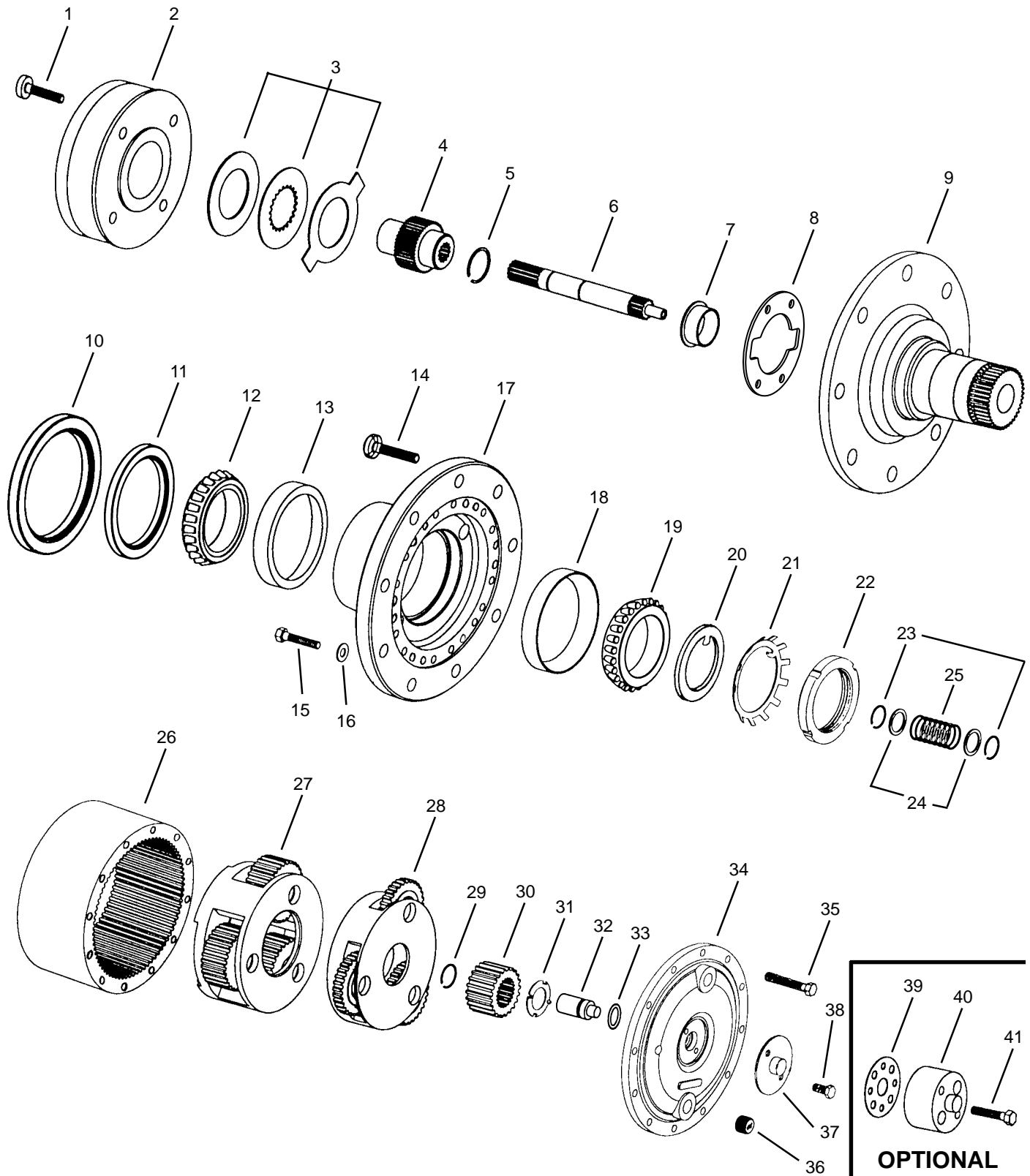


Power Wheel® Service Manual

Model 7 Double Reduction Wheel Drives With Integral Parking Brake Option



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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: **6000236-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

If brake portion of drive is to be serviced, remove motor from planetary drive. Temporarily install two 1/2-13 x 1.25 screws into hydraulic motor mounting holes and torque to 50 lb. ft. (67 Nm). These must be used to hold spring back-up plate in position when parking brake assembly is removed from the drive. If the brake portion of drive does not require service go to step 5.

STEP 2

Remove the four T-50 Torx head screws (1) holding the parking brake assembly in position. It may be necessary to lightly strike the piston assembly (2) with a rubber mallet to loosen from spindle or cover.

STEP 3

Remove disc pack (3) from drive only if necessary. Be careful to maintain discs in order.

STEP 4

If brake piston assembly (2) has been removed slide the coupling (4) and retaining ring (5) from splines on input shaft (6). Remove sleeve bearing (7) if replacement is required.

STEP 5

Position the assembly upright on face of spindle (9).

STEP 6

Remove the disengage cover (37) if necessary.

STEP 7

Remove eight bolts (35) and the large cover (34) from the unit. The thrust washer (31) and the disengage plunger (32) usually remain attached to the large cover (34) when it is removed. Remove thrust washer (31), disengage plunger (32) and "O" ring (33) from the large cover (34).

STEP 8

Remove primary sun gear (30) from end of input shaft (6).

STEP 9

Remove the primary carrier assembly (28).

STEP 10

Remove the secondary carrier assembly (27).

STEP 11

Remove the input shaft (6) from spindle (9). Remove the retaining rings (23), washers (24), and disengage spring (25) from input shaft (6) only if replacement is required.

STEP 12

One tab of lock washer (21) will be engaged in slot of bearing nut (22); bend back to release. Remove the bearing nut (22), lock washer (21) and thrust washer (20). **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 13

Bolt spindle drive tool, 598FF, to ring gear (26). Grade 8 bolts should be used. Drive spindle (9) from hub (17) by turning center bolt of spindle drive tool. Care should be taken to avoid damaging splines and threads on spindle. **Note:** Bearing cone (19) has been designed with a press fit with respect to spindle (9). Considerable force will be required to remove cone from spindle.

STEP 14

Remove spindle drive tool from ring gear (26).

STEP 15

Remove the 18 bolts (15) and washers (16) from hub (17) and remove ring gear (26). It may be necessary to strike ring gear (26) with a rubber mallet to loosen from hub (17).

STEP 16

Remove the boot seal (10) and oil seal (11) and bearing cones (12 & 19) from hub (17). Inspect bearing cups (13 & 18) in position and remove only if replacement is required.

ASSEMBLY OF POWER WHEEL

STEP 1

Press new bearing cups (13 & 18) in each side of the hub (17). It is recommended that bearing cups (13 & 18) and cones (12 & 19) be replaced in sets.

STEP 2

Assemble bearing cone (12) into cup (13) at seal end of hub (17) and press a new seal (11) into hub (17). Install boot seal (10) on hub (17) if unit is so equipped.

STEP 3

Position spindle (9) upright on bench. Lubricate lips of seal (11) and lower hub (17) onto spindle (9). Hub (17) should be centered as it is lowered over spindle (9) to prevent seal damage.

STEP 4

Assemble bearing cone (19) over spindle (9). Press bearing cone (19) over spindle bearing journal using press and cylindrical bearing cone driver 598E. Press bearing cone (19) down until rollers just touch cup (18). Take care to avoid pressing cone (19) too far. **Note:** If a press is not available, place tool 598E over splined end of spindle (9) on the edge of bearing cone (19) 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 5

Install thrust washer (20) with tab in keyway of spindle and bearing nut (22). **DO NOT install lock washer (21) at this time.**

STEP 6

Clean mating surfaces and apply a bead of silicone sealant to face of hub (17) that mates with ring gear (26). See instructions on sealant package. Hub (17) is attached to ring gear (26) with 18 3/8-24 grade 8 hex head cap screws (15) and flat washers (16). Torque cap screws to 52 - 60 lb.-ft. (70 - 81 Nm).

STEP 7

Place spindle drive tool, 598FF, over spindle (9) and bolt or pin to ring gear (26). Make sure center bolt of drive tool is not touching spindle 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 drive tool and turning hub (17) slowly and steadily with the torque wrench. Note mean torque. An initial bearing torque of greater than 52 lb.-in. with boot seal installed or 46 lb.-in. without boot seal means that the cone (19) was pressed on too tightly in step 4. In this case, back off bearing cone (19) by pressing spindle (9) out of cone (19) until initial preload is relieved. See step 13 of disassembly procedure.

STEP 9

Torque bearing nut (22) with bearing nut wrench 596Z until a bearing rolling torque of 42 - 50 lb.-in., with a boot seal installed, or 38 - 46 lb.-in., without a boot seal, is reached. This may require several trials of pressing the cone (19) by torquing the nut (22) and then checking the rolling torque. Rotate hub (17) 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 (22) in order to press cone (19) into position.

STEP 10

Remove bearing nut (22) and install lock washer (21). Replace bearing nut (22).

STEP 11

Re-torque bearing nut (22) to 60 - 70 lb.-ft. (80 - 94 Nm).

STEP 12

Secure bearing nut (22) by bending a lock washer (21) 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

Assemble a washer (24), spring (25), a second washer (24), and a retaining ring (23) in the middle grooves of input shaft (6). Install a second retaining ring (23) in groove near small end of input shaft (6).

STEP 14

Assemble the splined end of the input shaft (6) down into spindle (9).

STEP 15

Assemble the secondary carrier assembly (27) to spindle (9) at splines.

STEP 16

Assemble the primary carrier assembly (28) into the ring gear (26). It will be necessary to rotate carrier to align secondary sun gear (part of primary carrier assembly (28)) with planet gear teeth in secondary carrier assembly (27). Assemble primary sun gear (30) over input shaft (6). Rotate primary sun gear (30) to align input shaft (6) to gear splines and gear teeth in primary carrier assembly (28).

STEP 17

Lubricate "O" ring (33) and assemble in groove inside cover hole, push disengage plunger (32) into cover (34) with pointed end facing inside of unit.

STEP 18

Assemble the thrust washer (31) with tangs engaged with cover (34). **NOTE:** A small amount of grease applied to the back side of thrust washer (31) will hold washer in place. Apply a bead of silicone sealant to end of face of ring gear (26). Assemble cover (34) aligning holes of cover and ring gear. Assemble the eight 5/16-18 x 1 inch hex head bolts (35). Torque bolts to 20 - 25 lb.-ft. (27 - 34 Nm).

STEP 19

Assemble the disengage cover (37) with dimpled center protruding out if wheel is to be used to drive the vehicle. Assemble and torque the two 5/16-18 x 1/2 inch bolts (38). Torque bolts to 10 - 20 lb.-ft. (13 - 27 Nm).

STEP 20

Invert the Power Wheel assembly and assemble the sleeve bearing (7), coupling (4) and retaining ring (5) with counterbore out to the input shaft (6).

STEP 21

The proper disc pack and piston kit assembly will depend on the Power Wheel brake model number: Contact Auburn Gear for specific part numbers. Disc packs are supplied as a matched set. Replacement packs are packaged individually to retain the matched characteristics. Pre-soak the disc pack in the oil used in the Power Wheel drive before placing into the unit. Do not remove from package until just before inserting the disc pack into the drive.

STEP 22

Carefully remove the disc pack and align the tangs on the steel separator plates. Place the complete disc pack (3) into the Power Wheel drive so that the tangs on the separator plates are within the slots in the drive. Also, the spline on the friction discs should be aligned with the spline on the Power Wheel coupling (4). Check to make sure that the disc pack is properly seated.

STEP 23

Clean seal surface of the drive and piston assembly (2) of any old sealant and wipe any oil from seal surface of spindle or cover. Most piston kits include a gasket which should be placed on spindle face to seal interface with piston assembly. If no gasket is included apply a continuous 1/32 bead of silicone sealant to seal surface on inside of the bolt circle. **NOTE:** Do not use excessive amount of sealant as this can interfere with proper operation of the parking brake.

STEP 24

Align the four piston assembly holes with the four holes in the Power Wheel spindle or cover. Apply Locktite 262 to the four screws to be installed and torque to 80 - 94 lb. ft. (108 - 127 Nm).

STEP 25

Remove the two screws installed in motor mounting holes.

STEP 26

Before using the brake, it is recommended that a pressure release check be performed. Using a suitable hydraulic source, bleed the air from the brake and pressurize the brake to the specified release pressure. The brake plates should now turn freely. If the hydraulic source will provide at least 1000 PSI pressure, apply 1000 PSI and check to make sure that the pressure does not decay more than 30 PSI in 60 seconds.

STEP 27

After motor is assembled to drive or drive is sealed at spindle, fill with lubricant to proper level and replace all plugs.

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.

CARRIER ASSEMBLIES

It is recommended that the primary and secondary carrier assemblies (28 & 27) 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). Power Wheel is to be half full of oil when unit is mounted level and horizontal. Use drain and fill plugs located in cover and ring gear. Oil is to be changed after first 50 hours of operation with subsequent changes every 1000 hours or yearly, whichever ever comes first. If unit is to be operated vertically, if ambient conditions are outside the specified range, or if the oil temperature exceeds 200°F (93°C) contact Auburn Gear for oil and level recommendations.

TOWING VEHICLE

CAUTION: The Power Wheel will not normally be damaged by towing; however, the hydraulic drive components may be damaged unless the Power Wheel is disengaged from the drive motor. Road speeds in excess of 25 MPH should be avoided unless clearly specified to be permissible by the equipment manufacturer.

TO DISENGAGE POWER WHEEL

CAUTION: For units equipped with the standard spring disconnect, assemble the disengage cover (37) with the dimpled center protruding inward. For units equipped with the optional quick disconnect, push in center plunger of disconnect.

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 | 70,000 lb. in. (7,910 Nm) |
| Maximum input speed | 2,500 RPM |
| Oil capacity | 36 oz (1065 ml) |
| Maximum parking brake release pressure | 3,000 PSI (206 bar) |

| ITEM NO. | DESCRIPTION* | NO. USED IN ASS'Y. | ITEM NO. | DESCRIPTION* | NO. USED IN ASS'Y. |
|----------|---------------------------|--------------------|----------|--------------------------------|--------------------|
| 1 | Socket or Torx Head Screw | 4 | 22 | Bearing Nut 614913 | 1 |
| 2 | Piston Assembly | 1 | 23 | Retaining Ring | 2 |
| 3 | Disc Pack | 1 | 24 | Washer | 2 |
| 4 | Coupling | 1 | 25 | Disengage Spring 14-02-156-001 | 1 |
| 5 | Retaining Ring | 1 | 26 | Ring Gear | 1 |
| 6 | Input Shaft | 1 | 27 | Secondary Carrier Assembly | 1 |
| 7 | Sleeve Bearing 612701 | 1 | 28 | Primary Carrier Assembly | 1 |
| 8 | Brake Gasket 904503 | 1 | 29 | Retaining Ring | 1 |
| 9 | Spindle | 1 | 30 | Primary Sun Gear | 1 |
| 10 | Boot Seal 604405 | 1 | 31 | Thrust Washer | 1 |
| 11 | Oil Seal 604415 | 1 | 32 | Disengage Plunger 610801 | 1 |
| 12 | Bearing Cone 613317 | 1 | 33 | "O" Ring 614101 | 1 |
| 13 | Bearing Cup 613316 | 1 | 34 | Large Cover | 1 |
| 14 | Wheel Bolt | 9 | 35 | Hex Head Bolt | 8 |
| 15 | Hex Head Bolt (Grade 8) | 18 | 36 | Magnetic Plug 14-00-052-002 | 1 |
| 16 | Flat Washer | 18 | 37 | Disengage Cover 14-02-039-005 | 1 |
| 17 | Hub | 1 | 38 | Hex Head Bolt 618305 | 2 |
| 18 | Bearing Cup 613318 | 1 | 39 | Quick Disconnect Gasket | 1 |
| 19 | Bearing Cone 613319 | 1 | 40 | Quick Disconnect Assembly | 1 |
| 20 | Thrust Washer 619321 | 1 | 41 | Hex Head Bolt | 2 |
| 21 | Lock Washer 605004 | 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 7 Power Wheel® Service Kits

| Part No. | Description | Included Items |
|----------|--------------------------|--------------------------------|
| 641023** | Bearing and Seal Kit | 11, 12, 13, 18, 19, 21, and 33 |
| 641024** | Seal Kit | 11, 21, and 33 |
| 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.