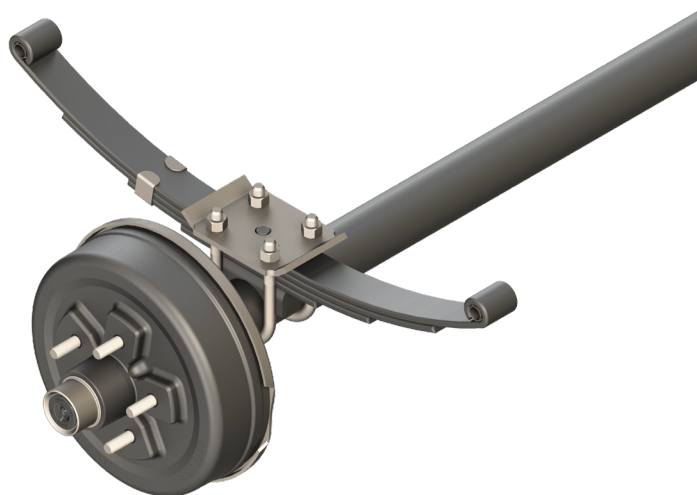




Spring Axle

Installation and Owner's Manual

(For Aftermarket Applications)

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Introduction

Additional information about this product can be obtained from lci1.com/support or by using the LippertNOW app. Replacement kits can be ordered from <https://store.lci1.com/> or by using the LippertNOW app.

The LippertNOW app is available for free on Apple App Store® for iPhone® and iPad® and also on Google Play™ for Android™ users.

App Store® and iPad® are registered trademarks of Apple Inc.

Google Play™ and Android™ are trademarks of Google Inc.

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.

Safety

Read and fully understand all instructions before installing or operating this product.

Adhere to all safety labels.

⚠ WARNING

THE "WARNING" SYMBOL ABOVE IS A SIGN THAT A SAFETY RISK IS INVOLVED AND MAY CAUSE DEATH, SERIOUS PERSONAL INJURY AND/OR SEVERE PRODUCT OR PROPERTY DAMAGE IF NOT SAFELY ADHERED TO AND WITHIN THE PARAMETERS SET FORTH IN THIS MANUAL.

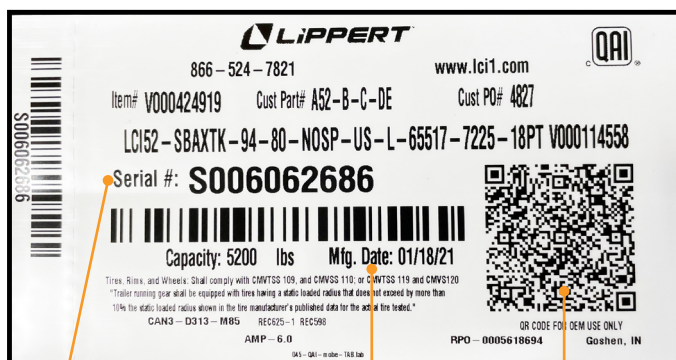
⚠ WARNING

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.

Axle Identification

A label on the axle, located on the back of the axle on the center of the beam, will supply information about the axle. This includes manufacture date and serial number.

A QR code on the axle serial number label will also supply access to online support documentation as well as provide information. If an Android camera phone is used to scan the label's QR code, it will provide a link to the website in addition to information on serial number, load rating, item number and description, customer and manufacturer purchase information and manufacture date. If using an iPhone, scanning the QR code with its camera will supply only the Lippert website link. A QR code reader app is needed on an iPhone to access the other information.

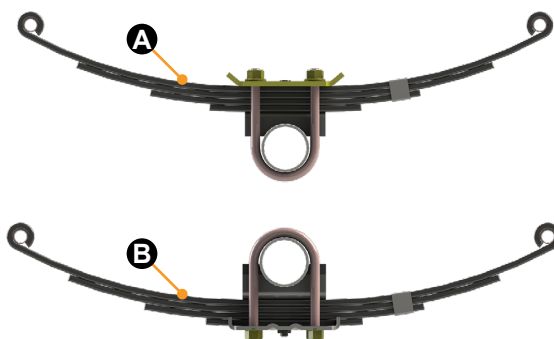


serial
number

manufacture
date

QR code

NOTE: Upgrade or replacement of axles may be completed on overslung (A) or underslung (B) axle configurations.



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Resources Required

- 1 to 2 people, depending on task
- Pneumatic impact wrench
- Torque wrench (ft-lb)
- Appropriate drive bits
- Assorted deep well sockets
- Grease gun
- Floor jacks
- Floor jack stands
- Hammer
- Steel tube to install bolts with grease fittings
- Multi-purpose grease marked with a NLGI code of GC-LB
- Appropriately-sized and rated bolts and fasteners

⚠ WARNING

THE TRAILER MUST BE SUPPORTED PER MANUFACTURER'S RECOMMENDATIONS BEFORE WORKING UNDERNEATH. FAILURE TO DO SO MAY RESULT IN DEATH OR SERIOUS PERSONAL INJURY.

Remove Axle, Leaf Spring

1. Park the trailer on a level surface.
2. With the trailer still connected to the tow vehicle, lower the front landing gear or the tongue jack until contact with the ground is made.
3. Disconnect all internal and external power supplies. Remove brake lines and wire harnesses to the axles that will be replaced.
4. Using the properly-rated floor jacks, lift the trailer according to the manufacturer's recommendation until the wheels are no longer in contact with the ground (Fig.1).
5. Support framework in accordance with the manufacturer's recommendations.

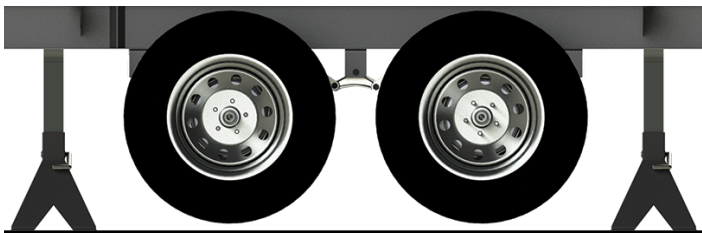


Fig.1

6. Remove the tires and wheels and set aside with the lug nuts for later reinstallation.

7. Using a floor jack, lift the axle or axles slightly and place additional properly-rated jack stands under the axles (Fig.2) so the shackle bolts can be driven out with a hammer.

⚠ CAUTION

ALLOWING THE AXLES TO DROP COULD RESULT IN DAMAGE TO THE WIRING FOR THE ELECTRIC BRAKES.

8. With an impact wrench or an appropriate wrench, loosen the nuts of the leaf spring hanger bolts (Fig.2A) and the nuts on the shackle bolts (Fig.2B).

NOTE: Hold the head of the bolts with a wrench.

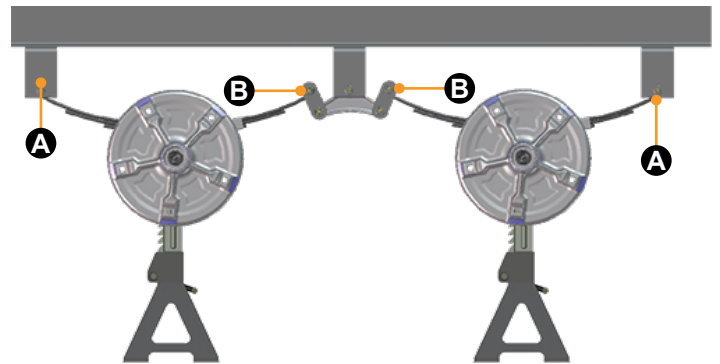


Fig.2

9. Drive out the leaf spring hanger bolts (Fig.2A) with a mallet or a hammer so the bolts unseat from the hanger. Remove the bolts.

NOTE: Inspect the threaded ends of the bolts for damage to the threads. If the threads are damaged, replace the bolts. Otherwise, set aside the bolts and nuts for later reinstallation.

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10. Drive out the bolts in the shackle links (Fig.3A) using a mallet or a hammer.

NOTE: Inspect the threaded ends of the bolts for damage to the thread. If the threads are damaged, replace the bolts. Otherwise, set aside the bolts and nuts for later reinstallation.

NOTE: At this point in the installation, Lippert recommends inspecting the equalizer shackle links. If the shackle links are worn, Lippert recommends replacing them.

roadside view



Fig.3

11. Adjust the floor jacks so the jack stands can be removed from under the axle.

12. Using the floor jacks, slide the axle being replaced from underneath the trailer.

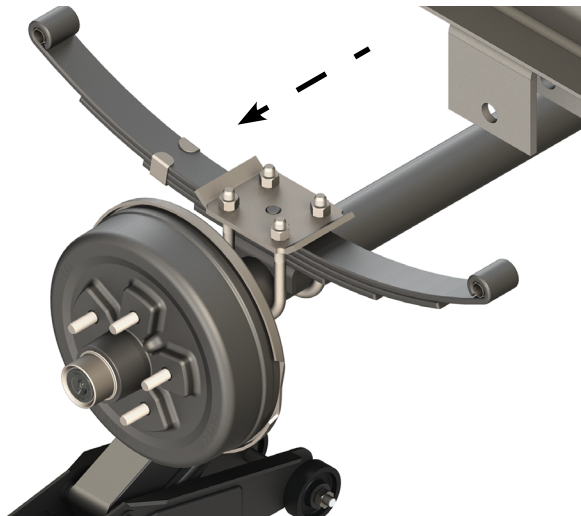


Fig.4

NOTE: If installing new leaf springs, proceed to the next section describing the installation of leaf springs. If reusing the existing leaf springs, continue with the instructions to remove the leaf springs from the axle.

13. After the axle and leaf springs have been lowered from the chassis hangers and shackle links, remove U-bolt nuts (Fig. 5A) from the leaf spring.

14. Remove U-bolts (Fig. 5B) and tie (spring) plate (Fig. 5C) from the axle (Fig. 5D) that are holding the leaf spring (Fig. 5E).

NOTE: Discard U-bolts and nuts. Inspect tie plate and, if necessary, replace with new tie plate.

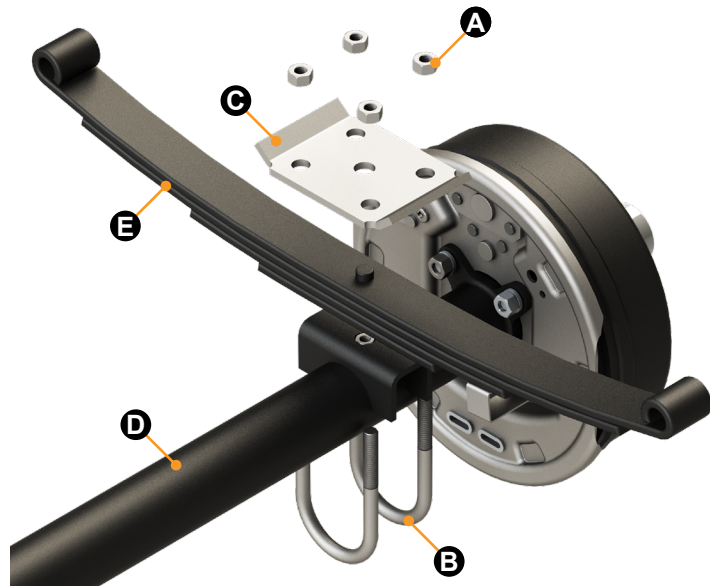


Fig.5

Install Leaf Spring

1. Place the new or reused leaf spring onto the new axle with the leaf spring clip pointing toward the front of the trailer (Fig.6).

2. Position U-bolts and tie plate on the axle (Fig.6).

NOTE: Make sure spring center bolt engages the center hole of the tie plate.

3. Install washers, if equipped, and hand tighten nuts until snug.

4. Verify the following:

- A. Center bolt is engaged in tie (spring) plate (Fig.6).
- B. Leaf spring is square to the axle (Fig.6).
- C. U-bolts are straight up and down and not splayed in or out.
- D. U-bolts have approximately the same amount of thread sticking out of each nut.

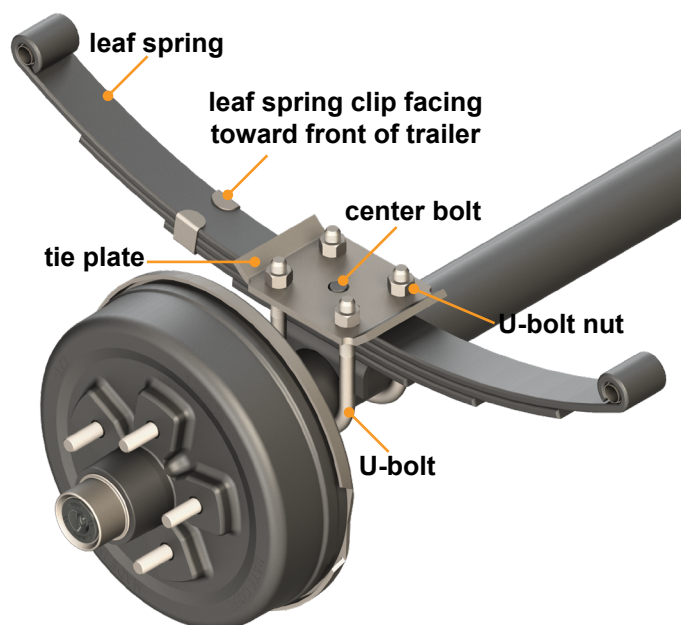


Fig.6

5. Progressively tighten tie (spring) plate nuts in a criss-cross pattern in the order given (Fig.7) until the final torque is obtained. Refer to Spring axle torque specifications chart for bolt torque requirements.

6. Verify the following:

- A. Leaf spring is square to the axle.
- B. Tie plate is flat against leaf spring.
- C. U-bolts are straight.
- D. U-bolts have approximately the same amount of thread sticking out of each nut.
- E. All nuts are torqued.

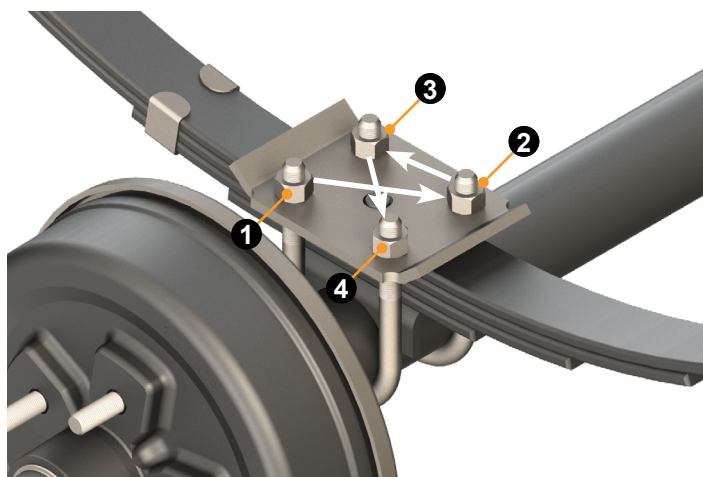


Fig.7

Spring axle torque specifications

Bolt type	Axle capacity	Torque
3/8" U-bolt nuts	2K	35 ft-lbs
1/2" U-bolt nuts	3.5K	50 ft-lbs
9/16" U-bolt nuts	5.2K	65 ft-lbs
9/16" U-bolt nuts	6-8K	90 ft-lbs
Spring eye, equalizer and shackle nuts	All double eye	30-50 ft-lbs.

Install Axles

Single Axle

NOTE: Axle and hub assembly not shown for clarity.

1. Using floor jacks, slide the axle into the normal operating position.

2. Install shoulder bolt for the spring clip side of the suspension spring through the spring eye and into the front hanger (Fig.8A).

NOTE: The spring clip (Fig.8B) should point toward the front of the trailer and the brake wire should exit the axle tube on the back side. Additionally, the position of the axle serial label designates the rear of the axle. These steps ensure correct orientation of the axle.

3. Using a hammer, drive in the bolt from the outside of the hanger to seat the bolt head against the hanger face.

4. Install flange nut onto the threaded end of the bolt.

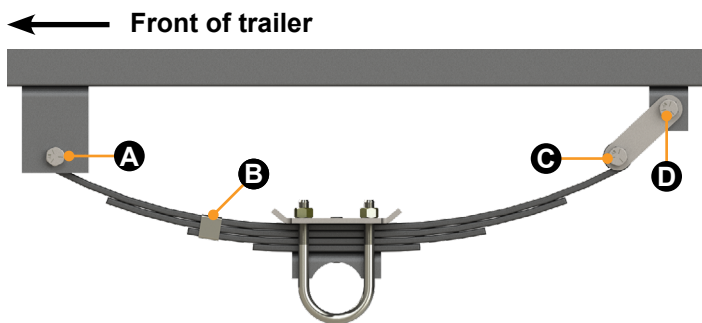


Fig.8 single axle

5. Use a wrench to hold the bolt head to prevent bolt rotation while tightening the nut to the shoulder of the bolt. Torque nut to 30 to 50 ft-lbs.

6. Rotate the rear spring eye toward the rear hanger and install a bolt of the shackle link/bolt assembly through the spring eye from the outside (Fig.8C).

7. Install other bolt in the shackle link/bolt assembly through the hanger (Fig.8D).

8. Install the loose shackle link on the inboard side.

9. Install flange nuts onto the threaded ends of the bolts.

10. Use a wrench to hold the bolt heads to prevent bolt rotation while tightening the nuts to the shoulder of bolts. Torque nut to 30 to 50 ft-lbs.

11. The axle is pre-wired and two lead wires are left for trailer wire hookup. One lead will need a 12V DC supply and the other lead will need a ground wire attached.

NOTE: The two leads are non-polar, so the 12V supply and ground can be hooked to either lead.

NOTE: Trailer wire size and connectors should be sized so a minimum supply of 10.5 volts is achieved at lead wires.

12. Repeat procedures for the opposite side of the trailer.

13. The axle installation is complete. See Reinstall Wheels section to mount the tire and wheel assemblies onto the axle. Follow the wheel manufacturer's instructions.

Spring Axle

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Tandem Axle

NOTE: Axle and hub assembly not shown for clarity.

1. Using floor jacks, slide the axles into the normal operating positions.
2. Beginning with the front axle, install shoulder bolt for the spring clip side of the suspension spring through the spring eye and into the front hanger (Fig.9A).

NOTE: The spring clip (Fig.9B) should point toward the front of the trailer and the brake wire should exit the axle tube on the back side. Additionally, the position of the axle serial label designates the rear of the axle. These steps ensure correct orientation of the axle.

3. Using a hammer, drive in the bolt from the outside of the hanger to seat the bolt head against the hanger face.
4. Install flange nut onto the threaded end of the bolt.
5. Use a wrench to hold the bolt head to prevent bolt rotation while tightening the nut to the shoulder of the bolt. Torque nut to 30 to 50 ft-lbs.
6. Repeat procedure for the rear spring eye of the rear axle (Fig.9C).
7. On the rear spring eye of the front axle (Fig.9D) and the front spring eye of the rear axle (Fig.9E) attach the new shackle link assemblies (Fig.10A), shackle links (Fig.10B) and mounting nuts (Fig.10C) to the equalizer (Fig.10D) and spring leaf (Fig.10E) on both sides of the equalizer (Fig.10F).
8. Use a wrench to hold the bolt heads to prevent bolt rotation while tightening the nut to the shoulder of the bolt. Torque nuts to 30 to 50 ft-lbs.

9. The axles are pre-wired and two lead wires are left for trailer wire hookup. One lead will need a 12V DC supply and the other lead will need a ground wire attached.

NOTE: The two leads are non-polar, so the 12V supply and ground can be hooked to either lead.

NOTE: Trailer wire size and connectors should adhere to CSA Z240 requirements so that a minimum supply of 10.5 volts is achieved at the lead wires. Amperage draw should be a minimum of 10 amps when tested at the trailer plug. Make sure a 12 to 15 volt power supply is being used for the test.

10. Repeat equalizer and suspension spring procedures for the opposite side of the trailer.

11. The axle installation is now complete. See Reinstall Wheels section to mount the tire and wheel assemblies onto the axle. Follow the wheel manufacturer's instructions.

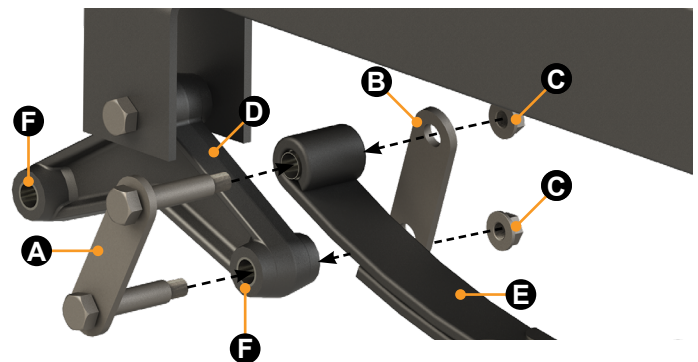


Fig.10

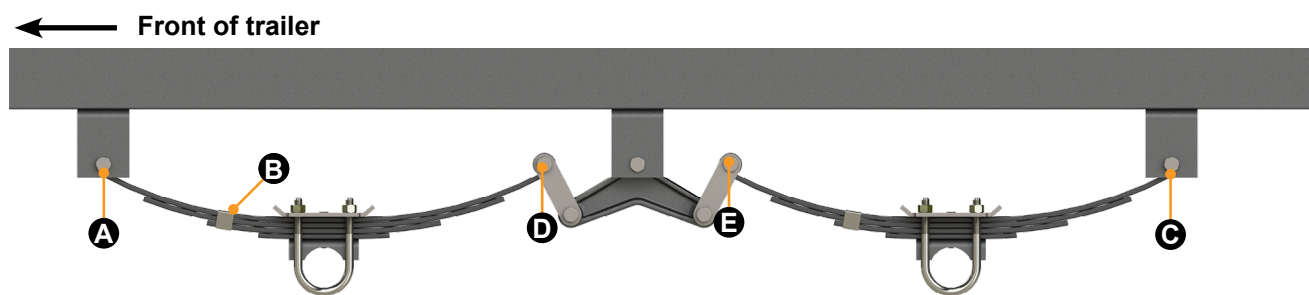


Fig.9

tandem axle

Spring Axle

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Triple axle

NOTE: Axle and hubl assembly not shown for clarity.

1. Using floor jacks, slide the axles into the normal operating positions.
2. Beginning with the front axle, install shoulder bolt for the spring clip side of the suspension spring through the spring eye and into the front hanger (Fig.11A).

NOTE: The spring clip (Fig.11B) should point toward the front of the trailer and the brake wire should exit the axle tube on the back side. Additionally, the position of the axle serial label designates the rear of the axle. These steps ensure correct orientation of the axle.

3. Using a hammer, drive in the bolt from the outside of the hanger to seat the bolt head against the hanger face.
4. Install flange nut onto the threaded end of the bolt.
5. Use a wrench to hold the bolt head to prevent bolt rotation while tightening the nut to the shoulder of the bolt. Torque nut to 30 to 50 ft-lbs.
6. Repeat procedure for the rear spring eye of the rear axle (Fig.11C).
7. Rotate rear spring eye of first axle toward the front of the triple axle equalizer and install a bolt of the shackle link/bolt assembly through spring eye from the outside (Fig.11C).
8. Install loose shackle link from the inboard side.
9. Install flange nut on threaded end of the bolt.
10. Use a wrench to hold the bolt head to prevent bolt rotation while tightening the nut to the shoulder of the bolt. Torque nut to 30 to 50 ft-lbs.

11. Install a bolt of through the fixed arm of the triple axle equalizer and through the spring eye of the front of the second axle (Fig.11E).

12. Install flange nut on threaded end of the bolt.

13. Use a wrench to hold the bolt head to prevent bolt rotation while tightening the nut to the shoulder of the bolt. Torque nut to 30 to 50 ft-lbs.

14. On the rear spring eye of the center axle (Fig.11F) and the front spring eye of the rear axle (Fig.11G), attach the new shackle link assemblies (Fig.12A), shackle links (Fig.12B) and mounting nuts (Fig.12C) to the equalizer (Fig.12D) and spring leaf (Fig.12E) on both sides of the tandem equalizer (Fig.12F).

15. Use a wrench to hold the bolt head to prevent bolt rotation while tightening the nuts to the shoulder of the bolt. Torque nuts to 30 to 50 ft-lbs.

16. The axles are pre-wired and two lead wires are left for trailer wire hookup. One lead will need a 12V DC supply and the other lead will need a ground wire attached.

NOTE: The two leads are non-polar, so the 12V supply and ground can be hooked to either lead.

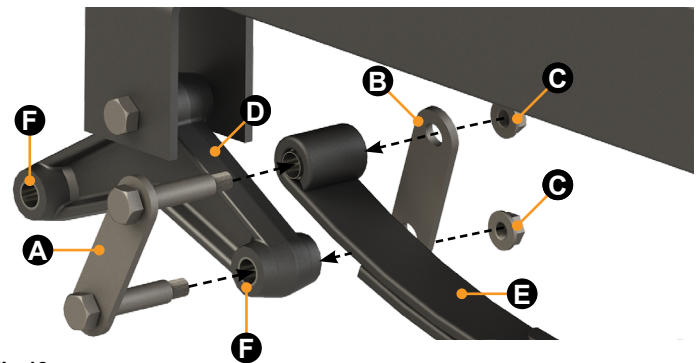


Fig.12

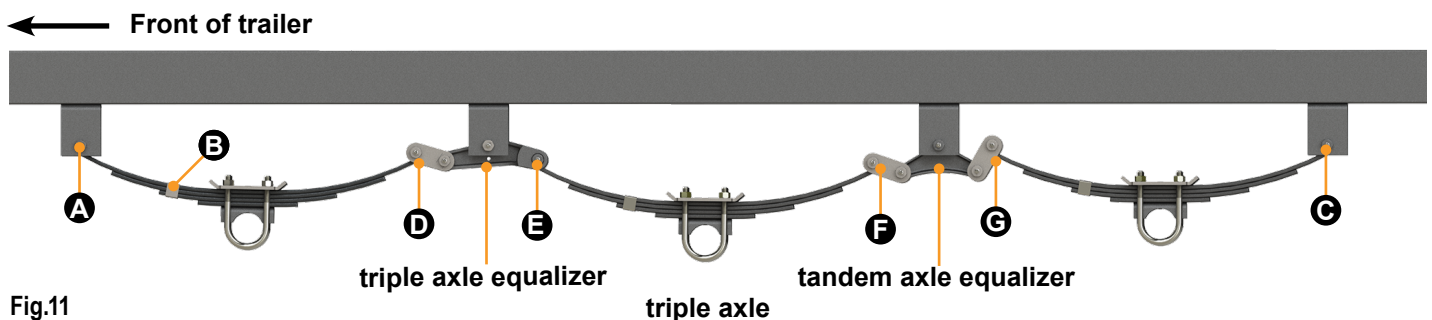


Fig.11

NOTE: Trailer wire size and connectors should adhere to CSA Z240 requirements so that a minimum supply of 10.5 volts is achieved at the lead wires. Amperage draw should be a minimum of 10 amps when tested at the trailer plug. Make sure a 12 to 15 volt power supply is being used for the test.

17. Repeat suspension spring procedures for the opposite side of the trailer.

18. The axle installation is now complete. See Reinstall Wheels section to mount the tire and wheel assemblies onto the axle. Follow the wheel manufacturer's instructions.

Post-Installation Note For Tandem, Triple Axles

1. After installation, make sure the tandem axle shackle links (Fig. 13A) are pointing up in the 10 o'clock and 3 o'clock positions and the leaf spring eyes (Fig. 13B) are located above the equalizer eyes (Fig. 13C).

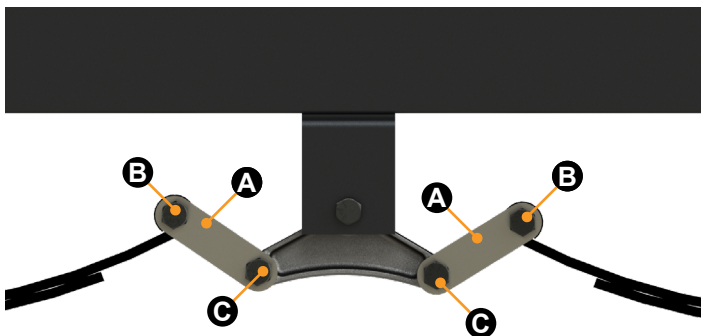


Fig.13

Checking Hanger Measurements

If the axles do not fit, check that the hanger measurements are correct.

1. Single axle hanger measurement, TI-178:

<https://lci-support-doc.s3.amazonaws.com/technical-information-sheets/axles-and-suspension/ccd-0002079.pdf>

2. Tandem axle hanger measurement, TI-058:

<https://lci-support-doc.s3.amazonaws.com/technical-information-sheets/axles-and-suspension/ccd-0001920.pdf>

3. Triple axle hanger measurement, TI-115:

https://lci-support-doc.s3.amazonaws.com/technical-information-sheets/axles-and-suspension/ccd_0002009.pdf

Wet Bolt Installation

If wet bolts are being installed or replaced, follow this procedure.

1. Disconnect all internal and external power supplies.
2. Using jack stands to support chassis per manufacturer's recommendations, support axle for safe disassembly of axle bolts and hardware.
3. Remove the wheels and set aside wheels and lug nuts.
4. After removing axle bolts, inspect spring eyes (Fig.13A) for brass bushings (Fig.13B). Replace brass bushings if needed by using the following procedure:
 - A. Place an appropriately-sized punch onto the brass bushing. An appropriately-sized punch will allow the bushing to slip onto the shaft, but not slide off the other end.
 - B. Insert the end of the punch into the spring eye.
 - C. Drive the old bushing out with a hammer.
 - D. As the old bushing is driven out, the new bushing will be inserted into the spring eye.

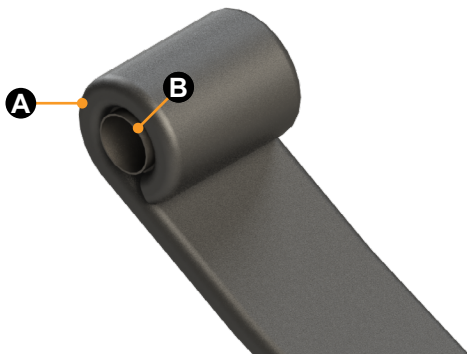


Fig.14

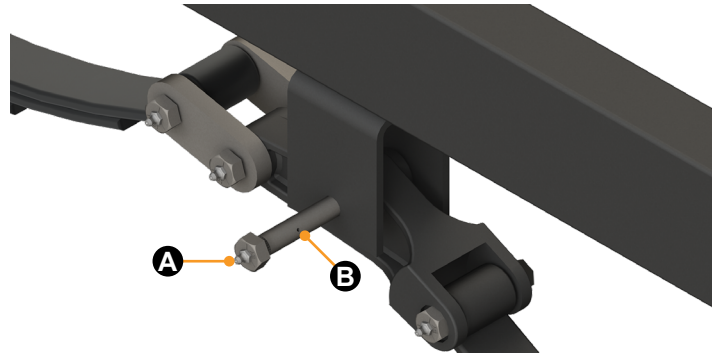


Fig.15

5. Replace standard mounting hardware, one at a time, with wet bolts and $\frac{7}{16}$ " locking flange nuts. Insert the wet bolts with the grease fittings (Fig.14A) on the inside of the spring hangers into the axle mounting holes. The serrations under the head of the wet bolt should be fully inserted into the hanger or shackle.

NOTE: The wet bolt grease hole (Fig.14B) should be positioned at 3 or 9 o'clock. If the grease hole locations are not installed properly, the weight of the chassis will prevent the grease from fully lubricating the brass bushings.

6. Tighten the locking flange nuts to the shoulders of wet bolts. If the serrations under the head of the wet bolt are not fully inserted into the hanger or shackle, carefully tap the wet bolt into position with a rubber mallet or similar tool. Care should be taken not to damage the grease fittings.
7. Apply enough grease to fully lubricate the brass bushing. Typically, two squirts from a manual grease gun is sufficient.
8. Reconnect electric brakes, if applicable.
9. Remount wheels. See section on mounting wheels.

Maintenance

Every 12 months or 36,000 miles, which ever comes first, check the equalizers and wet bolts if applicable, to be sure they are free from debris and that the nuts are torqued at 30-50 ft-lbs.

If using the triple axle wet bolts with grease fittings, use any multi-purpose grease marked with the NLGI code of GC-LB.

Reinstall Wheels

1. Reinstall previously removed tires, wheels and lug nuts onto the axles.

2. Start all wheel lug nuts by hand to prevent cross-threading.

A. Continue to hand-tighten wheel lug nuts in the sequential pattern shown in figure 15.

B. After wheel lug nuts are fully hand-tightened, torque nuts in stages and in the sequential pattern shown in figure 15.

C. Torque wheel lug nuts to the torque values listed in the Wheel Torque Requirement Chart.

3. After reassembly is complete, test all function and operation of the axles and brakes before returning the trailer to normal use.

NOTE: Wheel lug nuts should be torqued before first road use and after each wheel removal. Check and re-torque wheel lug nuts after 10, 25 and 50 miles. A periodic check during regular service is recommended.

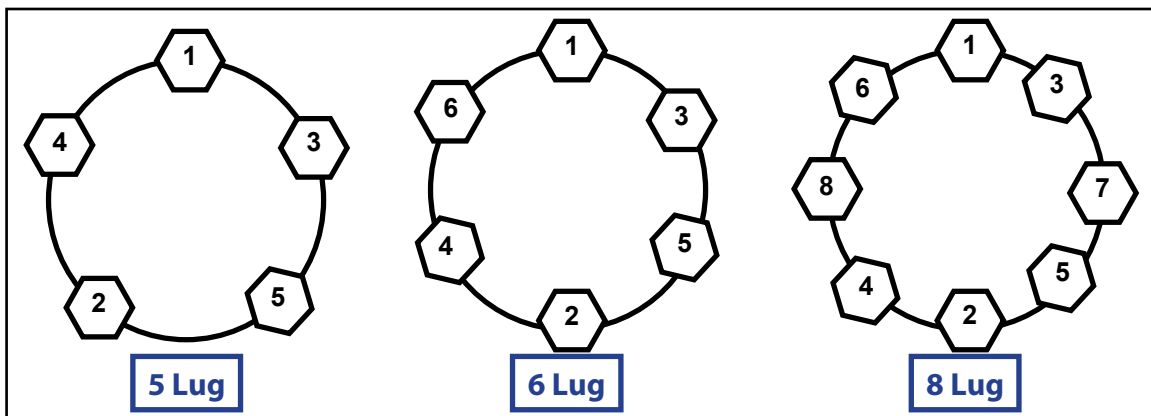
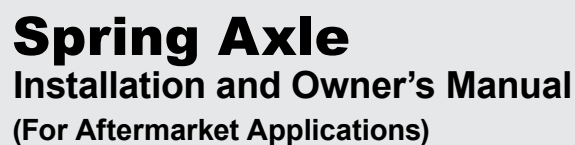


Fig.16

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
15"	1/2"	20-25 ft-lbs	50-60 ft-lbs	90-120 ft-lbs
16.6" x 6.75"	1/2"	20-25 ft-lbs	50-60 ft-lbs	90-120 ft-lbs
16.6" 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		



Notes



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