

# How To

## Install a Roll Bar

Even for fast cars that spend most of their waking hours on the street, installing some sort of roll-over protection is always a good idea. Naturally, a full roll cage offers maximum protection, and is downright sex, to boot. Unfortunately, climbing over and around all the tubing to get in the car, on a regular basis, can soon get old for even the most die-hard and hard-core of drivers — let alone their possibly not-quite-so-enthusiastic passengers!

The best alternative is a well-designed roll-bar system, and the more places that it attaches to the car itself, the better. While the jungle-gym complications are reduced, getting around the side bars can still require an uncomfortable degree of physical contortions.

Which brings us to the subject at hand: the installation of a more-user-friendly, 8-point roll bar. This particular kit provides a substantial degree of safety, and is NHRA-accepted for competition use with stock-floored cars running 10 seconds flat or slower. The kit shown here also includes the optional bent rear struts, the removable back brace, and quick-pinned, swing-out (or removable) side bars that make getting in and out of the car a whole lot easier.

## Your Chassisworks Roll Bar is Mandrel-Formed to Fit Your Interior

This Chassisworks 8-point roll-bar kit features the optional removable back brace, bent rear struts, and swing-out side bars that are NHRA-accepted for competition use.



Flexible, unibody cars require a little extra effort to install roll bars or cages; the first step in this installation is to replace the six rubber body bushings with these billet-aluminum versions (Part Number 6816).



After removing the bolt that holds the body bushing in place, the rubber OEM piece is pounded out.



The billet bushing then slides into place and is bolted down. Caution: Don't remove all the bushings on each side at the same time, or the body and frame will have to be realigned.

After installing the rearmost billet bushing, a thick washer had to be used to take up the space previously occupied by the bottom part of the original rubber bushing in this Camaro; otherwise, the bolt would run into the car's floor before it was seated.



Installing the subframe connectors is the next step. This is what the box-tube subframe connectors look like when they arrive, complete with factory-welded mounting gussets and end caps.



These features allow you to minimize the impact of the required tubing on the car's more basic and mundane daily-driving chores, while still fulfilling the original design function. If the rear seat needs to be utilized for passengers, unbolting and removing the back brace provides the necessary access. Likewise, the swing-out side bars can also be easily unbolted. Then, when it's time to once again push the performance envelope, simply put all the bars back in place and go racing.

A certain amount of structural rigidity has to exist in the car for all this to work properly. With a full-frame vehicle, this is not a concern, but installing a roll bar (or cage) in a unibody car requires a bit of extra work to stiffen everything up.



After bending the brake lines out of the way, the connector is ready for welding. The gussets on either side of the connector may have to be notched to follow the contour of the floor.

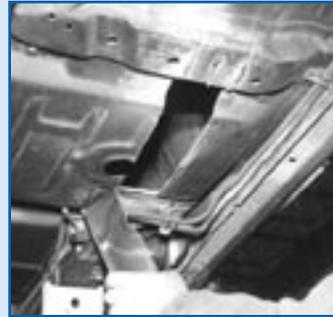
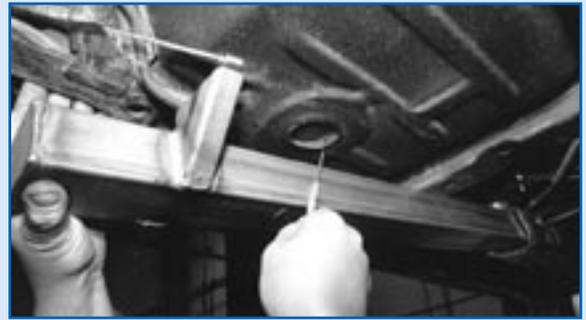


Floor-plate material for the roll bar is included in the kit. After being cut to size, the plate is then formed into shape. Also visible in the foreground is the top of the subframe connector, welded to the floor.



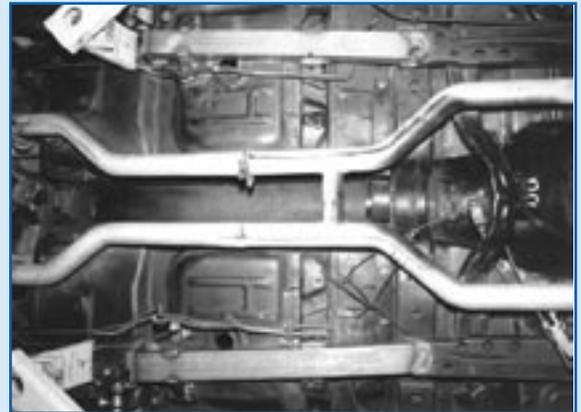
With the floor plates welded to the floor, it's time to fit the main hoop and contour the ends to fit the plates. The roll bar was leaned back slightly, to match the angle of the door opening; it should sit as high as possible in the car, while still allowing enough room to fully weld the rear struts to the hoop.

Here, the front of the connector is set in place inside the front frame stub, and the bottom of the car's floor is marked with a scribe for cutting.



After cutting, the offending strip is removed to make way for the connector. With this Camaro, it would have been possible to merely push the floor up to make room, but notching it makes for a much cleaner installation.

This view from under the car shows both subframe connectors welded in place, with the brake and fuel lines rerouted to clear the new hardware.

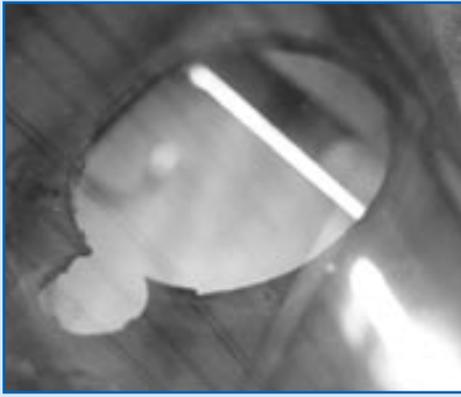


Once the hoop location is finalized, the contour of the floor plate is marked on the ends of the tubing for the trim-to-fit process.



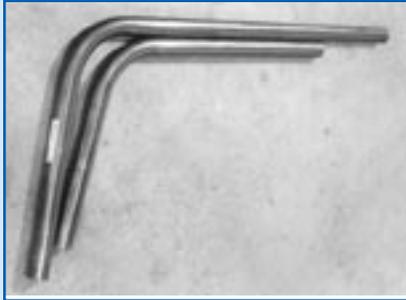
Fitting the bent rear struts is the next part of the installation process; the hidden end of the pre-bent tubing goes through a hole in the rear package tray and rests on a floor plate. Note: When marking any tubing for cutting to length, leave it a bit long and then "sneak up" on the proper fit with a series of short cuts.

Looking down through the driver's-side corner of the rear windshield shows the small hole cut into the package tray for the strut to pass through; obviously, the rear speakers will have to be moved a bit inboard to clear the tubing.



If a tubing notcher isn't available, fishmouth cuts can be achieved with a carefully used disc grinder.

In some installations, the angle of the strut's bend may have to be slightly modified. Here, the long piece is the optional bent strut as it comes in the kit, while the inner piece is cut, formed, and ready to mount in this Camaro. To open up the bend a little, stick one end under an immovable object and lean down on the other end. Obviously, you should do this in gradual stages.



After both rear struts are fabricated and in place at the middle of the main hoop's bends, a straightedge and level are employed to make sure both sides match.

With the seats removed, and the headliner and tinted rear windshield protected from sparks, the rear struts are welded to the main hoop. As mentioned, there must be adequate room to weld the strut all the way around.



This view from the trunk shows the strut in place and fully welded to the mounting plate.



The subframe struts that unite the main hoop to the subframe connectors are an integral part of this 8-point roll-bar design. Here, a hole that is substantially larger in diameter than the strut tubing is cut into the floor, far enough forward to clear the rear seat and directly above the connector.



The hole in the floor must be large enough to allow the strut to be welded to the subframe connector itself.

The angle of the sub-frame strut in relation to the hoop requires substantial contouring of the tubing to achieve a quality fit.



When fabricating the bars for both the removable back brace and the swing-out/removable side bars, a hole is drilled through the end of the tubing for a rosette weld before inserting the clevis.

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This kit includes the means to take care of the problem: We provide billet-aluminum body bushings to take the place of the OEM rubber, along with subframe connectors to rigidly tie in the front subframe to the rest of the car. Obviously, these modifications will result in a ride that is substantially harsher than the automakers intended, but it's hard to imagine why this would be a major problem for anyone reading this catalog and contemplating the use of our products.

Rather than use a roomy, shoebox-style car for this installation, we wanted to show how it would all go together in a sleeker, more-modern car with a fairly confined passenger compartment. This second-generation Camaro fit the bill quite nicely: a daily driver loaded with horsepower, and scheduled for occasional runs down the track.



Again, the floor plate is cut and contoured; the lower end of the bar itself is fully welded and bolted to the bracket, while the bracket itself remains loose in the tubing until the fit is finalized.



With the mounting tab now tacked to the hoop, the tubing is marked for its second cut.



The mounts for the back brace are positioned at the widest point of the main hoop. One end of the tubing is fully welded to the clevis, while the other is left loose until the very end of the fitting-and-installation process.



This combination of tubing and bracket is used to provide the front mounting/pivot point for the side bars.



After determining the best angle for the side bar, the front assembly is tacked down; here, the rear mount is held in place and the tubing marked for cutting.



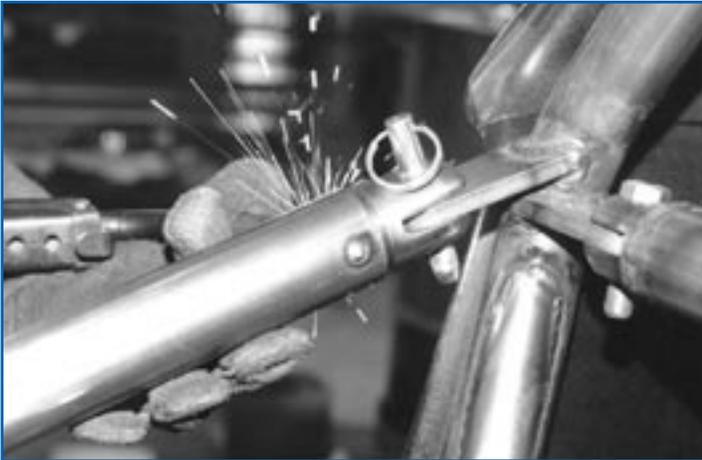
Before doing any final welding, the side bar is checked for proper operation and orientation.



With the seat mocked up in place, another critical item to check before welding everything up is the clearance between the side bar and the arm rest. Failure to do so may result in some unnecessary hacking of the door panel.



After welding the tab to the main hoop and cutting the side-bar tubing to length, the clevis is installed in the end of the tube and the holes aligned with the help of a punch.



With the quick-release pin in place, the rosettes in the tubing are welded up first, to minimize the movement of the clevis as it is then fully welded.



We recommend using a round file or die grinder, rather than a larger drill bit, to "egg-shape" the hole in the mounting tab to achieve proper quick-pin clearance if the alignment changes due to the welding procedure.

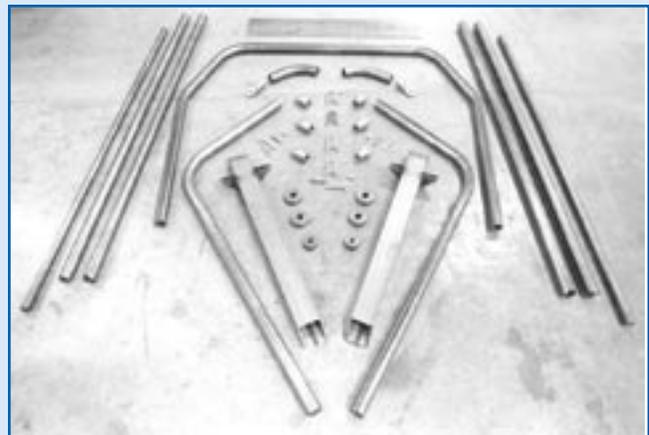


After everything else is done, don't forget to weld up the second end of the removable back brace, again starting with the rosettes.

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There are a few major requirements with a project such as this. The car must be level and solidly supported at every corner, so the body doesn't rock and change the readings on the levels as the installer moves about the passenger compartment. A water sprayer and/or a fire extinguisher should be close at hand whenever using torches or welders. And, needless to say, competent welding skills and a familiarity with tape measures and the other tools of the trade are also very important to the success of the mission ■



All of the pieces used in this installation are displayed here. Needless to say, some assembly is required.