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INSTALLATION INSTRUCTIONS

QA1 P/N R073-000, R074-000, Rx73-170, Rx74-170
Universal Triangulated 4-Link

TOOLS AND SUPPLIES REQUIRED

• Floor Jack • Jack Stands • Ratchet & Socket Set • Torque Wrench • Masking Tape • Cut-off wheel
• Jack Stands • Angle Finder • Plumb Bob • Anti-seize • Mig Welder (capable of ¼" penetration) • Tape Measure

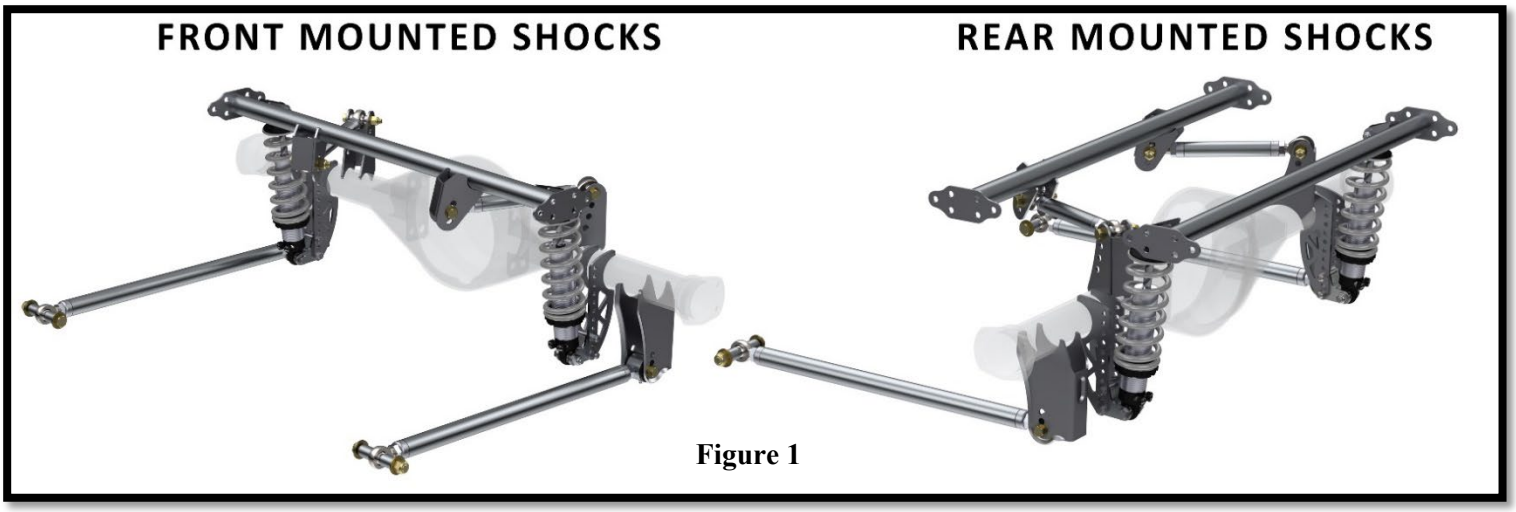
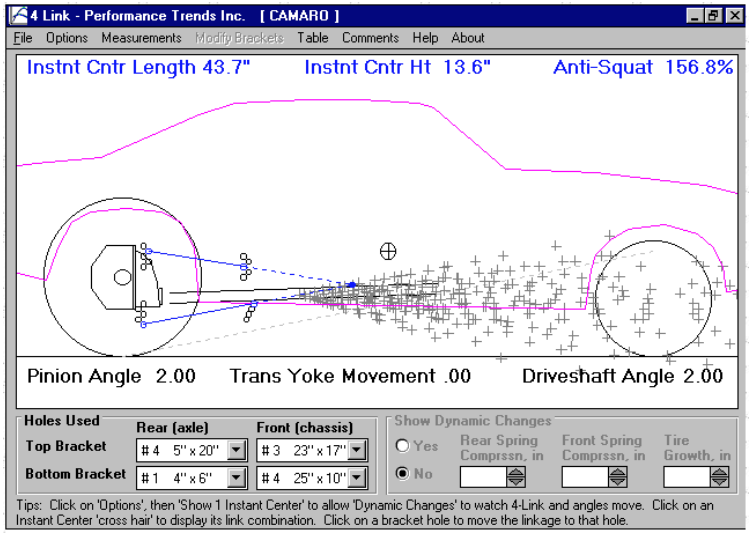


Figure 1

PRE-INSTALLATION NOTES-

This universal triangulated 4 link rear suspension includes MIG weldable components and is intended for 3" diameter axle tubes. This system should be fully mocked up on the vehicle and the suspension cycled prior to finish welding.

This is a DIY builders suspension and will require fabrication skills and knowledge of suspension geometry. Air Suspension Design by Max Fish (airsuspensionbook.com) is a great resource for the basics of suspension geometry. For in-depth instant center and tuning information, suspension calculator programs are available such as Performance Trends. (www.performancetrends.com/4link.htm)



This suspension is offered with front or rear mounted shocks. **(Figure 1)**

Inventory all items included with this kit to ensure all components are on-hand before beginning the installation. **(Page 8)**

VEHICLE PREPARATION-

1. Measure the vehicles beginning ride height from the center of the wheel opening down through the center of the wheel to the ground. Although a new ride height might be desired with this installation, it's always good to know the starting point.

2. Measure the vehicles wheelbase on the left and right side from the center of the front hub to the center of the rear hub.

3. On a flat and true surface, set the vehicle on jack stands or a chassis table and ensure the chassis is completely level.

4. Remove the rear axle from the vehicle, including any leaf springs, trailing arms, panhard bars, etc.

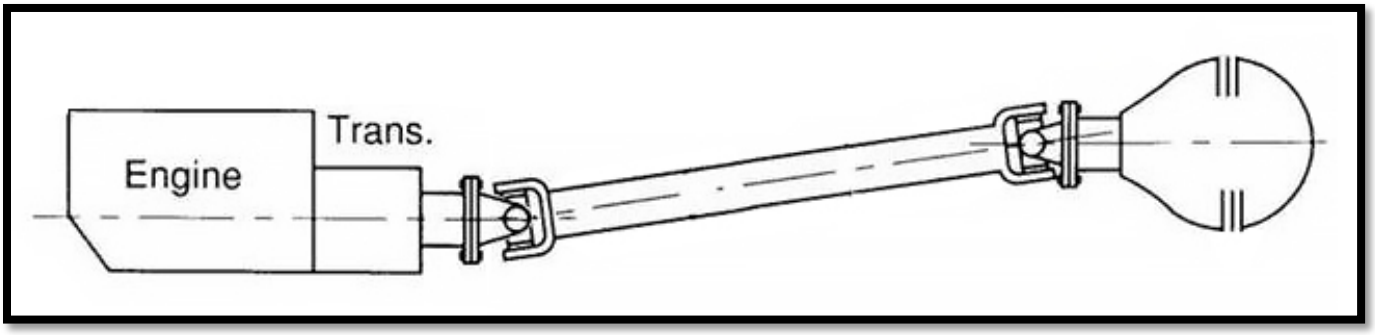
5. To find the center of the wheel opening, mock the wheel and tire up at ride height in the wheel opening. Once the wheel position has been determined, mark the axle centerline.

6. Install a piece of tape on the floor or chassis table and hang a plumb bob from the lip of the fender through the marked tape line. Mark the floor tape to show the axle centerline. This floor tape will be used throughout the installation to show the axle centerline.

AXLE MOCK UP-

It is essential to begin this installation with mocking the axle up exactly where it will sit at the desired ride height. This includes centering the axle right/left under the car, setting the pinion angle to 0°, and checking the wheelbase against the wheel base measurement previously taken. Once the axle is set exactly where it will reside, it is important to keep the axle in this position throughout the entire installation.

1. Mock the axle up to the vehicle to the exact ride height location desired and the pinion angle set to 0°. Slight adjustments to the pinion angle should be made via the upper trailing arm lengths after installation. More information on pinion angles can be found at: **qa1.net/tech-center/driveline-angles-pinion angle-explained.**



TRAILING ARM ASSEMBLIES-

The upper and lower trailing arm tubes included with this suspension are intentionally left long and will need to be cut to length and threaded tube adapters welded into the tubes. Each trailing arm will need one left-hand threaded and one right-hand threaded tube adapter welded into the tube with matching right-hand/left-hand rod ends and jam nuts. **(Figure 2)** All of these components will contribute to the overall length of the trailing arms. The upper and lower trailing arms should be mounted as wide as the frame and tires allow for maximum roll stability. If a cast iron center axle is used such as most GM or Dana Axles, mount the axle brackets in a location the weld bead will not be on cast iron. NEVER WELD TO CAST IRON CENTERS. It is recommended to have 1.5x the diameter of the rod end threads engaged into the tube adapter at all times. (Example: 5/8" threaded rod end should have no less than 15/16" (1.5 x 5/8")

NOTE:

The necessary length of trailing arms should be measured (at mocked up ride height) and cut to length before welding the tube adapters into the tube. Set the links up to your desired lengths in the mid-range of the rod end threads so that further on-car adjustments can be made.

1. Identify one right hand threaded tube adapter and one left hand threaded tube adapter. Tube adapters with a line around them signify that it is a left-hand thread.

Figure 2

2. Install one right-hand tube adapter into the end of the tube and one left-hand threaded tube adapter into the opposite end of the tube. Additional tube end strength can be gained by drilling holes in the trailing arm tube to also plug weld the tube adapters in addition to welding the butt joint around the circumference. Tack welding these joints for mockup is recommended before fully welding. **(Figures 3 & 4)**

3. Fully thread one jam nut onto each rod end before fully threading the rod end into the end of the tube.

4. To ensure the same amount of thread engagement, hold both rod ends and rotate the trailing arm to achieve the desired center to center length.

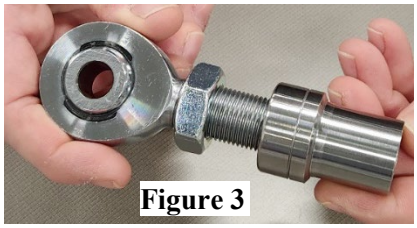


Figure 3

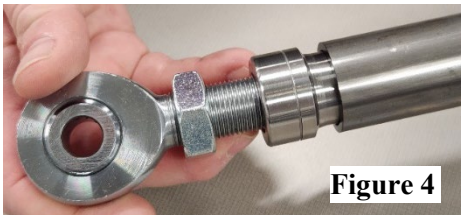
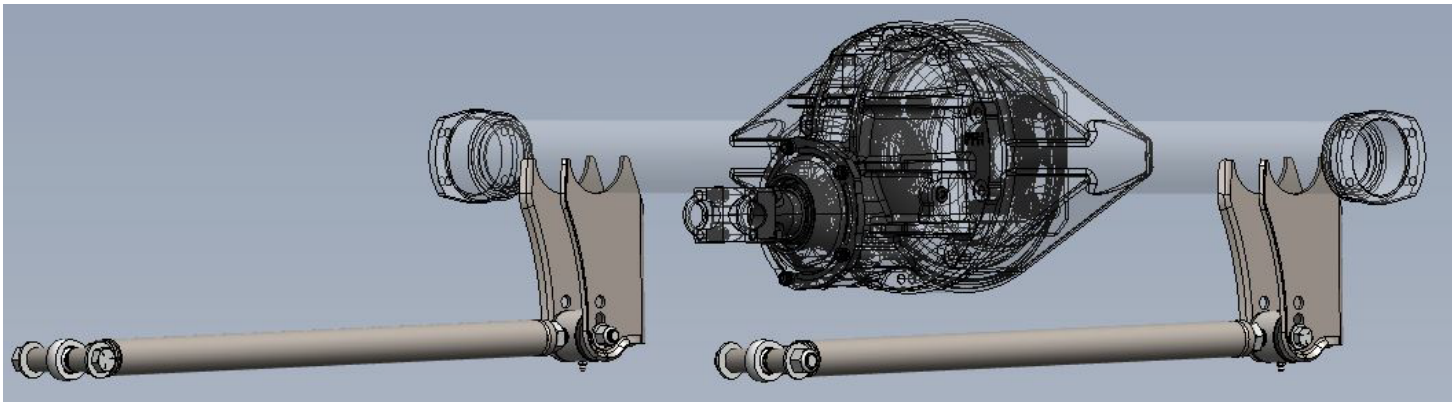


Figure 4

LOWER TRAILING ARMS AND AXLE BRACKETS-



The front rod end connection of the lower trailing arms may be able to be mounted at the factory leaf spring mounts or by adding additional plates for mounting. One SG104 **(#19)** misalignment spacer should be installed on each side of the rod end with the narrow end facing the rod end. **(Figure 5)** Depending on the width of the mount used, 5/8" I.D. sleeves **(#17)** and three lengths of 5/8" bolts are also included. The rear connection for the lower trailing arm is a threaded bushing, shown in **(Figure 6)** and will use 1/2" x 3.25" hardware.

1. Determine the front mounting of the lower trailing arm then determine the length of trailing arm needed. Weld the tube adapters into the determined length of the tube and assemble the trailing arm using anti-seize on the threads of the rod ends.

LINE	QTY/KIT	DESCRIPTION	2ND DESCRIPTION	WHERE USED ON VEHICLE
1	6	BOLT, HEX 1/2-13 X 3.25"	GRADE 8, YELLOW ZINC, PARTIAL THREAD	TRAILING ARM MOUNT
2	6	NUT, NYLOCK 1/2-13	GRADE 8, YELLOW ZINC	TRAILING ARM MOUNT
3	12	WASHER, FLAT 1/2" SAE	.53" ID X 1.06" OD X .095", GRADE 8, CLEAR ZINC	TRAILING ARM MOUNT
4	2	BOLT, HEX 5/8-11 X 4.0"	GRADE 8, YELLOW ZINC, PARTIAL THREAD	LOWER, FORWARD TRAILING ARM MOUNT
5	2	BOLT, HEX 5/8-11 X 4.5"	GRADE 8, YELLOW ZINC, PARTIAL THREAD	LOWER, FORWARD TRAILING ARM MOUNT
6	2	BOLT, HEX 5/8-11 X 5.0"	GRADE 8, YELLOW ZINC, PARTIAL THREAD	LOWER, FORWARD TRAILING ARM MOUNT
7	2	NUT, NYLOCK 5/8-11	GRADE 8, YELLOW ZINC	LOWER, FORWARD TRAILING ARM MOUNT
8	4	WASHER, FLAT 5/8" SAE	.66" ID X 1.31" OD X .134", GRADE 8, YELLOW ZINC	LOWER, FORWARD TRAILING ARM MOUNT

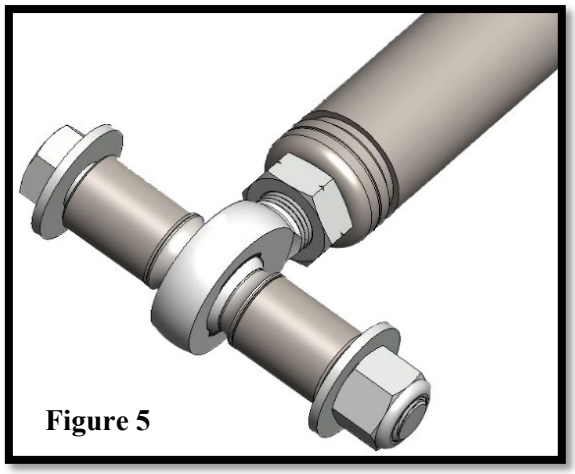


Figure 5

Figure 6

UPPER TRAILING ARM CROSSBAR-
Locate the area of the chassis where the crossbar can be structurally welded. Consider the length of upper trailing arm and the angle of the trailing arm when plotting the crossbar, as this will help determine the instant center. If the shocks will be mounted in front of the axle, this crossbar will also determine the angle and the length of the shocks at ride height. The axle plates that will mount the rear of the upper trailing arm do have multiple mounting holes to adjust the instant center. **(Figure 7)**

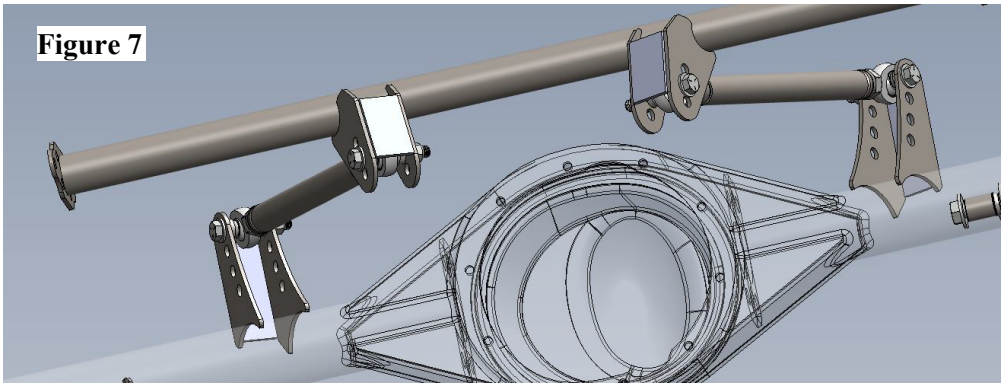


Figure 7

The upper trailing arm crossbar and axle mounts as shown **(Figure 9)** can be swapped right to left if opposite triangulation is desired (axle mounts narrower than the crossbar mounts). Common upper trailing arm lengths are 10”-13” long, and a common length ratio of upper trailing arms is 70% of the lower trailing arm length. While these percentages aren’t always possible, they may be able to be used as a target. Rod end braces **(Figure 8)** are included to support the rod ends during tack welding. The outer edges of all brackets should be tack welded and double checked before fully welding the outer flanges. Fully welding the inner edges of the brackets may introduce too much heat and warp the flanges. Some inner flange stitch welding is acceptable.


Figure 8

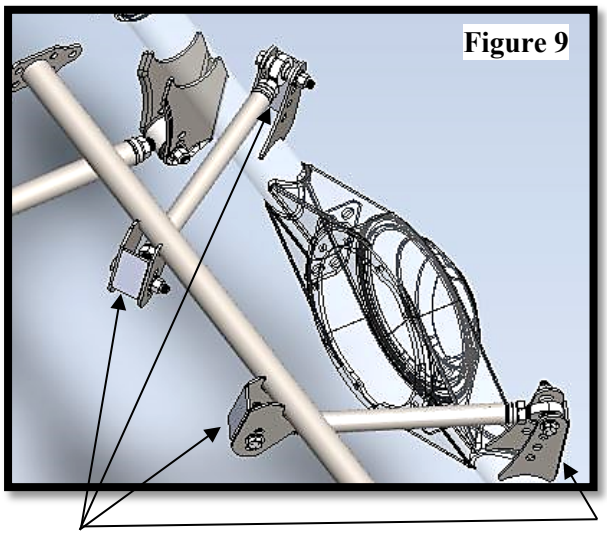
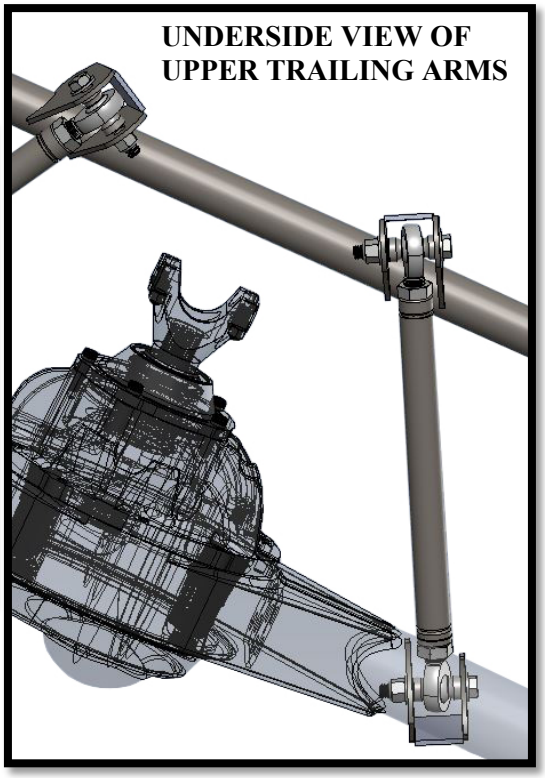


Figure 9

Plates (#22) included to gusset upper control arm mounts.

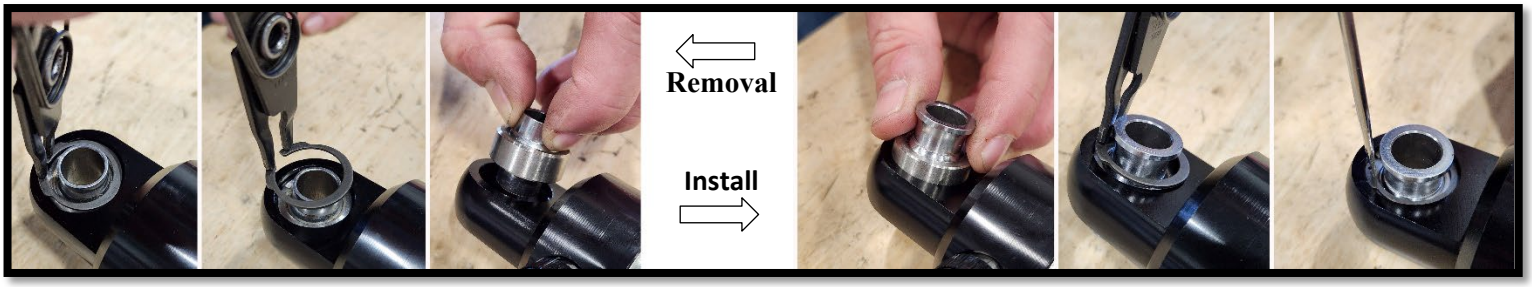


NOTE:

During the mockup stage, keep in mind the thickness of any coating that may be applied to the brackets, as well as leaving additional adjustment holes above/below the mounted trailing arms for future adjustments.

SWAPPING THE SHOCK BEARINGS-

The 1” wide bearings that come in the included shocks will need to be swapped out for the included 1-1/4” wide bearings before mocking up the shock mounting tabs. Using snap ring plyers, remove one snap ring and push the bearing out of the shock eyelet. Install the 1-1/4” wide bearings into the top and bottom shock eyelets before reinstalling the c-clip. Press down on the installed c-clip to ensure it is seating in the groove of the shock eyelet.



SHOCK MOCK-UP-

Whether the shocks will be mounted in front of or behind the axle, the shocks will need to be mocked up with the shock length, width, and angle in mind.

1. Install the lower shock “L” mounts to the inboard side of the axle brackets with one black spacer inside the two “L” brackets. **(Figure 10)** The brackets can be installed up or down depending on user preference and ride height. Secure each connection with black spacers within the “L” tabs using 1/2" x 2.5” hardware with two washers and one nyloc connection per connection.

LINE	QTY/KIT	DESCRIPTION	2ND DESCRIPTION	QA1 ITEM#	WHERE USED ON VEHICLE
1	4	BOLT, HEX 3/8-16 X 2.75"	GRADE 5, CLEAR ZINC, PARTIAL THREAD	9013-127	LOWER ADJUSTABLE SHOCK MOUNT BRACKETS
2	4	NUT, NYLOCK 3/8-16	GRADE 5, CLEAR ZINC	NA	
3	8	WASHER, FLAT 3/8" SAE	.41" ID X .82" OD X .065", CLEAR ZINC	9005-256	
4	4	BOLT, HEX 1/2-20 X 2.5"	GRADE 5, CLEAR ZINC, PARTIAL THREAD	9012-108	UPPER AND LOWER SHOCK MOUNTS
5	4	NUT, NYLOCK 1/2-20	GRADE 5, CLEAR ZINC	9014-107	
6	8	WASHER, FLAT 1/2" SAE TYPE-B	.536" ID X 1.004 OD X .064", CLEAR ZINC	9005-316	

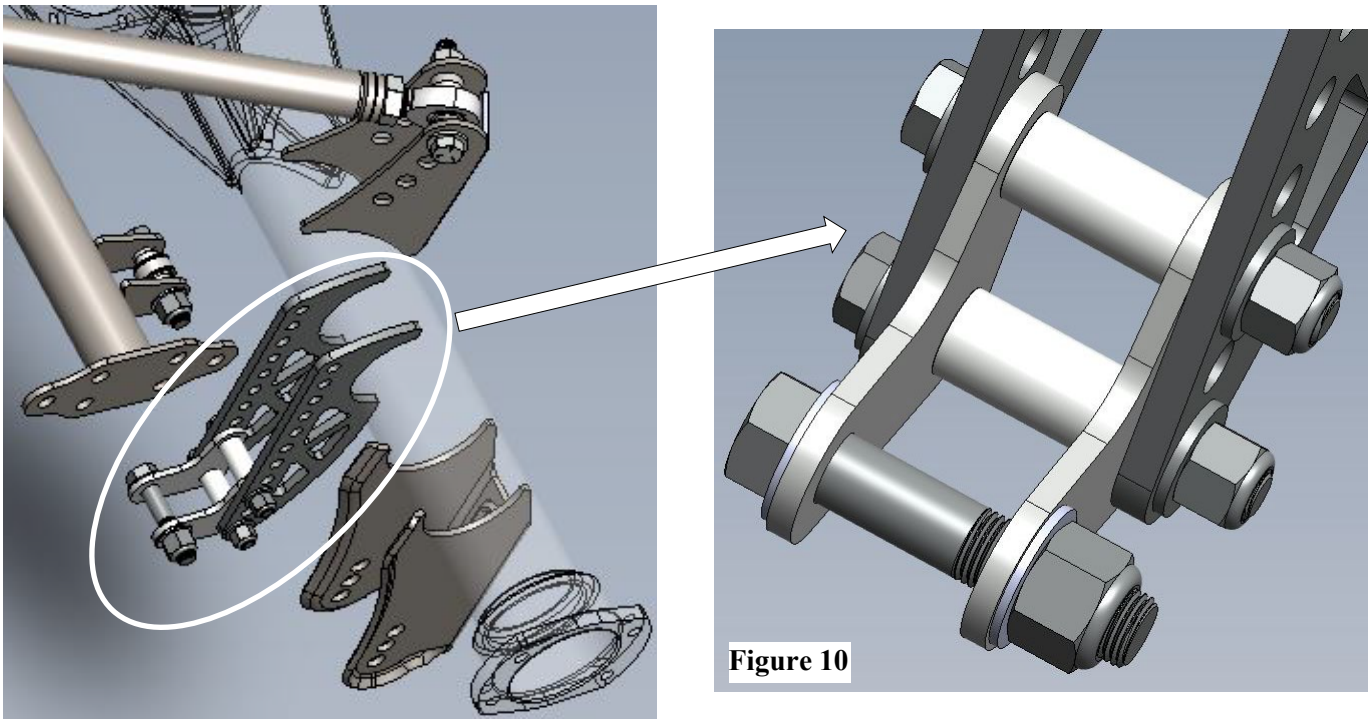
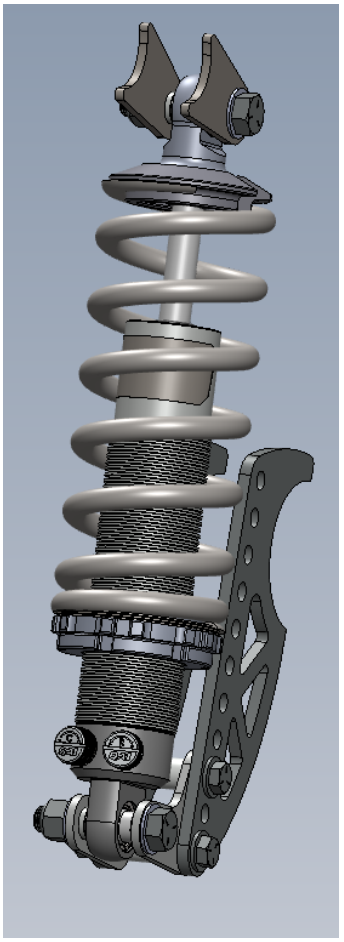


Figure 10

2. The upper shock mounting tabs will need to be installed in the orientation that works best for the vehicle. The suspension should be fully traveled without springs to verify shock clearance. Shock angle and clearance should be checked before welding the crossbar/tabs in. With the adjustability of the lower shock mounts it is important to know the recommended shock length of the included 5” stroke shocks. This suspension is also offered without shocks. If using a different shock length, ensure the shock length at ride height will fall within the recommended ride height length.

SHOCK PART NUMBER	COMPRESSED LENGTH	EXTENDED LENGTH	RECOMMENDED RIDE HEIGHT
DS501/DD501	11-5/8”	16-7/8”	14”- 15”
M511PR/M511PL	11-1/2”	16-7/8”	14”- 15”

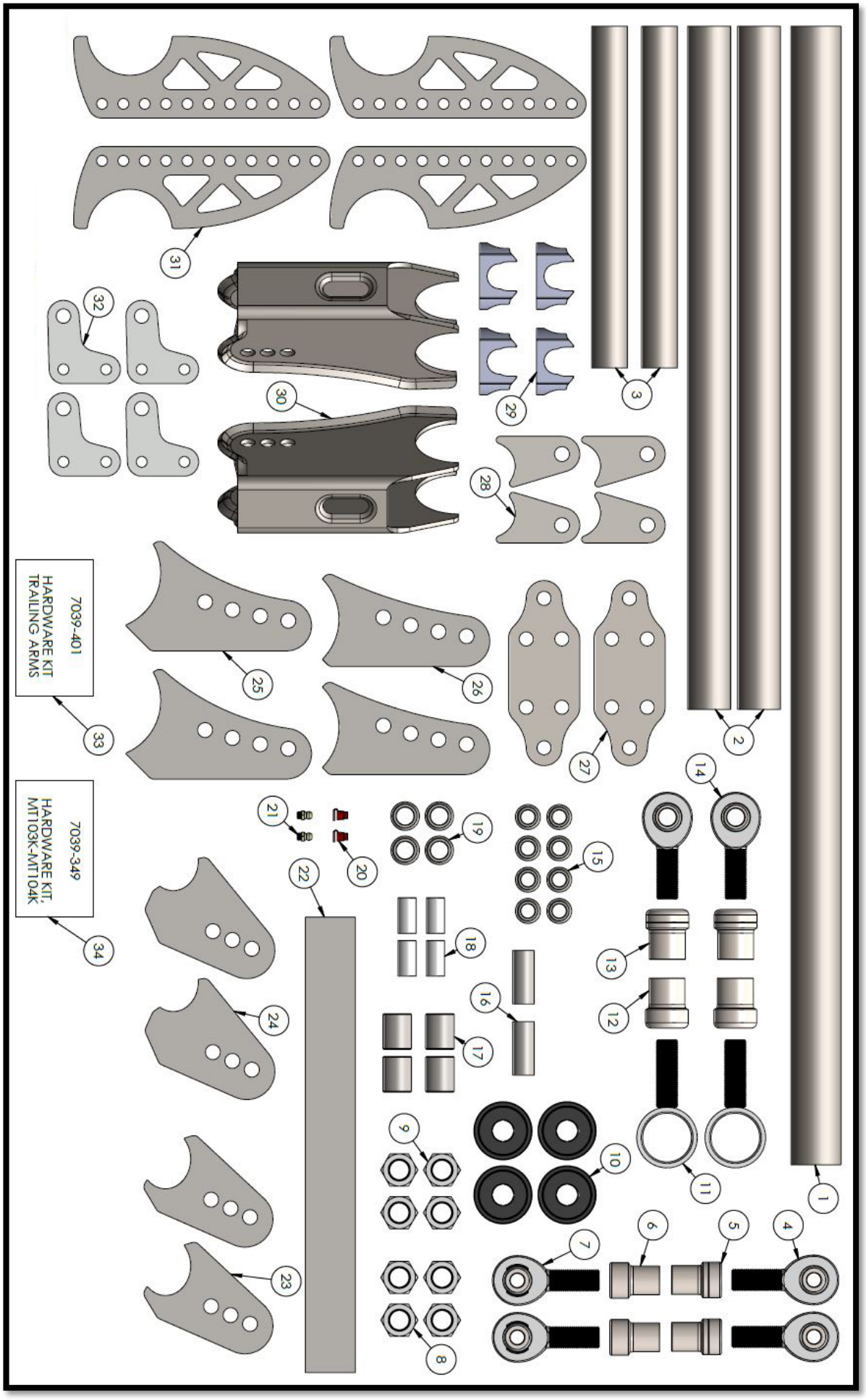
9. Refer to the instructions included with the shocks to install the coil-over hardware. It is recommended to install the shocks to the 4-link WITHOUT SPRINGS for mock up.



10. Mock up the entire 4-link at ride height and verify that the axle and rear suspension is square by measuring diagonals before fully welding:
- Axle is at the marked centerline (front to rear)
- Ride height is established.
- Axle is centered left/right under the vehicle.
- Desired instant center is achieved.
- Pinion angle set to 0°. Final pinion angle can be adjusted via the upper trailing arms after installation.
- Shock length is within the recommended length at ride height.
- All links, shocks, and mounts have sufficient clearance.

11. Fully weld all outboard flange faces of the 4-link while all the above parameters are maintained. Remove all rod ends during this stage as the heat may reduce or destroy the PTFE liner of the rod ends. It is recommended not to weld the inboard flange faces fully as this may induce enough heat to warp the flanges. Some stitch welding of the inner flanges is acceptable. When the frame box welding is done, use the grinder to smooth the welds if desired.

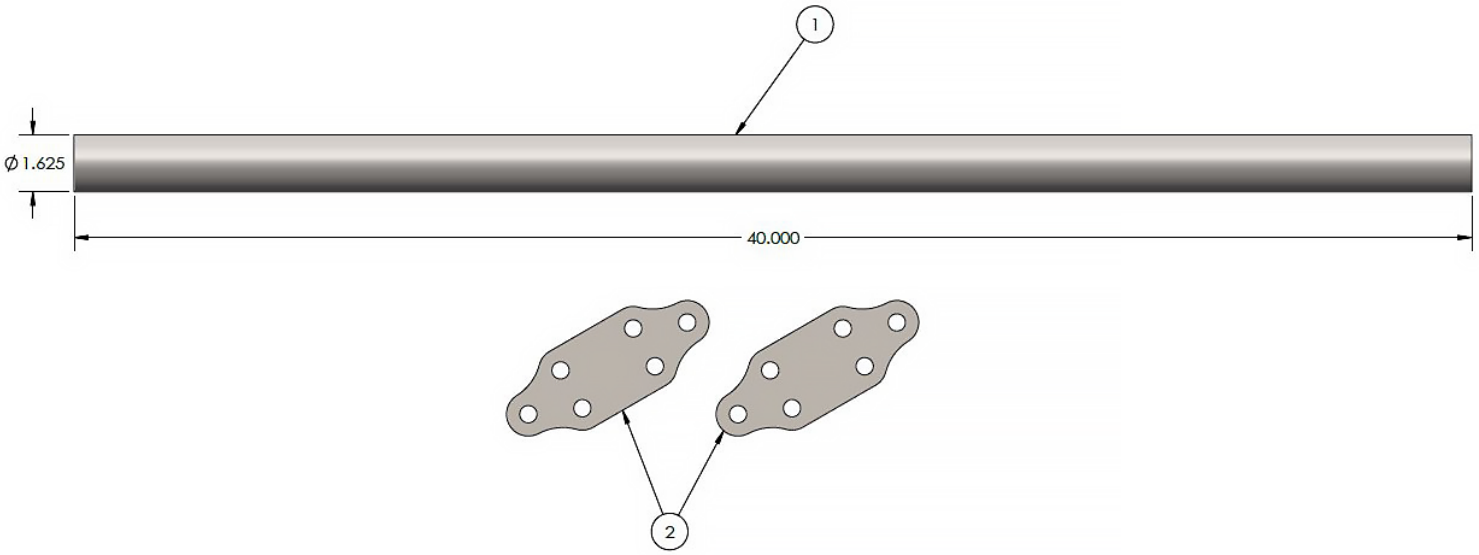
12. With the welding complete, now is the time to protect your newly installed 4-Link system: Clean, prep, and paint or powder coat it. Once reassembled, verify that all fasteners are torqued to specification, and have the vehicle aligned before driving.


7039-401
HARDWARE KIT
TRAILING ARMS
7039-349
HARDWARE KIT,
MT103K-MT104K

BALLOON #	ITEM #	DESCRIPTION	QTY.
1	9064-217	TUBE, 1.75" OD X .250" WALL	1
2	9637-881	TUBE, 1-1/2" X 30"	2
3	9637-882	TUBE, 1-1/4" X 12"	2
4	XML8-12	ROD END (X) ENDURA ALLOY HT	2
5	1844-168	TUBE ADAPTER, 1-1/4" OD, 3/4-16 LH	2
6	1844-167	TUBE ADAPTER, 1-1/4" OD, 3/4-16 RH	2
7	XMR8-12	ROD END (X) ENDURA ALLOY HT	2
8	JNR12S	JAM NUT, STEEL 3/4-16 RH	4
9	JNL12S	NUT, JAM 3/4-16 LH	4
10	9032-169	BUSHING, POLY 2-PIECE .75" ID, BLACK	4
11	7039-157	PANHARD SHORT END SUB-ASM	2
12	1844-164	TUBE ADAPTER, 1-1/2" OD, 3/4-16 RH	2
13	1844-165	TUBE ADAPTER, 1-1/2" OD, 3/4-16 LH	2
14	XML10-12	ROD END (X) ENDURA ALLOY HT	2
15	SG88	SPACER ROD END SS, 1/2" ID	8
16	9033-390	SLEEVE, .5" ID X .75" OD X 1.875	**2**
17	9033-549	SLEEVE, 1.0" OD X .628" ID X 1.25" LONG	4
18	9033-513	SLEEVE, .395" ID X .625" OD X 1.25"	4
19	SG104	SPACER ROD END SS	4
20	9023-116	CAP, GREASE ZERK	2
21	9023-119	FITTING, ZERK 1/4-28 .150" SHANK	2
22	9637-887	PLATE, GUSSETING, CUT-TO-LENGTH	1
23	9637-883	PLATE, UPPER TRAILING ARM, FRAME INNER	2
24	9637-884	PLATE, UPPER TRAILING ARM, FRAME OUTER	2
25	9637-885	PLATE, UPPER TRAILING ARM, AXLE INNER	2
26	9637-886	PLATE, UPPER TRAILING ARM, AXLE, OUTER	2
27	7740-426	PLATE, CROSS MEMBER MOUNT, FRONT	2
28	9039-461	PLATE, SHOCK MOUNT TAB, LARGE OFFSET	4
29	7791-175	TOOL, ALIGNMENT, AXLE PLATES	4
30	9039-447	BRACKET, AXLE MOUNT, LOWER	2
31	9037-1104	BRACKET, AXLE HOUSING MOUNT 3.00", HD	4
32	9037-1008	PLATE, LOWER SHOCK MOUNT	4
33	7039-401	HARDWARE KIT, TRIANGULATED 4-LINK	1
34	7039-349	HARDWARE KIT, MT103K-MT104K	1

Additional Parts Included With Rear Mounted Shock Suspension

BALLOON #	ITEM #	DESCRIPTION	QTY.
1	9053-117	TUBE, PRO COIL-OVER, 40" TUBE ONLY	1
2	7740-426	PLATE, CROSS MEMBER MOUNT, FRONT	2



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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