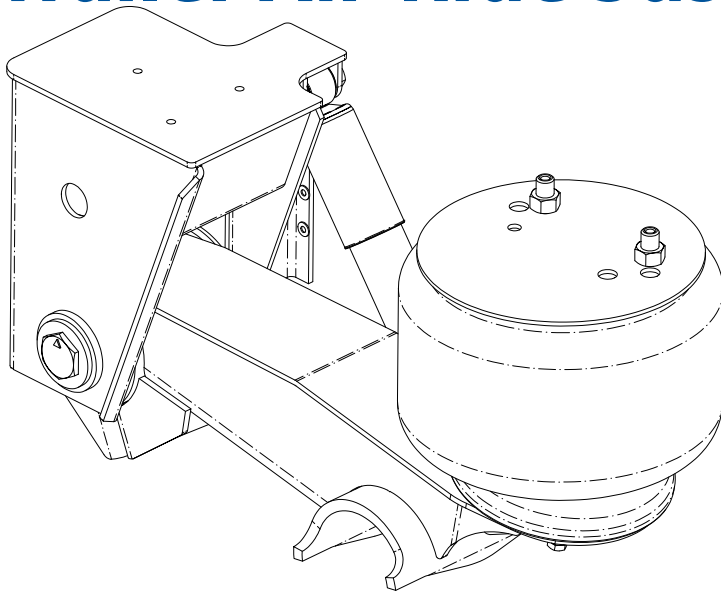


# RAR-240 Trailer Air-Ride Suspension



## Installation and Service Manual

<b>Suspension Identification</b> .....	<b>2</b>
<b>Installation</b>	
Prior to Installation .....	3
Axle Integration .....	4
Suspension Mounting .....	6
Height Control Kit – Troubleshooting .....	7
<b>Maintenance</b>	
<b>Recommended Service Intervals</b> .....	<b>8</b>
240-25K Overslung Components .....	9
240-30K Overslung Components .....	10
240-25K/30K Underslung Components .....	11
240-25K/30K Yoke Mount Components .....	12
<b>Bushing Replacement/Torque Specifications</b> .....	<b>13</b>
<b>Yoke Mount – Bushing Replacement/Torque Specifications</b> .....	<b>14</b>
<b>Axle Alignment</b> .....	<b>15</b>
<b>Warranty</b> .....	<b>16</b>



## SUSPENSION IDENTIFICATION

### Introduction

The Ridewell Air Ride (RAR) 240 Trailer Suspension is available in an overslung, underslung or yoke mount configuration for use in a range of applications. The suspension can be purchased with or without an integrated axle.

### Suspension Identification Tag

The **Part Number** is listed as a (606-) Installation/Assembly Number when an axle and other system components are factory installed with the suspension (Figure 1).

The **Suspension Number** and **Serial Number** lists the suspension model and date of manufacture of the 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 Identification Tag.**

## Standard Trailer Dimensions

Trailer	Track Width	Frame Center	Beam Center	Air Spring Center
96"	71.5"	38"	35"	31"
102"	77.5"	44"	41"	37"

### Prior to Installation

Refer to suspension model engineering drawing for detailed information on system components; range of available ride heights; dimensional requirements; and, operating parameters.

The suspension is designed to fit-up onto standard I-beam trailer frames at beam centers that correspond to standard axle track widths (Chart).

Installation at wider beam centers will reduce suspension clearances. Installation at narrower beam centers will de-rate the axle beam capacity.

For non-standard beam centers, frames, frame centers, axle track widths and wheel-end equipment, the installer is responsible for verifying clearances, axle capacity, proper fit-up, and any additional required support structure.

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.

## Axle Integration

Suspension systems are available with and without a factory integrated axle. Customer-supplied axle assemblies must be positioned and oriented (rotated) properly before welding the axle.

Use the top-center mark on the axle, if available, to identify the center of the axle and orient the axle assembly on the suspension.

The axle assembly should be installed so that the camshafts, when activated, rotate in the same direction as the wheels.

**CAUTION** Failure to follow procedures and design specifications could result in injury, damage to the axle or suspension and void the warranty.

### Weld Preparation

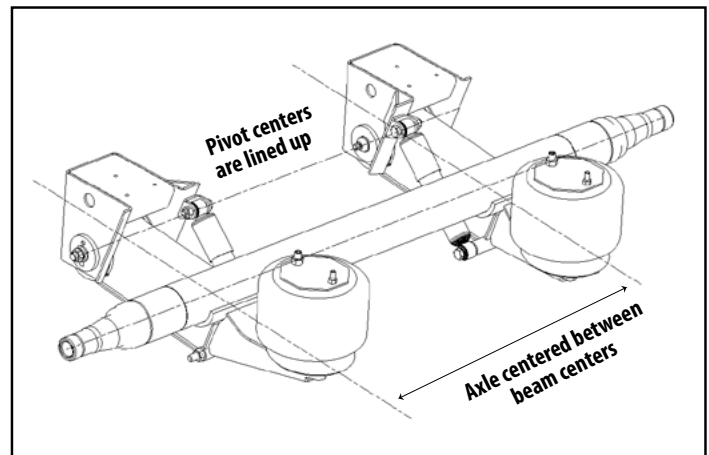
The joint to be welded should be positioned in the flat or horizontal position. All grease, dirt, paint, slag or other contaminants must be removed from the weld joint.

The axle and suspension components should be at a minimum temperature of 60°F (15.5°C). Pre-heat the weld zone to the axle manufacturer's recommended pre-heat temperature, if required.

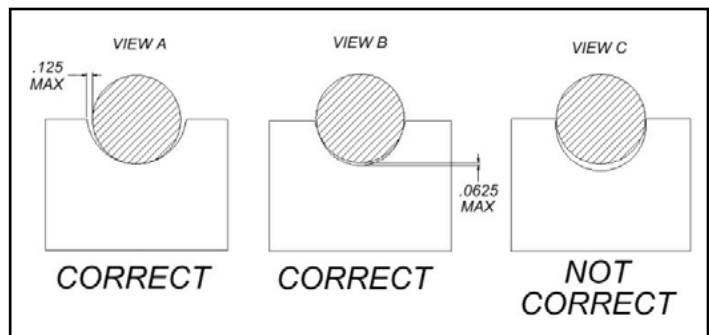
### Weld Procedure

Ridewell recommends supporting the axle and suspension with a weld fixture during axle integration. Contact Ridewell Customer Service for the correct weld fixture for your suspension model.

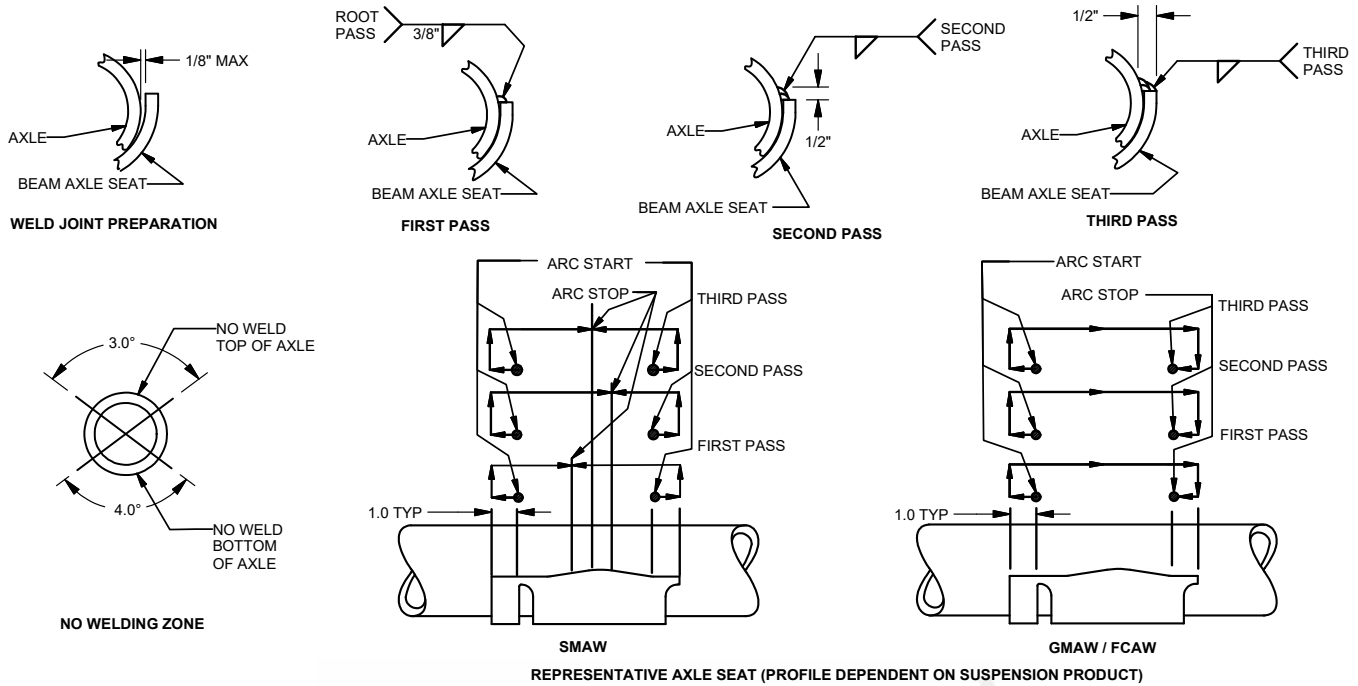
1. Center the axle assembly between beam centers (Figure 3).
2. Check engineering drawing for the brake component orientation (rotation) before clamping into place and making final welds.
  - 2.1. Drum brake camshafts are spaced off the tail of the trailing arm beam. Make sure brake chamber brackets are oriented properly and clamp the axle assembly into place.
  - 2.2. Disc brake assemblies have a right- and left-hand caliper assembly. Verify callipers are located on the correct side and rotated to the proper position before clamping axle assembly into place.
3. Check gap between the axle and the axle seats before welding. Side gaps should be no greater than 1/8". The gap at the bottom of the axle seat should be no greater than 1/16" (Figure 4).
4. Weld the axle to the axle seat according to Ridewell Weld Process #1 (Page 5).



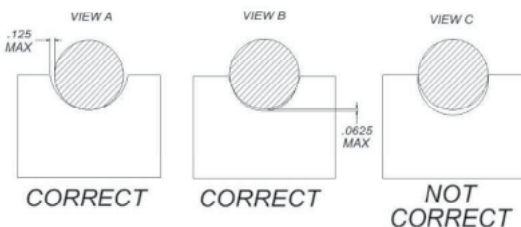
**Figure 3.**  
Axle should be centered between beam centers. Beams and axle should be perpendicular. Refer to the engineering drawing for measurements.



**Figure 4.**  
Correct axle tube seating for welding.



- CAUTION:** All welds must be kept away from the top and bottom of the axle where maximum stresses occur (see "NO WELDING ZONE" illustration above). Do not test-weld the arc on any part of the axle tube.
- All welders and welding operators should be certified as per the requirements of the American Welding Society (AWS) or equivalent. All electrodes used should meet the AWS specifications and classifications for welding carbon and low-alloy steels.
- Recommended Welding Methods:** Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW) or Flux Cored Arc Welding (FCAW). The welding method used and the electrode selected must develop a minimum weld tensile strength of 70,000 psi per AWS specifications. The best fusion and mechanical properties will be obtained by using the voltage, current, and shielding medium recommended by the electrode manufacturer. If the SMAW method is used, the stick electrodes must be new, dry, free of contaminants and stored per AWS specifications.
- Weld Joint Preparation:** The joint to be welded should be positioned in the flat or horizontal position. All grease, dirt, paint, slag or other contaminants must be removed from the weld joint without gouging the axle tube. **CAUTION:** Never weld when the axle is cold. The axle and beam assemblies to be welded should be at a temperature of at least 60°F (15°C). Pre-heat the weld zone to the axle manufacturer's recommended pre-heat temperature, if required. This will reduce the chance of an area of brittle material forming adjacent to the weld.
- The axle should fit into the beam assembly with a maximum root gap of 1/8-inch between the axle and the beam axle seat (see "WELD JOINT PREPARATION" illustration above).
- NOTE:** Clamp the axle to the beam axle seat with a C-clamp prior to welding to make sure that proper contact occurs (see "CORRECT" illustration below).
- Ground the axle to one of the attached axle parts such as the brake chamber brackets, cam brackets or brake spider. Never ground the axle to a wheel or a hub as the spindle bearing may sustain damage.
- Multiple pass welding should be used on the beam/axle connection using the following guidelines:** 8.1-Total fillet weld size should be 1/2-inch. 8.2-Weld pass starts and stops should be performed as illustrated above. 8.3-Never start or stop welds at the end of the weld joint. 8.4-Each pass must be accomplished in one or two segments. 8.5-Start welds at least 1-inch from the end and backweld over the start. Backstep fill all craters. 8.6-If process is not GMAW all slag must be removed between passes. 8.7-Welds must go to within 1/8-inch +/- 1/16-inch of the ends of the axle seat and must not go beyond or around the ends of the axle seat. 8.8-Post-weld peening is recommended, but not required: Needle peen the entire toe of the second pass, including around the ends of the axle seat. Hold the needles perpendicular to the axle. A uniform dimpled pattern will appear when properly peened.



F	16101	ADDED MAXIMUM TO 5, ADDED GMAW NOTE TO 8.6 UPDATED CORRECT VIEWS	2/10/2016	G.H.	B.B.	CJB
E	15101	REVISED TEXT. REMOVED LIST OF MODELS.	6/30/15	G.H.	MDJ	CJB
REV	PROJECT	DESCRIPTION	DATE	BY	CHK	APPD
DRAWN BY: CBC		2/1/2016		<b>RIDEWELL CORPORATION</b> PO BOX 4586 SPRINGFIELD, MISSOURI 65808		
CHECKED: MDJ		2/21/2003				
APPROVED: CJB		2/21/2003				
PROJECT NO: 03103		SCALE: A-SIZE: NTS		TITLE: RIDEWELL WELD PROCESS #1, 5" DIA. AXLE, 3 PASS WELD		
MATERIAL: -		WEIGHT: -		SHEET 1 OF 1		PART NO: WELD PROCESS #1
						REV: F

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## Suspension Mounting

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

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 customer-furnished 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 customer-furnished 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 ¼" fillet welds down the length of the crossmember.
4. Weld the hangers to the frame/filler plates with ¼" fillet welds completely around the hangers. Stop the welds ½" 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 ½"-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 3/16" fillet welds.
6. Attach a crossmember or diagonal brace to the front of the hangers with ¼" 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.

Bolt-holes are not provided in the air spring mounting plates. Clamp the air spring mounting plates and any customer-furnished filler plates in place on the frame before drilling.

Grade-8 bolts, flanged locknuts or locknuts with hardened washers are supplied by the installer.

### 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.

Complete assembly and installation of air springs as shown on the engineering drawing. Torque to specifications (Page 13).

Install/connect the height control valve (HCV), if applicable. Check the air system tubing and fittings after installation for leaks (Page 7).

Verify the suspension ride height is adjusted within the range shown on the engineering drawing and complete axle alignment procedure (Page 15).

Install shock absorbers.

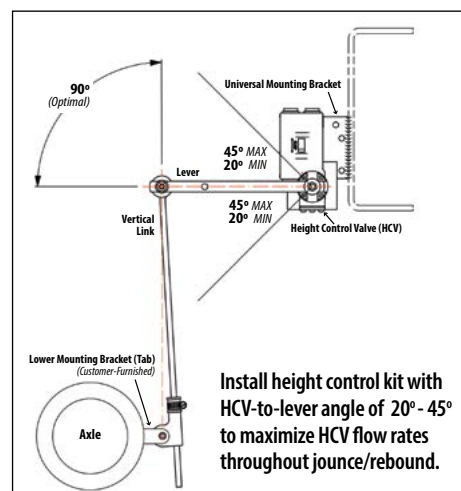
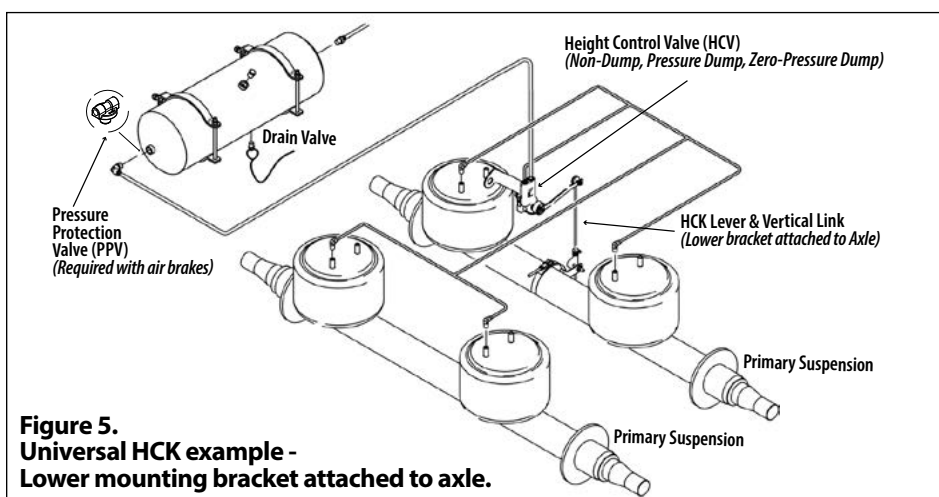
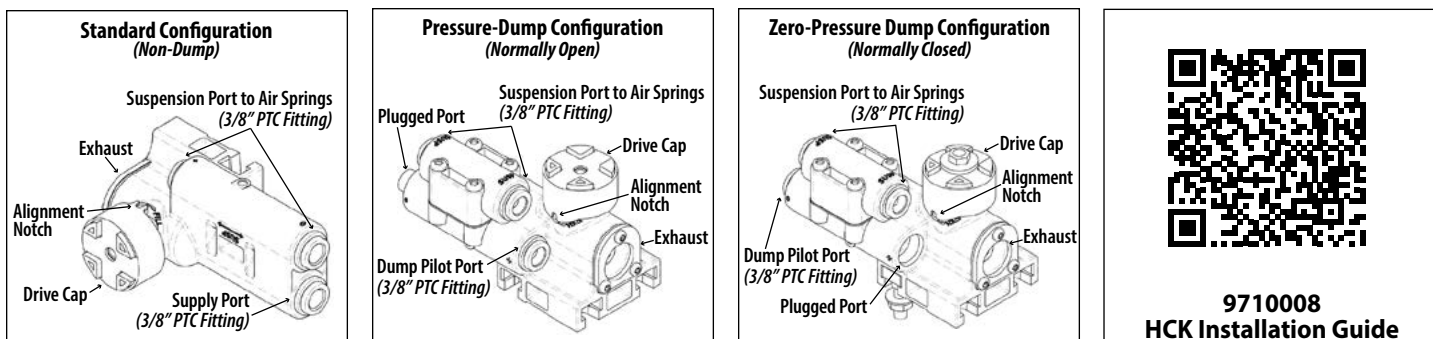
NOTE: If the suspension is painted after shocks are installed, make sure paint overspray does not get under the shock absorber dust covers.

**CAUTION** Failure to torque bolts/nuts of suspension components to specifications can result in failure of the suspension 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 air system requirements comply with all appropriate Federal Motor Vehicle Safety Standards.



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): No leak found – Do not remove valve, check rest of system for leaks. 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 12/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 12/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 12/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 Procedure”).
- \_\_\_ 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**

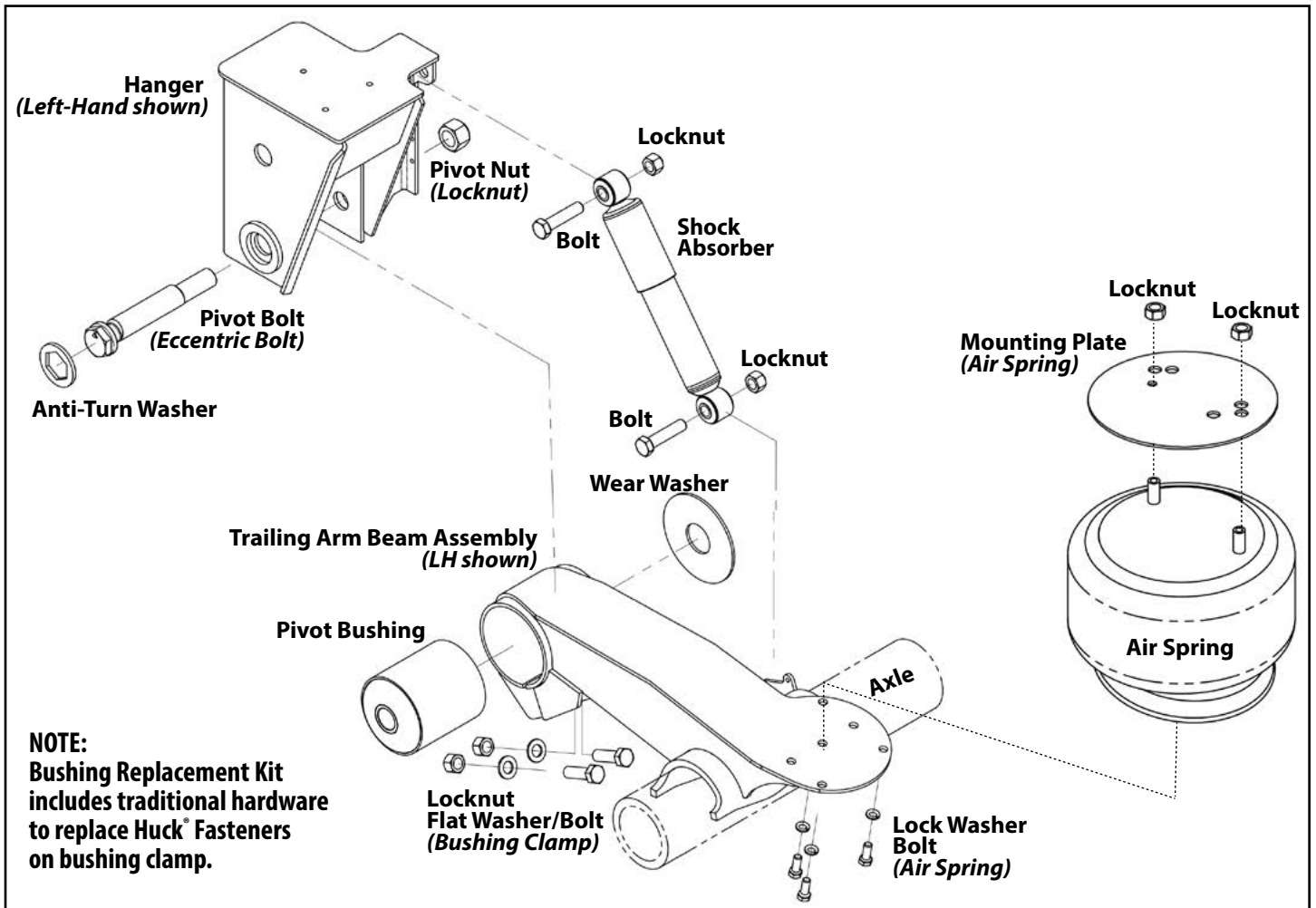
Park the unloaded trailer on a level surface. Set the brakes and chock the tires so vehicle cannot move during inspection.

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

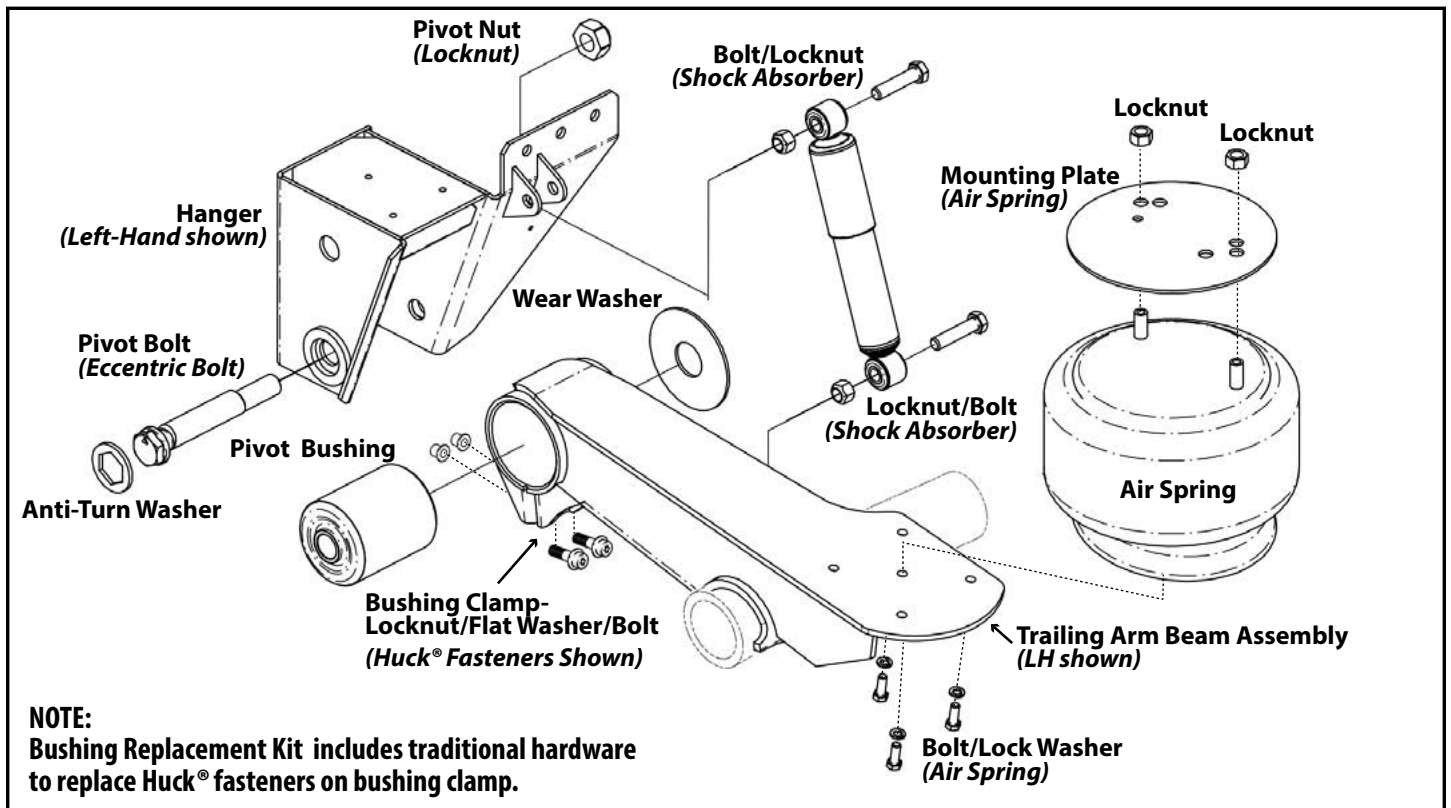
movement because of rubber flexing is normal). Inspect wear washers for excessive wear/damage.

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.

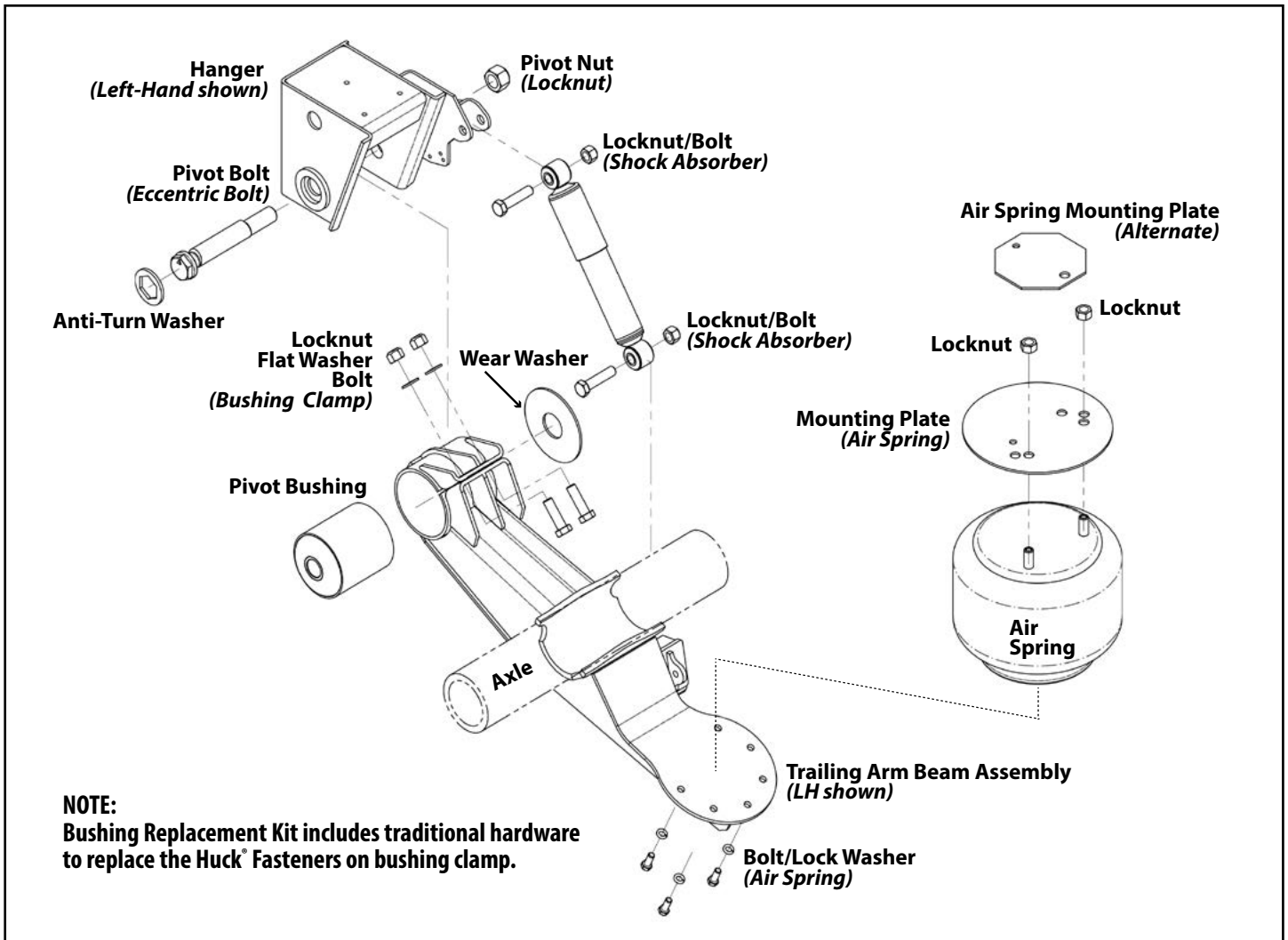




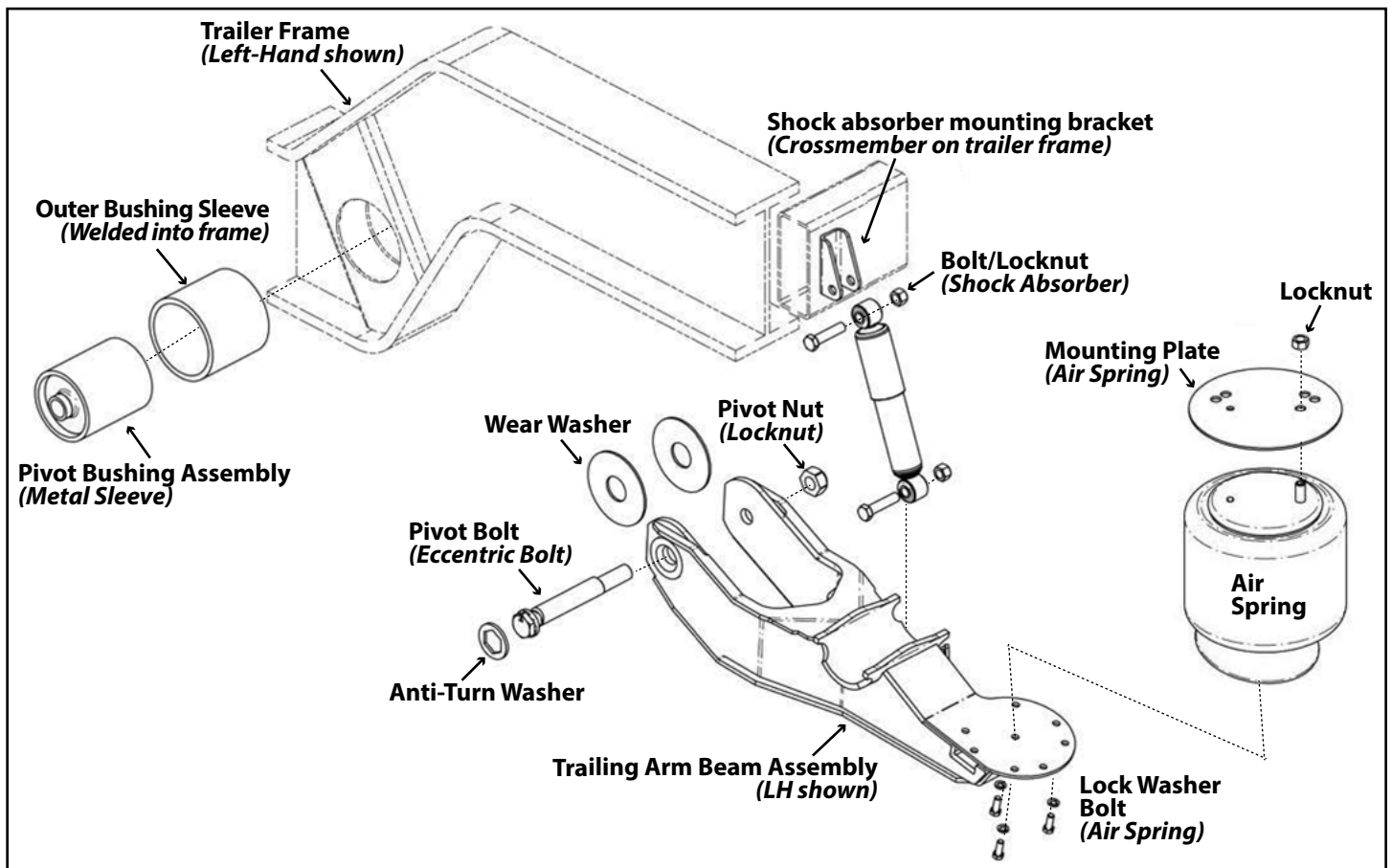
**Figure 6.**  
**240-25K Overslung Suspension Components**  
 Refer to the suspension model engineering drawing for the individual component part number.



**Figure 7.**  
**240-30K Overslung Suspension Components**  
 Refer to the suspension model engineering drawing for the individual component part number.



**Figure 8.**  
**240-25K/30K Underslung Suspension Components**  
 Refer to the suspension model engineering drawing for the individual component part number.



**Figure 9.**  
**240–25K/30K Yoke Mount Suspension Components**  
 Refer to the suspension model engineering drawing for the individual component part number.

## RAR 240 – BUSHING REPLACEMENT/TORQUE SPECIFICATIONS

Part Number (Component)	Item Description	Size	Torque Values	
			foot-pound	Newton-meter
6040029 – Bushing Kit 15K U/S (2400080) and 25K U/S; O/S	Pivot Hardware– Eccentric Bolt/Locknut	1 1/4" -7NC	1000 ft-lb	1350 N-m
6040028 – Bushing Kit 30K U/S; O/S	Pivot Hardware– Eccentric Bolt/Locknut	1 1/4" -7NC	1000 ft-lb	1350 N-m
6040071 – Bushing Kit 25K O/S - Tanker Special	Pivot Hardware– Eccentric Bolt/Locknut	1 1/4" -7NC	1000 ft-lb	1350 N-m
6040091 – Bushing Kit 30K O/S - Tanker Special	Pivot Hardware– Eccentric Bolt/Locknut	1 1/4" -7NC	1000 ft-lb	1350 N-m
6047680B060 – Bushing Kit 25K/30K U/S; O/S Manuf. pre-1995	Pivot Hardware– Eccentric Bolt/Locknut	1 1/4" -7NC	1000 ft-lb	1350 N-m
<b>Fasteners</b>	Bolt/Locknut (Air Spring)	1/2" -13NC	25 ft-lb	35 N-m
	Bolt/Locknut (Air Spring)	3/4" -16NF	50 ft-lb	70 N-m
	Bolt/Locknut (Shock Absorber)	3/4" -10NC	200 ft-lb	270 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 height that removes load from suspension and support with jack stands.

Disconnect linkage from the height control valve(s), if necessary, and exhaust all air from the air springs.

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

### Disassemble Suspension

Remove wheels and tires. Remove shock absorbers.

Remove pivot nut. Remove the anti-turn washer from the eccentric bolt head by grinding away the welds. Locate arrow on bolt head. Turn bolt head until arrow points straight up. Remove bolt.

Rotate beam down and out of hanger. Inspect pivot-bolt hole and hanger surfaces for wear or damage. Repair or replace components as needed.

### Bushing Removal

Remove Huck® fasteners from bushing clamp (Fig 10). Separate clamp and remove pivot bushing assembly.

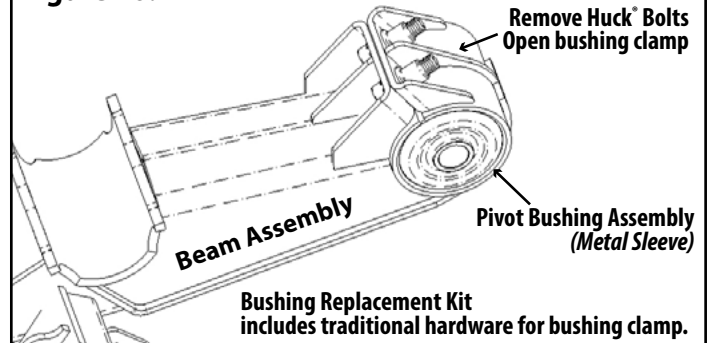
### Bushing Installation

Insert new bushing assembly into bushing clamp.

Center bushing assembly on bushing clamp. Torque nuts on clamp to 190 ft-lb.

Verify bushing clamp surfaces are closed “metal-to-metal.” Torque nuts to 280 ft-lb (380 N-m).

**Figure 10.**



### Reassemble Suspension

Rotate arm beams into hangers. Install new wear washer on inboard side of the beams.

**CAUTION** Tanker Special Suspension requires wear washer on both inboard and outboard beam side.

Coat the large diameter shank of the eccentric bolt with anti-seize compound, locate arrow on bolt head and install bolt with arrow pointing straight up.

Align axle if necessary (Pg 15). Weld anti-turn washers over eccentric bolt head with 1/4" fillet welds at bolt head top and bottom.

Verify suspension ride height. Torque pivot nut to 1,000 ft-lb (1,350 N-m).

Install shock absorbers. Install wheels and tires. Raise the vehicle and remove support stands. Lower vehicle to the ground.

Connect height control valve linkage, if necessary, and adjust ride height.

## RAR 240 YOKE MOUNT – BUSHING REPLACEMENT/TORQUE SPECIFICATIONS

Part Number (Component)	Item Description	Size	Torque Values	
			foot-pound	Newton-meter
6040011 – Bushing Kit	Pivot Hardware–Eccentric Bolt/Locknut	1 1/4"–7NC	1000 ft-lb	1350 N-m
Fasteners	Bolt/Locknut (Air Spring)	1/2"–13NC	25 ft-lb	35 N-m
	Bolt/Locknut (Air Spring)	3/4"–16NF	50 ft-lb	70 N-m
	Bolt/Locknut (Shock Absorber)	3/4"–10NC	200 ft-lb	270 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 to keep vehicle from moving.

Raise vehicle to height that removes load from suspension and support with jack stands. Disconnect linkage from height control valve(s), if necessary.

Exhaust all air from the system. Remove the wheels and tires if necessary. Remove shock absorbers.

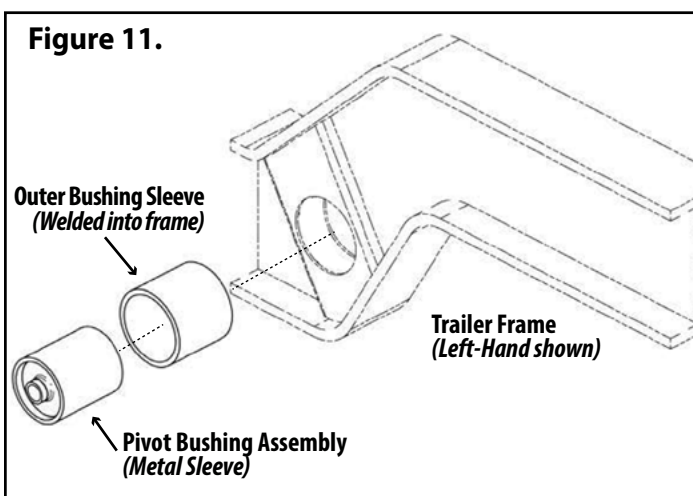
**CAUTION** Failure to properly chock wheels, exhaust the air system and support the vehicle could allow vehicle movement that could result in serious injury.

### Disassemble Suspension

Remove pivot nuts. Remove the anti-turn washers from the eccentric bolt (pivot bolt) heads by grinding away the welds.

Locate the arrow on the eccentric bolt head. Turn bolt head until the arrow points straight up and remove bolt.

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



### Bushing Removal and Installation

Remove the pivot bushing assembly from the bushing sleeve welded to the frame by grinding away the four (4) welds on each side of the sleeve.

Position (center) replacement bushing assembly into the outer bushing sleeve (Figure 11).

Attach bushing assembly with four one-inch welds on each side.

Welds should be staggered and the steel allowed to cool between welds.

Weld the top of bushing sleeve at outboard side of frame, then the bottom of the sleeve at the inboard side of frame and move the welds around the sleeve in 900 increments.

**CAUTION** Excessive heat and distortion can damage the bond between the rubber bushing and steel sleeve of the bushing assembly.

### Reassemble suspension

Rotate trailing arm beams onto the frame. Install new wear washers on both the inboard and outboard side of the bushing assembly.

Coat the large diameter shank of the eccentric bolts with anti-seize compound. Locate arrow on bolts. Install bolts with the arrows pointing straight up.

Align the axle, if necessary (Page 15).

Weld anti-turn washers over eccentric bolt heads with 1/4" fillet welds at top and bottom of bolt head. With the suspension at ride height, torque pivot nut to 1,000 ft-lb (1,350 N-m).

Install shock absorbers.

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

Connect height control valve linkage, if necessary, and adjust ride height.

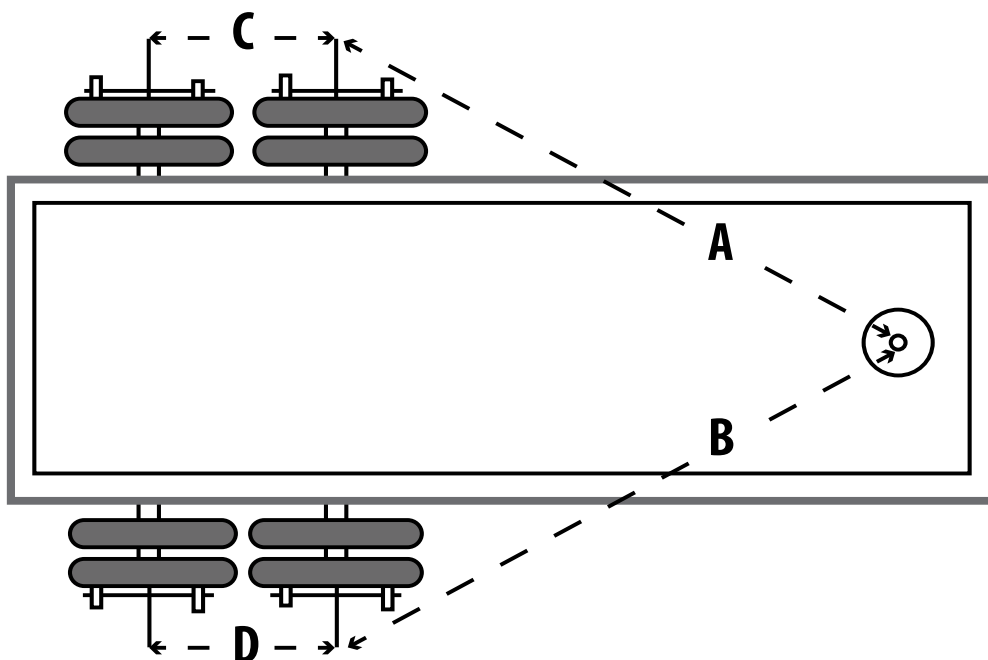
**CAUTION** Failure to properly torque pivot hardware could result in suspension failure/void the warranty.

Alignment should be performed on a level surface with the suspension at the desired ride height. Refer to the engineering drawing for the designed ride heights of the suspension model.

Align the suspension per TMC or SAE recommended standards. On a multiple-axle vehicle, the forward axle is moved into the 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 12).

**Figure 12.**  
**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” and the “D” measurement is greater than 1/16-inch.**

### **Axle Alignment Procedure**

Loosen the pivot nut enough for the beam to move.  
NOTE: If installed, remove the anti-turn washer by grinding away the welds.

Turn bolt head until arrow on bolt head points straight up (12 o’clock position).

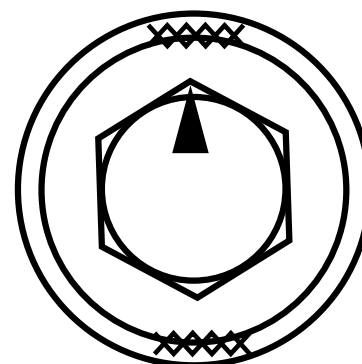
Turn eccentric bolt to move beam forward or backward until axle reaches alignment.

**CAUTION** Do not turn arrow past the 9 o’clock or 3 o’clock position (horizontal).

Weld anti-turn washer over bolt head with 1/4” fillet welds at top and bottom (Figure 13).

Torque pivot nut to 1,000 ft-lb (1,350 N-m).

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



**Figure 13.**  
**Secure anti-turn washer with 1/4” fillet welds**  
**before applying final torque to pivot nut.**

**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.**