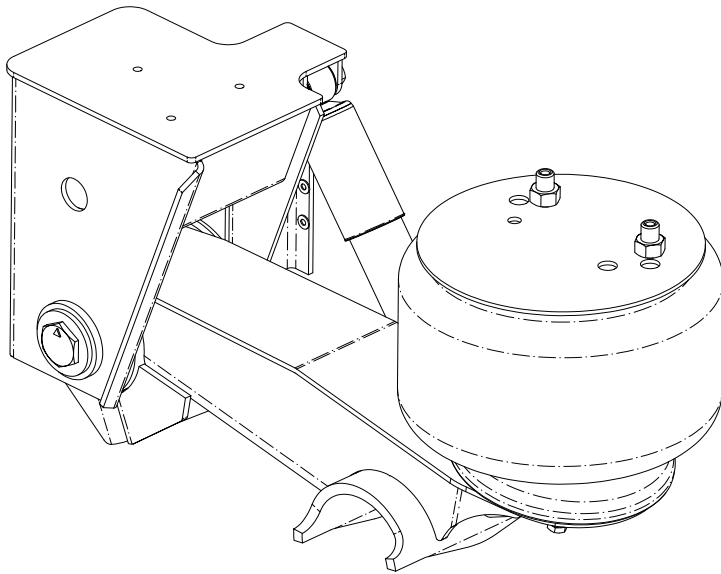



# RAR-240 Trailer Air-Ride Suspension



## Installation and Service Manual

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

**Suspension ID 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.

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

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.

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

**Axle-Body ID Tag**

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

The **165XXXX Base-Axle Part Number** refers to Ridewell-branded 5" and 5 3/4"-round axles manufactured in various axle wall-thicknesses and track-widths.

**Notes and Cautions**

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

Read through entire Installation and Service Manual before performing any installation or maintenance procedures.

The ISM uses two service notes to provide important safety guidelines, prevent equipment damage and ensure system components function correctly.

The service notes are defined as:

“NOTE”: Provides additional instructions/procedures to complete tasks that ensure the suspension and other components function properly.

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

## 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 the engineering drawing for detailed information on system components; range of available ride heights; dimensional requirements; and, operating parameters.

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

- The suspension is designed to fit-up onto a standard I-beam trailer frame at beam centers that correspond with 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 any non-standard beam centers, frames, frame centers, axle track-widths and-or wheel-end equipment, the installer is responsible for verifying suspension clearances, axle load capacity, proper fit-up, and any required support structure.
- 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 any vehicle chassis modifications are required, consult with the vehicle manufacturer to ensure that such modifications/changes are permitted.
- Welding or altering of suspension components is not permitted without the express written permission of Ridewell Suspensions.

### Installer Responsibilities

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

- The installer has the responsibility of 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 system at the installing location.
- It is the installer's responsibility to determine whether axle spacing conforms to applicable federal, state and local bridge laws.
- The installer must verify 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. 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 (Figure 1).

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

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

### Weld Preparation

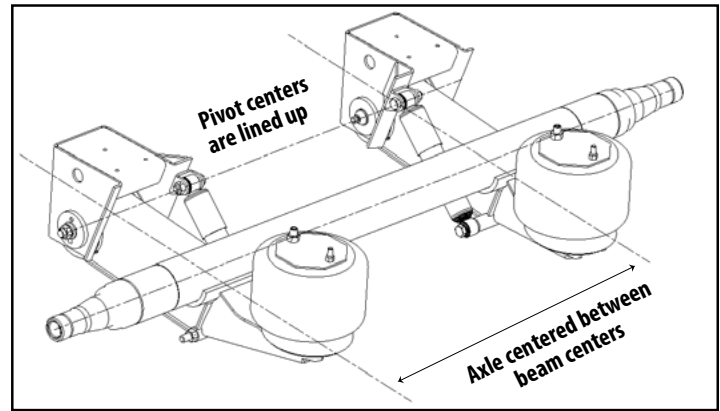
The joint to be welded should be positioned in the flat or horizontal position. All grease, dirt, paint, slag or other contaminants must be removed from the weld joint.

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

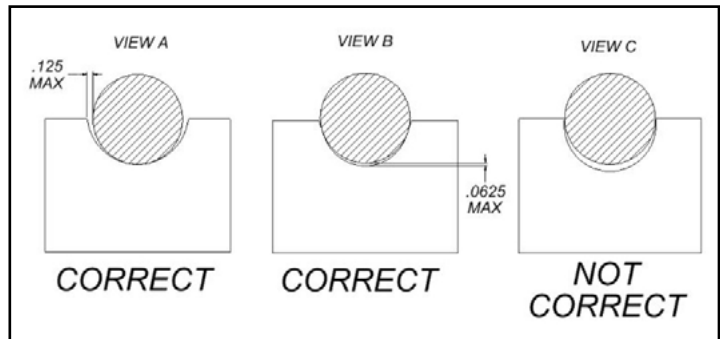
### Weld Procedure

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

1. Center axle assembly between beam centers (Figure 1).
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 the 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 2).
4. Weld the axle to the axle seat according to Ridewell Weld Process #1 (Page 5).



**Figure 1.**  
Axle should be centered between beam centers. Beams and axle should be perpendicular. Refer to the engineering drawing for measurements.

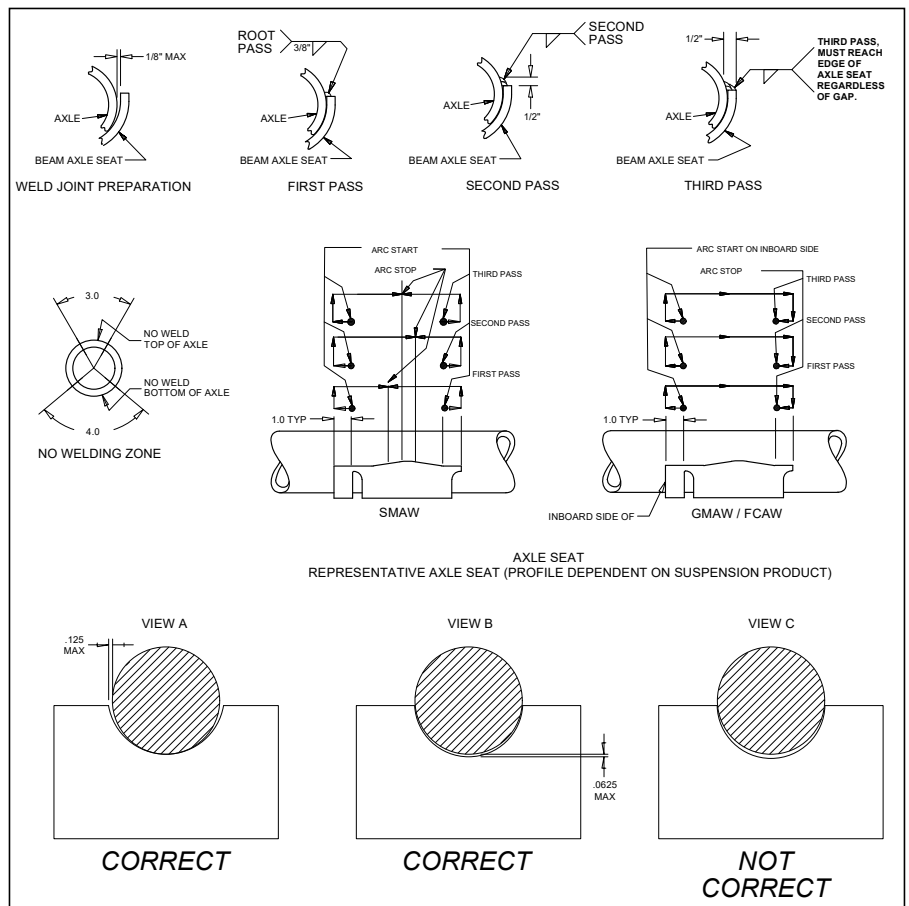


**Figure 2.**  
Correct axle tube seating for welding.

## Ridewell Weld Process #1 – 5”- 6” Diameter Axle, 3-Pass Weld (ENG DWG 9710039-K)

- All welds must be kept away from the top and bottom of the axle where maximum stresses occur (see “NO WELDING ZONE” illustration). Do not test-weld the arc on any part of the axle tube.
- All welders and welding operators should be certified as per requirements of the American Welding Society (AWS) or equivalent. All electrodes used should meet 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. It is recommended that paint be removed a minimum of 2” away from the weld joint.  
CAUTION: Never weld when the axle is cold. The axle and beam assemblies should be at a temperature of at least 60°F (15°C). Preheat the weld zone to the axle manufacturer’s recommended preheat 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). The root gap should be as equal as possible on each side of the beam axle seat. The axle must be centered laterally in the beams.
- 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 - View A or B). When installing a drop-center axle, a gap of up to 1/4” is allowed on one side of each seat, while the other side of seat has a max gap of .0625”.
- 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:

- Total fillet weld size should be 1/2” total weld. Weld size increases with gap size proportionally.
- Weld pass starts and stops should be performed as illustrated.
- Never start or stop welds at the end of the weld joint.
- Each pass must be accomplished in one or two segments.
- Start welds at least 1-inch from the end and back-weld over the start. Backstep fill all craters.
- If process is not GMAW, all slag must be removed between passes.
- Welds must go 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.
- 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.



## Suspension Mounting

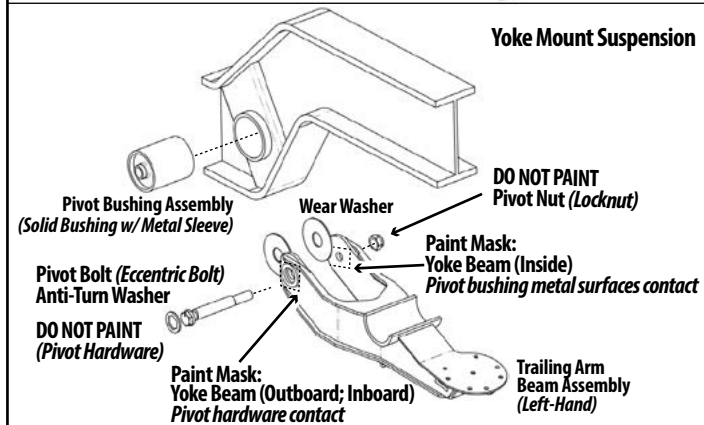
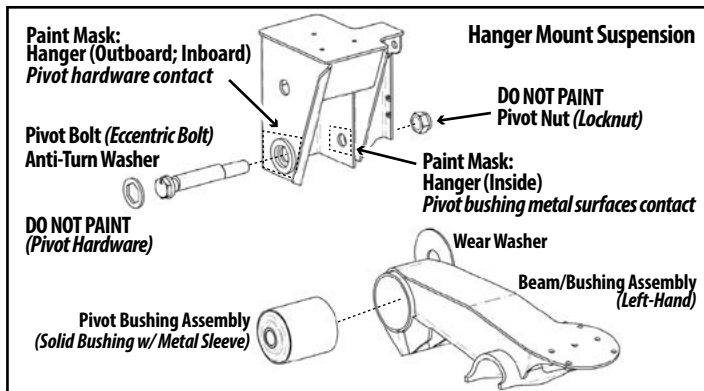
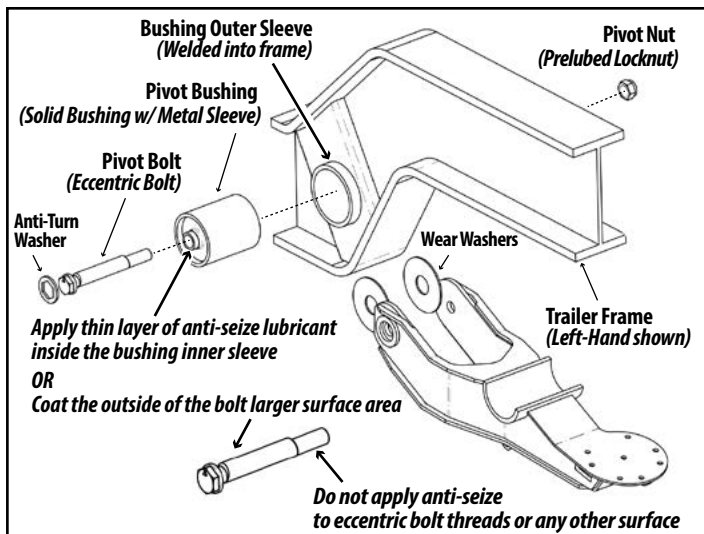
Refer to the engineering drawing for torque values; ride heights; locations for customer-furnished filler plates/supporting crossmembers; and, suspension spacing/clearance requirements.

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

### Yoke-Mount Suspension

Before bushing installation, apply a thin layer of anti-seize lubricant to the inside of the bushing's inner sleeve or to the outside of the eccentric bolt's large surface area.

**CAUTION** Do not apply anti-seize lubricant to eccentric bolt threads, pivot nut threads or any other suspension component.



**Figure 3. CAUTION: Mask areas where metal surfaces contact the frame hanger when applying under- or top coating prior to suspension assembly/mounting.**

### Weld-On Installation Procedure

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

1. Mark desired location of 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 1/4" fillet welds down the length of the crossmember.
4. Weld the hangers to the frame/filler plates with 1/4" fillet welds completely around the hangers. Stop the welds 1/2" from the corners and edges.
5. For hangers with wing gussets, the wing gussets must be welded to a crossmember or other supporting structure.
6. A length of 1 1/2"-diameter pipe can be placed through the two hangers to help with stabilization and alignment.
7. Weld the air spring mounting plates to the frame/filler plates with 3/16" fillet welds.
8. Attach a crossmember or diagonal brace to the front of the hangers with 1/4" fillet welds.

### Bolt-On Installation

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

- 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.

### Final Assembly and Inspection

- Verify hanger and air spring mounting plate welds.
- 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 (Torque Chart pg 12).  
**CAUTION** Do not apply undercoating; paint or other top coat to suspension; frame hangers; or pivot connection hardware until axle alignment procedure is completed.
- Complete air spring installation as shown on the suspension engineering drawing.
- Install/connect height control valve (HCV), if applicable. Check 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.

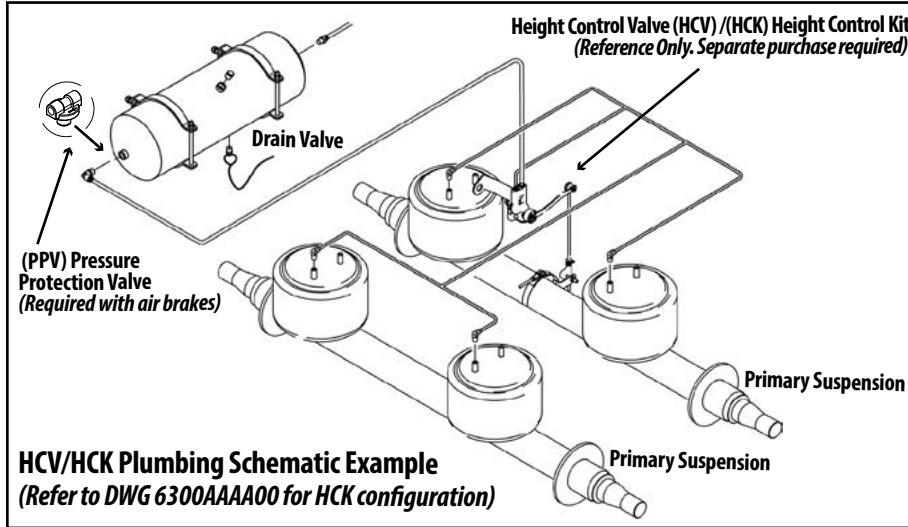
**CAUTION** Failure to torque bolts/nuts to specifications can result in suspension failure and void the warranty.

## Height Control Kit maintains vehicle ride height

The Ridewell Extreme Air Height Control Kit (HCK) adds pressure to/ exhausts air from the air springs to maintain the vehicle ride height.

A height control kit consists of a horizontal lever arm connected to the height control valve (HCV); with a rod arm (vertical link) connected to the lever and the lower HCK mounting bracket.

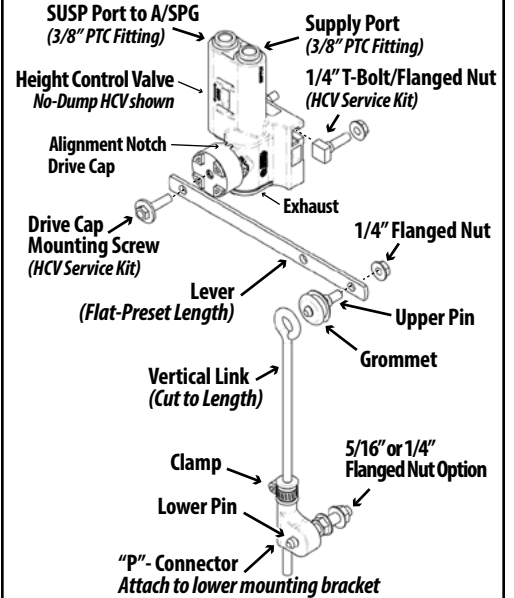
**CAUTION** The installer is responsible for ensuring vehicle's air system requirements comply with all Federal Motor Vehicle Safety Standards.



Scan or click QR-Code  
HCK Installation Guide  
(P/N 9710008)

### 630- Height Control Kit Example

(6255004 - HCV Service Kit; No mounting brackets shown)



## HCV/HEIGHT CONTROL KIT – 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) is not working correctly.</li> <li>Pilot port is not plumbed or the port 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 the 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>The HCV is 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 air 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>The HCV is installed backwards.</li> <li>Leak in air system beyond accepted standards.</li> </ul>	<ul style="list-style-type: none"> <li>Disconnect linkage to the height control valve. Turn lever to the up position (fill). If air springs do not inflate, reinstall HCV. Check entire 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 –</li> <li>Do not remove valve, check rest of system for leaks.</li> <li>Check that tubing cuts are straight and smooth. Re-cut and reassemble if necessary.</li> </ul> </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/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 any 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 12/14 or Engineering Drawing).  
NOTE: Do not re-torque shear-type pivot bolt.
- \_\_\_ Verify suspension is operating at installed ride height.

### Every 12,000 miles of use

- \_\_\_ Inspect air springs for damage/excessive wear. Torque air spring bolts/nuts to specifications (Page 12/14 or Engineering Drawing).
- \_\_\_ Check air lines and connections for leaks.

### Every 50,000 miles of use

- \_\_\_ Torque suspension components to specifications (Page 12/14 or Engineering Drawing).  
NOTE: Do not re-torque shear-type pivot bolt.

#### 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

### Annual/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 12/14 or 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 is operating at installed ride height.

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



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## Pivot Bushing Inspection Procedure

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

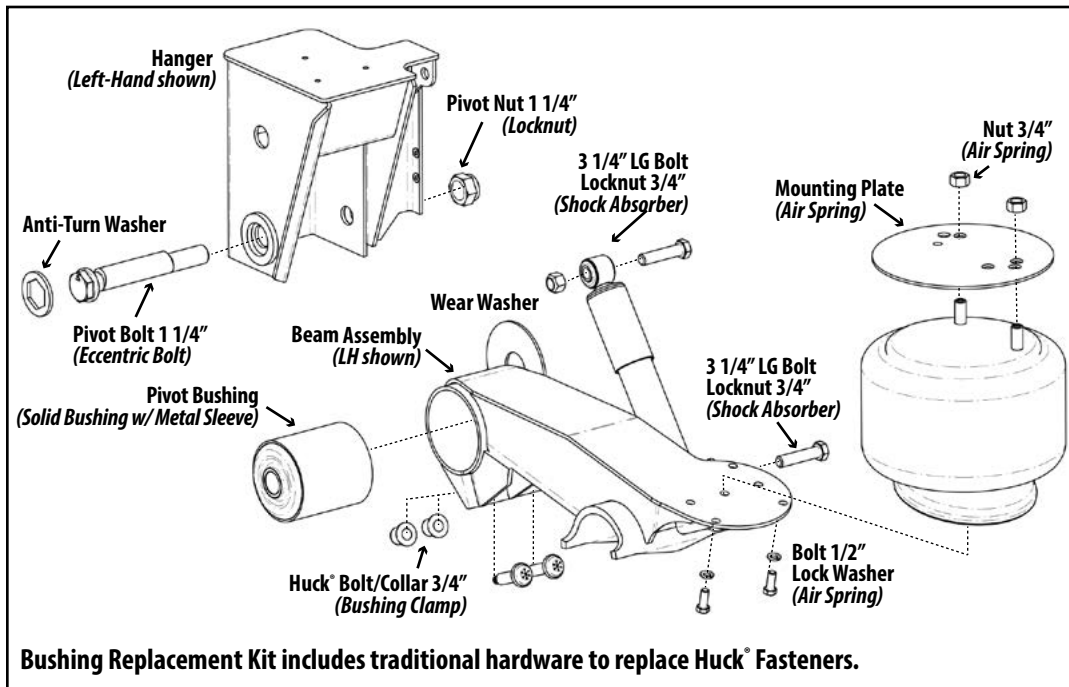
Insert the flat end of a pry-bar between one side of the hanger sidewall and the wear washers. Move the pry-bar back-and-forth and look for excessive movement of the beam (NOTE: A small amount of beam movement because of

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

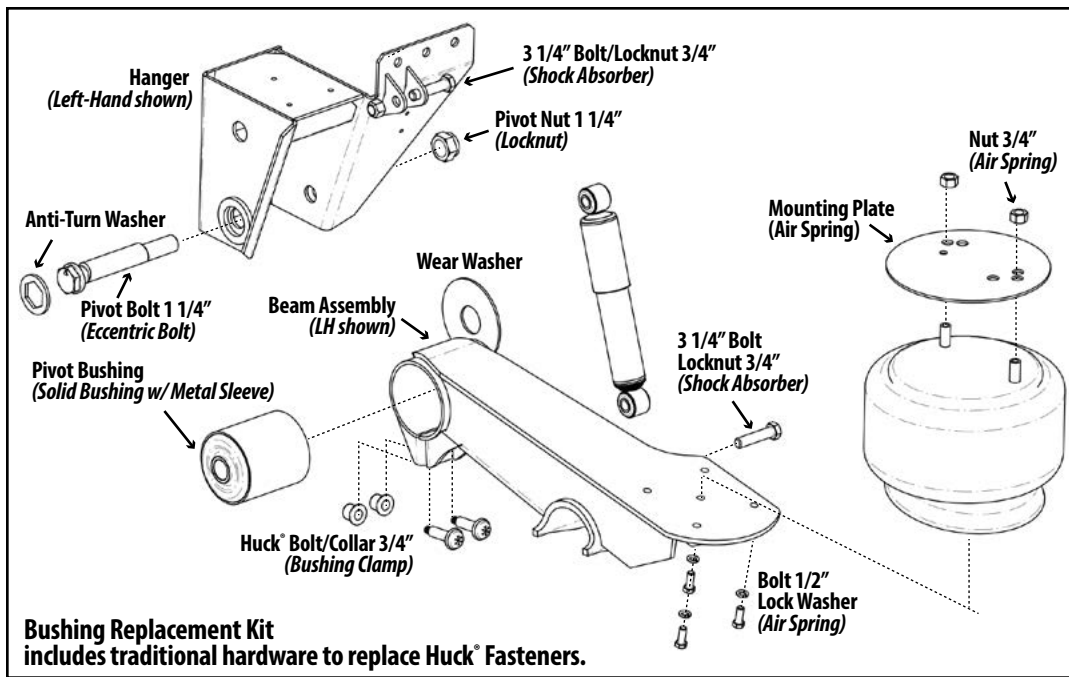
Repeat the pry-bar process and wear washer inspection on the other side of the hanger.

If any large/easy movement or damage to wear washers is observed, drop the beams for further inspection.

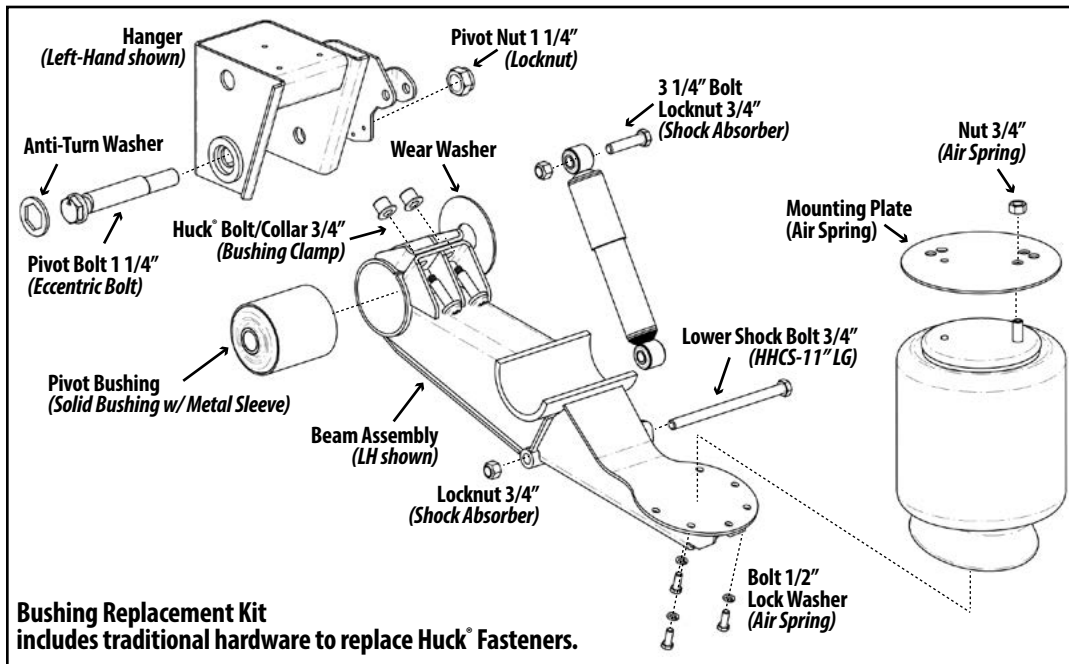
Replace components as necessary.



**Figure 4.**  
**25K OSW Components**  
 Refer to the engineering drawing for individual component part number.



**Figure 5.**  
**30K OSW Components**  
 Refer to the engineering drawing for individual component part number.



**Figure 6.**  
**25K/30K Underslung Components**  
 Refer to the engineering drawing for individual component part number.

## RAR-240 Hanger Mount Suspension – Clamped Bushing Replacement

Bushing Kit – Suspension Model	Item Description	Size	Torque Values (ft-pound/Newton-meter)	
6040029 – 15K U/S (2400080); 25K U/S; O/S	Pivot (Eccentric Bolt/Locknut*) *Requires 1-7/8" socket	1 1/4"-7NC	1000 ft-lb	1350 N-m
6040028 – 30K U/S; O/S				
6040071 – 25K O/S - Tanker Special				
6040091 – 30K O/S - Tanker Special				
6047680B060– 25K/30K U/S; O/S-(Manuf. before 1995)				
<b>Traditional Hardware - Bushing Clamp</b>	HHCS; Flat Washer; Locknut	3/4"-10NC	280 ft-lb	380 N-m
<b>Fasteners</b>	Bolt (Air Spring, Lower)	1/2"-13NC	25 ft-lb	35 N-m
	Nut (Air Spring, Upper)	3/4"-16NF	50 ft-lb	70 N-m
	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. Disconnect and remove the shock absorber.

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/Installation

Remove Huck® fasteners from bushing clamp (Figure 7). Separate clamp and remove pivot bushing assembly.

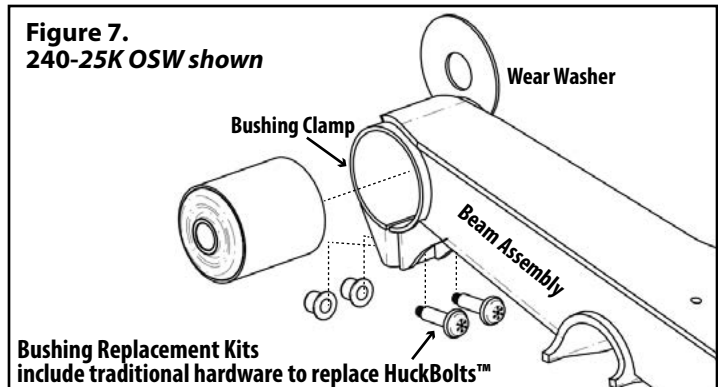
Replace Huck fasteners with hardware (HHCS, flat washer, locknut). Insert new bushing into bushing clamp. Center bushing inside clamp. Torque the clamp locknuts to 190 ft-lb.

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

### Reassemble Suspension

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

**CAUTION** 25K/30K Tanker Special Suspensions require a wear washer on the inboard and outboard side of beam.



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 (Page 15). Weld the anti-turn washers over the eccentric bolt with 1/4" fillet welds at the top and bottom of the bolt-head.

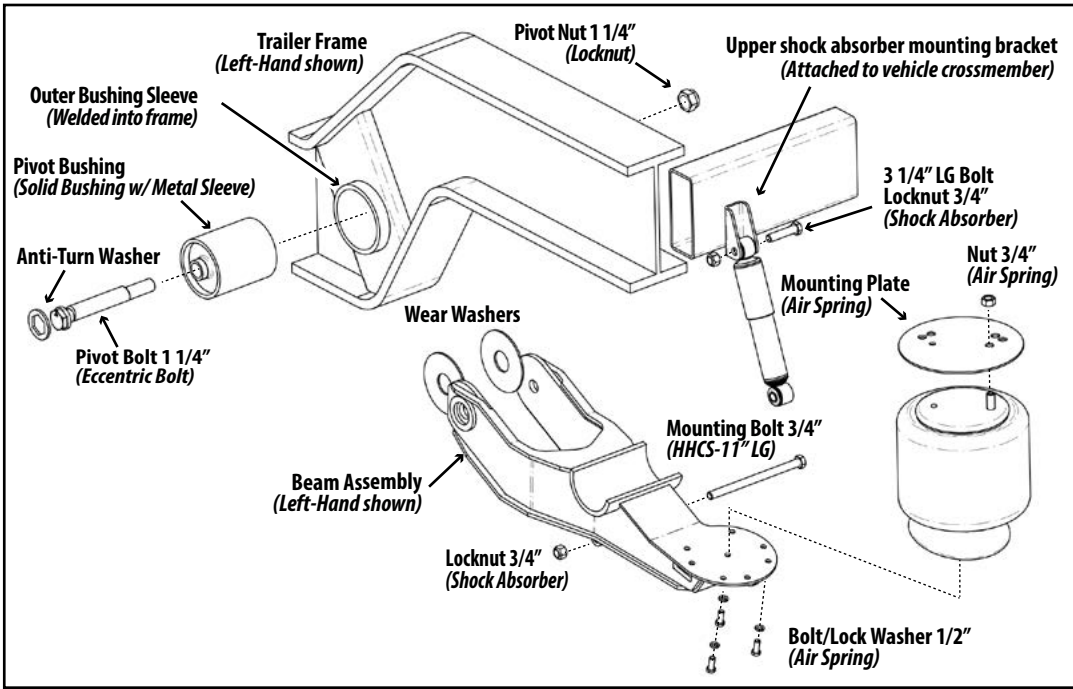
Verify ride height. Torque pivot nut to 1,000 ft-lb (1,350 N-m).

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.

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



**Figure 8.**  
**25K/30K Yoke Mount**  
**Components**

Refer to engineering drawing for the individual component part number.

## RAR-240 Yoke-Mount Suspension – Clamped Bushing Replacement

Bushing Replacement Kit	Item Description	Size	Torque Values (foot-pound Newton-meter)	
6040011 (Yoke Mount)	Pivot Hardware (Eccentric Bolt/Locknut*) *Requires 1-7/8" socket	1 1/4"-7NC	1000 ft-lb	1350 N-m
Fasteners	Bolt (Air Spring, Lower)	1/2"-13NC	25 ft-lb	35 N-m
	Locknut (Air Spring, Upper)	3/4"-16NF	50 ft-lb	70 N-m
	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 the 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 nut. Remove the anti-turn washers from the eccentric bolt-head 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 9).
- 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 90° increments.
 

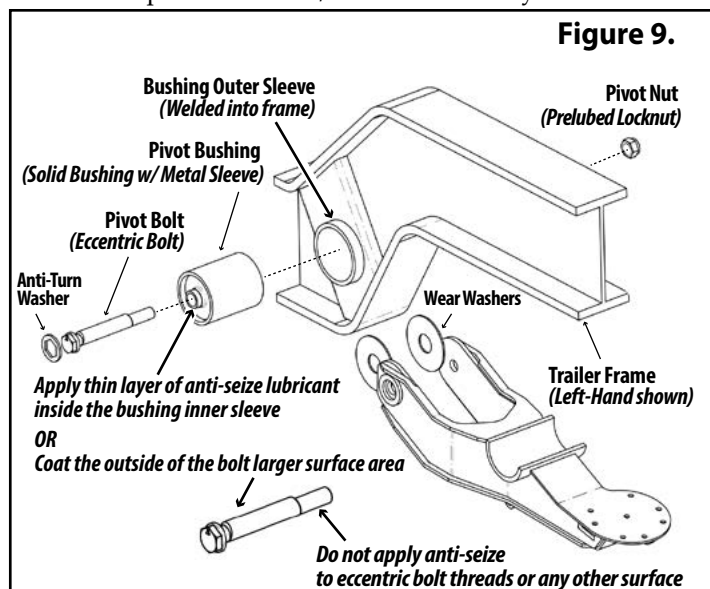
**CAUTION** Excessive heat and distortion can damage the bond between the rubber bushing and steel sleeve of the bushing assembly.

### Reassemble suspension

- Rotate trailing arm beams onto the frame. Install new wear washers on both the inboard and outboard side of the bushing assembly.
- Apply anti-seize lubricant either to the inside of the pivot bushing's inner sleeve or to the large diameter, eccentric surface of the pivot bolt.
 

**CAUTION** Do not apply anti-seize lubricant to the eccentric bolt threads, the pivot nut threads or to any other suspension component.
- Locate arrow on bolts. Install bolts with the arrows pointing straight up.
- Align the axle, if necessary (Page 15).
- Weld anti-turn washers over bolt-heads with 1/4" fillet welds at top and bottom of the bolt-head.
- Verify ride height. Torque pivot nut to 1,000 ft-lb (1,350 N-m).
- Install shock absorbers.
- Install wheels and tires (if removed). Raise the vehicle to remove the 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.

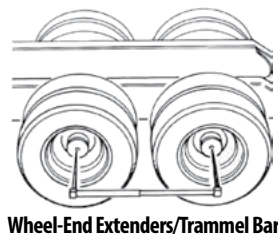


Refer to the engineering drawing for the designed ride heights of the suspension model. Align the suspension per TMC- or SAE- recommended standards.

On a multiple-axle vehicle, the forward (lead) axle is moved into proper alignment, then the following (rear) axles are positioned to be parallel to the lead axle (Figure 10).

### Position trailer for alignment

- The suspension must be in a “relaxed” state without any preloading applied to the bushings.
- Disengage the trailer parking brakes. Pull the trailer forward in a straight line at least three feet.
- Adjust landing legs to place the trailer at the designed kingpin height. Place the kingpin adapter/kingpin extender onto the kingpin.
- Install wheel-end extender/trammel bar onto each end of the lead and rear axle.



Wheel-End Extenders/Trammel Bar

**CAUTION** An axle alignment performed with a pre-loaded (compressed) bushing can provide incorrect measurements and may cause tracking problems/premature tire wear.

### Recommended Equipment

- 50-ft 1/32”-ruled steel tape measure.
- 12-ft 1/32”-ruled tape measure.
- A device to keep tension on the tape measure(s).
- A kingpin adapter/kingpin extender (pogo stick).
- Wheel-end (spindle) extenders/Trammel bar.

### Axle Alignment Measurements

Use extreme care; as measurement errors can take up most, if not all, of the alignment tolerances (Figure 10).

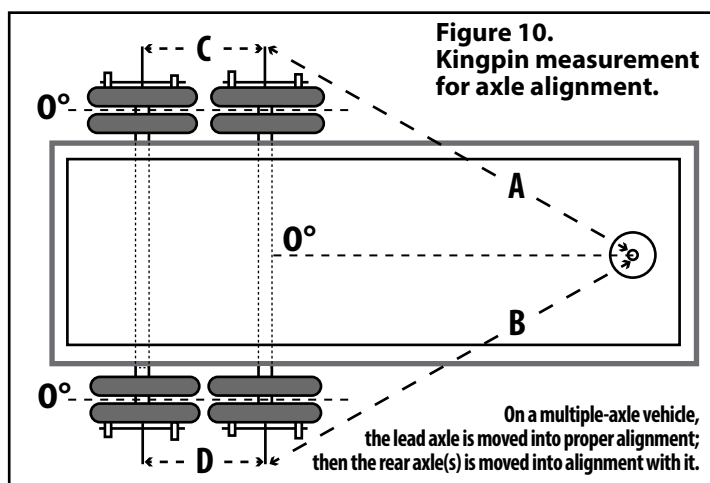
1. Attach the 50-ft tape measure to the kingpin. Measure Distance “A” and Distance “B” from the kingpin to the centers of the lead axle. The difference between the “A” and “B” measurements must not exceed 1/8-inch.
2. Measure Distance “C” and Distance “D” from the lead axle to the next axle with the 12-ft measuring tape or trammel bar. The difference between the “C” and “D” measurements must not exceed 1/16-inch.

### Axle Alignment Procedure

Select either the left-hand or right-hand beam of the leading axle to begin the alignment procedure.

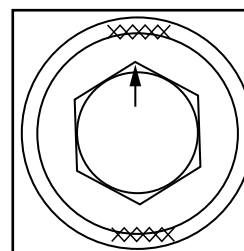
1. Loosen the pivot nut enough for the beam to move.  
NOTE: If anti-turn washer has been installed, grind away the welds and remove anti-turn washer before loosening the pivot bolt (Figure 11).
2. Turn bolt head until arrow on bolt-head points straight up (12 o’clock position).
3. Turn eccentric bolt to move beam forward or backward until axle reaches alignment position.

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



**Figure 10.**  
Kingpin measurement for axle alignment.

4. Repeat the alignment measurements from the kingpin to both sides of axle to ensure alignment is within desired tolerance. Adjust each axle side as needed.



**Figure 11.**  
Secure anti-turn washer with 1/4” fillet welds before applying final torque.

5. Weld anti-turn washer over bolt-head with 1/4” fillet welds at top and bottom (Figure 11).
6. Torque pivot nut to 1,000 ft-lb (1,350 N-m).

### Align the rear axle to the lead axle.

Check “C” and “D” axle alignment measurements to verify the difference does not exceed 1/16-inch tolerance (Fig 10).

Repeat Axle Alignment Procedure Steps 1-6, if necessary, to bring the rear axle into alignment with the lead axle.

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

**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. 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.

All work under warranty must have prior written approval from the Ridewell warranty department. All warranty claim submissions must have the owner's name; the In-Service Date; the VIN and the Ridewell serial number for each suspension submitted; and, clear photos of the failure as well as a description of the failure for the submission to be considered.

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 nontransferable 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.**