

Detroit Speed
First Generation Camaro/Firebird Mini-Tub Kit
 1967-1969 Camaro/Firebird
 P/N: 041203DS, 041204DS, 041205DS & 041206DS



PN: 041203DS Shown

Item	Component	Quantity
1	Detroit Speed Mini Tubs- 1967-1969 Camaro/Firebird	2
2	Rear Upper Shock Crossmember	1
3	Upper & Lower Shock Mount Bolt (1/2"-13 x 3" L)	4
4	Upper & Lower Shock Mount Nylock Nut (1/2"-13)	4
5	Upper Shock Mount Bushing (3/4" OD x 1/2"ID x 5/8" L)	2
6	Lower Shock Mount Bushing (3/4" OD x 1/2"ID x 1/4" L)	2
7	Lower Shock Mount Washer (1/2" SAE)	2
8	Offset Shackle Set	1
9	Urethane Bushing Kit	1
10	Adjustable Leaf Spring Pad	2
11	1/2" U-Bolt Kit	1
12	Lower Shock Plate- Right Hand (Depending on Year Application)	1
13	Lower Shock Plate- Left Hand (Depending on Year Application)	1
14	Detroit Speed Rear Leaf Spring (2" or 3" Drop)	2
15	Mini-Tub Shock	2

INTRODUCTION

Congratulations on your purchase of the Detroit Speed First Generation Camaro/Firebird Rear Mini-Tub Kit. The DSE Mini-Tubs are inner wheel housings designed to accommodate wider tire and wheel packages, including tires as wide as 335 mm. They are engineered for a perfect fit and retain a stock appearance. The DSE Mini-Tubs are wider than stock, stamped from 18-gauge steel, made in the USA. Please read the entire set of instructions and fully understand all the steps involved before beginning the project.

NOTE: All work should be performed by a qualified welder and technician.

NOTE: The DSE Mini-Tubs were designed to OEM sheet metal, therefore any aftermarket restoration sheet metal may require additional body work to fit to the DSE Mini-Tubs.

NOTE: There is an installation video available through the Detroit Speed website in the tech/install video section shown here:

<https://www.detroitsspeed.com/1967-69-camaro-install-videos>.

NOTE: We recommend welding one mini-tub in at a time because it is easier to fit and install the upper shock crossmember without one of the mini tubs in place. Cut and fit both sides however only weld one side in place until the upper shock crossmember has been fitted.

Preparing the Vehicle

1. Properly square, level, and support the vehicle.
2. Remove the rear axle, drive shaft, shocks, leaf springs, and fuel tank from the vehicle. Remove the interior items from the backseat area of the vehicle.
3. Strip and remove all undercoating, paint and seam sealer from the inner and outer wheelhouses. This will help identify seams and spot welds.
4. Remove the decklid and decklid torsion springs from vehicle. **NOTE:** Use caution when removing the decklid torsion springs as they are under tension.

Installing the Mini-Tubs

5. **Mark or scribe a line between the original upper shock point centerlines.** This will be used as a reference line when installing the Detroit Speed Upper Shock Crossmember from the Leaf Spring Mini-Tub Kit. **NOTE: You must draw this reference line before you make any cuts, otherwise you will NOT be able to locate your upper shock crossmember.**
6. Locate a cut line inboard of the stock inner wheel tub. This measurement is located 2-3/4" inboard of the wheel tub. See Figures 1 and 2. This will be the location of the new wheel tub. Do not cut to this line at this point.



Figure 1 - Line Scribe (Trunk Area)



Figure 2 - Line Scribe (Passenger Compartment)

7. Remove the decklid braces to inner tub and seat back braces to inner tub by drilling the spot welds. To remove the inner wheel tub from both sides of car, drill the spot welds with a spot weld cutter or a rotor broach tool. Do not damage the outer wheelhouse. If the outer wheelhouse is rust free, it will not need to be modified. The inner wheel tub will not be reused.
8. Once the inner wheel tub is removed, the scribed line from Step 6 will now be used. This will be the new Mini Tub location. From the scribed line, mark an additional line $\frac{3}{4}$ " outboard of the previous line. This line will only be needed in the passenger compartment area. This line will be used on the angled portion of the rear floor pan. See Figures 3 & 4. This is the actual cut line in that area. Once cut, a flange can be formed from the original marked line. This flange will be bent downward and will meet up with the new Mini Tub.

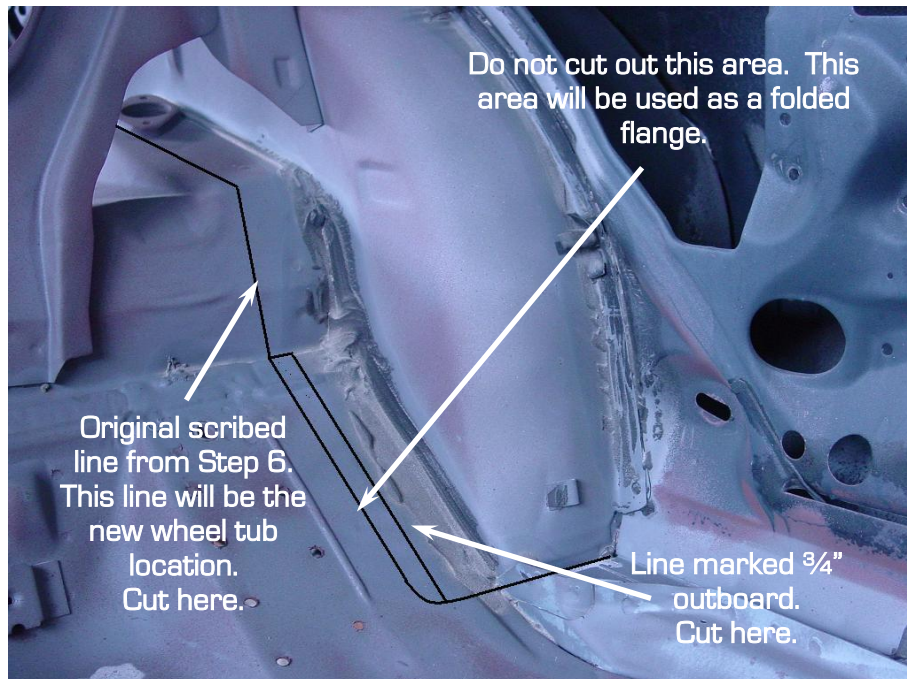


Figure 3 - Rear of Passenger Compartment

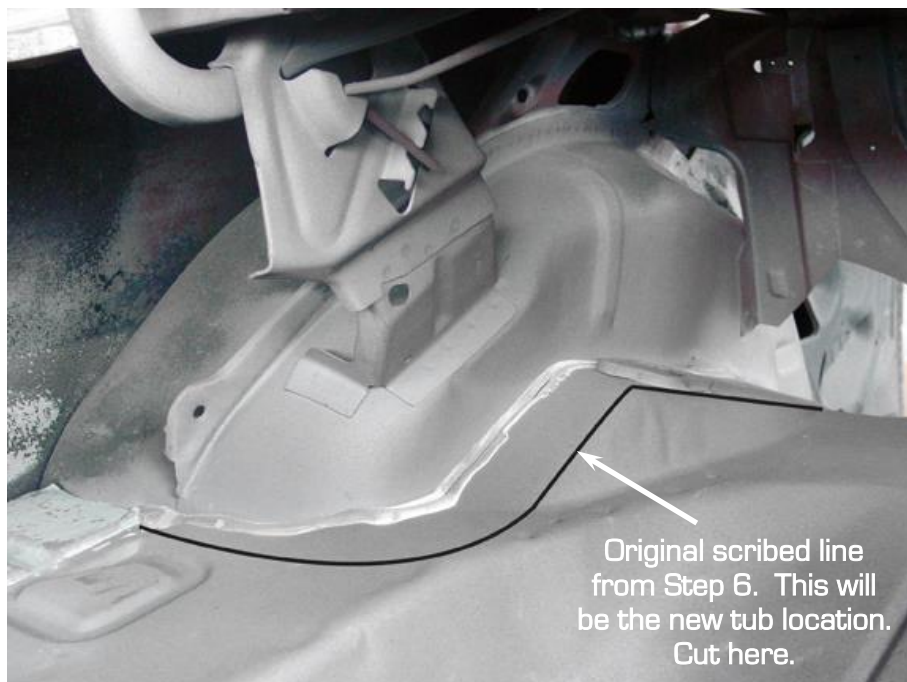


Figure 4 - Trunk Area

9. Using the cut line as a guide, cut the floor and trunk pan with a cut off wheel on a die grinder or plasma cutter. This line will be inboard of the frame rail as the frame rail runs outward at the rear of the axle centerline.
10. Remove the outer frame rail wall with a die grinder or a plasma cutter. The section to be removed will start approximately at the axle centerline and continue rearward to inner tub radius.
11. Fabricate a new outer frame rail section from 1/8" steel. The section should follow the rear inner tub radius. See Figure 5.



Figure 5 - Frame Rail Closeout

12. Make close out panels between the upper trunk and stock shock area. Make these panels from 1/8" steel. Figure 6 shows the mockup of the templates, while Figure 7 on the next page shows them installed and finish welded.



Figure 6 - Mocking up of Templates



Figure 7 - Framerrail with Closeouts Installed

13. Fold down a sheet metal flange using the initial scribe line as a reference. A flange tool or vise grips can be used to start working the metal. A body hammer can be used to finalize the flange. See Figure 8.



Figure 8 - Folding of Flange

14. **NOTE (1967 Camaro & Firebird Installers):** The driver side Mini Tub will require a small closeout between the base of the Mini Tub and the top of the trunk pan rearward of axle centerline. This closeout is necessary for the driver side only on 1967 model cars. This is due to upper shock mounting differences between 1967 and 1968-1969 model cars.

15. Drill or punch holes approximately 2" apart in the new flange and along the lower edge of the inner tub. The tub can then be final fit and welded in place. **NOTE:** Detroit Speed recommends welding one mini tub at a time because it is easier to fit and install the upper shock crossmember without one of the mini tubs in place. Cut and fit both sides, however only weld one side in place until the upper shock crossmember has been fitted. See Figure 9.



Figure 9 - Tub with Holes Punched

16. After the tubs have been installed and finish welded, install the trunk hinge supports on the new Mini Tubs. These will be cut down slightly to go on the new tubs. See Figures 10 and 11.



Figure 10



Figure 11

17. With the decklid hinge supports repositioned and welded in place, reinstall the decklid tension springs.
18. The installation of the Mini Tubs is complete. We recommend that all seams receive seam sealer to prevent the possibility of water intrusion and all bare metal be primed and painted. The welded tub is shown in Figures 12 and 13 on the next page.



Figure 12 - Welded Tub View (Passenger Compartment)



Figure 13 - Welded View (Trunk Area)

Installing the Upper Shock Crossmember

19. Cut the shock crossmember to length to insure proper clearance to each inner wheel tub. Measure the distance between the inner wheel tubs in the trunk. The crossmember is long to accommodate various wheel tub positions.
20. Position the crossmember so that the shock crossmember centerline is near the centerline of the original upper shock mounts.

21. Mark and/or scribe the trunk pan for the cut lines that will be approximately 6" wide. Use the shock centerline as a guide that you marked in Step 5 and measure 3" on either side for your cut lines. It is always a good idea to cut inside your lines; the section can always be made wider during final fitting.
22. Once the crossmember can be placed in position, determine your mounting height. The top of the crossmember should be approximately 1-1/2" above the trunk floor measured from the frame rail area. This will provide additional shock travel if ride height is lowered.
23. With the crossmember in position scribe the underside of crossmember with the trunk pan and floor pan. The crossmember can be removed and trimmed to trunk pan contours.
24. Once fitted, the crossmember should be welded on both sides of the trunk/floor pan and to each wheel tub and frame rail.
25. The installation of the Mini-Tubs is complete. We recommend that all seams receive seam sealer to prevent the possibility of water intrusion and all bare metal be primed and painted.

Installing the Urethane Rear Bushings

NOTE: If the Delrin Bushing Kit has been purchased, skip to step 27.

26. Remove your stock shackles and press out your stock bushings. Before installing the new bushings and crush sleeves, lightly coat the following areas and parts with the grease supplied:
 - I.D. of the rear spring eye
 - I.D. of the shackle bushing brackets
 - I.D., O.D. and flange of the polyurethane bushing
 - O.D. of the crush sleeves
27. Install the urethane bushings by first gently tapping in the bushings and then tapping in the crush sleeves. Skip to step 30.
28. After removing your stock shackles and pressing out your stock bushings (if applicable), ensure that the bushings are oriented in the shackles as follows;
 - The upper, two-piece bushings should be installed with the grease fittings facing toward the inside and front of the vehicle.
 - The lower, one-piece bushings should be installed with the grease fittings facing down and toward the outside of the vehicle.
29. Correct bushing configuration can be seen in Figure 14 on the next page. This configuration is correct for standard and offset shackles. The included Delrin™ washers should be installed between the bushing and the shackle at each contact point as seen in Figure 15 on the next page.
30. Installing the bushings can be made easier by pre-lubricating the bushings before pressing them into the springs and shackle mounts. After installation, the bushings should be lubricated thoroughly and checked for adequate lubrication from time to time.

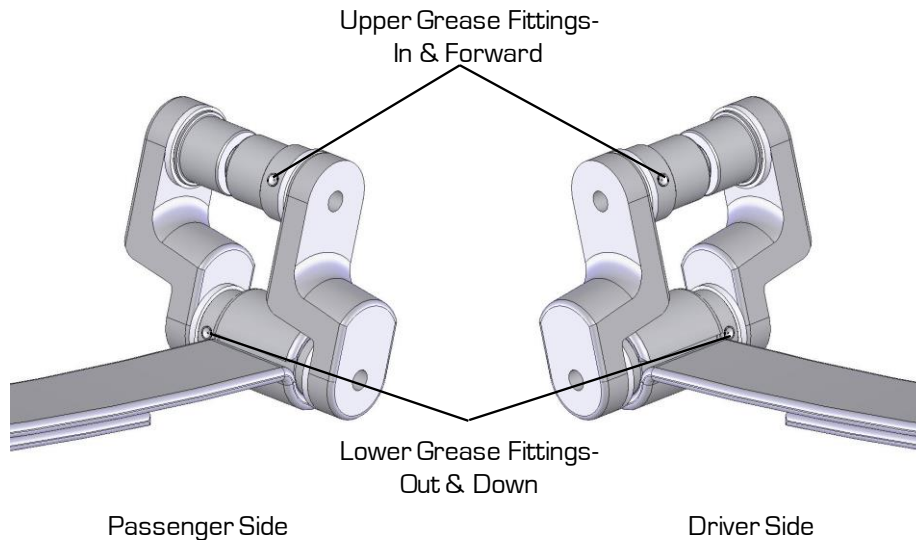


Figure 14 - Delrin Bushing Positioning

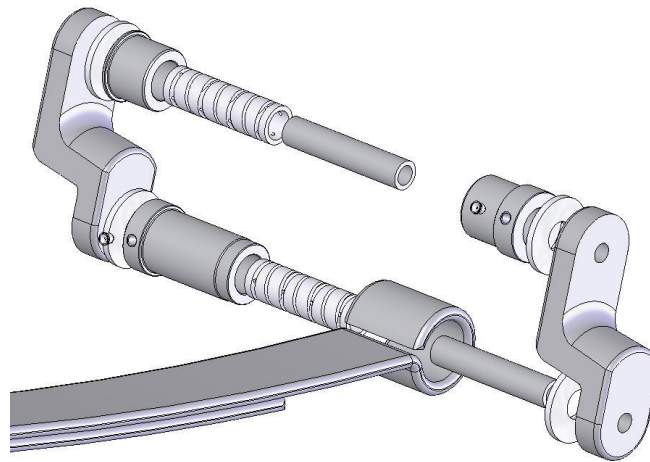


Figure 15 - Exploded View of Offset Shackle with Delrin Bushings

Installing the Offset Shackles

31. Install the offset shackles so that the offset portion of the shackle is inboard of the frame rail. See Figure 16, Detail B on the next page. Do not torque at this time. Once the rear suspension is loaded with the weight of the vehicle, then torque the rear shackle bolts to 90 ft-lbs.

Installing the Leaf Springs

32. The front leaf spring bushings have a “thick” and “thin” side. Make sure to bias the bushing so that the “thin” half is on the inboard of each spring. The front spring pocket mounting is left unchanged but may need to be loosened to allow it to “float” when moving the springs inboard.
33. Install the leaf springs into the vehicle using the factory front leaf spring perch and the rear Detroit Speed offset shackles. Re-tighten the front leaf spring pockets after installation of the leaf springs. Do not torque the shackle bolts at this time.

Installing the Adjustable Leaf Spring Pads

34. It will be necessary to remove the factory leaf spring pads from your axle housing tubes by cutting and grinding the axle tubes smooth. Set the rear axle on top of the leaf springs. Install the Detroit Speed adjustable leaf spring pads on the axle housing.
35. Center the housing at the new leaf spring location and adjust the pinion angle at ride height. It is recommended that the adjustable leaf spring pads be clamped securely in position once the pinion angle and spring widths are set. **NOTE:** Failure to draw the bolts down evenly will cause permanent damage to the spring pads. Detroit Speed recommends a pinion angle of -3° to -4° down towards the ground.
36. Remove the leaf springs and permanently attach the pads by **welding** the lower spring pad bases to the axle tubes. Use care when welding as excessive heat can distort the axle tubes. See Figure 16, Detail A on the next page. **NOTE:** The spring pads **must be welded** to the axle tube before driving the vehicle.

Installing the Lower Shock Plates

37. Install the lower shock plates to the vehicle using the provided $1/2''$ -20 U-Bolts and torque to 75 ft-lbs. For a 1967 Camaro/Firebird you will have a left and a right-hand shock plate as both shocks are located on the front side of the rear axle, both inboard of the leaf springs. For a 1968-69 Camaro/Firebird you will have 2 right hand shock plates as the driver side shock is on the back side of the rear axle and the passenger side shock is located on the front side of the rear axle, both inboard of the leaf springs. See Figure 16, Detail C.

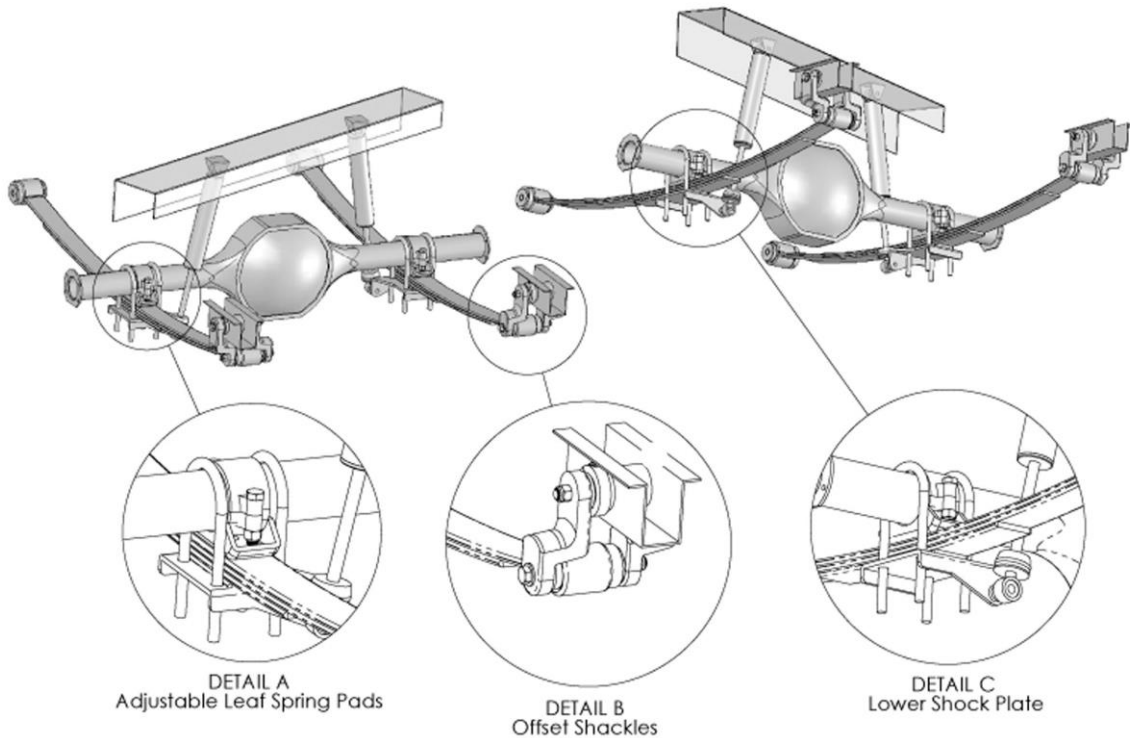


Figure 16

Installing the Upper Shock Mounts and Mini-Tub Shocks

38. The Mini-Tub shocks can now be attached with the shaft side down, to the lower shock plates using the provided 1/2"-13 hardware and lower shock bushing. **NOTE:** There is an upper and lower shock mount bushing so make sure you have the correct one. The longer bushing is for the upper shock mount and the shorter bushing is for the lower shock mount.
39. Attach the Mini-Tub shocks to the lower shock plates using the provided 1/2"-13 x 3" L hex head bolts. Place the lower shock mount bushing over the bolt and install them through the lower shock eyelet.
40. Install the bolt and shock through the lower shock plate and tighten with the provided 1/2"-13 Nylock nut and washer.
41. The upper shock mounts must now be located to the upper shock crossmember. Place the upper shock mount bushing on the provided 1/2"-13 x 3" L hex head bolt. **NOTE:** There is an upper and lower shock mount bushing so make sure you have the correct one. The longer bushing is for the upper shock mount and the shorter bushing is for the lower shock mount.
42. Place the shock eyelet into the upper shock mounts and install the bolt and upper shock bushing through the upper shock mount. Tighten the bolt with the provided 1/2"-13 Nylock nut and washer.
43. With the weight of the vehicle on the rear axle, position the shocks so they are straight up and down when looking at the side of the vehicle and then tilt the top of the shock in towards the center of the vehicle by 5° to 10° off vertical while looking from the rear of the vehicle forward. Maintain shock tube to axle tube clearance during suspension travel. See Figure 16 on the previous page. **NOTE:** Detroit Speed references a ride height shock length of 15" to 15-1/2" from eyelet to eyelet with the Mini-Tub shocks.
44. Mark the bottom side of the upper shock crossmember where the upper shock mounts meet, and tack weld the upper shock mounts to the crossmember. Position the upper shock mounts so that the 1/2" bolts are perpendicular to the frame rails and tack weld in place.
45. Disconnect the shocks so you have room to final weld the upper shock mounts to the bottom side of the upper shock crossmember. Allow clearance for shock fasteners inside the crossmember.
46. Install the Detroit Speed Mini-Tub shocks to the upper shock mounts and lower shock plates using the provided 1/2"-13 hardware.

Final Assembly

47. With the wheels/tires installed and resting the vehicle on all four tires, 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 at 108.0."
48. Once the rear suspension is loaded with the weight of the vehicle, then torque the front leaf spring eye bolt and rear shackle bolts to 90 ft-lbs.
49. If the kit was purchased without the leaf springs, the rubber front bushing must be pressed out. The leaf spring front spacer must be installed, and the bushing pressed back in place with the spacer on the outboard side of the leaf spring. This will provide the maximum tire to leaf spring clearance.

50. A stainless-steel narrowed gas tank is available from Detroit Speed to fit between the new offset leaf spring locations.
51. Reinstall the package tray, rear interior quarter trim panels, carpet padding, carpet, seats, gas tank, rear suspension, and any additional interior panels that were removed for the installation process.
52. Check all rear clearances before driving the vehicle and make sure all hardware is tightened and has been installed with the correct torque settings.

If you have any questions before or during the installation of this product, please contact Detroit Speed at tech@detroitsspeed.com or 704.662.3272

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