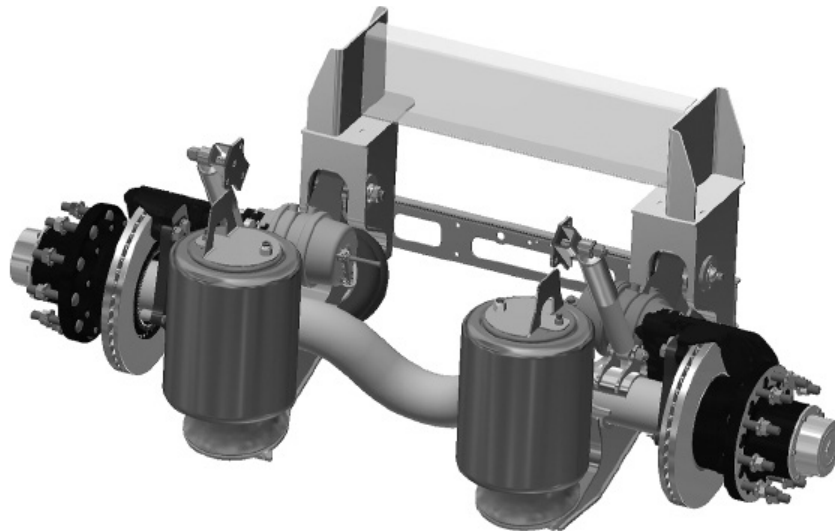


# RCA-215 - Truck

## Nonsteerable – Auxiliary Axle Suspension



# Installation and Service Manual

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Part No.: 9710112

Doc.: 215-Truck-ISM-RevF-12-04-19

# SUSPENSION IDENTIFICATION

## Introduction

The Ridewell Compact Air Ride (RCA) 215 Truck Suspension can be purchased with or without an integrated axle for use in a wide range of applications.

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

## Suspension Identification Tag

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

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

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

## Axle-Body Identification Tag

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

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

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

## Notes and Cautions


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

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


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

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

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

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

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

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

**Figure 2.**  
The Base-Axle Part Number (165-) and the Serial Number assigned to the axle tube are listed on the Axle-Body Serial Identification Tag.

## Prior to Installation

Refer to the engineering drawing to confirm dimensional requirements and the range of ride heights available. Operating the suspension outside of design parameters can result in improper performance, damaged equipment, and void the warranty.

The methods and procedures listed in this manual are considered to be general practices. 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 auxiliary suspension, air springs, brake chambers, steering components, axle (including axle to driveline clearance) and tires.

# Axle Integration

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

Use the top-center mark on the axle, if available, to identify the center of the axle and orient the axle assembly on the suspension. The axle assembly should be installed so that the camshafts, when activated, rotate in the same direction as the wheels.

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

## Weld Preparation

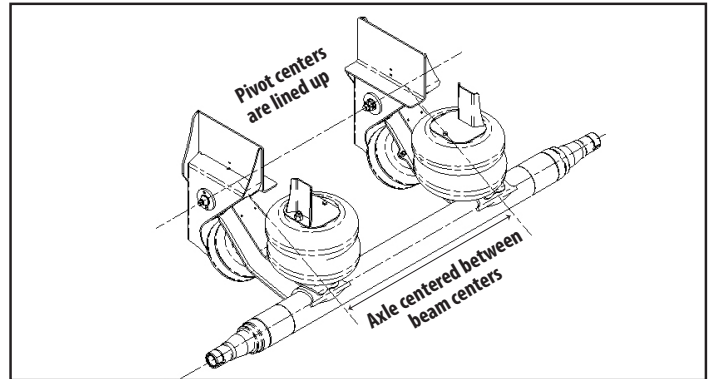
The joint to be welded should be positioned in the flat or horizontal position. All grease, dirt, paint, slag or other contaminants must be removed from the weld joint.

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

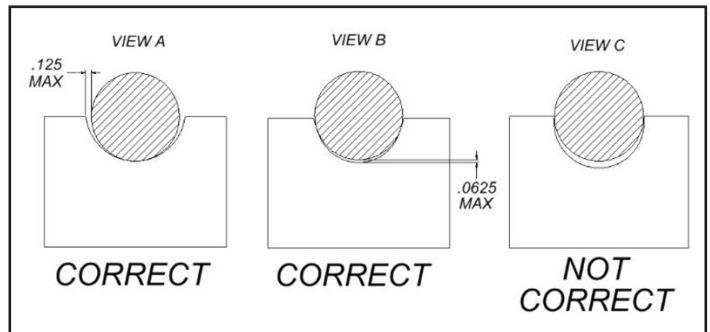
## Weld Procedure

- Center the axle assembly on the beams (Figure 3).
- Check the engineering drawing for the brake component orientation (rotation) before clamping into place and making the final welds.
  - Drum brake camshafts are spaced off the tail of the trailing arm beam. Make sure the brake chamber brackets are oriented properly and clamp the axle assembly into place.
  - Disc brake assemblies have a right- and left-hand caliper assembly. Make sure the callipers are located on the correct side and rotated to the proper position before clamping the axle assembly into place.
- Check the gap between the axle and the axle seats before welding (Figure 4). 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".
- Weld the axle to the seat according to Ridewell Weld Process #1 (Page 5).

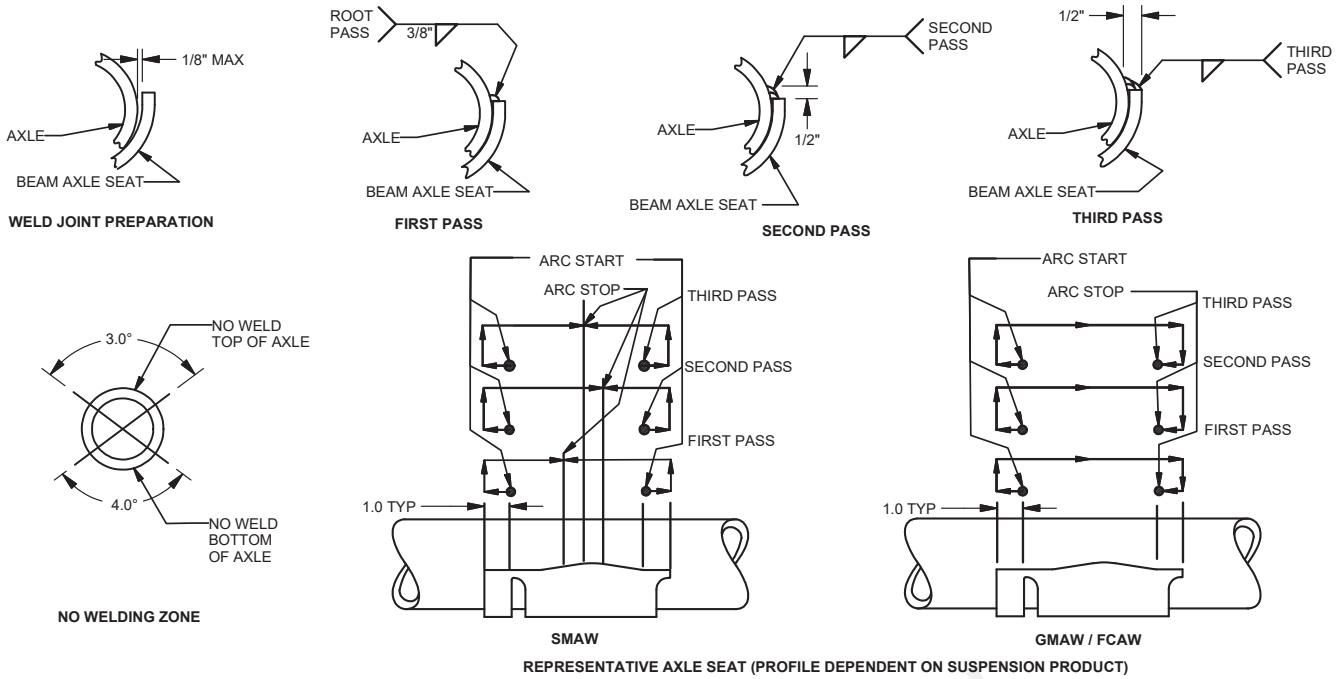
NOTE: Mounted air springs should be covered to protect them from welding spatter.



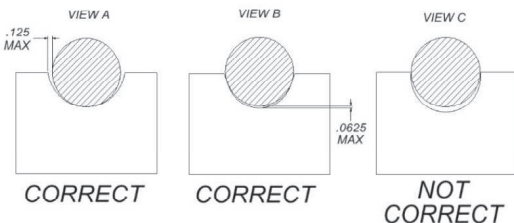
**Figure 3.**  
Axle should be centered between beams.



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



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



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

---

## Mounting the suspension to the frame

Refer to the engineering drawing for the range of ride heights available, torque values, spacing and clearance requirements of the suspension.

A 1" or 2" spacer kit is available for the hangers and air spring mounting plates. A shock absorber kit is available for RCA-215 Low-Mount and Mid-Mount Truck Suspensions.

Supplied hanger cross channel should be installed after axle integration. Torque the cross channel locknuts to 45-50 ft-lb (61-68 N-m).

Mandatory customer-supplied crossmember locations are shown on the engineering drawing.

### Bolt-On Installation Procedure

Bolts/nuts for attaching the suspension to the vehicle are supplied by the installer. NOTE: Grade 8 bolts and flanged locknuts or locknuts with hardened washers are recommended.

1. Locate the hangers and air spring mounting plates (and spacers, if necessary) on the chassis and clamp firmly into place. The hangers, mounting plates and spacers (if installed) must have full contact to the bottom of the frame.
2. Make sure that hangers and mounting plates are evenly located and square to the frame for proper axle alignment. Check that location provides adequate clearance for suspension components.
3. Refer to engineering drawing for the recommended bolt hole locations on hangers and air spring mounting plates. Center punch and drill eight bolt holes (minimum 5/8") in each hanger. Center punch and drill two bolt holes (minimum 5/8") in each air spring mounting plate.  
**CAUTION** Check to make sure that wires, hoses or other components located within the chassis are not affected by drilling.
4. Bolt the hangers and air spring mounting plates to the vehicle chassis with customer-supplied 5/8" Grade 8 bolts and locknuts.
5. Attach the load springs to the air spring mounting plates. Torque to specifications (Appendix).
6. Install/connect the air control kit (ACK). Check the air system after installation for leaks and proper operation of controls (Page 8).
7. Perform final assembly and inspection and align the suspension per TMC or SAE recommended standards (Appendix). Alignment should be performed with suspension at installed ride height.

### Shock Absorber Kit (Optional)

The shock absorber can be installed after the suspension has been assembled and mounted on the vehicle.

### Installation Procedure

Refer to the shock kit engineering drawing for the correct mounting locations and installation angles for the upper and lower mounting brackets on individual RCA-215 suspension models.

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

1. Disconnect and remove the load springs from the suspension assembly. Protect the lift springs from welding spatter.
2. Locate and drill three holes in the chassis above the air spring mounting plate for the upper mounting bracket. Bolt the bracket to the chassis with customer-supplied Grade 8 bolts and locknuts (5/8" recommended).  
NOTE: If hanger and air spring spacers are installed, upper brackets installation height must be adjusted and brackets rotated to allow shock absorbers to clear air spring mounting plates.
3. Measure for the location of the shock absorber to axle (lower) mounting bracket from the edge of the axle seat, not from the axle weld. Clamp the bracket into place. Use a 5/16" fillet weld to weld the lower mounting bracket to the axle at the forward and rear edge only. Do not weld perpendicular to the axle centerline.
4. Attach the shock absorbers to mounting brackets.
  - 4.1 Attach the shock to the upper mounting bracket with the supplied Hex Head Cap Screw (HHCS) and flat washer. Torque HHCS to 160-200 ft-lb (217-271 N-m).
  - 4.2 Attach shock to the lower mounting bracket with supplied HHCS and locknut. Torque locknut to 160-200 ft-lb (217-271 N-m).
5. Install load springs. Torque to specifications (Appendix). Connect load springs to air system.
6. Raise and lower suspension to make sure that shock absorbers clear air spring mounting plates and that shock absorbers do not overextend.

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

## Final Assembly and Inspection

1. Verify that all suspension component bolts/nuts are torqued to specifications (Appendix).
2. Install wheels and tires.  
**CAUTION:** When lowering an auxiliary axle on an unloaded vehicle, pressure to the load air springs must be reduced to below 10 psi. Failure to reduce the air pressure could cause the vehicle's drive axles to rise from the ground and the vehicle could roll in an unsafe manner.
3. Check that tires are inflated to recommended pressure. Check wheel hubs for proper level of lubricant recommended by the manufacturer.
4. Lift the axle to the raised position. Check the air system tubing and connections for leaks.
5. Check that wheels can rotate freely and that brakes and slack adjusters are properly adjusted.
6. Raise and lower the suspension assembly (wheels and tires installed) through the entire range of travel. Make sure that sufficient clearances for air springs, brake chambers and other components has been provided.

**CAUTION** Do not lower the auxiliary axle while the vehicle is moving above 10 mph.

### Regulate load with air spring pressure

The load capacity of the auxiliary axle is adjusted by increasing or decreasing the pressure to the air springs. By applying more air, the lift axle takes on a greater percentage of the load's weight. The load capacity is decreased as the air pressure decreases.

Accurate readings of the load capacity can be obtained by parking a loaded vehicle over a calibrated scale and lowering the axle onto the scale. The air pressure to the air springs is manually adjusted up or down to obtain the axle load weight at various air pressures.

**CAUTION** Do not exceed the rated load capacity of the suspension system or other components. Exceeding the capacity can cause component failure and void the warranty.

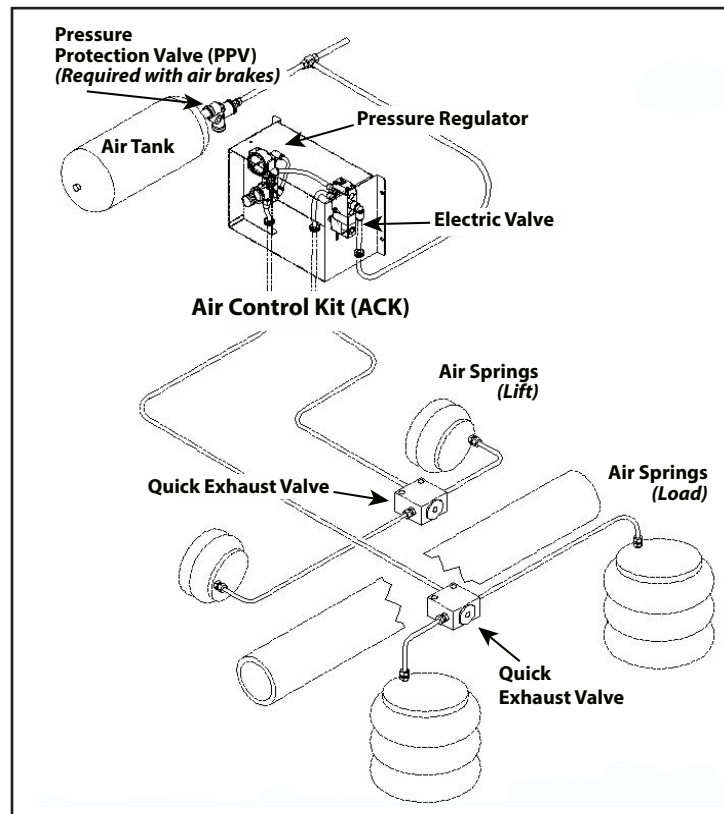
## Install air system components

Connect the load and lift air springs and an air control kit to the air system (Figure 5).

The air control kit (ACK) consists of a pressure regulator with a gauge connected to an air valve controlled by an electric switch or manual knob. The ACK allows the operator to control the air spring pressure so that the auxiliary axle can support different loads.

Ridewell has a number of manual/electric ACK configurations available. Installation will vary by the type of configuration.

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



**Figure 5.**  
Example of Air Control Kit (ACK) installation

## Troubleshooting – Air System Installation

Problem	Possible Cause	Solution
<b>Air springs fill but do not exhaust.</b>	<ul style="list-style-type: none"> <li>– Obstructed air line.</li> <li>– Faulty controls wiring.</li> <li>– Manual override pushed in</li> </ul>	<ul style="list-style-type: none"> <li>– Check for pinched/blocked lines.</li> <li>– Check wiring with voltmeter and correct wiring/installation.</li> <li>– Release manual override.</li> </ul>
<b>Air system leaks down after a short period of time.</b>	<ul style="list-style-type: none"> <li>– Leak in air system beyond accepted standards.</li> </ul>	<ul style="list-style-type: none"> <li>– 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.</li> <li>– Check that tubing cuts are straight and smooth. Re-cut and reassemble fitting joints, if necessary.</li> </ul>
<b>Auxiliary unit will not stay up</b>	<ul style="list-style-type: none"> <li>– Loose Air Fittings.</li> <li>– Damaged Air Lines.</li> <li>– Air lines to lift and load air springs are reversed.</li> <li>– Damaged or Worn Air Springs.</li> </ul>	<ul style="list-style-type: none"> <li>– Check and retighten fittings. Repair or replace component, as necessary.</li> <li>– Check installation. Air line from regulator goes to (load) air springs.</li> <li>– Replace if worn or damaged.</li> </ul>
<b>Auxiliary unit not getting the correct lift</b>	<ul style="list-style-type: none"> <li>– Air lines to lift and load air springs are reversed.</li> <li>– Lift air springs do not have proper air pressure.</li> <li>– Interference with driveline or other chassis components.</li> <li>– Air control system not installed correctly.</li> </ul>	<ul style="list-style-type: none"> <li>– Check installation. Air line from regulator goes to (load) air springs.</li> <li>– Check for loose fittings or worn/damaged lines. Verify air tank pressure with gauge.</li> <li>– Visually inspect unit operation for proper clearance. Check for loose fasteners and retighten.</li> <li>– Check installation; refer to OEM installation procedures.</li> </ul>



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 (see torque values chart in Appendix).
- 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 (see torque values chart in Appendix).
- 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 (see Appendix).
- 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 (Appendix).
- 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.

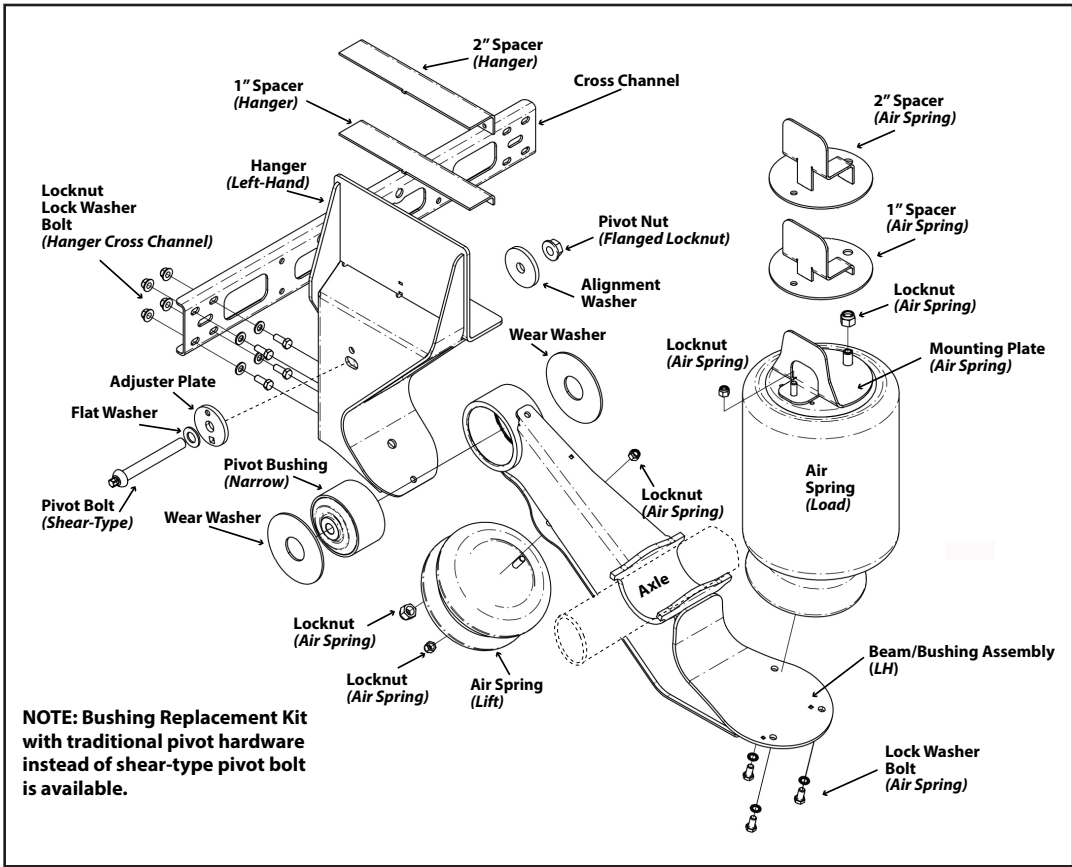
## Pivot Bushing Inspection Procedure

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

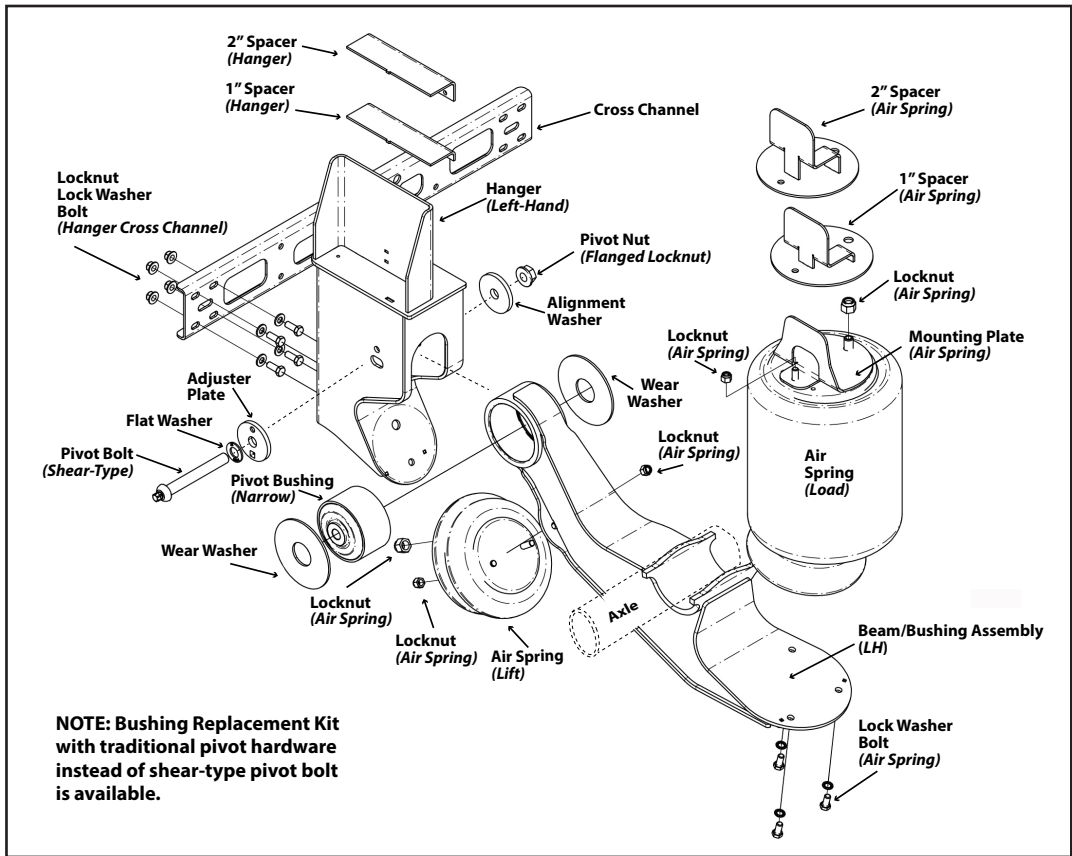
Insert the flat end of a pry-bar between one side of the hanger sidewall and the wear washers. Move the pry-bar back-and-forth and look for excessive movement of the beam (NOTE: A small amount of beam

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.



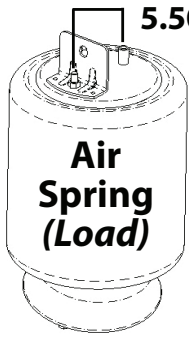

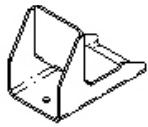
**Figure 6.**  
RCA-215 Truck Suspension with Drum Brakes.  
Refer to the engineering drawing for the individual component part number.



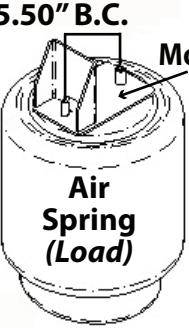
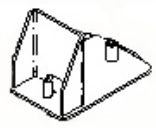
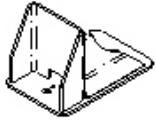
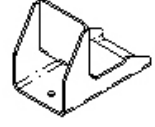
**Figure 7.**  
RCA-215 Truck Suspension with Disc Brakes.  
Refer to the engineering drawing for the individual component part number.

**RCA-215 - Truck Air Spring Mounting Bracket - Component Parts**





**(5.50" Bolt Center) – Manufactured before Oct. 2014**

 <p>5.50" B.C.</p> <p><b>1001R12444G</b></p>	<p><b>(Stamped) Upper Mounting Bracket - Included with air spring</b></p>  <p>3450126      <b>1" - Mounting Spacer</b></p>  <p>3450155      <b>2" - Mounting Spacer</b></p>
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**(5.50" Bolt Center) – Manufactured between Oct. 2014 - Feb. 2017**

 <p>5.50" B.C.</p> <p><b>Upper Mounting Bracket</b></p> <p><b>1001R12653G</b></p>	 <p><b>Upper Air Spring Mounting Bracket (Standard)</b> 3450154</p>  <p>3450126      <b>1" - Mounting Spacer</b></p>  <p>3450155      <b>2" - Mounting Spacer</b></p>
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**(6.20" Bolt Center) – Current Release**

 <p>6.20" B.C.</p> <p><b>Upper Mounting Bracket</b></p> <p><b>1001R121202</b></p>	 <p><b>Upper Air Spring Mounting Bracket (Standard)</b> 8003809</p>  <p>3450266      <b>1" - Mounting Spacer</b></p>  <p>3450267      <b>2" - Mounting Spacer</b></p>
--	--

**Figure 8.**  
Refer to the suspension engineering drawing for individual component part information.

## RCA-215 - Truck Suspension – Bushing Replacement Kit/Torque Specifications

	Size	foot-pound	Newton-meter
<b>BUSHING REPLACEMENT KIT #6040128</b>			
<b>Pivot Bolt - (Shear-Type)</b> <b>Pivot Nut - (Locknut)</b> <i>Requires E-20 Torx® socket (RW #6100054)</i>	7/8" - 9NC	Do not lubricate bolt/nut threads. Use a 1" drive impact wrench to tighten pivot bolt until Torx® head is sheared off.	
<b>BUSHING REPLACEMENT KIT #6040078</b>			
<b>Pivot Bolt - Hex Head Cap Screw (HHCS)</b> <b>Pivot Nut - (Locknut)</b>	7/8" - 9NC	500 ft-lb	678 N-m
<b>Locknut - (Cross Channel)</b>	1/2" - 13NC	45-50 ft-lb	61-68 N-m
<b>Locknut - (Air Spring)</b>	1/2" - 13NC	25 ft-lb	34 N-m
<b>Locknut - (Air Spring)</b>	3/4" - 16NF	50 ft-lb	68 N-m
<b>Bolt (HHCS) Locknut - (OPT Shock Absorber)</b>	3/4" - 10NC	160-200 ft-lb	217-271 N-m
<i>Torque values reflect a lubricated thread condition (Nuts are pre-lubed). Do not overtorque.</i>			
<b>⚠ CAUTION</b> <i>Suspension is shipped with minimal torque applied to fasteners. 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 fasteners at torque specifications could result in suspension failure and voiding of the warranty.</i>			

## 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. Remove the shock absorbers. Disassemble the pivot connections. Remove and inspect adjuster plates and alignment washers. Replace, if necessary. Discard pivot hardware. Rotate trailing arm beams down and out of hangers. Inspect pivot bolt holes and hanger surfaces for 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 both the tool cone tapered insert and larger open end for any damage/out-of-round. Repair or replace if necessary.

### Bushing Removal

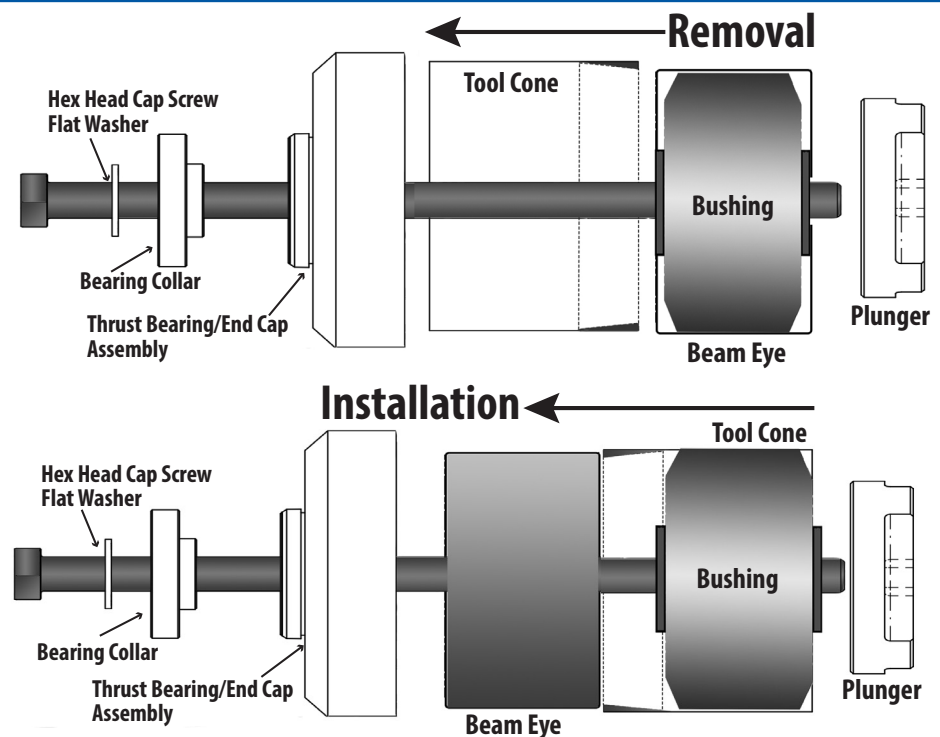
1. Lubricate hex-head bolt threads and thrust bearing with Extreme Pressure Lube (#1980014).  
NOTE: Failure to apply lubricant could result in decreased performance and reduced tool life.
2. Place flat washer onto hex-head bolt, followed by the bearing collar, then the end cap. The bushing tool cone 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 (Figure 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 the old bushing from the bushing tool cone and discard.

*Continued on next page*

**Figure 9.**  
**Bushing Tool #6100044**

**The tapered cone (insert) allows the rubber bushing to expand during removal and compresses the bushing for installation. Place the tapered end of the cone against the beam eye for bushing installation and removal.**



## 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 the tool cone.
4. Place the plunger/cone/bushing assembly on the beam eye (Figure 9).
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 (a 1" impact wrench is recommended) to rotate the hex bolt and press the bushing into the beam eye.
7. 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.

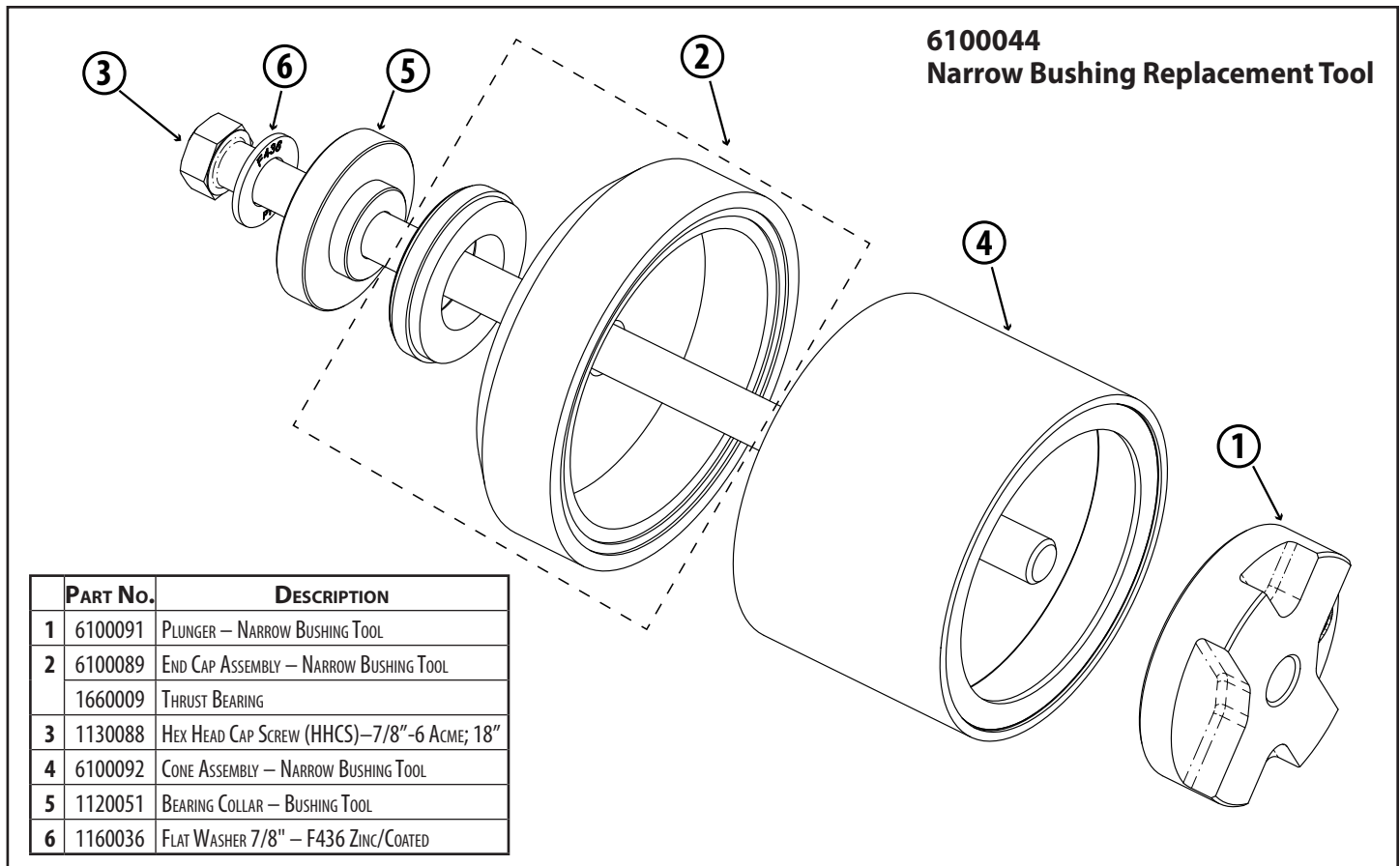
NOTE: Do not lubricate pivot bolt/nut. Tighten flanged locknut until adjuster plate pin is engaged and hardware is snug against hanger. Do not apply final torque until axle alignment has been checked.

Connect height control valve linkage, if necessary. Inflate air springs. Install wheels and tires (if removed). Raise vehicle and remove support stands. Lower vehicle to ground.

Check axle alignment and realign, if necessary. Tighten pivot bolt with a 1" drive impact wrench and E-20 Torx® socket (Ridewell tool 6100054) until the Torx® head is sheared off.

NOTE: If traditional pivot hardware is used, torque to 500 ft-lb (678 N-m).

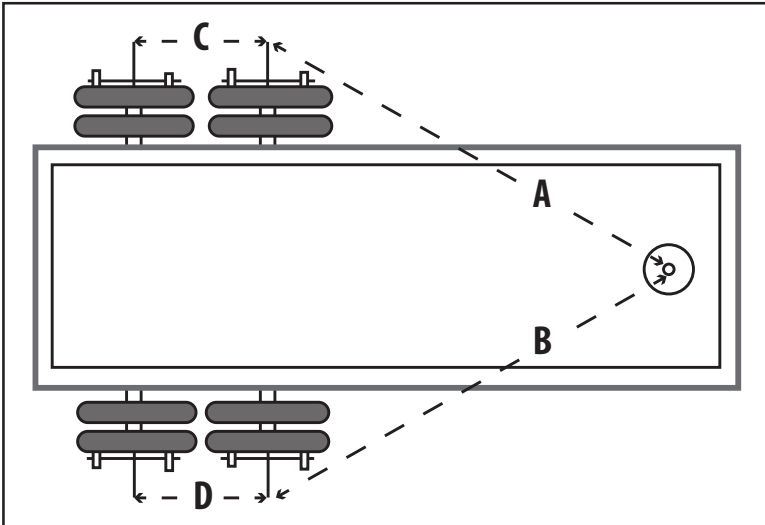
**CAUTION** Failure to torque pivot hardware to component specifications can result in suspension failure and voiding the warranty.



# Axle Alignment

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

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



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.

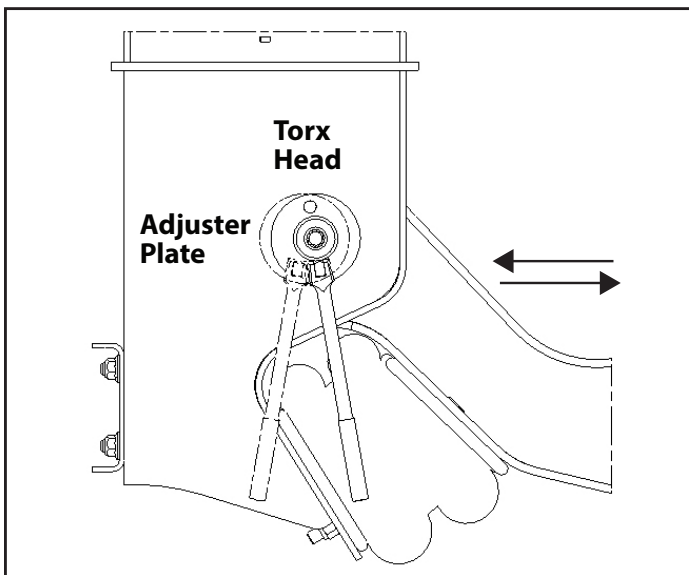
**Figure 10.**  
**Kingpin measurement for axle alignment.**

## Speed Set™ Alignment

The RCA-215 Auxiliary Axle Truck Suspension is equipped with the Ridewell Speed Set® alignment feature for simple, manual alignment of the axles.

### Axle alignment procedure

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



**Figure 11.**  
**Move beam back-and-forth with adjuster plate until axle is aligned.**

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 the alignment measurements (Figure 11).

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

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 that both the adjuster plate and alignment washer are flat against the beam 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.

NOTE: If traditional pivot hardware is used, torque to 500 ft-lb (678 N-m).

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

## 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.**