

George Washington Chapter, MAFCA



Seat Belts for your Model A

Prepared and presented by Stan Johnson

Not all Wrecks are Bad



Why are these
Guys smiling?

Do they know
they are in a
Model A wreck?

This Ramblin' Wreck needs to belt in the drivers



Official Georgia Tech Cheerleaders car

But not all ramblin' wrecks end up in smiles



Were people hurt? Did they have seatbelts?



Outline

- Laws of Physics apply to Model A's
- Laws of Probability apply to Model A's
- Body style & body structure differences
- Seat belt style differences
- Attachment point reinforcement
- Examples

Rule # 1 – NEVER Drive your Model A after drinking

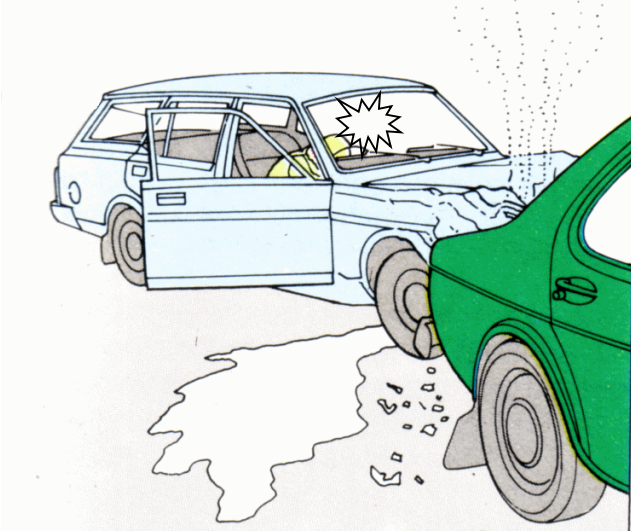


Even if you had a need to consume the evidence



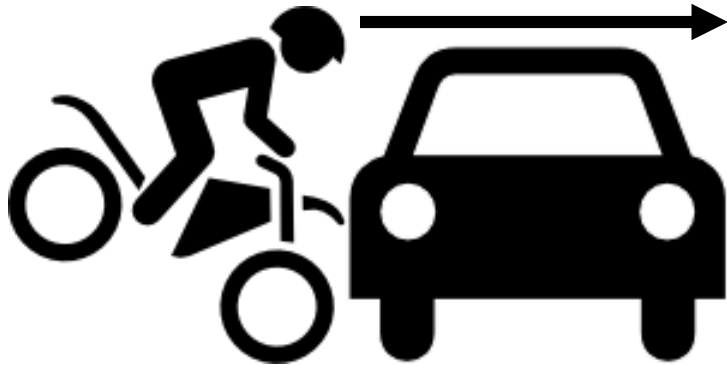
Laws of Physics

- Newton's first law of motion – “An object in motion tends to stay in motion with the same speed and in the same direction. . .”
- A car going 50 mph has passengers also going 50 mph
- Model A door latches are small – the doors tend to fly open during accidents and the passengers keep going.
- Passengers get injured when they strike an object



Something has to hold you in place or you will keep on going until you hit something

Compare:



Fall down while running

Fall down while bicycling

Fall down while going 50 mph

Just the Facts, Ma'am

Accident on Martha's Vineyard

Model A not seriously damaged

Toyota nearly totaled

Two men in Model A seriously injured

One woman in Toyota not injured

Men in Model A not wearing seatbelts

Model A's were thrown out

Model A doors pop open in accidents

Model A bodies withstand accidents



June 17, 1925. "Klinge Ford Bridge wreck" in Washington, D.C., just off (and under) Connecticut Avenue. 4x5 glass negative, National Photo Company Collection.



Old wooden frame car passenger compartment not crushed

Laws of Probability

- For Any event A, $P(A) + P(A') = 1$
- Translation: “Stuff Happens”
- About 37,000 motorists die each year in the USA

National Highway Traffic Safety Administration

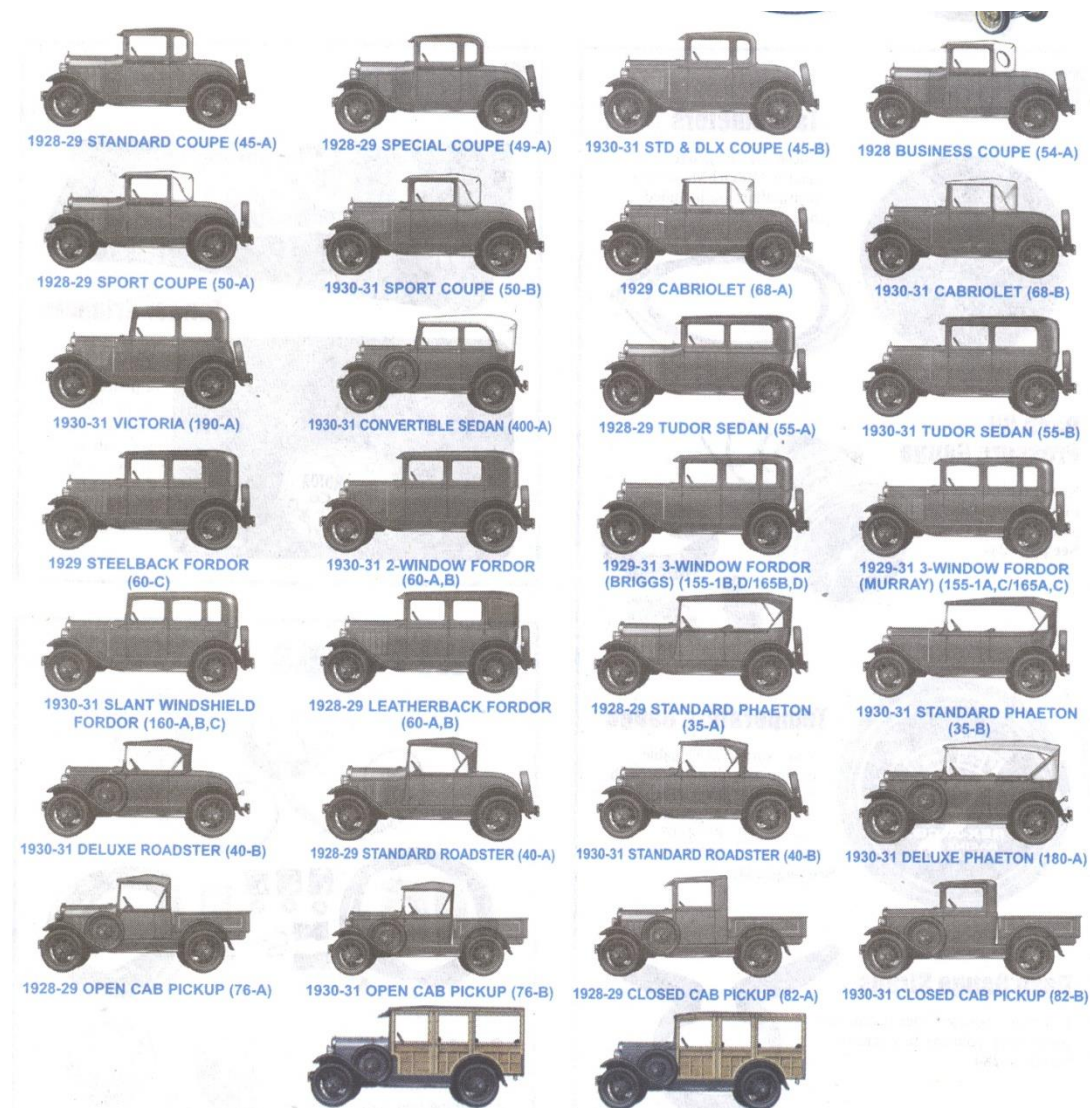
- Model A's sometimes get into accidents
- Reduce the Probability of an accident
- Reduce the Probability of injury, even in an accident
 - Don't be thrown out of the car
 - Don't fly into the dash or windshield
 - Don't have dangerous objects or equipment in the car



Model A body stays in shape, door pops open
Note the “crumple zone” (energy absorber)

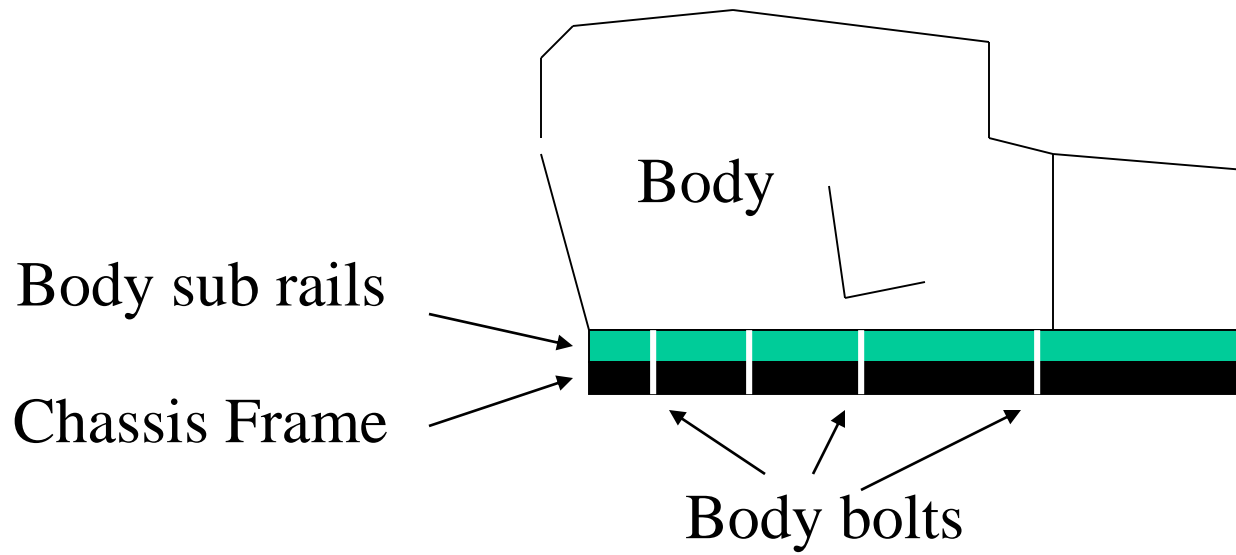
Model A Body Styles — Not including Firetrucks

Many seatbelt
mounting variations
among the styles



Structural Differences

- Model A bodies vary in configuration, not just in appearance, but in seatbelt placement
- Some Model A's are all steel, others have wood substructure
- Coupes, Pickups and roadsters have structure behind the seat
- Tudors and Fordors have open spaces for rear seat feet behind the front seat.



Rails are made of stamped steel or 2" oak depending on model

Seat belt differences

- Seat belts come in several types
 - Fixed
 - Adjustable
 - Retractable
 - 3-point (shoulder)

Attachment Point

- Strong enough to hold in an accident
- Convenient to encourage use
- Avoid dangle-berries
- Sheet metal? Body member? Chassis frame?
- Structural augmentation –
 - Added cross bar
 - Reinforcement

Examples

- Body styles
- Techniques
- Do-able

A Tudor Solution



Reinforcing straps, high strength bolts, quality belts





Two straps on one bolt?



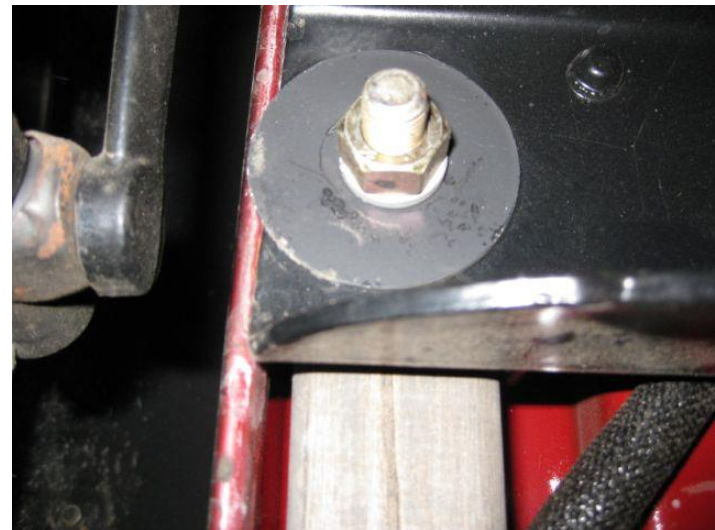
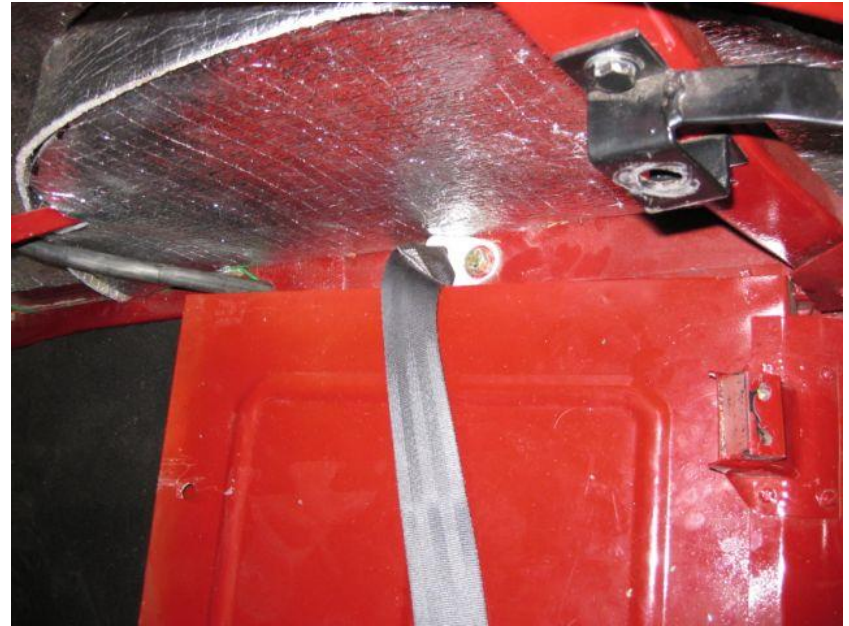
Mark
Kuklewitz



Jim Gray's Coupe



Jim Gray Rumble Seat



Single seatbelt better than
no seatbelt

Two Belt Rumble Seat using cross bar



Les Andrews Volume II Seat Belt Info

SEAT BELT INSTALLATION

INTRODUCTION

Seat belts should be installed in every Model A for safety of driver and passengers. In any kind of collision, from front or rear, at a speed of 10 mph and greater, the Model A doors will fly open, regardless of body styles. A quick turn around a corner can also cause a door to fly open. In a collision or in a sharp turn, when the doors fly open, the driver and passengers normally fly out. Seat belts in the Model A are meant to keep the driver and passengers in the car. Statistics show that major injuries and fatalities occur when the occupants are thrown from the car.

The interior of the Model A was not designed with the kind of safety in today's modern car. The steering wheel, steel dash, and windshield, are but 20" or less from the occupants face. There are no airbags for protection, and no means to install shoulder straps. The lap seat belt is the only safety belt available. The primary purpose of the lap seat belt is to keep the occupants in the car. The seat belts should therefore be anchored well enough to withstand at least a 500 pound pull on the belt.

There are many different styles, colors, and lengths of seat belts available from automotive parts stores. The seat belt set normally has all the hardware required to anchor the seat belt in the car. Two inch (2") fender washers should be used to back up bolt and nut anchoring hardware if a heavy backing plate or large fender washers are not provided in the seat belt kit. Seat belts are available with fixed length straps, with adjustable length straps, and retractable straps. The difference is at the mounting end of the strap (Figures 4-178 and 179). Before purchasing, determine which style will be needed.

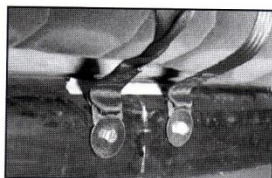


Figure 4-178
Fixed Length Straps

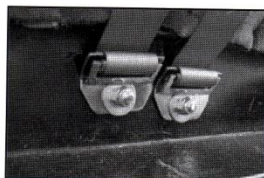


Figure 4-179
Adjustable Length Straps

Installation of seat belts will vary, depending on the body style. Coupes and Town Sedans can be installed the same way, to the seat metal frame. The Tudor Sedan requires the seat belts to be anchored through the floor to the body cross frame. A length of perforated Dexeion angle-iron can be used to backup sheet metal or wood anchoring points for added strength (Figure 4-180). Rear seat belt installation is not shown, but can be installed in the same manner as the front seat belts.

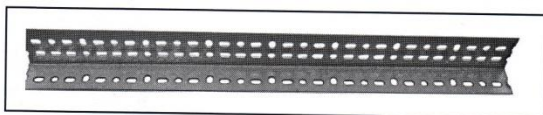


Figure 4-180 Dexeion Angle-Iron (Perforated Steel)

SEAT BELT INSTALLATION

Installation (Coupes and Fordor Sedans)

All Coupes and Fordor Sedans have a metal seat frame. The front seat belts can be anchored to the back of the metal seat frame.

1. Remove the front seat cushion. Mark the center of the seat on the rear seat metal riser. Mark hole locations 1-1/2" each side of the center line. The two center seat belt anchor points will be 3" apart (Figure 4-181/182).
2. Measure 2" in from the seat frame end to locate the two end seat belt anchor points.
3. Drill four (4) 15/32" holes for the anchor bolts (7/16-20 x 2"). Before drilling holes, make sure that no wiring or obstruction will hinder installation of the mounting hardware. On the Fordor Sedan, the anchor bolts and hardware will be exposed on the back side of the lower backrest. The exposed hardware can later be covered with floor carpeting if desired (Figures 4-184/185).
4. Anchor bolts for Coupe installation will protrude into the trunk or rumble seat area. A strip of perforated Dexeion angle-iron (Figure 4-180) can be bolted across the back of the seat frame on the trunk/rumble seat side to add strength to the anchor point.
5. Secure the Anchor Bracket to the metal seat frame with 7/16-20 bolt and flat washer. On the backside of the metal seat frame (or Dexeion angle-iron strip) install a 7/16 I.D. fender washer, 7/16 flat washer, and 7/16-20 Nylock nut (Figure 4-183). Torque nut to 50 ft.lbs. (psi). Refer to Figure 4-191 and step 15 for proper threading of belt webbing through the anchor bracket and belt plate.



Figure 4-181
Seat Frame Anchor Points

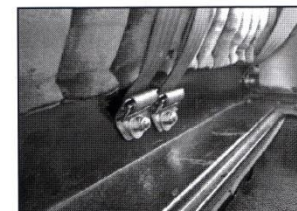


Figure 4-182 Seat Belt Brackets

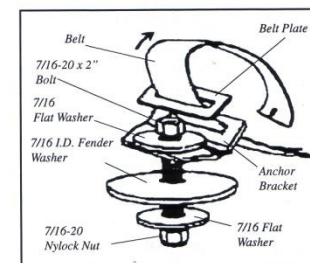


Figure 4-183 Hardware Installation

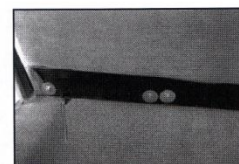


Figure 4-184
Anchor Bolts - Seat Backside

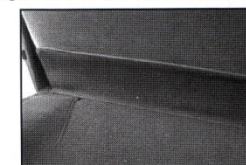


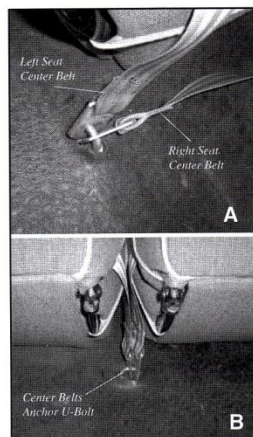
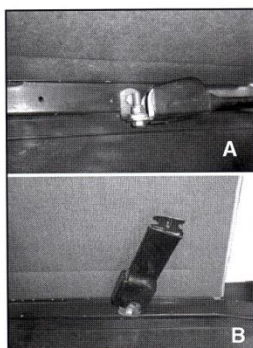
Figure 4-185
Seat Backside Carpet Covering

Installation (Tudor Sedans Only)

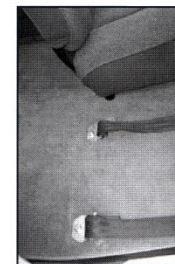
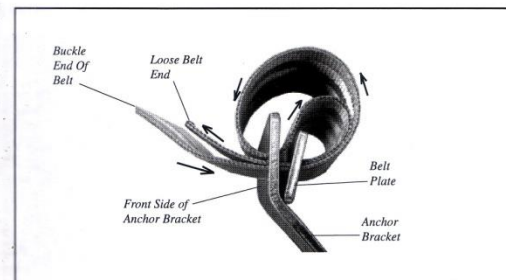
The Tudor Sedan has a large wood flooring covered by a rubber mat. Under the mat a 4" wide steel channel can be seen, spanning across the body, just behind the front seats. The seat belts can be anchored through this body cross channel. Retractable seat belts can be installed in the Tudor because of available mounting location for the retractable belt at the side body channels (Figure 4-187).

Retractable Seat Belts

6. The center belts for both right and left seat can be anchored to the same bolt. Mark the center location between the two seats, centered on the steel cross channel.
7. Drill two holes for a 3/8" x 3-1/2" U-bolt, centered on the body cross channel.
8. Feed the U-bolt through the hole on both fixed length seat belts mounting bracket. Run a 3/8-16 nut to the top of the threads on both of the U-bolt legs. Apply a 3/8 flat washer against both nuts and push the U-bolt into the two drilled holes. The nut and washer serve as a Stop for the U-bolt depth position. Use the nut on each leg to adjust for correct U-bolt height above the floor for free movement of both belt anchor brackets (Figure 4-186A and B).
9. Cut a 6" length of Dexion angle-iron and place it over both U-bolt legs from the bottom side of the cross channel. This will provide added strength around the U-bolt holes in the cross channel. Apply a 3/8 flat washer, lock washer, and nut to the bottom side of the U-bolt. Torque both nuts on the U-bolt to 30 ft.lbs. (psi).
10. The retractable belt is bolted to the body side channel using a right angle bracket supplied with the retractable belt kit. Drill appropriate hole for supplied bolt to anchor the bracket to the body side channel (Figure 4-187A). Use an appropriate fender washer on the bottom side of the bolt. Torque to nut to 30 ft.lbs.(psi). The retractable belt arm should swing freely at any angle (Figure 4-187B).

**Figure 4-186 Anchor U-Bolt****Figure 4-187 Retractable Belt****Adjustable Seat Belts**

11. All four seat belts of the adjustable type are anchored to the body center cross channel. Mark the location for each anchor bracket along the center cross channel. Position the anchor bracket bolt hole along the cross channel, 2" inside each rear seat leg (Figure 4-188).
12. Fold the front seats forward and drill four (4) 15/32" holes for the anchor bolts (7/16-20 x 2"). Before drilling holes, make sure that no wiring or obstruction will hinder installation of the mounting hardware.
13. Secure the Anchor Bracket to the metal cross channel with 7/16-20 bolt and flat washer. On the bottom side of the metal cross channel, use 7/16 flat washer and a fender washer with the sides cut off so it will fit in the channel, and 7/16-20 Nylock nut (Figure 4-189). Torque nut to 50 ft.lbs. (psi). Refer to Figure 4-183.
14. Refer to Figure 4-191 for proper threading of belt webbing through the anchor bracket and belt plate.
15. Feed the loose belt end through the Anchor Bracket slot (from the front side), then through the slot in the belt plate, make a large loop and come back around to the front side of the anchor bracket and back through the slot, come up between the anchor bracket and belt plate, over the top of the belt plate and back through the belt plate slot from the back side and out the front side of the anchor bracket. When the belt webbing is pulled taut, the belt will lock in place between the anchor bracket and the belt plate. Proper threading should be double checked with Figure 4-191 which is accordance with S.A.E. J-80B Safety Regulation.
16. Adjust all four belts in accordance with step 15. above.

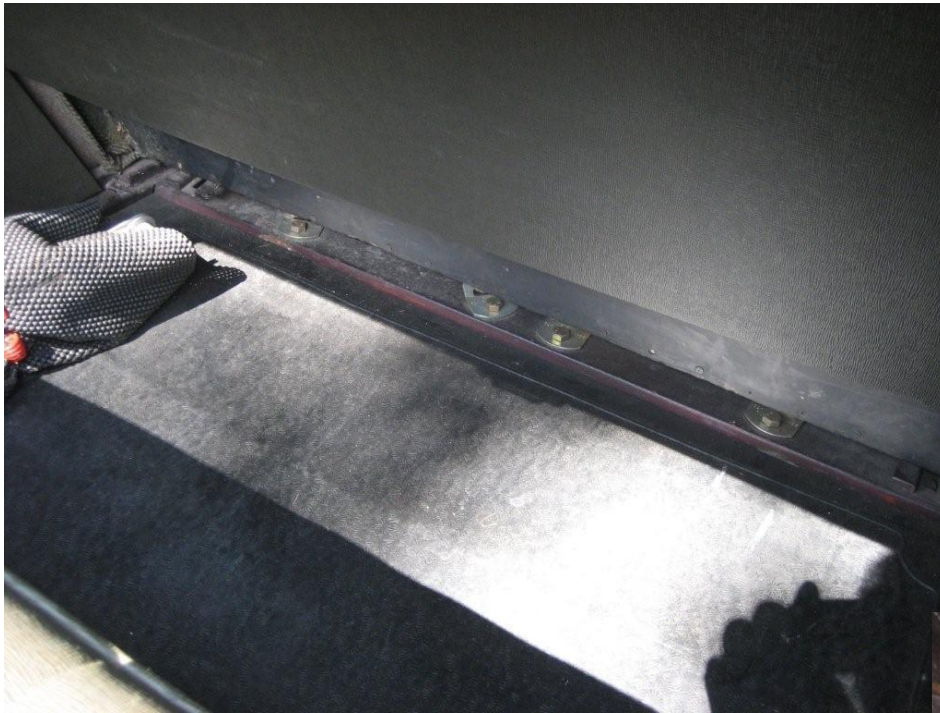
**Figure 4-188
Belt Anchor Bolts****Figure 4-189
Cross Channel Bolts****Figure 4-191 Threading Of Belt Webbing****Figure 4-190
Installed Belts**



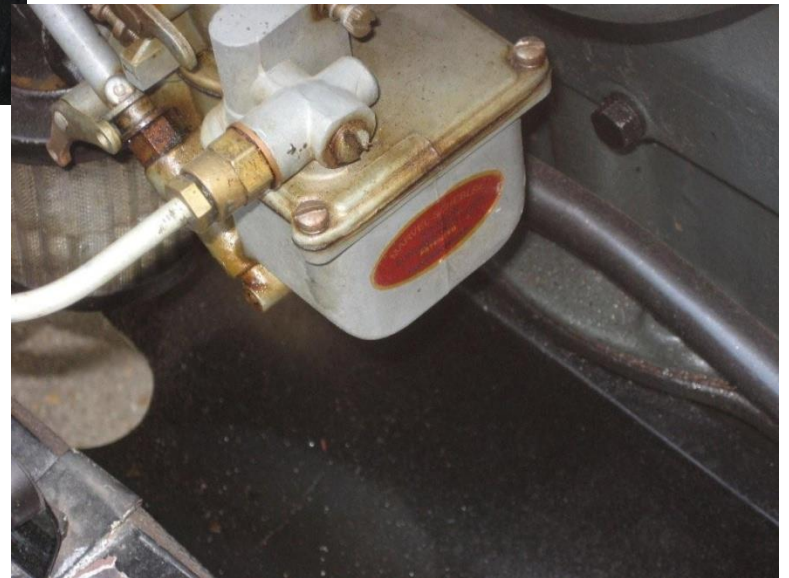
Who gets to use
the seatbelt
today?

Bill Shield's Coupe

Body cross rail



Johnson Carburetor

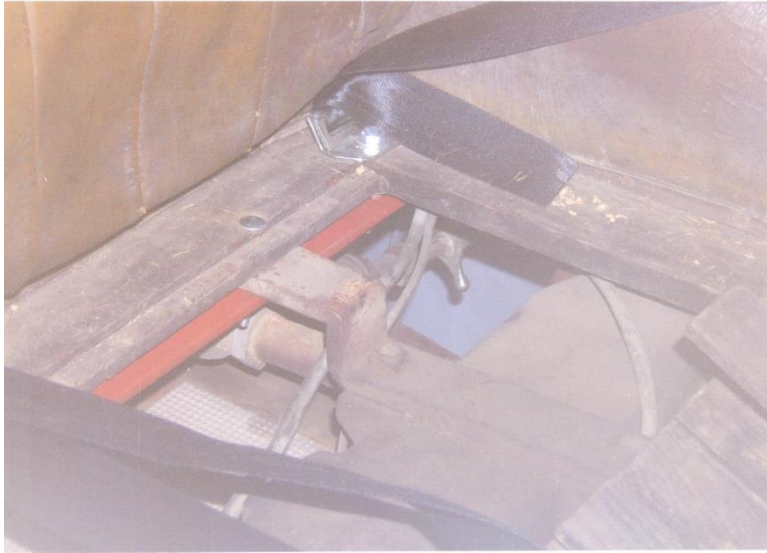




Note “Fender Washers”
which provide resistance
to pull through.

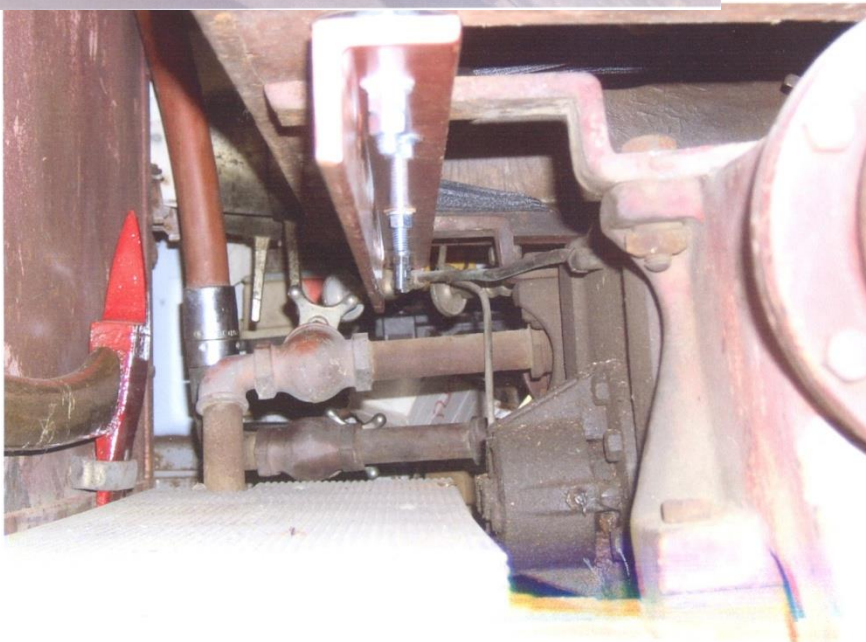
Doug Cox Closed Cab Pickup





Marty's Fire Truck

Seat out showing
attachment below
seat

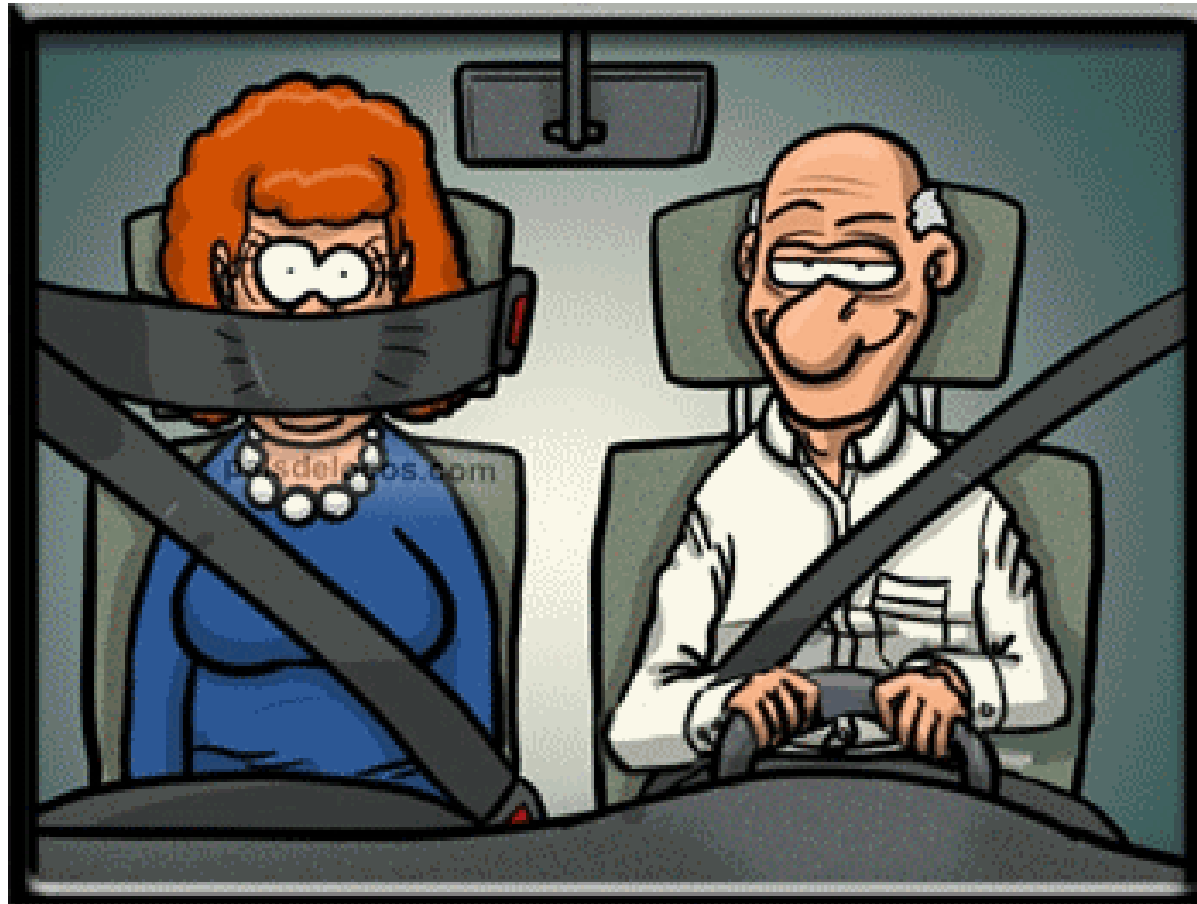


Reinforcing bracket
(can also be used to
lift engine)

Avoid and Surviving accident

- Defensive driving
- Good maintenance of mechanicals
- Avoid direct hit
- Safety glass
- Loose items = shrapnel
- Tired = Drunk
- Other advice?

New Four Point Seat Belt for selected passengers



Is this a wreck, or was it a wreck?



Note rear
crossmember is in
front

Seatbelts still in store,
intend to buy them soon