



SPECIAL TECHNICAL PRESENTATION

Oklahoma City, Ok
April 2012



How government regulations will affect your body shop business?





What is CAFÉ?

CAFÉ stands for Corporate Average
Fuel Economy



What are the CAFÉ standards for the year 2015?

The standards for passenger vehicles will rise from the current 27.5 mpg to 35.7 mpg by 2015, while light trucks will go from 23.5 mpg to 28.6 mpg.



What will the higher fuel efficiency mean to the automobile industry?

- Smaller Vehicles
- Lighter Vehicles
- A greater use of Advanced High Strength Steels
- More Air Bags
- Safer Vehicles



There is a greater use of aluminum panels and body shops are going to need to repair them.



Aluminum Repair





Rivet Gun System for Self Piercing Rivets and Adhesive Bonding





Aluminum Welding



How another government regulation will affect your body shop business.

The Federal Government mandated all vehicle manufacturers to install an electronic stability control system by the year 2013.



What is Electronic Stability Control?

ESC constantly monitoring how the vehicle is responding to the driver and road conditions. If a problem starts to develop, it takes whatever measures that are necessary to bring the vehicle under control. The engine power is reduced letting off of the throttle, retarding the timing and simultaneously applying the brake. All these processes coupled together will counter the forces that are causing the vehicle to lose traction or control. This whole process is accomplished without the driver's input.

Vehicle without ESC



Vehicle with ECS





In 2006, stability control was standard equipment on approximately 30 percent of all cars & trucks. With the production of 2010 vehicles, 85% of passenger cars & 100% of SUV's have stability control. Government mandated that all vehicles will have the system installed by the model year 2012



Percent of vehicles with ESC compiled by the Insurance Institute of Highway Safety

Percent ESC availability by vehicle type

| | | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 | 2001 | 2000 | 1999 | 1998 | 1997 | 1996 |
|----------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Cars | Standard | 90 | 88 | 74 | 65 | 56 | 48 | 37 | 34 | 30 | 28 | 24 | 17 | 8 | 5 | 2 | 1 |
| | Optional | 5 | 7 | 14 | 18 | 17 | 19 | 18 | 18 | 17 | 16 | 11 | 8 | 8 | 5 | 2 | 2 |
| | Not available | 5 | 5 | 12 | 17 | 27 | 34 | 45 | 48 | 53 | 56 | 65 | 75 | 84 | 90 | 97 | 97 |
| SUVs | Standard | 100 | 100 | 100 | 96 | 88 | 66 | 38 | 23 | 17 | 10 | 9 | 3 | 1 | – | – | – |
| | Optional | – | – | – | 1 | 2 | 5 | 12 | 18 | 15 | 3 | 2 | – | – | – | – | – |
| | Not available | – | – | – | 3 | 11 | 28 | 50 | 58 | 68 | 86 | 89 | 97 | 99 | 100 | 100 | 100 |
| Pickups | Standard | 72 | 62 | 38 | 11 | 9 | 1 | – | – | – | – | – | – | – | – | – | – |
| | Optional | 15 | 2 | 19 | 20 | 14 | 16 | 18 | 5 | 2 | – | – | – | – | – | – | – |
| | Not available | 13 | 36 | 43 | 70 | 77 | 83 | 82 | 95 | 98 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| All | Standard | 92 | 85 | 74 | 63 | 51 | 41 | 29 | 22 | 19 | 16 | 14 | 9 | 4 | 3 | 1 | 1 |
| | Optional | 4 | 4 | 11 | 13 | 12 | 14 | 16 | 15 | 12 | 9 | 6 | 4 | 4 | 3 | 1 | 1 |
| | Not available | 4 | 11 | 15 | 24 | 36 | 45 | 55 | 63 | 69 | 75 | 80 | 86 | 91 | 94 | 98 | 98 |

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Here is a partial list of vehicles that use Electronic Stability Controls Systems

- Audi Electronic Stability Program (ESP)
- BMW Dynamic Stability Control (DSC)
- Chrysler Electronic Stability Program (ESP)
- Ford Advance Trac
- GM Active Handling System
- Jaguar Dynamic Stability Control (DSC)
- Lexus Vehicle Stability Control (VSC)
- Porsche Porsche Stability Management (PSM)
- Toyota Vehicle Stability Control (VSC)
- Subaru Vehicle Dynamics Control (VDC)
- VW Electronic Stability Program (ESP)
- Volvo Dynamic Stability Traction Control (DTSC)



What is this part?



Answer—It is a steering angle sensor



As the steering wheel moves in either direction, the speed and number of Revolutions are transmitted to the vehicle's computer.



HUNTER
Engineering Company



Vehicles with ESC will require a complete four wheel alignment plus resetting the steering angle sensor. That translates into more equipment (scan tools, code link, etc) and higher cost in wheel alignments.





Scan Tools





Question—How long does it take to blink your eye?



Answer—Approximately 150 milliseconds or .15 seconds



Toyota Corolla sedan (2007)

5 star Euro NC AP safety rating

Watch the video and notice that the frontal air bags are fully deployed before the front hood crushes completely. The whole sequence takes less than .15 seconds



Watch the end of the bumper reinforcement. Note how the difference strengths of steel behave and how the high strength steels stop the forward motion, but the mild steel does not.

OEM



Watch the video and see how a change of 30 milliseconds in the timing changes the results of the impact on the melon.





How will this regulation affect the collision industry?

- Longer cycle times
- More total losses
- Higher severity
- More technical training
- Major Investment in New Equipment



The Federal Government has mandated that all Passenger Vehicles, SUVs & Pick up Trucks have side curtains by the year 2013.



Side Curtain and Seat Air Bags will Be standard on all vehicle next year



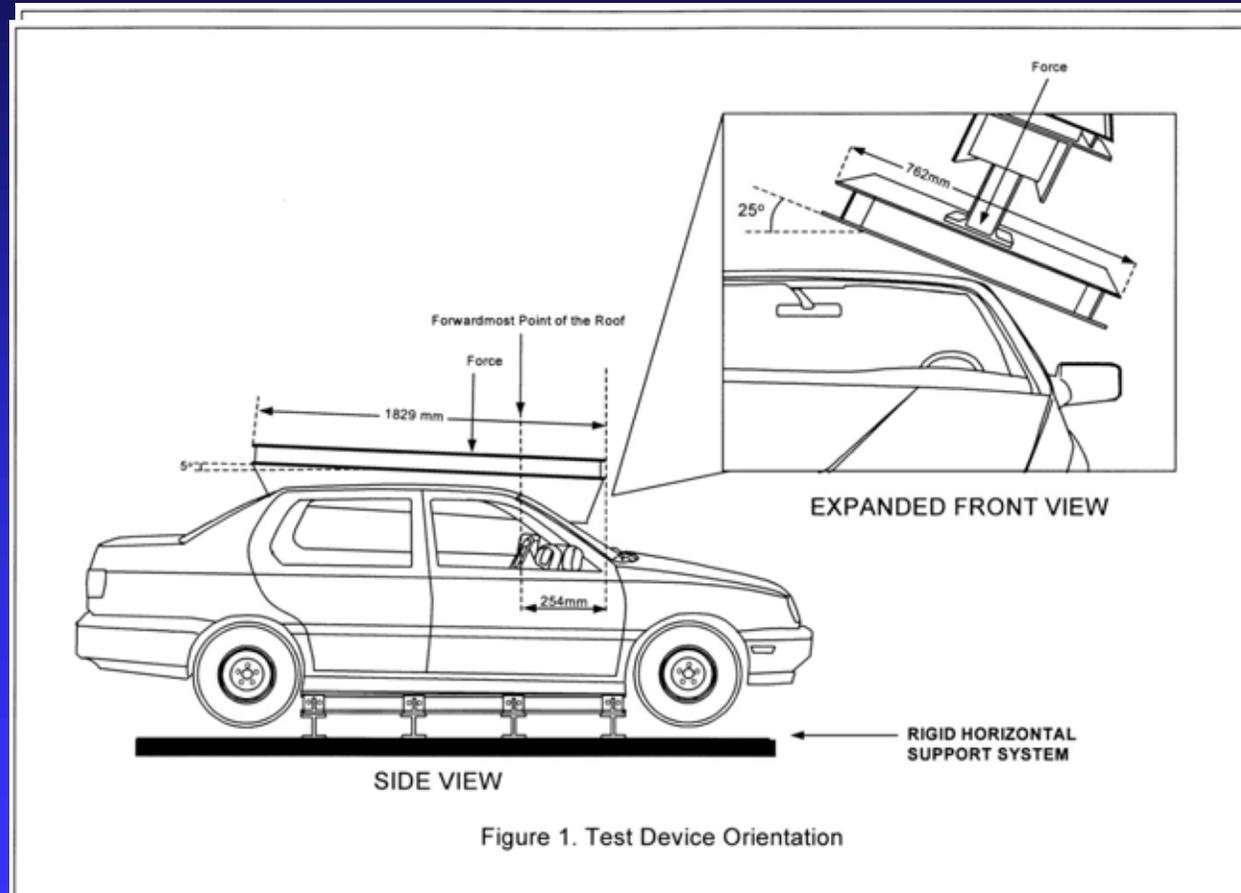


Passenger Protection with and without outside curtains.





FMVSS 216 Roll Over Testing





Actual test of the roof test



Roll Over Crash Test



Side Impact Crash Test

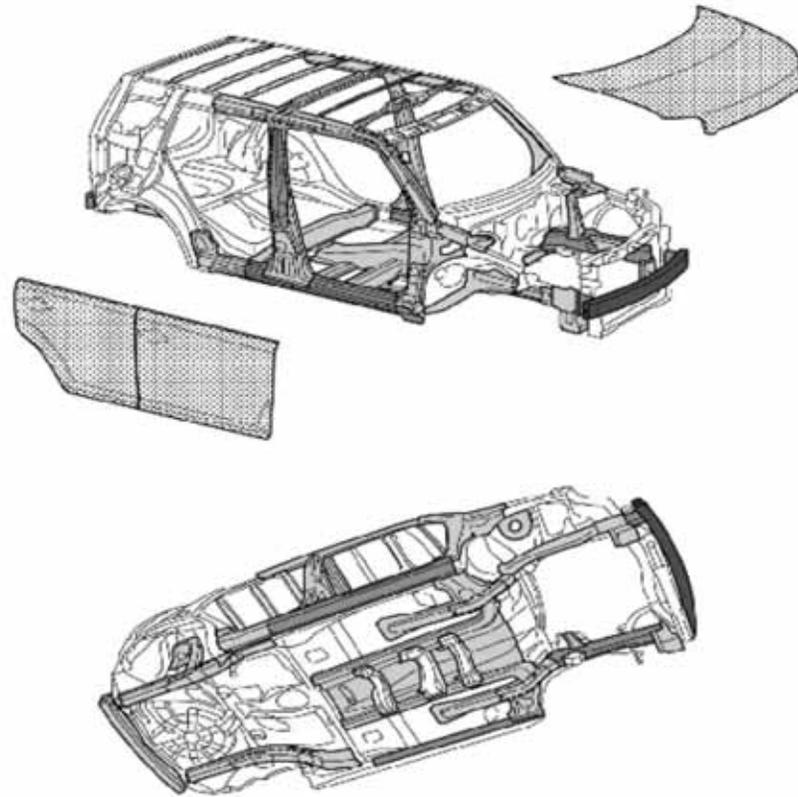




Electronic Measuring for Damage Analysis



ABOUT THIS VEHICLE STRUCTURAL OUTLINE



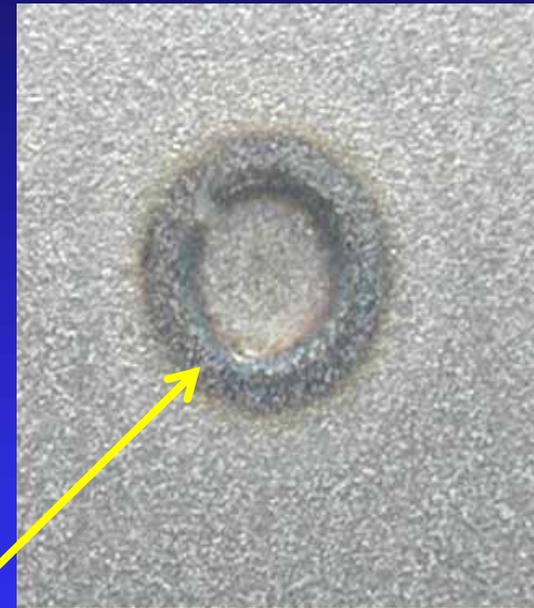
-  --- 980Mpa Ultra high strength steel
-  --- 590Mpa High strength steel
-  --- 440Mpa High strength steel
-  --- 340Mpa High strength steel



Lets Talk about Heat



Heat Affect Zone



HAZ



The front rail on a 2009 Toyota Camry is made of 440 MPa High strength steel as per Toyota. The Value of the steel tested at 16.9 which translates To a strength of 440 Mpa's.





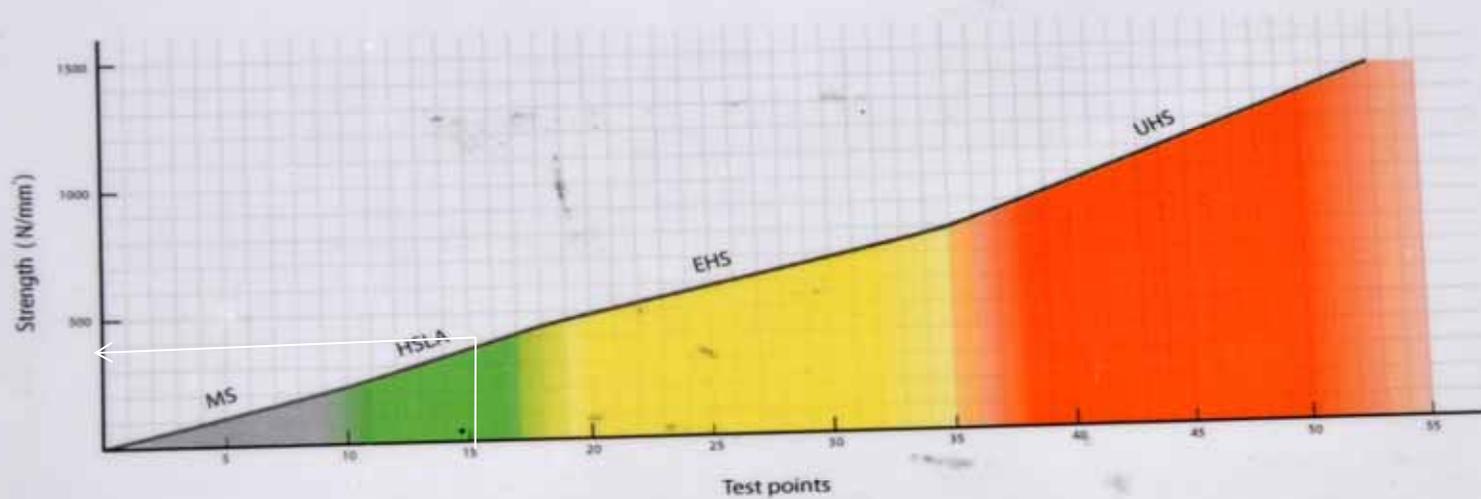
Toyota states in CRIB 175 no heat for repairs. The rail Was heated to 1000 degrees for less that 15 seconds. The Strength of the metal dropped to 250 Mpa's





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AUTOBODY ANALYSER



Quick guide material test points

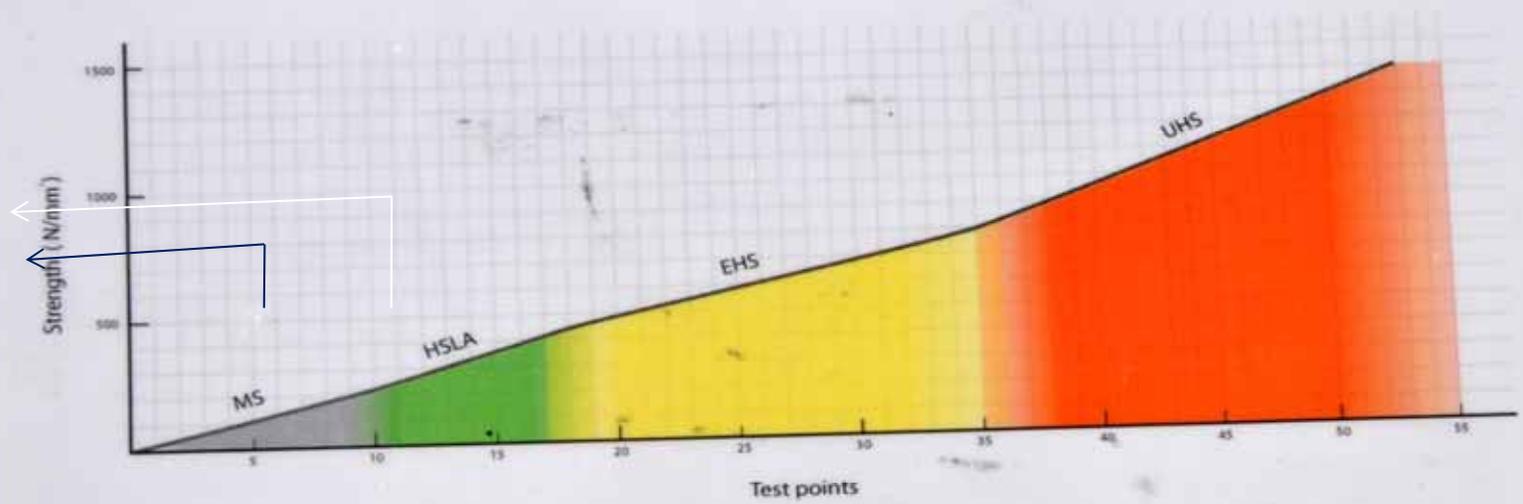
- MS** Mild steel
- HSLA** High strength low alloy steel
- EHS** Extra high strength steel (Dual Phase, Trip, etc)
- UHS** Ultra high strength steel (Boron or higher)

Test Points ©

- 0-10
- 10-18
- 18-35
- 35-



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This is a "B" pillar reinforcement from a Volvo XC 90. It has a 1380 MPa rating.



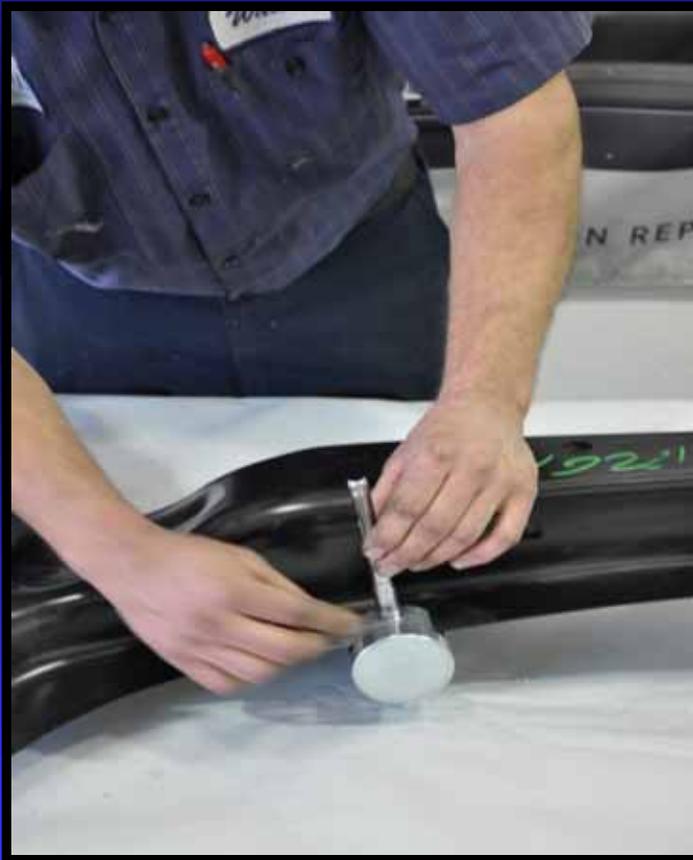


The part was heated to 800 degrees for 10 seconds





The reading went from 53 to 27 on the scale in less Than 10 seconds at 800 degrees





MIG Weld Brazing

Inverter Welders



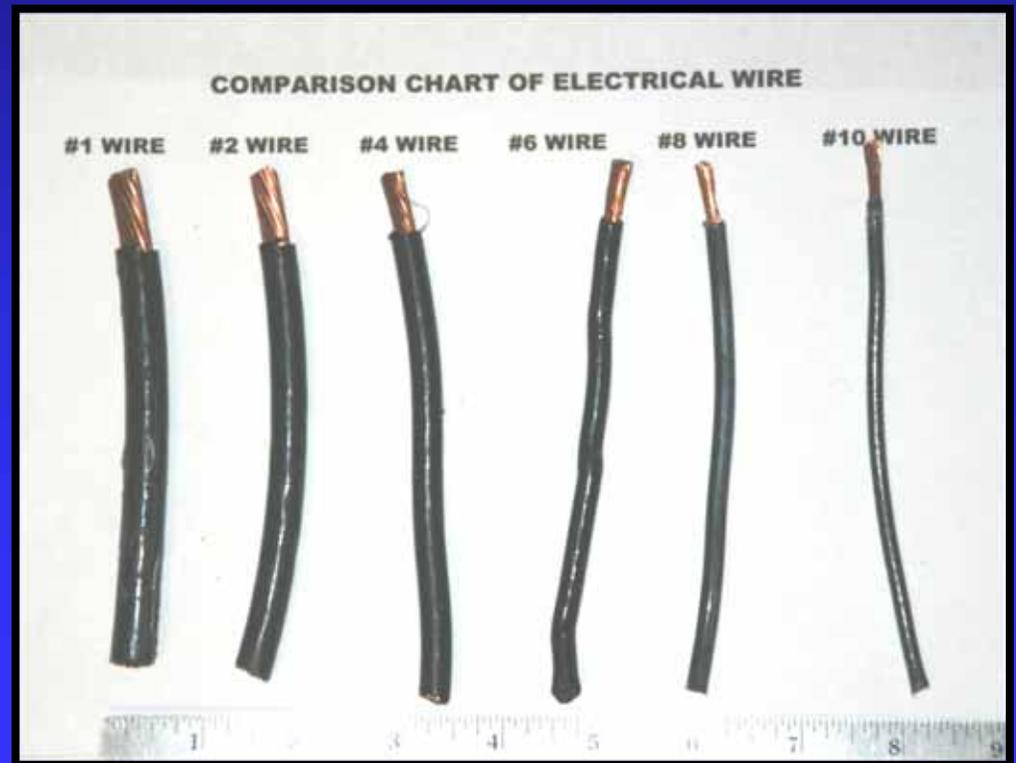
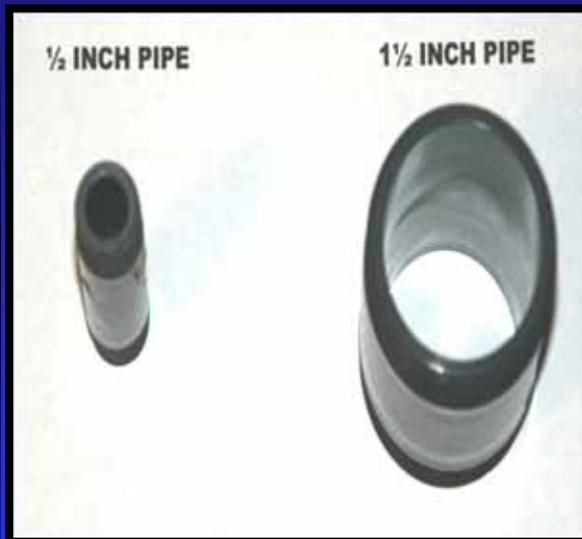


Besides the larger wires, you may need to bring more electricity and upgrade your electrical boxes.





Inverter welders need 3 phase power. Prior to purchasing, you will need to check if you enough power.





A 2010 Toyota XB with Damage to the Driver's Side





There is damage to the rocker & outer "B" pillar-lower section





After reviewing the CRIB, pulling for repairs is out of the question. You can pull for replacement only.





Because occupant safety is such a high priority, HSS and UHSS occupant cabin reinforcement repair is not recommended.

Do not use the following occupant cabin reinforcement repair procedures:

- Hot and cold straightening methods
- Sectioning of 980 MPa and 590 MPa strength-rated pillar reinforcements
- Sectioning of 440 MPa rated components at locations other than those specified

COLLISION REPAIR INFORMATION
FOR THE COLLISION REPAIR PROFESSIONAL

TITLE: HSS & UHSS CABIN REINFORCEMENT REPAIR & REPLACEMENT

SECTION: STRUCTURAL BULLETIN # 75 (revised)

MODELS: ALL TOYOTA, LEXUS, and SCION

DATE: DECEMBER 2009

Model-specific 'Collision Damage Repair Manuals' contain 'Structural Outline' illustrations that identify locations and strength ratings for High Strength Steel (HSS) and Ultra High Strength Steel (UHSS) components throughout body-in-white structure. This information is provided so that collision repair professionals can make informed decisions on repair and replacement of components that provide high margins of crash safety to vehicle occupants.

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This recommendation is based on a reduction in reinforcement strength and crash energy management revealed during research and testing conducted by Toyota Motor Corporation. Repair and/or improperly sectioned reinforcements failed to exhibit the strength and performance ratings of genuine new original equipment, as well as parts related to specific cuts. Therefore damaged occupant cabin reinforcements must be replaced.

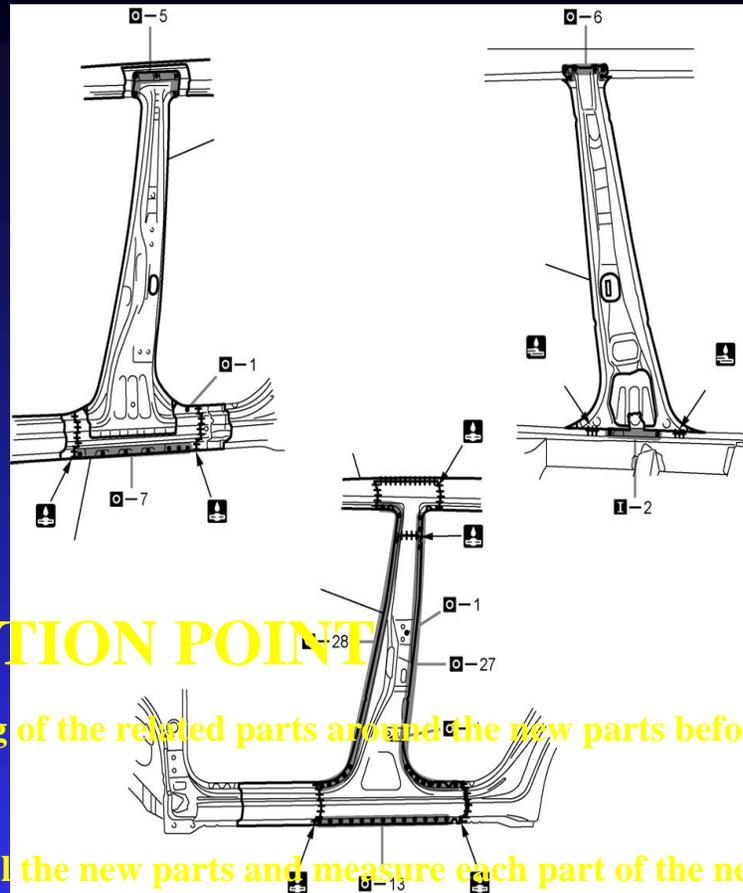
When reinforcements must be replaced, always follow fielding specifications and adhere to component fit and specifications out and repair locations and procedures.

- Example Structural Outline -

Legend:
Over 590 MPa high strength steel
Over 440 MPa high strength steel

PLEASE ROUTE THIS BULLETIN TO YOUR COLLISION REPAIR CENTER
MANAGER AND COLLISION REPAIR TECHNICIANS

00409-03000-175



INSTALLATION POINT

- 1 Inspect the fitting of the reworked parts around the new parts before welding. This affects the appearance of the finish.
- 2 Temporarily install the new parts and measure each part of the new parts in accordance with the body dimension diagram. (See the body dimension diagram)
- 3 After welding the rocker outer reinforce, center body pillar reinforcement and center body pillar lower reinforce to the vehicle side, install the rear body front outside panel and roof side rail.
- 4 After welding, apply polyurethane foam to the corresponding parts. (See the paint.coating)
- 5 After welding, apply body sealer and undercoating to the corresponding parts. (See the paint.coating)



The correct repair procedure is to cut a "T" section out of the roof to expose the upper part of the reinforcement.





INSTALLATION POINT

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Training

















