

QA1

INSTALLATION INSTRUCTIONS

QA1 P/N R140-170, R240-200, R040-000
'88-'98 C1500 Rear Coil-over Suspension System

TOOLS AND SUPPLIES REQUIRED

- Floor Jack
- Two (2) Jack Stands
- SAE & Metric Wrench Set
- Anti-seize
- Torque Wrench
- Clamps
- Right Stuff gasket maker
- Loctite
- Drill with 5/8" & 7/16" drill bits
- Clamps
- Cutoff wheel
- Grinder or Air Chisel

PRE INSTALLATION NOTES:

Installation of this system will reduce the load carrying capability of the vehicle.

This rear suspension system can be installed without removing the bed, although removing the bed is recommended.

A grinder or air chisel is recommended for removal of factory rivets.

DISASSEMBLY INSTRUCTIONS:

1. Place the truck securely on jack stands to allow enough room for installation. If using a lift, place the rear arms just forward of the front leaf spring mount on the frame.
2. Remove the drive shaft, rear brake lines, and ensure the taillight wiring is out of the way of the frame rails.
3. With the axle supported, unbolt the leaf springs from the leaf spring mounts and remove the leaf springs and the axle.
4. Cut the factory shock mounts from the axle.
5. Remove the two rivets holding the original bump stops to the frame. Remove both drivers and passengers side bump stops. **(Figure 1)** The bump stop mounting holes will be used as the basis to locate the frame notch template.
6. Remove the rivets from the passenger side upper shock mount bracket from the frame and discard. **(Figure 2)** The drivers side upper shock mounting bracket does not need to be removed to install this suspension system.
7. Remove the rivets holding the front leaf spring hangers and discard. Do this on the Drivers side **(Figure 3)** and the Passenger side. **(Figure 4)**

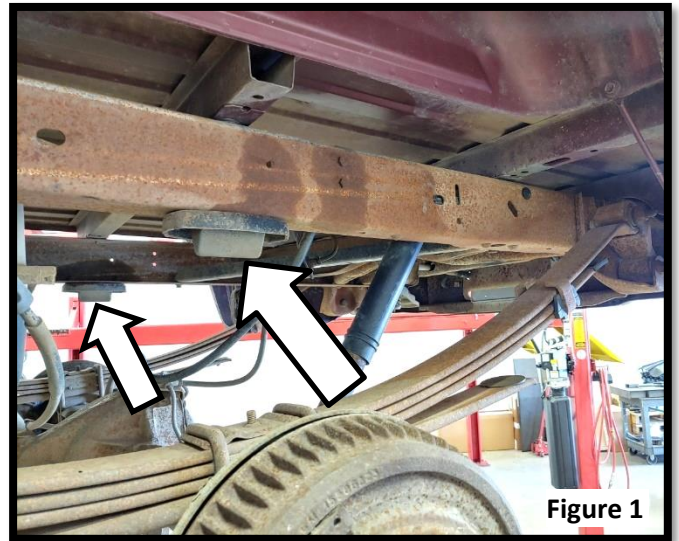


Figure 1

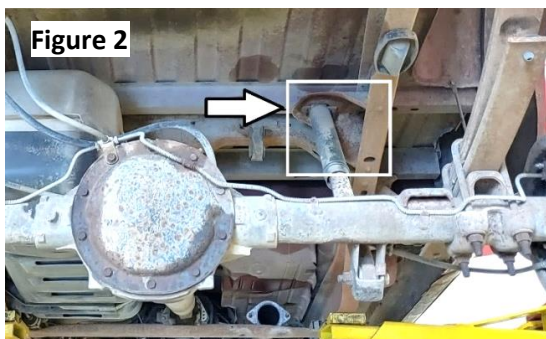


Figure 2

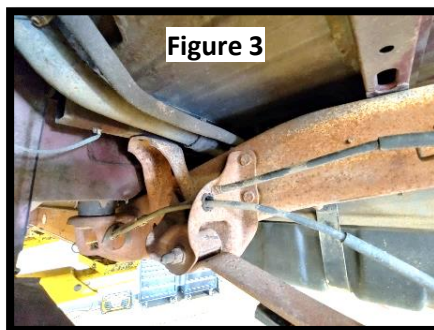


Figure 3

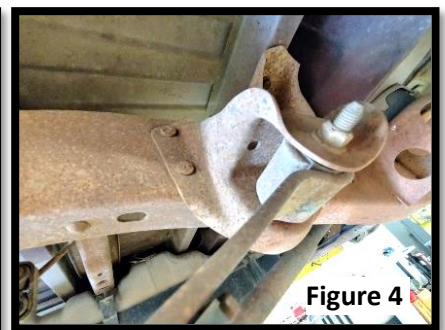


Figure 4

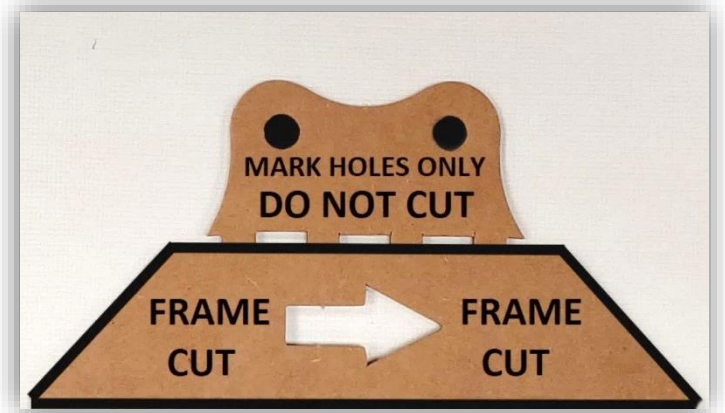
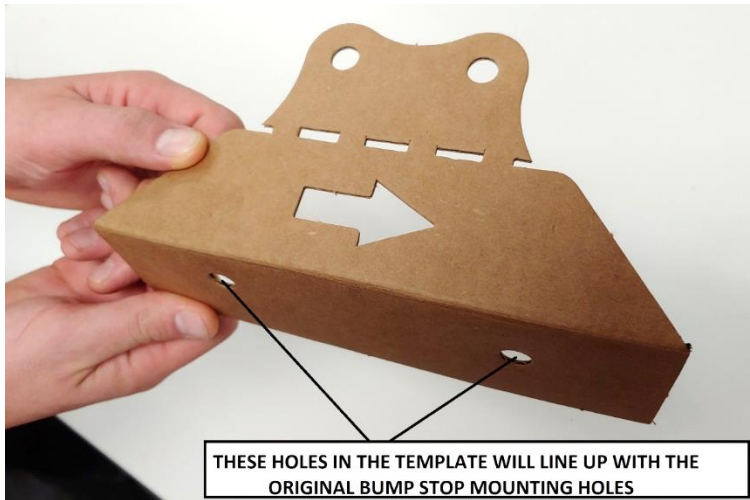
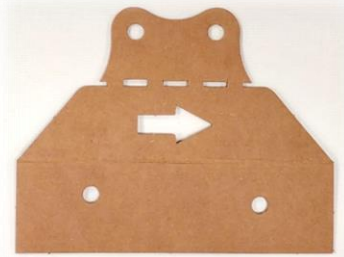
- Cut the bracket holding the e-brake cables to release the cables and discard the bracket. A new e-brake cable bracket is included with this suspension system.

FRAME NOTCHING:

This suspension system comes with a cardboard frame notch template (**Figure 5**) that can be used on both driver and passenger side. Depending on which direction the lower template is folded the arrow should point towards the front of the truck. The lower holes in the template will line up with the original bump stop holes.

- Mount the template to the frame matching the original bump stop holes with the lower holes on the template. Fold the template up the side of the frame with the arrow pointing towards the front of the truck.
- Trace the lower portion of the template below the dotted cutout.
- Mark the two holes in the upper template above the dotted cutout. The top portion of the template is for locating the two holes. **DO NOT CUT THE TOP PORTION OUT OF YOUR FRAME.**

Figure 5



- Repeat steps 1-4 on the opposite side of the frame.
- Using a cut off wheel, notch the frame along the outline drawn. Only cut out the lower portion of the notch template.
- Drill the marked holes using 7/16" drill bit.
- Clean the frame of dirt, rust and under coating to allow the QA1 notch bracket to fit tightly to the frame. Paint as desired.

INSTALLATION:

- Using 7/16" x 1.25" bolts, two washers per bolt, and nylock nut, fit the passenger side notch bracket (**Figure 6**) to the two holes drilled into the frame.
- Using clamps, evenly draw the notch bracket to the frame.
- Mark and drill the additional notch bracket holes into the frame.
- Using 7/16" x 1.25" bolts, two washers per bolt, and nylock nut evenly tighten the notch bracket to the frame. (**Figure 6**)
- Torque notch bracket hardware to 49 lb. ft.
- Complete steps 1-5 for the driver side notch bracket. (**Figure 7**)

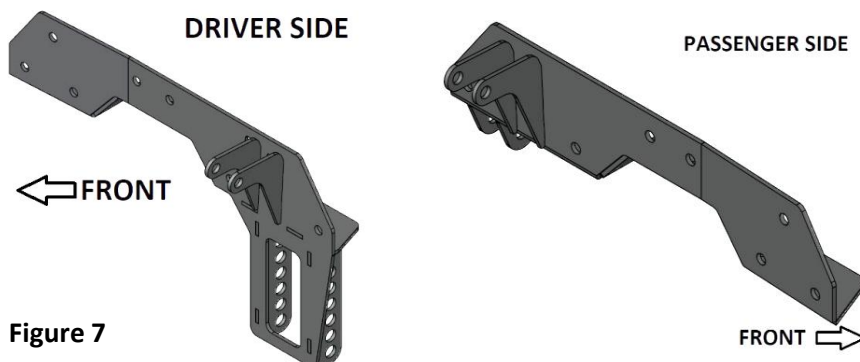
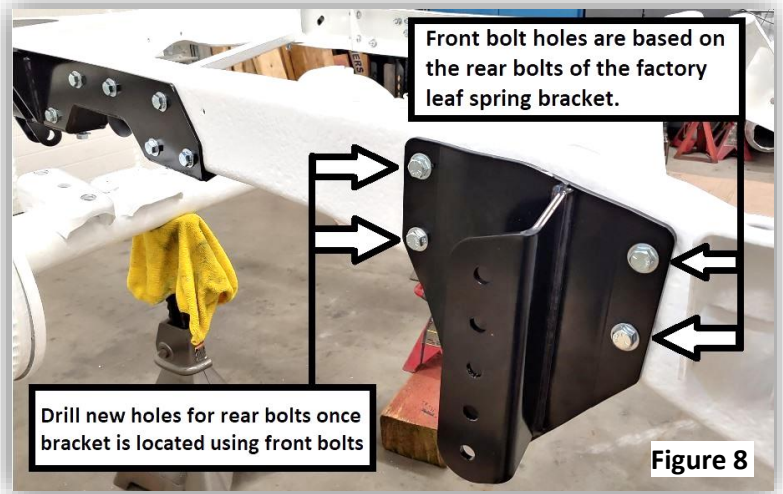
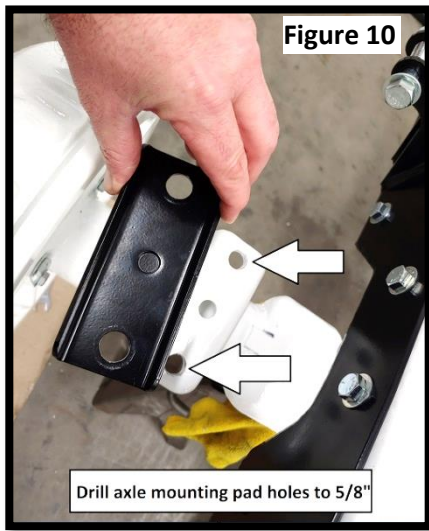


Figure 7



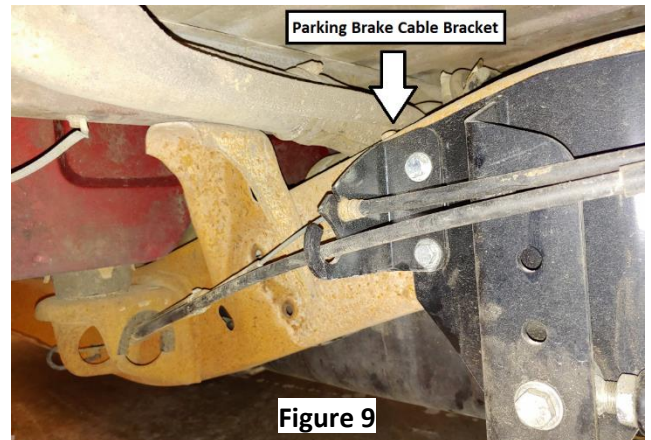
Figure 6



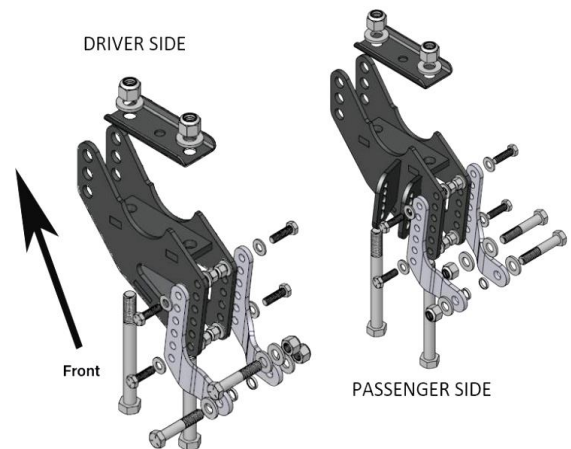
7. Locate the driver and passenger side front trailing arm mount.
8. Match the front bracket holes to the rear holes of the factory leaf spring mount and secure with 7/16" x 1.25" bolts, two washers per bolt and nylock nut. **(Figure 8)**
9. Install the ebrake cables into the bracket before mounting the brake cable bracket on the front mounting holes. The ebrake cable bracket will share the front two holes of the drivers side notch bracket. **(Figure 9)**
10. With the bracket located with the front two mounting holes, drill the rear mounting bolt holes into the frame using a 7/16" drill bit.

NOTE:

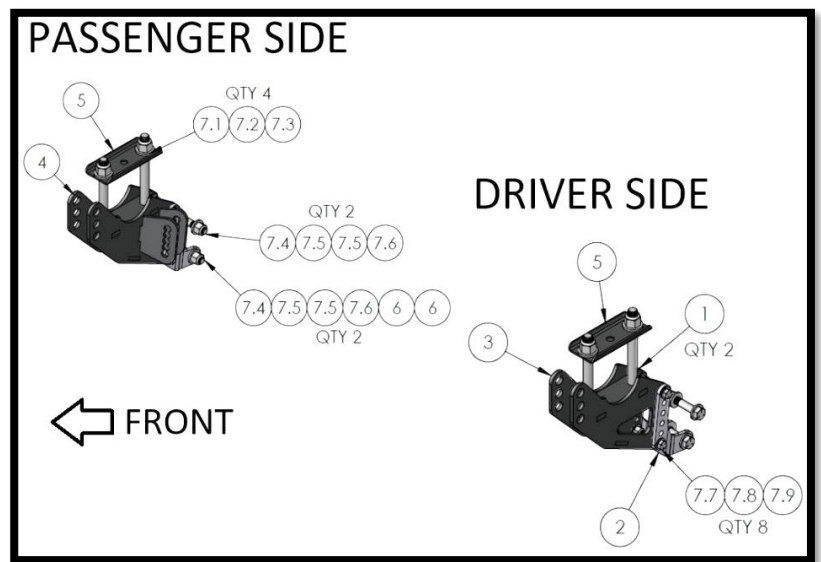
With the bed and stock fuel tank in place the driver side inner frame nuts will be difficult to get in place with the bed and stock fuel tank in place. Use the small access holes in the frame to fish the nuts into place.



11. Use 7/16" x 1.25" bolt with two washers per bolt and nylock nut.
12. Torque mounting bolts to 49 lb. ft.
13. Set the right and left axle mounting pads on the axle and drill the axle holes to 5/8". **(Figure 10)**
14. The right and left axle brackets can be identified by the pan hard mounts facing inboard. Identify the right and left axle brackets and install onto the axle using 5/8" x 6" bolts. Install one 5/8" washer on top of the axle pad. Torque to 158 lb. ft.
15. Install left and right shock mount onto the outside of each axle mount using 3/8" x 1.25" hardware. **(Figure 11)** The shock mount brackets are adjustable for ride height changes. Torque to 31 lb. ft.

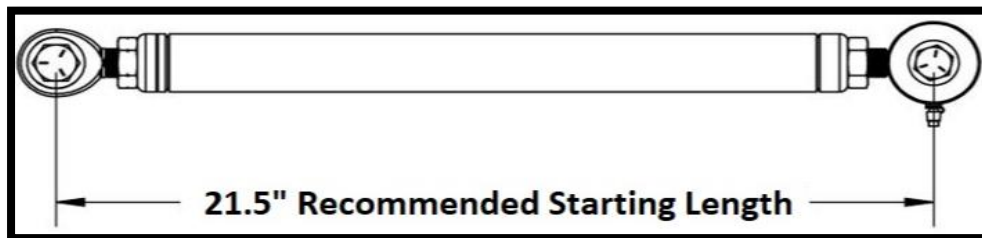
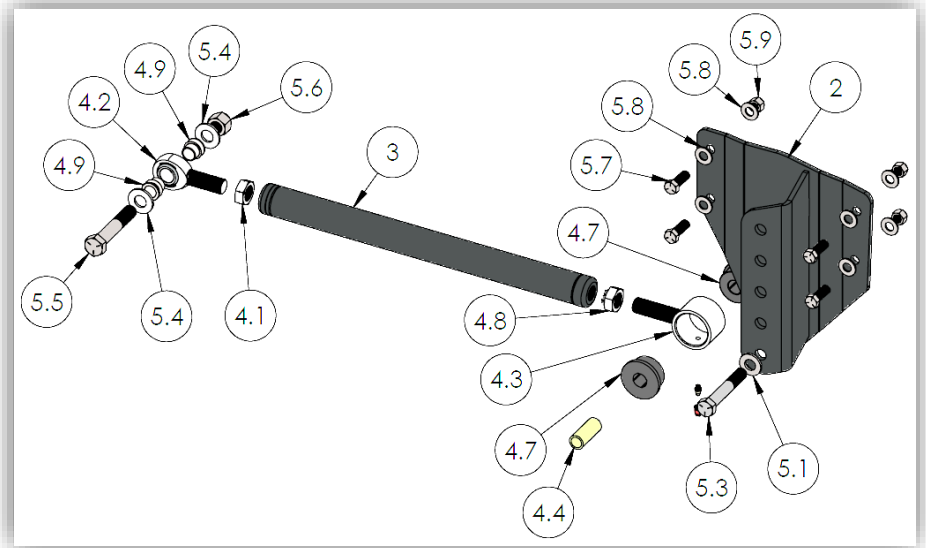


BALLOON #	ITEM #	DESCRIPTION	QTY.
1	9037-654	BRACKET,SHOCK MOUNT, LEFT, BOLT ON	2
2	9037-655	BRACKET, SHOCK MOUNT, RIGHT, BOLT ON	2
3	9037-718	WELDMENT, DRIVER SIDE AXLE MOUNT	1
4	9037-722	WELDMENT, PASSENGER SIDE AXLE MOUNT	1
5	9037-727	PLATE, TOP MOUNT, AXLE PAD	2
6	9033-430	SLEEVE, .500" ID X .625" OD X .125"	4
7	9037-863	HARDWARE KIT, AXLE MOUNT	1
7.1	-	WASHER, 5/8	4
7.2	-	NUT, NYLOCK, 5/8-11	4
7.3	-	BOLT, 5/8-11 X 6.0"	4
7.4	-	BOLT, 1/2-13 X 2.75"	4
7.5	-	WASHER, 1/2, SAE	8
7.6	-	NUT, NYLOCK, 1/2-13	4
7.7	-	BOLT, 3/8-16 X 1.25"	8
7.8	-	WASHER, 3/8, SAE	16
7.9	-	NUT, NYLOCK, 3/8-16	8



- Using anti-sieze on the threads, loosely thread the left-hand threaded rod end with jam nut into the left-hand threaded side of the trailing arm as far as possible.
- Loosely thread the fixed rod end with jam nut into the right hand threaded end of the trailing arm as far as possible.
- With an even amount of thread engagement for both rod ends, set the trailing arm length (center to center) at 21.5".

BALLOON #	ITEM #	DESCRIPTION	QTY.
1	9037-855	WELDMENT, DS TRAILING ARM MOUNT	1
2	9037-858	WELDMENT, PS TRAILING ARM MOUNT	1
3	9037-760	WELDMENT, TRAILING ARM	2
4	7039-244	INSTALL KIT, TRAILING ARMS	1
4.1	JNL12S	NUT, JAM 3/4-16 LH	2
4.2	XML12	ROD END (X) ENDURA ALLOY HT	2
4.3	7039-157	Panhard Rod Asm., Short	2
4.4	9033-317	Sleeve, .56" ID X .75" OD X 1.88"	2
4.5	9023-116	CAP, GREASE ZERK	2
4.6	9023-119	GREASE ZERK, 1/4-28	2
4.7	9032-169	Bushing, Energy 2042G	4
4.8	JNR12S	NUT, JAM 3/4-16 RH	2
4.9	SG12-106	High Misalignment Spacer, SS	4
5	9037-861	HARDWARE KIT, TRAILING ARM	1
5.1	-	WASHER, 9/16, SAE	4
5.2	-	NUT, NYLOCK, 9/16-12	2
5.3	-	BOLT, 9/16-12 X 3.5"	2
5.4	-	WASHER, 5/8, SAE	4
5.5	-	BOLT, 5/8-11 X 3.5"	2
5.6	-	NUT, NYLOCK, 5/8-11	2
5.7	-	BOLT, 7/16-14 X 1.25"	8
5.8	-	WASHER, 7/16, SAE	16
5.9	-	NUT, NYLOCK, 7/16-14	8
6	9037-825	BRACKET, E-BRAKE MOUNT	1



19. Install the QA1 differential cover using Right Stuff gasket maker **ONLY**, with blue thread locker on the 5/16" x 1.25" flanged head bolts. Do Not Use a pre-made gasket. **(Figure 12)** The differential cover is installed with the torque arm mounting points on the passenger side of the axle. Torque to 17 lb. ft.



Figure 12

20. Install the bushing end of the trailing arm into the middle hole of the front frame bracket using 9/16" x 3.5" bolts, two washers per bolt, and nylock nut.
21. Insert high misalignment spacers into the rod end of the trailing arm and mount to the middle hole of the axle mount using 5/8" x 3.5" hardware. **(Figure 13)**

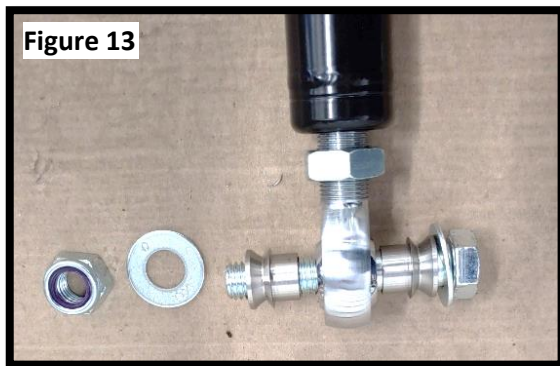


Figure 13

NOTE:

The mounting position of the trailing arm to the axle and front bracket should be adjusted after ride height is set to ensure the trailing arm is parallel with the ground.

22. Connect the front of the trailing arm to the bracket.
23. Position the axle under the frame and connect trailing arm to the middle hole on the axle bracket. **(Figure 14)**



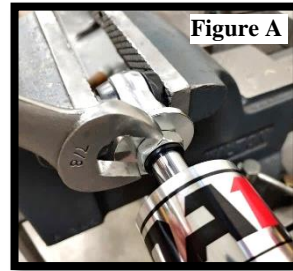
Figure 14

24. Refer to the instructions included with coil-over shocks and assemble the springs onto the shocks.

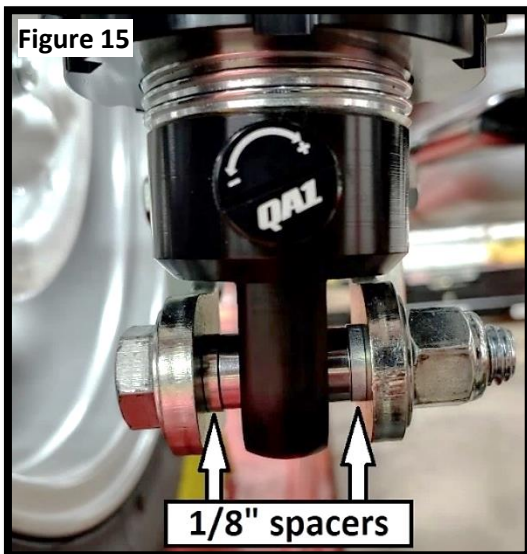
NOTE:

This rear suspension system comes with optional shaft mounted bump stops. The bump stops can be installed for added insurance for ride heights in the lower range.

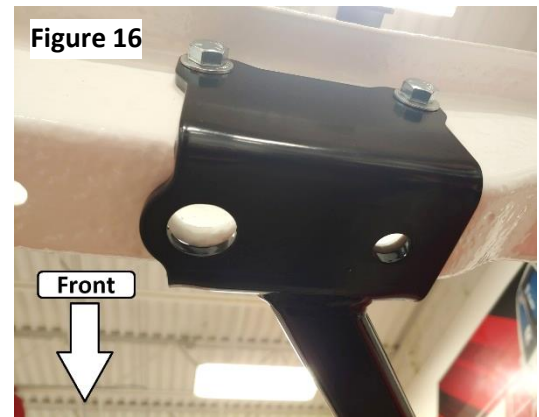
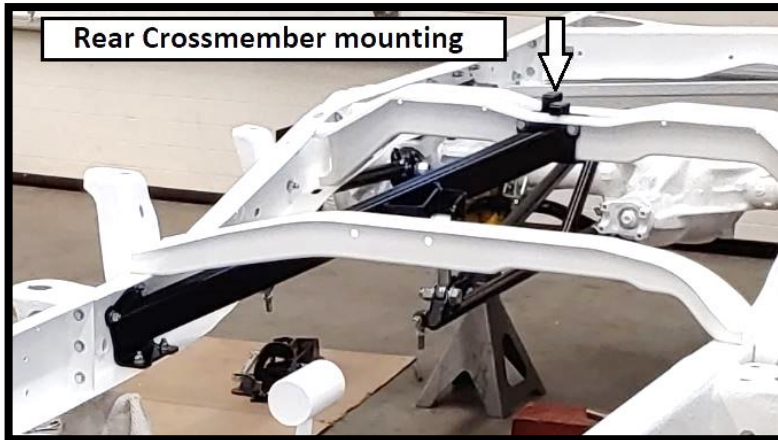
- A. Secure a bushing style shock connection in a vise or a bearing style shock connection with a 5/8" wrench and loosen the jam nut from the eyelet using a 7/8" wrench. **(Figure A & B)**
- B. Continue spinning the jam nut towards the shock until the nut engages the shaft and unthreads the shaft from the eyelet. **(Figure C)**
- C. Hold the shaft and remove the jam nut. **(Figure D)**
- D. Install the 9032-117 shaft mounted bump stop. You can re-install the travel indicator o-ring under the bump stop or use the bump stop as the travel indicator. **(Figure E)**
- E. Reinstall travel indicator and jam nut, followed by the shock eyelet.
- F. Snug jam nut to 12 lb. ft.



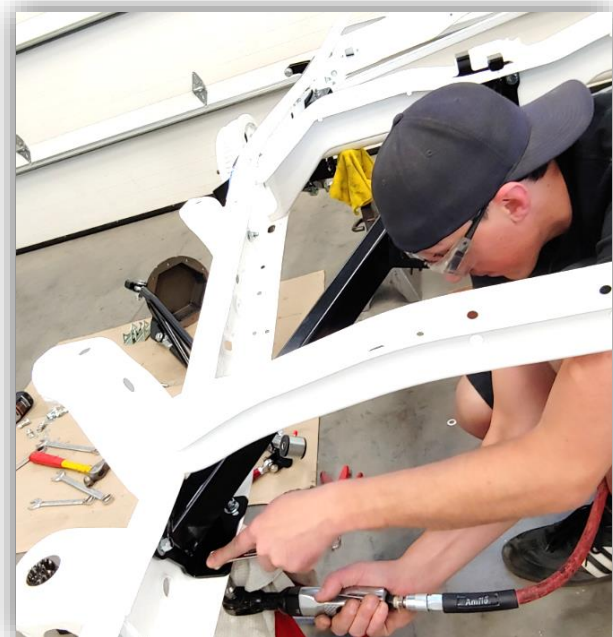
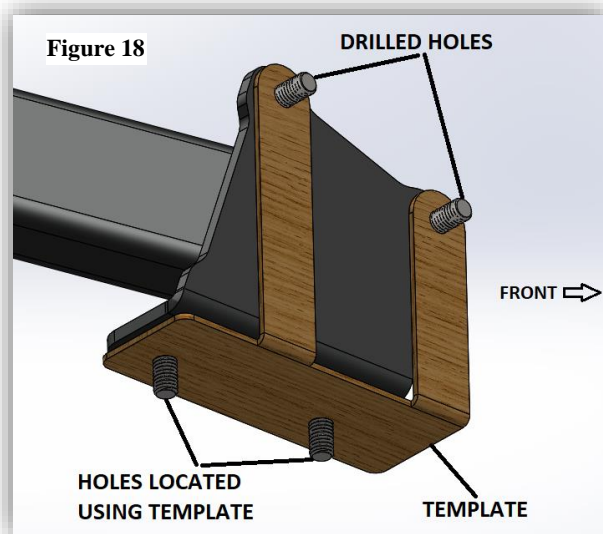
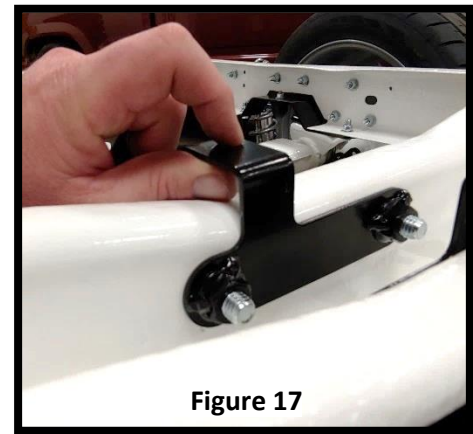
25. Install the coil-overs to the notch bracket and axle mount using 1/2" x 2.75" bolts, washers and nylock nuts. The lower shock connection will use two 1/8" spacers inboard of the shock brackets. **(Figure 15)**



26. Set the torque arm crossmember into place locating the rear bracket on the trucks crossmember. The underside of the rear mount will have one small and one large hole that will match the same two holes on the underside of the trucks crossmember. **(Figure 16)**



27. Clamp the bracket to match the holes in the frame and drill the four mounting holes in the crossmember to 7/16".
28. The inner crossmember nut plates were designed with tabs for installing with the truck bed on the truck. **(Figure 17)**
29. Install the rear mount to the crossmember using 7/16" x 1.25" bolts and one washer for all four connections.
30. The front portion of the diagonal support will land within the frame rail. Clamp the support to the frame to ensure the support is fully seated to the frame. Mark and drill the two horizontal holes with a 7/16" drill bit.
31. Using the included template on the outside of the frame, line up the template with the two drilled holes. Wrap the template around the bottom of the frame rail to locate the two lower bolt hole locations. **(Figure 18)**
32. Evenly draw the support to the frame using 7/16" x 1.25" bolts, two washers per bolt, and nylock nuts. Torque all support hardware to 49 lb. ft.



BALLOON #	ITEM #	DESCRIPTION	QTY.
1	9037-828	WELDMENT, GM 10 BOLT, TA MOUNT	1
2	7039-261	HARDWARE KIT, GM 10 BOLT	1
2.1	-	BOLT, FLANGED, 5/16-18 X 1.25	10
3	9037-829	WELDMENT, TORQUE ARM	1
4	7039-260	INSTALL KIT FOR TORQUE ARM	1
4.1	9033-477	SLEEVE, .875"HEX ALUMINUM ANODIZED, 10"	1
4.2	JNR8S	Jam Nut, Left Hand Thread	1
4.3	JNR8S	Jam Nut, Right Hand Thread	1
4.4	XML8	ROD END (X) ENDURA ALLOY HT	1
4.5	XFR12	ROD END (X) ENDURA ALLOY HT	1
4.6	7039-157	Panhard Rod Asm., Short	1
4.7	9032-169	Bushing, Energy 2042G	2
4.8	9033-317	Sleeve, .56" ID X .75" OD X 1.88"	1
4.9	JNR12S	JAM NUT, 3/4-16 RH	3
4.10	XMR10-12	ROD END (X) ENDURA ALLOY HT	2
4.11	AS12-12	LINKAGE ADJUSTER STEEL 3/4-16	1
4.12	-	Nut, Jam 3/4-16 LH Chrome	1
4.13	SG8-64	HIGH MISALIGNMENT SPACER, .5" OD	4
4.14	9037-840	BRACKET, BRACE BAR FRAME MOUNT	1
4.15	9012-179	BOLT, HEX 3/8-16 X 1.25"	2
4.16	9005-256	WASHER, FLAT 3/8" SAE	4
4.17	9014-253	NUT, NYLOCK 3/8-16	2
4.18	XML8	ROD END (X) ENDURA ALLOY HT	1
5	7039-232	HARDWARE KIT, TORQUE ARM	1
5.1	-	NUT, NYLOCK, 3/4-10	1
5.2	-	WASHER, 3/4, SAE	2
5.3	-	BOLT, 3/4-10 X 2.75	1
5.4	-	WASHER, 3/8, SAE	4
5.5	-	WASHER, 5/8, SAE	4
5.6	-	NUT, NYLOCK, 3/8-16	2
5.7	-	BOLT, 3/8-16 X 2.25	2
5.8	-	NUT, NYLOCK, 5/8-11	2
5.9	-	BOLT, 5/8-11 X 2.5"	2
5.10	-	NUT, NYLOCK, 9/16-12	1
5.11	-	WASHER, 9/16, SAE	2
5.12	-	BOLT, 9/16-12 X 3.25	1
6	9093-137	DECAL, DIFF COVER, C10 10/12-BOLT	1



Figure 19

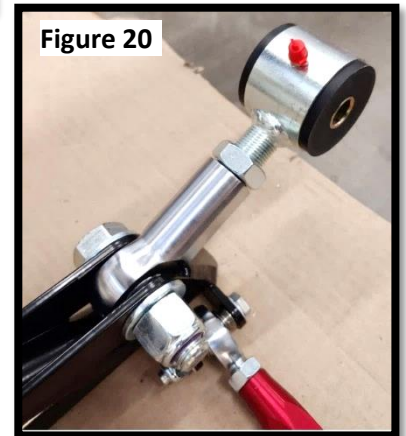
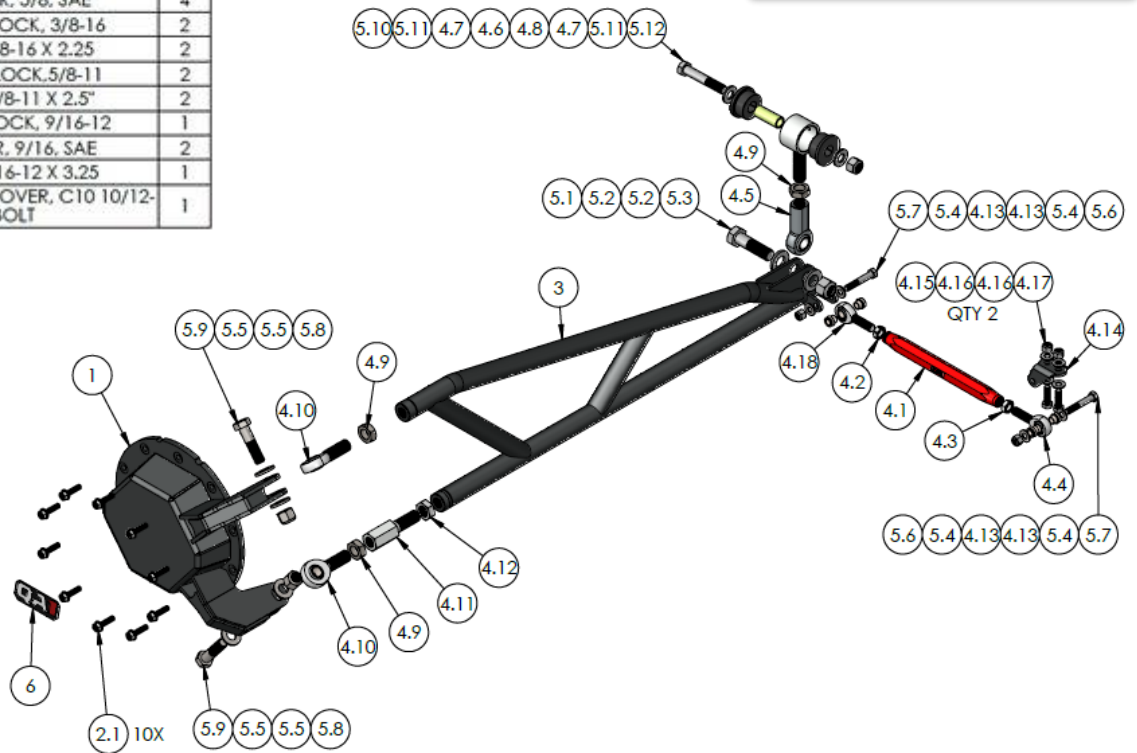


Figure 20



33. Install a jam nut onto the XMR10-12 rod end and fully thread into the rear upper torque arm connection. Back the rod end out two turns for initial install. **(Figure 19)**
34. Install left hand jam nut onto the linkage adjuster and fully thread into the lower rear torque arm connection. Both connections should be fully threaded. This is the connection for adjusting pinion angle. Final adjustments should be made with the truck at ride height. **(Figure 19)**
35. Thread an XMR10-12 rod end with jam nut into the linkage adjuster on the lower torque arm connection.
36. Thread the 3/4" jam nut onto the bushing rod end for the front connection. **(Figure 20)**

37. Thread the XFR12 female rod end onto the bushing rod end as far as possible to keep this linkage as short as possible. **(Figure 20)**
38. Install the rear rod end connections of the torque arm to the differential cover using 5/8" bolts, two washers per connection and nylock nut. Torque to 90 lb. ft.
39. Install the bushing end into the middle hole of the diagonal crossmember using 9/16" x 3.25" bolt, two washers and nylock nut. Torque to 79 lb. ft.
40. Install the opposite end of the linkage onto the front of the torque arm using 3/4" x 2.75" bolt, two washers and nylock nut. Torque to 90 lb. ft.

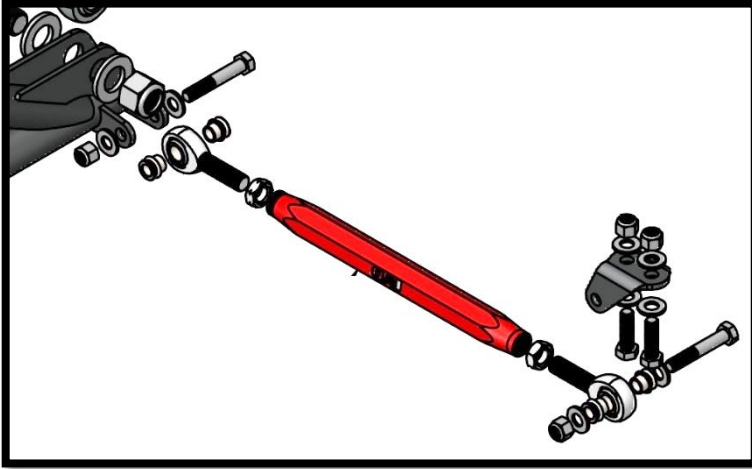


Figure 21

41. Install the left hand jam nut onto the XML8 rod end and the right hand jam nut onto the XMR8 rod end.
42. Fully thread both rod ends into the red aluminum stabilizer rod keeping in mind one end is right hand threaded and one is left.
43. Install two high misalignment spacers into both rod ends before attaching to the torque arm using 3/8" x 2-1/4" bolt, two washers and nylock nut. Torque to 31 lb. ft. **(Figure 21)**
44. The frame side of the linkage rod will be secured using the included bracket (#4.14). Ensure that the bracket is mounted to the frame so that the linkage rod is perpendicular to the frame. Mark and drill the bracket holes into the frame using a 3/8" drill bit. **(Figure 22)** Use 5/16" x 1-1/4" bolts, two washers and nylock nut to secure the bracket to the trucks frame. Torque to 17 lb. ft.



Figure 22

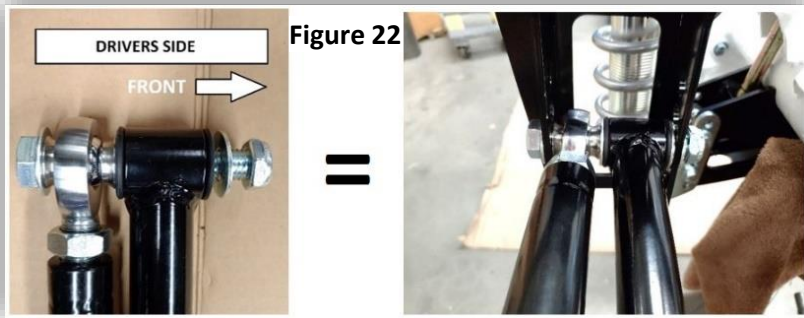
NOTE:

The rear of the suspension system includes a panhard bar (bar with curve) and a brace bar (straight bar).

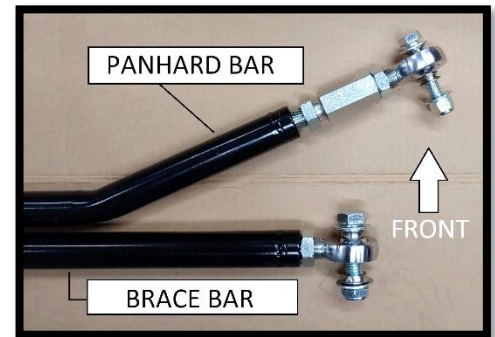
45. Install the left hand jam nut onto the XML10-12 and the right hand jam nut on the XMR10-12 rod end for the brace bar.
46. Fully thread the rod ends into the brace bar keeping in mind one end of the bar is right hand threaded and the other is left hand.
47. Thread the left hand threaded jam nut onto the male end of the linkage adjuster and thread assembly into the panhard bar.
48. Install right hand threaded jam nut onto the XMR10-12 rod end and thread into the back of the linkage adjuster.

NOTE:

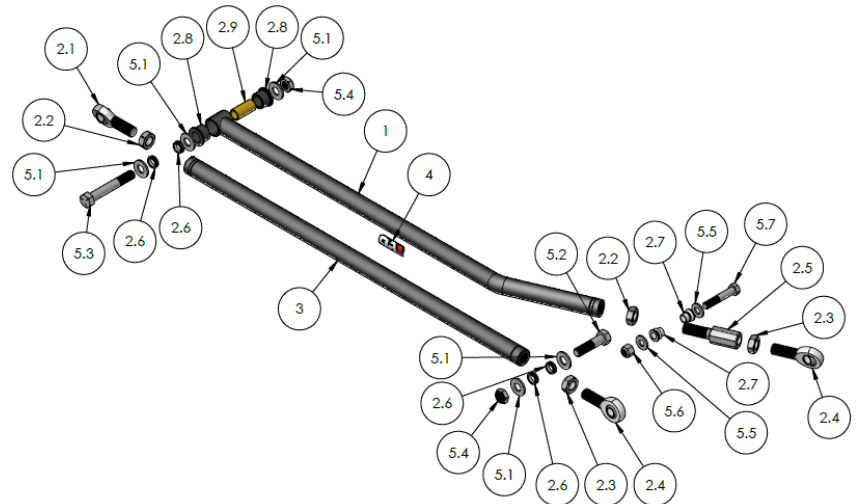
It is recommended to bottom out the threads of the linkage adjuster to bar and the rod end to linkage adjuster for even thread engagement during adjustment.



49. With high misalignment spacers on both sides of the brace bar rod end, install the brace bar and the bushing end of the panhard bar into the center hole of the drivers side notch bracket. Secure using 5/8" x 4-1/4" bolt with two washers and nylock nut. **(Figure 22)**
50. With high misalignment spacers on both sides of the brace bar rod end, install the passenger side of the brace bar onto the frame notch bracket using 5/8" x 2-1/2" bolt, two washers and nylock nut

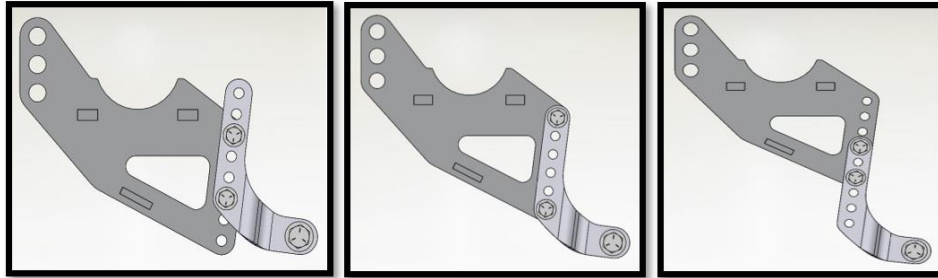


BALLOON #	ITEM #	DESCRIPTION	QTY.
1	9037-831	WELDMENT, PANHARD BAR	1
2	7039-245	INSTALL KIT FOR PANHARD BAR	1
2.1	XML10-12	ROD END (X) ENDURA ALLOY HT	1
2.2	JNL12S	JAM NUT, STEEL 3/4-16 LH	2
2.3	JNR12S	JAM NUT, 3/4-16 RH	2
2.4	XMR10-12	ROD END (X) ENDURA ALLOY HT	2
2.5	AS12-12	LINKAGE ADJUSTER STEEL 3/4-16	1
2.6	SG104	SPACER ROD END SS	4
2.7	SG10-86	High Misalignment Spacer, SS	2
2.8	9032-395	BUSHING, .875	2
2.9	9033-457	SLEEVE .625" ID x 0.875" OD x 1.75"	1
3	9037-833	WELDMENT, BRACE BAR	1
4	9093-122	DECAL, SUSPENSION DECAL, USA	1
5	7039-233	HARDWARE KIT, PANHARD BAR	1
5.1	-	WASHER, 5/8, SAE	5
5.2	-	BOLT, 5/8"-11 X 2.5"	1
5.3	-	BOLT, 5/8"-11 X 4.25"	1
5.4	-	JAM NUT, NYLOCK, 5/8-11	2
5.5	-	WASHER, SAE, 1/2	2
5.6	-	NUT, NYLOCK, 1/2-13	1
5.7	-	BOLT, 1/2-13 X 2.75"	1



FINALIZING THE INSTALL:

1. The rear shocks have a recommended ride height length of 14" to 15". Set the ride height within this shock length and use the adjustable shock brackets to further dial in the desired ride height. The brackets should be mounted in the following orientation based on the desired drop.



4" DROP

5"-6" DROP

7" DROP

2. This suspension system will come with two sizes of bump stop. Install the larger of the two axle-bump stops onto the notch bracket unless your low ride height necessitates the shorter bump stop. **(Figure 23)**
3. Re-install brake lines and bleed the brake system.
4. Make any changes to the trailing arm and panhard bar mounting points to ensure both are parallel to the ground at ride height.
5. Adjust the torque arm front support so the torque arm is parallel with the frame rails and the front torque arm connection is as vertical as possible.
6. Make final pinion angle adjustments.
7. Double check all hardware connections and snug all jam nuts

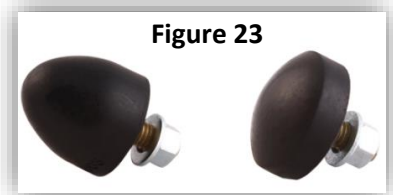


Figure 23





Technical Support Line: (952) 985-5675 Email: Info@QA1.net

21730 Hanover Ave.
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READ ALL INSTRUCTIONS CAREFULLY AND THOROUGHLY PRIOR TO STARTING INSTALLATION. PRODUCTS THAT HAVE BEEN INSTALLED ARE NOT ELIGIBLE FOR RETURN. USE THE PROPER JACKING LOCATIONS. DEATH OR SERIOUS INJURY CAN RESULT IF INSTRUCTIONS ARE NOT CORRECTLY FOLLOWED. A GOOD CHASSIS MANUAL, AVAILABLE AT YOUR LOCAL PARTS STORE, MAY ALSO AID IN YOUR INSTALLATION.

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