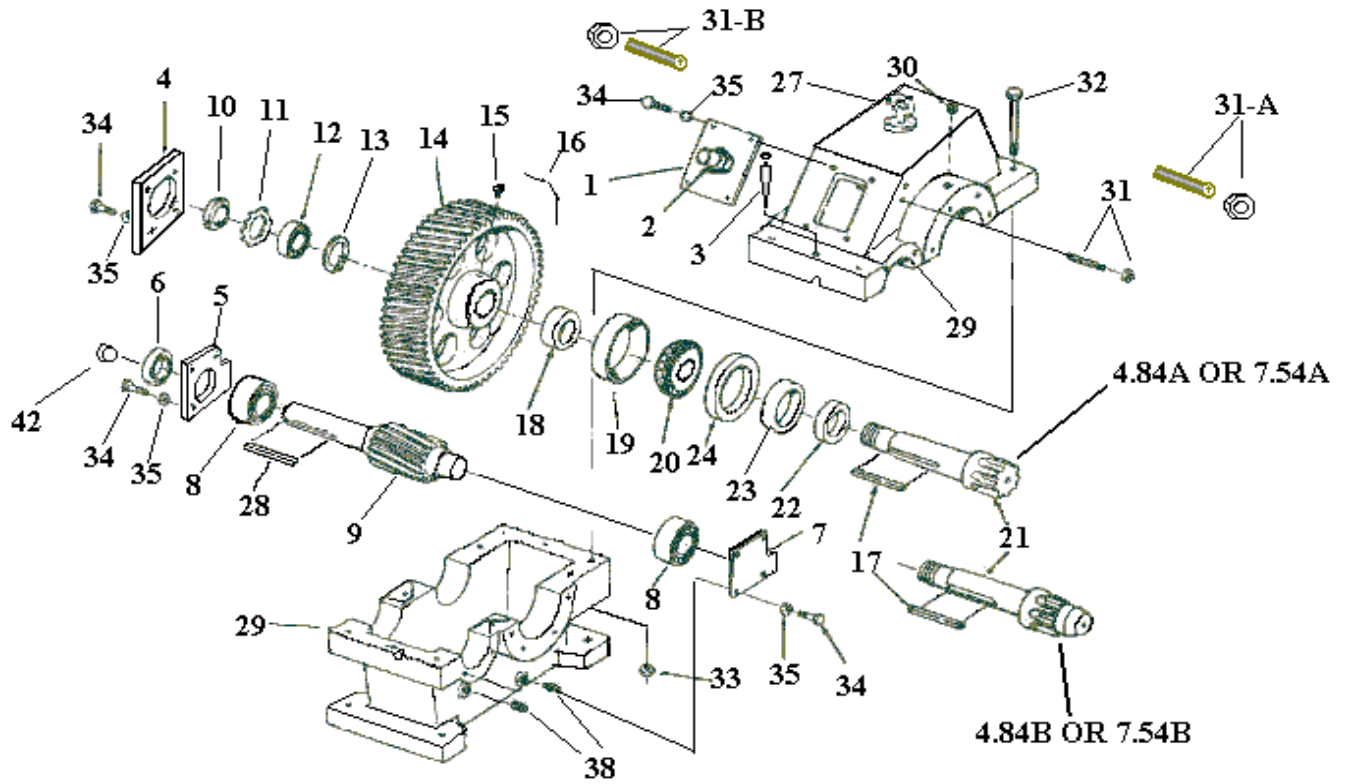
Note: Use only the brand names we point out in this manual, using bearings or seals other than what we specify may prove disastrous. Contact Dixie Grinders Inc. if you have any questions.

Locknut Socket
Part # 10214



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4.84A, 4.84B, 7.54A, AND 7.54B DIXIE GRINDER INC. GEARBOX



	DGI	4.84A OR 4.84B PARTS LIST	
ITEM	PART NO	DESCRIPTION	QTY.
1	10131	INSPECTION COVER	1
2	10154	BREATHER	1
3	10156	GUIDE PIN, with 5/8-18 nut	2
4	10134	MAINSHAFT COVER	1
5	10133	PINION SHAFT SEAL CARRIER, with oil slot	1
6	1403	PINION SHAFT OIL SEAL, CR 24988	1
7	10253	PINION SHAFT COVER, with oil slot	1
8	1381	PINION SHAFT BALL BEARING, MRC-5313	2
9	1372	PINION GEAR, 19 TOOTH (2-1/2" DIAMETER)	1
10	1344	LOCK NUT, SKF N12	1
11	1345	LOCKWASHER, SKF W12	1
12	1346	REAR MAIN BALL BEARING MRC 5212	1
13	1347	RETAINING RING, TRUARC 5100-325	1
14	1383	BULL GEAR, 92 TEETH	1
15	1361	5/8-11 SQ HEAD SET SCREW, 1 3/4" LG W/ LOCK WIRE HOLE	2
16	1035	LOCK WIRE	1
17	1384	MAIN SHAFT KEY, 7/8" SQ. X 5" LG.	1
18	1385	SPACER COLLAR	1
19	1351	CUP BEARING, THRUST, TIMKEN 9321	1
20	1352	CONE BEARING, THRUST, TIMKEN 9386H	1
21A	1391	MAIN SHAFT, A	AR
21B	0898	MAIN SHAFT, B	AR
22	1388	WEAR COLLAR, CHROME PLATED	1
23	1386	INNER OIL SEAL, NATIONAL #416888	1
24	1387	SEAL CARRIER	1
25	1394	OUTER OIL SEAL, JM-045-11832	1
26	10157	4.84, 7.54 GEARBOX TO ADAPTER PLATE GASKET	1
27	1341	EYE BOLT , 5/8-11	1
28	2374	KEY, 5/8" SQ. X 6" LONG	1
29	1380	GEARBOX HOUSING	1
30	10155	LUBE FITTING, 1/4-28 NPT	1
31	2096	5/8-11 BRASS STUD OILER (used on gearboxes prior to 1999)	2
31-A	10254	3/4-16 HIGH VOLUME OILER	1
31-B	10255	5/8-18 HIGH VOLUME OILER	1
32	10274	5/8-18 x 10" LONG HEX BOLT, GRADE 8	9
33	2689	5/8-18 HEX NUT, GRADE 8	9
34		1/2-13 x 1-1/2" LG. HEX CAP SCREW	16
35		1/2" LOCK WASHER	16
36	1139	ADAPTER PLATE STUDS (A only)	6
37	1085	ADAPTER PLATE STUDS, WITH ACORN NUTS (A only)	2
38	10023	1/2-14 NPT PIPE PLUG	2
39	10214	LOCK NUT SOCKET (NOT SHOWN)	1
40	1392	4.84A ADAPTER PLATE (A only)	AR
41	0899	4.84B ADAPTER PLATE (B only)	AR
42	CR99250	PINION SHAFT SLEEVE, 2-1/2"	1
43		7/8-9 HEX CAP SCREW, 2-1/2" LONG, GRADE 8 (A only)	8
44	1395	LOCK, CAP SCREW, 1/8" X 1/2" ANGLE, 1/2" LONG (A only)	8
45		7/8" LOCK WASHER (B only)	8
46		7/8-9 HEX CAP SCREW, 4-1/2" LONG, GRADE 8 (B only)	8
47	1103	1-1/4-12 HEX CAP SCREW, 6-1/2" LONG, GRADE 8 (B only)	3
48	1207	1-1/4-12 HEX NUT, GRADE 8 (B only)	3
49	1220	1-1/4-12 JAM NUT, GRADE 2 (B only)	3
50	0901	1-1/4" HEAVY WASHER (B only)	3
51	0900	ADAPTER PLATE SPACER (B only)	3
52	1184	1-1/4" FLAT WASHER (B only)	3

	DGI	7.54A OR 7.54B PARTS LIST	
ITEM	PART NO	DESCRIPTION	QTY.
1	10131	INSPECTION COVER	1
2	10154	BREATHER	1
3	10156	GUIDE PIN, with 5/8-18 nut	2
4	10134	MAINSHAFT COVER	1
5	10132	PINION SHAFT SEAL CARRIER, with oil slot	1
6	1332	PINION SHAFT OIL SEAL, GARLOCK #63-1264	1
7	10253	PINION SHAFT COVER, with oil slot	1
8	1381	PINION SHAFT BALL BEARING, MRC-5313	2
9	1373	PINION GEAR, 13 TOOTH (2-1/16" DIAMETER)	1
10	1344	LOCK NUT, SKF N12	1
11	1345	LOCKWASHER, SKF W12	1
12	1346	REAR MAIN BALL BEARING, MRC 5212	1
13	1347	RETAINING RING, TRUARC 5100-325	1
14	1396	BULL GEAR, 98 TEETH	1
15	1361	5/8-11 SQ HEAD SET SCREW, 1 3/4" LG W/ LOCK WIRE HOLE	2
16	1035	LOCK WIRE	1
17	1384	MAIN SHAFT KEY, 7/8" SQ. X 5" LG.	1
18	1385	SPACER COLLAR	1
19	1351	CUP BEARING, THRUST, TIMKEN 9321	1
20	1352	CONE BEARING, THRUST, TIMKEN 9386H	1
21A	1391	MAIN SHAFT, A	AR
21B	0898	MAIN SHAFT, B	AR
22	1388	WEAR COLLAR, CHROME PLATED	1
23	1386	INNER OIL SEAL, NATIONAL #416888	1
24	1387	INNER OIL SEAL CARRIER	1
25	1394	OUTER OIL SEAL, JM-045-11832	1
26	10157	4.84, 7.54 GEARBOX TO ADAPTER PLATE GASKET	1
27	1341	EYE BOLT , 5/8-11	1
28	1328	KEY, 1/2" SQ. X 6" LONG	1
29	1380	GEARBOX HOUSING	1
30	10155	LUBE FITTING, 1/4-28 NPT	1
31	2096	5/8-11 BRASS STUD OILER (used on gearboxes prior to 1999)	2
31-A	10254	3/4-16 HIGH VOLUME OILER	1
31-B	10255	5/8-18 HIGH VOLUME OILER	1
32	10274	5/8-18 x 10" LONG HEX BOLT, GRADE 8	9
33	2689	5/8-18 HEX NUT, GRADE 8	9
34		1/2-13 x 1-1/2" LG. HEX CAP SCREW	16
35		1/2" LOCK WASHER	16
36	1139	ADAPTER PLATE STUDS (A only)	6
37	1085	ADAPTER PLATE STUDS, WITH ACORN NUTS (A only)	2
38	10023	1/2-14 NPT PIPE PLUG	2
39	10214	LOCK NUT SOCKET (NOT SHOWN)	1
40	1392	4.84A ADAPTER PLATE (A only)	AR
41	0899	4.84B ADAPTER PLATE (B only)	AR
42	CR99205	SPEEDI SLEEVE, 2-1/16"	1
43		7/8-9 HEX CAP SCREW, 2-1/2" LONG, GRADE 8 (A only)	8
44	1395	LOCK, CAP SCREW, 1/8" X 1/2" ANGLE, 1/2" LONG (A only)	8
45		7/8" LOCK WASHER (B only)	8
46		7/8-9 HEX CAP SCREW, 4-1/2" LONG, GRADE 8 (B only)	8
47	1103	1-1/4-12 HEX CAP SCREW, 6-1/2" LONG, GRADE 8 (B only)	3
48	1207	1-1/4-12 HEX NUT, GRADE 8 (B only)	3
49	1220	1-1/4-12 JAM NUT, GRADE 2 (B only)	3
50	0901	1-1/4" HEAVY WASHER (B only)	3
51	0900	ADAPTER PLATE SPACER (B only)	3
52	1184	1-1/4" FLAT WASHER (B only)	3