



2265 Crosswind Drive, Prescott, AZ. 86301

8060

**Front Spring Shackle Inversion Kit
1975 and newer Jeep CJ (CJ5 & CJ7)**

Read and understand all instructions and warnings prior to installation of system or the operation of the altered vehicle.

SAFETY WARNING: Performance Automotive Group recommends this system be installed by a certified technician! These instructions address installation of the Trail Master system and may not include OE recommended procedures for disassembly / reassembly of OE components. Research the areas requiring certification. In addition to these instructions, professional knowledge of disassembly / reassembly procedures as well as post installation checks must be known. Attempts to install this system without knowledge and expertise may jeopardize the integrity and or operating safety of the vehicle.

PRODUCT SAFETY WARNING: Certain Performance Automotive Group products are intended to improve off-road performance. Modifying your vehicle for off-road use may result in the vehicle handling differently than a factory equipped vehicle. Use of oversize tires, suspension lifts, body lifts and other suspension modifications may raise your vehicles center of gravity, resulting in an increased tendency for the vehicle to “pitch and roll” during sudden turns or abrupt maneuvers. Extreme care must be used to prevent loss of control or vehicle roll over. Failure to drive your modified vehicle safely may result in serious injury or death. Drive at reduced speeds to ensure your ability to maintain control of the vehicle under all driving conditions. Always wear a safety belt.

PRODUCT SAFETY LABEL: Supplied in this kit is a Safety Warning Label. Install this label inside of the vehicles cab, in a highly visible location to all operators of the vehicle.

Trail Master does not recommend the combined use of suspension lifts, body lifts, or other lifting devices. See Product Safety Warning above. Combining lift devices may require altering your vehicle’s track width to ensure safe handling characteristics. Consult a professional mechanic with off-road experience before combining any lifting device. Larger rim and tire combinations may increase leverage on suspension, steering, and related components. As you increase the size of the rim and tire combinations over stock, you also increase the possibility of OE related component failure.

PRE-INSTALLATION NOTES:

1. Back space of wheels and tire pull over must be such that the possibility of the combination will not interfere with and mobile, fixed, or rotating components; failure to do so may result in serious vehicle damage!
2. Special literature or tools required; OE service manual for model / year of vehicle. Refer to OE manual for proper disassembly / reassembly procedures of OE related components. Additional tools required unique to installation are mentioned in the following instructions.
3. Compare parts included in your system with the enclosed parts list. Placing hardware with the components before you start may reduce installation time. Contact your Trail Master dealer if any parts are missing or appear to be different than those indicated on the parts list.

4. Always wear safety glasses. Use appropriate safety equipment at all times.

GLOSSARY OF TERMS:

- TM: Trail Master
- DRV: Drivers side of the vehicle
- PASS: Passengers side of the vehicle
- OE: Original equipment

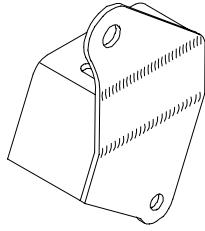
FASTENERS: Adhere to recommendations when replacement fasteners, retainers, and keepers are called out in the OE service manual. When reassembling the vehicle it is recommended by the vehicle manufacturer that certain fasteners are replaced in order to maintain proper retaining characteristics. This system may not include all replacement hardware as recommended by the OE service manual. Additional replacement hardware should be obtained prior to installation of this system to meet the requirements of the OE service manual.

TORQUE SPECIFICATIONS: See OE manual for torque values and procedures when reusing an OE fastener. See General Fastener Specification

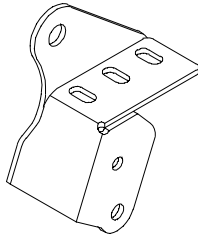
BOLT SIZE	GRADE 5	GRADE 8
1/4"-20 fastener	10'LBS	10'LBS
1/4"-28 fastener	10'LBS	12.5'LBS
5/16"-18 fastener	17'LBS	22.5'LBS
5/16"-24 fastener	20'LBS	25'LBS
3/8"-16 fastener	30'LBS	40'LBS
3/8"-24 fastener	35'LBS	45'LBS
7/16"-14 fastener	50'LBS	65'LBS
7/16"-20 fastener	55'LBS	70'LBS
1/2"-13 fastener	75'LBS	100'LBS
1/2"-20 fastener	85'LBS	110'LBS
9/16"-12 fastener	105'LBS	135'LBS
9/16"-18 fastener	115'LBS	150'LBS
5/8"-11 fastener	150'LBS	195'LBS
5/8"-18 fastener	160'LBS	210'LBS
3/4"-16 fastener	175'LBS	225'LBS

PARTS LIST:

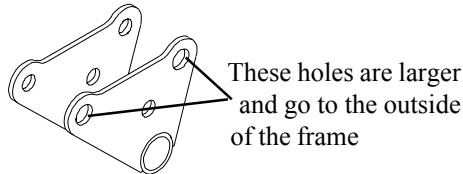
960608 DVR Side Front Mount Bracket 1



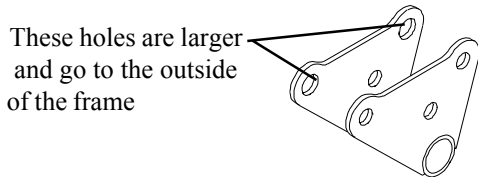
960609 PASS Side Front Mount Bracket 1



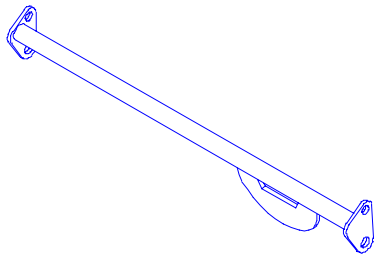
960610 DVR Side Rear Mount Bracket 1



960611 PASS Side Rear Mount Bracket 1



960612 Cross Brace 1



8060BAG1: HARDWARE FOR THE FRONT BRACKETS
96200CHHC 9/16" X 2" Coarse Thd Bolt 2
N96CL 9/16" Coarse Lock Nut 2
W96S 9/16" SAE Flat Washer 4
96412FHHC 9/16" x 4 1/2" Fine Thd Grade 8 Bolt 2
N96FL8 9/16" Fine Thd Grade 8 Lock Nut 2
W96S 9/16" SAE Flat Washer 4
38114CHHC 3/8" X 1 1/4" Coarse Thd Bolt 4
N38CL 3/8" Coarse Thd Lock Nut 4
W56F 5/16" Flat Washer 8

8060BAG2: HARDWARE FOR THE REAR BRACKETS
47 .750 O.D. X .083 Wall X 1.875 Long Sleeve 4
12312CHHC 1/2" X 3 1/2" Coarse Thd Bolt 6
N12CL 1/2" Coarse Thd Lock Nut 6
W12S 1/2" SAE Flat Washer 12
W150F 1 1/2" O.D. X 1" I.D. Flat Washer 4
WL002 Warning label 1

INSTALLATION INSTRUCTIONS

A. VEHICLE PREPARATION

1. Block and secure vehicle.
 - a. Block the rear wheels.
 - b. Raise the front of the vehicle.
 - c. Secure the frame and axles with jack stands.
2. Remove the wheels and tires.

B. REMOVE THE SPRINGS

1. Remove the springs from the axle.
 - a. Disconnect the anti-sway bar from the spring pad (if vehicle is equipped with an anti-sway bar).
 - b. Remove the four U-bolts retaining the spring pad.
 - c. Remove the spring pad.
 - d. Repeat process on the opposite side of the vehicle.
2. Remove the springs from the vehicle.
 - a. Be sure the axle is supported with jack stands and that there is no weight resting on the springs.
 - b. Disconnect the spring at its rearward pivot mount.
 - 1.) Remove the nut from the spring pivot bolt.
 - 2.) Remove the spring pivot bolt.
 - c. Disconnect the spring from the lower point of the front shackle.
 - d. Remove the spring from the vehicle (be sure to note the front and the rear of the spring).

C. REMOVE THE SHACKLES AND BUSHINGS

1. Remove the front shackles.
 - a. Remove the upper shackle pivot bolt nut.
 - b. Remove the shackle.
2. Remove the shackle mount bushings.
 - a. Remove the front bushings where the shackle used to be.
 - 1.) Pry or push loose the bushings.
3. Repeat process on the opposite side of the vehicle.

D. REMOVE THE FRAME MOUNTS

1. Remove the front frame mounts as shown in *figure 1*.
 - a. Remove the two bolts retaining the front shackle frame mounts.
 - b. Remove the frame mount.
 - c. Repeat on opposite side of the vehicle.

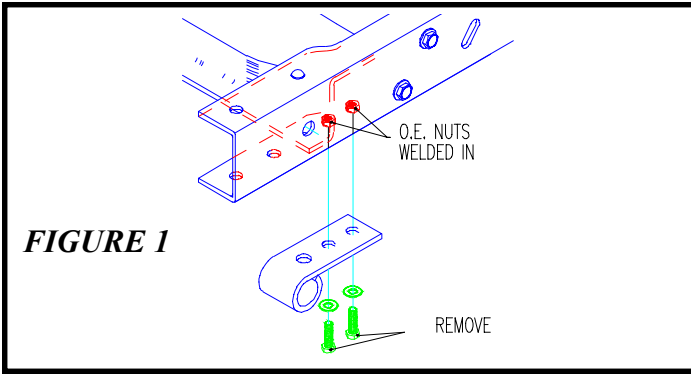


FIGURE 1

2. Drill out rivets for front mount.
 - a. Find the head of the rivet just in front of the two bolt holes for the front frame mount and center punch.
 - b. Using a 3/8" drill bit, drill 5/16" deep into the head of the rivet as shown in **figure 2**.

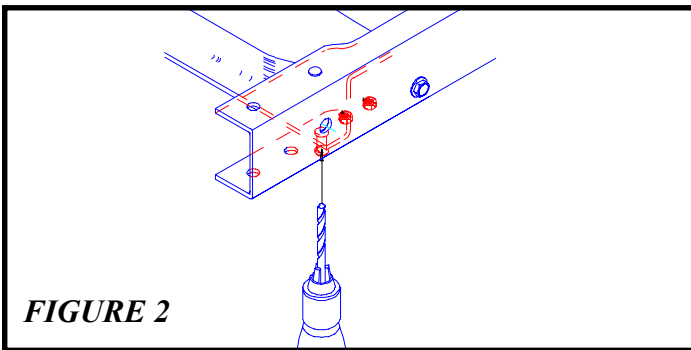


FIGURE 2

- c. Using a chisel strike the head of the rivet to remove it.
 - d. Using a punch, drive the remaining part of the rivet free.
3. Remove the rear frame mounts.
 - a. Remove the rivets holding the rear frame mounts to the frame.
 - 1.) Center punch the head of the two rivets.
 - 2.) Using a 3/8" drill bit, drill 5/16" deep into the head of the rivet as shown in **figure 3**.

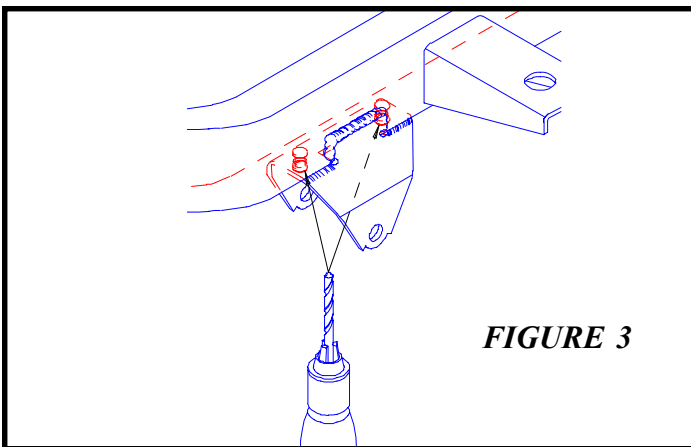


FIGURE 3

- 3.) Using a chisel strike the head of the rivet to remove it.
 - 4.) Using a punch drive the remaining part of the rivet free.
- b. Remove the welds retaining the frame mount to the

frame as shown in **figure 4**.

- 1.) Using an abrasive wheel remove the pivot bracket.
 - a.) Grind on the welds only.
 - b.) DO NOT DAMAGE THE FRAME RAIL

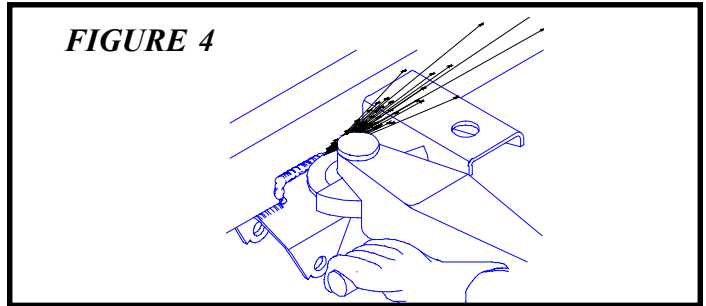


FIGURE 4

- 2.) Using a grinder dress the frame rail to remove any sharp edges.
- 3.) Cover all exposed metal with rubberized under coating or black paint to prevent rust.
- c. Repeat process on the opposite side of the vehicle.

E. INSTALL FRONT BRACKETS

1. Locate the large 3/4" side hole in the DRV side of frame.
2. Place the DRV bracket (960608) onto the DRV side of frame as shown in **figure 5**.
 - a. Align the large side hole in the bracket with the large side hole you just found in the frame.
 - b. Align the three oval holes in the bracket with the three holes in the bottom of the frame.
3. Retain the bracket as shown in **figure 5**.
 - a. Place (1) 9/16" x 2" coarse thd bolt, (2) 9/16" SAE washers, and (1) 9/16" coarse thd lock nut into the large side hole (DO NOT TIGHTEN).
 - b. Place the two OE bolts previously removed into the two rearward holes at the bottom of the frame (DO NOT TIGHTEN).
 - c. Place (1) 3/8" X 1 1/4" coarse thd bolt, (2) 5/16" flat washers, (2) 3/8" coarse thd lock nut into the front hole at the bottom of the frame (where the rivet was removed) (DO NOT TIGHTEN).
4. Repeat Process on the opposite side of the frame using 960609.

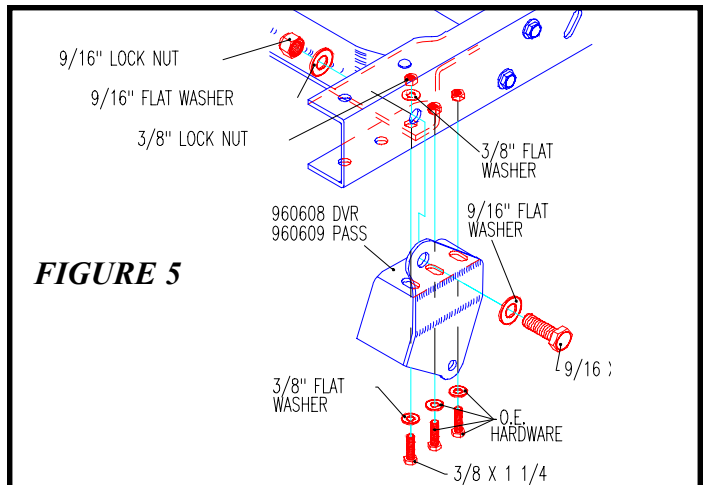


FIGURE 5

F. INSTALL CROSS BRACE

- Place cross brace (960612) so that it is between the two front mount brackets, the flap should be on the DRV side pointing downward as shown in *figure 6*.
- Retain the cross brace as shown in *figure 6*.
 - Place (1) 9/16" X 3 1/2" coarse thd bolt, (2) 9/16" SAE flat washers, and (1) 9/16" coarse thd lock nut into the lowest hole in the bracket, the bolt will need to go through the entire bracket and the flange on the cross brace.
 - Place (1) 3/8" X 1 1/4" coarse thd bolt, (2) 3/8" SAE flat washers, and (1) 3/8" coarse thd lock nut into the upper hole in the cross brace, the bolt will need to go through one side of the front mount bracket and the flange on the cross brace.
 - Repeat on the opposite side of the vehicle.

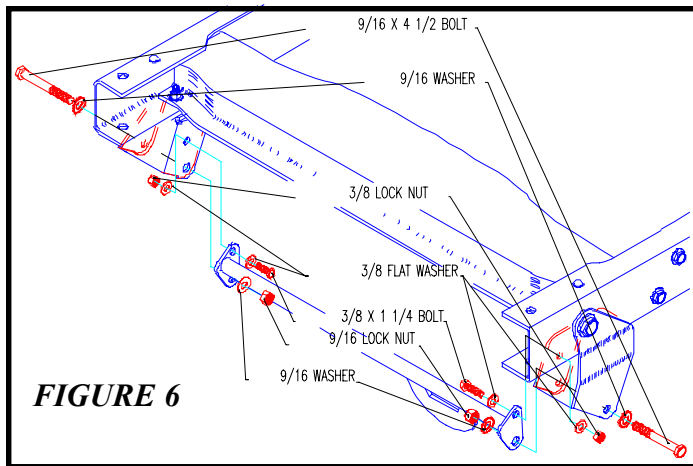


FIGURE 6

G. TORQUE THE FRONT SYSTEM

- Torque the two 9/16" side bolts in each of the front brackets to 105'LBS.
- Torque the four OE bolts in the bottom of the frame to OE spec.
- Torque the two 3/8" bolts in the front of the brackets to 30'LBS.
- Torque the two 3/8" bolts holding the cross brace to the front mounts to 30'LBS (the large bolt in the cross brace will be tightened later, use it to line up the holes in the cross brace with the holes in the front mounts then remove it).

H. INSTALL THE SHACKLE MOUNT BRACKETS

- Mark for proper alignment.
 - Measure from the center of the lowest hole in the DRV side front mount bracket to a point on the DRV side frame rail 43 1/2" (43.50") back as shown in *figure 7*.
 - Mark the frame at 43 1/2" (43.50") as shown in *figure 7*.

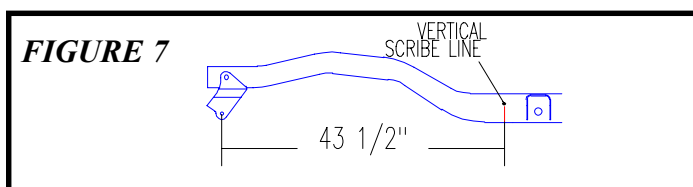


FIGURE 7

- Place the DRV side rear mount bracket (960610) onto the DRV side frame rail as shown in *figure 8*.
 - Slide the DRV rear mount bracket onto the frame rail.
 - Adjust the bracket so that the bushing hole is in line with the mark indicating 43 1/2" on the frame.
 - Clamp bracket into place using C-clamps.

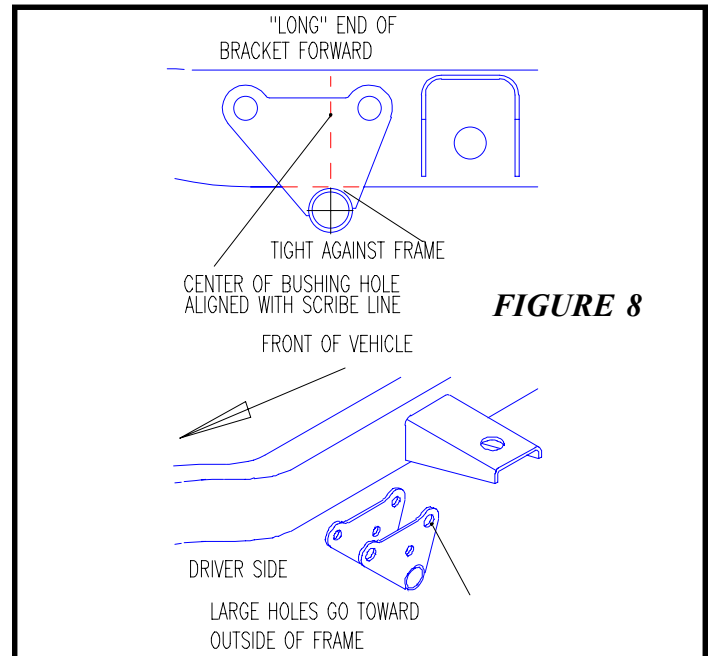


FIGURE 8

- Drill holes for mounting the brackets.
 - Using the rear mount bracket as templet mark the center of each of the three mount points with a center punch as shown in *figure 9*.

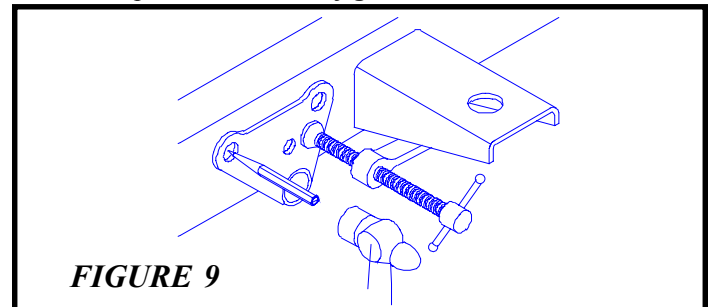


FIGURE 9

- Using a 1/2" drill bit, drill through all three mount points as shown in *figure 10*. (Note: the holes that are being drilled need to go all the way through the frame rail).

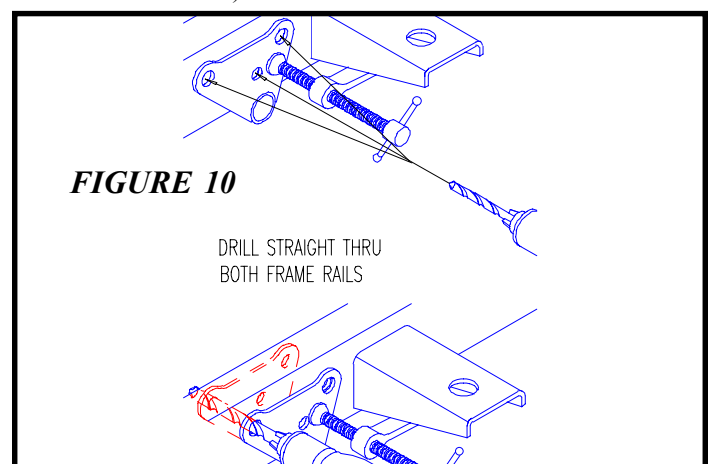
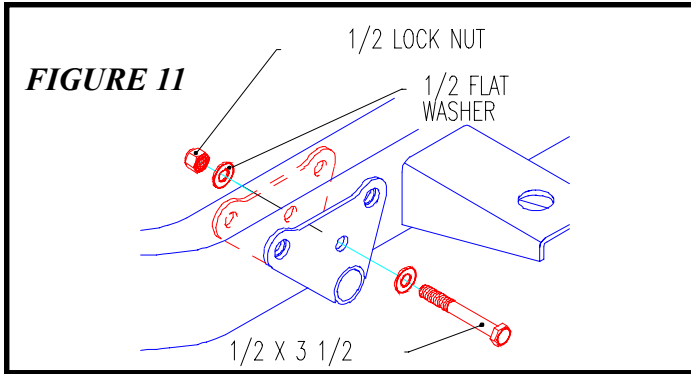
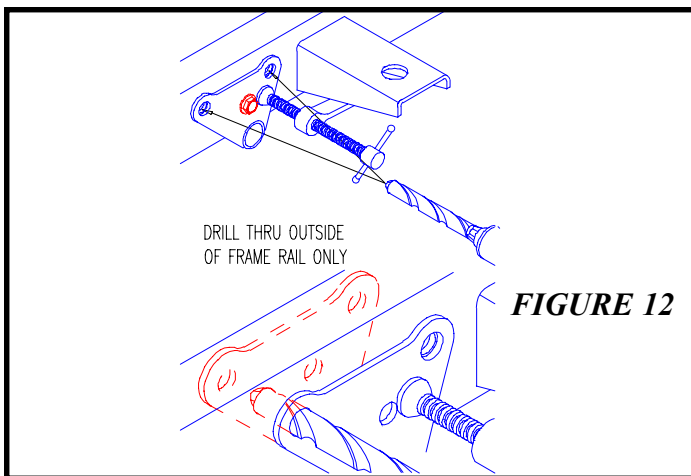


FIGURE 10

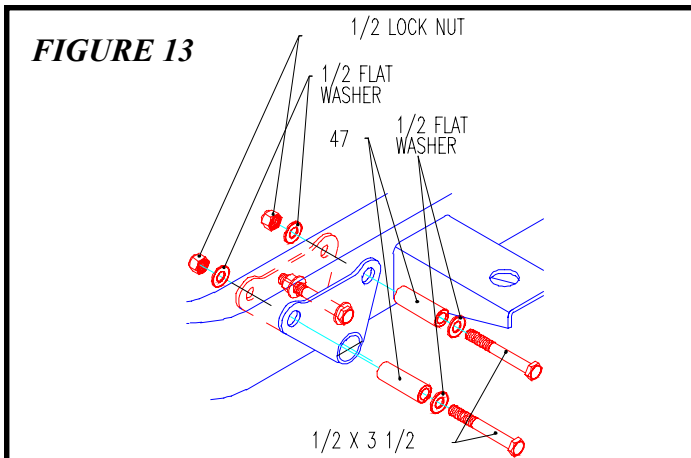
- c. Install (1) 1/2" X 3 1/2" coarse thd bolt, (2) 1/2" SAE flat washers, and (1) 1/2" coarse lock nut into the center hole as shown in **figure 11**.



- d. Drill the outside of the two remaining holes again using a 3/4" drill bit as shown in **figure 12** (note: drill only on the outside of the frame rails).



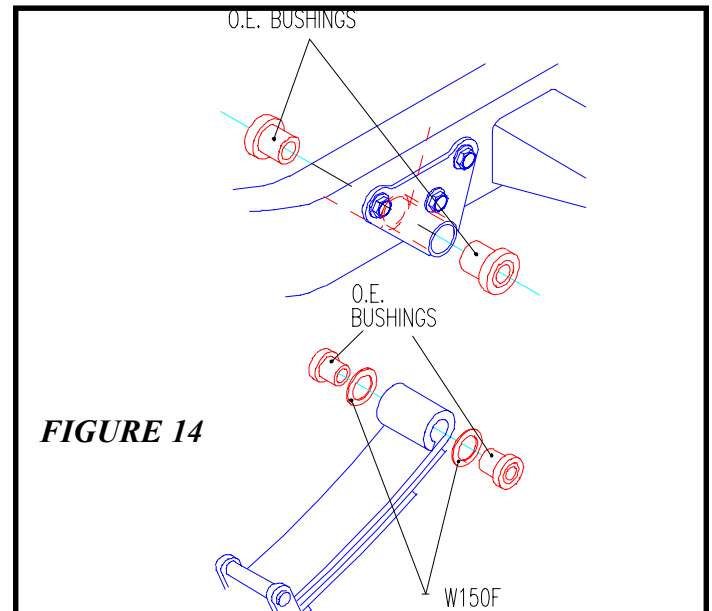
4. Retain the rear mount as shown in **figure 13**.
 - a. Install spacer sleeves into the outside mount points (DO NOT LET SLEEVES DROP INTO THE FRAME RAILS).
 - b. Install (1) 1/2" X 3 1/2" coarse thd bolt, (2) 1/2" SAE flat washers, and (1) 1/2" coarse thd lock nut into each of the two mount points, being sure to have the bolt pass through the sleeves.



5. Torque the retaining bolts to 85' LBS.
6. Repeat on opposite side of the vehicle using 960611.

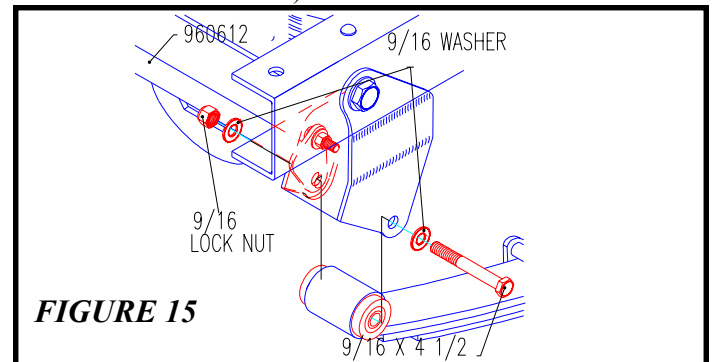
I. INSTALL BUSHINGS

1. Install the four OE shackle bushings that were removed previously, into the rear mount brackets as shown in **figure 14**.
2. Install washers onto the spring eye bushings as shown in **figure 14**.
 - a. Remove the rear spring eye bushings.
 - b. Place one W150F flat washer over each of the spring eye bushings.
 - c. Reinstall the spring eye bushings

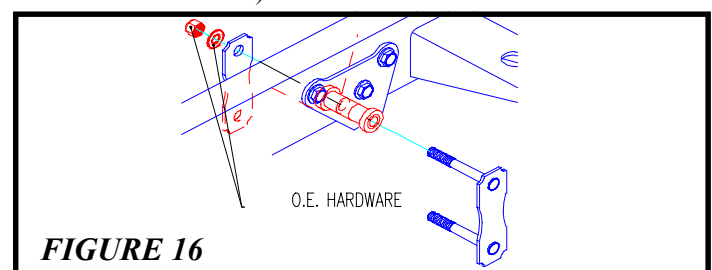


J. INSTALL THE SPRINGS

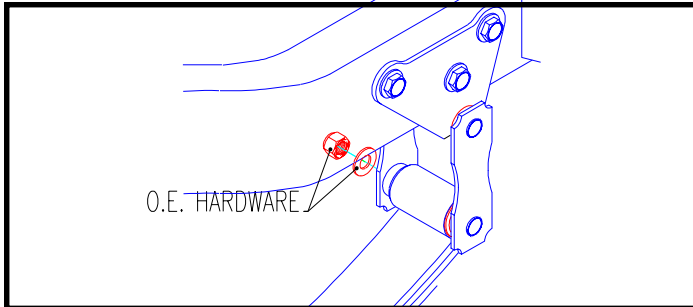
1. Install the **large** eye of the spring (previously the rear) into the **front** mount bracket as shown in **figure 15**.
 - a. Retain spring using OE pivot bolt (DO NOT TIGHTEN AT THIS TIME).



2. Install shackle into the bushing in the rear mount bracket as shown in **figure 16**.
 - a. Retain using OE hardware (DO NOT TIGHTEN AT THIS TIME).



3. Install spring into the shackle as shown in **figure 17**.
 - a. Line up the holes in the spring eye and the shackle.
 - b. Place one 1 1/2" O.D. X .075 thick washer in between the shackle and the bushing on each side of the spring as shown.
 - c. Retain using (1) 1/2" X 3 1/2" coarse thd bolt, (2) 1/2" SAE flat washers, and (1) 1/2" coarse thd lock nut.
 - d. Repeat process on opposite side of the vehicle.



members, adjust lines / brackets to eliminate interference and maintain proper working order. Failure to perform inspection may result in component failure.

3. Bump stops and extension stops must be in place on all vehicles! Note: allowing suspension to over extend by neglecting to install or maintain stops and extensions may cause serious damage to OE and related components.
4. Re torque all fasteners after 500 miles. Visually inspect components and re torque fasteners during routine vehicle service.
5. Retain this and all information regarding your altered vehicle.

Thank You for choosing Trail Master. For questions or suggestions, contact our Technical Assistance Department.

K. INSTALL AXLE ONTO THE SPRINGS

1. Lower axle onto springs, being careful to position the axle correctly.
2. Using the U-bolts, spring pads, and U-bolt nuts removed previously retain the axle to the spring.
3. Torque the U-bolt nuts to O.E. spec.
4. Connect the anti-sway bar (if equipped).
 - a. Place the eye of the anti-sway bar over the stem on the spring pad.
 - b. Retain the anti-sway bar using OE hardware.
 - c. Torque the anti-sway bar to OE spec.

**Trail Master Suspension
2265 Crosswind Drive
Prescott, AZ. 86301
(928) 636-3175**

L. REINSTALL RIMS & TIRES

1. Reinstall rims and tires.
2. Lower vehicle.
 - a. Raise vehicle high enough to remove the jack stands.
 - b. Remove the jack stands.
 - c. Slowly lower the vehicle.
 - d. Remove the wheel blocks.

L. FINAL TORQUING

1. Tighten all bolts left loose.
 - a. Torque rear pivot points.
 - 1.) Torque upper shackle pivot point to OE spec.
 - 2.) Torque lower shackle pivot point to OE spec.
 - b. Torque front pivot point to OE spec.

POST INSTALLATION WARNINGS

1. Check all fasteners for proper torque. Check to ensure there is adequate clearance between all rotating, mobile, fixed, and heated members. Ensure that there is adequate clearance between exhaust and brake lines, fuel lines, fuel tank, floor board, and wiring harnesses. Check steering gear for interference and proper working order. Test brake system

2. Perform a steering sweep. Check to ensure brake hoses have sufficient slack and will not contact rotating, mobile, or fixed

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