RAR-244 – 16K

Air-Ride Trailer Suspension

Installation and Service Manual

RIDEWELL SUSPENSIONS

Part No.: 9710120
Doc.: 244-Trailer-ISM-07-31-20

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 (Fig. 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.

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.

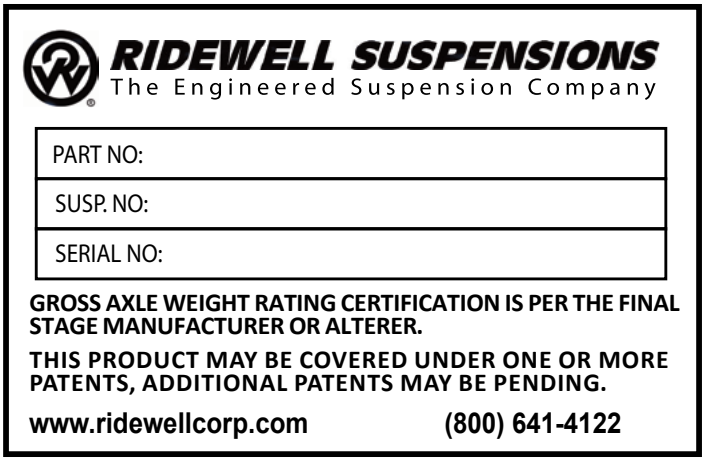


Figure 1.
The Suspension Model (Suspension Number) and the date of manufacture (Serial Number) are listed on the Suspension Identification Tag.

Prior to Installation

Refer to the engineering drawing to confirm dimensional requirements and ride height.

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

Axle assemblies must be positioned correctly before welding the axle to the axle seats. Refer to the suspension model engineering drawing for measurements.

CAUTION The RAR 244 suspension requires an axle configured with electric/hydraulic brakes and does not have the clearances necessary for use with air brakes. 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

Center axle assembly on the beam center (Fig. 2).

Check the gap between the axle and the axle seats before welding (Fig. 3).

Side gaps should be no greater than 1/8". The bottom gap of the axle seat should be no greater than 1/16".

Weld the axle to the seat according to Ridewell Weld Process #1 (Page 5).

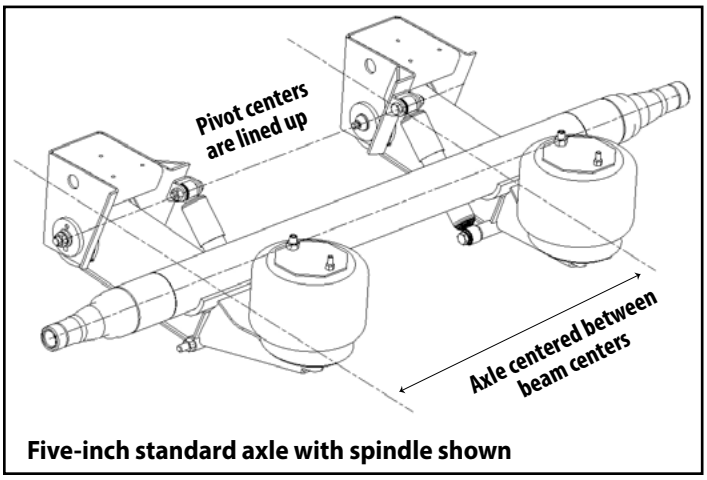


Figure 2.
Axle should be centered between beams with beams and axle perpendicular. Refer to the suspension model engineering drawing for measurements.

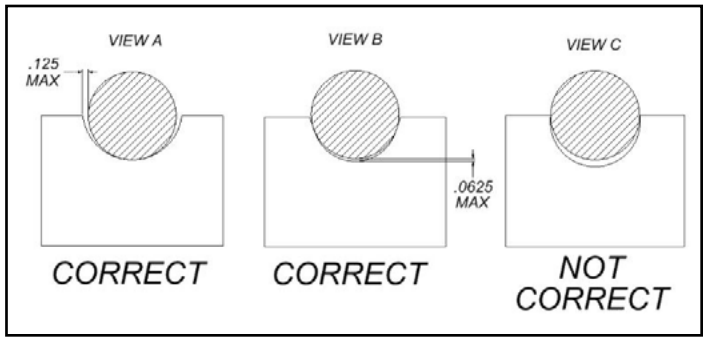
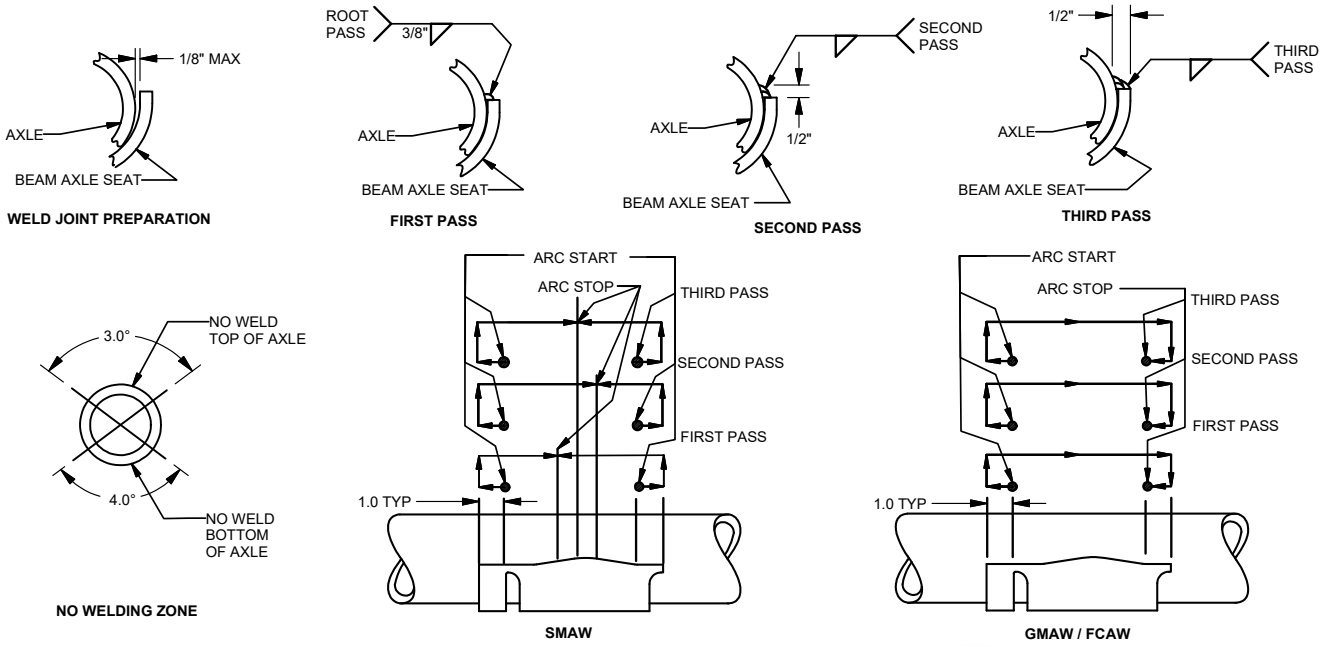


Figure 3.
Correct axle tube seating for welding.



1 - 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.

2 - 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.

3 - 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.

4 - 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℉ (15℃). 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.

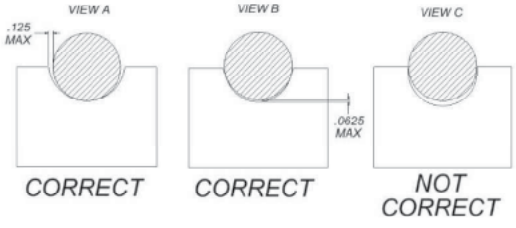
5 - The axle should fit into the beam assembly with a maximum root gap of 1/8-inch between the axle and the beam axle seat (see "WELD JOINT PREPARATION" illustration above).

6 - 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).

7 - 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.

8 - 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.



REV	PROJECT	DESCRIPTION	DATE	BY	CHK	APPD
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

DRAWN BY: CBC	2/1/2016	RIDEWELL CORPORATION
CHECKED: MDJ	2/21/2003	PO BOX 4586 SPRINGFIELD, MISSOURI 65808
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

Mounting the suspension to the frame

Refer to the suspension model engineering drawing for torque values and clearance requirements.

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

Weld-On Installation Procedure

Recommended locations of supporting crossmembers for the suspension hangers and air spring mounting plates are shown on the engineering drawing.

⚠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 (if needed) on the vehicle frame. NOTE: Hangers must be installed parallel to each other for proper axle alignment.
2. Mark the desired location of air spring mounting plates and filler plates (if needed) on the frame.
3. 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 1/4" fillet welds completely around the hangers. Stop welds 1/2" from the corners and edges.
5. Weld the air spring mounting plates to the frame/filler plates with 3/16" fillet welds.

Final Assembly and Inspection

- Check the location for sufficient clearances of assembled suspension components.
- Verify hanger and air spring mounting plate welds after installation.
- Complete assembly and installation of air springs as shown on the engineering drawing. Torque to specifications (Chart).
- 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.
- Install/connect the height control valve (HCV), if applicable (Page 8). Check the air system tubing and fittings after installation for leaks.
- Verify desired ride height is adjusted to range shown on the engineering drawing. Complete axle alignment procedure (Page 15).

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

TORQUE SPECIFICATIONS

FASTENER TYPE	SIZE	TORQUE VALUES	
Pivot Bolt - (Shear-Type)/Locknut *Requires E-20 Torx® socket (RW #6100054)*	7/8" - 9NC	Do not lubricate bolt/nut threads. Use 1" drive impact wrench to tighten pivot bolt until Torx® head shears off.	
Pivot Bolt - (Hex Head Cap Screw-HHCS) Pivot Nut - (Locknut)	7/8"-9NC	500 ft-lb	678 N-m
Bolt/Locknut - (Shock Absorber)	3/4"-10NC	200-230 ft-lb	271-312 N-m
Nut - (Air Spring)	3/4"-16NF	45-50 ft-lb	61-68 N-m
Locknut - (Air Spring)	1/2"-13NC	20-25 ft-lb	27-34 N-m
LIFT KIT			
Bolt - Socket Head Cap Screw (SHCS) (Air Spring-Upper Mount)	3/8"-16 x 5/8"	20 ft-lb	27 N-m
Bolt - Flanged Screw (Air Spring-Upper/Lower Mount)	3/8"-16 x 3/4"	20 ft-lb	27 N-m
Bolt/Flanged Locknut - (Hanger Mount)	5/8"-11NC	160 ft-lb	217 N-m

Refer to the suspension model engineering drawing for component torque value. Torque values reflect a lubricated thread condition (Nuts are pre-lubed). Do not overtorque.

⚠CAUTION *Suspension is shipped with minimal torque applied to fasteners. It is the installer's responsibility to apply the proper torque values. All fasteners, except for shear-type pivot bolt, must be re-torqued after the first 6,000 miles of operation. Failure to install and maintain component fasteners at torque specifications could result in suspension failure and void the warranty.*

Lift Kit Installation

Refer to the suspension model engineering drawing for clearance requirements and torque values. An air control kit is required for lift kit operation (Page 9).

CAUTION Always wear personal protective equipment when working on the vehicle air system. Failure to provide support, chock vehicle's wheels or exhaust the air system could allow vehicle movement that could result in serious injury.

1. Park the vehicle on a flat, level, surface. To prevent vehicle movement, chock the wheels on the opposite side from the lift kit installation. Exhaust all air from the trailer air system.
2. Raise vehicle side where the lift kit is to be installed until the wheel clears the surface. Support vehicle with safety stands.
3. Remove wheel and any other components necessary to gain access to the suspension hanger and beam.
4. Bolt lift spring to the lift bracket mounting plate with two flanged screws. Torque to 20 ft-lb.
5. Attach the socket head cap screw (SHCS) to the lift spring upper mounting plate.Torque SHCS to 20 ft-lb.
   NOTE: Threadlocking adhesive recommended.
6. Attach lift bracket assembly to suspension hanger with hanger mounting hardware. Do not apply final torque.
7. Position lift bracket assembly on beam by pivoting lift spring upward until the SHCS top goes through lift spring alignment hole in the beam. Align mounting plate bolt hole to beam hole on opposite side of SHCS. Attach lift spring to beam with flanged screw. Do not apply final torque.
8. Make sure front of the lift bracket is aligned with and tight against the hanger. Torque lift bracket hanger fasteners to 160 ft-lb.
9. Torque lift spring upper mount flanged screw to 20 ft-lb. Verify torque on all fasteners.
10. Connect lift spring to air system (Page 9).
11. Replace wheel and other components (if removed). Remove support stands and lower vehicle to ground.
12. Repeat lift kit installation steps 1-12 for the other side of suspension.

Check ground and component clearance by operating suspension through full range of travel.

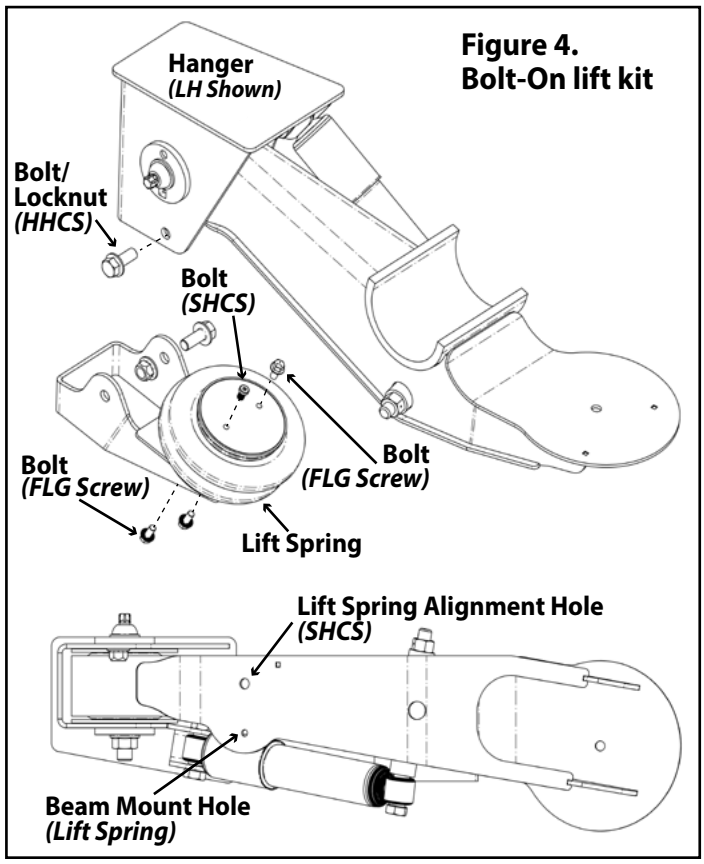


Figure 4.
Bolt-On lift kit

Height Control Kit Information

"Universal" HCK installation

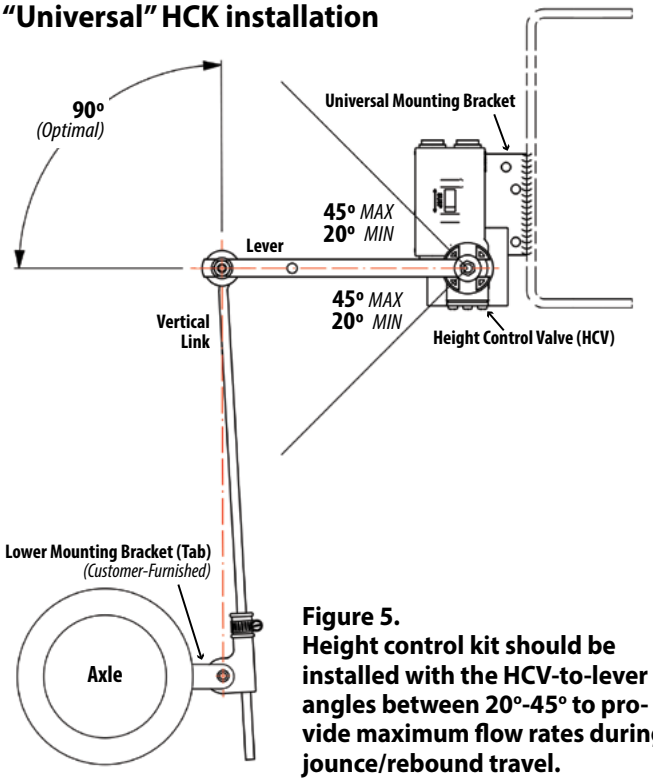


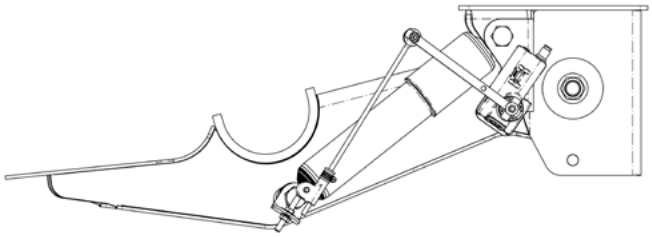
Figure 5.
Height control kit should be installed with the HCV-to-lever angles between 20°-45° to provide maximum flow rates during jounce/rebound travel.

The Ridewell Extreme Air® Height Control Kit (HCK) automatically adds and exhausts air from the air suspension to maintain the vehicle ride height as loads increase and decrease.

The (HCK) assembly consists of a lever arm connected to the height control valve (HCV) and a vertical rod arm (vertical linkage) connected to the suspension/axle mounting bracket (Fig. 5).

⚠CAUTION The installer is responsible for making sure the air system complies with federal and state requirements such as the "Federal Motor Vehicle Safety Standards (FMVSS) 121 for Air Brake Systems."

Refer to the Extreme Air® HCK-Trailer-Install-Guide (#9710021) for HCK orientation/installation procedures.



HCK #6241027 with Lo-Flo HCV Shown

Troubleshooting – Height Control Valve Installation

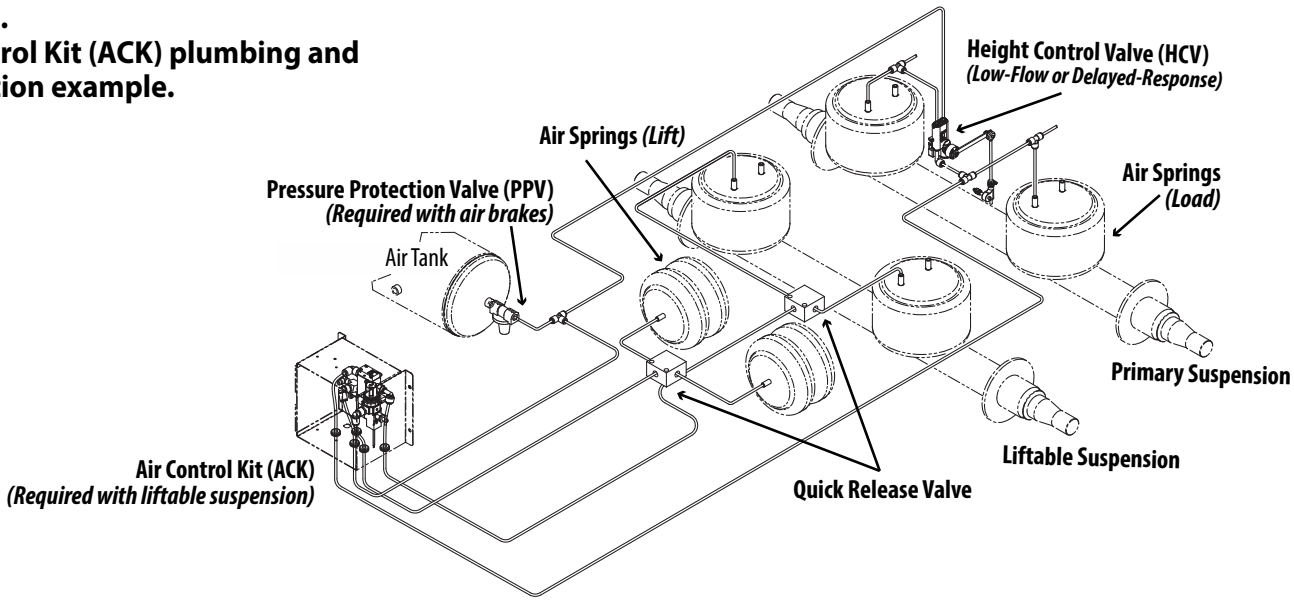
Problem	Possible Cause	Corrective Action
HCV is not receiving air/ HCV is not delivering air to the air springs.	— Blocked air supply line.	— Verify air lines are pressurized by removing supply line at HCV. Check for pinched lines.
	— Air tank is not filling/ reaching set pressure.	— Verify air tank pressure with manual/in-line pressure gauge.
	— Pressure Protection Valve (PPV) not working correctly.	— Check PPV operation by making sure that valve opens when system reaches the desired pressure setpoint *(usually greater than 70 psi)*.
	— Pilot port is not plumbed or is plumbed incorrectly.	— Check HCV configuration – Non-Dump; Pressure-Dump (Normally Open); Zero-Pressure Dump (Normally Closed). Reinstall, if necessary.
Air springs fill but do not exhaust.	— Obstructed air line.	— Disconnect linkage and rotate actuating lever to down position (exhaust). If springs remain inflated, check for pinched/blocked lines.
	— HCV installed backwards.	— Check installation. Reinstall, if necessary.
	— Supply line installed in suspension port	— Move air supply line to HCV supply port.
Air system leaks down in a short period of time.	— HCV installed backwards.	— Disconnect HCV linkage and rotate actuating lever to the up position (fill). If air springs do not inflate, reinstall HCV.
	— Leak in air system beyond accepted standards.	— 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 the rest of the system for leaks. Check that tubing cuts are straight and smooth. Re-cut and reassemble if necessary.

Air Control Kit Example

The air control kit (ACK) typically consists of a pressure regulator connected to a manual/electric lift valve. The ACK allows the operator to control when each set of air springs (load/lift) are filled. Installations vary by ACK options and configurations (Fig. 6).

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

Figure 6.
Air Control Kit (ACK) plumbing and installation example.



Troubleshooting – Air Control Kit Installation

Problem	Possible Cause	Solution
Air springs fill but do not exhaust.	— Obstructed air line. — Faulty controls wiring. — Manual override pushed in	— Check for pinched/blocked lines. — Check wiring with voltmeter and correct wiring/installation. — Release manual override.
Air system leaks down after a short period of time.	— Leak in air system beyond accepted standards.	— Pressurize system and spray soap water solution onto the tubing, valves and fittings. Check for bubbles (leaks). Note: Some valves will leak at an acceptable rate. — Check that tubing cuts are straight and smooth. Re-cut and reassemble fitting joints, if necessary.
Lift unit will not stay up	— Loose Air Fittings. — Damaged Air Lines. — Air lines to lift and load air springs are reversed. — Damaged or Worn Air Springs.	— Check and retighten fittings. Repair or replace component, as necessary. — Check installation. Air line from regulator goes to (load) air springs. — Replace if worn or damaged.
Lift unit not achieving the correct lift	— Air lines to lift and load air springs are reversed. — Lift air springs do not have proper air pressure. — Interference with driveline or other chassis components. — Air control system not installed correctly.	— Check installation. Air line from regulator goes to (load) air springs. — Check for loose fittings or worn/damaged lines. Verify air tank pressure with gauge. — Visually inspect unit operation for proper clearance. Check for loose fasteners and retighten. — Check installation; refer to OEM installation procedures.

MAINTENANCE

A visual inspection of the suspension structure should be performed during each pre-trip/safety inspection. 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/ 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 all suspension bolts/nuts to specifications (Page 14/Engineering Drawing).

__ Verify that the suspension is operating at the designed ride height.

Refer to the following Technology & Maintenance Council (TMC) publications for additional maintenance information:

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

Every 12,000 miles of use

__ Inspect air springs for any damage or excessive wear. Torque air spring bolts/nuts to specifications (Page 14/Engineering Drawing).

__ Check air lines and connections for leaks.

__ Lubricate Brake Cams and Slack Adjusters.

First 50,000 miles of use

__ Torque all suspension component bolts/nuts to specifications (Page 14/Engineering Drawing).

__ Check wheel ends for excessive play.

Annually/100,000 miles of use

__ Inspect pivot connections for worn pivot bushings and replace if necessary. Torque pivot hardware and component bolts/nuts to specifications (Page 14/Engineering Drawing).

__ Check suspension hanger and air spring mounting plate connections to frame.

__ Check lubrication level in wheel ends:
1) Oil-Filled Wheel Ends:
Refill/Replace lubricant as needed (Refer to TMC RP 631 "100K/Annual Inspection").
2) Semi-Fluid Grease:
Pull outer bearing and visually inspect lubrication level. Refill/Replace as needed
(Refer to TMC RP 631 "Level 3 Lubrication Level Inspection" and TMC RP 618 "Wheel Bearing Adjustment Procedure").

__ Check air system for leaks.

__ Test air system pressure protection valve (if equipped).

__ Check brake chambers and brakes for damage and proper function.

⚠CAUTION Failure to torque bolts/nuts of suspension components to specifications can result in failure of the suspension 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.

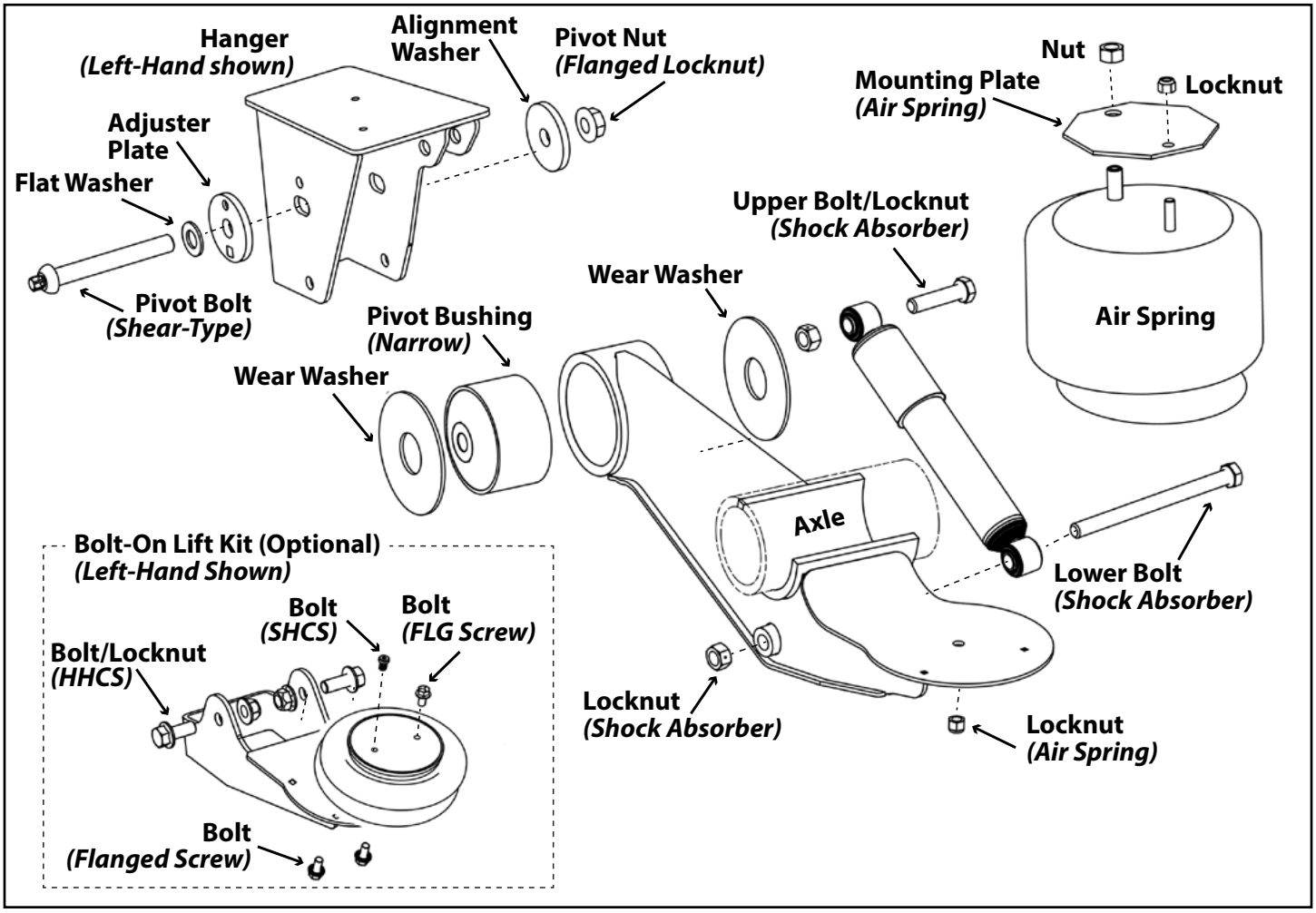


Figure 7.
RAR-244 16K Trailer Suspension shown with optional integrated lift kit.
Refer to the suspension's engineering drawing for the individual component part numbers.

Bushing Replacement

RAR 244 16K Trailer Suspension – Bushing Replacement Kit					
Suspension Type	**Replacement Kit Part No.**	**Replacement Tool Part No.**	**Pivot Hardware**	**Torque Specification foot-pound**	**Newton-meter**
Underslung	6040128	6100044	Shear-Type	Do not lubricate bolt/nut threads. Use a 1″ drive impact wrench to tighten pivot bolt until Torx® head shears off.	
Underslung	6040078	6100044	Traditional - Hex Head Cap Screw-HHCS/Locknut	500 ft-lb	678 N-m

⚠CAUTION *Failure to install and maintain suspension component fasteners at torque specifications could result in suspension failure and void the warranty. Refer to the engineering drawing for torque values.*

Bushing Replacement Procedure – Narrow Bushing Replacement Tool #6100044

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

Remove wheels and tires, if necessary. Disassemble the pivot connections. Remove and inspect adjuster plate and alignment washer(s). Replace if necessary. Discard pivot hardware (new pivot hardware and wear washers included in bushing replacement kit).

Rotate trailing arm beams down and out of the hangers. Inspect the pivot bolt holes and the hanger surfaces for unusual wear or damage. Repair or replace components, as needed.

Bushing Replacement Tool Assembly

Make sure that the thrust washer is firmly seated in the flat (outside) edge of end cap. Examine the tool cone tapered insert and larger open end for any damage/out-of-round. Repair/replace if necessary (Fig.8).

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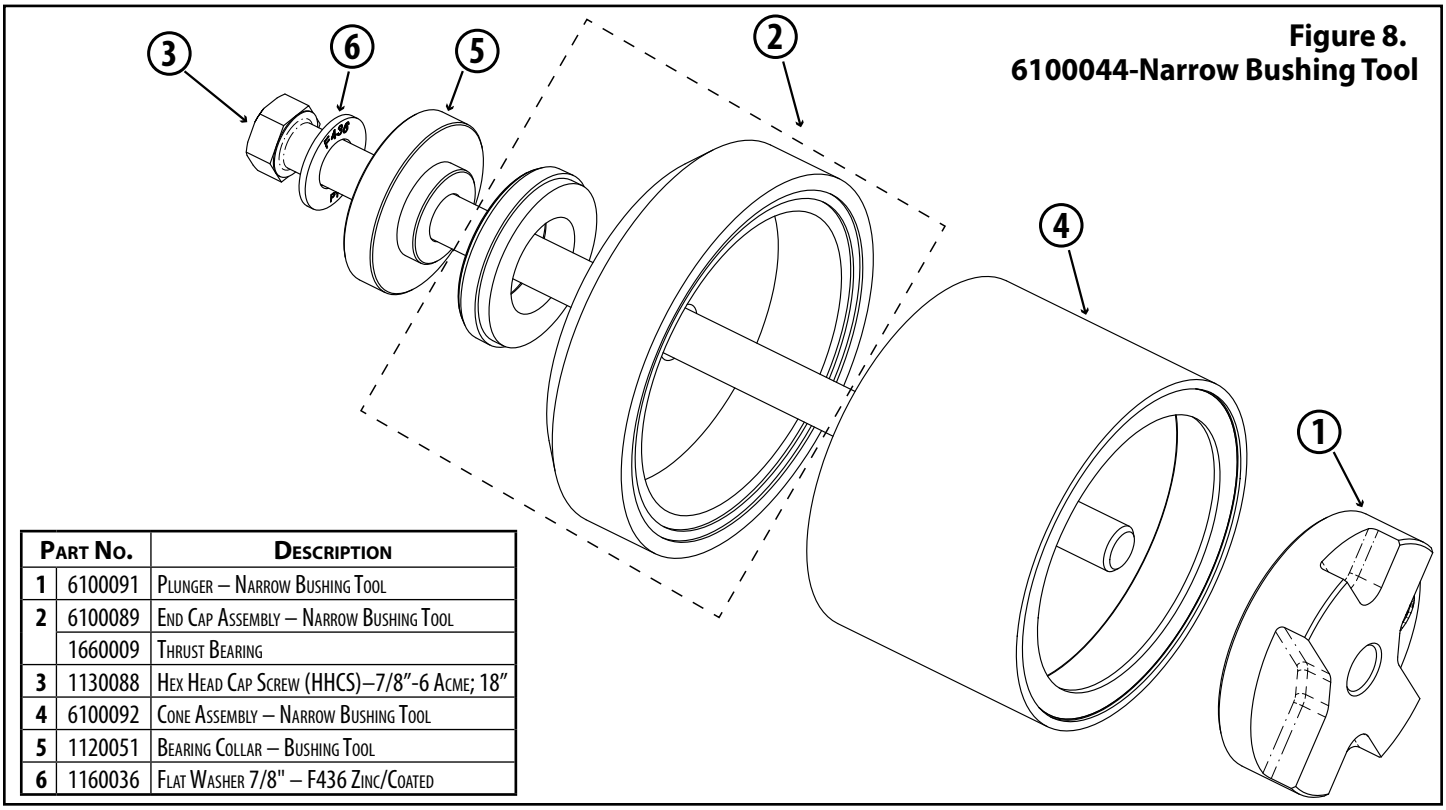


Figure 8.
6100044-Narrow Bushing Tool

Part No.		Description
1	6100091	Plunger – Narrow Bushing Tool
2	6100089	End Cap Assembly – Narrow Bushing Tool
	1660009	Thrust Bearing
3	1130088	Hex Head Cap Screw (HHCS)–7/8″-6 Acme; 18″
4	6100092	Cone Assembly – Narrow Bushing Tool
5	1120051	Bearing Collar – Bushing Tool
6	1160036	Flat Washer 7/8" – F436 Zinc/Coated

Bushing Removal

1. Lubricate hex-head bolt threads and thrust bearing with Extreme Pressure Lube (#1980014). NOTE: Failure to apply lubricant could result in decreased performance and reduced tool life.
2. Place flat washer onto hex-head bolt, followed by the bearing collar,then the end cap. The bushing tool cone tapers to a smaller opening on one end. Place larger opening of the cone onto the end cap. NOTE: Always place the tapered end of the cone against the eye of the beam (Fig. 9).
3. Insert the end of the hex bolt through the bushing sleeve into the center opening of the plunger. Make sure the cone is centered on the beam eye and tighten the hex bolt until the plunger is firmly against the bushing.
4. Use a 1 1/4" socket on a 3/4" drive impact wrench (1" recommended) to rotate hex bolt and press bushing out of the beam eye into the cone. NOTE: It may require a small amount of heat to break the bond between the bushing and the beam eye. Do not overheat. Allow beam to cool before installing the new bushing.
5. Disassemble the bushing replacement tool. Remove old bushing from cone and discard.

Bushing Tool Assembly – Installation

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

1. Use a wire brush to clean debris and corrosion out of the beam eye.
2. Liberally apply P80® lubricant or soap solution to the inside of the beam eye, the outside of the bushing and inside the tool cone.
3. Insert the new bushing into the large end of tool cone.
4. Place the plunger/cone/bushing assembly on the beam eye (Figure 8).
5. Insert the hex-head bolt assembly through the beam eye. Thread the hex bolt into the plunger until the end-cap rests against the beam.
6. Center the bushing tool cone on the beam eye. Use a 1 1/4" socket on a 3/4"drive impact wrench (1" impact wrench is recommended) to rotate the hex bolt and press bushing into the beam eye. Disassemble and remove the bushing replacement tool. Check placement to make sure the bushing is centered in beam.

Reassemble suspension

Rotate trailing arm beams into hangers. Install pivot connection hardware – alignment washers, adjuster plates, wear washers, shear-type pivot bolt, flat washer and flanged locknut.
NOTE: Do not lubricate pivot bolt/nut.
Tighten flanged locknut until adjuster plate pin is engaged and pivot hardware is snug against hanger. Do not apply final torque until axle alignment has been checked.

Connect air system (if disconnected). Install wheels and tires (if removed).

Inflate air springs. Raise vehicle and remove support stands. Lower vehicle to ground.

Check axle alignment and realign (Page 14). 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 can result in suspension failure and void warranty.

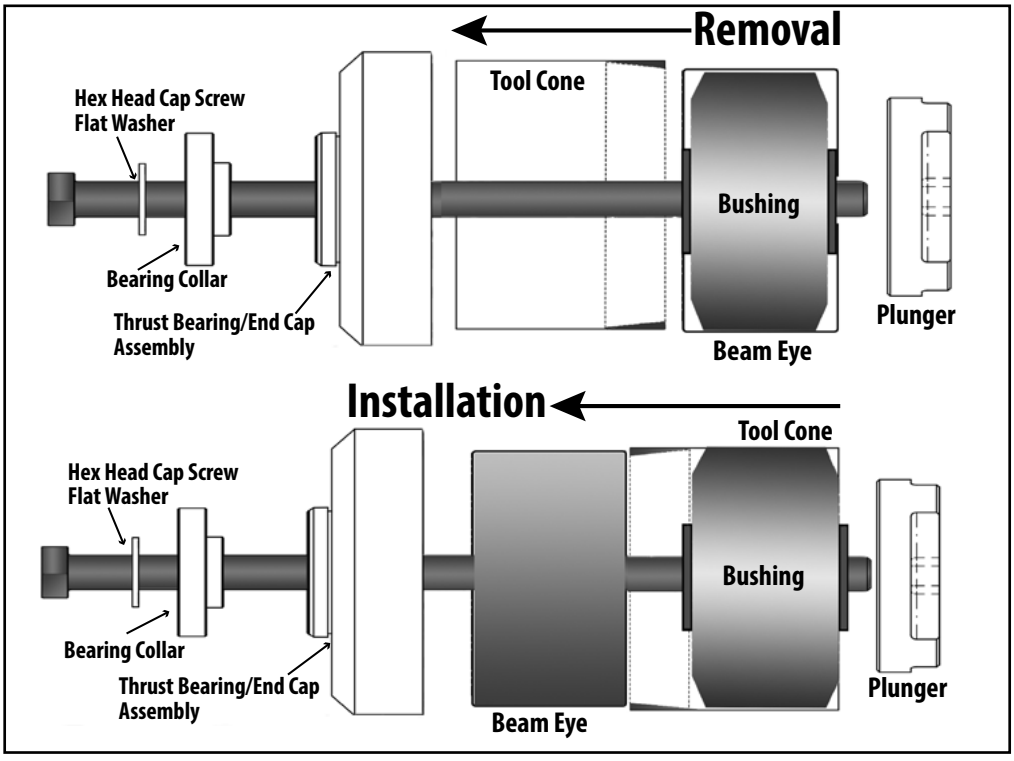


Figure 9.
Bushing Replacement Tool (#6100044) is for trailer suspensions that use a narrow (4 1/8") rubber bushing.

Axle Alignment

Alignment should be performed on a level surface with the suspension at the desired ride height.

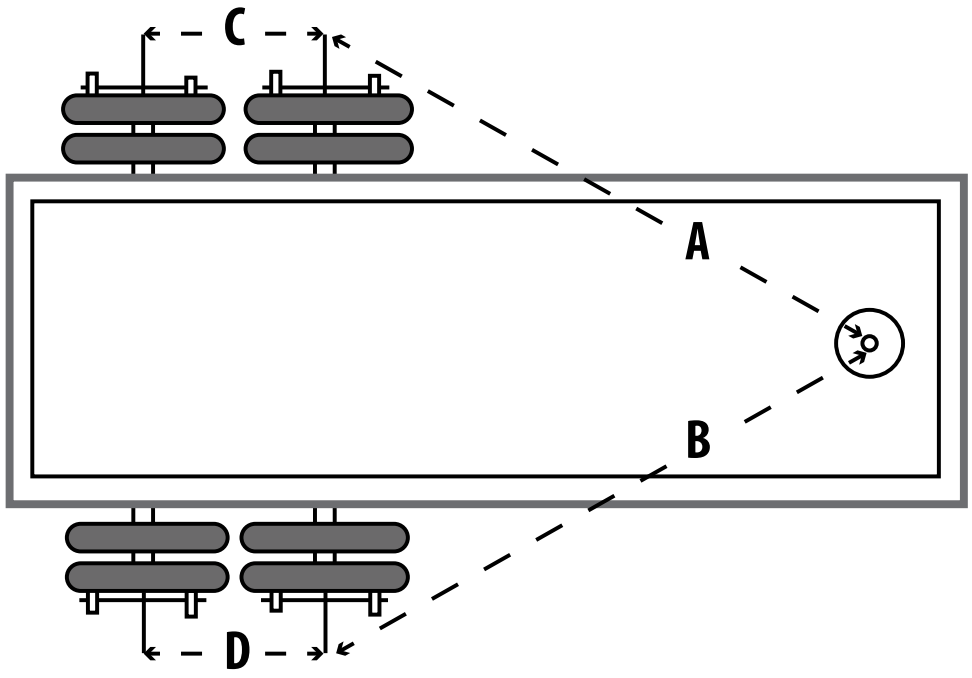
Align the suspension per TMC or SAE recommended standards. On a multiple-axle vehicle, the forward axle is moved into the proper alignment, then the remaining axles are positioned so that they are parallel to the forward axle. A maximum tolerance of 1/8-inch difference from side-to-side of the forward axle and 1/16-inch difference from side-to-side for the aft axles is acceptable (Fig. 10).

Figure 10.
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.

If the difference between the "C" measurement and the "D" measurement is greater than 1/16-inch, the aft axle needs adjustment.



Axle alignment procedure

The RAR-244 16K Trailer Suspension is equipped for simple, manual alignment of the axle.

1. Loosen the pivot nut enough for beam to move.
2. Locate the adjuster plate at the pivot connection. Insert a 1/2"-shank breaker bar into the square hole of the adjuster plate. Move the arm beam forward or backward until the axle reaches the desired alignment location (Fig. 11).
   NOTE: Check to make sure that the pivot bushing is not wedged sideways during beam movement. The adjuster plate and alignment washer on the two sides of the hanger should move in unison with the beam.
3. Tighten the pivot nut so that beam can no longer move. Re-check alignment measurements and adjust, if necessary.
   NOTE: Check to make sure that both the adjuster plate and alignment washer are flat against the hanger before final torque is applied.

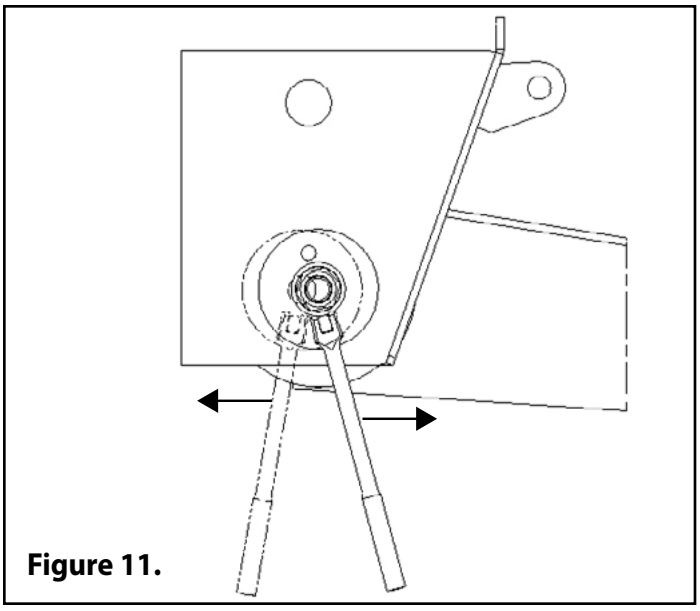


Figure 11.

4. Use a 1" drive impact wrench with an E-20 Torx® socket to tighten the pivot bolt until the Torx head is sheared off.

⚠CAUTION Failure to properly torque pivot hardware could result in catastrophic suspension failure and void the warranty

Notes

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.

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.