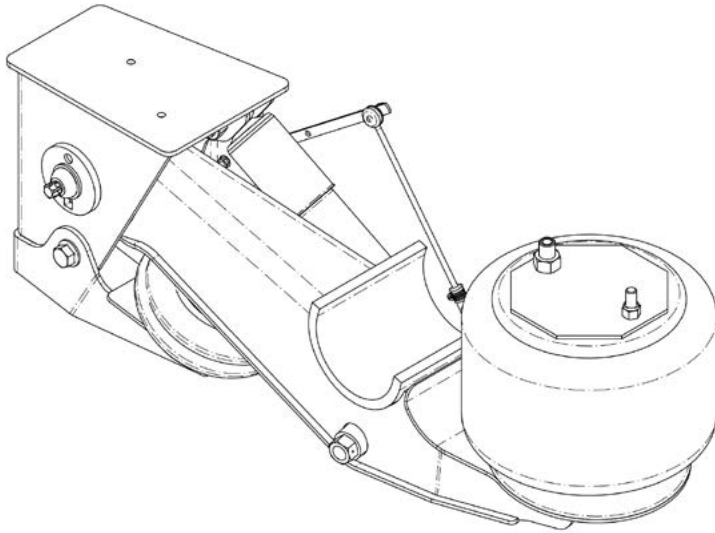


RAR-244-16K Trailer Suspension



Installation and Service Manual

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SUSPENSION IDENTIFICATION

The Ridewell Air Ride (RAR) 244-16K Trailer Suspension is available for on-highway applications. The suspension can be purchased with or without an integrated axle.

CAUTION The suspension requires an axle with electric/hydraulic brakes that does not have the clearances necessary for use with an air brakes system.

Suspension Identification Tag

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

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

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 ensure the suspension system components operate correctly. The service notes are defined as:

“NOTE”: Provides additional instructions or work procedures to complete tasks and make sure that the suspension component functions properly.

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



| |
|------------|
| 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

Prior to Installation

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

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 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 244-16K Suspension requires an axle with electric/hydraulic brakes that does not have the clearances necessary for use with an air brake system. 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 (Figure 1).

Check the gap between the axle and the axle seats before welding (Figure 2).

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).

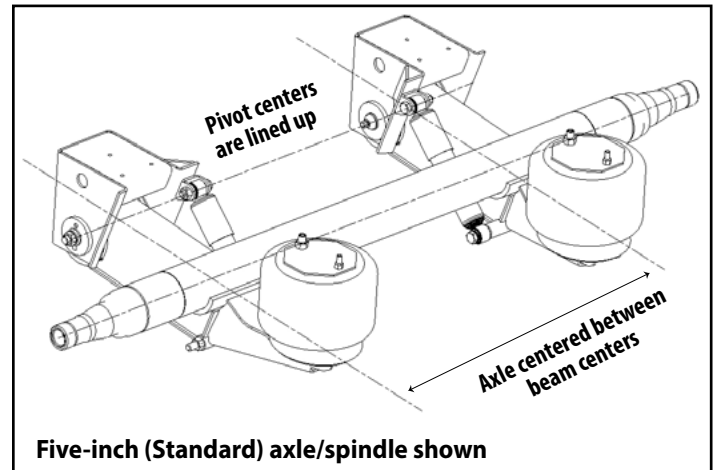


Figure 1.
Axle should be centered between beams with the beams and axle perpendicular. Refer to 244-16K engineering drawing for beam measurements.

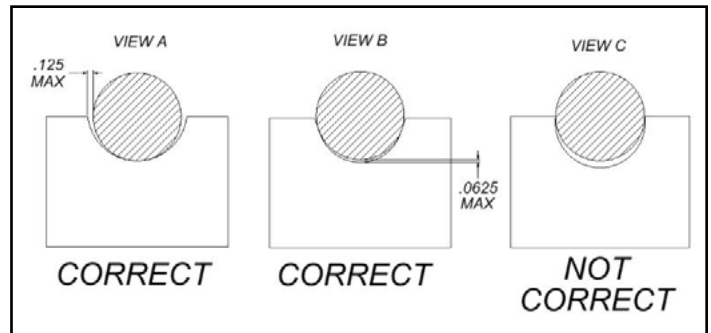
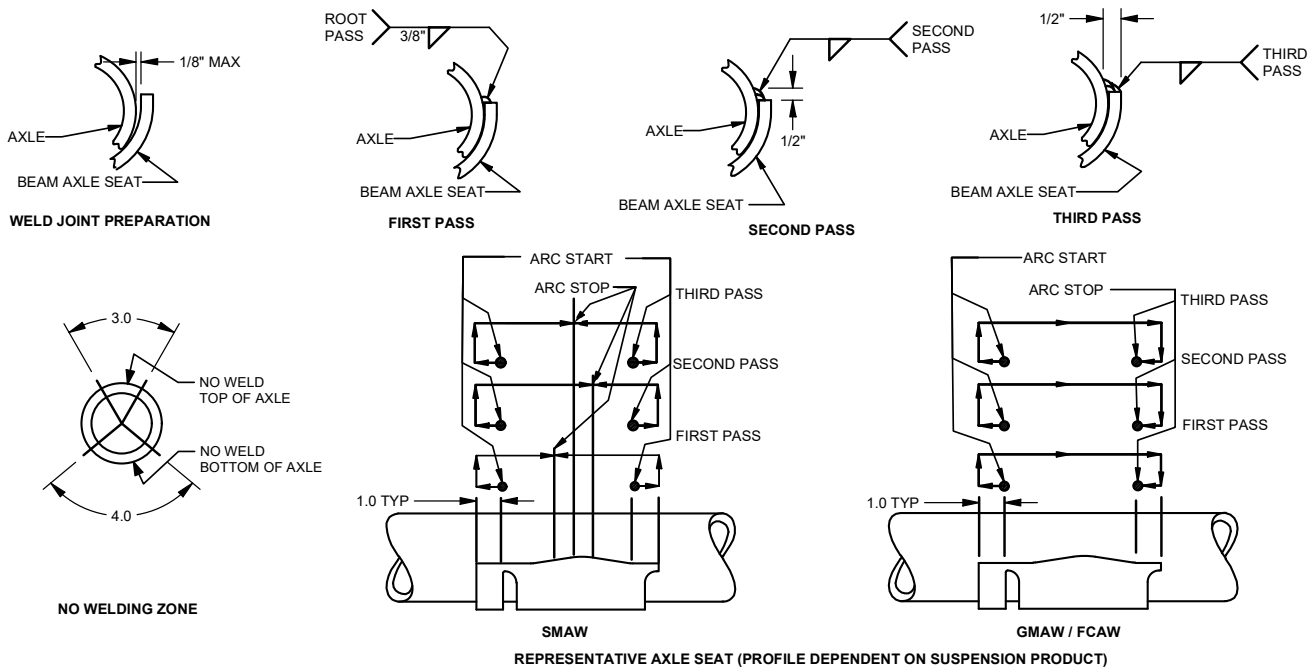
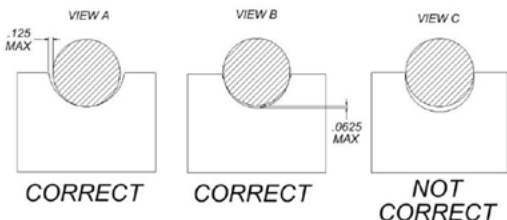


Figure 2.
Correct axle tube seating for welding.



- 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°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.
- 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.



| | | | | | | |
|-------------|----------|---|--|------------------------|------|---------------|
| G | 22101 | REVISED "NO WELDING ZONE" DETAIL | 11/7/22 | AAS | BB | CJB |
| F | 16101 | ADDED MAXIMUM TO 5, ADDED GMAW NOTE TO 8.6 UPDATED CORRECT VIEWS | 2/10/2016 | G.H. | B.B. | CJB |
| REV | PROJ/ECR | DESCRIPTION | DATE | BY | CHK | APPD |
| DRAWN BY: | CBC | 11/7/2022 | RIDEWELL CORPORATION 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: G |

Suspension Mounting

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

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

Weld-On Installation Procedure

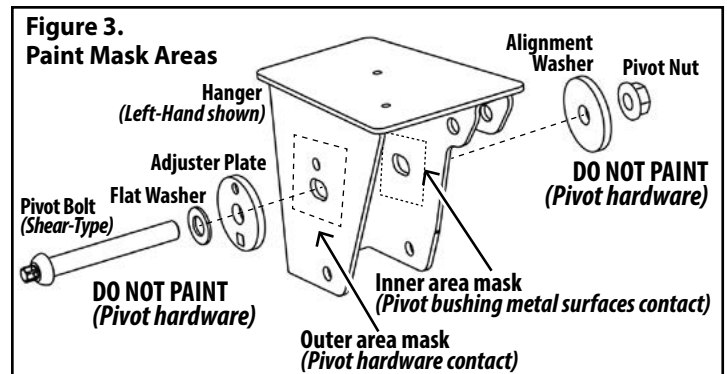
Recommended locations of supporting crossmembers for the suspension hangers and air spring mounting plates are shown on the engineering drawing.

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 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 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

- 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 (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.
- NOTE: Areas where metal surfaces of alignment plates; washers; pivot bolts/nuts or pivot bushing (bushing sleeve) contact the frame hanger must be masked if applying under- or top coating prior to suspension assembly (Figure 3).



- Complete assembly and installation of air springs as shown on the engineering drawing. Torque to specifications (Page 12).
- 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 14).

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

Lift Kit (Optional) – Installation

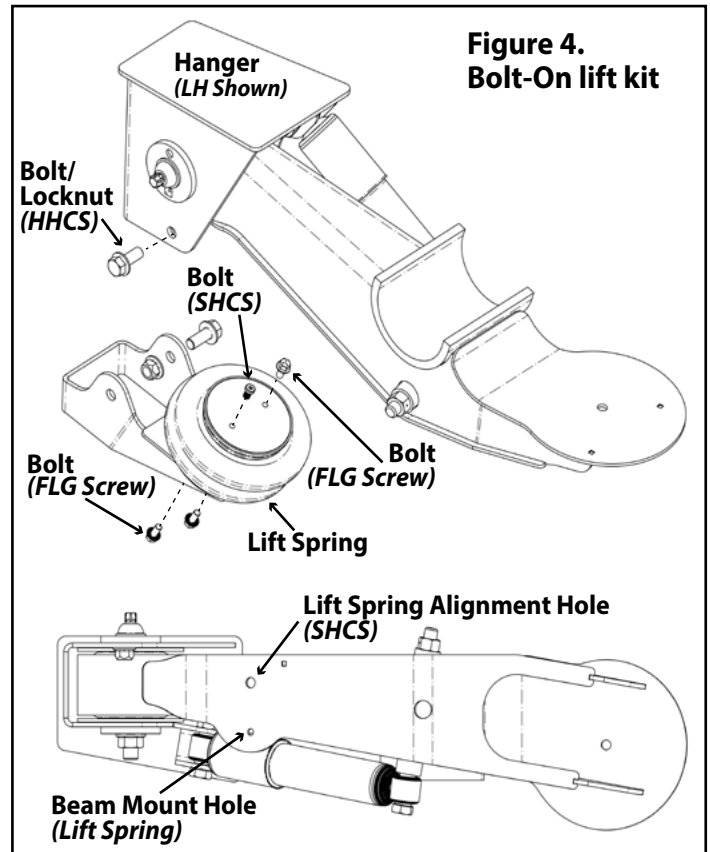
Refer to the suspension model engineering drawing for clearance requirements and torque values. An air control kit is required for lift kit operation (Page 9).

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. Exhaust all air from the trailer air system.
Chock the wheels on the opposite side from the lift kit installation to prevent vehicle movement.
2. Raise vehicle side where lift kit is to be installed until the wheel clears the surface. Support vehicle with safety stands.
3. Remove wheel/other components as necessary to gain access to 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 removed components.
12. Raise vehicle and remove support stands. Lower vehicle to the ground.

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.



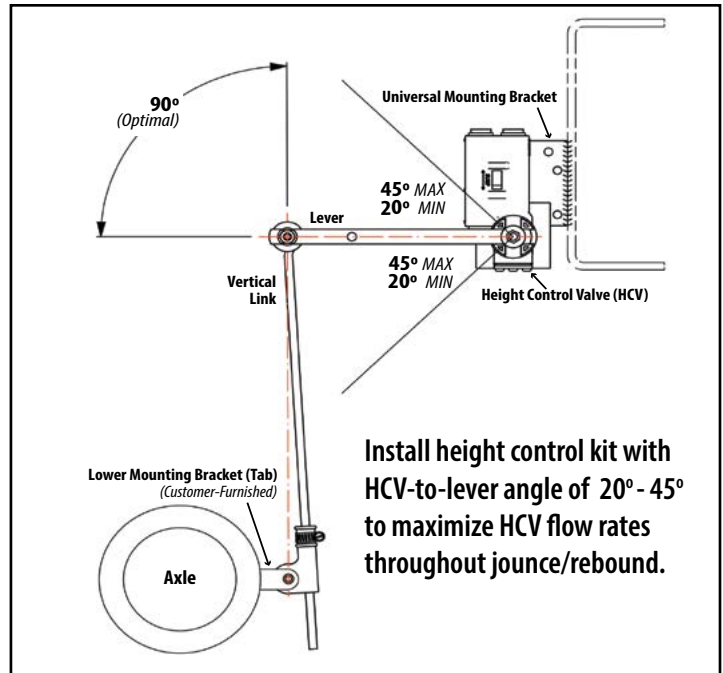
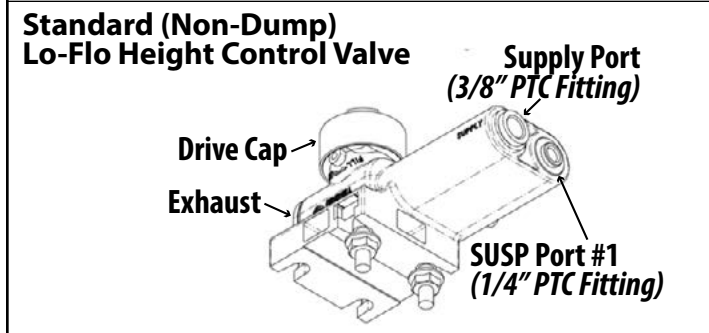
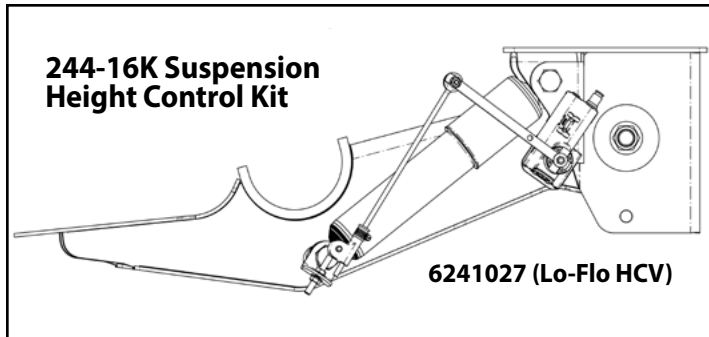
The Ridewell Extreme Air® Height Control Kit (HCK) adds and exhausts air from the air springs to maintain the vehicle ride height. The height control kit assembly consists of one lever connected to the height control valve with a rod arm (vertical link) connected to the HCK lower mounting bracket.



Scan QR-Code
to view HCK Installation Guide

Refer to HCV/HCK Installation Guide (P/N) 9710008 for installation. The entire air system should be checked for leaks after any height control kit installation.

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



TROUBLESHOOTING – HEIGHT CONTROL KIT

| Problem | Possible Cause | Corrective Action |
|--|--|---|
| HCV is not receiving air. | <ul style="list-style-type: none"> Blocked air supply line. Air tank not filling/reaching set pressure. | <ul style="list-style-type: none"> Verify air lines are pressurized by removing supply line at HCV. Check for pinched lines. Verify air tank pressure with manual/in-line pressure gauge. |
| HCV is not delivering air to the air springs. | <ul style="list-style-type: none"> Pressure Protection Valve (PPV) not working correctly. | <ul style="list-style-type: none"> Check PPV operation by making sure valve opens when system reaches the desired pressure setpoint (usually greater than 70 psi). |
| Air springs fill but do not exhaust. | <ul style="list-style-type: none"> Obstructed air line. HCV installed backwards. Supply line installed to suspension port | <ul style="list-style-type: none"> Disconnect linkage. Rotate lever to down position (exhaust). If springs remain inflated, check for pinched/blocked lines. Check installation. Reinstall, if necessary. Move air supply line to HCV supply port. |
| Air system leaks down in a short period of time. | <ul style="list-style-type: none"> HCV installed backwards. Leak in air system beyond accepted standards. | <ul style="list-style-type: none"> 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. 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. |

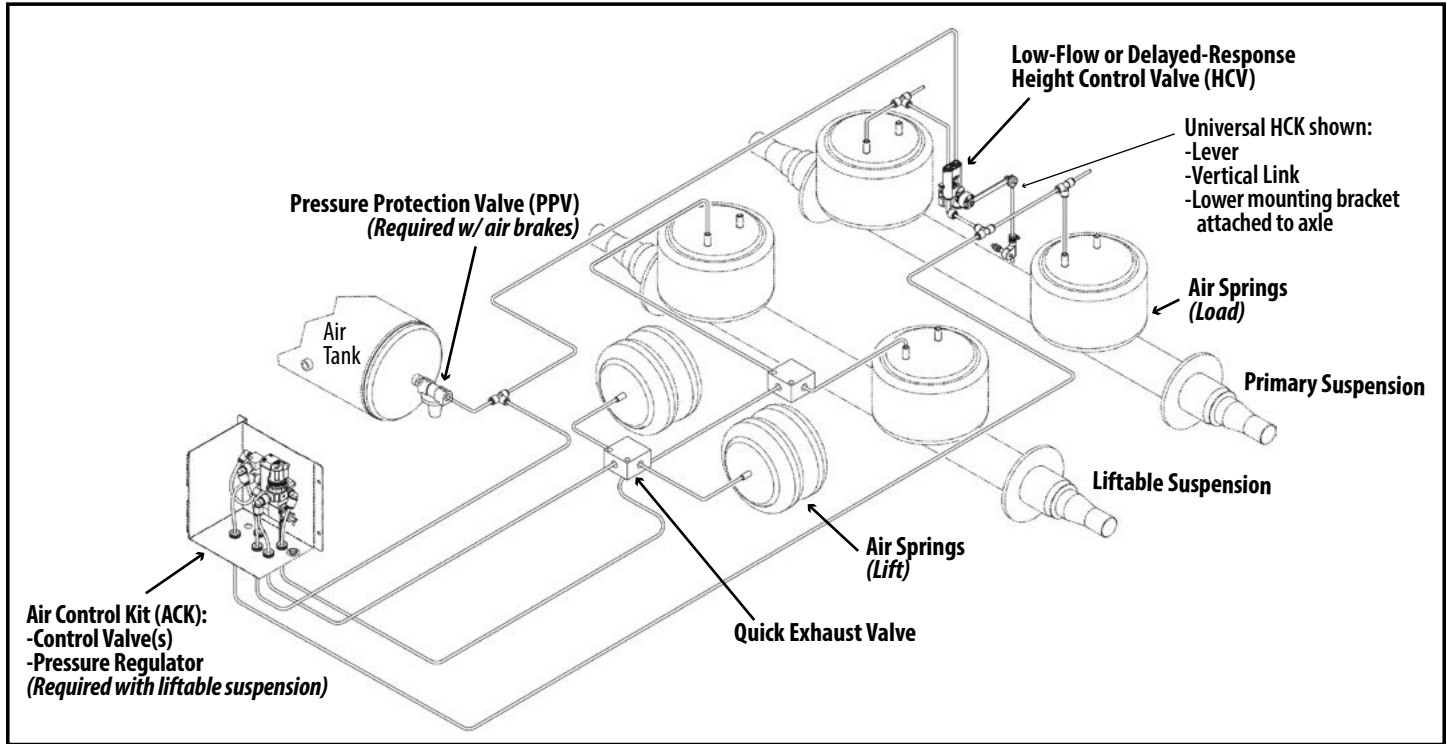
Air Control Kit

The air control kit (ACK) consists of a pressure regulator with an air gauge; connected to an air valve that is operator-controlled by a manual knob or by an electric switch. The operator uses the air control kit to control the pressure to the air springs to support different loads.

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



Scan QR-Code
to view ACK Install Guide



AIR CONTROL KIT INSTALLATION — TROUBLESHOOTING

| Problem | Possible Cause | Solution |
|--|--|--|
| Air springs fill but do not exhaust. | <ul style="list-style-type: none"> — Obstructed air line. — Faulty controls wiring. — Manual override pushed in. | <ul style="list-style-type: none"> — 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. | <ul style="list-style-type: none"> — Leak in air system beyond accepted standards. NOTE: Some valves will leak at an acceptable rate. | <ul style="list-style-type: none"> — Pressurize system and spray soapy water solution onto the tubing, valves and fittings. Check for bubbles (leaks). — Check that tubing cuts are straight and smooth. Re-cut and reassemble fitting joints, if necessary. |
| Lift unit will not stay up | <ul style="list-style-type: none"> — Loose air fitting connection/Damaged air lines. — Air lines to lift and load air springs are reversed. — Damaged or worn air springs. | <ul style="list-style-type: none"> — Check and retighten fittings. Repair or replace component, as necessary. — Check installation. Air line from regulator goes to (load) air springs. — Replace air spring if worn or damaged. |
| Lift unit not achieving correct lift | <ul style="list-style-type: none"> — Air lines to lift and load air springs are reversed. — Lift air springs do not have proper air pressure. — Air control system not installed correctly. | <ul style="list-style-type: none"> — 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. — Check air control kit installation; refer to OEM installation procedures. |

MAINTENANCE

Recommended Service Intervals

Ridewell Suspensions recommends the following minimum service intervals for standard duty, on-highway usage applications.

More frequent service intervals are recommended for off-highway, 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/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 suspension operating at installed ride height.

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

| | |
|--------|---|
| RP 609 | Brake Adjuster Installation/Maintenance |
| RP 618 | Wheel Bearing Adjustment Procedure |
| RP 619 | Air System Inspection Procedure |
| RP 622 | Wheel Seal/Bearing Maintenance |
| RP 631 | Wheel End Lubrication |
| RP 643 | Air Ride Suspension Maintenance Guide |
| RP 728 | Trailer Axle Maintenance |

Inspection Procedure – Pivot Bushing

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

Every 12,000 miles of use

- Inspect air springs for any damage or excessive wear. Torque air spring bolts/nuts to specifications (Page 12/Engineering Drawing).
- Check air lines and connections for leaks.
- Lubricate Brake Cams and Slack Adjusters.

First 50,000 miles of use

- ___ Torque suspension components to specifications (Page 12/Engineering Drawing).
NOTE: Do not re-torque shear-type pivot bolt.
- ___ Check wheel ends for excessive play.

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 the lubrication level in wheel-ends:

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

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

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

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

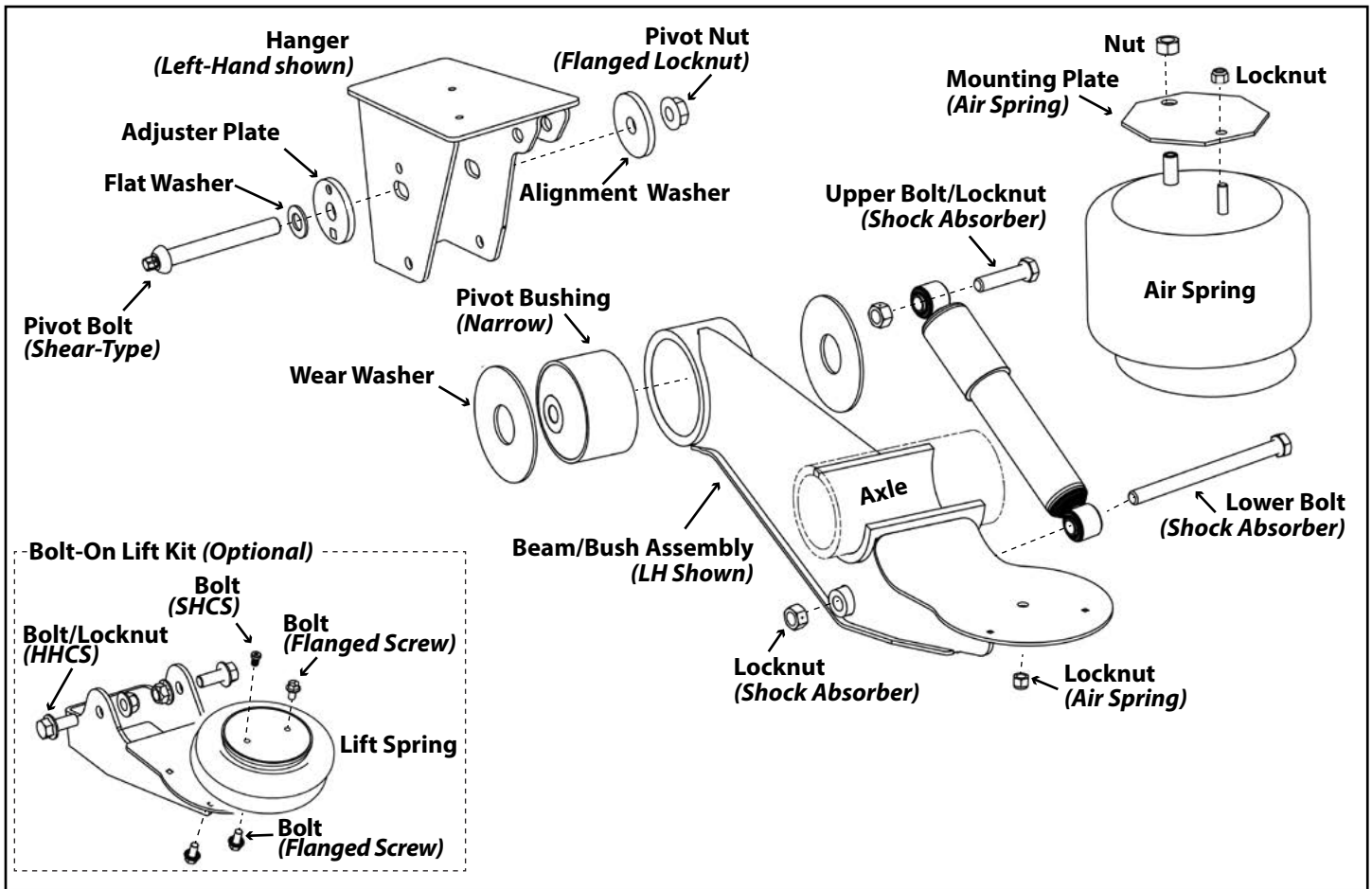


Figure 5.
244-16K Trailer Suspension Components (Optional Integrated Lift Kit shown).
 Refer to the suspension model engineering drawing for the individual component part numbers.

RAR 244-16K TRAILER SUSPENSION—BUSHING REPLACEMENT/TORQUE SPECIFICATIONS

| Part Number (Component) | Item Description | Size | Torque Values (foot-pound Newton-meter) | |
|--|--|----------------|--|-------------|
| 6040128-Bushing Kit 6100044-Bush Tool | Pivot Bolt/Nut - (Shear-Type Bolt/Locknut) <i>Requires E-20 Torx® socket (RW #6100054)</i> | 7/8"-9NC | <i>Do not lubricate bolt/nut threads. Use 1"-drive impact wrench to tighten until Torx® head shears off.</i> | |
| 6040078-Bush Kit 6100044-Bush Tool | Pivot Bolt - Hex Head Cap Screw (HHCS) Pivot Nut - (Locknut) | 7/8"-9NC | 500 ft-lb | 678 N-m |
| Hanger Mount Lift Kit | Hanger Mount Bolt/Flanged Locknut | 5/8"- 11NC | 160 ft-lb | 217 N-m |
| | Air Spring Bolt (SHCS) - Upper | 3/8"-16 x 5/8" | 20 ft-lb | 27 N-m |
| | Air Spring Flanged Screw - Upper; Lower | 3/8"-16 x 3/4" | 20 ft-lb | 27 N-m |
| Fasteners | Shock Absorber Bolt/Locknut | 3/4"- 10NC | 200-230 ft-lb | 271-312 N-m |
| | Air Spring Nut - Upper | 3/4"- 16NF | 45-50 ft-lb | 61-68 N-m |
| | Air Spring Locknut - Upper; Lower | 1/2"- 13NC | 20-25 ft-lb | 27-34 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 vehicle wheels to prevent movement. Raise vehicle to a height that removes the load on the suspension. Support with jack stands.

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

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

Disassemble the suspension

Remove wheels and tires. Remove shock absorbers.

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

CAUTION Do not reuse pivot hardware.

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

Tool Assembly

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

Lubricate HHCS and thrust bearing threads with Extreme Pressure Lubricant (#1980014).

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

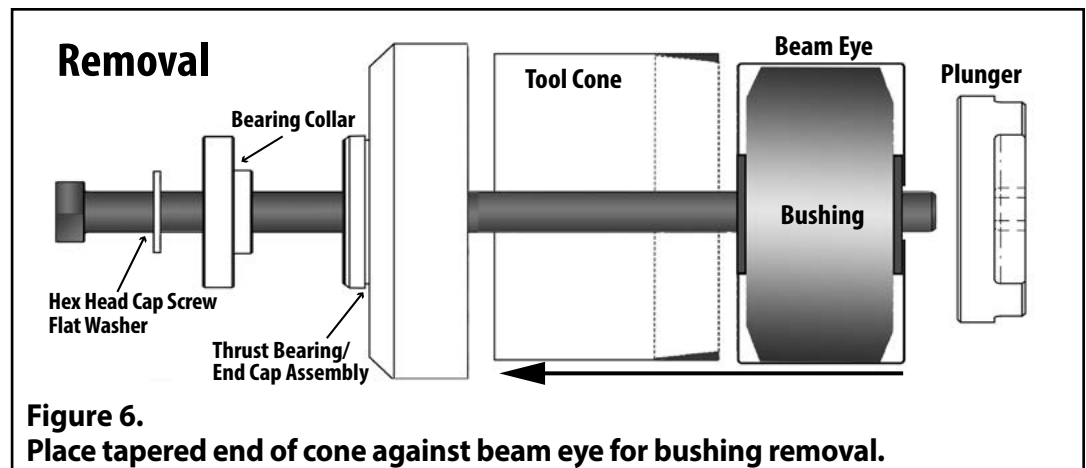
Place tool cone onto endcap (Figure 6).

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

Bushing Removal

1. Push the HHCS through the bushing inner sleeve until the tool cone is against the beam eye. Thread the plunger onto the HHCS until the tool cone is held firmly against the beam (Figure 6). NOTE: The smaller, tapered end of the cone is placed against the beam eye for both removal and installation of the bushing.
2. Check that tool cone is centered on the beam eye. Use a 1 5/16" socket on a 3/4"-drive impact wrench (1"-drive impact wrench recommended) to rotate HHCS and pull bushing into cone. NOTE: A small amount of heat may be needed to break the bond between the bushing and beam eye. Do not overheat. Allow the beam to cool before installing replacement bushing.
3. Remove bushing tool from the beam. Detach tool cone from endcap, remove bushing and discard.

continued on next page



Tool Assembly for Installation

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

Installation Procedure

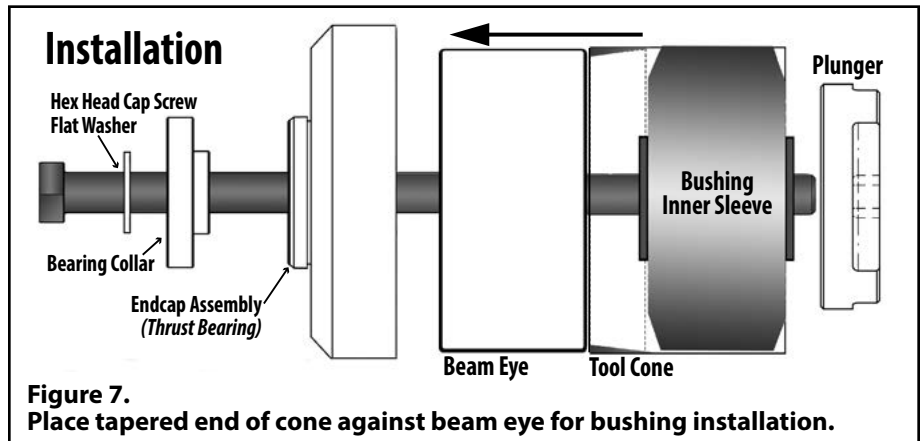
1. Use wire brush to clean debris /corrosion from eye.
2. Liberally apply P80® lubricant/soap solution to inside of the beam eye, outside of the new bushing and inside the tool cone. Insert new bushing into the larger opening of the tool cone (Figure 7).
3. Center smaller opening of tool cone against beam eye. Push the hex-head cap screw through the bushing inner sleeve from the opposite side of the beam until the endcap rests against the beam eye.
4. Thread the plunger onto the hex-head cap screw until tool cone is held firmly against the beam.
NOTE: The smaller opening of the tool cone is placed against the beam eye for both removal and installation of the bushing.
5. Verify bushing tool cone is centered on the beam eye. Use a 1 5/16" socket and 3/4-drive impact wrench (1"-drive impact wrench recommended) to rotate hex-head cap screw and press bushing into the beam eye.
6. Remove bushing tool. Check that bushing is centered inside beam. Realign the bushing if necessary.

Reassemble suspension

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

2. Connect the height control valve linkage (if linkage has been disconnected). Inflate air springs.
3. Install wheels and tires (if removed). Raise the vehicle and remove support stands. Lower vehicle to the ground.
4. Verify suspension ride height. Check axle alignment. Realign if necessary (Page 14).
5. Tighten pivot bolt with a 1" drive impact wrench and E-20 Torx® socket (Ridewell tool #6100054) until Torx® head is sheared off.
6. Install shock absorbers.

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



| Narrow Bushing Tool – P/N 6100044 | | |
|-----------------------------------|----------|---|
| DIAG No.. | Part No. | Item Description |
| 1 | 1130088 | HEX HEAD CAP SCREW (HHCS) 7/8"-6; 18" GR5 |
| 2 | 1160036 | FLAT WASHER – 7/8" F436 ZINC COATED |
| 3 | 1120051 | BEARING COLLAR |
| 4 | 1660009 | THRUST BEARING |
| 5 | 6100089 | ENDCAP – NARROW BUSHING TOOL |
| 6 | 6100092 | CONE ASSEMBLY – NARROW BUSHING TOOL |
| 7 | 6100091 | PLUNGER – NARROW BUSHING TOOL |
| — | 1980014 | EXTREME PRESSURE LUBRICANT |

1 2 3 4 5 6 7

Tapered end of tool cone (Cone Insert)

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.

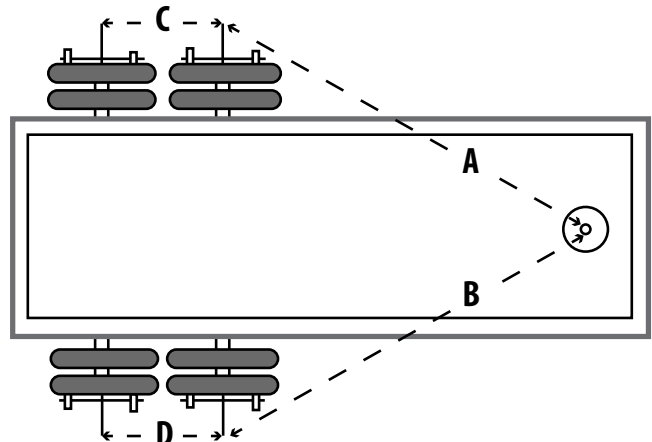
On a multiple-axle vehicle, the forward axle is moved into proper alignment, then the remaining axles are positioned so that they are parallel to the forward axle. A maximum tolerance of 1/8-inch difference from side-to-side of the forward axle and 1/16-inch difference from side-to-side for the aft axles is acceptable (Figure 7).

Figure 8. Kingpin measurement for axle alignment.

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

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

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



Axle alignment procedure

1. Loosen the pivot nut enough for the beam to move within the hanger.

CAUTION Do not reuse pivot hardware if Torx® head is damaged or missing. A new shear-type pivot bolt, flat washer and locknut must be installed and the Torx head sheared off to complete the alignment.

2. Locate the adjuster plate at the pivot connection. Insert a 1/2"-shank breaker bar into the square hole of the adjuster plate. Push on the breaker bar to move the beam forward or backward until the axle reaches alignment measurements (Figure 8).

NOTE: Verify that the pivot bushing is not wedged sideways during beam movement. The adjuster plate and alignment washer should move in unison with beam movement.

3. Tighten the pivot nut so that the beam can no longer move. Re-check alignment measurements and adjust if necessary.

NOTE: Check to make sure both the adjuster plate and alignment washer are flat against the hanger before final torque is applied.

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

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

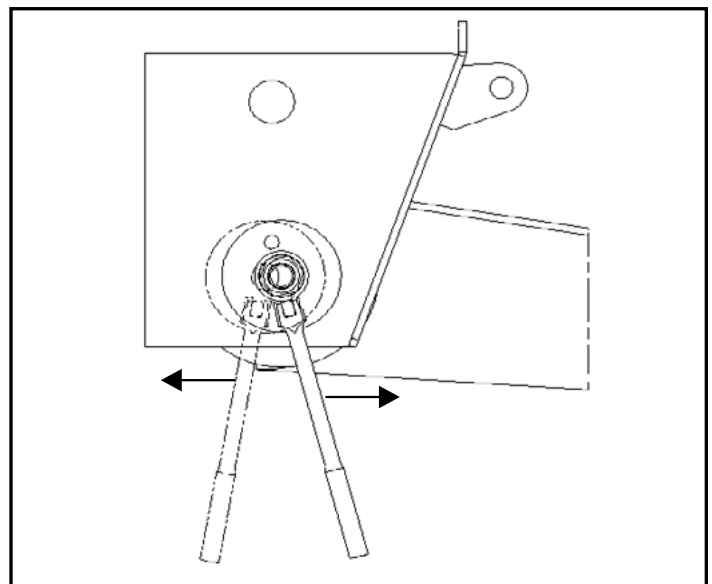


Figure 9.
Move beam back-and-forth using breaker bar until the axle reaches the desired position.

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.