



INDEPENDENT
SUSPENSION (IS) 2.0
OEM INSTALLATION MANUAL

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Introduction

The independent suspension system permits individual wheels to move up and down without affecting the other wheels. This allows wheels to be on different surfaces while maintaining traction.

Version 2 of the system removes a top bump stop which is replaced by a weldment. This eliminates a rivet nut as well as the need for Loctite. Inner cam gears are also eliminated and replaced with a structural hard washer. A nylon lock nut will continue to secure the bolts.

NOTE: Images used in this document are for reference only when assembling, installing and/or operating this product. Actual appearance of provided and/or purchased parts and assemblies may differ.

For information on the assembly or individual components of this product, please visit:

<https://support.lci1.com/independent-suspension/>

Safety

Read and understand all instructions before installing or operating this product. Adhere to all safety labels.

This document provides general instructions. Many variables can change the circumstances of any procedure, i.e. the degree of difficulty involved in the service operation and the ability level of the individual performing the operation. This document cannot begin to plot out procedures for every possibility, but will provide the general instructions for effectively installing, removing or servicing the system. In the event the skill level required is too advanced or the procedure too difficult, a certified technician should be consulted before performing the necessary operation. Failure to correctly install, remove or service the system may result in voiding the warranty, inflicting injury or even death.

WARNING

The "WARNING" symbol above is a sign that a procedure has a safety risk involved and may cause death or serious personal injury if not performed safely and within the parameters set forth in this manual.

WARNING

Lift the trailer by the chassis. Do not go under the trailer unless it is properly supported. Unsupported trailers can fall and may result in death, serious injury or property damage.

WARNING

Trailer **MUST** be supported per manufacturer's recommendations before working underneath. Failure to do so may result in death or serious personal injury.

WARNING

Failure to follow instructions provided in this manual may result in death, serious personal injury and/or severe product and property damage, including voiding of the component warranty.

CAUTION

The "CAUTION" symbol is a sign that a procedure has a risk involved that may cause personal injury or property damage if not performed safely and within the parameters set forth in this manual.

CAUTION

Moving parts can pinch, crush or cut. Keep clear and use caution.

Resources Required

- Hoists to invert chassis, lower suspension assembly onto chassis
- Floor jacks
- Jack stands
- Torque wrench
- Fastening hardware: Three $\frac{5}{8}$ " - 11 x 1 $\frac{3}{4}$ " flange bolts, three $\frac{5}{8}$ " - 11 serrated flange nuts

Installation

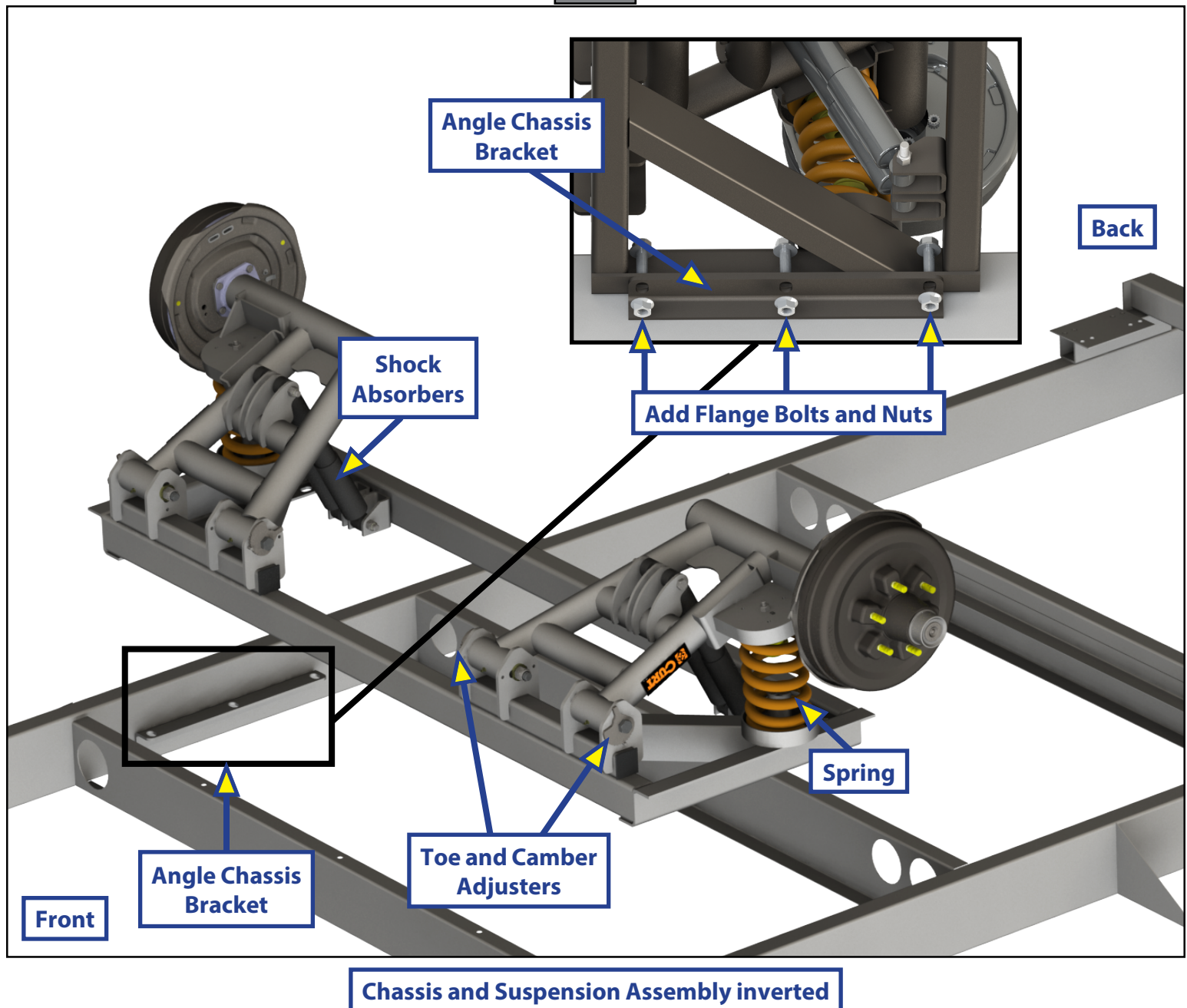
Single Axle

1. Invert trailer chassis.
2. Lower suspension assembly onto chassis while aligning the three bolt holes on each side of the assembly frame with the fastening holes in the angle chassis bracket (Fig. 1).

NOTE: The camber and toe adjusters of the axle assembly will face forward. The shock absorbers and springs will be at the back of the suspension assembly.

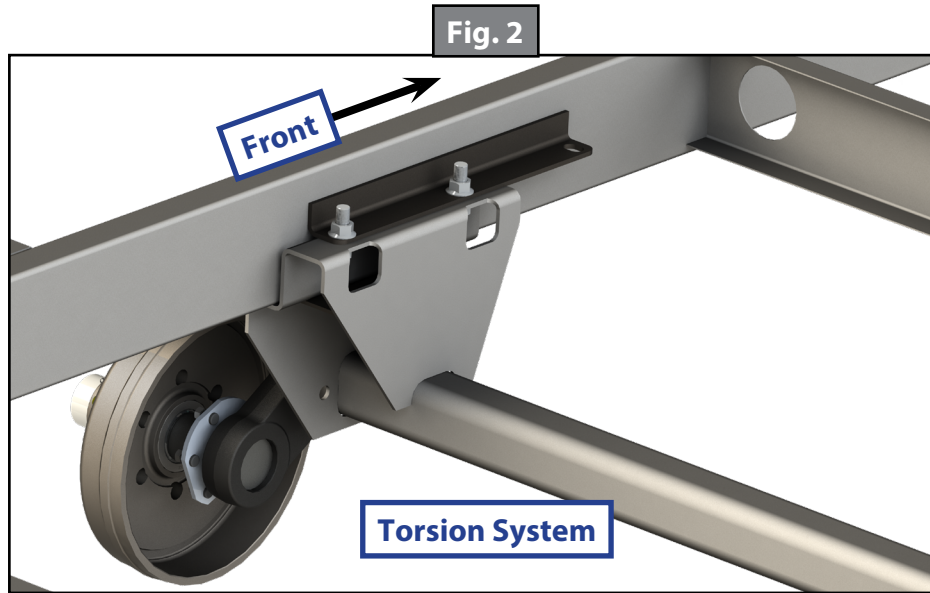
3. Insert three 5/8" - 11 x 1 3/4" flange bolts on each side of the suspension assembly frame (Fig. 1).
4. Attach 5/8" - 11 serrated flange nuts on the ends of the bolts. When the assembly is turned upright, the nuts will be on top.
5. Torque each of the nuts to 90 to 110 ft.-lbs.

Fig. 1



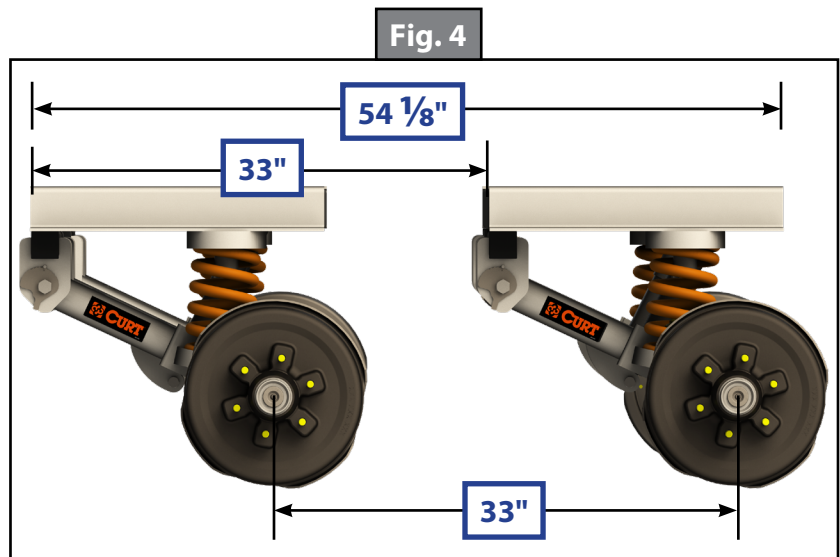
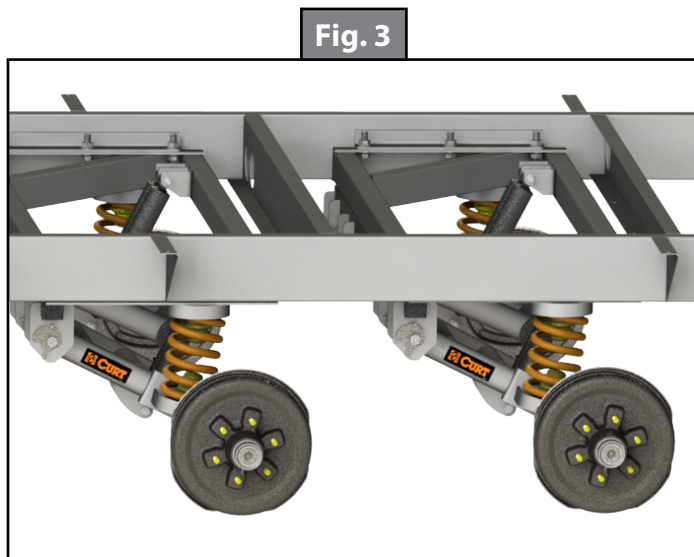
Torsion System

The independent suspension torsion system bolts to the same angle chassis bracket mount. However, use only two $\frac{5}{8}$ " - 11 x 1 $\frac{3}{4}$ " flange bolts and serrated flange nuts on each side to install the torsion independent suspension (Fig. 2). The fasteners are installed at the two back holes on the angle chassis bracket farthest from the front of the bracket. Torque the nuts to 90 to 110 ft.-lbs. The front hole will remain unused.



Tandem Axle

The independent suspension tandem axle system involves the installation of two single systems to the same angle chassis bracket mounts that are used in the single axle system (Fig. 3). However, two chassis brackets are installed 33" apart on each side of the chassis (Fig. 4). Invert the trailer chassis and lower the suspension assemblies onto the angle chassis brackets. Attach systems using three $\frac{5}{8}$ " - 11 x 1 $\frac{3}{4}$ " flange bolts and serrated flange nuts for each bracket. Torque the nuts to 90 to 110 ft.-lbs.



Wheels

Wheel Selection

NOTE: Wheels and tires, added according to the manufacturer's recommendations, must be installed prior to measuring toe and camber.

⚠ WARNING

Air pressure on a weakened or cracked rim can create an unsafe, explosive condition and may result in serious personal injury or death. Do not attempt to modify or repair a wheel. Replace damaged or weakened wheel and rim with new wheel and rim.

⚠ WARNING

Use manufacturer's suggested rim contours only. Failure to use recommended rim contours may result in dramatic separation between tire and wheel, and may result in possible serious personal injury or death.

Wheel Torque Requirements

It is important to maintain proper wheel mounting torque limits on the trailer axle. Use of torque wrenches will ensure proper torque limits are applied to wheel mounting lug nuts. Use no other method to torque wheel lug nuts.

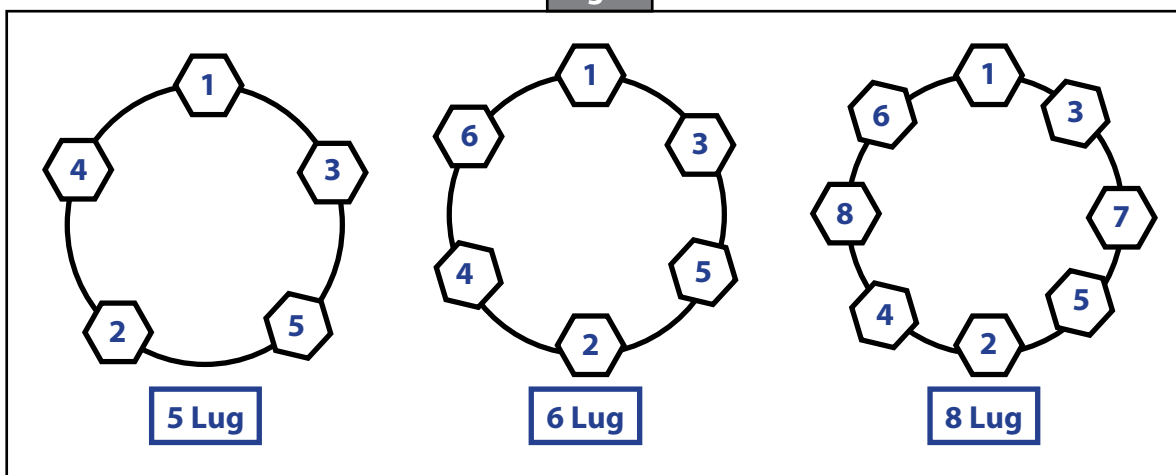
Make sure wheel fasteners match the cone angle of the wheel (usually 60 degrees or 90 degrees) being serviced. Attach new wheel to the axle hub as follows:

1. Start all bolts or nuts by hand to prevent cross-threading.
2. Continue to hand-tighten wheel lug nuts in the sequential pattern shown in Fig. 5.
3. After wheel lug nuts are fully hand-tightened, torque nuts in stages in the sequential pattern shown in Fig. 3.
4. Torque wheel lug nuts to the torque values listed in the Wheel Torque Requirement Chart.

⚠ WARNING

Proper and accurate torque MUST be maintained to prevent wheels from loosening, studs from cracking and/or breaking or other possible hazardous breakage, which may resulting in serious injury or death.

Fig. 5



Wheel Torque Requirement Chart				
Wheel Size	Stud Size	Torque Sequence		
		1st Stage	2nd Stage	3rd Stage
14"	1/2"	20-25 ft-lbs	50-60 ft-lbs	90-120 ft-lbs
15"	1/2"	20-25 ft-lbs	50-60 ft-lbs	90-120 ft-lbs
16"	1/2"	20-25 ft-lbs	50-60 ft-lbs	90-120 ft-lbs
16.5" x 6.75"	1/2"	20-25 ft-lbs	50-60 ft-lbs	90-120 ft-lbs
16"	9/16"	20-25 ft-lbs	60-70 ft-lbs	120-130 ft-lbs
16.5" x 6.75"	9/16"	20-25 ft-lbs	60-70 ft-lbs	120-130 ft-lbs
16" Dual and 17.5" Cone Nut	5/8"	50-60 ft-lbs	100-120 ft-lbs	190-210 ft-lbs
16" Dual and 17.5" Flange Nut	5/8"	50-60 ft-lbs	150-200 ft-lbs	275-325 ft-lbs
14.5" Demount	1/2"	Tighten sequentially to 85-95 ft-lbs		

Tires

Prior to mounting tires onto wheels, do as follows:

1. Make sure rim size and contour are approved by the Tire and Rim Association Yearbook or the tire manufacturer's catalog.
2. Verify tire load rating. If the load is not evenly distributed across all tires, use the tire rated for the heaviest wheel position.
3. Consult the Rubber Manufacturers Association or the tire manufacturer's guidelines for wheel mounting procedures.

Tire pressure is important to promoting tire life and performance. Tire pressure should always be in accordance with the manufacturer's recommended pressure rating for any given load. Check tire pressure as follows:

1. Always check tire pressure cold before operation.
2. Do not bleed air from tires when they are hot.
3. Check inflation pressure weekly.

Brake Amperage, Wire Gauge

Amperage Chart			
Amps/Magnet	Two Brakes	Four Brakes	Six Brakes
3.0	6.0	12.0	18.0

Low or no voltage are the most common problems with the braking system. Amperage at the brakes is also a relatively common issue. Common causes of these conditions are:

1. Low quality electrical connections.
2. Open circuits.
3. Insufficient wire gauge. (Reference Trailer Wire Gauge chart.)
4. Broken wires.
5. Blown fuses (fusing of brakes is not recommended).
6. Short circuits (indicated by high amperage).

Trailer Wire Gauge Chart		
Wire Gauge and Type	Number of Axles	Length of Run
16 Ga Stranded Copper	1	N/A
14 Ga Stranded Copper	2	Under 30ft. (9.1m) from hitch to center of axles
12 Ga Stranded Copper	2 or 3	Over 30ft. (9.1m) from hitch to center of axles

Wheel Alignment Procedure

NOTE: There are nine different positions on both camber and toe adjusters, including four positive and four negative positions and a neutral position. Adjustments for camber and toe are different on curbside and roadside of the trailer (Fig. 6).

NOTE: Camber is the inward or outward tilt of the tires as viewed from the front: Inward tilt is negative, outward tilt is positive (Fig. 7). Camber is used to distribute load across the entire tread. Toe is the side-to-side difference in distance between the front and rear of the tire (Fig. 8).

NOTE: Each slot is an increment of $\frac{1}{16}$ " bolt displacement. Maximum travel is $\frac{1}{4}$ " in each direction.

Measure Camber, Toe

1. Load the trailer and park it on a flat surface.
2. To measure camber, place a digital level vertically across the wheel rim or drum face.
3. For the toe measurement, place a straight edge horizontally across the wheel, edge of rim or drum face and then measure the distance from the straight edge to the chassis rail in the front and rear of the tire.

Adjust Camber, Toe

1. Lift the vehicle so the weight is off the suspension.
2. Place jack stands under the trailer.

WARNING

Trailer MUST be supported per manufacturer's recommendations before working underneath. Failure to do so may result in death or serious personal injury.

WARNING

Always lift trailer by the frame, never the axle or suspension. Do not go under the trailer unless it is properly supported by jack stands. Unsupported trailers can fall causing death or serious injury. This repair should only be completed by an authorized service technician.

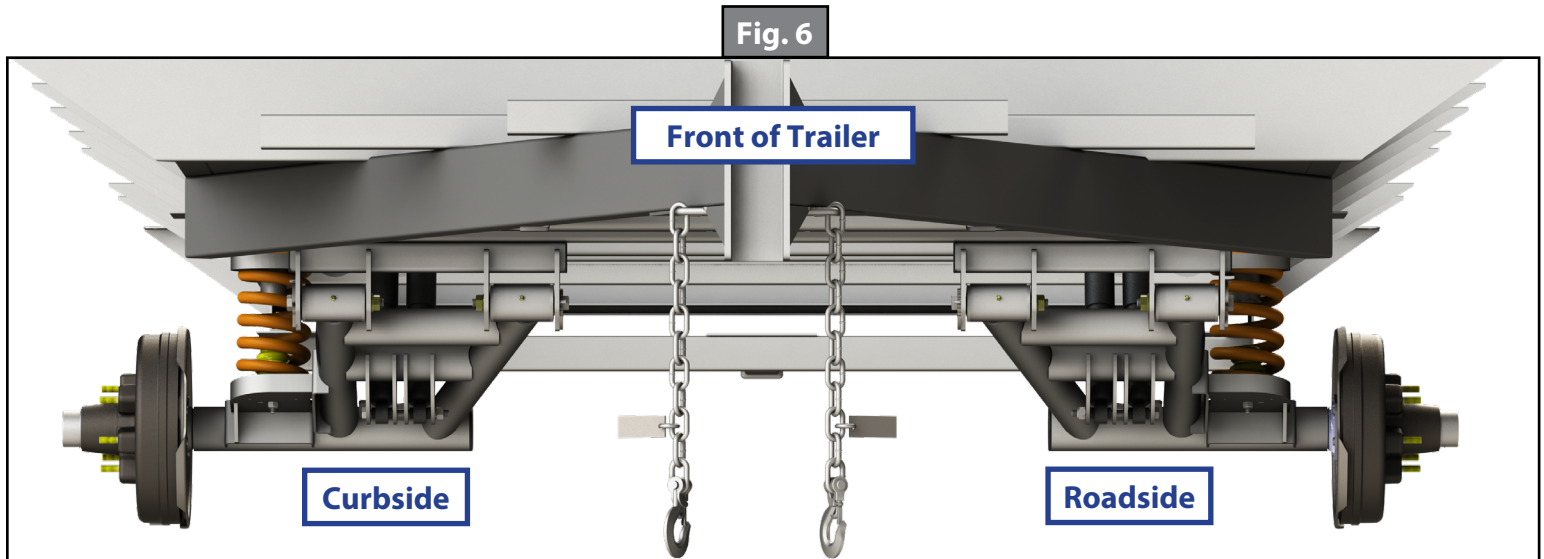
3. Loosen the nut on the camber adjuster, which is located next to the wheel (Fig. 7).
4. Adjust camber.
 - A. Negative:** On the curbside adjusters, clockwise rotation of the outer adjuster (Fig. 9) from the neutral positions will add negative camber so the top of the wheel is slightly leaning in toward the trailer. On the roadside adjusters, counterclockwise rotation of the outer adjuster (Fig. 10) will add negative camber.
 - B. Positive:** On the curbside adjusters, counterclockwise rotation of the outer adjuster (Fig. 9) from the neutral positions will add positive camber so the top of the wheel is slightly leaning away from the trailer. On the roadside adjusters, clockwise rotation of the outer adjuster (Fig. 10) will add positive camber.
5. Loosen the nut on the toe adjuster, which is inside the adjuster assembly (Fig. 7).
6. Adjust toe.
 - A. Toe out:** On the curbside adjusters, clockwise rotation of the adjuster (Fig. 11) from the neutral positions will create toe out so the front of the tire will be slightly farther from the chassis rail than the back of the tire. On the roadside adjusters, counterclockwise rotation of the adjuster (Fig. 12) will add toe out.
 - B. Toe in:** On the curbside adjusters, counterclockwise rotation of the adjuster (Fig. 11) from the neutral position will add toe in so the front of the tire will be slightly farther from chassis rail than the back of the tire. On the roadside adjusters, clockwise rotation of the adjuster (Fig. 12) will add toe in.

7. After adjustment, torque adjuster nuts to 250 ft-lbs.

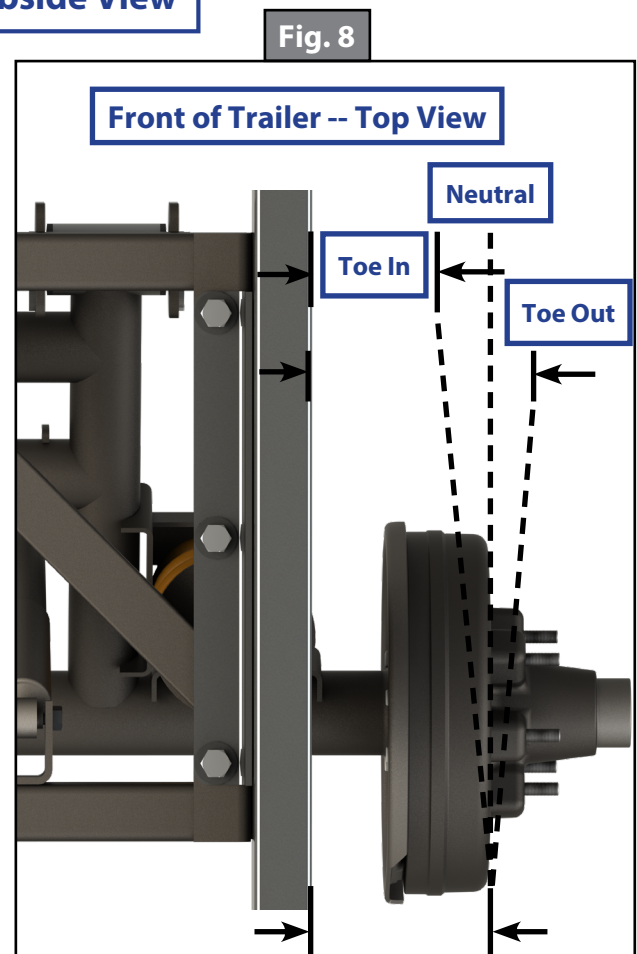
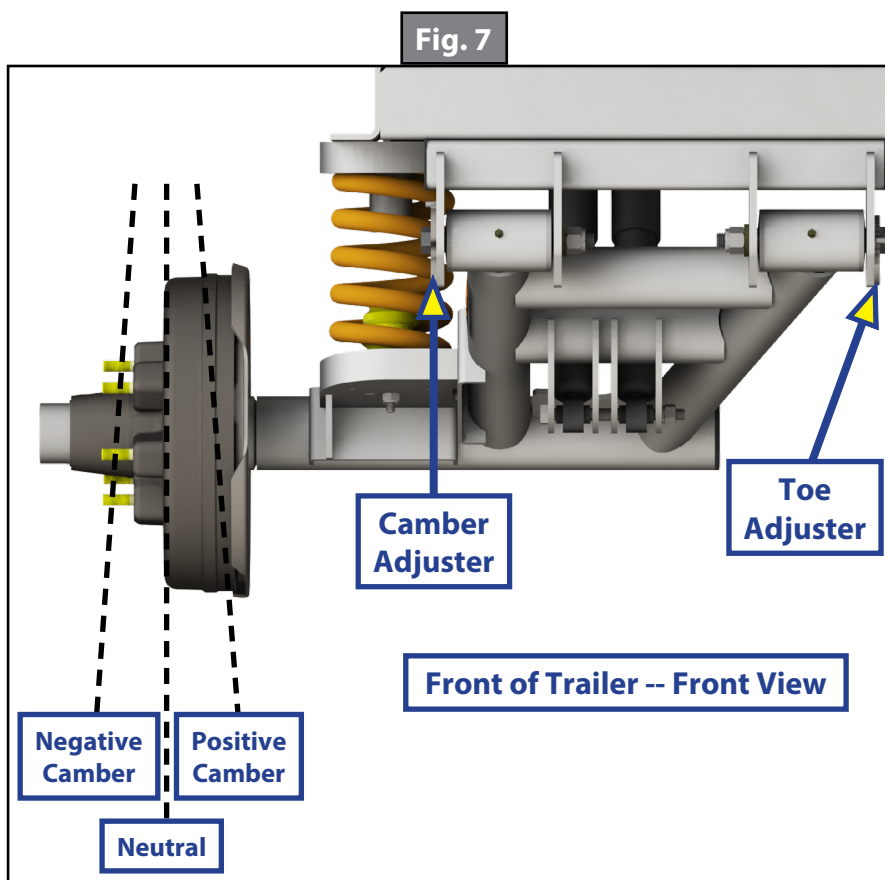
⚠ CAUTION

It is important to torque the adjuster nuts to 250 ft-lbs. Inadequate torque may not retain correct camber and toe settings.

8. Lower the vehicle to load the suspension.
9. Measure the alignment to determine if the adjustment is satisfactory.
10. If necessary, repeat procedure and readjust wheels.



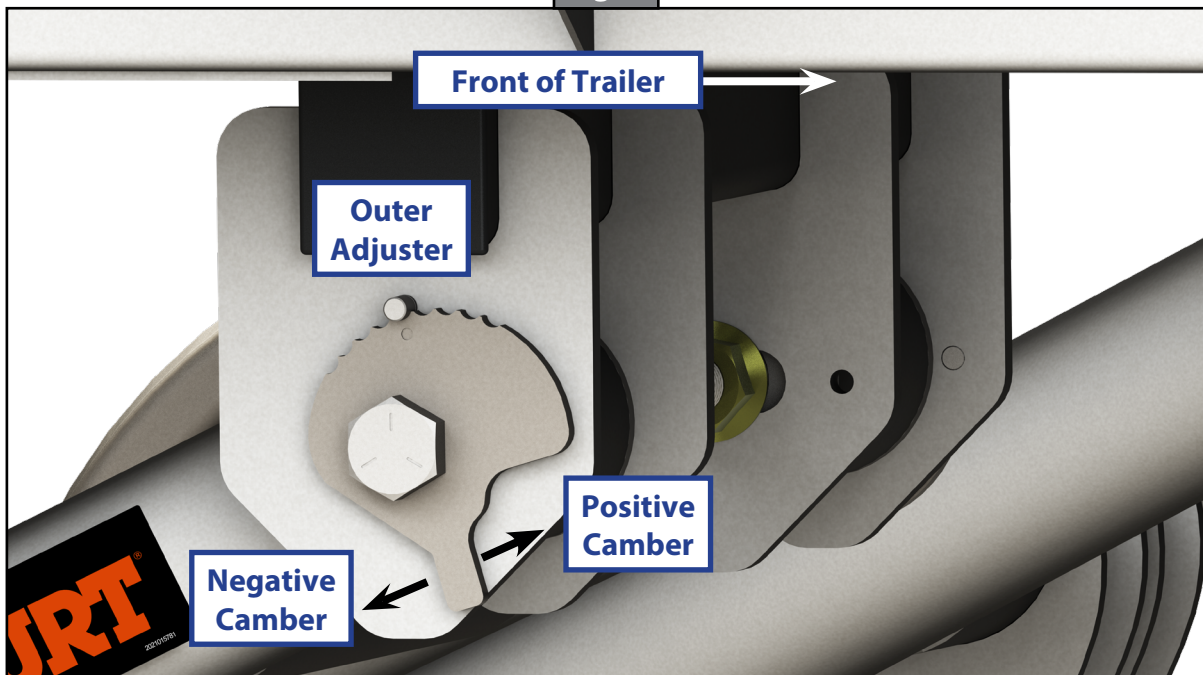
Adjusting Camber/Toe - Curbside View



Adjusting Camber
Higher bolt position = Negative camber
Lower bolt position = Positive camber

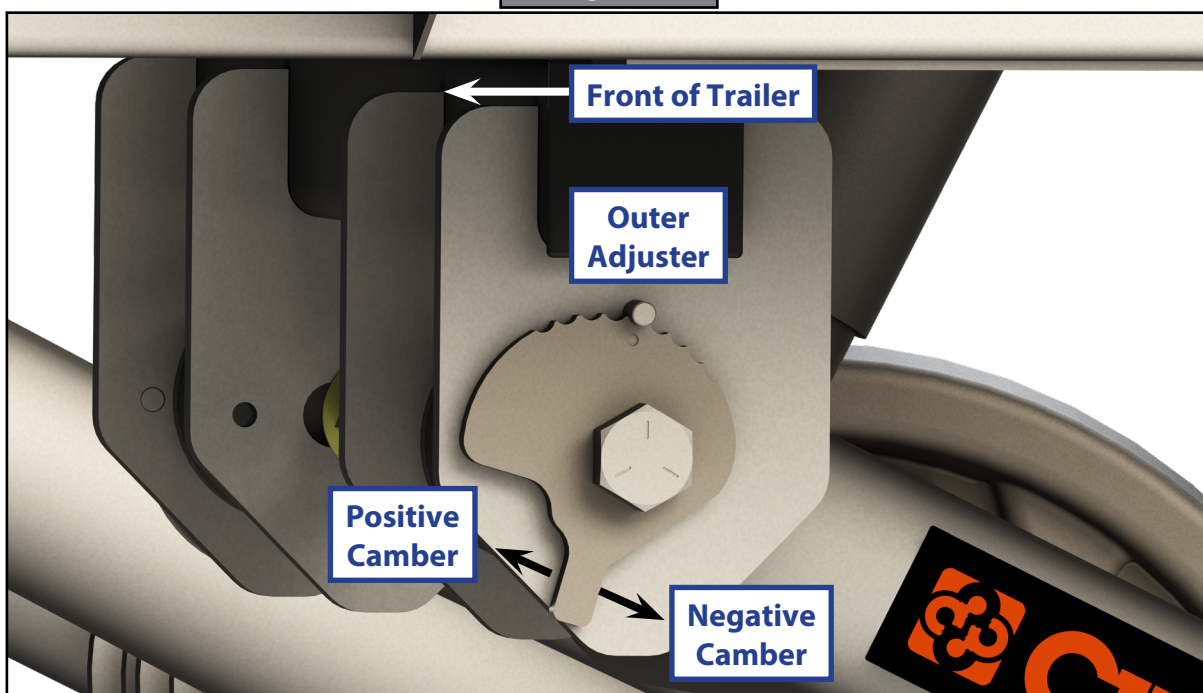
Curbside View

Fig. 9



Roadside View

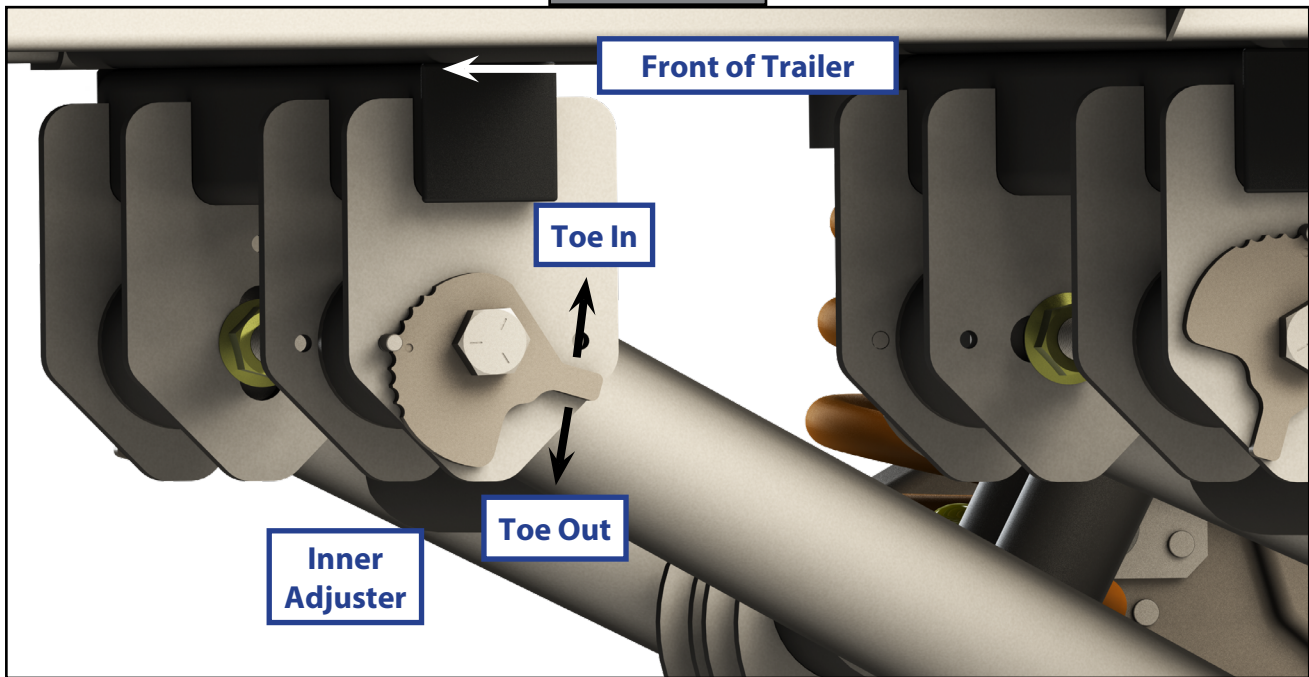
Fig. 10



Adjusting Toe
Bolt position toward front = Toe in
Bolt position toward rear = Toe out

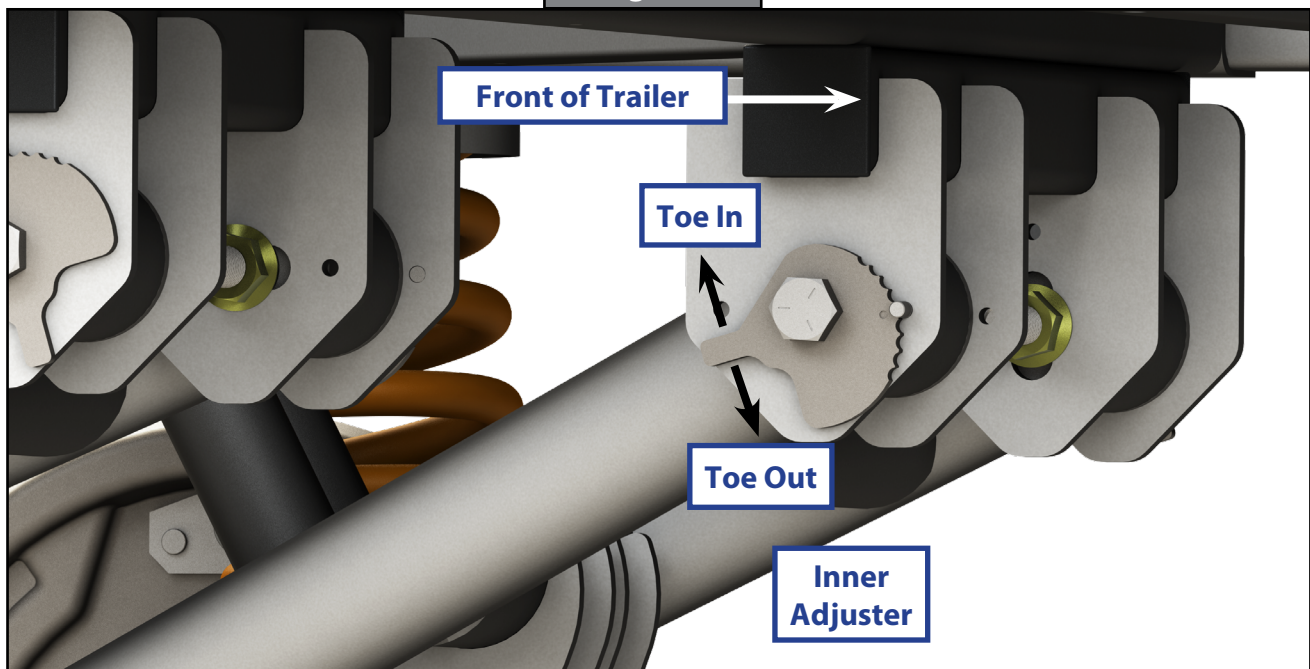
Curbside View

Fig. 11



Roadside View

Fig. 12



Post-Installation Check

1. Check tire clearance at unit's Gross Axle Weight Rating (GAWR).
A. It is recommended to have a minimum of 5" tire clearance as measured at the unit's GAWR.
2. Make sure wheel lug nuts are torqued to the torque values listed in the Wheel Torque Requirement Chart.
3. Test tire pressure cold before operation. Tire pressure should be set in accordance with the manufacturer's recommended pressure rating for any given load.
4. Confirm there are no electrical problems with the braking system.

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Follow proper safety practices. If in doubt, consult a professional RV technician.