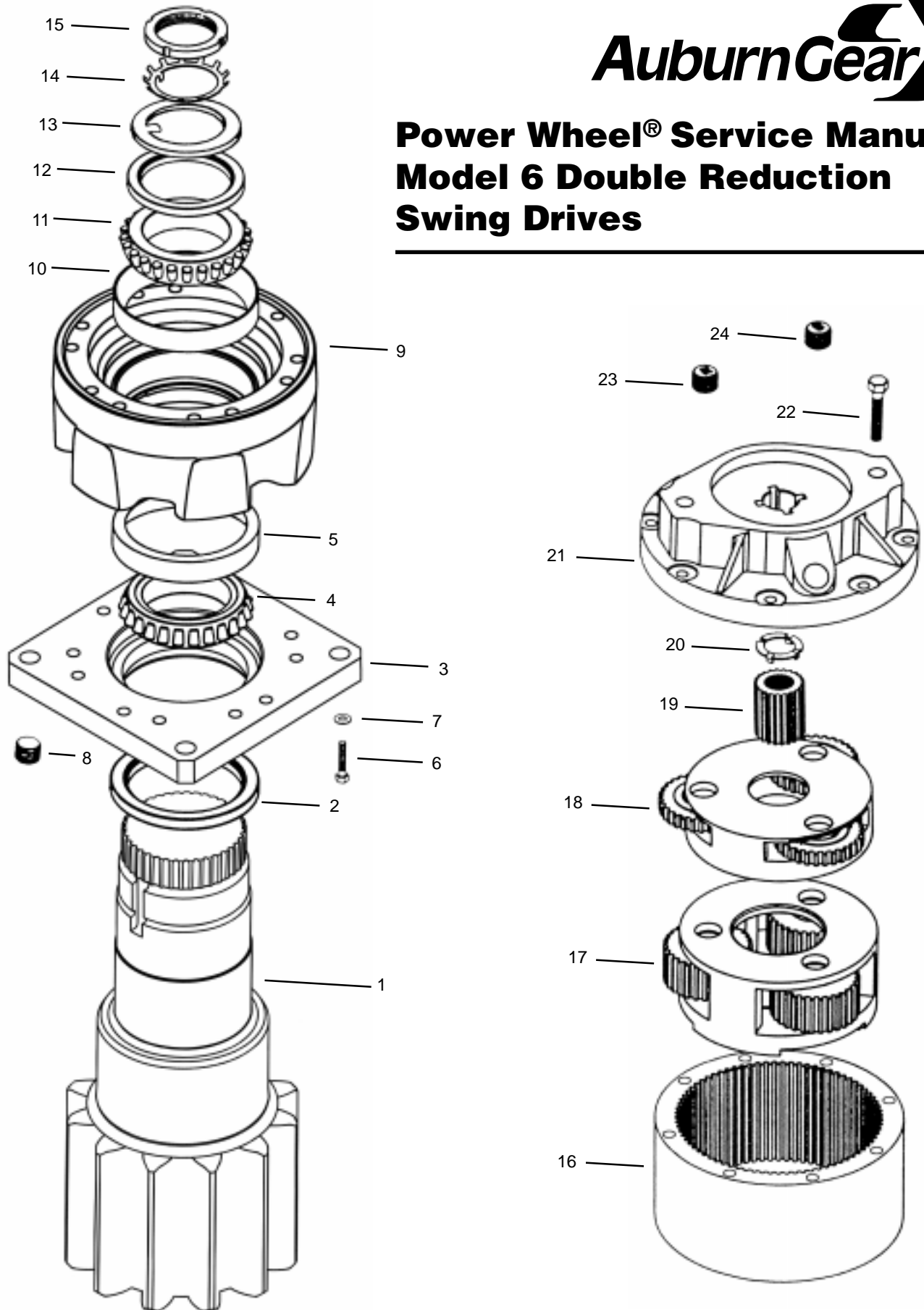




# Power Wheel® Service Manual Model 6 Double Reduction Swing Drives



## IDENTIFICATION

**IMPORTANT:** All Power Wheel units and kits are shipped with a nameplate that includes the Auburn Gear part number and order code as shown.

Example:



In addition to the nameplate, Power Wheel drives are stamped with an identification number which appears on the cover or hub flange as shown.

Example: **6000993-A-4-9**

When ordering parts, the information included on the nameplate or the stamped identification number is necessary to accurately identify the drive and obtain the correct replacement parts. Once this information has been obtained, contact Auburn Gear for the appropriate parts list.

## DISASSEMBLY OF POWER WHEEL

### STEP 1

Remove eight hex head bolts (22) from cover (21). Lift cover (21) from assembly. Thrust washer (20) usually remains with cover (21).

### STEP 2

Lift sun gear (19) from primary carrier assembly (18).

### STEP 3

Remove primary carrier assembly (18).

### STEP 4

Remove the secondary carrier assembly (17)

### STEP 5

One tab of lock washer (14) will be engaged in slot of bearing nut (15); bend back to release. Remove the bearing nut (15), lock washer (14) and thrust washer (13). **NOTE:** A special locknut wrench, 596Z, is required for the removal of the bearing locknut. Contact Auburn Gear for procurement of wrench and other service tools.

### STEP 6

Bolt spindle drive tool, 598FF, to ring gear (16). Grade 8 bolts should be used.

Drive shaft (1) from hub flange (3), hub (9) and ring gear (16) by turning center bolt of spindle drive tool. Care should be taken to avoid damaging splines and threads on shaft. **NOTE:** Bearing cone (11) has been designed with a press fit with respect to shaft (1). Considerable force will be required to remove cone from shaft.

### STEP 7

Remove spindle drive tool from ring gear (16).

### STEP 8

Remove the 12 socket head cap screws (6) and flat washers (7) from hub flange (3), hub (9), and ring gear (16). Separate the hub flange (3) from the hub (9). The bearing cones (4 & 11) should be removed at this point. If an excluder seal (12) was in the drive, due to a shaft up application, this will also be removed when bearing cone (11) is removed. Remove ring gear (16). It may be necessary to strike ring gear (16) with a rubber mallet to loosen from hub (9).

### STEP 9

Remove the oil seal (2) from the hub flange (3). Inspect bearing cups (5 & 10) in hub (9) and remove only if replacement is required.

## ASSEMBLY OF POWER WHEEL

### STEP 1

Press new bearing cups (5 & 10) into each side of hub (9). It is recommended that bearing cups (5 & 10) and cones (4 & 11) be replaced in sets.

### STEP 2

Assemble bearing cone (4) into cup (5) at seal end of hub (9) and press a new seal (2) into hub flange (3).

### STEP 3

Clean mating surfaces and apply a bead of silicone sealant to face of hub (9) that mates with hub flange (3). See instructions on sealant package. Also, apply a bead of silicone sealant to the ring gear (16) on the hub (9) mounting side. Lay hub (9) onto ring gear (16).

### STEP 4

Place bearing cone (4) into cup (5). Lubricate lips of oil seal (2) and lower hub flange (3) onto hub. Place 12 washers (7) onto hub flange (3) and install 12 cap screws (6). Torque each screw to 65-70 lb-ft (88-95 N-m). Lower hub flange (3), hub (9), and ring gear (16) onto output shaft (1). Keep hub flange (3) centered to prevent damage to oil seal (2).

### STEP 5

Assemble bearing cone (11) over output shaft (1). Press bearing cone (11) over output shaft bearing journal using press and cylindrical bearing cone driver 598E. Press bearing cone (11) down until rollers just touch cup (10). Take care to avoid pressing cone (11) too far. **NOTE:** If a press is not available, place tool 598E over splined end of output shaft (1) on the edge of bearing cone (11) and drive into place with hammer or mallet. If this method is used, care must be taken to avoid damage to bearing cone and spindle.

### STEP 6

Install thrust washer (13) and bearing nut (15). **DO NOT install lock washer (14) at this time.**

### STEP 7

Place spindle drive tool, 598FF, over shaft (1). Make sure center bolt of drive tool is not touching shaft and is prevented from rotating by jam nuts provided on tool.

### STEP 8

Check initial rolling torque by installing a lb.-in. torque wrench (arm or dial type) on center nut of spindle/shaft drive tool and turning hub flange (3) slowly and steadily with the torque wrench. Note mean torque. An initial bearing rolling torque of greater than 48 lb.-in. means that the cone (11) was pressed on too tightly in step 4. In this case, back off bearing cone (11) by pressing output shaft (1) out of cone (11) until initial preload is relieved. See step 6 of disassembly procedure.

### STEP 9

Torque bearing nut (15) with bearing nut wrench 596Z until a bearing rolling torque of 38 - 46 lb.-in. is reached. This may require several trials of pressing the cone (11) by torquing the nut (15) and then checking the rolling torque. Rotate hub flange (3) by hand as nut is being tightened in order to seat bearings. **NOTE:** Up to 250 lb.-ft. of torque may have to be applied to bearing nut (15) in order to press cone (11) into position.

### STEP 10

Remove bearing nut (15) and install lock washer (14). Replace bearing nut (15).

**STEP 11**

Re-torque bearing nut (15) to 60 - 70 lb.-ft. (80 - 94 Nm).

**STEP 12**

Secure bearing nut (15) by bending a lock washer (14) tab into one of four bearing nut slots. If no tab aligns with a slot, the nut may be tightened until one of the slots aligns with a lock washer tab.

**STEP 13**

Place secondary carrier assembly (17) into ring gear (16) aligning the gear teeth. Carrier splines mesh with splines on output shaft (1).

**STEP 14**

Lower primary carrier assembly (18) into assembly. Align sun gear teeth with secondary carrier planetary gears and primary planet gears with ring gear (16).

**STEP 15**

Install primary sun gear (19) into primary carrier assembly. Sun gear

(19) should turn freely by hand when assembled.

**STEP 16**

Apply a bead of silicone sealant to cover face of ring gear (16). Secure thrust washer (20) with tangs engaged in cover (21). **NOTE:** Washer (20) can be secured to cover (21) with a small amount of grease or silicone sealant. Assemble cover (21) to ring gear (16). Align cover (21) with hub flange (3) so that pipe plug holes on cover (21) align with mounting holes in hub flange (3).

**STEP 17**

Install eight 5/16-18 x 1 inch bolts (22) and torque to 20 - 25 lb.-ft. (27 - 34 Nm).

**STEP 18**

Fill unit so that primary sun gear (19) is running in an oil bath. Install pipe plugs (8), (23) and (23).

**NOTE:** When installing a hydraulic motor to the Power Wheel drive it is necessary to place an "O" ring or gasket (not supplied by Auburn Gear) between the motor and the planetary drive. "O" ring sizes: SAE A 2-042, SAE B 2-155, SAE C 2-159. Apply sealant to motor mounting bolt threads when holes in cover are thru holes.

### CARRIER ASSEMBLIES

It is recommended that the primary and secondary carrier assemblies (17 & 18) be serviced in their entirety to protect the integrity of the Power Wheel drive.

### LUBRICATION RECOMMENDATIONS

**IMPORTANT: POWER WHEEL PLANETARY DRIVES ARE SHIPPED WITHOUT LUBRICANT AND MUST BE FILLED TO THE PROPER LEVEL PRIOR TO START UP.**

Observe lubrication recommendations given by the original equipment manufacturer. When specific recommendations are not available, use mild extreme pressure lubricant API-GL-5, No. 80 or 90 when filling the Power Wheel under normal temperature ranges between 0 - 120°F (-18 to 49°C). Oil is to be changed after first 50 hours of operation with subsequent changes every 1000 hours or yearly, whichever ever comes first. Swing drive shaft down applications - the unit should be filled so that the primary sun gear (19) is running in an oil bath. Swing drive shaft up applications, see note.

**NOTE:** This drive is equipped with a grease seal and fittings for shaft up operations. the bearing cavity must be filled with a good grade of extreme pressure (EP) bearing grease before the unit is placed in service.

To correctly fill the bearing cavity:

1. Preferably with the drive horizontal, pump grease into cavity with a manual grease gun or low-pressure pump system. Rotate output shaft periodically to distribute grease evenly into bearings. **NOTE:** On those units equipped with an integral brake, the brake will have to be hydraulically disengaged in order to rotate the output shaft.
2. Continue pumping/rotating until grease exits relief fitting (relief pressure 11-5 psi) as soon as pumping begins. This indicates that cavity is nearly full. Full capacity is 7-8 ounces.
3. If the grease must be added with the drive vertical, care must be taken to introduce the full 7-8 ounces to ensure that the upper bearing is being filled with grease.

### STORAGE

A protective film is applied to the Power Wheel at the factory to prevent rust during shipment. Additional protection may be required if the Power Wheel is to be stored for an extended period of time.

### SEALING COMPOUND

Silastic RTV732 sealer and General Electric Silimate RTV No. 1473 or RTV No. 1503 are currently recommended for sealing gasket surfaces. Sealant should be applied in a continuous bead, which should be centered on the surface to be sealed but should move to the inside of the hole at each bolt hole location. For service requirements order Auburn Gear part number 604101.

### SPECIFICATIONS

|  |                           |
|--|---------------------------|
| Maximum intermittent output torque ..... | 50,000 lb. in. (5,650 Nm) |
| Maximum input speed .....                | 5,000 RPM                 |
| Oil capacity shaft down .....            | Contact Auburn Gear       |
| Oil capacity shaft up .....              | Contact Auburn Gear       |

| ITEM NO. | DESCRIPTION*                                      | NO. USED IN ASS'Y. | ITEM NO. | DESCRIPTION*                | NO. USED IN ASS'Y. |
|----------|---|--------------------|----------|-----------------------------|--------------------|
| 1        | Pinion or Output Shaft                            | 1                  | 13       | Thrust Washer 619321        | 1                  |
| 2        | Oil Seal 14-00-044-010                            | 1                  | 14       | Lock Washer 605004          | 1                  |
| 3        | Hub Flange  | 1                  | 15       | Bearing Nut 614913          | 1                  |
| 4        | Bearing Cone 613321                               | 1                  | 16       | Ring Gear                   | 1                  |
| 5        | Bearing Cup 613320                                | 1                  | 17       | Secondary Carrier Assembly  | 1                  |
| 6        | Socket Head Cap Screw (Grade 8) 618323            | 12                 | 18       | Primary Carrier Assembly    | 1                  |
| 7        | Flat Washer 604705                                | 12                 | 19       | Primary Sun Gear            | 1                  |
| 8        | Magnetic Plug 14-00-052-002                       | 1                  | 20       | Thrust Washer               | 1                  |
| 9        | Hub 617982  | 1                  | 21       | Cover                       | 1                  |
| 10       | Bearing Cup 613318                                | 1                  | 22       | Hex Head Bolt 0000179820    | 8                  |
| 11       | Bearing Cone 613319                               | 1                  | 23       | Magnetic Plug 14-00-052-002 | 1                  |
| 12       | Excluder Seal 604414 (Shaft up applications only) | 1                  | 24       | Pipe Plug 03-04-101-01      | 1                  |

\* Contact Auburn Gear with part number and order code of drive to obtain the appropriate parts list. Refer to parts list for the specific part numbers and quantities.

### Model 6 Power Wheel® Swing Drive Service Kits

| Part No. | Description              | Included Items |
|----------|--------------------------|----------------|
| 641001** | Seal Kit                 | 2              |
| 596Z     | Bearing Locknut Tool     | Not Shown      |
| 598E     | Bearing Cone Driver      | Not Shown      |
| 598FF    | Spindle/Shaft Drive Tool | Not Shown      |

\*\* Indicates kit also includes a tube of sealant, part number 604101.