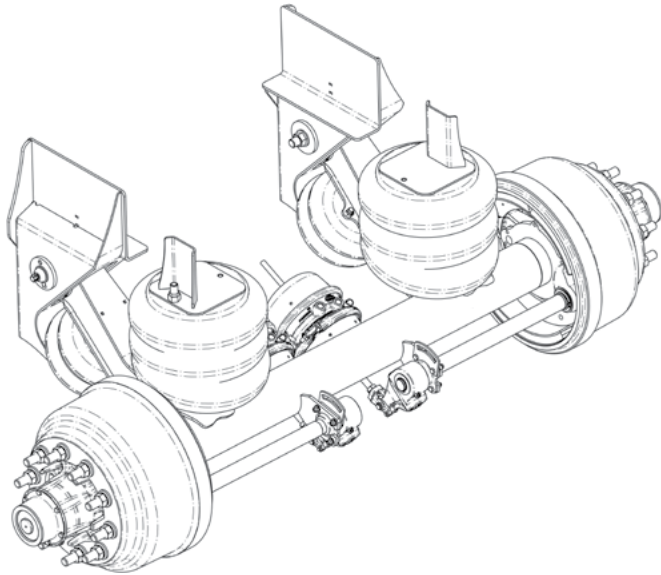


# RUL-245 - Truck

## *NonSteerable - Auxiliary Axle Suspension*



## Installation and Service Manual

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**RIDEWELL SUSPENSIONS**  
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

equipment damage and serious injury.



**RIDEWELL SUSPENSIONS**

MODEL:		PART NO.	
SERIAL NO.		CAPACITY	TON

**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.

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

**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.

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**

Read through the entire Installation and Service Manual (ISM) before performing any procedures. All work should be completed by a properly trained technician using the appropriate tools and safe work procedures.

The ISM uses two types of service notes to provide important safety guidelines and information:

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

**CAUTION** Indicates a hazardous situation or unsafe practice that, if not avoided, could result in

---

## Prior to Installation

Refer to the engineering drawing for system component details; available ride heights; dimensional requirements; and, the suspension 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. Consult with tire, wheel, axle and brake manufacturers before installation to determine GAWR.
- If vehicle chassis modifications are required, consult with the vehicle manufacturer to verify such changes are permitted.
- Welding or altering of the 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 proper load distribution.
- The installer must verify that vehicle crossmembers are positioned to support the suspension system at the installing location.
- It is the installer's responsibility to determine 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 auxiliary suspension and the installed components - air springs; brake chambers; axle; and, tires and wheels.

## AXLE INTEGRATION

RUL-245 suspensions are available with and without a factory integrated axle. Customer-supplied axles must be correctly positioned and oriented before welding.

Use the top-center mark on the axle, if available, to position/orient the axle 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.

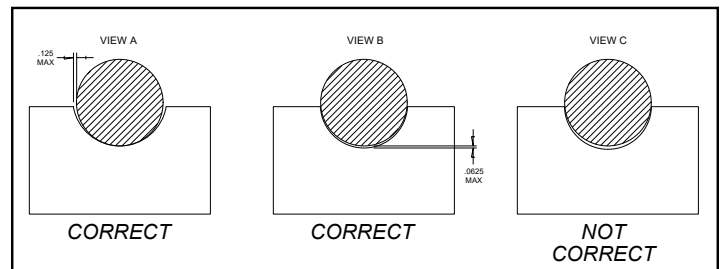
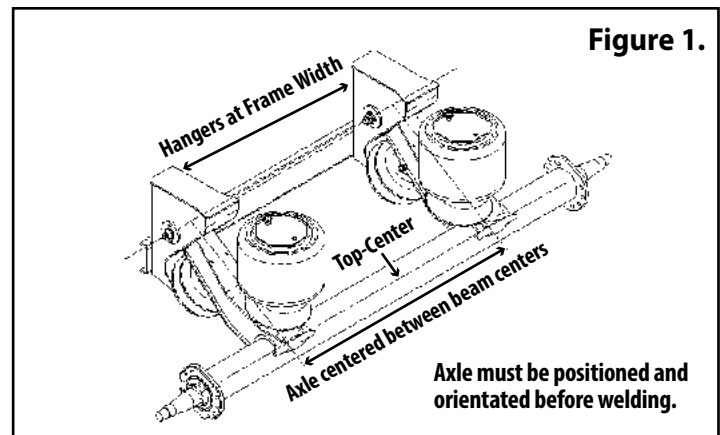
### Weld Preparation

Position the joint to be welded in a 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.

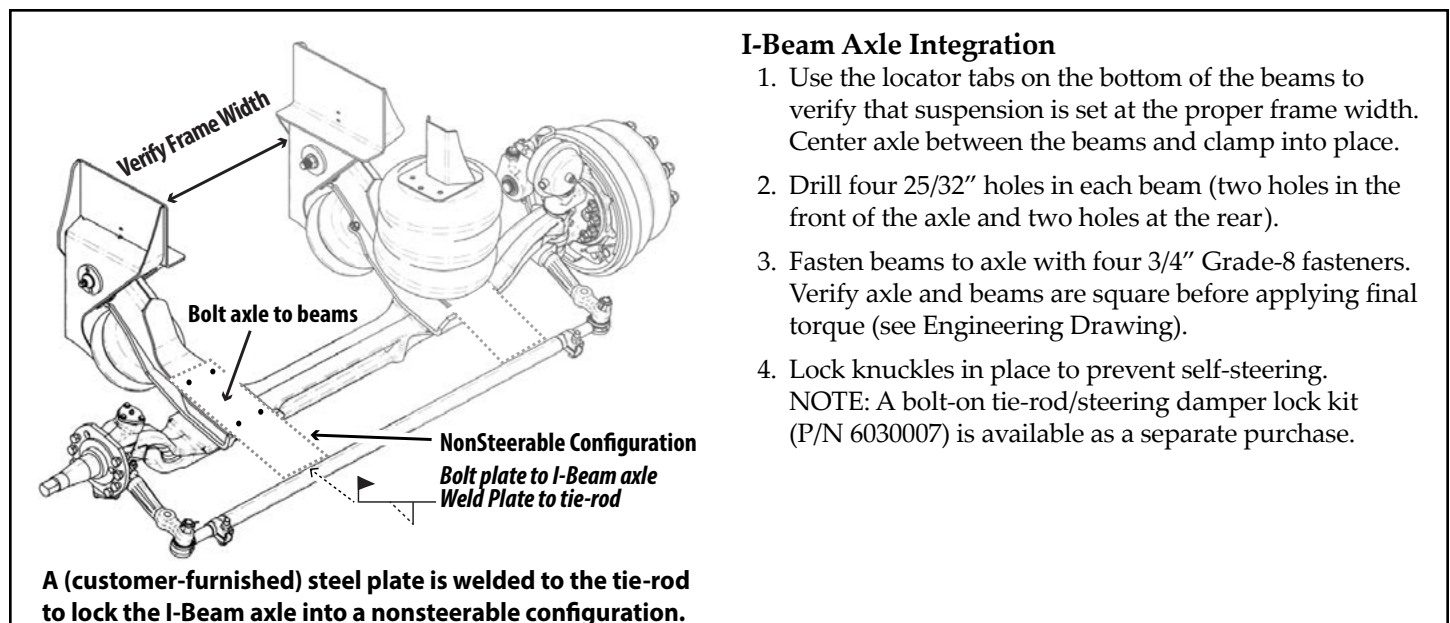
### Welding Procedure

1. Center axle assembly between beam centers (Figure 1).
2. Check engineering drawing for the brake components orientation (rotation) before clamping axle into place and making final welds.
  - 2.1. Drum brake camshafts are spaced off the tail of the trailing arm beam. Verify brake chamber brackets are oriented properly before clamping the axle assembly into place.
  - 2.2. Disc brake assemblies have a right- and left-hand caliper assembly. Verify the calipers are located on the correct side and rotated to the proper position before clamping the axle assembly into place.



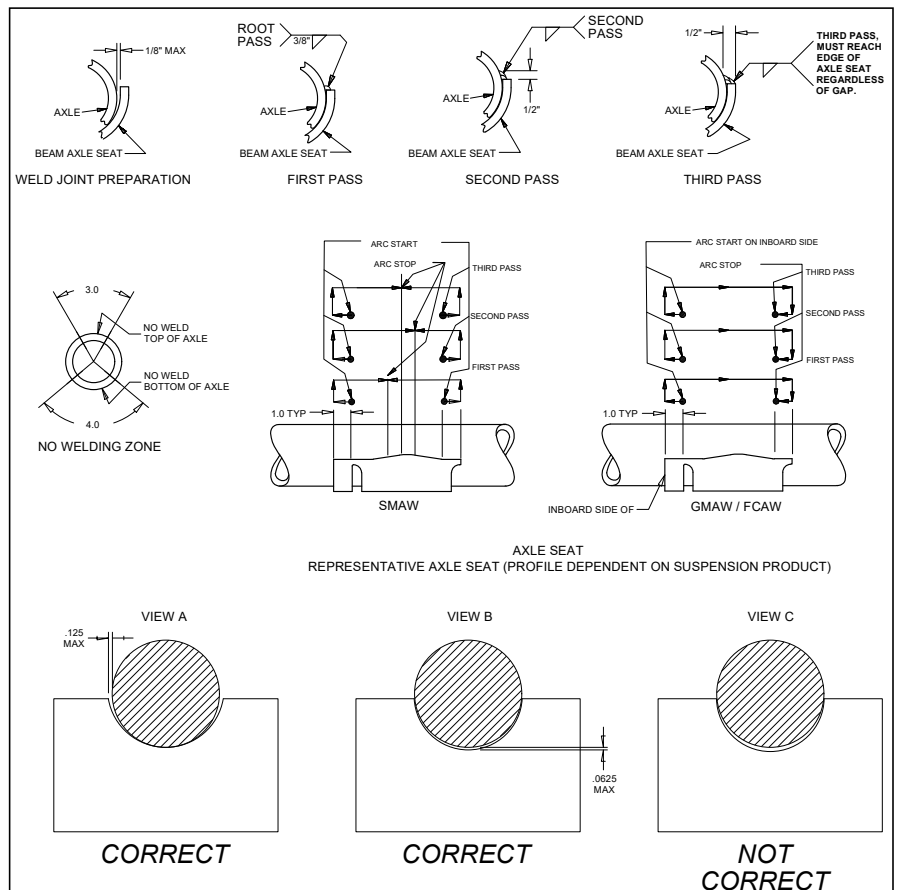
**Figure 2.**  
**Correct axle-tube seating for welding.**

3. Check the gap between the axle and the axle seats before welding (Figure 2). 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".
4. Weld axle to the axle seat according to Ridewell Weld Process #1 (Page 5).  
NOTE: Mounted air springs should be covered to protect them from weld spatter.



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

- All welds must be kept away from the top and bottom of the axle where maximum stresses occur (see “NO WELDING ZONE” illustration). Do not test-weld the arc on any part of the axle tube.
- All welders and welding operators should be certified as per 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. It is recommended that paint be removed a minimum of 2” away from the weld joint.  
CAUTION: Never weld when the axle is cold. The axle and beam assemblies should be at a temperature of at least 60°F (15°C). 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 axle seat with a maximum root gap of 1/8-inch between the axle and the beam axle seat (see “WELD JOINT PREPARATION” illustration). The root gap should be as equal as possible on each side of the beam axle seat. The axle must be centered laterally in the beams.
- NOTE: Clamp the axle to the beam axle seat with a C-clamp prior to welding to make sure that proper contact occurs (see “CORRECT” illustration - View A or B). When installing a drop-center axle, a gap of up to 1/4” is allowed on one side of each seat, while the other side of seat has a max gap of .0625”.
- Ground the axle to one of the attached axle parts such as the brake chamber brackets, cam brackets or brake spider. Never ground the axle to a wheel or a hub as the spindle bearing may sustain damage.
- Multiple pass welding should be used on the beam/axle connection using the following guidelines:
  - Total fillet weld size should be 1/2-inch total weld. Weld size increases with gap size proportionally.
  - Weld pass starts and stops should be performed as illustrated.
  - Never start or stop welds at the end of the weld joint.
  - Each pass must be accomplished in one or two segments.
  - Start welds at least 1-inch from the end and back-weld over the start. Backstep fill all craters.
  - If process is not GMAW, all slag must be removed between passes.
  - Welds must go within 1/8-inch +/- 1/16-inch of the ends of the axle-seat and must not go beyond or around the ends of the axle-seat.
  - Post-weld peening of the weld is recommended, but not required: Needle peen the entire toe of the second pass, including around the ends of the axle-seat. Hold the needles perpendicular to the axle. A uniform dimpled pattern will appear when properly peened.



## SUSPENSION MOUNTING

Adjust suspension mounting height with a 1" or 2" spacer kit (Kit includes both hanger and air spring brackets).

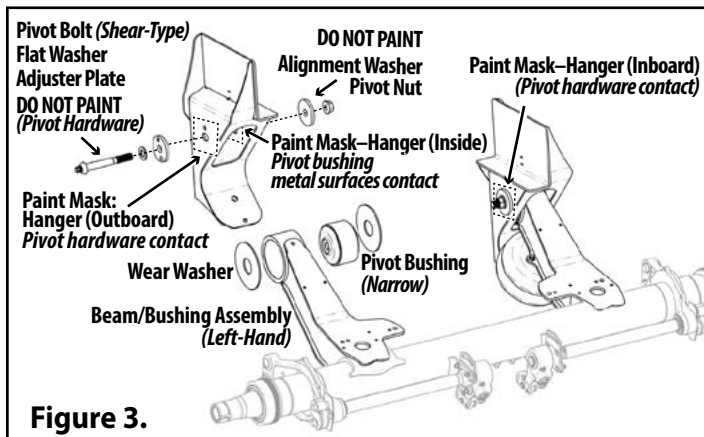
<b>6040223</b>	245 - 1" Spacer Kit	<b>6040092</b>	245I - 1" Spacer Kit
<b>6040224</b>	245 - 2" Spacer Kit	<b>6040093</b>	245I - 2" Spacer Kit

Refer to the engineering drawing for mandatory customer-supplied crossmember locations; hanger mounting bolt-hole locations; and, spacing and clearance requirements.

**CAUTION** Components must be reassembled with the proper torque applied if suspension is taken apart for installation (Page 9; Engineering Drawing).

Do not apply any undercoating; paint or other top coat to the suspension, frame hangers or pivot hardware until axle alignment is completed (Page 15).

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



**Figure 3.**

### Bolt-On Installation Procedure

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

1. Locate hangers and air spring mounting plates/spacers on the vehicle chassis and clamp firmly into place.
 

**CAUTION** Corresponding hanger mounting spacer must be installed with the air spring spacer. All Hangers/ Mounting Plates/Spacers must have full contact with the bottom of the vehicle frame.
2. Check that frame hangers/mounting plates/spacers are evenly located and square to the frame. Confirm that the installing location provides adequate clearances.
3. Center-punch and drill eight bolt-holes (minimum 5/8") in each frame hanger. Center-punch and drill two bolt-holes (minimum 5/8") in each air spring mounting plate.
 

NOTE: Space frame mounting bolt-holes as far apart as possible if the recommended locations are not available.

**CAUTION** Verify that wires, hoses or other components located within the chassis are not affected by drilling.
4. Bolt the suspension assembly to the vehicle chassis with 5/8" Grade 8 bolts and locknuts.

### Pressure-Regulated Load Capacity

The auxiliary axle load capacity is adjusted by increasing or decreasing the pressure to the air springs.

The axle takes on a greater percentage of the load's weight as more air pressure is applied. The load capacity is decreased as the air springs air pressure decreases.

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

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

5. Attach the load springs to the air spring mounting plates. Torque to specifications (Page 9, Engineering Drawing).
6. Install/connect the air control kit (ACK). Check the air system after installation for leaks (Page 7).
7. Perform final assembly and inspection and align the suspension per TMC- or SAE-Recommended standards. Alignment should be performed with suspension at installed ride height (Page 15).

### Final Assembly and Inspection

1. Verify all suspension components are torqued to design specifications (Page 9; Engineering Drawing).
2. Install wheels and tires.
 

**CAUTION** When lowering an liftable auxiliary axle on an unloaded vehicle, pressure to the load springs must be reduced to below 10 psi. Failure to reduce the air spring 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 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 the brakes are properly adjusted.
6. Raise and lower the suspension assembly through the entire range of travel. Check for sufficient vehicle clearances of air springs, brake chambers and other components.
 

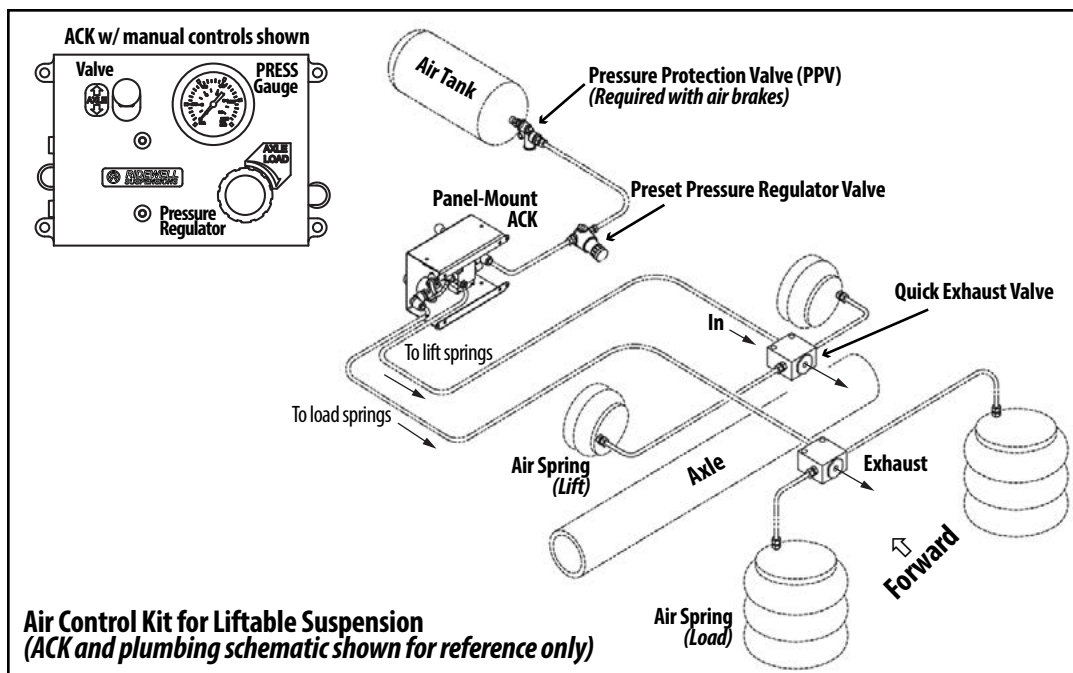
**CAUTION** Do not lower the auxiliary axle while the vehicle is moving above 10 mph.

## Lift-Axle Air Controls Kit- Plumbing Example

The air control kit is installed into the vehicle's air brake system. The ACK consists of an inline preset air pressure regulator connected to an air valve that an operator controls with a manual knob or electric switch.

An operator uses air controls to increase/decrease the air pressure to the air springs to support different loads.

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



### AIR CONTROL KIT – TROUBLESHOOTING

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 controls wiring with voltmeter. 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. NOTE: Some valves leak at an acceptable rate.</li> </ul>	<ul style="list-style-type: none"> <li>– Pressurize system. Spray soapy water solution onto the tubing, valves and fittings. Check for bubbles (leaks).</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 fitting connection/Damaged air lines.</li> <li>– Air lines to lift and load 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 the pressure regulator goes to the (load) air springs.</li> <li>– Replace air spring if worn or damaged.</li> </ul>
<b>Auxiliary unit not achieving correct lift</b>	<ul style="list-style-type: none"> <li>– Air lines to lift and load springs are reversed.</li> <li>– Lift springs do not have proper air pressure.</li> <li>– Interference with the driveline and-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 the pressure regulator goes to the (load) air springs.</li> <li>– Check for loose fittings or worn/damaged lines. Verify air tank pressure with gauge.</li> <li>– Visually inspect auxiliary unit operation for proper clearance. Retighten any loose fasteners.</li> <li>– Check air control kit installation; refer to OEM installation procedures.</li> </ul>

**Recommended Service Intervals**

Ridewell Suspensions recommends these minimum service intervals for standard duty, on-highway usage applications. More frequent intervals are recommended for heavier duty applications.

**Daily/Pre-Trip Inspections**

- \_\_\_ Check tires for proper inflation, damage/excessive wear.
- \_\_\_ Check wheel-ends for obvious signs of lubricant leakage. Check for missing components.
- \_\_\_ Check axle for damage/loose components.
- \_\_\_ Visually inspect suspension structure for signs of damage/excessive wear.
- \_\_\_ Check for loose or missing bolts/nuts. Check for any irregular movement of the suspension components.
- \_\_\_ Make sure air controls are operating properly. Drain all moisture from air reservoirs.

**First 6,000 miles of use**

- \_\_\_ Torque suspension fasteners to specifications (Page 9; Engineering Drawing).  
NOTE: Do not retorque shear-type pivot bolt.
- \_\_\_ Verify suspension is operating at installed ride height.

**Every 12,000 miles of use**

- \_\_\_ Inspect air springs for damage/excessive wear. Torque fasteners to specifications (Pg 9; Engineering Drawing).
- \_\_\_ Check air lines and connections for leaks.
- \_\_\_ Lubricate Brake Cams and Slack Adjusters.

**First 50,000 miles of use**

- \_\_\_ Torque suspension fasteners to specifications (Page 9; Engineering Drawing).  
NOTE: Do not retorque shear-type pivot bolt.
- \_\_\_ Check wheel-ends for excessive play.

**Annually/100,000 miles of use**

- \_\_\_ Inspect pivot connections for worn bushings/wear washers. Replace if necessary. Torque pivot hardware to specifications (Pg 9; Engineering Drawing).
- \_\_\_ Check suspension hanger and air spring mounting plate connections to vehicle frame.

Check lubrication level in wheel ends:

- \_\_\_ 1) Oil-Filled Wheel Ends:  
Refill/Replace lubricant as needed (TMC RP 631-“100K/Annual Inspection”).
- \_\_\_ 2) Semi-Fluid Grease:  
Pull outer bearing and visually inspect the lubrication level. Refill/Replace as needed (TMC RP 631-“Level 3 Lubrication Level Inspection”) (TMC RP 618-“Wheel Bearing Adjustment”).
- \_\_\_ 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 components to specifications can result in suspension failure and void the warranty.

**Refer to these Technology & Maintenance Council (TMC) Recommended Practices for additional information**

RP 607	Maintenance - S-Cam Brakes
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
RP 652	Inspection/Service - Air Disc Brakes
RP 708	Trailer Axle Alignment
RP 728	Trailer Axle Maintenance



**Pivot Bushing Inspection Procedure**

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

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; 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 hanger.

Drop the beams for further inspection if any large/easy beam movement or damage to the wear washers is observed. Replace components as necessary.

## RAR-245 Truck — Narrow Bushing Replacement (Bushing Tool #6100044)

Part Number	Item Description	Size	Torque Values	
			foot-pound	Newton-meter
<b>6040128 – Bushing Kit Bushing Tool - 6100044</b>	Pivot Bolt/Nut - (Shear-Type Bolt/Locknut) Requires E-20 Torx® socket (RW #6100054)	7/8"-9NC	Do not lubricate bolt/nut threads. Use 1"-drive impact wrench to tighten until Torx® head shears off.	
<b>6040078 – Bushing Kit Bushing Tool - 6100044</b>	(Traditional Hardware) - Pivot Bolt/Nut Hex Head Cap Screw (HHCS)/Locknut	7/8"-9NC	500 ft-lb	678 N-m
Fasteners	Locknut (Air Spring, Upper)	3/4"-16NF	50 ft-lb	68 N-m
	1" Hex-Head Cap Screw (Air Spring, Lower)	3/8"-16NC	25 ft-lb	34 N-m
	5-3/4" Hex-Head Cap Screw (Air Spring, Lower)	3/8"-16NC	25 ft-lb	34 N-m
	Locknut (Lift Spring)	1/2"-13NC	25 ft-lb	34 N-m
	Locknut (Lift Spring)	3/8"-16NC	25 ft-lb	34 N-m

*Torque values reflect a lubricated thread condition (Nuts are prelubed). Do not overtorque.*

**CAUTION** Suspension is shipped with minimal torque applied to fasteners. All fasteners must be retorqued after the first 6,000 miles of operation. Failure to install and maintain fasteners at torque specifications could result in suspension failure and void the warranty.

### Vehicle Preparation

Park vehicle on a level surface. Chock wheels. Raise vehicle to a height that removes the load on the suspension. Support with jack stands.

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

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

### Disassemble the suspension

Remove wheels and tires, if necessary. Remove shock absorbers. Take the pivot connections apart. Remove and discard pivot bolt, flat washer and pivot nut. Inspect adjuster plate and alignment washer for wear/damage. Replace components as necessary.

**CAUTION** Do not reuse pivot hardware.

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

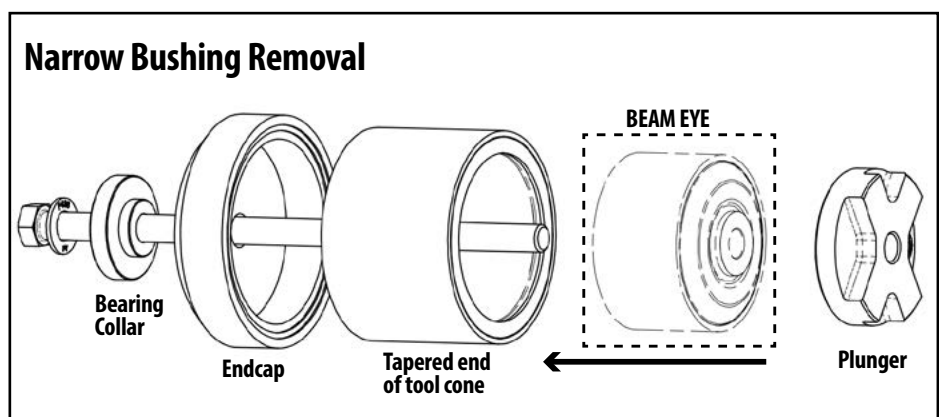
### Tool Assembly for Bushing Removal

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

Apply Lubricant (P/N 1980014) to HHCS and bearing threads.

Thread the flat washer, the bearing collar and the endcap onto the HHCS until the bearing collar and endcap rest against the HHCS head. Place the open end of the bushing tool cone onto the endcap (Figure 4).

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



**Figure 4.** Center the tapered end of the tool cone against the beam eye to pull bushing out of the eye and into the cone.

### Bushing Removal

1. Push hex-head cap screw through the bushing inner sleeve until tool cone is against the beam eye. Thread plunger onto HHCS until tool cone is held firmly against the beam (Figure 4).  
NOTE: The tapered end of the tool cone is placed against the beam eye for bushing removal and installation.
2. Verify 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 the Hex Head Cap Screw and pull the bushing into the cone.  
NOTE: A small amount of heat may be needed to break the bond between the bushing and the beam eye. Do not overheat. Allow beam to cool before installing new bushing.
3. Remove bushing tool from the beam. Detach tool cone from endcap, remove bushing and discard.

*Continued on next page*

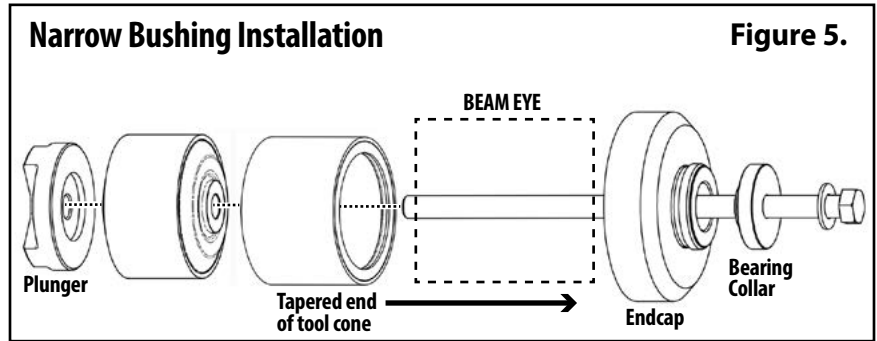
# Narrow Bushing Replacement Tool Procedure (Tool – #6100044)

## Bushing Tool Assembly

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

## Bushing Installation

1. Use wire brush to clean debris /corrosion from the beam eye.
2. Liberally apply P80® lubricant or a soap solution to the inside of the beam eye, the outside of the new bushing and inside the tool cone.  
Insert new bushing into the larger opening of the tool cone (Figure 5).
3. Center the smaller opening of the tool cone against the 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 to press bushing into the beam eye.
6. Remove bushing tool from the beam. Check that bushing is centered inside the beam. Realign bushing to center if necessary.



## Reassemble suspension

Rotate beams into the hangers. Assemble pivot connection – alignment washer, adjuster plate, wear washers, shear-type pivot bolt, flat washer and flanged locknut.

NOTE: Do not lubricate pivot bolt/nut.

Tighten locknut until adjuster plate pin is engaged and pivot connection hardware is snug against the hanger.

Do not apply final torque until axle alignment is checked.

Connect the height control valve linkage (if linkage has been disconnected). Inflate air springs.

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

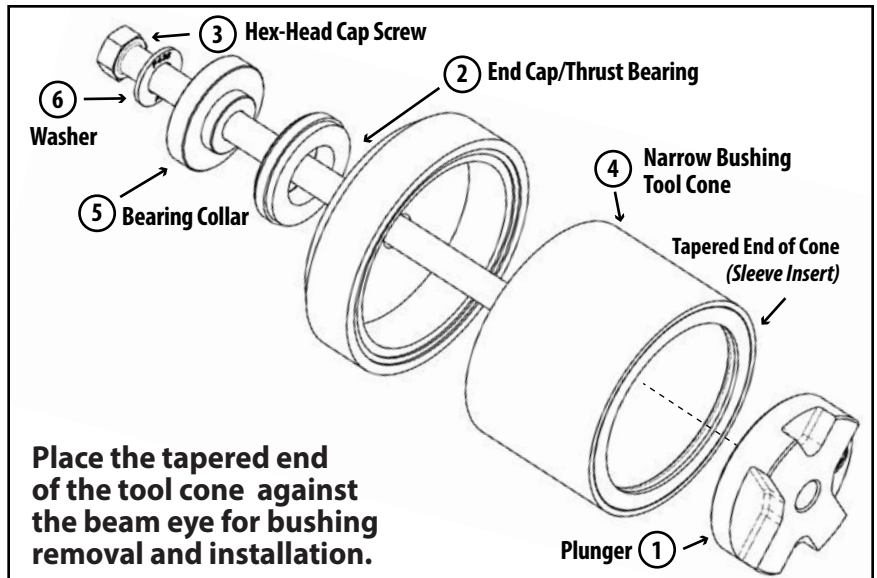
Verify suspension ride height. Check axle alignment. Realign if necessary (Page 15).

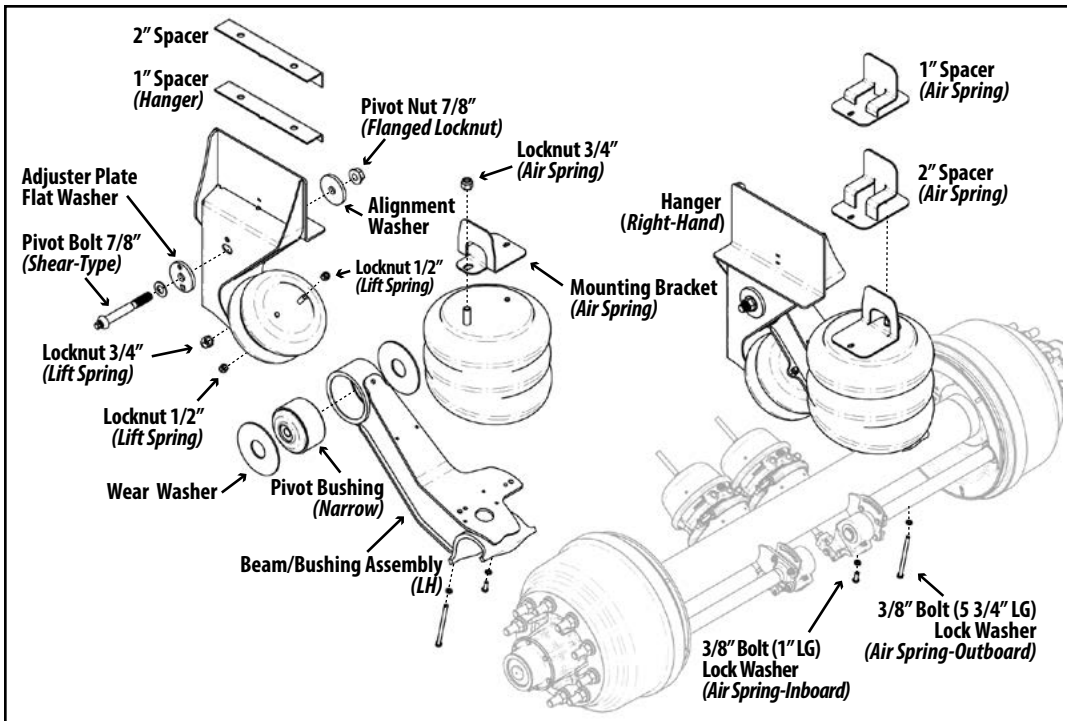
Tighten pivot bolt with a 1" drive impact wrench and E-20 Torx® socket (Ridewell tool #6100054) until Torx® head is sheared off.

Install shock absorbers.

**CAUTION** Failure to torque hardware to specifications can result in suspension failure and voided warranty.

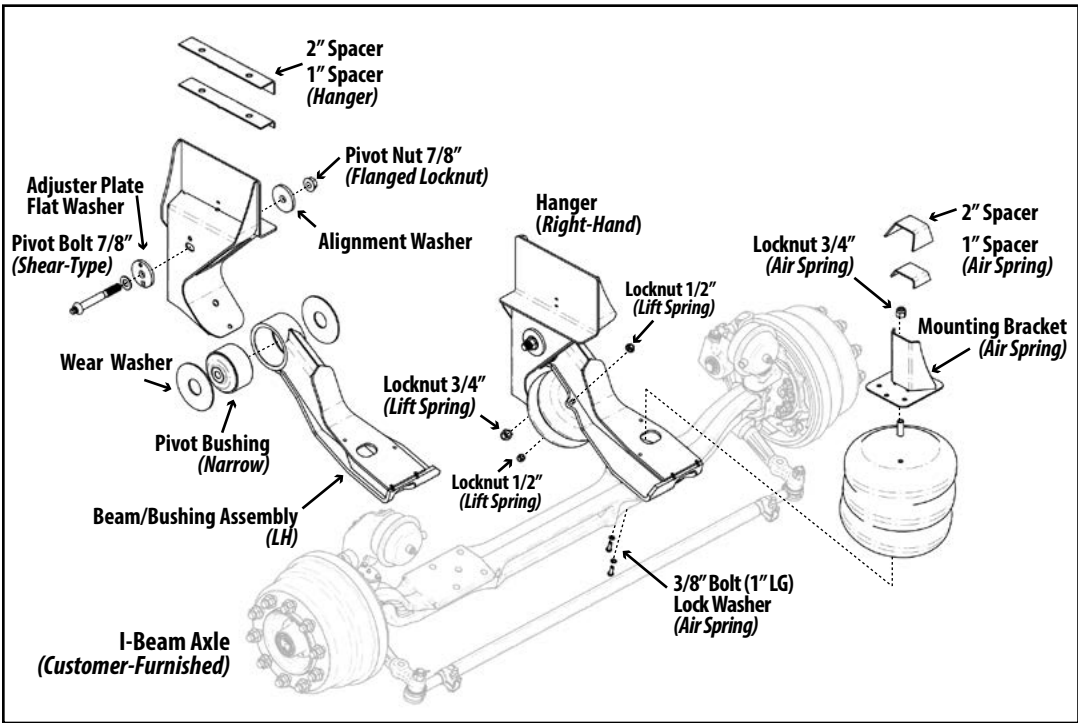
6100044 – Narrow Bushing Installation Tool		
Use with 4 1/8" narrow rubber bushing		
No.	Part No.	Item Description
1	6100091	PLUNGER BUSH TOOL NARROW MACH'D
2	6100089	END CAP BUSHING TOOL ASY (DWG)
	1660009	BEARING, THRUST, 12-16K WESPORT
	6100090	END CAP BUSH TOOL 260 MACHINED
3	1130088	HHCS 7/8-6 ACMEx18.0LG 12" THRD
4	6100092	CONE ASSY,BUSH INSTALL, NARROW
5	1120051	BRNG COLLAR BUSH TOOL
6	1160036	WASHER 7/8" F436 ZINC/COATED
—	1980014	EXTREME PRESSURE LUBE





**Figure 6.**  
**245 Truck**  
**Suspension Components**  
**(Drum Brake Axle Shown)**

**Refer to the engineering drawing for the individual component part number.**



**Figure 7.**  
**245I Truck**  
**Suspension Components**  
**(Customer-Supplied**  
**I-Beam Axle)**

**Refer to the engineering drawing for the individual component part number.**

## Glue-In/Clamped Bushing Replacement – 245 Suspension Manufactured Before 2009

Suspension No.	Part Number	Item Description	Size	Torque (foot-pound Newton-mtr)	
2457615D000	6040192	<b>Wide (6 3/4") Bushing Kit</b>			
2457616D000	1135873B105	Hex Head Cap Screw (HHCS) 8.5" LG	1-1/2"-6NC	1000 ft-lb	1356 N-m
2457666D000	1151065B002	Nut	1-1/2"-6NC		
2457666D001	1160673B000	Lock Washer			
2457666D002	1987625B000	Epoxy Adhesive FUSOR-320 50ML			
2457666D101	1117625C060	Monopivot Bushing 70DURO			
2457666D011					
2450000-to-0021	6040193	<b>Wide (6 3/4") Bushing Kit</b>			
24510700	1137694B000	Eccentric Bolt - 9.5" LG	1 1/4" - 7 UNC-2A	1000 ft-lb	1356 N-m
2457666D003	1155648B108	Locknut	1 1/4" - 7 UNC-2B		
2457666D005	9003092B000	Anti-Turn Washer			
2457666D007	1987625B000	Epoxy Adhesive FUSOR-320 50ML			
2457666D008	1117625C060	Monopivot Bushing 70DURO			
2457572xxxx	2457661xxxx	2457718xxxx	<b>Clamped Bushing (See ENG Drawing)</b>		
<b>Fasteners</b>		Locknut (Air Spring, Upper)	3/4"-16NF	50 ft-lb	68 N-m
		1" HHCS; L'Washer (Air Spring, Lower)	3/8"-16NC	25 ft-lb	34 N-m
		5-3/4"HHCS (Air Spring, Lower)	3/8"-16NC	25 ft-lb	34 N-m
		Locknut (Lift Spring)	1/2"-13NC	25 ft-lb	34 N-m
		Locknut (Lift Spring)	3/8"-16NC	25 ft-lb	34 N-m
<b>6100045</b>		(OPT) Bushing Replacement Tool – 245 Wide Bushing (1117625C060)			
<p><i>Torque values reflect a lubricated thread condition (Nuts are pre-lubed). Do not overtorque.</i></p> <p><b>⚠CAUTION</b> 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/maintain fasteners at torque specifications could result in suspension failure and void the warranty.</p>					

### Vehicle Preparation

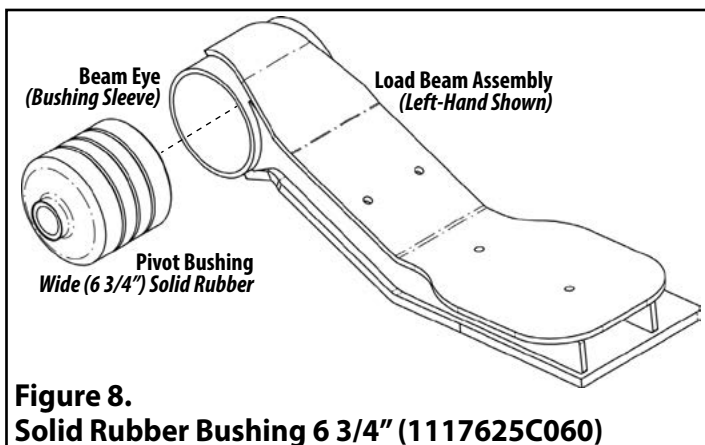
Park the vehicle on a level surface. Chock wheels to keep vehicle from moving.

Raise vehicle to a height that removes the load from the suspension. Support with jack stands.

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

Disassemble suspension to reach pivot connection.

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



### Bushing Replacement Procedure

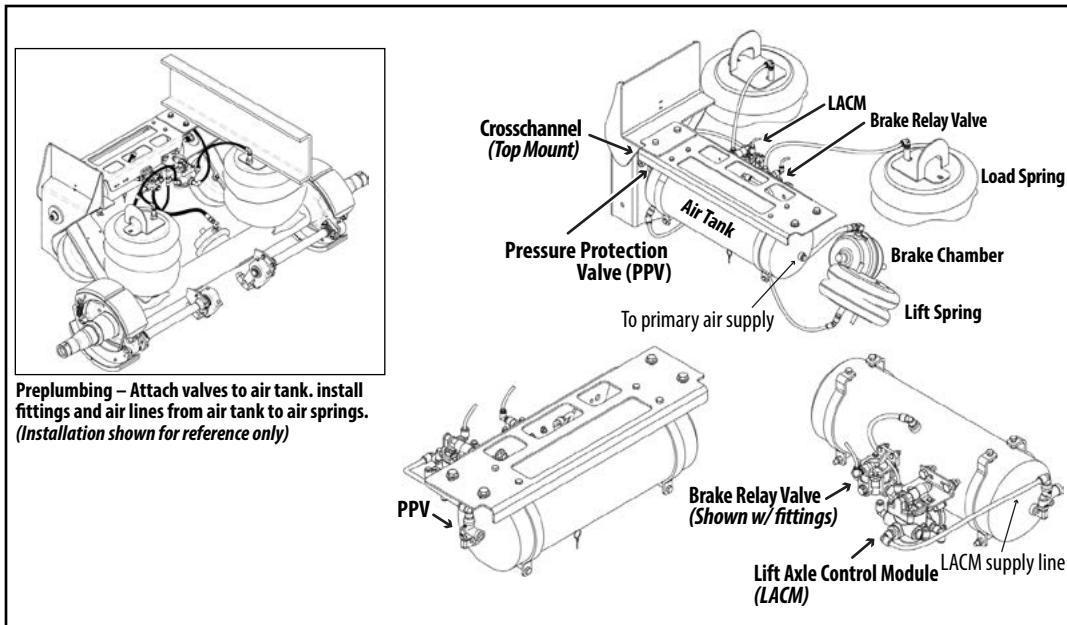
1. Remove bushing from load beam. (Figure 8).  
NOTE: Apply heat to the outside of the beam eye with oxyacetylene torch to destroy remaining bonding element.
2. Use a wire brush to remove bonding residue - rubber, dirt, rust, etc. - from the inside of the beam eye.
3. Thoroughly wash inner bore of the beam eye and the surface of the new bushing with paint thinner.  
**⚠CAUTION** Epoxy adhesive/paint thinner are flammable materials. Read all label instructions before use.
4. Remove cap from Epoxy Adhesive tube. Squeeze out entire contents. Thoroughly mix the adhesive.  
NOTE: Mixed adhesive must be used in 20 minutes.
5. Spread mixed adhesive on the entire surface of bushing. Apply adhesive to the inside bore of the beam eye.
6. Press bushing into beam eye until bushing is centered.  
NOTE: Bushing tool #6100045 can be used in place of a bushing press or rubber mallet.
7. Wipe away excess adhesive from installed bushing ends with paint thinner and rag. Adhesive can be handled after four hours and will totally cure after 24 hours.  
**⚠CAUTION** Adhesive must be totally cured before the vehicle can return to service.
8. Reassemble the suspension. Torque to specifications. (Chart/Engineering Drawing).

## Air Tank Integration Kit (\*Factory Preplumbing Available)

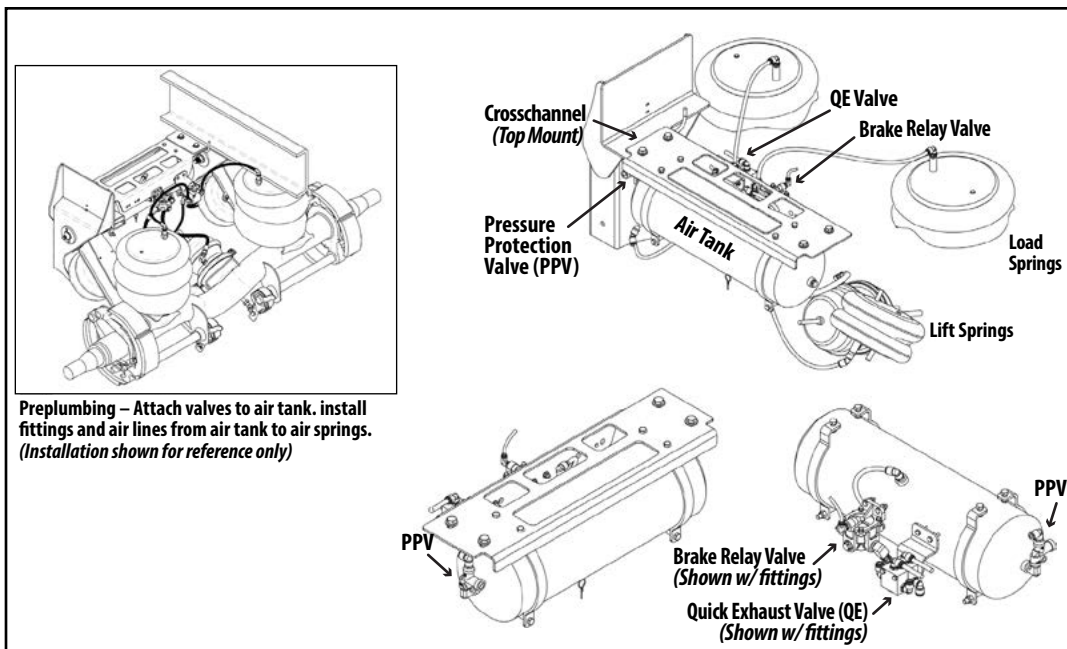
INTEG Air Tank P/N	Item Description	*Factory Plumb P/N	Air Tank-1175-Cu In	PPV-PRESS PRTCTN VLV	LACM Lift AX CNTRL Module	Brake Relay Valve	QE-Quick Exhaust VLV
1200286	INTEG 245 SPL STR'T AXLE ACK LACM (2459005; 2459006-Drum Brake-StraightAX)	1200287	1234256B001	1230060	1230195	1230081	
1200288	INTEG 245 SPL ACK QE Valve (2459005; 2459006-Drum Brake DropAX)	1200289					1230078 (2) needed

\*Factory Preplumbing requires an integrated axle to install valves, fittings, air lines from the air tank to the air springs.

**CAUTION** Verify that vehicle is compliant with vehicle manufacturer standards and Federal Motor Vehicle Safety Standards (FMVSS) 121.



**Figure 9.**  
Preplumbed example –  
1200286-LACM Kit  
2459005; 2459006 w/  
Drum Brake Straight Axle  
Fully assembled suspension  
with integrated axle required for  
factory preplumbing.



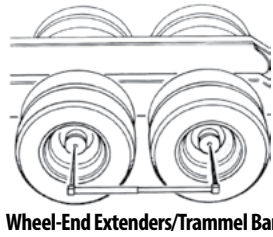
**Figure 10.**  
Preplumbed example –  
1200288-QE Valve Kit:  
2459005; 2459006 w/  
Drum Brake Drop Axle  
Fully assembled suspension  
with integrated axle required for  
factory preplumbing.

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

On a multiple-axle vehicle, the forward (lead) axle is moved into proper alignment, then the following (rear) axles are positioned to be parallel to the lead axle (Figure 11).

### Position trailer for alignment

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



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

### Recommended Equipment

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

### Axle Alignment Measurements

Use extreme care; as measurement errors can take up most, if not all, of the alignment tolerances (Figure 11).

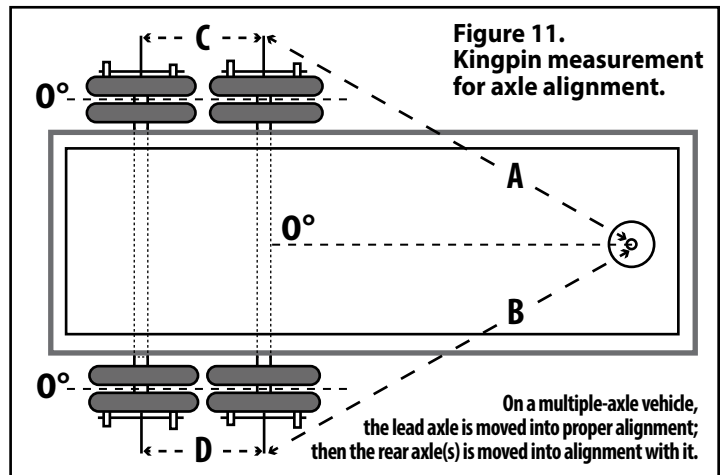
1. Attach the 50-ft tape measure to the kingpin. Measure Distance “A” and Distance “B” from the kingpin to the centers of the lead axle. The difference between the “A” and “B” measurements must not exceed 1/8-inch.
2. Measure Distance “C” and Distance “D” from the lead axle to the next axle with the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

### Axle Alignment Procedure

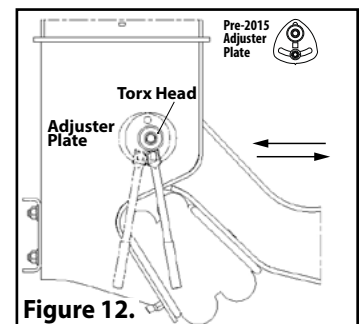
Select either the left-hand or right-hand beam of the lead axle to begin the alignment procedure.

1. Tighten the pivot nut on the selected side until snug.
2. Move to the opposite side of the selected beam. Tighten the pivot nut on this side until snug.

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



3. Return to starting location. Insert a 1/2”-shank breaker bar into the square hole of the adjuster plate at the pivot connection (Figure 12).
4. Push/pull on breaker bar to adjust the beam forward or backward into lead axle alignment (Figure 12).  
NOTE: Verify that pivot bushing is not wedged side-ways during beam movement. The adjuster plate and the alignment washer should both rotate as the beam moves.
5. Move to the opposite beam. Re-check the alignment measurements. Use breaker bar procedure if necessary to move axle into the correct alignment location.
6. Re-check alignment measurements on both sides. Adjust if necessary, then tighten pivot nut on each side so that the axle can no longer move.  
NOTE: Confirm both the adjuster plate and the alignment washer are flat against hanger before applying final torque.



7. Tighten pivot bolt on both sides with a 1”-drive impact wrench and E-20 Torx® socket (Ridewell tool #6100054) until the Torx head is sheared off.
8. Repeat measurements “A” and “B” to verify alignment is within tolerances. Redo alignment if necessary.

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

Check “C” and “D” axle alignment measurements to verify the difference does not exceed 1/16-inch tolerance (Fig 11).

Repeat Axle Alignment Procedure Steps 1-8, if necessary, to bring the rear axle into alignment with the lead axle.

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

**Terms and coverage in this warranty apply only to the United States and Canada.**

Ridewell Suspensions warrants the suspension systems manufactured by it to be free of defects in material and workmanship. Warranty coverage applies only to suspensions that have been properly installed, maintained and operated within the rated capacity and recommended application of the suspension.

The responsibility for warranty coverage is limited to the repair/replacement of suspension parts. The liability for coverage of purchased components is limited to the original warranty coverage extended by the manufacturer of the purchased part. Ridewell has the sole discretion and authority to approve or deny a claim and authorize the repair or replacement of suspension parts. All parts must be held until the warranty claim is closed.

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

Parts that need to be returned for warranty evaluation will be issued a Returned Materials Authorization (RMA). Parts must be returned to Ridewell with the transportation charges prepaid. The transportation charges will be reimbursed if the warranty claim is approved.

This nontransferable warranty is in lieu of all other expressed or implied warranties or representations, including any implied warranties of merchantability or fitness or any obligations on the part of Ridewell. Ridewell will not be liable for any business interruptions, loss of profits, personal injury, any costs of travel delays or for any other special, indirect, incidental or consequential losses, costs or damages.

**Contact the Ridewell Warranty Dept. at 417.833.4565 - Ext. 135, for complete warranty information.**