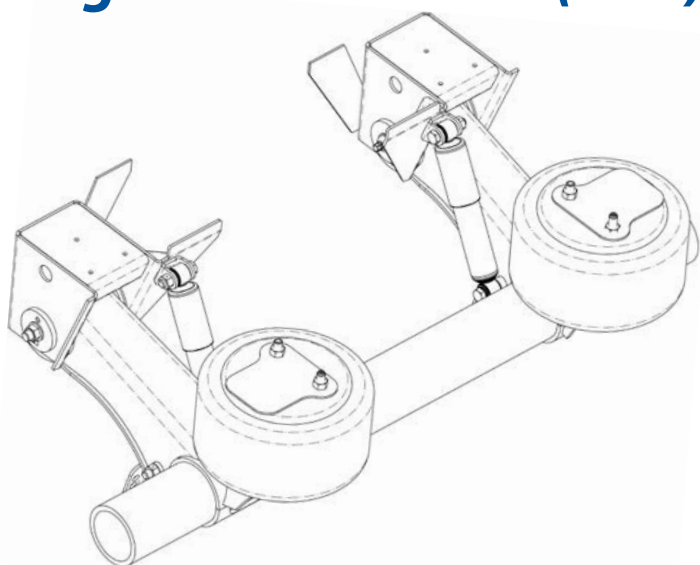


# RAR-266

## Large Diameter Axle (LDA) – Air-Ride Suspension



## Installation and Service Manual

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## SUSPENSION IDENTIFICATION

### Introduction

The Ridewell Air Ride (RAR) 266 Trailer Suspension is a fully integrated Large Diameter Axle (LDA) suspension system that can be used in a range of applications. The suspension can also be configured with a standard five-inch axle.

Refer to the engineering drawing for detailed information on the suspension system components and operating parameters.

### Suspension Identification Tag

A (606-) **Installation/Assembly Number** will be listed as the **Part Number** when other system components are factory installed with the suspension (Figure 1).

The **Suspension Number** and **Serial Number** on the Suspension ID Tag refer to the model and the date of manufacture of an individual suspension system.

Please refer to the suspension number/part number and serial number on the Suspension Identification Tag when contacting Ridewell for customer service, replacement parts and warranty information.

### Axle-Body Identification Tag

The **Base-Axle Part Number (165-)** and the **Serial Number** of the axle tube are listed on the Axle-Body ID Tag of Ridewell-branded round axles (Figure 2).

The **Base-Axle Part Number** refers to Ridewell-branded round axles manufactured in various axle wall thicknesses and widths.

More information on Ridewell-branded axles can be found in the "Trailer Axle Parts Guide" (9710029).

### Notes and Cautions

All work should be completed by a properly trained technician using the proper/special tools and safe work procedures.

Read through the entire Installation and Service Manual (ISM) before performing any installation or maintenance procedures.

The ISM uses two types of service notes to provide important safety guidelines, prevent equipment damage and make sure that the suspension system operates correctly. The service notes are defined as:

"NOTE": Provides additional instructions or procedures to complete tasks and make sure that the suspension functions properly.

**⚠ CAUTION** Indicates a hazardous situation or unsafe practice that, if not avoided, could result in equipment damage and serious injury.


 <b>RIDEWELL SUSPENSIONS</b> The Engineered Suspension Company	
PART NO:	
SUSP. NO:	
SERIAL NO:	
GROSS AXLE WEIGHT RATING CERTIFICATION IS PER THE FINAL STAGE MANUFACTURER OR ALTERER.	
THIS PRODUCT MAY BE COVERED UNDER ONE OR MORE PATENTS, ADDITIONAL PATENTS MAY BE PENDING.	
www.ridewellcorp.com	(800) 641-4122

Figure 1.

The Suspension Model (Suspension Number) and date of manufacture (Serial Number) are listed on the Suspension Identification Tag.


 <b>RIDEWELL SUSPENSIONS</b>			
MODEL:		PART NO.	
SERIAL NO.		CAPACITY	TON

Figure 2.

The Base-Axle Part Number (165-) and the Serial Number assigned to the axle tube are listed on the Axle-Body Serial Identification Tag.

## Prior to Installation

Refer to the engineering drawing to confirm dimensional requirements and the range of ride heights available.

Installations can vary and procedures should be adapted for different vehicles, as needed.

- The Gross Axle Weight Rating (GAWR) is determined by the system component with the lowest load rating. Please consult with tire, wheel, axle and brake manufacturers before installation to determine the GAWR.
- If vehicle chassis modifications are required, consult with the vehicle manufacturer to ensure that such changes are permitted.
- Welding or altering suspension components is not permitted without the express written permission of Ridewell Suspensions.

## Installer Responsibilities

The installer of the suspension has the sole responsibility for proper attachment of the suspension system to the vehicle chassis.

- The installer is responsible for locating the suspension system on the vehicle to provide the proper load distribution.
- The installer must verify that vehicle crossmembers are positioned to support the suspension at the installing location.
- It is the installer's responsibility to determine that axle spacing conforms to any applicable federal and local bridge laws.
- The installer must verify that air reservoir volume requirements are met after suspension installation. Consult the vehicle manufacturer or Federal Motor Vehicle Safety Standards (FMVSS) 121 for more information.
- The installer must verify there is sufficient clearance for proper functioning of the suspension, air springs, brake chambers, axle and tires.

## Suspension Mounting

Refer to the engineering drawing for available ride heights; the recommended locations of any customer-furnished filler plates and supporting crossmembers; the torque values; and the spacing and clearance requirements of suspension components.

The suspension installer has the final responsibility of attaching the suspension to the vehicle frame.

### Weld-On Installation Procedure

**CAUTION** Welding method must use a minimum weld tensile strength of 70,000 psi, per AWS specifications.

1. Mark the desired location of the hangers and filler plates on the vehicle frame. Hangers must be installed parallel to each other for proper axle alignment.
2. Mark the desired location of the air spring mounting plates and filler plates on the frame.
3. Install filler plates for the hangers and air spring mounting plates on the frame. Weld filler plates to crossmembers with  $\frac{1}{4}$ " fillet welds down the length of the crossmember.
4. Weld the hangers to the frame/filler plates with  $\frac{1}{4}$ " fillet welds completely around the hangers. Stop the welds  $\frac{1}{2}$ " from the corners and edges.
  - 4.1 For hangers with wing gussets, the wing gussets must be welded to a crossmember or other supporting structure.
  - 4.2 A length of 1  $\frac{1}{2}$ "-diameter pipe can be placed through the holes in the two hangers to help with stabilization and alignment.
5. Weld the air spring mounting plates to the frame/filler plates with  $\frac{3}{16}$ " fillet welds.
6. Attach a crossmember or diagonal brace to the front of the hangers with  $\frac{1}{4}$ " fillet welds.

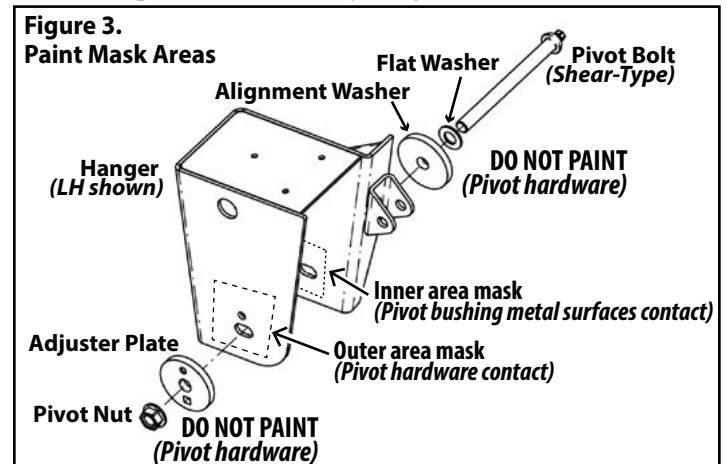
### Bolt-On Installation

Before installation, check to make sure that wires, hoses or other components will not be affected by drilling into the frame rail.

- Bolts/nuts for attaching the suspension to the vehicle are supplied by the installer. Grade 8 bolts and flanged lock nuts or lock nuts with hardened washers are recommended.
- Bolt holes are not provided in the air spring mounting plates. Clamp mounting plates and filler plates (if necessary) in place before drilling.

### Final Assembly and Inspection

- Verify the welds of the hanger and air spring mounting plates.
  - Check the location for sufficient clearances of suspension components.
  - Attach beam and axle assemblies to hangers. Note: Do not fully torque pivot hardware until axle alignment is completed (pg 11).
- CAUTION** Do not apply undercoating; paint or other top coat to suspension; frame hangers; or pivot connection hardware until axle alignment procedure is completed.
- NOTE: Areas where metal surfaces of alignment plates; washers; pivot bolts/nuts or pivot bushing (bushing sleeve) contact the frame hanger must be masked if applying under- or top coating prior to suspension assembly (Figure 3).



- Complete assembly and installation of air springs as shown on the engineering drawing. Torque to specifications (Page 11).
- Install/connect the height control valve (HCV), if applicable. Check the air system tubing and fittings after installation for leaks (Page 7).
- Verify suspension ride height is adjusted within range shown on engineering drawing. Complete axle alignment procedure (Page 15).
- Install shock absorbers. Note: If the suspension is painted after shocks are installed, make sure paint overspray does not get under the shock absorber dust covers.

**CAUTION** Failure to torque suspension components to specifications can result in suspension failure and void the warranty.

The Ridewell Extreme Air® Height Control Kit (HCK) adds and exhausts air from the air springs to maintain vehicle ride height. The HCK assembly consists of one lever connected to the height control valve (HCV) with a rod arm (vertical link) connected to the lower mounting bracket (Fig. 5).

Refer to Installation Guide 9710008 for installation procedures and HCK configurations for different suspension applications. The vehicle's entire air system should be checked for leaks after any height control kit installation.

**CAUTION** The installer is responsible for making sure that the air system requirements comply with all appropriate Federal Motor Vehicle Safety Standards.

**Standard Configuration  
(Non-Dump)**

**Pressure-Dump Configuration  
(Normally Open)**

**Zero-Pressure Dump Configuration  
(Normally Closed)**

**9710008  
HCK Installation Guide**

**Figure 4.**  
**Universal HCK example -**  
**Lower mounting bracket attached to axle.**

Install height control kit with HCV-to-lever angle of 20°- 45° to maximize HCV flow rates throughout jounce/rebound.

HEIGHT CONTROL KIT INSTALLATION – TROUBLESHOOTING		
Problem	Possible Cause	Corrective Action
HCV is not receiving air.	<ul style="list-style-type: none"> <li>Blocked air supply line.</li> </ul>	<ul style="list-style-type: none"> <li>Verify air lines are pressurized by removing supply line at HCV. Check for pinched lines.</li> </ul>
HCV is not delivering air to the air springs.	<ul style="list-style-type: none"> <li>Air tank not filling/reaching set pressure.</li> <li>Pressure Protection Valve (PPV) not working correctly.</li> <li>Pilot port is not plumbed or is plumbed incorrectly.</li> </ul>	<ul style="list-style-type: none"> <li>Verify air tank pressure with manual/in-line pressure gauge.</li> <li>Check PPV operation by making sure valve opens when system reaches the desired pressure setpoint (<i>usually greater than 70 psi</i>).</li> <li>Check HCV configuration and reinstall if necessary – Non-Dump; Pressure-Dump (Normally Open); Zero-Pressure Dump (Normally Closed).</li> </ul>
Air springs fill but do not exhaust.	<ul style="list-style-type: none"> <li>Obstructed air line.</li> <li>HCV installed backwards.</li> <li>Supply line installed to suspension port</li> </ul>	<ul style="list-style-type: none"> <li>Disconnect linkage. Rotate lever to down position (exhaust). If springs remain inflated, check for pinched/blocked lines.</li> <li>Check installation. Reinstall, if necessary.</li> <li>Move air supply line to HCV supply port.</li> </ul>
Air system leaks down in a short period of time.	<ul style="list-style-type: none"> <li>HCV installed backwards.</li> <li>Leak in air system beyond accepted standards.</li> </ul>	<ul style="list-style-type: none"> <li>Disconnect linkage to HCV. Turn lever to the up position (fill). If air springs do not inflate, reinstall height control valve. Check air system for leaks.</li> <li>To find leak in the HCV area, pressurize system and spray soapy water solution onto the valve and lines. Check for bubbles (leaks):               <ul style="list-style-type: none"> <li>No leak found – Do not remove valve, check rest of system for leaks.</li> </ul> </li> <li>Check that tubing cuts are straight and smooth. Re-cut and reassemble if necessary.</li> </ul>



## Recommended Service Intervals

Ridewell Suspensions recommends the following minimum service intervals for standard duty, on-highway usage applications. More frequent intervals are recommended for heavier duty applications.

### Daily/Pre-Trip Inspections

- \_\_\_ Check tires for proper inflation, damage or excessive wear.
- \_\_\_ Check wheel-ends for obvious signs of lubricant leakage. Check for missing components.
- \_\_\_ Check axle assemblies for damage or loose components.
- \_\_\_ Visually inspect suspension structure for signs of damage or excessive wear.
- \_\_\_ Check for loose or missing bolts/nuts. Check for irregular movement in suspension components.
- \_\_\_ Make sure air controls are operating properly. Drain all moisture from air reservoirs.

### First 6,000 miles of use

- \_\_\_ Torque suspension components to specifications (Page 11/Engineering Drawing).  
NOTE: Do not re-torque shear-type pivot bolt.
- \_\_\_ Verify that suspension is operating at the installed ride height.

### Refer to these Technology & Maintenance Council (TMC) publications for additional information

RP 609	Self-Adjusting/Manual Brake Adjuster Removal, Installation and Maintenance
RP 618	Wheel Bearing Adjustment Procedure
RP 619	Air System Inspection Procedure
RP 622	Wheel Seal and Bearing Removal, Installation, and Maintenance
RP 631	Wheel End Lubrication Recommendations
RP 643	Air Ride Suspension Maintenance
RP 728	Trailer Axle Maintenance

### Every 12,000 miles of use

- \_\_\_ Inspect air springs for damage/excessive wear. Torque air spring bolts/nuts to specifications (Page 11/Engineering Drawing).
- \_\_\_ Check air lines and connections for leaks.

### Every 50,000 miles of use

- \_\_\_ Torque suspension components to specifications (Page 12/Engineering Drawing).  
NOTE: Do not re-torque shear-type pivot bolt.

### Annually/100,000 miles of use

- \_\_\_ Inspect pivot connection for worn pivot bushing and wear washers. Replace if necessary.
- \_\_\_ Torque component bolts/nuts to specifications (Page 11/Engineering Drawing).
- \_\_\_ Check arm beam-to-axle connection welds.

### Check lubrication level in wheel ends:

- \_\_\_ 1) Oil-Filled Wheel Ends:  
Refill/Replace lubricant as needed  
(TMC RP 631-“100K/Annual Inspection”).
- \_\_\_ 2) Semi-Fluid Grease:  
Pull outer bearing and visually inspect the lubrication level. Refill/Replace as needed  
(TMC RP 631-“Level 3 Lubrication Level Inspection”) (TMC RP 618-“Wheel Bearing Adjustment”)
- \_\_\_ Check air lines and connections for leaks.
- \_\_\_ Test air control system pressure protection valve (PPV), if equipped.
- \_\_\_ Check height control valve (HCV) adjustment.
- \_\_\_ Verify suspension operating at installed ride height.

**CAUTION** Failure to torque suspension components to specifications can result in suspension failure and void the warranty.

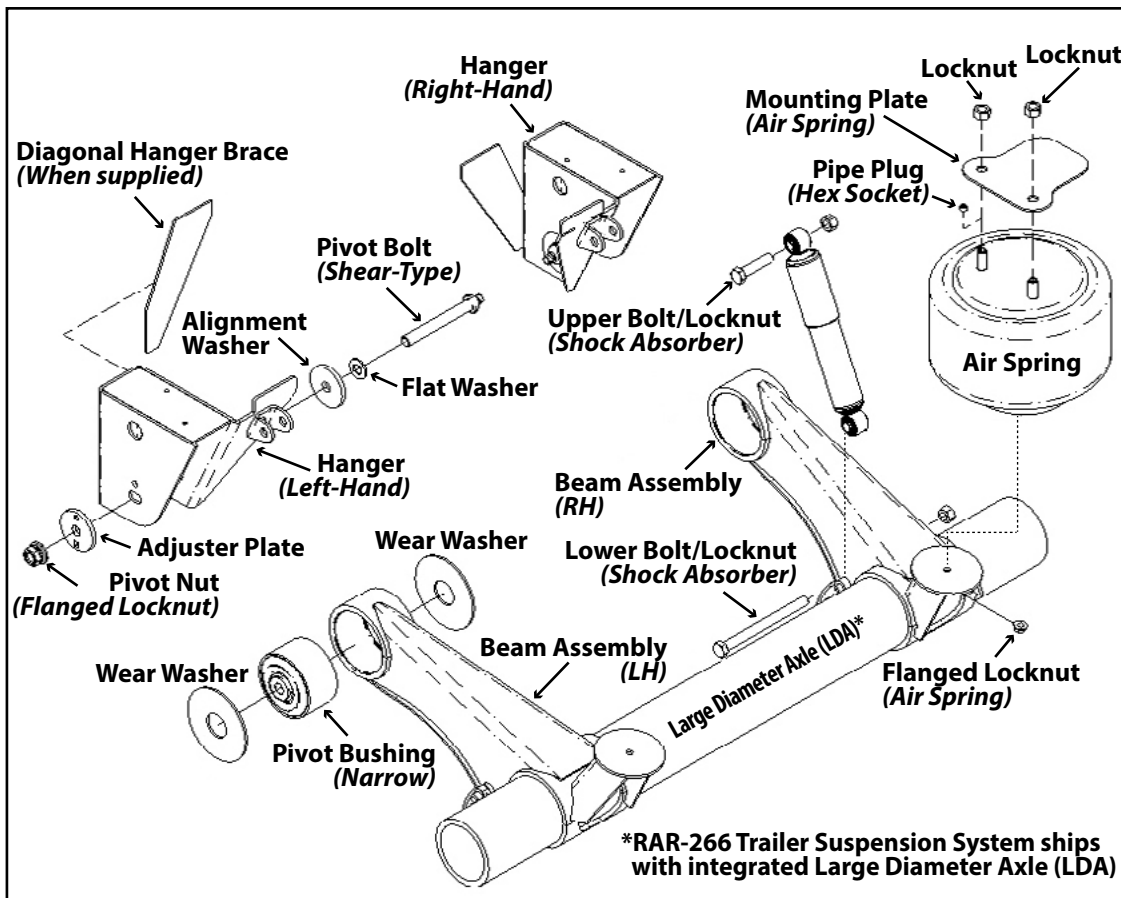
## Pivot Bushing Inspection Procedure

Park the unloaded trailer on a level surface. Set the brakes and chock the tires so vehicle cannot move during inspection.

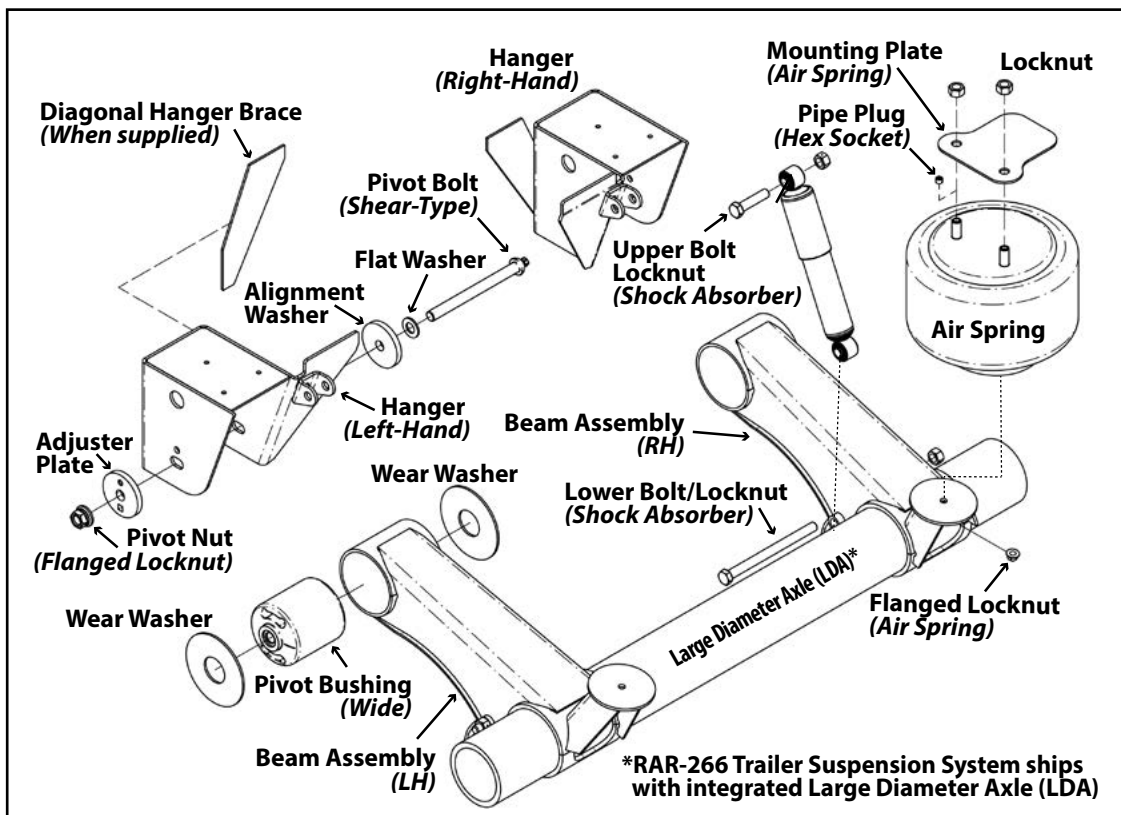
Insert the flat end of a pry-bar between one side of the hanger sidewall and the wear washers. Move the pry-bar back-and-forth and look for excessive movement of the beam (NOTE: A small amount of beam

movement because of the rubber flexing is normal). Inspect the wear washers for excessive wear/damage.

Repeat the pry-bar process and wear washer inspection on the other side of the hanger. If any large/easy movement or damaged wear washers is observed, drop the beams for further inspection. Replace components as necessary.



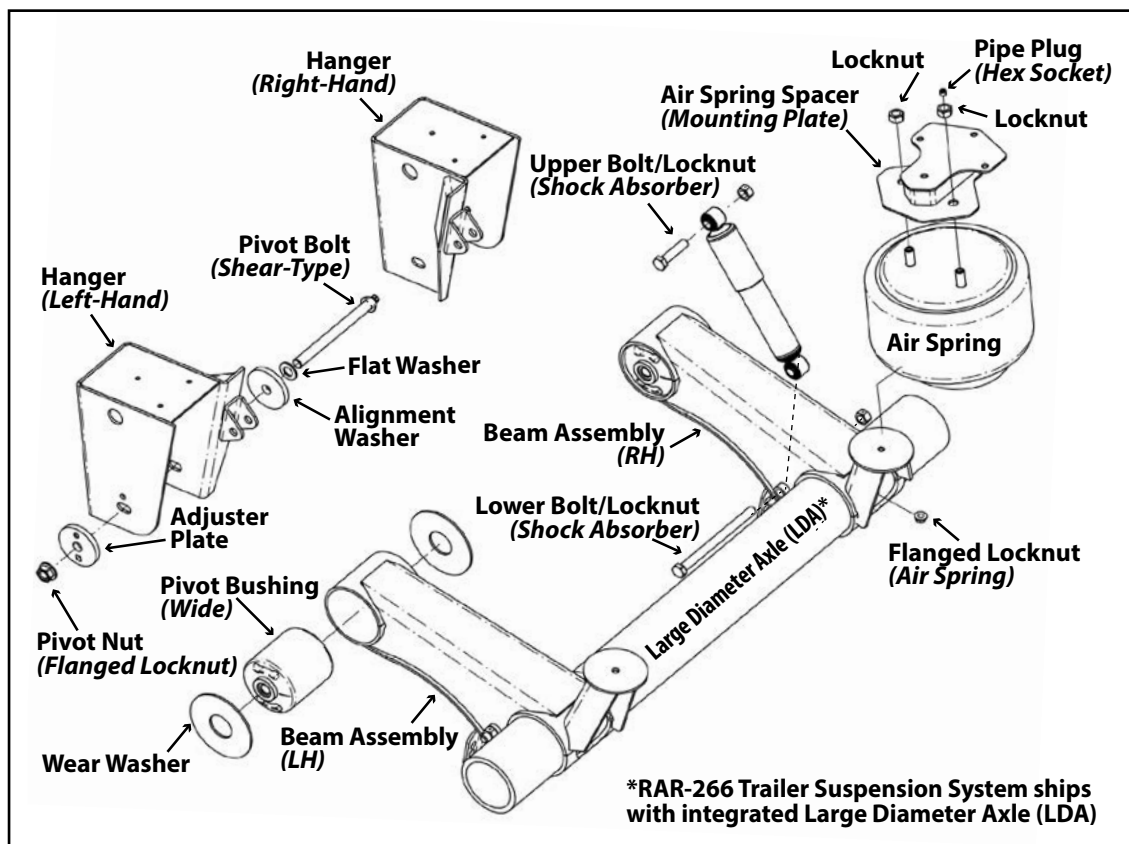
**Figure 5.**  
**266-23K OSW –**  
**Narrow Bushing**  
 Refer to suspension  
 model engineering  
 drawing for the com-  
 ponent part number.



**Figure 6.**  
**266-23K/25K OSW –**  
**Wide Bushing**  
 Refer to suspension  
 model engineering  
 drawing for the com-  
 ponent part number.

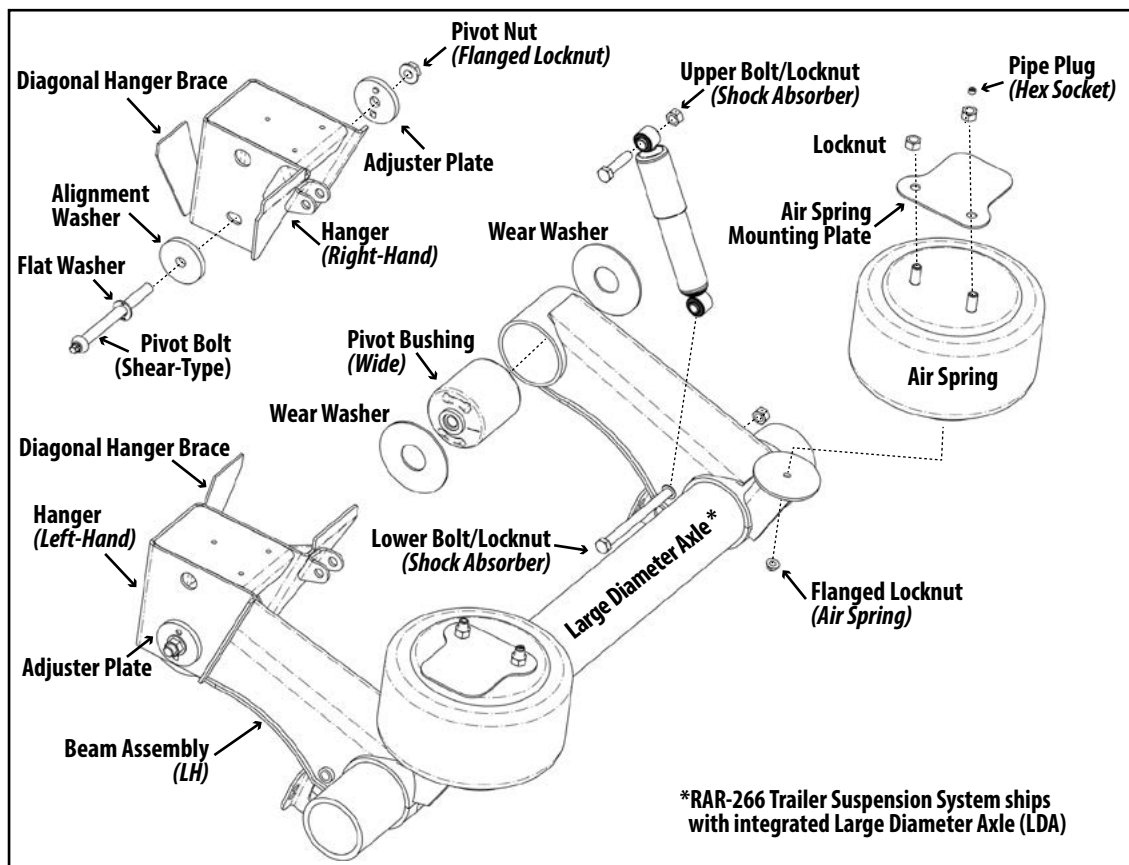
**Figure 7.**  
**266-25K OSW**  
**with A/SPG Spacer –**  
**Wide Bushing**

Refer to suspension  
model engineering  
drawing for the compo-  
nent part number.

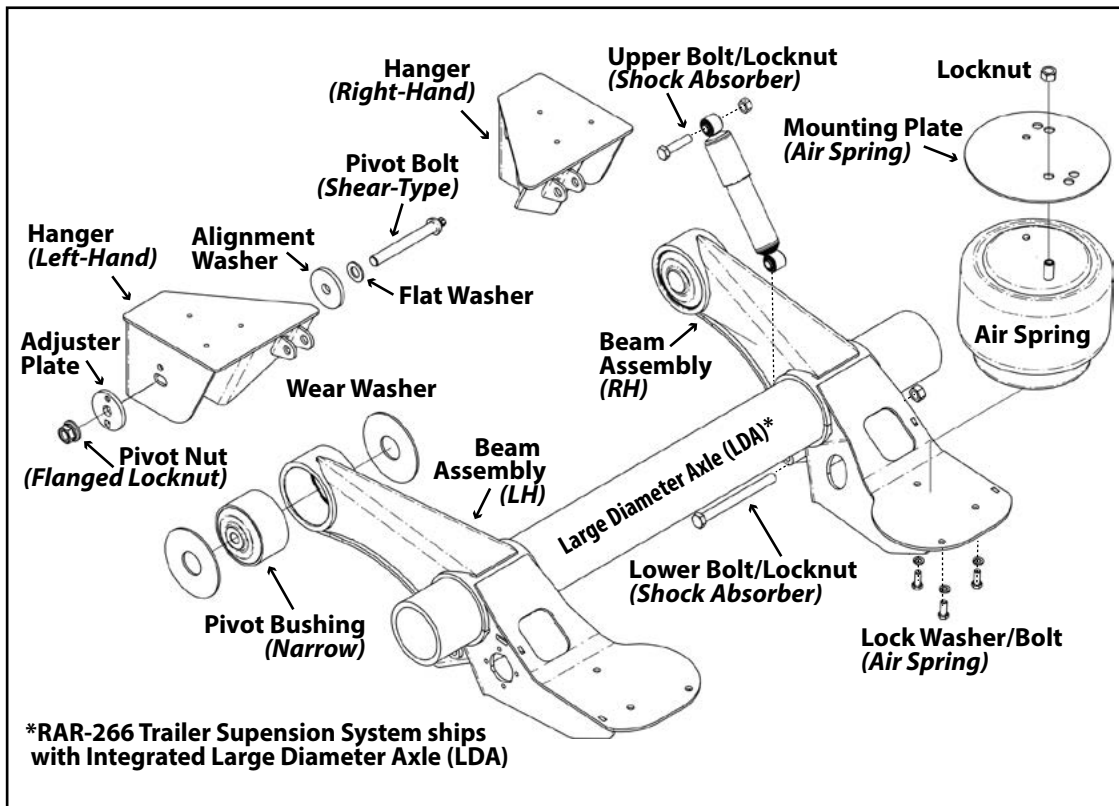


**Figure 8.**  
**266-30K OSW**  
**Heavy Duty LDA –**  
**Wide Bushing**

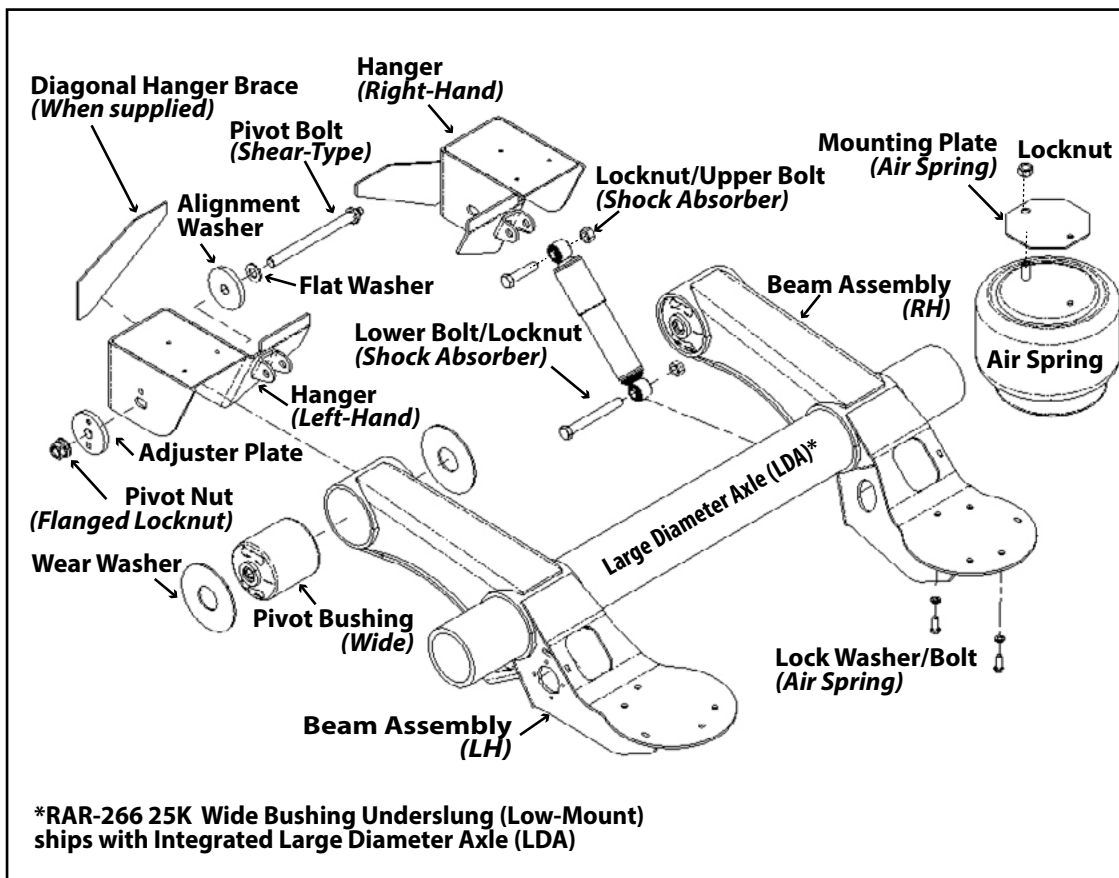
Refer to suspension  
model engineering  
drawing for the compo-  
nent part number.







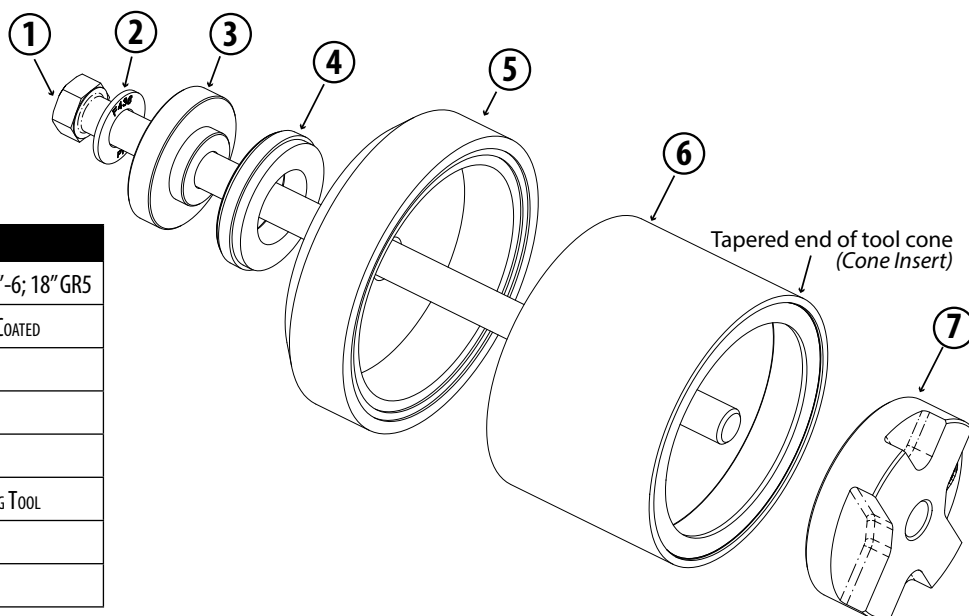
**Figure 9.**  
**266-20K USW**  
**(Low Mount) –**  
**Narrow Bushing**  
 Refer to suspension  
 model engineering  
 drawing for the com-  
 ponent part number.



**Figure 10.**  
**266-25K USW**  
**(Low Mount) –**  
**Wide Bushing**  
 Refer to suspension  
 model engineering  
 drawing for the com-  
 ponent part number.

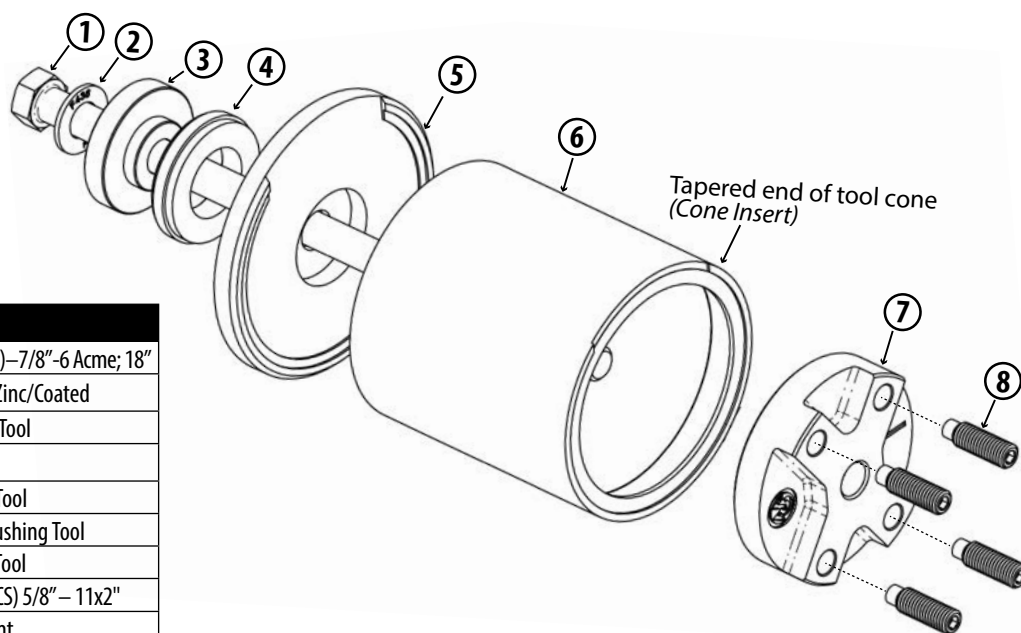
**P/N 6100044**  
**Narrow Bushing**  
**Replacement Tool**

No	Part No.	Item Description
1	1130088	Hex Head Cap Screw (HHCS) 7/8"-6; 18" GR5
2	1160036	Flat Washer — 7/8" F436 ZINC COATED
3	1120051	BEARING COLLAR
4	1660009	THRUST BEARING
5	6100089	ENDCAP — NARROW BUSHING TOOL
6	6100092	CONE ASSEMBLY — NARROW BUSHING TOOL
7	6100091	PLUNGER — NARROW BUSHING TOOL
—	1980014	EXTREME PRESSURE LUBRICANT



**P/N 6100051**  
**Wide Bushing**  
**Replacement Tool**

No.	Part No.	Item Description
1	1130088	Hex Head Cap Screw (HHCS)—7/8"-6 Acme; 18"
2	1160036	Flat Washer 7/8" — F436 Zinc/Coated
3	1120051	Bearing Collar — Bushing Tool
4	1660009	Thrust Bearing
5	6100086	End Cap — Wide Bushing Tool
6	6100083	Cone Assembly — Wide Bushing Tool
7	6100087	Plunger — Wide Bushing Tool
8	1130087	Cavity Alignment Stud (SHCS) 5/8" — 11x2"
—	1980014	Extreme Pressure Lubricant



## 20K Low Mount/23K OSW SUSPENSION W/ NARROW BUSHING — BUSHING REPLACEMENT/TORQUE SPECIFICATIONS

Part Number (Component)	Item Description	Size	Torque Values (foot-pound Newton-meter)	
<b>6040128-Bushing Kit</b> <b>6100044-Narrow Tool</b>	<b>Pivot Bolt/Nut - (Shear-Type Bolt/Locknut)</b> <i>Requires E-20 Torx® socket (RW #6100054)</i>	7/8"-9NC	<i>Do not lubricate bolt/nut threads. Use 1"-drive impact wrench to tighten until Torx® head shears.</i>	
<b>Fasteners</b>	<b>Bolt - (Air Spring)</b>	1/2"-13NC	20-25 ft-lb	27-34 N-m
	<b>Locknut - (Air Spring)</b>	3/4"-16NF	45-50 ft-lb	61-68 N-m
	<b>Locknut - (Shock Absorber)</b>	3/4"-10NC	200-230 ft-lb	271-312 N-m
	<b>Locknut - (Air Spring-23K O/S)</b>	1/2"-13NC	45-50 ft-lb	61-68 N-m

*Torque values reflect a lubricated thread condition (Nuts are pre-lubed). Do not overtorque.*

**CAUTION** Suspension is shipped with minimal torque applied to fasteners. All fasteners must be re-torqued after first 6,000 miles of operation. Failure to install and maintain fasteners at torque specifications could result in suspension failure and void the warranty.

### Vehicle Preparation

Park vehicle on a level surface. Chock wheels.

Raise vehicle to a height that removes the load on the suspension. Support with jack stands.

Disconnect the linkage from the height control valve(s), if equipped. Exhaust all air from the system.

**CAUTION** Failure to properly chock wheels, exhaust the air system and safely support the vehicle could allow vehicle/suspension movement that could result in serious injury.

### Disassemble the suspension

Remove wheels and tires, if necessary. Remove the shock absorbers.

Take the pivot connections apart. Remove and discard pivot bolt, flat washer and pivot nut. Inspect adjuster plate and alignment washer for wear/damage. Replace if necessary.

**CAUTION** Do not reuse pivot hardware.

Rotate beams down and away from frame. Inspect pivot-bolt holes and wear washers for unusual wear/damage. Repair or replace components as needed.

### Tool Assembly

Check that thrust bearing is installed in the flat, outside edge of endcap. Inspect tapered insert and endcap for damage. Repair or replace as needed.

Lubricate Hex-Head Cap Screw and thrust bearing threads with Extreme Pressure Lubricant (#1980014).

Thread the flat washer, the bearing collar and the endcap onto the HHCS until the bearing collar and endcap rest against the head of the HHCS. Place tool cone onto endcap (Figure 11).

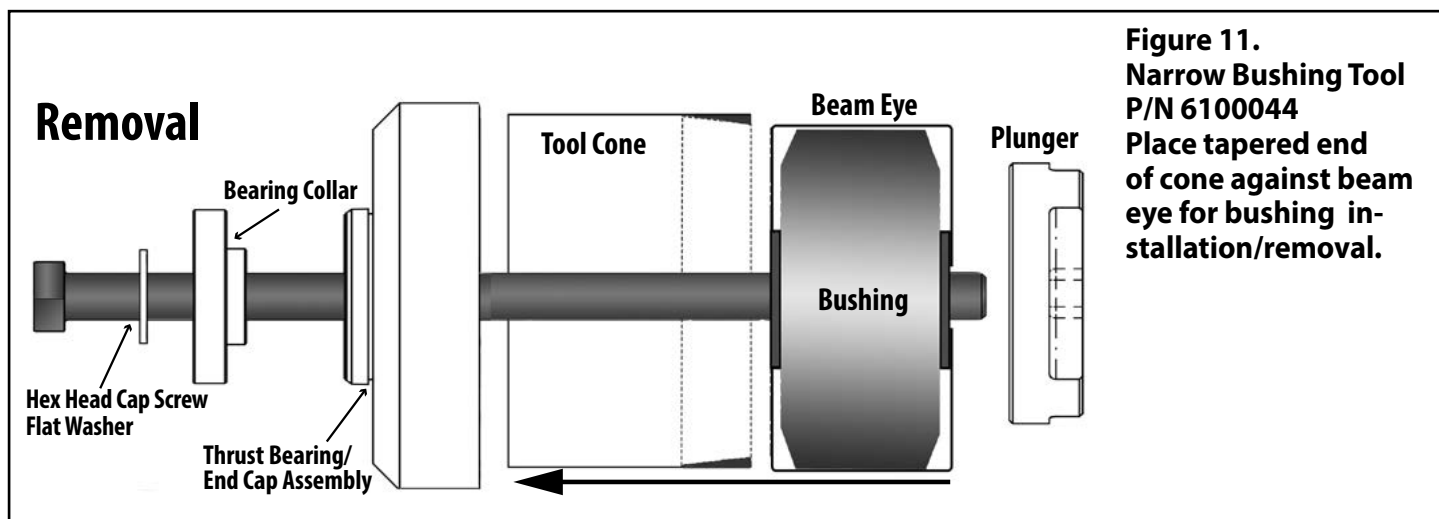
NOTE: Failure to apply lubricant to the threads could result in decreased tool performance and reduce the life of the bushing tool.

### Bushing Removal

1. Push the hex-head cap screw through the bushing inner sleeve until the tool cone is against the beam eye. Thread the plunger onto the HHCS until the tool cone is held firmly against the beam (Figure 11).

NOTE: The smaller, tapered end of the cone is placed against the beam eye for both removal and installation of the bushing.

*continued on next page*



**Figure 11.**  
**Narrow Bushing Tool**  
**P/N 6100044**  
**Place tapered end**  
**of cone against beam**  
**eye for bushing in-**  
**stallation/removal.**

## Replacement Procedure with Narrow Bushing Tool #6100044 (continued)

2. Check that tool cone is centered on the beam eye. Use a 1 5/16" socket on a 3/4"-drive impact wrench (1"-drive impact wrench recommended) to rotate HHCS and pull the bushing into cone.  
NOTE: In some cases, a small amount of heat may be needed to break the bond between the bushing and beam eye.  
Do not overheat. Allow the beam to cool before installing replacement bushing.
3. Remove bushing tool from the beam. Detach tool cone from endcap, remove bushing and discard
5. Check that bushing tool cone is centered on the beam eye. Use a 1 5/16" socket on a 3/4"-drive impact wrench (1"-drive impact wrench recommended) to rotate the hex-head cap screw and press the bushing into the beam eye.
6. Remove bushing tool from the beam. Check that bushing is centered inside the beam. Realign bushing if necessary.

### Tool Assembly

Thread the flat washer, the bearing collar and the endcap onto the hex-head cap screw until the bearing collar and endcap rest against the head of the HHCS.

### Bushing Installation

1. Use wire brush to clean debris /corrosion from eye.
2. Liberally apply P80<sup>®</sup> lubricant or a soap solution to the inside of the beam eye, the outside of the new bushing and inside the tool cone. Insert new bushing into the larger opening of the tool cone (Figure 12).
3. Center the smaller opening of the tool cone against beam eye. Push the hex-head cap screw through the bushing inner sleeve from the opposite side of the beam until the endcap rests against the beam eye.
4. Thread the plunger onto the hex-head cap screw until tool cone is held firmly against the beam.  
NOTE: The smaller opening of the tool cone is placed against the beam eye for both removal and installation of the bushing.

### Reassemble suspension

Rotate the beams into hangers. Assemble the pivot connection – alignment washer, adjuster plate, wear washers, shear-type pivot bolt, flat washer and flanged locknut.

NOTE: Do not lubricate pivot bolt/nut.

Tighten locknut until adjuster plate pin is engaged and pivot connection hardware is snug against the hanger. Do not apply final torque until the axle alignment has been checked.

Connect the height control valve linkage (if linkage has been disconnected). Inflate air springs.

Install wheels and tires (if removed). Raise vehicle and remove support stands. Lower vehicle to ground.

Verify suspension ride height. Check axle alignment. Realign if necessary (Pg 15).

Tighten pivot bolt with a 1" drive impact wrench and E-20 Torx<sup>®</sup> socket (Ridewell tool #6100054) until Torx<sup>®</sup> head is sheared off.

Install shock absorbers.

**CAUTION** Failure to torque hardware to specifications can result in suspension failure/void the warranty.

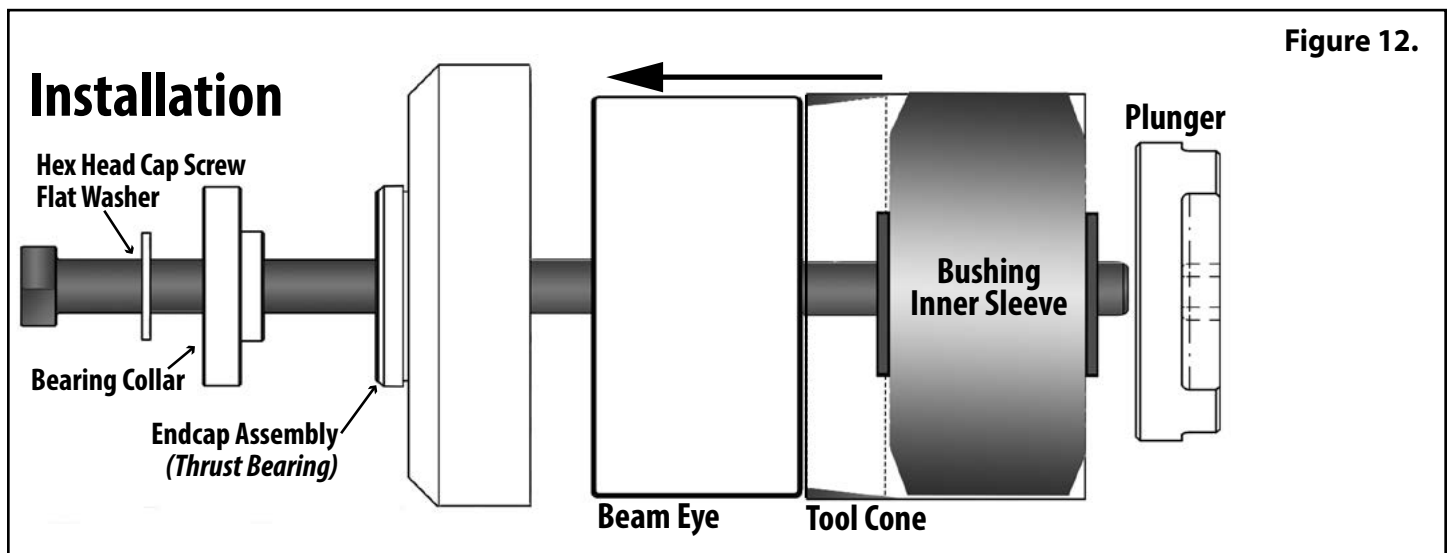


Figure 12.



## 25K Low Mount and 23K/25K/30K OSW w/ Wide Bushing – Bushing Replacement/Torque Specifications

Part Number (Component)	Item Description	Size	Torque Values (foot-pound Newton-meter)	
<b>6040098-Bushing Kit</b> <b>6100051-Wide Tool</b>	<b>Pivot Bolt/Nut - (Shear-Type Bolt/Locknut)</b> <i>Requires E-20 Torx® socket (RW #6100054)</i>	7/8"-9NC	<i>Do not lubricate bolt/nut threads. Use 1"-drive impact wrench to tighten until Torx® head shears.</i>	
<b>Fasteners</b>	<b>Bolt - (Air Spring)</b>	1/2"-13NC	20-25 ft-lb	27-34 N-m
	<b>Locknut - (Air Spring)</b>	3/4"-16NF	45-50 ft-lb	61-68 N-m
	<b>Locknut - (Shock Absorber)</b>	3/4"-10NC	200-230 ft-lb	271-312 N-m
	<b>Locknut - (Air Spring-23K/25K/30K O/S)</b>	1/2"-13NC	45-50 ft-lb	61-68 N-m

*Torque values reflect a lubricated thread condition (Nuts are pre-lubed). Do not overtorque.*

**CAUTION** Suspension is shipped with minimal torque applied to fasteners. All fasteners must be re-torqued after first 6,000 miles of operation. Failure to install and maintain fasteners at torque specifications could result in suspension failure and void the warranty.

### Vehicle Preparation

Park the vehicle on a level surface. Chock wheels. Raise vehicle to a height that removes the load from the suspension. Support with jack stands.

Disconnect the linkage from the height control valve(s), if equipped. Exhaust all air from the system.

**CAUTION** Failure to properly chock wheels, exhaust the air system and safely support the vehicle could allow vehicle movement that results in serious injury.

### Disassemble the suspension

Remove wheels and tires, if necessary. Remove the shock absorbers.

Take the pivot connections apart. Remove and discard pivot bolt, flat washer and pivot nut. Inspect the adjuster plate and the alignment washer for wear/damage. Replace if necessary.

**CAUTION** Do not reuse pivot hardware.

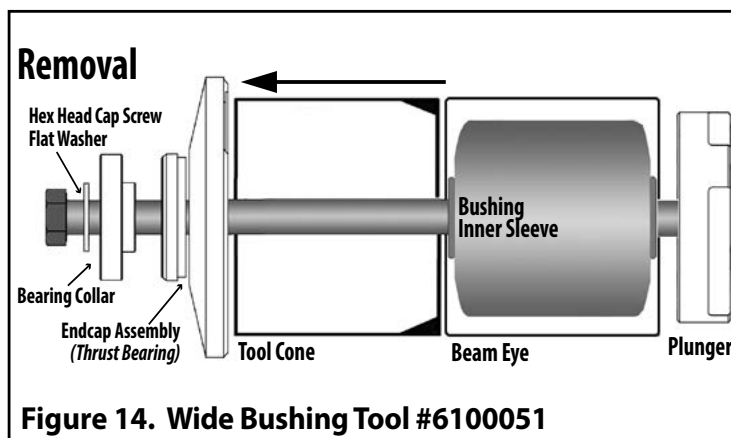
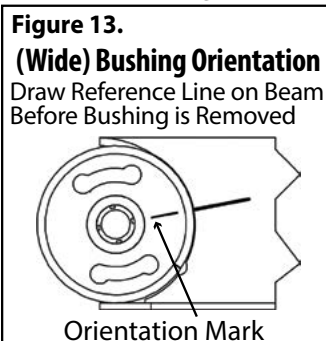
Rotate beams out of the hangers. Inspect pivot-bolt holes and hanger surfaces for unusual wear/damage. Repair or replace suspension components as needed.

### Tool Assembly

Make sure that thrust washer is seated firmly in the flat (outside) edge of the endcap. Examine the tool cone tapered insert and large end for damage/out-of-round. Repair or replace as necessary (Figure 14).

### Bushing Removal

1. Draw/scribe line on the beam using locator mark on installed bushing as reference (Figure 13).
2. Lubricate the hex-head bolt threads and the thrust washer bearings with Extreme Pressure Lube (P/N 1980014).  
NOTE: Failure to apply lubricant could result in decreased performance and reduced tool life.



3. Place flat washer onto the hex-head bolt, followed by the bearing collar, then the endcap assembly.
  4. The bushing tool cone is tapered inside to a smaller opening on one end. Place the larger opening of the cone onto the endcap.  
NOTE: The tapered end of tool cone is placed on the eye of the beam for removal/installation.
  5. Insert the end of the hex bolt through the bushing sleeve into the center opening of plunger. Center cone on the beam eye. Tighten the hex bolt until plunger is held firmly against the bushing.
  6. Use a 1 5/16" socket on a 3/4"-drive impact wrench (1"-drive impact wrench recommended) to rotate the hex bolt and press the bushing out of the beam eye into the tool cone.  
NOTE: In some cases, a small amount of heat may be required to break the bond between the bushing and the beam eye. Do not overheat. Allow the beam to cool before installing replacement bushing.
  7. Disassemble the bushing tool. Remove the old bushing from the bushing tool cone and discard.
- continued on next page*

## Replacement Procedure with Wide Bushing Tool #6100051 (continued)

### Tool Assembly-Installation

Place flat washer, the bearing collar, and the end-cap assembly on the hex-head bolt.

Insert the smooth end of each Cavity Alignment Stud (Socket Head Cap Screw-SHCS) into the four holes on the outside edge of the bushing tool plunger.

Tighten the alignment stud(s) until the socket head is flush with the edge of the plunger.

NOTE: The smooth ends of the studs should extend beyond the inside edge of the plunger (Figure 15).

### Bushing Installation

1. Use a wire brush to clean foreign debris and corrosion out of the beam eye.
2. Coat the inside of the beam eye, the outside of the bushing and the inside of the tool cone with S.G. Type "M" Rubber Assembly Oil.  
NOTE: Do not substitute lubricant. Type "M" Oil included with all bushing replacement kits.
3. Insert the replacement bushing into the large end of the tool cone. Make sure the locator mark on the new bushing is visible.
4. Line up the locator mark on the tool plunger with the locator mark on the bushing. Insert the four cavity alignment studs into the bushing cavity holes and press the plunger firmly against the end of the bushing.  
NOTE: The stud threads should NOT touch the bushing. Reinstall studs if necessary (Figure 15).
5. Align plunger locator mark with the line drawn on the beam. Place the plunger/cone/bushing assembly onto the beam eye.
6. Insert the hex-head bolt assembly through the beam eye. Thread the hex bolt into the plunger until the endcap rests against the beam.

7. Center the bushing tool cone on the beam eye.  
Use a 1 5/16" socket on a 3/4"-drive impact wrench (1"-drive impact wrench recommended) to rotate the hex-head cap screw and press the bushing into the beam eye.
8. Disassemble and remove the bushing replacement tool. Check placement to make sure bushing is centered in the beam.
9. Check bushing locator mark against the line drawn on beam to make sure new bushing is properly oriented.

### Reassemble suspension

Rotate the beams into hangers. Assemble pivot connection—alignment washer, adjuster plate, wear washers, shear-type pivot bolt, flat washer and locknut.

NOTE: Do not lubricate pivot bolt/nut. Tighten flanged locknut until adjuster plate pin is engaged and pivot connection hardware is snug against hanger. Do not apply final torque until axle alignment has been checked.

Connect height control valve linkage (if linkage has been disconnected). Inflate air springs.

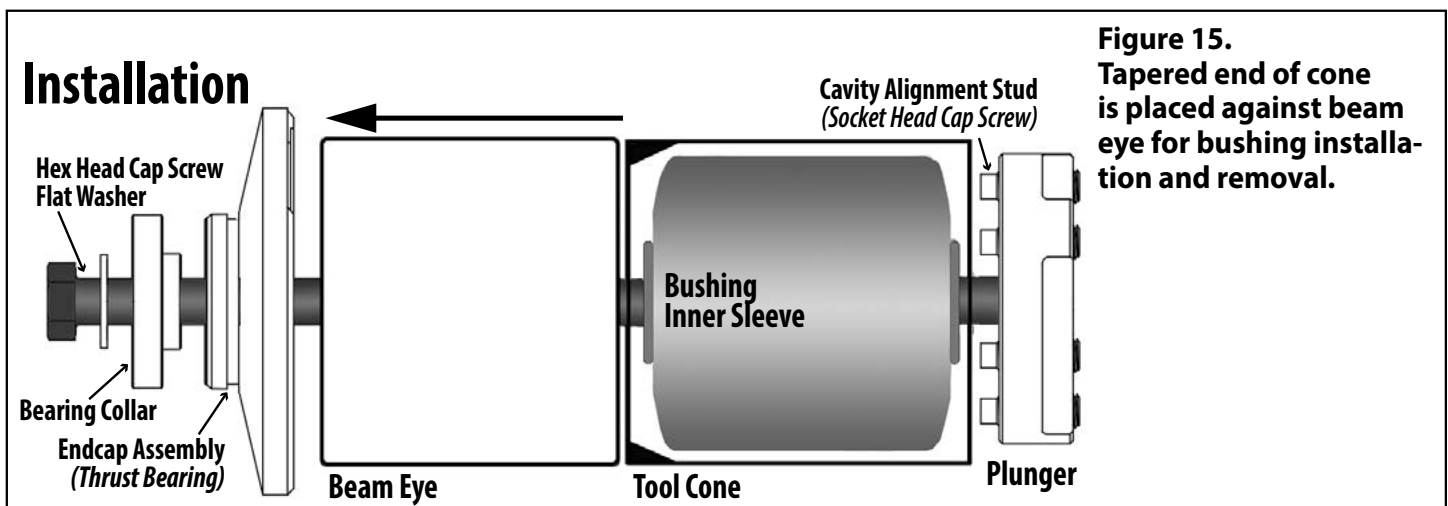
Install wheels and tires (if removed). Raise vehicle and remove support stands. Lower vehicle to ground.

Verify suspension ride height. Check axle alignment. Realign if necessary (Page 15).

Tighten pivot bolt with a 1" drive impact wrench and E-20 Torx® socket (Ridewell tool #6100054) until Torx® head is sheared off.

Install shock absorbers.

**CAUTION** Failure to torque hardware to specifications can result in suspension failure and void the warranty.



**Figure 15.**  
Tapered end of cone is placed against beam eye for bushing installation and removal.

Alignment should be performed on a level surface with the suspension at the desired ride height. Align the suspension per TMC- or SAE-recommended standards.

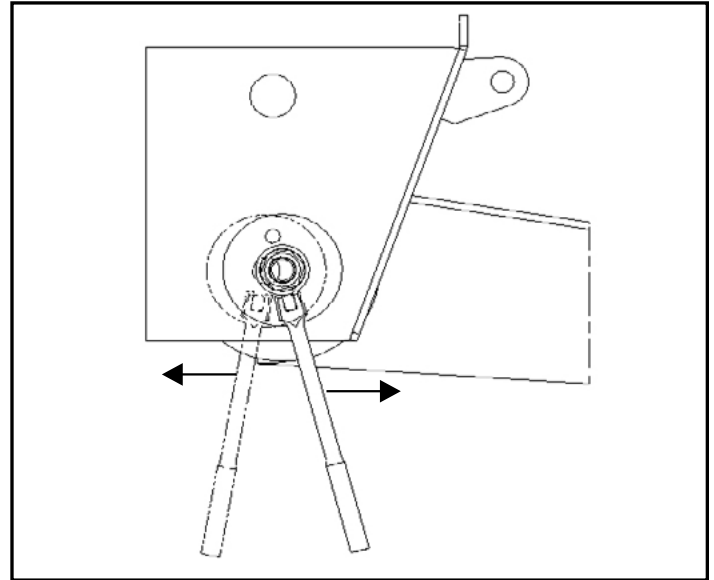
On a multiple-axle vehicle, the forward axle is moved into proper alignment, then the remaining axles are positioned so that they are parallel to the forward axle. A maximum tolerance of 1/8-inch difference from side-to-side of the forward axle and 1/16-inch difference from side-to-side for the aft axles is acceptable (Figure 17).

The RAR 266 suspension is equipped with the Ridewell Speed Set® alignment feature for manual alignment.

### Axle alignment procedure

1. Loosen the pivot nut enough for the beam to move within the hanger (Figure 16).  
**CAUTION** Do not reuse pivot hardware if Torx® head is damaged or missing. A new shear-type pivot bolt, flat washer and locknut must be installed and the Torx head sheared off to complete the alignment.
2. Locate the adjuster plate at the pivot connection. Insert a 1/2"-shank breaker bar into the square hole of the adjuster plate. Push on the breaker bar to move the beam forward or backward until the axle reaches alignment measurements (Figure 16).  
 NOTE: Verify that the pivot bushing is not wedged sideways during beam movement. The adjuster plate and alignment washer should move in unison with beam movement.
3. Tighten the pivot nut so that the beam can no longer move. Re-check alignment measurements and adjust if necessary.  
 NOTE: Check to make sure both the adjuster plate and alignment washer are flat against the hanger before final torque is applied.
4. Tighten pivot bolt with a 1"-drive impact wrench and E-20 Torx® socket (Ridewell tool #6100054) until the Torx® head is sheared off.

**CAUTION** Failure to properly torque pivot hardware could result in suspension failure/void the warranty.



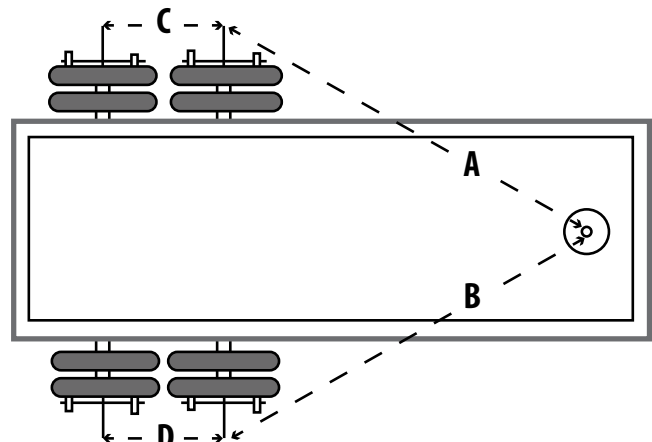
**Figure 16.**  
Move beam back-and-forth using breaker bar until axle reaches the desired position.

### Figure 17. Kingpin measurement for axle alignment.

Check the forward axle alignment by measuring from the kingpin to both ends of the axle centers.

If the difference between the "A" measurement and the "B" measurement is greater than 1/8-inch, the forward axle needs to be aligned.

Adjust the aft axle if the difference between the "C" measurement and the "D" measurement is greater than 1/16-inch.



**Terms and coverage in this warranty apply only to the United States and Canada.**

Ridewell Suspensions warrants the suspension systems manufactured by it to be free of defects in material and workmanship. Warranty coverage applies only to suspensions that have been properly installed, maintained and operated within the rated capacity and recommended application of the suspension. The responsibility for warranty coverage is limited to the repair/replacement of suspension parts. The liability for coverage of purchased components is limited to the original warranty coverage extended by the manufacturer of the purchased part.

All work under warranty must have prior written approval from the Ridewell warranty department. Ridewell has the sole discretion and authority to approve or deny a claim and authorize the repair or replacement of suspension parts. All parts must be held until the warranty claim is closed.

Parts that need to be returned for warranty evaluation will be issued a Returned Materials Authorization (RMA). Parts must be returned to Ridewell with the transportation charges prepaid. The transportation charges will be reimbursed if the warranty claim is approved.

This non-transferable warranty is in lieu of all other expressed or implied warranties or representations, including any implied warranties of merchantability or fitness or any obligations on the part of Ridewell. Ridewell will not be liable for any business interruptions, loss of profits, personal injury, any costs of travel delays or for any other special, indirect, incidental or consequential losses, costs or damages.

**Contact the Ridewell Warranty Dept. at 417.833.4565 - Ext. 135, for complete warranty information.**