

# Power Wheel® Service Manual Model 145 Double Reduction Shaft and Spindle Output Drives

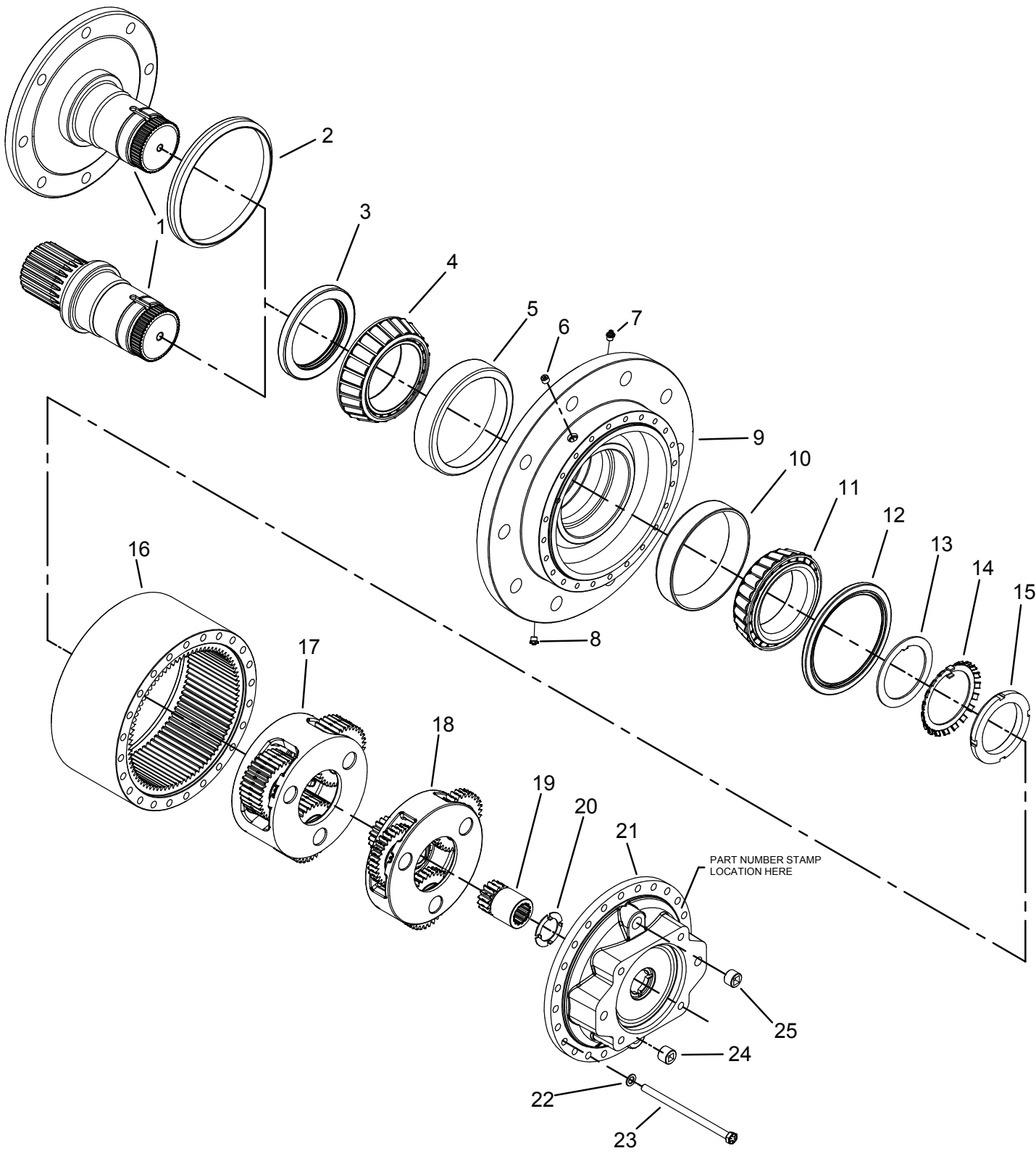


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## IDENTIFICATION

**IMPORTANT:** All Power Wheel units and kits are shipped with a label that includes the Auburn Gear part number, order code and work order.



In addition to the label, Power Wheel drives are stamped with the last four digits of the part number and date code, which appears on the cover or hub flange as shown.

Example: **0216 12335**

When ordering parts, the information included on the label or the stamped part 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 twenty-four hex head bolts (23) and flat washers (22) from cover (21). Thrust washer (20) usually remains with cover.

### STEP 2

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

### STEP 3

Remove primary carrier assembly (18) from ring gear (16).

### STEP 4

Remove the secondary carrier assembly (17). It may be necessary to remove the ring gear (16) first, if difficulty is encountered in removing the secondary carrier assembly (17).

### STEP 5

If not previously removed (see step 4) remove ring gear (16) from hub (9). It may be necessary to strike ring gear (16) with a rubber mallet to loosen from hub (9).

### STEP 6

One tab of lock washer (14) will be engaged in slot of bearing nut (15); bend tab back to release. Remove the bearing nut (15), lock washer

(14) and thrust washer (13). **NOTE:** A special locknut wrench, 593RR, is required for the removal of the bearing locknut. Contact Auburn Gear to purchase wrench and other service tools.

### STEP 7

Place assembly in press with shaft/spindle (1) down on hub flange (9). Place material under shaft/spindle so not to damage when it's pressed out of hub. Care should be taken to avoid damaging splines and threads on shaft/spindle while pressing it out. **NOTE:** Bearing cone (11) has been designed with a press fit with respect to shaft/spindle (1). Considerable force will be required to remove cone from shaft/spindle.

If a press is not available you will need the 598FF Spindle/Shaft removal tool. Place the small disk on the end of the shaft/spindle (1). Mount the cross tube to the hub (9). Turn the screw against the small disk, DO NOT use an impact gun. Turning the screw will force the shaft/spindle (1) out of the bearing cone (11).

### STEP 8

Remove the oil seal (3) & boot seal (2), if included, and bearing cones (4 & 11) from hub (9). Inspect bearing cups (5 & 10) in position and remove only if replacement is required.

## ASSEMBLY OF POWER WHEEL

### STEP 1

Press new bearing cups (5 & 10) in each side of the 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 (3) into hub (9). Install boot seal (2) on hub (9) if unit is so equipped.

### STEP 3

Position output shaft or spindle (1) upright on bench. Lubricate lips of seals (2) and (3) and lower hub (9) onto output shaft/spindle (1). Hub (9) should be centered as it is lowered over output shaft/spindle (1) to prevent seal damage.

**NOTE: [On heavy duty seals (order code T) there is to be no lubrication on seal (3), output shaft/spindle (1), or hub (9)].**

### STEP 4

Press inner bearing cone (11) onto shaft/spindle (1) until rollers just contact inner bearing cup (10) using bearing cone driver 598F.

### STEP 5

If applicable, install grease seal (12) into hub (9) until flush with surface of hub where seal is installed. Install tab of thrust washer (13) into slot of output shaft or spindle (1). Place lock washer (14) onto output shaft or spindle (1).

### STEP 6

Torque bearing nut (15) to 50 lb-ft (68 N-m) using tool 593RR.

### STEP 7

Rotate hub (9) several revolutions in each direction to allow bearings to seat.

### STEP 8

Using an appropriate pick, check each roller of the inner bearing cone (11) for looseness.

### STEP 9

If all rollers are tight, proceed to step 13.

### STEP 10

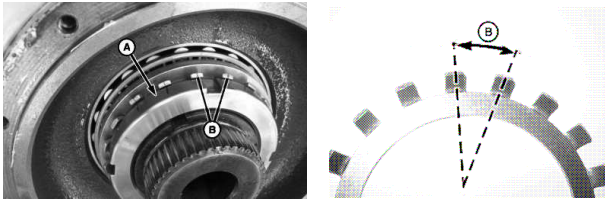
With bearing nut tool 593RR placed on bearing nut (15), tap end of bearing nut tool with an appropriate hammer to advance the inner bearing cone (11) further onto shaft (1).

### STEP 11

Repeat steps 7 thru 10 until all inner bearing cone rollers are tight.

### STEP 12

Identify and mark the target tab/slot combination required to achieve the recommended preload of 3/4 tab to 1 full tab. Refer to figures below.



### STEP 13

Set the bearing preload by advancing the bearing nut (15) onto the shaft (1) between 3/4 tab to 1 full tab. To advance the bearing nut to the preload position, tighten bearing nut using tool 593RR until the slot and tab combination identified in Step 13 are aligned. Do not exceed 150 lb-ft (203 N-m). If the appropriate slot and tab are not aligned prior to reaching 150 lb-ft (203 N-m), tap end of bearing nut tool as described in Step 8 and continue to tighten bearing nut. Repeat as required until the appropriate tab and slot are aligned.

### STEP 14

Secure bearing nut (15) by bending the lock washer tab into the aligned bearing nut slot.

### STEP 15

Apply a bead of silicone sealant to cover face of hub (9) that mates with ring gear (16). See instructions on sealant package.

### STEP 16

Assemble ring gear (16) to hub (9) being careful to align all the bolt holes.

### STEP 17

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

### STEP 18

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

### STEP 19

Install primary sun gear (19) into primary carrier assembly (18). Sun gear (19) should turn freely by hand when assembled.

### STEP 20

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 (19) with a small amount of grease or silicone sealant. Assemble cover (21) to ring gear (16). Align cover (21) with hub (9) such that pipe plug holes on cover (21) align with mounting holes in hub (9).

### STEP 21

Install twenty-four 3/8-16 x 6 1/2 inch grade 8 bolts (23) and flat washers (22). Torque bolts to 45-50 lb-ft (61-68 N-m).

### STEP 22

Install pipe plugs (24). Position filler opening horizontally and fill unit to oil level hole in hub (9). Install pipe plugs (6) and (25). Torque pipe plugs (24 & 25) 11-25 lb-ft (15-34 N-m).

**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, SAE D 2-163. Apply sealant to motor mounting bolt threads when holes in cover are thru holes.

## SPECIAL INSTRUCTIONS FOR SHAFT BEARING GREASE CAVITY

Certain models utilize a grease seal (12), grease fitting (7) and pressure relief fitting (8) to provide a separate grease cavity for the output shaft bearings that is necessary for vertical shaft up applications. Bearings should be greased on a regular basis with interval depending on duty cycle and operating conditions. Lubricate with Timken NLGI grade 2 part no. GR219C or equivalent grease with heavy-duty moly based grease through fitting (7) until grease is purged from relief fitting (8). Always grease bearings if drive is to be stored or shut down for an extended period.

## 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). Power Wheel is to be half full of oil when unit is mounted level and horizontal. Use drain and fill plugs located in cover. 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.

## 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 ..... 145,000 lb-in (16,400 N-m)  
 Maximum input speed ..... 5,000 RPM  
 Oil capacity ..... Shaft/Spindle down; 103 oz (3,046)..... Shaft/Spindle horizontal: 67 oz (1,981 cc)

ITEM NO.	DESCRIPTION*	NO. USED IN ASS'Y.	ITEM NO.	DESCRIPTION*	NO. USED IN ASS'Y.
1	Shaft or Spindle Output	1	14	Lock Washer 605003	1
2 ***	Boot Seal	1	15	Bearing Nut 614912	1
3	Oil Seal	1	16	Ring Gear	1
4	Bearing Cone	1	17	Secondary Carrier Assembly	1
5	Bearing Cup	1	18	Primary Carrier Assembly	1
6	Pipe Plug 03-04-101-09	1	19	Primary Sun Gear	1
7 ***	Grease Zerk	1	20	Thrust Washer	1
8 ***	Pressure Relief Fitting	1	21	Cover	1
9	Hub	1	22	Flat Washer	24
10	Bearing Cup	1	23	Hex Head Bolt	24
11	Bearing Cone	1	24	Magnetic Plug 14-00-052-002	1
12 ***	Grease Seal	1	25	Pipe Plug 03-04-101-01	1
13	Thrust Washer 619320	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.

\*\*\* Not required in all assemblies

### Model 145 Power Wheel® Service Kits

Part No.	Description	Included Items
593RR	Bearing Locknut Tool	Not Shown
598F	Bearing Cone Driver	Not Shown
598FF	Spindle/Shaft Drive Tool	Not Shown
641028**	Bearing & Seal Kit	3,4,5,10,11,14
641027**	Seal Kit	3, 14

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

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