



Detroit Speed, Inc.
QUADRA Link Rear Suspension
 1967-1969 Camaro/Firebird
 P/N: 041703

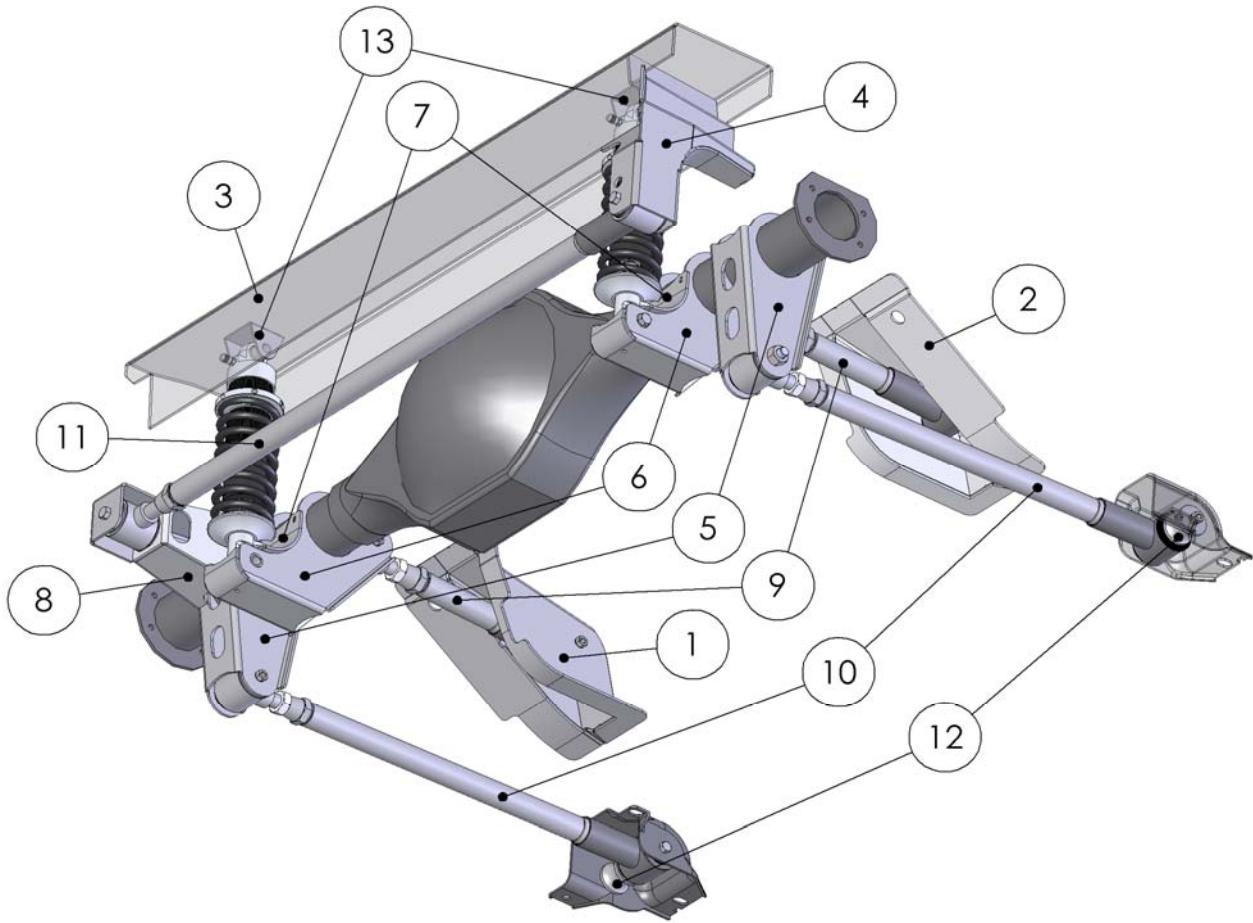


Figure 1

| Item | Component | Quantity |
|------|--|----------|
| 1 | Upper Link Front Pocket-Left | 1 |
| 2 | Upper Link Front Pocket-Right | 1 |
| 3 | Upper Shock Crossmember | 1 |
| 4 | Track Bar Body Mount Bracket | 1 |
| 5 | Lower Link Axle Mount Bracket | 2 |
| 6 | Upper Link/Coilover Axle Mount Bracket | 2 |
| 7 | Upper Link/Coilover Axle Bracket Reinforcement | 2 |
| 8 | Track Bar Axle Mount Bracket | 1 |
| 9 | Upper Link-Adjustable with Swivel-Link | 2 |
| 10 | Lower Link-Adjustable with Swivel-Link | 2 |
| 11 | Track Bar-Adjustable with Swivel-Link | 1 |

| | | |
|----|---|---|
| 12 | Lower Link Front Spacer | 2 |
| 13 | Coilover Upper Shock Mount with 1/2"-13 x 3.0" Bolt & Nut Assembly | 2 |
| 14 | 9/16"-18 x 3.75" Grade 8 Hex Head Bolt & Nylock Nut Assembly with 2 SAE Washers | 8 |
| 15 | 9/16"-18 x 5.0" Grade 8 Hex Head Bolt & Nylock Nut Assembly with 2 SAE Washers | 2 |
| 16 | 1/2"-20 x 3.5" Grade 8 Hex Head Bolt & Nylock Nut Assembly with 2 AN Washers | 2 |
| 17 | Spacer, 2.42" Long - For Fabrication Use Only | 2 |
| 18 | Upper Link Front Pocket Template | 1 |

Introduction

Congratulations on your purchase of a QUADRA Link rear suspension from Detroit Speed and Engineering, Inc. This is a great way to upgrade from an original leaf spring rear suspension. DSE's exclusive new 4-link geometry design is uncompromised and designed to achieve the best possible handling during all conditions. The new DSE "Swivel-Link" technology (U.S. Patent No: 7,398,984) in combination with tuned high-durometer rubber bushings allow the suspension to fully articulate with smooth silent motion. The binding, noise, and poor wear associated with Heim joints are no longer an issue. The jam nuts on a typical adjustable bushed link have a tendency to loosen due to suspension bind when going over uneven surfaces (like pulling into a driveway). The Swivel-Links on the QUADRA Link suspension permit the links to pivot, thus eliminating bind and unwanted torsional loading of the jam nuts. The long suspension links provide excellent pinion and u-joint angle control. This system utilizes a long, horizontal track bar that provides precise and effective rear axle lateral location during hard cornering. The track bar is adjustable for roll center control at various ride heights, and the rear upper shock crossmember adds strength and rigidity to the rear body and frame section.

Installation Instructions

1. Before beginning the installation, read and comprehend the entire set of instructions.
2. Prepare the vehicle
 - a. Raise the vehicle a few feet off the ground so the interior, trunk and underside may be accessed. Insure that the vehicle is level and well supported.
 - b. Disconnect the negative battery cable.
 - c. Remove the rear suspension and axle.
 - d. Remove the fuel tank and lines.
 - e. Remove the seats, carpet and padding, rear interior quarter trim panels, and package tray. Any other interior panels, headliner, door panels, etc., should be removed or masked well to protect them from grinding and welding sparks.
3. Install the upper link, front mounting pockets
 - a. Cut out the upper link mounting pocket template, align the arrows, and position it on the floorpan under the rear seat on the right side of the vehicle. The hole in the template lines up with the rear seat belt mounting hole and runs parallel to the rear framerail as shown in Figure 2. Outline the area to be cut, remove the template, turn it over, and then repeat the procedure on the left side of the vehicle.



Figure 2

- b. Carefully cut out the areas in the floorpan marked in the previous step and fit the front link mounting pockets (as shown in Figure 3) which also have a hole that lines up with the rear seat belt bolt to aid in positioning. Due to variations between vehicles and floorpan types, additional material may need to be trimmed. It may also be necessary to form the floorpan and/or mounting pocket flange to obtain the best fit. If the vehicle has a bump or welded nut for the muffler hanger above the left lower seat back bracket, trim the left link pocket in this area to clear the feature.



Figure 3

- c. Once the mounting pockets are properly fit to the vehicle, drill two rows of holes (approximately 5/16" in diameter) in the outboard flange of the mounting pocket in line with the frame rail flange under the floor. This will allow the pockets to be plug welded to the of the frame rail flange as shown in Figure 4.

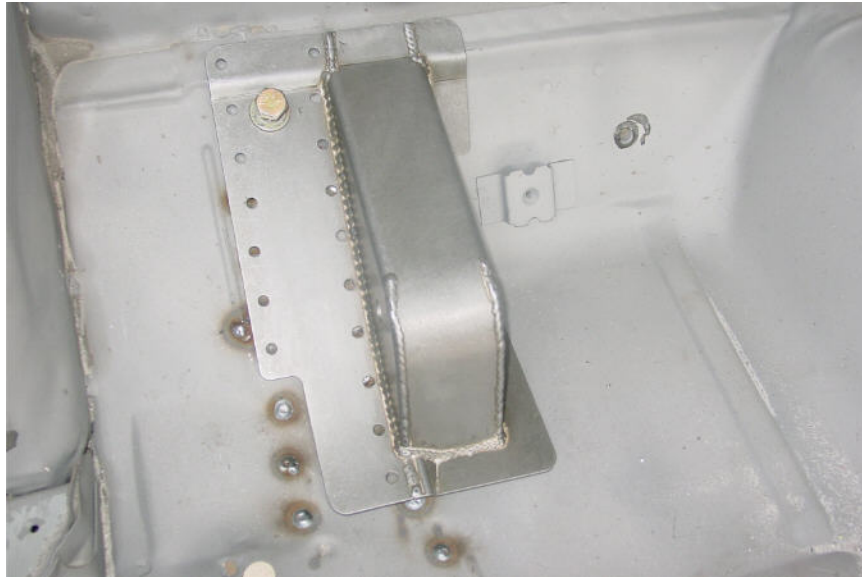


Figure 4

- d. Tack weld the mounting pockets in place, then double check their position and fit.
- e. Weld the mounting pockets in place.

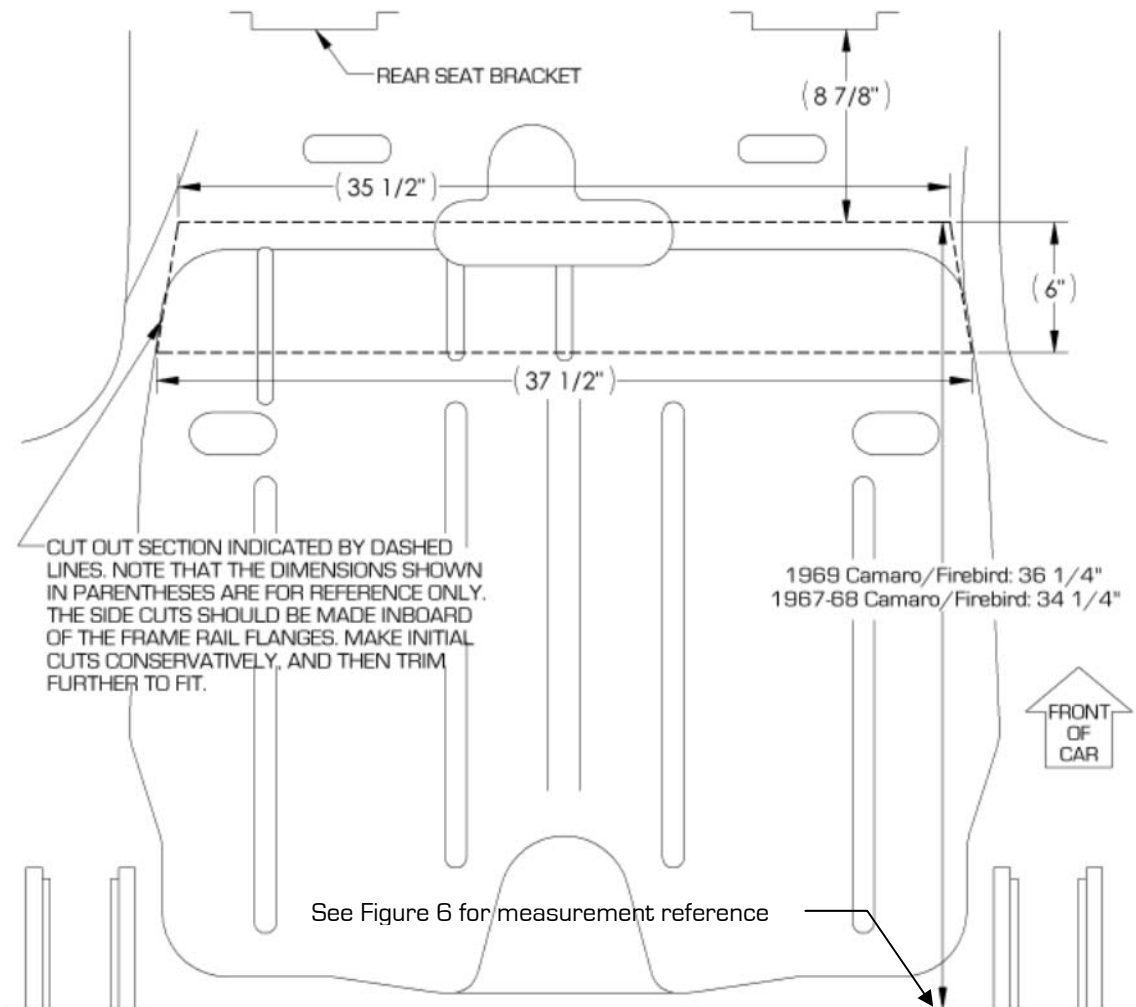
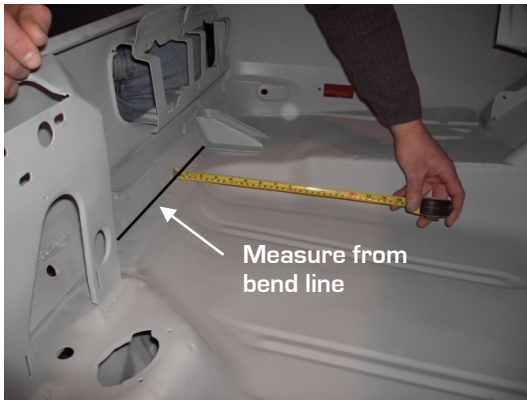


Figure 5

4. Install the upper shock crossmember
 - a. Cut the area in the trunk floor between the rear tires for the upper shock crossmember as shown in Figure 5. Figure 6 shows the rear measurement points near the rear tail panel. Note that the crossmember location and measurement points of 1967-68 models are different from 1969 models.
 - b. Fit the crossmember in the cut out area. Position it so the longer flange is toward the rear of the vehicle. It will sit on the trunk floor right above the rear frame rails. This will locate it at the correct height. The crossmember should be level in the horizontal plane and straight fore/aft from the rear of the vehicle.



1967-68 F-Body



1969 F-Body

Figure 6

- c. Tack weld the crossmember in place and verify that it is positioned correctly.
- d. Trim the front and rear edges of the crossmember to match the profile of the floor pan if necessary.
- e. Weld the crossmember in position.
- f. Install a closeout made from 1/8" steel on the left-hand side of the vehicle in between the bottom of the crossmember and the top of the frame rail, refer to Figure 7. The closeout will approximately measure 5 3/4" x 1 1/2". **NOTE:** A closeout is not required on the right-hand side because the track bar bracket also serves to fill the gap as shown in Figure 9.

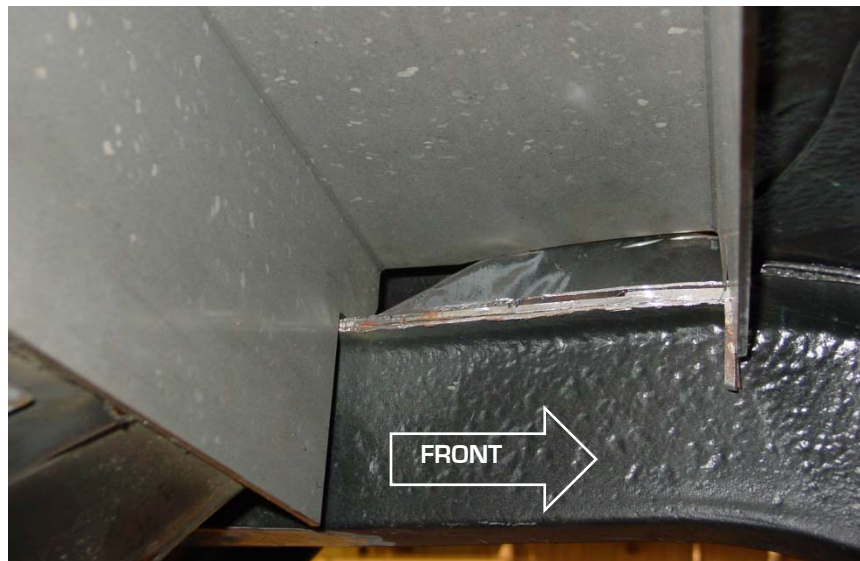


Figure 7

5. Install the track bar body mount bracket
 - a. Position the track bar body mount bracket against the bottom and inside of the right rear framerrail as shown in Figure 8. It should also be aligned inside the upper shock crossmember as shown in Figure 9. The bolt holes should be level and parallel to the centerline of the vehicle.



Figure 8

- b. Tack weld the track bar body mount, then double check its position and fit.
 - c. Weld the track bar body mount bracket in place.



Figure 9

6. Install the axle brackets
 - a. It is recommended that the axle brackets are installed when the axle tube flanges are not on the axle. If a new axle is being installed or the existing axle is being narrowed, install the axle brackets first, and then install the flanges. If the flanges are not removed, cut the axle brackets apart and weld them back together around the axle tube.

- b. It is important that the correct width for the bushings is maintained on the axle brackets when they are welded; therefore, the spacers provided with the kit should be installed in the brackets in these areas during welding. Position the axle brackets on the axle tubes as shown in Figure 15. If the axle brackets were cut during installation, the upper link/coilover bracket reinforcements should be welded on after the upper link/coilover brackets are welded to the axle, but the reinforcements should be kept on as much as possible during welding to maintain correct alignment. If the axle brackets were not cut for installation, it may be easier to weld the upper link/coilover bracket reinforcements in place before welding the axle brackets to the axle. The track bar axle bracket attaches to the left lower link axle bracket and will be installed later. **NOTE:** Detroit Speed offers a pinion centering tool (P/N 070202) that will be helpful in placing your axle brackets in the correct location on your axle tube.
 - c. Tack weld the brackets in place, and then verify that they are all positioned correctly. Weld the brackets securely in place.
 - d. Install and weld the upper link/coilover reinforcement brackets as shown in Figure 15 if not done previously.
 - e. The track bar axle bracket mounts on the rear of the driver's side lower link bracket as shown in Figure 15. The left side of the bracket lines up with the left side of the link bracket and is square to the axle tube.
 - f. Tack weld the track bar axle bracket in place, verify its position, and then weld it to the other bracket.
 - g. Once all of the axle brackets are fully welded in place, remove the spacers, and check the axle for straightness.
7. Install the upper shock mount brackets
- a. Position the rear axle in place under the vehicle and install the links as shown in Figure 1. **NOTE:** Do not tighten the bolts at this time. The 9/16"-18 x 5" bolts for the front of the lower links mount with the included spacers through the stock front leaf spring brackets once the holes have been enlarged with a 37/64" diameter drill bit. Support the axle at ride height. Check the axle position in the vehicle and adjust the end links as necessary.
 - b. Install the upper shock mounts on the shocks and mount the shocks in the axle brackets without the springs (no need to tighten the bolts at this time). Position the shocks as vertical as possible. Take care to leave enough clearance to prevent the shocks from contacting anything during the full range of suspension travel. Mark the upper shock mount locations.
 - c. Remove or shield the shocks and axle assembly and weld the upper shock mount brackets in place.
8. Verify the installation
- a. At this point the fabrication work is complete. Send the axle to a qualified shop to have the ends welded (if necessary).
 - b. Check the axle tubes for straightness and have them straightened (if needed).
 - c. Mocking up the vehicle before painting all of the components is recommended. Mock up includes installing all of the suspension components (the link bolts still don't need to be tightened yet) installing the wheels/tires, and resting the vehicle on all four tires. Double check that the rear axle is positioned correctly in the vehicle. It should be centered from side to side, and the wheelbase should be correct on both sides of the vehicle (108.0" for a 1967-69 Camaro/ Firebird). The pinion angle should be measured and adjusted to your preference. Two degrees down is recommended. Raise and lower the vehicle to verify that there is no interference.
 - d. On some vehicles the rear seat cushion frame may need to be modified in order to clear the upper link pockets. Modify the seat frame if needed.
 - e. Paint or coat the components as desired.
9. Final assembly and adjustments
- a. Install the rear axle and suspension assembly; the end link bolts will be tightened later with the vehicle sitting at ride height.

- b. Reinstall the fuel tank, fuel lines, and interior components that were removed. The rear seat back may be installed, but do not install the rear seat cushion in the vehicle at this time. Place the rear seat cushion in the vehicle so it will be at the correct weight during adjustments. The rear seat cushion will not be installed until after the upper link bolts are tightened.
 - c. Install the wheels on the vehicle and lower it onto the ground.
 - d. Verify that the track bar is installed in the hole that places it closest to horizontal.
 - e. Position the axle in the vehicle by adjusting the end links. **NOTE: There can be no more than 1 1/4" of exposed threads on the end link (3/4" of thread engagement in the tube). This measurement does not include the jam nut.** It should be centered from side to side, the wheelbase must be correct on both sides of the vehicle, and the pinion should be adjusted to the desired angle. Once the axle is in the proper position, torque the end link jam nuts to 100 ft-lbs.
 - f. Settle the suspension by bouncing the vehicle several times and then torque all of the rear suspension link pivot bolts to 120 ft-lbs. with the vehicle sitting at ride height.
 - g. Torque the coilover mounting bolts to 80 ft-lbs with the vehicle sitting at ride height.
 - h. Confirm the axle position again. Double check that all of the bolts and jam nuts are tightened to their respective torque specifications.
 - i. Install the rear seat cushion.
10. Setting the vehicle ride height.
- a. With the vehicle assembled with all components installed, adjust the ride height as necessary. Detroit Speed does recommend using a small wipe of anti-seize before adjusting the spanner nut and compressing the coilover spring.
 - b. Detroit Speed does include a Spanner Tool (P/N: 031060) to adjust ride height however if you have the adjustable coilover shocks, Detroit Speed does offer an Adjustment Tool available as P/N: 031061 if needed. A photo can be seen in Figure 10.



Figure 10 - DSE Spanner & Adjustment tools

11. If the Single Adjustable, Double Adjustable or the Double Adjustable Remote Canister Coilovers were purchased as an upgrade, refer to the following information for adjustment procedures.

**PLEASE NOTE: ALL ADJUSTABLE TYPE SHOCKS GET MOUNTED BODY SIDE UP
SHAFT SIDE DOWN**

DSE Single Adjustable Shock Applications

To change from the recommended "Detroit Tuned" valving, adjustments can be made independently to the rebound setting. The rebound is controlled by the knob at the lower shock mount (Shock is mounted body side up). The knob rotates clockwise (+) to increase the damping and counterclockwise (-) to decrease the damping. Refer to Figure 11a below

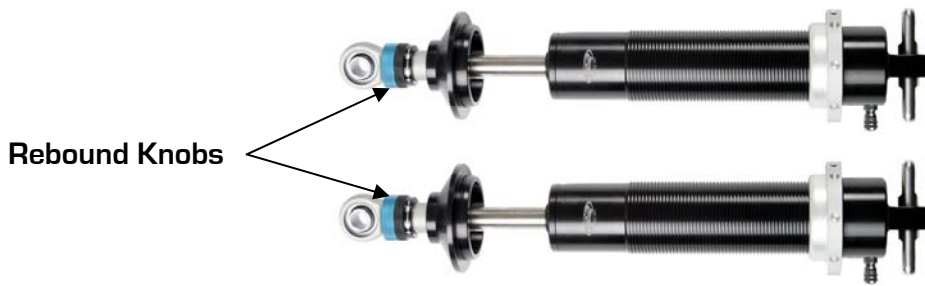


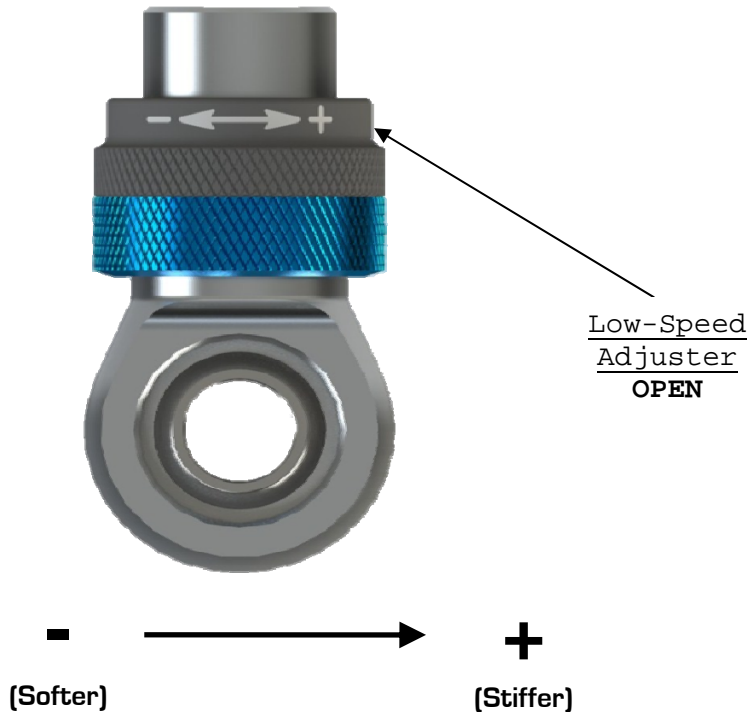
Figure 11a- DSE Single Adjustable Shock

To return to the DSE recommended settings, turn the knob clockwise (+) to full damping. Once at full damping, turn counterclockwise (-) to reach the recommended settings. Refer to Figure 11b for the rebound settings.

Rebound (Shaft Knob)..... 15 Open (counterclockwise, -)

Figure 11b - DSE Recommended Settings

Adjuster Operation



- **Adjuster (60-64 Clicks)**

The low-speed adjuster is a “clicker” style adjuster meaning that its adjustment is measured by detents located inside the blue adjuster knob. There are 16 clicks per 1 revolution of the knob. It uses a right-hand thread in its operation which means as you increase low-speed, the adjuster will move up on the eyelet. The recommended change for an adjustment is 8 clicks at a time. The low-speed adjuster’s reference position is **full stiff** (closed, or all the way up) and referred to -0 [-0 = full stiff, -64 = full soft].

- **Tuning Notes**

- **Racetrack**

- For more grip, soften the damping.
 - For increased platform control, stiffen the damping.

- Street
 - For a more comfortable ride, soften the damping

***DO NOT FORCE KNOB WHEN IT STOPS TURNING, YOU MAY DAMAGE THE ADJUSTER AND INTERNAL HARDWARE**

DSE Double Adjustable Shock Applications

To change from the recommended “Detroit Tuned” valving, adjustments can be made independently to both the high and low speed settings. The rebound is controlled by the sweepers at the lower shock mount. The sweepers rotate clockwise (+) to increase the damping and counterclockwise (-) to decrease the damping. The sweepers can be seen in Figure 12a.



Figure 12a - DSE Double Adjustable Shock

When adjusting the low speed rebound start at full (+) position, when adjusting the high speed rebound start at full (-) position. To return to the DSE recommended settings turn the sweeper clockwise(+) to full damping for the low speed setting, and counterclockwise (-) to full damping for the high speed setting. Once at full damping, turn counterclockwise(-) for the low speed setting, and clockwise(+) for the high speed setting to reach the recommended settings. Refer to Figure 12b for recommended settings.

- Low Speed Rebound (Sweeper)..... 20 sweeps (counterclockwise)(-)
- High Speed Rebound (Sweeper)..... 2 sweeps(clockwise)(+)

Figure 12b - DSE Recommended Settings

DSE Double Adjustable Shocks w/Remote Canisters

To change from the recommended “Detroit Tuned” valving, adjustments can be made independently to both the high and low speed settings. The rebound is controlled by the sweepers at the lower shock mount. The sweepers rotate clockwise (+) to increase the damping and counterclockwise (-) to decrease the damping. Refer to Figure 13a.

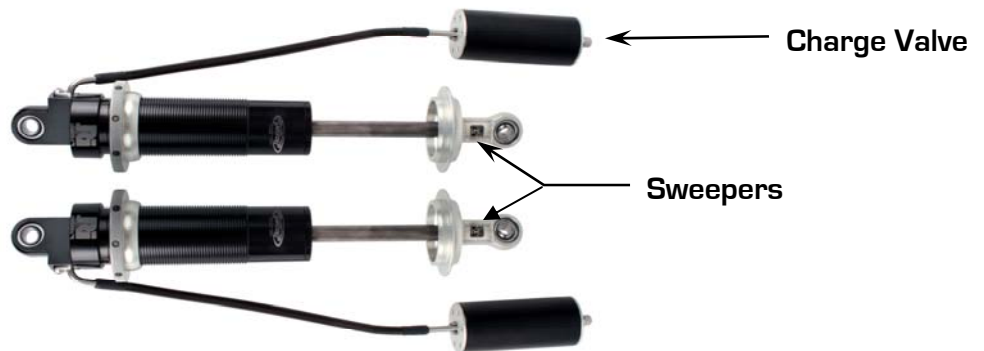


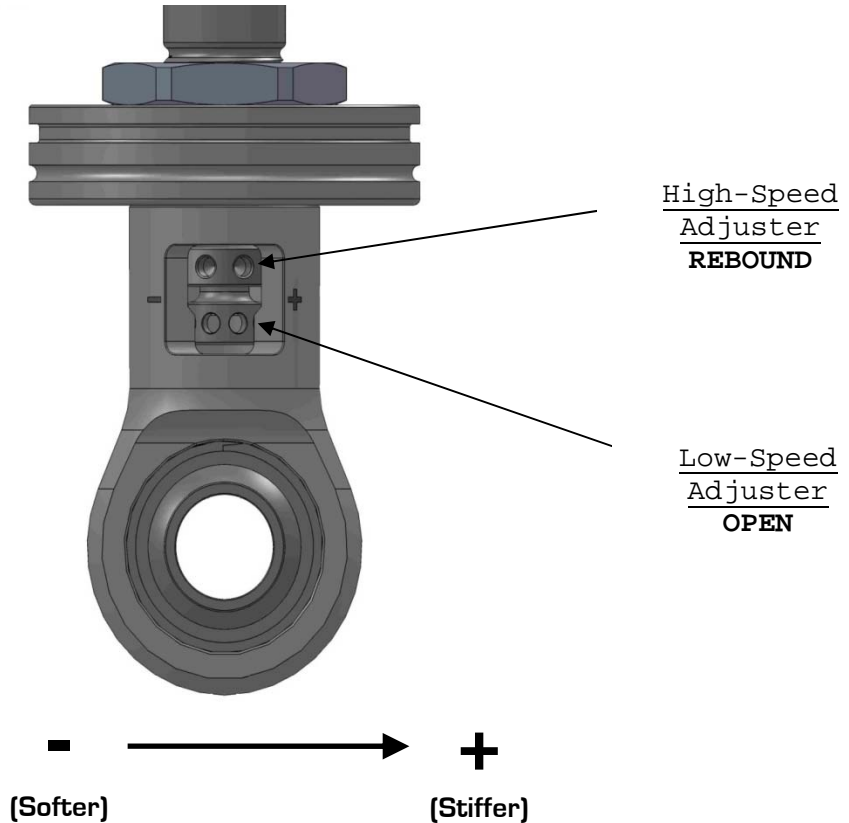
Figure 13a - DSE Double Adjustable Shock w/Remote Canister

When adjusting the low speed rebound start at full (+) position, when adjusting the high speed rebound start at full (-) position. To return to the DSE recommended settings turn the sweeper clockwise(+) to full damping for the low speed setting, and counterclockwise (-) to full damping for the high speed setting. Once at full damping, turn counterclockwise(-) for the low speed setting, and clockwise(+) for the high speed setting to reach the recommended settings. Refer to Figure 13b for recommended settings.

Low Speed Rebound (Sweeper)..... 20 sweeps (counterclockwise)(-)
 High Speed Rebound (Sweeper)..... 2 sweeps(clockwise)(+)

Figure 13b - DSE Recommended Settings

Adjuster Operation



- **High-Speed Adjuster (12 Sweeps)**

The high-speed adjuster is a “sweep” style adjuster meaning that its adjustment is measured by the location of the adjuster in the eyelet window. It uses a left-hand thread in its operation which means; as you increase high-speed, the adjuster will move down in the window*. The high-speed adjuster’s reference position is **full soft** and referred to as +0 (+0 = full soft, +12 = full stiff).

- **Low-Speed Adjuster (25 Clicks)**

The low-speed adjuster is a “clicker” style adjuster meaning that its adjustment is measured by detent grooves located inside the high-speed shaft. It uses a right-hand thread in its operation which means; as you increase low-speed, the adjuster will move up in the window. The low-speed adjuster’s reference position is **full stiff** and referred to -0 (-0 = full stiff, -25 = full soft).

**The low-speed adjustment does not change when adjusting the high-speed.*

To aid in the installation of the reservoirs, we also offer a set of Billet Aluminum Remote Canister Mounts. The canister mounts are available exclusively through DSE, P/N: 032102. They are shown in Figure 14.

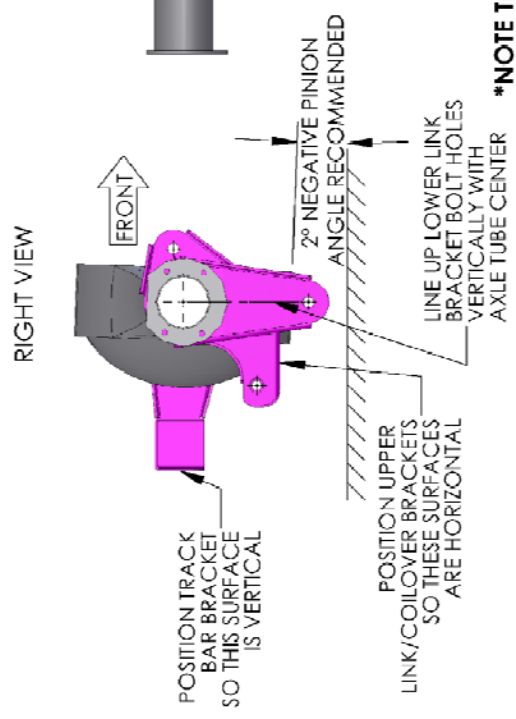
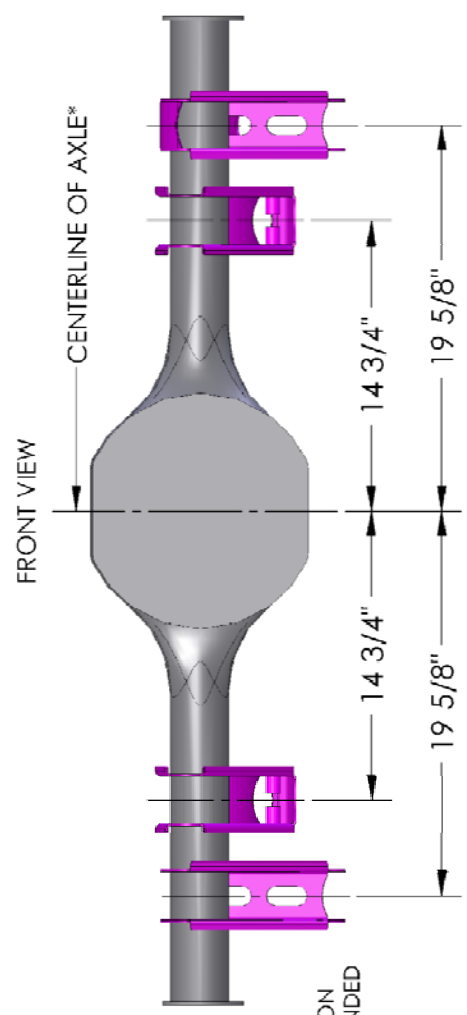
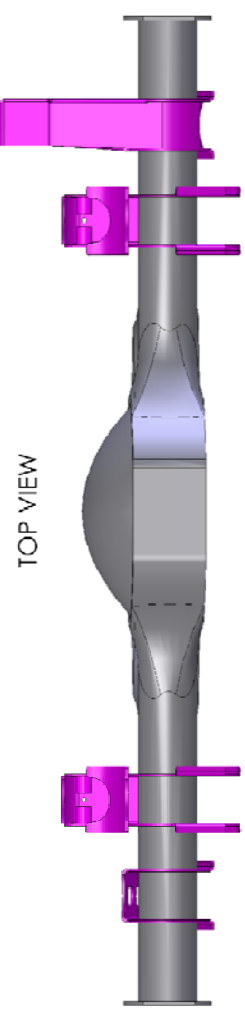
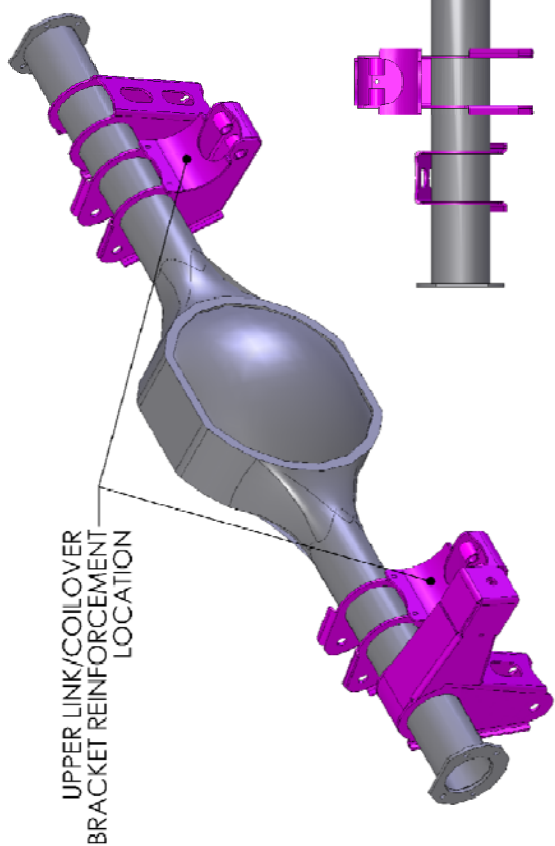


Figure 14 - Billet Aluminum Remote Canister Mounts

If you have any questions, please call Detroit Speed at (704) 662-3272.



**QUADRA LINK AXLE
BRACKET LOCATIONS**



***NOTE THAT THE CENTERLINE OF THE AXLE IS NOT LOCATED AT THE CENTER OF THE PINION, AND DEPENDING ON AXLE TYPE, MAY NOT BE LOCATED AT THE CENTER OF THE CARRIER HOUSING. THE PINION IS OFFSET TO THE PASSENGER SIDE OF THE VEHICLE.**

Figure 10

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