Torque box reinforcement: Installation instructions

There are several methods to reinforce the much abused and often damaged torque boxes of Mustangs (and similar Fox-bodied vehicles), but this is one of the easiest…While they can be used as bolt-in items, it is highly recommended that you have the units welded in to realize the full benefit of installation. The large inner plate meets NHRA requirements for rollbar/cage attachment points (minimum 6" x 6" x 1/8" thick). Due to the coverage of not up to but over the framerail, this plate allows a downtube to be installed directly over the framerail centerline, increasing structural integrity and safety.

Packing list:

In the kit, you should find the following items:

Plate, inner doubler (2)	(inside vehicle, under rear seat)
Bracket, reinforcement (2)	(inside torque box, from below vehicle)
Hardware bag (1)	(includes eight (8) 5/16"-18 x 1 bolts, lock washers, and nuts, and sixteen (16) flat washers)

Required tools:

18mm socket, ratchet, extensions
18mm combination wrench
Drill motor
11/32" (or 3/8") drill bit
High speed sander/grinder (air or electric)
1/2" socket
1/2" combination wrench
welder

Installation procedure:

Remove the rear seat bottom from the vehicle by pressing the cushion towards the rear of the car while simultaneously lifting up. Remove the lower cushion retaining brackets with appropriate equipment. From underneath the car, loosen the lower control arm (LCA) fastener, and remove the nut. Install the correct bracket in the appropriate side (side specific LCA hole location), through the large opening in the sheetmetal outboard of the LCA (Note: it might take some time to get them in place, as orientation is key to a successful installation. I've found that rotating the bracket so one "leg" is pointing forward (90 degrees from "normal"), and angled up 45 degrees, makes it quite easy to get "into the box".). Once inside the box, slide the bracket over the LCA fastener, install the nut, and finger tighten (Note: due to factory sheetmetal variations, the LCA hole may have to be opened up a bit to allow installation. It is recommended that you not exceed 9/16" hole size, as this affects fastener contact area.). Mark the outline of each bracket inside the boxes, and the four fastener locations on the top of each bracket. Remove the brackets, and grind/sandblast the undercoating, paint, and galvanizing 1/2" or so on both sides of the marked line (I find sandblasting to be the quickest, easiest, and most effective method to do this.). Drill as many of the holes as you can from the bottom, using an 11/32" or 3/8" bit. If you find limited drill access on one or two fasteners, that's fine; drill as many as possible. From inside the vehicle, locate the inner plate using the drilled holes, and drop fasteners in from the top, temporarily.

The chamfered (angled, clipped) corner should be oriented to the rear and outside of the vehicle. If you are short any fastener holes, drill them using the inner plate as a guide. Mark the plate profiles on the floor, on both sides (including the three 3/4" holes on each side for plug welding). Remove the plates; scrape the undercoating/sound deadener, and grind the paint and galvanizing 1/2" on both sides of the marks. The car is nearly prepped for welding…

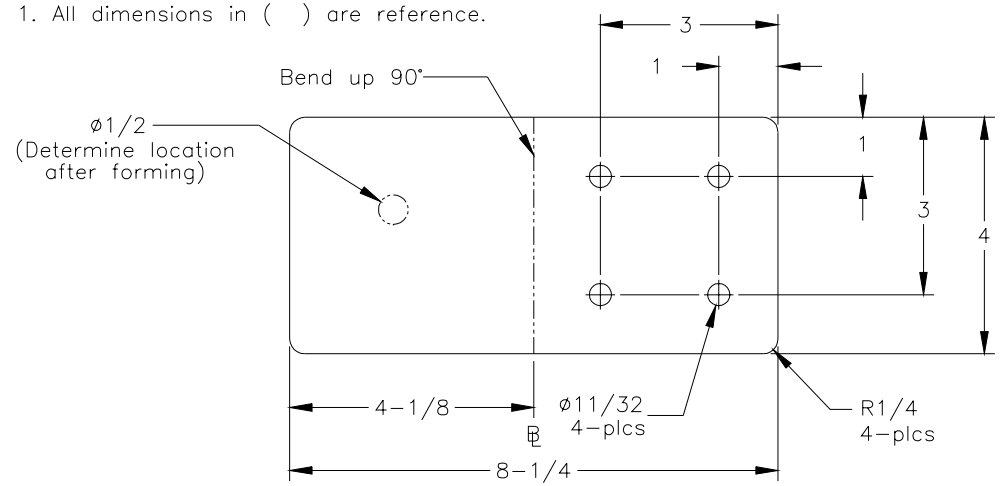
Before doing any major welding on your vehicle, it is important to isolate the alternator, computer, and all other high dollar electronic equipment from the chassis. Isolation prevents a voltage spike from damaging sensitive equipment by eliminating ground-fault loops. Disconnect the negative battery cable, the EEC ground (and EEC connector, for good measure), and any other grounds you might deem necessary. Some people don't consider this step vital, and have gotten by without it. Personally, it's worth the few minutes of labor to avoid several hundreds (and possibly thousands) of dollars of damage; I recommend you do it…

Since the brackets cannot be painted after installation (or at least the backsides), paint the entire bracket with a good quality paint or primer, and let dry (you might clean them first with lacquer thinner or carburetor cleaner first). Also, paint the backsides of the large inner plate. Grind the intended weld areas, and install the brackets into the torque boxes as before. Install the inner plate, aligning with the fastener holes in bracket. Install a flat washer on each fastener, and drop them through (from inside the vehicle; fastener heads will be located under the seat) the plate and bracket. Once all eight (8) fasteners are in place, have an assistant hold the bolt as you install a flat washer, lock washer, and tighten the nut (or vice-versa!) from underneath the vehicle. Torque the 5/16" fasteners to about 17 ft-lbs. Torque the LCA fasteners to 80-105 ft-lbs.

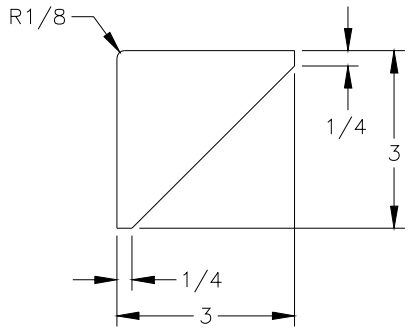
Once securely fastened, drape fireproof cloth over the side panels inside the car, and cover the glass with cardboard (or other suitable material). Weld splatter pits glass very easily, and seems attracted to it. Weld the inner plates completely around the perimeter, skip welding in 1/2" increments. The floor pan is thin, so proceed with caution and pay attention to the weld bead. Note one exception: The straight edge, closest to the driveshaft tunnel, is designed to fall directly on top of the inner framerail lip. This seam can and should be welded as hot as possible to try and "burn through" to the lip. In fact, it might not be a bad idea to cut through the floor sheetmetal with a grinder, cut-off wheel, or Dremel, to gain direct weld access to the lip. Continue skip welding, alternating plates and location, filling in the unwelded areas, until the entire perimeter is complete (appears as a continuous bead). The three 3/ 4" holes In each bracket for plug welding are located directly above the centerline of the LCA; they too should be welded as "hot" as possible for maximum integrity. From underneath the vehicle, weld as much of the bracket as possible inside the torque box. Take some time and try to at least complete the bottom seam, and wrap the corners as much as possible. Grind welds as required, and let cool. Prime, paint, and reassemble the vehicle, reversing the disconnection order.

Notes:

1. All dimensions in ( ) are reference.



DETAIL: ITEM #1



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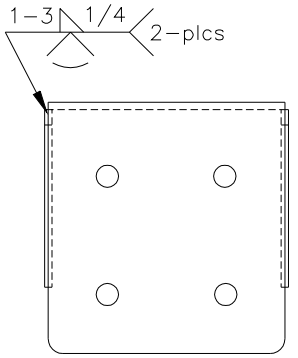

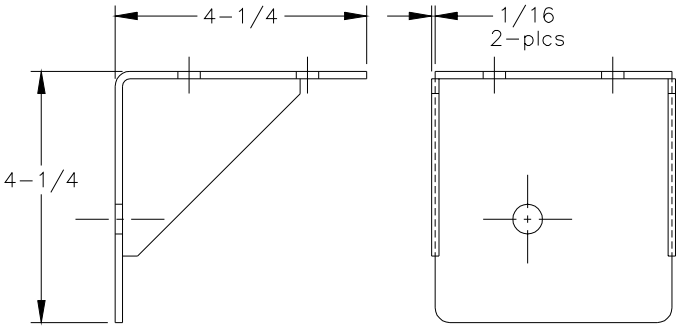

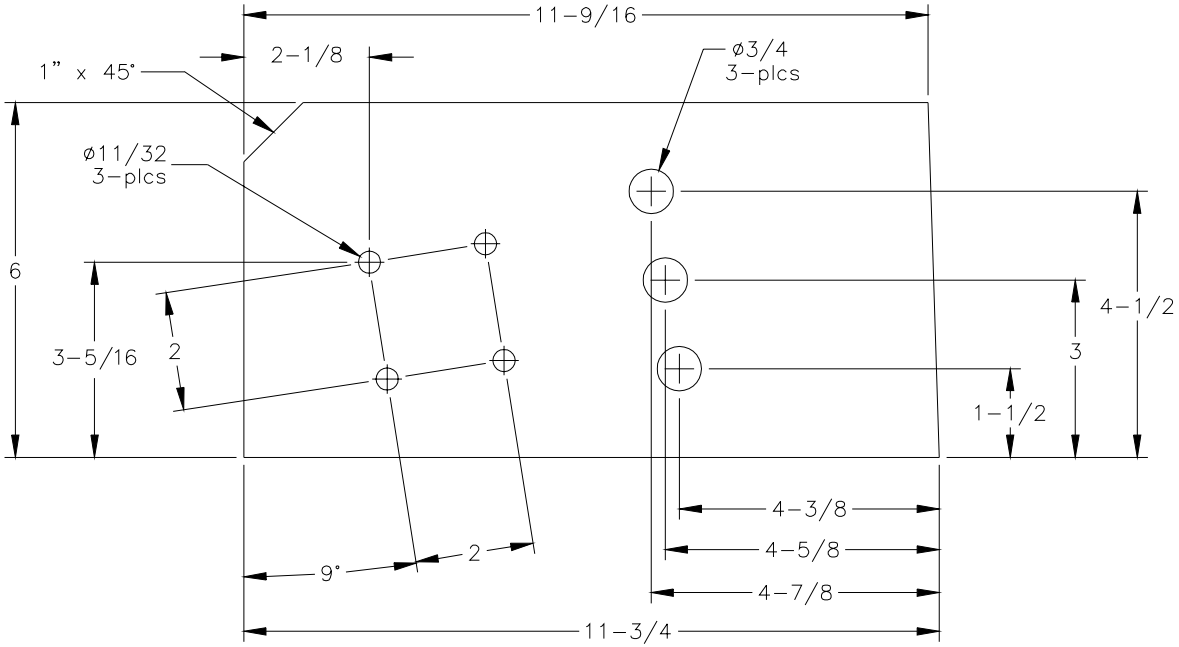

DETAIL: ITEM #4

NO	QTY	UOM	DESCRIPTION	STOCK NO.
7	8	ea	Nut, 5/16"-18 UNC grade 5	
6	8	ea	Washer. lock 5/16"	
5	16	ea	Washer, flat 5/16"	
4	8	ea	Bolt, hex 5/16"-18 UNC x 1" long gr 5	
3	2	ea	Strip, 1/8" CRS x 6" x 11-3/4" long	
2	4	ea	Strip, 1/8" CRS x 4" x 8-1/4" long	

MATERIAL LIST

REVISIONS

LTR	ECN NO.	DATE	DFT	CHKR	DES	ENG	MFG ENG	MGR

CAD DOCUMENT

DRAWN C. NEIGHBORS
CHECKER
DESIGNER C. NEIGHBORS
ENGINEER
MFG. ENGINEER
MGR. APPROVAL
NEXT ASSEMBLY

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DIMENSIONAL LIMITS AND SURFACE ROUGHNESS APPLY BEFORE FINISHING PROCESS
TOLERANCES

DECIMAL	FRACTIONAL	ANGLES
.X ±.030	±1/32	±1/2°
.XX ±.015		
.XXX ±.005		

CONCENTRICITY MACHINED DIAMETERS .005 T.I.R.
MACHINED SURFACE ROUGHNESS 125/
FILLET RADII 1/32
REMOVE ALL BURRS AND SHARP EDGES
DO NOT SCALE DRAWING
DRILL HOLE TOLERANCES

.0135 THRU .125	+.004-.001	.126 THRU .250	+.005-.001
.251 THRU .500	+.006-.001	.501 THRU .750	+.008-.001
.751 THRU 1.000	+.010-.001	1.001 THRU 2.000	+.012-.001

NEIGHBORS INDUSTRIES

TITLE
BRACKET,
TORQUE BOX REINFORCEMENT
1979-1998 FORD MUSTANG

SCALE: 1 : 1 | SHT of 1 | QTY

SIZE D | 550-9100 | REV A