



Part# C3132/C3156
2005-Up Ford Mustang 8-Point Roll Bar

Installation Instructions

Please read the instructions completely **BEFORE** starting this project.

Competition Engineering 8-Point Roll Bars are **not** designed for use in vehicles where the stock floor has been removed. Check your sanctioning body's rulebook for installation guidelines. To help you install this 8-Point Roll Bar; we've provided you with this step-by-step instruction manual. These directions are a general guideline for a typical roll bar installation and are not written specifically for your application. If you have installed a roll bar before, this will be a quick refresher course. The installation process will involve fitting the bar components into the racecar, trimming the bars to fit and then tack welding the tubing together before making the final welds. By following this procedure, any minor mistakes can be corrected easily and with the smallest loss of valuable time.

NOTE: THE MATERIAL FURNISHED IS NOT TO BE CONSIDERED A COMPLETELY FINISHED AND FITTED ASSEMBLY. INSTALLED DIMENSIONS ARE NOT PROVIDED WITH THESE INSTRUCTIONS. THE ROLL BAR IS TO BE INSTALLED TO YOUR OWN PERSONAL SATISFACTION WITHIN SANCTIONING BODY RULES AND THE GUIDELINES SET BY COMPETITION ENGINEERING IN THESE INSTRUCTIONS.

This Roll Bar has been designed to eliminate some of the more critical operations for you, the installer. Some of the tubes have had the notches roughed in for you but will still require some minor trimming to meet your specific needs. Refinement of the notches should be done as carefully as possible. We recommend using a hand grinder or if possible a holesaw type tube notcher to prepare the ends of the tube for proper fit. The notches should allow for a slight gap to help maximize weld penetration. Also make sure to dress the notched end of the tube with a grinder or hand file to remove burrs and provide a chamfer for improved weld appearance.

We recommend that all welds be done with the approved MIG or TIG welding process. A machine with 130-amps or higher should be used. **DO NOT USE FLUX CORE WIRE TO WELD THIS ROLL BAR.**

If you are unsure about your welding abilities, have a professional welder complete the installation. Follow all safety guidelines that are provided with the equipment you are using. Always wear eye protection.

NOTE: Always be aware of fuel line locations.

*For Technical Assistance, call Competition Engineering's Tech Line at
(203) 458-0542, 8:30am-5:00pm Eastern Time*

COMPETITION ENGINEERING
80 Carter Drive • Guilford, CT 06437
Phone: (203) 453-5200 • Fax: (203) 453-6906

TABLE OF CONTENTS

- I. Material parts list with identifying names
- II. List of tools required
- III. Step-by-step instructions
- IV. Illustrations for specific steps

I. PARTS LIST

- | | |
|-------------------------------------|-------------------------------|
| 1) Main Hoop | 2) Formed Rear Struts |
| 2) Formed Door Struts | 2) Main Hoop Struts 39" Long |
| 1) Main Hoop/Harness Crossbrace | 4) Gussets |
| 4) 6"x6" Plates | 1) Rear Strut Plate Dr.Side |
| 2) Main Hoop Plates (1-3/4in. Hole) | 1) Rear Strut Plate Pass.Side |

II. TOOL LIST

- Power Band Saw or Hand hacksaw to shorten tubing
- Body Grinder with coarse wheel to remove paint and rust. Also to refine tube notches.
- MIG or TIG Welder with 130 amp minimum rating
- Protective Face Shield for grinding and welding
- Sheetmetal Shears to modify or remove interior panels.
- Die Grinder or Electric Drill with rotary file to notch tube ends.
- Tape Measure, Hammer, C-Clamps, Locking Pliers, Magic Marker
- 4 Jack Stands to support vehicle
- Carpenter's Level and Angle Finder
- Bench Vise to hold tubing while grinding and cutting.

For a professional looking installation we highly recommend the following materials and tools:

- .030"-.035" Mild steel welding wire
- Thin cardboard to cover the windows. This protects the glass from welding and grinder sparks.
- 80-Grit sandpaper to remove paint and light surface rust
- Holesaw type tube notcher
- Scrap pieces of sheetmetal to protect the headliner during welding.

III. INSTALLATION

NOTE: Always disconnect BOTH battery cables before welding.

NOTE: Always check for fuel lines under the vehicle before welding, Remove or isolate as necessary.

1. Begin the installation process by removing the interior from the vehicle. This includes, front and rear seats, carpet and sound deadening.
2. Install cardboard or other protective material over all exposed interior glass. Don't forget to cover-up your gauges and radio if they are installed. Grinder and welding sparks go everywhere.
3. Jack-up the vehicle and support it in four places with approved jack stands. You want to take extra time to make sure the vehicle is level from front to back and side to side. Steel shims can be used between the jackstands and the chassis to achieve proper level.

NOTE: Do not let the chassis droop on the jackstands. If this is allowed to happen during the roll bar installation this droop will become permanent.

4. Next trial fit the main hoop. Take a measurement from the headliner to the mounting point for the base of the main hoop. Turn the main hoop upside down on the shop floor and measure from the floor to the end of the hoop leg. Mark the hoop legs at the dimension you measured in the car. Cut the tubes at this mark.

NOTE: The main hoop can pass through the factory drain holes and C.E. Floor Plates to mate up to a Competition Engineering Part# C3142 Subframe Connector. The drain holes may need to be opened slightly for the hoop to drop through but minimum work will easily accomplish this. Fig 1 Shows bottom of hoop dropped through drain holes. If you are not using Comp. Engineering subframe connectors, the Hoop is mounted to the floor plates.

5. First remove the factory drain plugs and grind the hole larger also prep the metal for welding later.
6. With the driver's seat installed and the driver seated with helmet on, determine the position of the main hoop.

NOTE: It is recommended that the main hoop be no further than 6" from the back of the driver's helmet. Check your sanctioning bodies rule book.

7. Trial fit the main hoop in the car. Try to align the vertical positions of the main hoop with the door pillar. Make sure it is centered in the vehicle by measuring from the door jam to the edge of the hoop on each side. If it fits snug, mark the leg positions on the floor with a marker. Remove the hoop from the car. Grind the area around the Main Hoop Plate. Remove all paint and seam seal.

NOTE: If using with Part# C3142 subframe connectors measure from the topside of the connector tube to the headliner and follow previous instructions.

8. Grind factory stud that would be under the Main Hoop Plate. There is a hole in the plate for the stud to protrude through. Tack weld each main hoop Plate in place.



Fig 1



Fig 2 (Drivers side Plate Viewed from Passenger's side)

9. Re-install the Main Hoop in the car, re-check the position of the Main Hoop and tack weld it to the previously installed Main Hoop Floor Plates or the subframe connector tube (if you are using Part# C3142) and the Main Hoop Plates. Re-check the position of the main hoop.

Note: The angle of the main hoop should match the angle of the (rear) of the door opening.

Note: Ensure fuel lines have been removed or isolated and protected from sparks and welding heat.

10. Now install the rear struts. The rear struts connect the main hoop with the rear of the car. They should be installed parallel to each other and directly over the rear frame rails.
11. Decide where the rear struts will be attached to the main hoop. Refer to sanctioning body rules.
12. Mark the position on the hoop.
 - a. Take a measurement from the mark on the main hoop to the desired end point for the rear struts.



Fig 3

- b. The rear package tray panel will have to be trimmed in order for the rear strut to pass through to the trunk floor. A oval shape hole must be cut. The hole we cut was 5IN. long. See Fig 3
- c. To position the oval hole we first found the center of the package tray panel.

NOTE: There are several reference points to help find the center of the panel.
- d. Draw the center line and measure outward 18-1/4in. to 18-3/8in. mark this spot. This is the centerline (From left to right) of the oval hole.
- e. Oval shaped hole should be 1in. rearward of centered on speaker hole (from front to back).
- f. Additional trimming will be necessary, for a finished look and fit. Measure per instruction 12 a,
13. Cut the struts to this dimension. Remember to take into account the angle needed, if any, on the end of the tube.

Note: Before beginning to tack weld the rear struts in place, check the fit of the struts against the Roll Bar Main Hoop.

Note: You should have isolated or removed the fuel lines by this time.

14. The Driver's Side and Passenger's Side, Rear Strut Floor Plates should be used over the rear frame. (See Fig. 4) Each is contoured to match the floor. These plates are to be located as far back (toward the tail panel) as possible. The hole in the plate should line up with the factory stud that is located at the back of the trunk.
15. Using a cut-off wheel remove stud or trim it back to allow stud to pass through the mounting plates and allow sufficient height to be welded.
16. Trace around the rear strut mounting Brackets with a marker.
17. Remove any paint, dirt, grease, and seam seal that might hinder welding. (See Fig 4)



Fig 4

18. Tack weld the Rear Strut Floor Plates and Rear Struts in place. Check fit, appearance and clearances on the Rear Struts. If you are satisfied with all these things, finish weld the Rear Strut Mounting Plates and rear struts.
19. With the driver seated, measure for the height of the main hoop crossbrace. This is the tube that mounts between the legs of the main hoop and supports the driver's seat in the event of impact. See Fig 5 and 6. It also acts as a structural member for the shoulder harness. Follow your sanctioning body's guideline for correct placement.
 - a. Cut the un-notched end of the tube to the correct dimension taking into account the notch that needs to be added to the end of the tube (typically 5/8" extra).
 - b. Trial fit the crossbrace and tack in place if the fit is correct. Make sure that the tube is level.
20. The Main hoop supports are installed next. These tubes span from the intersection of the main hoop and main hoop crossbrace to a set of 6 X 6 plates, the top of a subframe connector or rear frame rail, near the front ladder bar or 4- link brackets. These supports will improve chassis reaction time and make the car less flexible.
 - a. Determine the location of the 6 x 6 plates. Form the plates to fit the location on the floor and tack weld to floor.
 - b. Next determine angle and position of the tube. Make a template of the notch required on the ends of the tube using a piece of paper wrapped around the end of the tube. Slide the paper up into the location for the notch and mark the contours on the paper. Trim the paper as if it were the piece of tube being notched. Refine the cut in the paper until you have a perfect fit.
 - c. Transfer this shape to the end of the main hoop supports.
 - d. Trial fit tube to the car. Tack weld in place. Finish weld both Support tubes and 6 X 6 Floor Plates
21. The last part of the roll bar to be installed is the door bars. See Fig 5 and 6

Note: Follow your sanctioning bodies rules for placement of these bars. Most rules state that this bar must pass by the driver at a point between the driver's shoulder and elbow.

Note: To properly locate the door bar the driver must be seated in the car.
22. Locate the position of the door bar on the rocker sill. Form and install a 6"x6" plate for each side.
 - a. The front of the door bar is to be located in the center of the floor plate. Trim the front of the door bar so that it fits flush to the floor plate..
 - b. Notch the back of the door bar to fit against the main hoop at your desired point.
At the same time ensure sufficient clearance so the door bar does not contact the door panel.

Work slowly and carefully here, mistakes happen easily on this type of notch.

Note: Make sure fuel lines are removed and or isolated and protected from heat.

- c. When you are satisfied with the fit, tack weld the bar to the floor plate. Remove the door bar and the floor plate and finish weld door bar to plate.
 - d. Tack Door Bar Floor Plates in car
23. Begin finish welding by placing additional tack welds opposite existing tack welds. You will need between two and three tacks around each tube to prevent the cage from drawing. Secondary tacks should also be placed in areas that will be difficult to reach during finish welding. Other areas for secondary tack welds will include tubes that don't fit tightly or are in areas where the tubes form a deep angle.
24. Finish weld the entire roll bar in the same order you installed each component part. Work on the center section first, then move on to the rear and then the front sections, using the same side to side, top to bottom welding method. If any porosity is encountered during welding, grind it out and re-weld. Check each union to be sure that they are welded 100%. If you are unable to completely weld around a tube union, a gusset must be used. With the welding completed, the roll bar can be degreased, sanded and painted.

ILLUSTRATIONS

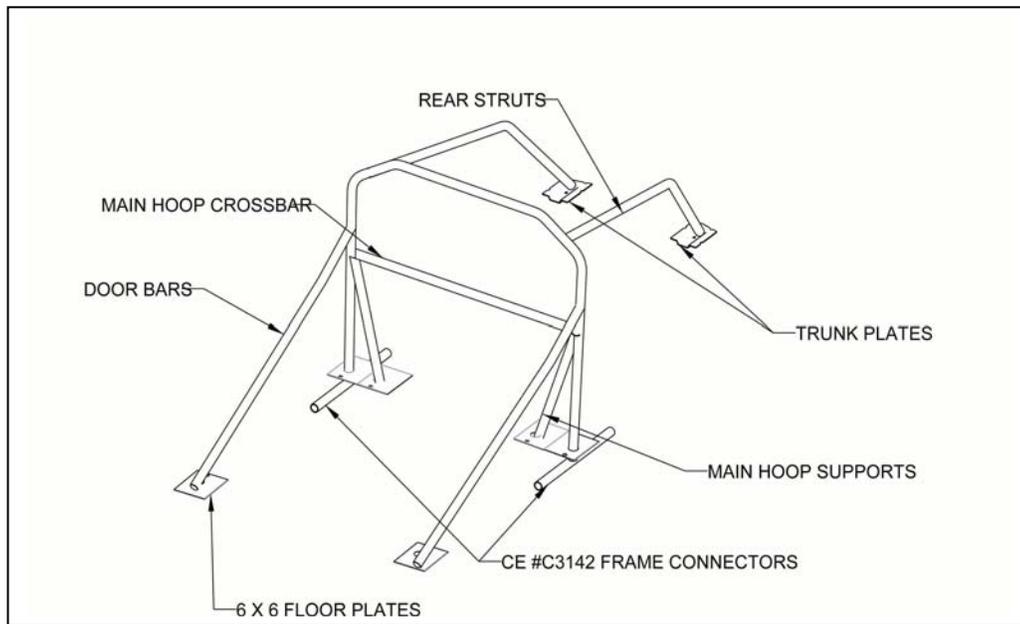


Fig 5

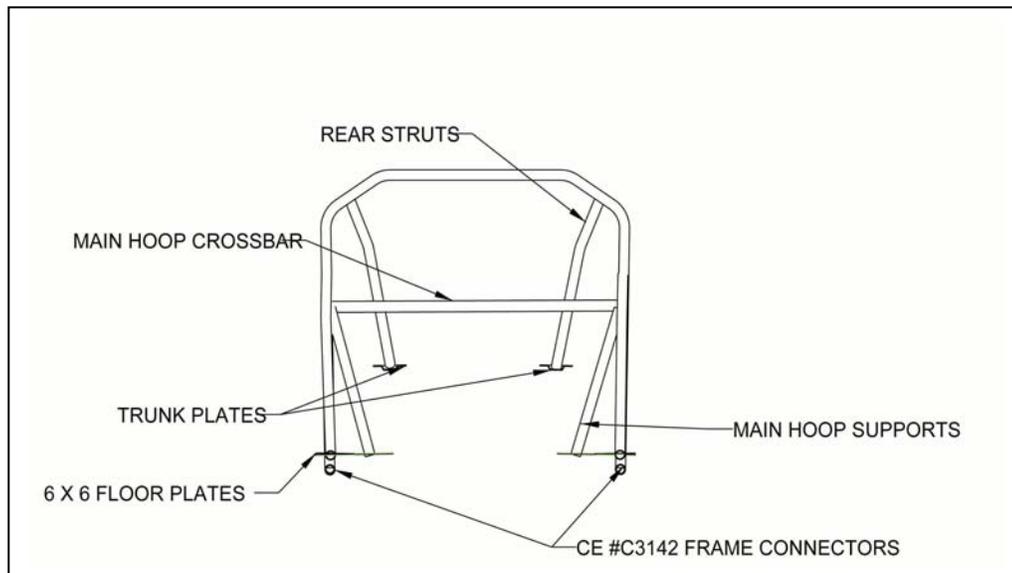


Fig 6