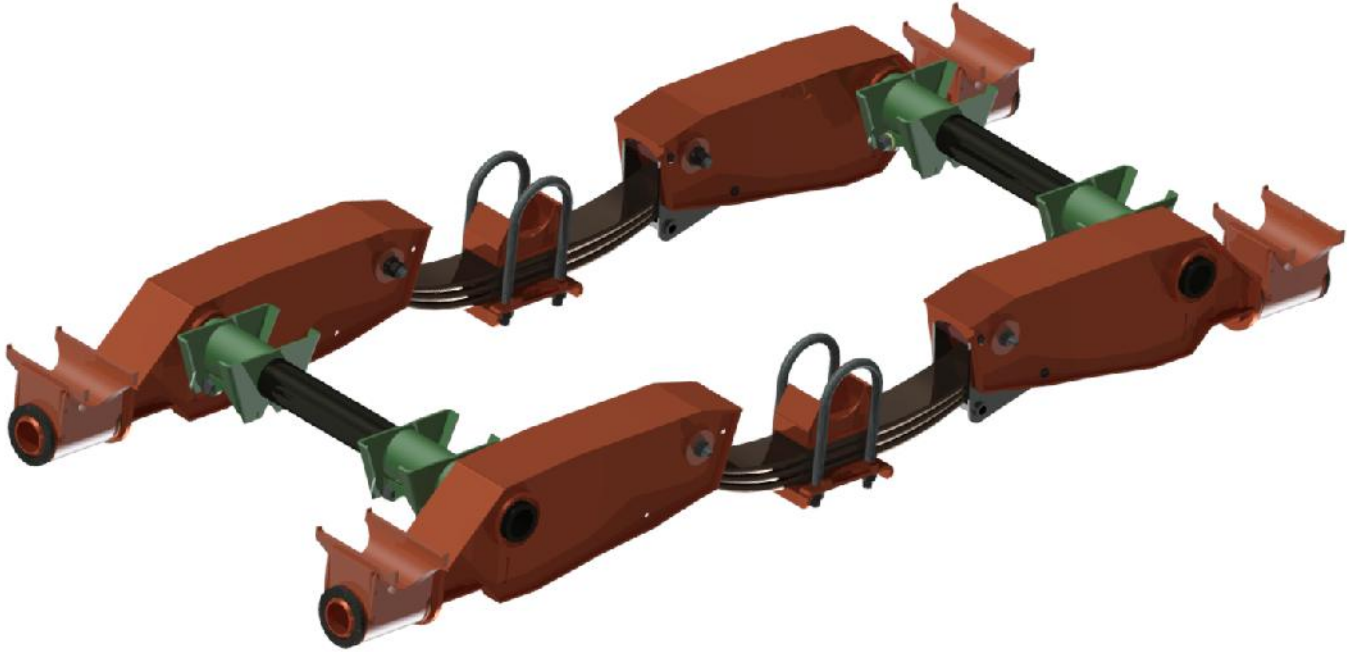


# CUSH CORP

Mechanical Walking Beam Suspension  
Model: **CushWALKER Tri-Axle**  
Suspension Installation & Product Service



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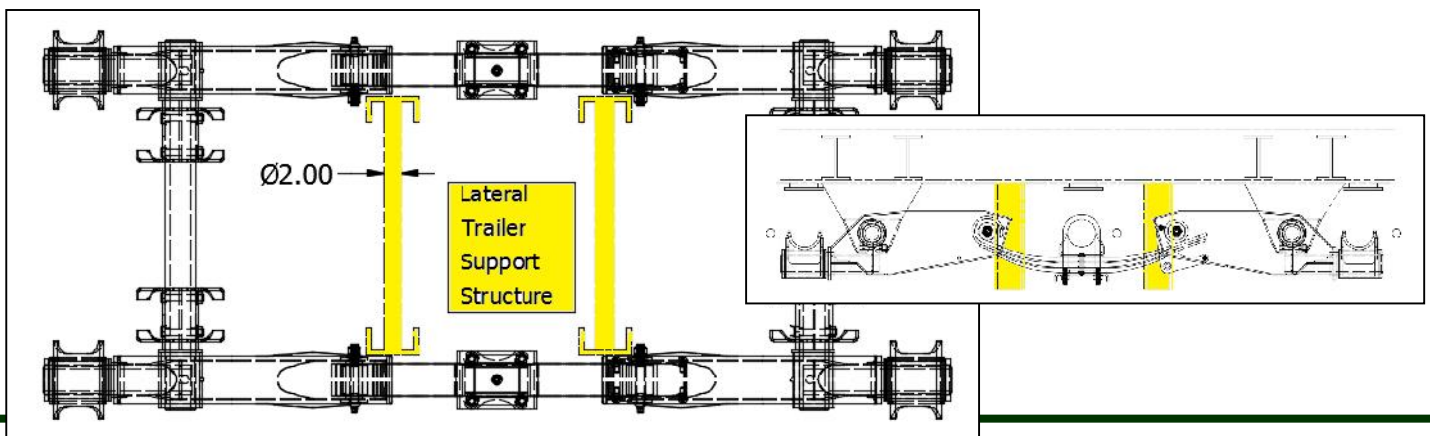
### Model “CushWALKER” (CSTR) Description

This model is designed to work with oscillating axle end seats to allow more suspension articulation and a better ride than rigid walking beam or spring leaf walking beam single point suspension. This model can be with all rubber bushings or upgraded to urethane bushings at the oscillatory spots for more articulation requirements of military applications or severe service. The **CushWALKER** model is designed to have several advantage features over competitive units: alignment adjustment on the axle, heavy-duty hanger and rocker components, industry standard replacement pivot bushing, common replacement bolts, rubber or urethane trunion bushing, heavy-duty keeper sleeves, replaceable spring seat wear pads, low-profile compensator structure.

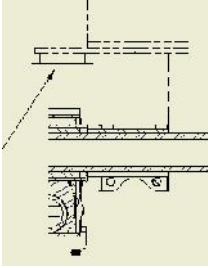
### Installer Trailer Structure Responsibility

INSTALLATION DISCLAIMER NOTES:

- 1) It is important that the proper Cush suspension is chosen for the trailer application. The following criteria must be considered when selecting a suspension: required suspension capacity, loaded frame-to-ground measurement, ride height, axle travel, axle spacing, and axle GAWR.
- 2) It is the responsibility of the installer to determine the correct location of the suspension in order to provide the proper trailer load distribution. The gross axle weight rating (GAWR) of each axle must not exceed the rated capacity of any of the components involved. The suspension capacity ratings are for suspension components and axle beam only.
- 3) Required frame hangers, bump-outs, supports, and cross member locations maybe shown. Actual size and shape may vary per trailer design. It is the responsibility of the suspension installer to ensure structural adequacy of the trailer frame and related cross members. Verify that the actual trailer cross member locations correspond with those specified on the suspension drawing.
- 4) It is the responsibility of the suspension installer to read the instructions on all the drawing sheets thoroughly before proceeding with a suspension installation.
- 5) If additional lateral support is needed for the suspension it is the responsibility of the suspension installer to install rub guides to support the appropriate load for your application. Contact Cush with questions about lateral support guides.



6) If Axle Stops Are Required the Trailer Manufacturer Must Provide a Design sufficient to Distribute Loading on Axle and Suspension. Frame Reinforcements May Be Required.

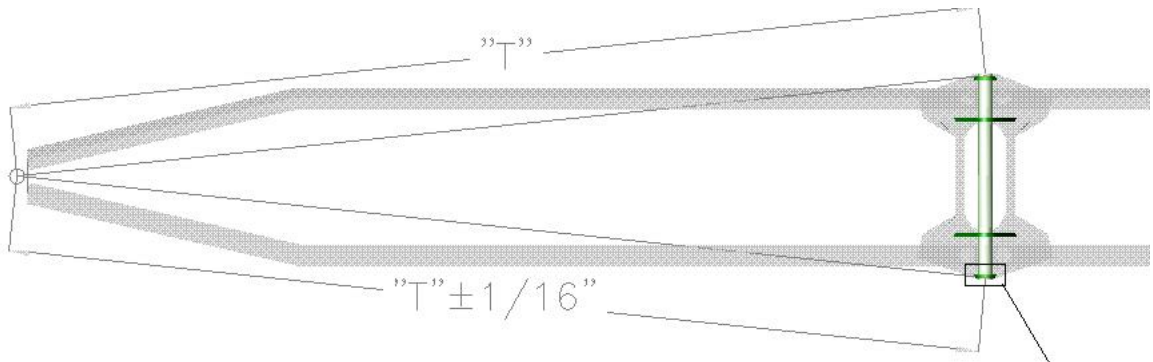


### Inspection Schedule

The following inspection schedule is a guide to help with the preventative maintenance of your suspension system. Your mechanical suspension will provide many trouble free miles of service by using the information in this publication.

#### QC - “CushWALKER” Hanger Pre-Welding & Alignment

- Verify that you have the correct height and width hangers for your application.
- Before welding the suspension straddle-mount trunion hanger to the frame you need to first measure that the center of the trunion tube is aligned to the kingpin of the trailer. Measure to the outer edge center of the trunion tube. Also, verify that the trunion hanger is centered on the frame.



#### QC - “CushWALKER” Original Inspection After Installation

When reviewing the suspensions on your trailer for the first time, check the following:

- The axles have been aligned properly.
- The suspension frame bracketry have been properly supported.
- Trailer is level
- All welds are of good and acceptable quality
- All fasteners are in place and securely torqued
- No component interferences are visible
- There should be 1" minimum clearance between top of tire and bottom of trailer structure when axle is at full jounce. If not a bump stop will need to be added.



- There should be 2" minimum clearance between inside of tire and trailer frame structure for lateral movement.
- There should be ample fore and aft clearances.

### Daily Inspection

A quick visual inspection before operating the trailer will often detect obvious problems such as broken or loose parts.

### “CushWALKER” 30-day Inspection

Check clearances around all moving suspension parts such as springs, tires, axle seats, u-bolts, fasteners, and compensator for any signs of wear, loosening, or component interferences.

Check each of the following:

- Fasteners – Not loose, broken or missing-retorque if needed
- Pivot Bushings – Not protruding, off-center, torn or worn
- Frame Hangers – Not worn, cracked, bent, or damaged
- Compensator – Not worn, cracked, bent, or broken
- Cantilever Springs – Not cracked, bent, out of alignment, or loose
- Axle Beam – Not cracked, bent, or broken
- Tires – No tire wear that might indicate an alignment problem.
- Axle Alignment – No pivot gear movement or inappropriate wear, axles tracking properly
- Trailer – Trailer not leaning, trailer frame suspension attachment structurally sound, no cracked or missing welds at suspension frame attachment.

### “CushWALKER” 90-day Inspection and at every brake lining change

Thoroughly check all items checked at the 30-day inspection. Also check:

- All welded connections for signs of deterioration
- All frame attachment joints and pivoting or clamping joints for problems-retorque
- All spring eye bushings intact
- For any sagging or broken leaf springs

### “CushWALKER” Axle Alignment Inspection

Check the “Cush-Align” connection for change of position at 30-day, 90-day, and every brake lining change. Re-align if necessary. Re-tack the alignment gear of the center axle after adjustment to maintain position in heavy-duty applications.

**Axle Inspection** (general notes, see axle manufacture’s service manual for details). Visually inspect the all axle components, seals, and hub caps for leaks and oil level every 6,000 miles (if oil bath type). Repair if necessary.

At 100,000 miles or 12 months, visually inspect seal and hub cap for contaminants, oil level, or leaks. Check the wheel bearing adjustment. Repair & retorque if necessary.



## Suspension Maintenance Items

The Cush trailer suspension system is designed to minimize service issues. With proper maintenance, the life of your suspension system can be extended.

### Caution Notes

- Trailer walk can occur due to loading, unloading, or damaged parts
- For safe loading and unloading, leave trailer attached to vehicle.
- Do not tow or pull on vehicle by suspension components.
- Fasteners that have been in service should never be reused, over-torqued, or lubricated.

Do not operate vehicle suspension with:

- Broken welds or metal parts
- Loose, broken, or missing fasteners or suspension components
- Loss of air pressure in brake system

## Torque Specifications

It is the customer's responsibility to check and tighten fasteners to specified torque at installation, after the suspension has been in operation for 3000 miles, and at suspension inspection cycles. Failure to do so can result in loss of warranty.

### CUSTOMER TORQUE INSTRUCTIONS:

2) It is the customer's responsibility to check and tighten fasteners to specified torque at installation, after the suspension has been in operation for 3000 miles, and at suspension inspection cycles. Failure to do so can result in loss of warranty.

3) Torque values given are specified for the fasteners in the condition supplied by Cush Corporation. **DO NOT APPLY ANY ADDITIONAL LUBRICANTS.**

4) **CAUTION:** Fasteners should never be reused if removed or complete loss of clamp load occurs. For proper joint clamping contact Cush for replacement fasteners.

5) **CAUTION:** Over-torquing fasteners could result in material failure.

Torque chart

TORQUE SPECS	Min	Max	Min	Max
DESCRIPTION	ft*lbs	ft*lbs	N*M	N*M
7/8-9UNC Auditorx Shear Off Bolt, Pivot and Axle Pedestal Bolt	550	600	746	813
7/8-14UNF Ubolt and Nut, Axle Ubolt	475	525	644	712
1/2-13UNC Grade 8, Button Head and Toplock Nut for Bolt in Keeper Pin	80	110	108	149
3/4-10UNC Grade 5, HHCS and Center Lock Nut for Trunnion Hanger	210	235	285	319



### Customer Welding Notes:

- It is the responsibility of the suspension installer and vehicle designer to provide adequate vehicle frame design, gusset support in the area of suspension attachment, and proper securing method for the suspension system. The suspension installer has the responsibility to determine the proper welding parameters for the materials being used. For specifications of suspension component materials, contact Cush.
- Required vehicle support cross member locations may be shown. Actual size and shape may vary per trailer design. It is the responsibility of the suspension installer to ensure structural adequacy of the trailer frame and related cross members.
- No welding of any of the suspension components is permitted, except where specified by Cush.
- Any alteration of the suspension components or installation deviations must be approved, in writing, by Cush Corporation.

### Recommended Steel Welding Procedures, If Required:

- **WARNING:** If these procedures and specifications are not followed, damage to the axle or suspension could result. The resulting axle or suspension damage could cause an accident, property damage, and/or serious injury.
- A welder qualified in 2G positions per ANSI/AWS D1.1-94 Section 5 Part C "Welder Qualification" must perform the welding.
- The specification below is for horizontal (2F) positioning.
- Suspension components and their mating parts must be at a minimum temperature of 60°F (15.5°C) and free from moisture, dirt, scale, paint, grease, and other contaminants.
- All welds must be performed in a flat, or horizontal, position. Achieve spray arc transfer with the following welding parameters:
- Standard Electrode: AWS E-7018 (Oven Dried), 0.125"DIA., 120-140 AMPS D.C., Electrode positive.
- Standard Wire: AWS ER-70S-6 or AWS ER-70S-3, 0.045"DIA
- Volts: 26-30 DCRP
- Current: 275-325 AMPS
- Wire Feed Speed: 380-420 Inches per Minute
- Electrode Extension: 0.75" to 1"
- Gas: 86%AR 14%CO2 at 30 to 35 CFH

Any deviation from these welding parameters must be of equal strength or approved by Cush Corporation in writing.

### Warranty Note

If after review of the Cush Corp Warranty it is determined that there is a warranty issue and Cush Corp has been notified, then a **Warranty Labor Allowance** may be needed. The **WLA** for the following service items are shown with each itemized description. The service item descriptions include the obvious parts involved, other parts may be involved to complete the warranty repair. Shop per-hour labor rate allowances will not exceed standard industry averages for the work done. Warranty claims should be filed per the CushWALKER Warranty. File with an itemized list of charges and copies of all available receipts. **NOTE:** Get written approval/warranty estimate from Cush Corp before working on item that you would like to submit for a warranty claim. Failure to do so may eliminate your warranty claim.



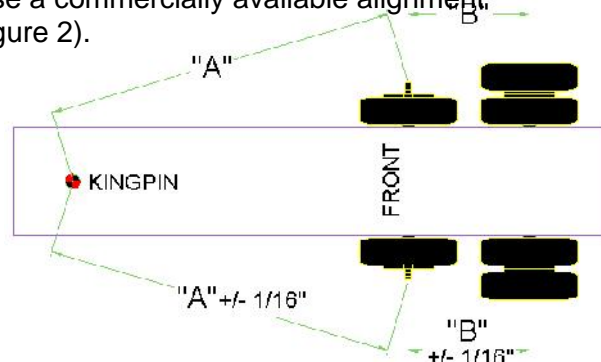
## Suspension Installation Items

### In-Service Axle Alignment General Notes

Cush has several different alignment means available for different applications. Listed here are some general alignment guidelines and alignment procedures for the styles of Cush Alignment.

**CAUTION: DO NOT APPLY** undercoating to the pivot alignment area until after alignment and torque of the suspension pivot bolts.

- Check that the tire inflation pressure is correct on all tires.
- Alignment should be performed with the vehicle empty and the brakes released.
- On a level floor move the vehicle forward and back to straighten, make sure last movement is forward.
- Remove the outer tires and any other parts from under the chassis that obstruct the measuring distances between the kingpin and the axle ends. If you use a commercially available kingpin and axle spindle extenders or the edge of the wheel rim, you will not need to remove this equipment.
- Measuring from the trailer's kingpin, determine the alignment of the forward axle.
- After achieving proper alignment of the forward axle, torque the Cush Pivot fasteners per Cush torque specifications, see Cush Axle Alignment procedures in this manual.
- Align the next axle, to within 0.1" tolerance, & any additional axles to the forward axle per the proper alignment method. Use a commercially available alignment gauge or trammel bar if available (see Figure 2).

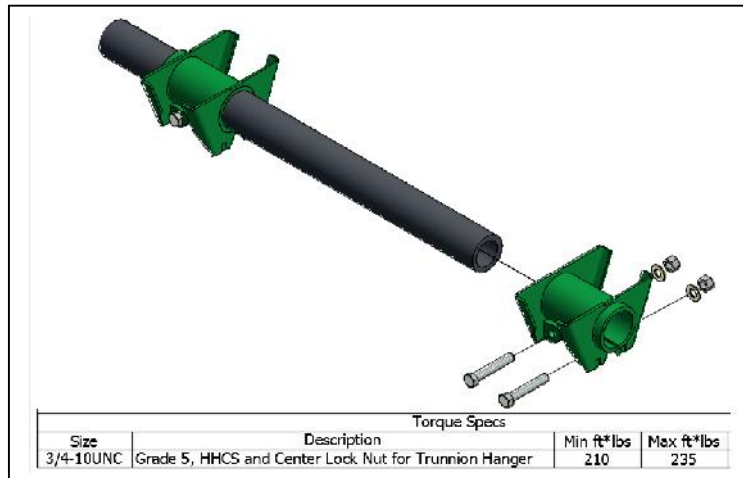


**NOTE:** Failure to follow the procedure for your axle alignment application and/or properly torque the pivot fasteners can result in a failed pivot connection and a loss of warranty coverage!

### Installation Axle Alignment on CushWALKER

To align the axles at installation first the trunnion tubes of the suspension should be aligned to the kingpin before they are welded in place.





- Center the Trunnion tube frame hangers on the tube per the spring centers
- Torque the 3/4" Trunnion tube bolts to 220 ft\*lbs.
- Align Front Trunnion to Kingpin by Shifting Trunnion Clamp on Frame Bracket, Tack Weld in Place once trunnion tube is aligned on each end and side to side.
- Align Rear Trunnion to Front Trunnion in Same Manner, Tack Weld in Place.
- Check alignment on both Trunnion tubes.
- Weld Trunnion Clamps Securely in Place, After Final Axle Alignment.

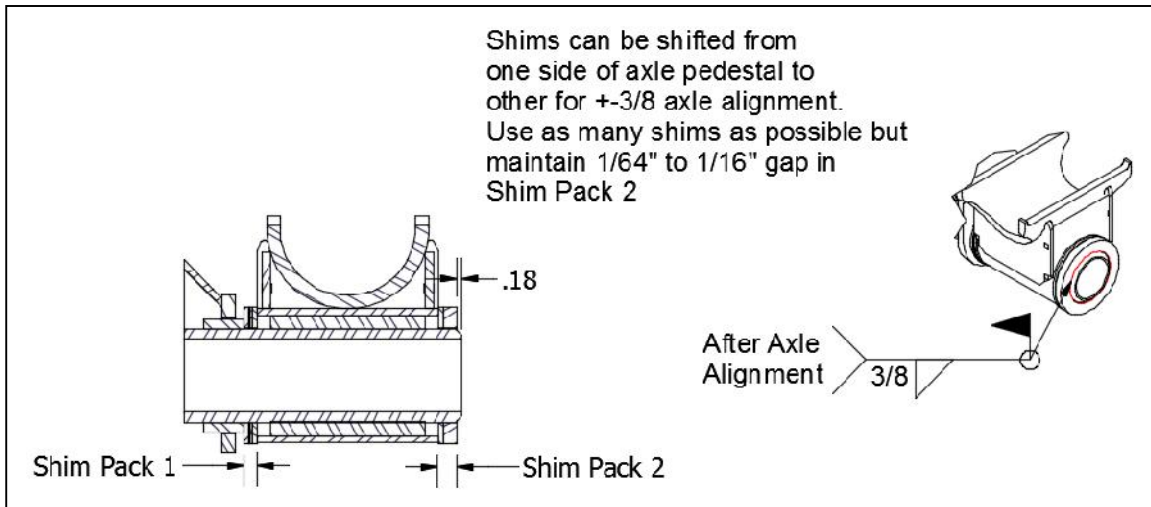
### Installation Axle Alignment

If the trunnion tubes are aligned but the axles are still not aligned then start by aligning the front axle to the kingpin at the axle seat.

#### FRONT & REAR AXLE

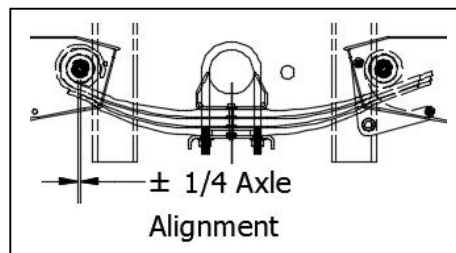
If this is a new installation and the end cap ring has not yet been installed you can remove the axle seat and shims can be shifted from one side of the axle pedestal to the other for axle alignment. You can align the axle seats to the kingpin prior to installing and welding in the axle for ease of alignment. Maintain a 1/64" to 1/16" gap in the shim pack. Adjust the shims so that the front axle is aligned to the trailer kingpin to within 1/8". Install the axle and check the alignment. If the alignment is still off you can grind out of the axle seat to give you room to adjust the axle alignment. Set the alignment and tack the axle in place. Weld the end cap ring in place on the end of the beam tube after alignment. Weld the axle in place.





## CENTER AXLE

The center axle of the suspension is easier to align. Adjust the alignment by moving the leaf spring eye pivot in the slot of the rocker beam fore and aft to get alignment before torquing the pivot bolt. Once you have alignment torque the pivot bolt and add a weld top and bottom of the round bearing boss to help hold alignment.



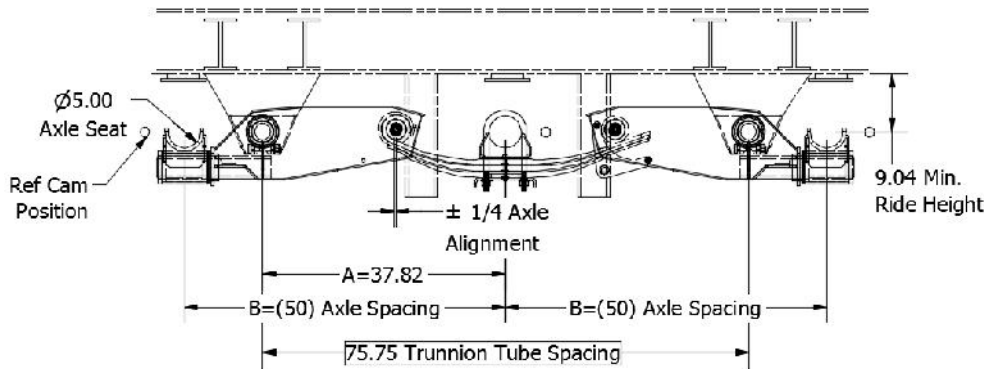
## Axle Spacing

Cush has several different axle spacing's available for different applications. See your Cush installation drawing for your application.

## Axle Equalization

For Closest Axle Equalization the Trunnion and Axle Centers Must Be on Same Horizontal Plane When Vehicle is Fully Loaded. Install Spacers at Frame Brackets to Achieve This.

**NOTE:** The axle spacing will be measured with the trailer unloaded. The axle spacing and ride height will decrease as the suspension springs are loaded and defect up.

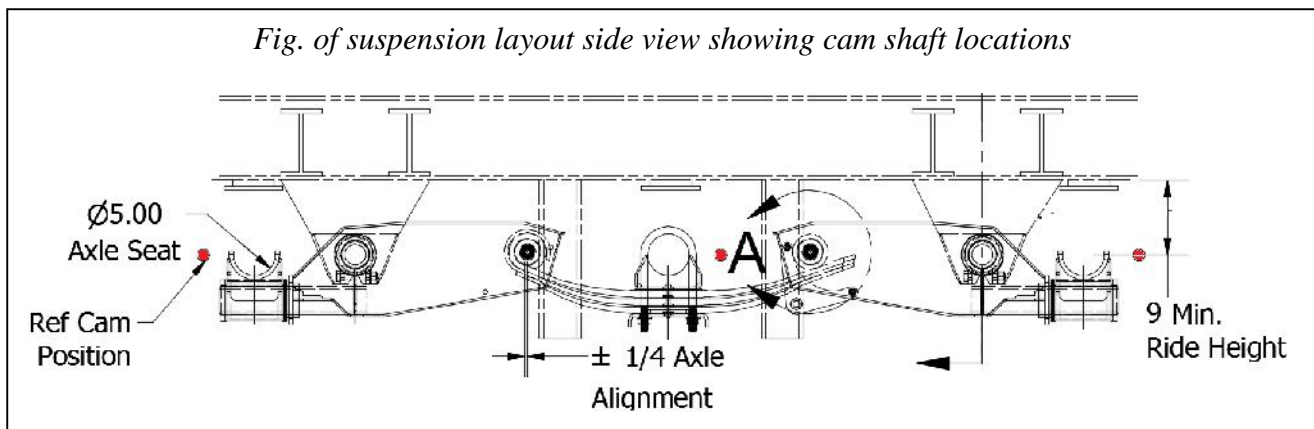


## Axle Welding Installation Notes

- Customers may have different axle tracks and applications that will dictate the center spring beam spacing to mount the axle seat to the axle.
- Spring seats may be pre-welded to axles prior to assembling to other suspension components, see Cush installation drawings. Note cam-shaft clocking when welding axles.
- Customers should also determine the clocking of the cam relative to the suspension axle seat. Customers may want to vary this per their application.
- Note: Customers must check that cam/slack placement will not cause interference with trailer components during articulation causing part failures.
- See picture below to locate cam shaft positions.

Try to put the push rod of the brake chamber so that it pushes on the brake slack adjuster the same rotation as the tire rotation moving forward motion. This will help reduce brake hop.

*Fig. of suspension layout side view showing cam shaft locations*



### Suspension to half-round Axle Seat Welding Procedures

On the tri or quad axle version of the CushWALKER the front and rear axles are mounted to the suspension with a weld-on half-round axle seat for a 5" round axle (5/8" wall min required). After the axle alignment is checked, these axle seats have a fore and aft edge that get welded to the axle with a 1/2" 3 pass weld, this weld edge seam is at least 9" long. The axle should be preheated before welding.

#### RECOMMENDED STEEL WELDING PROCEDURES:

**WARNING:** If these procedures and specifications are not followed, damage to the axle or suspension could result. The resulting axle or suspension damage could cause an accident, property damage, and/or serious injury.

**NOTE:** A welder qualified in 2G position per ANSI/AWS D1.1-94 Section 5 Part C "Welder Qualification" must perform the welding.

**NOTE:** The specification shown below is for horizontal (2F) positioning.

1) Suspension components and their mating parts must be at a minimum temperature of 60°F(15.5°C) and free from moisture, dirt, scale, paint, grease, and other contaminants. (Pre-heat per axle manufacturer)

2) All welds must be performed in a flat, or horizontal, position. Clean welds between each pass.

**Standard Wire:** AWS ER-70S-6, 0.045"DIA

**Volts:** 26-30 DCRP

**Current:** 275-325 AMPS

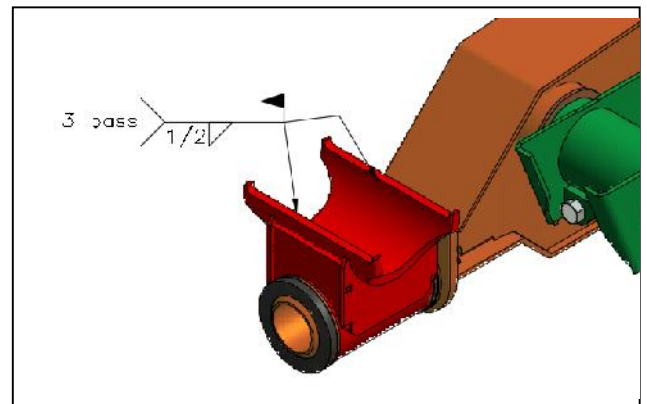
**Gas:** 90%AR 10%CO2 at 30 to 35 CFH

*Note: Brake camshaft to be located according to axle manufacturer specifications & suspension/trailer model.*

Use locating fixture or flat surface to space suspension axle seats and center axle. Check that axle seats are: parallel, square to axle, and perpendicular to axle.

- The suspension axle seat must be tight against the axle tube with no more that .063" gap at bottom.
- Weld sequence, size, and weld direction should be followed for proper installation.
- Back-weld .38" over the start/ends of all welds
- Fill all craters, avoid cold laps, and undercuts.
- Place 1/2" tack welds in the center forward of both suspension axle seats
- Position and weld rear root pass
- Do not wrap welds over axle seat ends, no weld .19" from ends
- Weld rear 2nd & 3rd cover pass
- Position & weld front root pass
- Weld front 2nd & 3rd cover pass
- Weld axle seat side welds

**Note:** Move back and forth to allow welds to cool and minimize distortion. You can skip in a "X" pattern for the axle welding.



### Suspension to U-bolted Axle Seat Welding Procedures

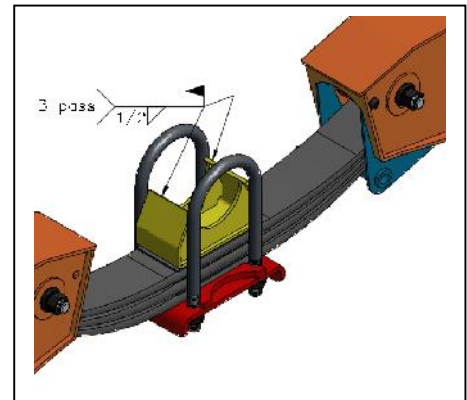
Note the same welding parameters required as on front and rear axle seat.

On the tri or quad axle version of the CushWALKER the mid axles are mounted to a leaf spring with u-bolts and an axle seat for a 5" round axle (5/8" wall min required). After the axle alignment is checked, these axle seats have a fore and aft edge that get welded to the axle with a 1/2" 3 pass weld, this weld edge seam is at least 3" long.

Use locating fixture or flat surface to space suspension axle seats and center axle. Check that axle seats are: parallel, square to axle, and perpendicular to axle.

- The suspension axle seat must be tight against the axle tube with no more that .063" gap at bottom.
- Weld sequence, size, and weld direction should be followed for proper installation.
- Back-weld .38" over the start/ends of all welds
- Fill all craters, avoid cold laps, and undercuts.
- Place 1/2" tack welds in the center forward of both suspension axle seats
- Position and weld rear root pass
- Do not wrap welds over axle seat ends, no weld .19" from ends
- Weld rear 2nd & 3rd cover pass
- Position & weld front root pass
- Weld front 2nd & 3rd cover pass
- Weld axle seat side welds

**Note:** Once the welds are cool, mount the u-bolts and spring. Torque the u-bolts for the axle seat to the spring.





## U-BOLT INSPECTION & INSTALLATION NOTES

**CAUTION!** Do not apply any additional lubricants to the u-bolts, improper clamp loading can occur causing failure

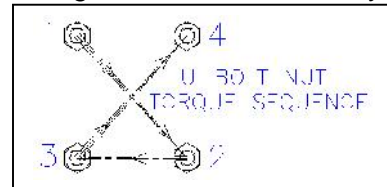
### Inspection

- Check each U-bolt threaded area for damage or burrs.
- After installation, an equal amount of thread should be visible beyond the head of the nut on each side of the U-bolt.

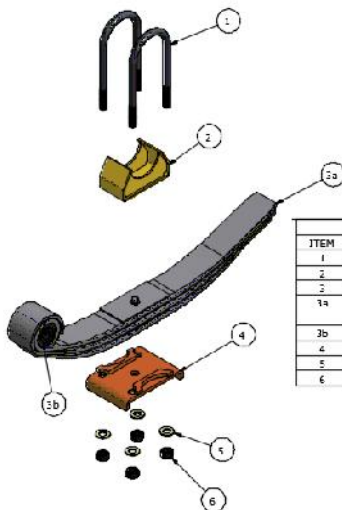
### Installation

- U-Bolts should only be installed and torqued after completion of any axle welding. Allow sufficient axle cooling time before applying torque to u-bolts.
- Check that U-bolts fit properly in area, if U-bolt is to tight tap on top of U-bolt to hard surface to open up. Be careful that U-bolt installation does not damage threads.
- Snug all U-bolts evenly before applying clamping torque with hand wrench. Check that u-bolts are parallel and square to axle.
- Torque U-bolts in a three-step process to avoid an improperly clamped axle and resulting damage. Torque the u-bolts in an "X" pattern with each torque step (1-2-3-4). This allows the U-bolt to stretch and relax for the clamp to hold torque. Proper tightening will allow equal amount of tread above each nut.
- Use a calibrated torque wrench to get the proper setting for the size of U-bolt you are using:

- **First Step-1/3 of Final torque**
- **Second Step-2/3 of Final torque**
- **Third Step-Final torque**



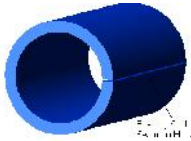
- After U-bolts have been torqued @ spec, weld bottom plate gussets sides to side of spring end box to secure that cantilever springs do not delaminate. Use 3/4" long welds.



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	H1102-1175	7/8"-41 UNF 6" Std. H.H.T. 1/2"lg	2
2	W1152	axle Spring Seal	1
3	AC0502	Eyelet Leaf Spring with Bushing	1
3a	Customer Supp. Item	Customer supplied Leaf Spring	1
3b	CD310	Rubber Bushing	1
4	W1154	Spring Clamp W/Seal	1
5	HR161	7/8" SAE Washers	4
6	H1108	7/8"-11 UNF Grade C Standard Height Nut	4

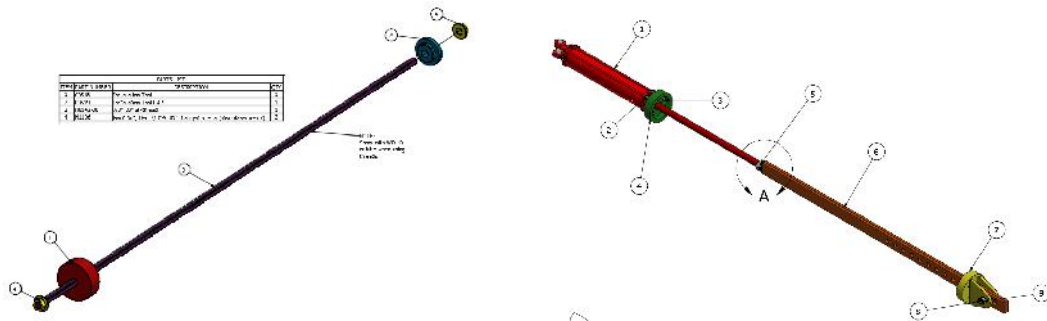
## Trunion Pivot Component Replacement

The pivot of a trunion hanger on a mechanical suspension is the main link to connect the suspension to your trailer. This link provides a resilient connection that allows a walking beam or compensator to walk without excessive flexing. Re-bushing does not require a shop press.



General notes, Disassembling trunion Pivot Connection of walking beam:

- On level ground, securely chock the tires and apply trailer parking brakes
- Support the trailer in a safe manner at a working height
- Support the weight of the walking beam
- Remove tires so that you can lower walking beam with axles from trailer
- Loosen and remove any nuts, bolts, and springs restricting movement of walking beam.
- Remove the end axle seats & axles from walking beams
- Pull walking beam from trunion tube
- Inspect trunion housing and trunion tube area for any metal damage that could tear a new bushing.
- Clean trunion area of any dirt or grime build-up.
- If is rubber, no lubrication needs to be added.
- If bushing is urethane, add a thin coating of silicone grease around trunion tube area. Urethane bushings are used to allow freer articulation of the walking beam.
- For rubber or urethane bushing, a new bushing might come without a slit: with a box knife cut a straight line on the bushing horizontal, place the bushing on the trunion tube with the slit on horizontal centerline and centered in hanger.
- Reinstall the new bushing.
- Reinstall walking beam on trunion tube using all thread tool Cush p/n K0383-80 or a hydraulic cylinder kit p/n AW1286 to pull the walking beam back onto the trunion tube.



## Installation and removal of URETHANE Type Trunnion Bushing (Procedure K0382)

Note1:

### Installation of Urethane Trunnion Bushing Compensator onto Trunnion Tube

1. Place inside snap ring (3c) into Compensator (2a)
2. Silicone grease the inside of the bushing housing (2a), outside of trunnion tube(1b), and inside of bushing (3b)
3. Insert trunnion bushing (3b) into Compensator housing (2a).
4. Start the mount of Compensator with bushing (2) onto trunnion tube (1b).
5. Utilize installation kit K0383 to pull bushing(3b) and Compensator (2) onto the trunnion tube at the same time. Do this with installation caps, all-thread, and 1" air impact.
6. After Compensator with bushing is fully installed, install outer snap ring (3b) into housing
7. Perform same procedure on opposite side.

Note2:

### Installation of axle seat housing trunnion bushing

1. Place inside snap ring (3c) into Axle Seat Housing (3a)
2. Silicone grease the inside of the bushing housing (3a), outside of Compensator(Equalizer Beam) tube(1b), and inside of bushing (3b)
3. Insert trunnion bushing (3b) into housing (3a).
4. Place outside snap ring (3c) into Axle Seat Housing (3a)
5. Mount alignment shim pack 1 (2x4c & 2x 4d).
6. Start the mount of housing with bushing (3) onto end of greased tube (2a).
7. Use installation tool kit K0384 to pull axle seat onto tube.
8. After installed all the way, mount the remaining shim pack (4c &4d) for later alignment, make sure there is a gap of 0.063" to allow rotation. If not remove shims so that there is the proper gap.
9. Mount Bushing end cap (4b) and end bolt (4a), thread bolt in without cross-threading.
10. Use E-20 socket to torque bolt (4a) and shear of torx nub to get proper torque of 500-600 ft\*lbs.

Note3:

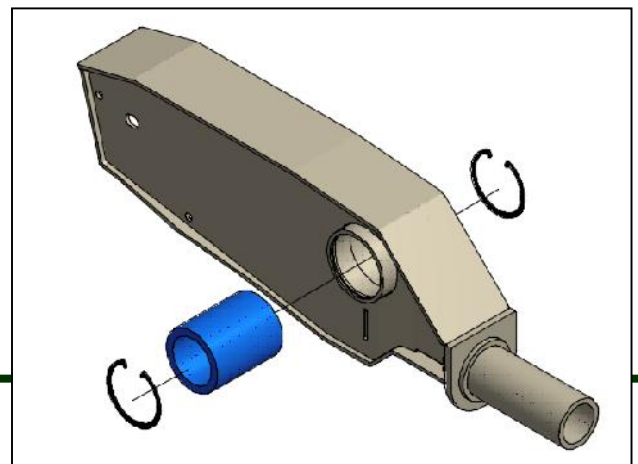
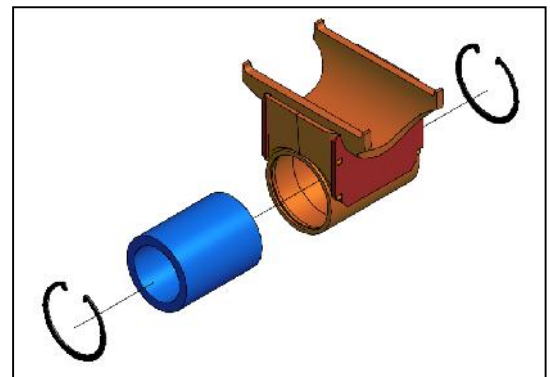
### Removal of axle seat housing trunnion bushing

1. Remove end cap bolt (4a), may have to cut off bolt head with torch.
2. Remove end caps and shims (4b, 4c, & 4d).
3. Remove remaining of bolt (4a).
4. do this on both sides of axle.
5. Pull axle off of end of Compensator tubes.
6. Remove snap ring from axle seat.
7. Remove bushing.
8. Check housing for any damage.

Note4:

### Removal of Trunnion Bushing in Compensator

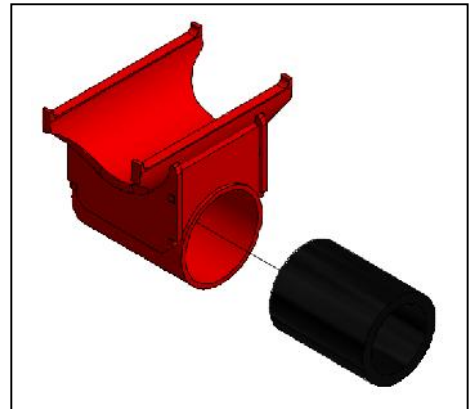
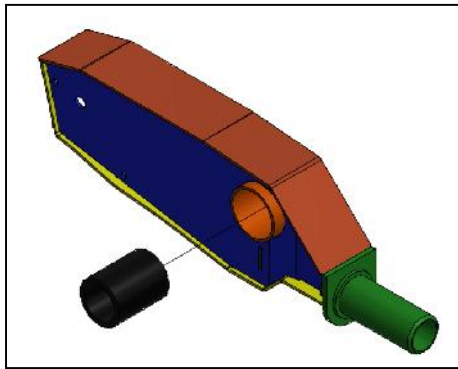
1. Remove axle seats/axle from Compensator to be worked on.
2. Remove Spring from other end of Compensator
3. Move axles and tires out of the way.
4. Pull Compensator off of trunnion tube.
5. Remove snap ring.
6. Remove bushings.
7. Check housing for any damage.



## Installation and removal of RUBBER Type Trunnion & Axle Seat Bushing

Installation Notes:

1. **IMPORTANT:** Tire Lube the inside of the bushing tube housing and outside of rubber bushing, wipe so that it is spread evenly.
2. Insert rubber bushing center in housing.
3. Install bushing into housing







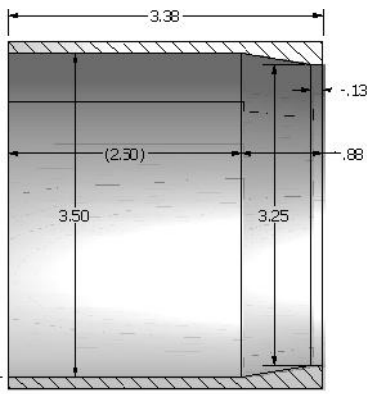
## Spring Pivot Bushing Component Replacement

The pivot of the eyed leaf spring allows for more articulation and softer ride characteristics than a steel spring walking beam. This pivot bushing is made of rubber compound to effectively absorb loads and maintain its shape. In order to use standard off the shelf replacement components bushings may require insert reducers to allow for spacing offsets and to accommodate smaller bolts that can be properly torqued to their effective 90% of proof load.

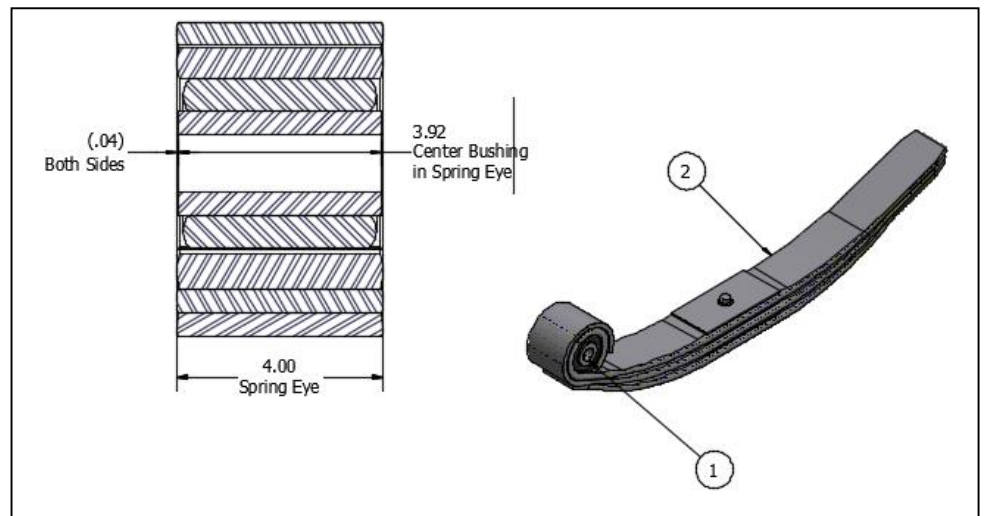
Tools required: Shop wrenches, bushing press, bushing insertion tool per unit

### Disassembling Pivot Connection of Cantilever Spring”

- On level ground, securely chock the tires and apply trailer parking brakes
- Support the trailer in a safe manner at a working height
- Support the weight of the walking beam underneath the center
- Remove tires from the side that you will be removing the cantilever springs
- Loosen and remove pivot hardware from spring side to be replaced
- Inspect pivot connection area of compensator after removing spring
- If spring is to be placed in shop press you will need to remove each from the axle connection: remove u-bolts, grind away axle seat connection welds between bottom seat and top seat, leave axle welds connecting top seat to axle in place, take apart axle seat top and bottom to be able to remove spring leaves from bottom seat dowel pin.
- Some models, remove the flanged inserts from the inner diameter of the bushing tube
- Take spring to shop press and remove old bushing
- Clean debris from spring eye cavity



Bushing Insert Tool p/n C0246



### Bushing Replacement :

- Use Cush bushing replacement kit shown on parts explosion for your suspension, or contact Cush Corp for cross-reference.
- Lubricate outside of new Cush bushing and inside of spring eye bushing sleeve with proper rubber lubricant (P-80 or Ru-glyde)
- Put bushing into bushing insertion tool to reduce bushing from free OD to smaller OD of spring eye. Lubricate tool before placing bushing.
- Press in bushing, try to center inner metal bushing sleeve with the outer metal bushing housing, it may be necessary to push bushing thru a little and pull back to center rubber and inner metal sleeve.

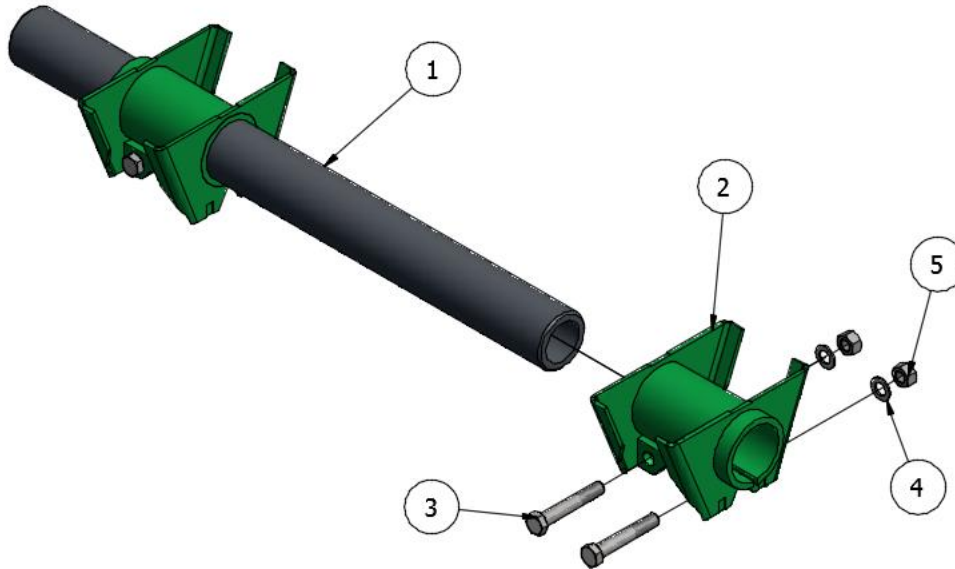
### Reassembling pivot connection:

- If required, replace the flanged inserts from to the inner diameter of the bushing tube sleeve
- If these inserts are loose and do not stay in place you may need to hold these inserts while guiding the spring into the compensator walking beam hanger.  
Note: it is easier to do this with the compensator on the ground upside down and use gravity to lower the spring eyes into the compensator.
- Center the spring eye with inserts at the compensator pivot slot, use a tapered rod to assist.
- Gather the alignment gear hardware and new fasteners to remount the pivot.
- Hand tighten the pivot hardware to hold the position of all loose items
- If needed to spread the compensator hanger: using a hydraulic jack or other spreading device, spread open the compensator until flanges of flanged inserts enter the inside of the compensator, remove spreading device.
- Place adjustment gear per suspension drawing (Always use new fastener hardware)
- Using a wrench, move alignment gear pointers to nominal position
- Align axle with relation to the kingpin per Axle Alignment notes
- Torque all the fasteners to specification



### Suspension Frame Hanger

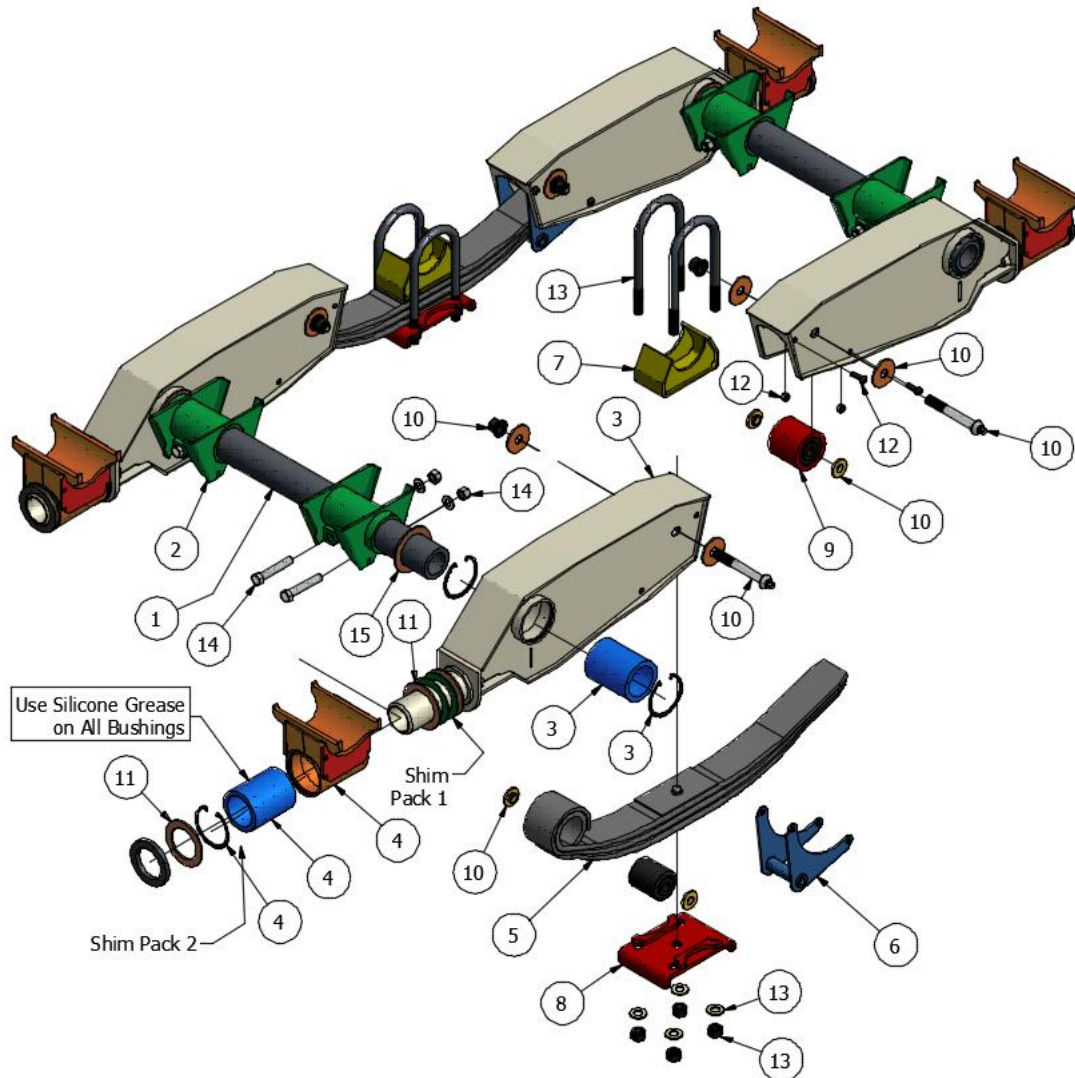
Cush manufactures various hangers for different applications; because of this it would be best for you to contact Cush for an installation drawing per your application. On these drawings we may show recommended cross-member and support locations, your trailer manufacture may have an installation drawing for this. Failure to have the proper support in place can cause a reoccurring failure mode. If for some reason it is required to replace a frame hanger, please follow the guidelines below as a minimum safety procedure when repairing these items.



To replace welded frame hanger:

- Contact your trailer manufacturer or Cush Corp for replacement parts
- On level ground, securely chock the tires and apply trailer parking brakes
- Support the trailer in a safe manner at a working height
- Remove Tires as required
- Disassemble the pivot connection and any other parts that interfere with lowering the walking beam out of the suspension hanger
- Lower the assembly, check for any damaged or wear
- Check that the bushings are in usable condition
- Mark the hanger position on the frame side for reference
- Cut away the frame hanger and clean up the frame with grinder, do not gouge frame
- Raise the new hanger assembly to the frame and clamp hanger to frame squarely
- Align hanger assembly to kingpin (see Hanger Alignment notes)
- Weld hanger to frame per Cush Corp installation drawing
- Reassemble any other parts that were disassembled to lower assembly
- Align axles with relation to the kingpin (see Axle Alignment)
- Torque all the fasteners to specification
- Apply paint to prevent rust corrosion

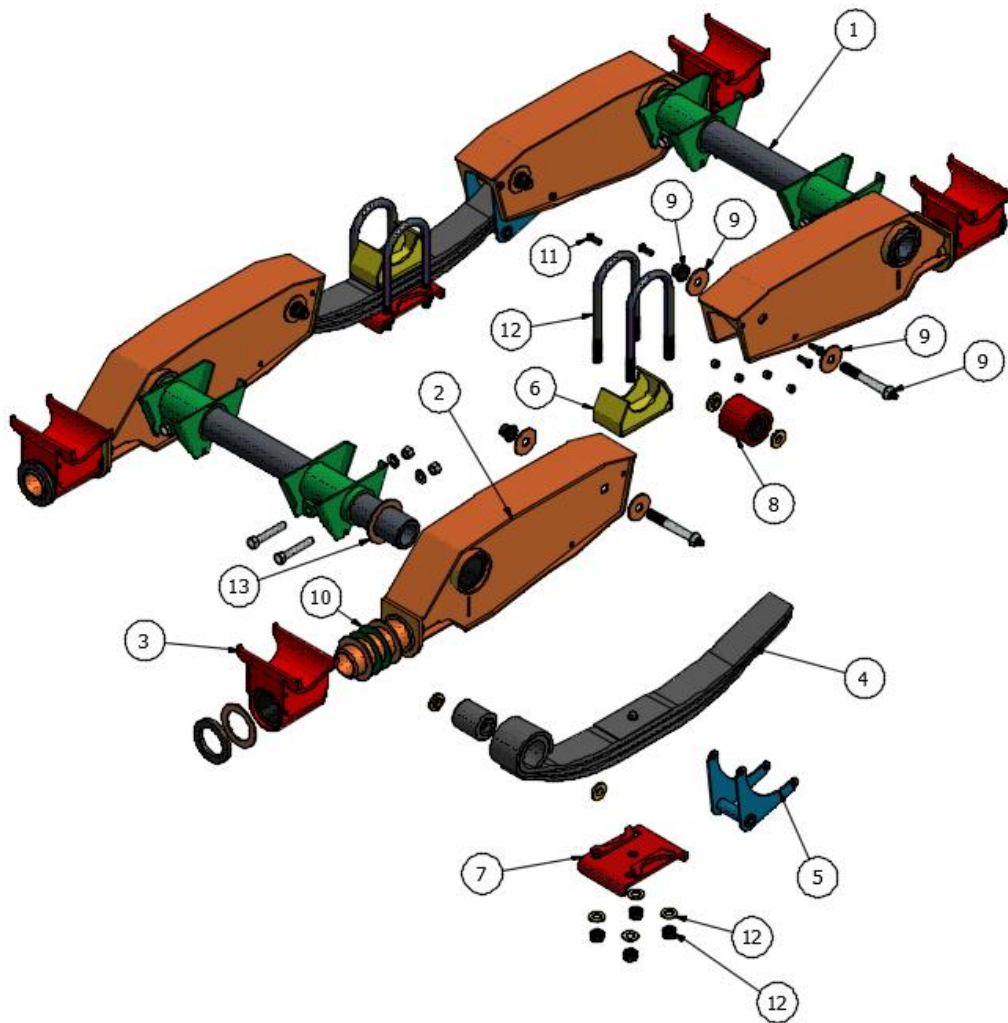
Parts Explosion, Urethane Bushings



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	A1020-X	"X" lg 3.5" OD Trunnion Tube	2
2	W1164	Trunnion Hanger Clamp	4
3	AW1168	Compensator Arm with Urethane Bushing and Snap Rings	4
4	AW1166	Axle Seat Pedestal with Urethane Bushing and Snap Rings	4
5	AC0502	Eyed Leaf Spring with Rubber Bushing	2
6	W1169	Bolt In Keeper Pin	2
7	W1162	Axle Spring Seat	2
8	W1163	Spring Clamp Plate	2
9	AT0193	Bushing Sleeve with Rubber Bushing	2
10	K0375-4	Pivot Bolt Hardware (X4 Bolts)	1
11	K0630-4	Axle Seat Trunnion Shim Pack	1
12	K0377	Keeper Pin Fasteners at Compensator	1
13	K0374-4	Axle Ubolt Kit (X4 Bolts)	1
14	K0378-4	Trunnion Hanger Fasteners (X8 Bolts)	1
15	F1138-19	3/16 Shim Plate	4



Parts Explosion, Rubber Bushings



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	A1020-1	3.5" OD Trunnion Tube and Hanger Clamp	2
2	AW1285	Compensator Arm w/ Bushing	4
3	AW1166-S	Axle Seat Pedestal w/ Bushing	4
4	AC0502	Eyed Leaf Spring w/ Bushing	2
5	W1169	Bolt in Keeper Pin	2
6	W1162	Axle Spring Seat	2
7	W1163	Spring Clamp Plate	2
8	AT0193	Bushing Sleeve with Bushing	2
9	K0375-4	Pivot Bolt Hardware (x4 Bolts)	1
10	K0630-4	Axle Seat Trunnion Shim Pack	1
11	K0377	Keeper Pin Fasteners at Compensator	1
12	K0374-4	Axle U-Bolt Kit (x4 Bolts)	1
13	F1138-19	3/16 Shim Plate	4



Giving the World a Better Ride!