Electronics Negotiation Tool
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Introduction

In response to numerous requests from valued Collision Advice customers across the US, we have created this tool to help explain, justify and negotiate time for repair operations. The collected information and documentation are intended to help clarify whether or not specific repair processes are considered to be required repair operations and if they are included or not-included within any other repair procedures. Our objective is to help our customers build a complete repair plan and to get paid for the work they do.

To do so, we utilize four negotiation questions and supporting documentation as described below:

1. Is it required to put the vehicle back to pre-accident condition?
   - OEM Position Statements
   - ALLDATA®, Tech Advisor and Other Similar Systems
   - Paint Manufacture Bulletins
   - Material Manufacturer Bulletins (ex. 3M, Wurth, Kent)
   - Equipment Manufacturers
   - Internet (www.YouTube.com)
   - Estimating Systems
   - Scan Tools (Ex. ASTech)
   - The Vehicle

2. Is it included in any other labor operations?
   - Estimating Systems
   - ASA Not-Included Charts
   - www.Degweb.org
   - www.Estimatescrubber.com
   - SCRS Guide to Estimating

3. Is there a pre-determined time in the database?
   - Estimating Systems
   - www.Degweb.org

4. What is it worth?
   - Do a Time Study
   - Print an Invoice
   - OEM Warranty Times
   - Equipment Manufacture Times
   - ALLDATA®, Tech Advisor and Other Similar Systems
   - Internet
Definition
Definition

General Explanation

The electrical system in an automobile is said to be a 12 volt system, but this is somewhat misleading. The charging system in most cars will generally produce a voltage between 13.5 and 14.4 volts while the engine is running. It has to generate more voltage than the battery's rated voltage to overcome the internal resistance of the battery.

Welding systems typically are 110 to 220 volts. In addition, electric welders produce high levels of electromagnetic noise. Any conductor within the device's range can work as an antenna. This means any electrical component within the welding area can pick up the charge from the welder. Since the welding voltage is much higher than the charging system in the vehicle, it can destroy the electrical components.

Source: http://www.bcae1.com/charging.htm
## Justifying Each Line on the Repair Plan

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Question 1.
Is it required?
Four Negotiation Questions

1. Is it required to R&I / set back electrical components within 12 inches of the weld zone in order to return the vehicle back to pre-accident condition?

Answer: Yes, it is required based on the following supporting documentation.

Answer Documentation:
R&I/set back electrical components within 12 inches of where welding is occurring is required based on the following:

- The major Information Providers
- Documentation from OE manufacturers

The electrical system in an automobile is said to be a 12 volt system, but this is somewhat misleading. The charging system in most cars will generally produce a voltage between 13.5 and 14.4 volts while the engine is running. It has to generate more voltage than the battery's rated voltage to overcome the internal resistance of the battery.

Welding systems typically are 110 to 220 volts. In addition, electric welders produce high levels of electromagnetic noise. Any conductor within the device’s range can work as an antenna. This means any electrical component within the welding area can pick up the charge from the welder. Since the welding voltage is much higher than the charging system in the vehicle, it can destroy the electrical components.

Source: [http://www.bcae1.com/charging.htm](http://www.bcae1.com/charging.htm)
I-CAR’s Uniform Procedures for Collision Repair states that electronic components should be removed from the vehicle if welding is to take place within 12 inches of the component. Refer to manufacturer’s specific recommendations for each vehicle.

Source: CCC/Motor Guide to Estimating, Rev. 9-14, Page G7
GUIDE TO ESTIMATING

ACOUSTICAL AND STRUCTURAL FOAM FILLERS

This type of product is used by some OEMs to control NVH (noise, vibration and harshness) or add structural integrity to the vehicle body. Acoustical foam is a soft, firm, pliable product while structural foam is a hard, dense, rigid product. Acoustical and/or structural fillers may be found internally on vehicle panels; therefore, identification of foam type and location may require an inspection after vehicle disassembly. Foam products must be removed if within six inches of an open flame, excessive heat (600 degrees) or welding operation. Any foam damaged or removed during the repair process must be replaced.

SPECIAL NOTATION:
Not all vehicles contain foam fillers; others may contain foam fillers in one or more locations. Refer to OEM for specific repair recommendations/procedures and replacement product(s).

ELECTRONIC SYSTEMS & ON-BOARD COMPUTERS

Special caution should be taken when servicing vehicles due to the wide use of computer modules, electronic sensors and printed circuit boards. This type of equipment is very sensitive to high temperatures and voltage fluctuations, including electrostatic discharge. A few safety tips you should consider are:

- Disconnect battery cable
- Computer modules should not be exposed to temperatures exceeding OEM recommendations
- Remove component if necessary
- Discharge static electricity before handling component(s)
- Avoid touching electrical terminals of component

I-CAR's Uniform Procedures for Collision Repair states that electronic components should be removed from the vehicle if welding is to take place within 12 inches of the component. Refer to manufacturer's specific recommendations for each vehicle.

HAZARDOUS MATERIALS

Regulations and safety considerations may require protective clothing, respirator, protective eyewear, and/or ear plugs be worn in certain areas of collision repair facilities. Caution must be exercised when dealing with isocyanates, flammables, fumes, liquids and airborne particles.

HYBRID/ELECTRIC VEHICLES

Warning: High Voltage Electrical System!

These vehicles are equipped with high voltage batteries and are capable of causing electrical shock. Failure to use caution in the proper disconnection of the electrical system may result in serious injury or death. For safety and ease of identification, electrical cables carrying the high voltage are colored orange. Any orange-colored cable should be avoided until the high voltage electrical system has been disabled. Follow OEM safety precautions including wearing personal protective equipment rated for working on Hybrid/Electric Vehicles. Follow OEM service repair information for disabling the high voltage electrical system before beginning any repairs.

OEM COLLISION REPAIR NETWORK

Some OEM(s) manufacture aluminum vehicles that have an established repair network for these vehicles and require collision repairs to be performed at an OEM authorized aluminum repair center. Manufacturers with collision repair networks covered in MOTOR's guide are Audi, BMW, Jaguar and Mercedes Benz. Refer to the OEM for complete information on collision repair network program.

OEM COMPONENT REPLACEMENT - GENERAL

The collision repair facility must have the equipment, training, and experience using the latest factory/industry information and procedures. Ultimately, the safety and quality of any repair will depend not only on the equipment that is used and the procedure that is followed, but also on the skill and knowledge of the repair technicians, the steps they take to control repair quality and how well they check the details of the repair.
Computer Modules

When working with vehicles equipped with on-board computers, manufacturers recommend removal if temperatures are likely to exceed 176°F (80°C). Do not apply heat from a torch or weld in the immediate vicinity of computers without protecting them. Remove if necessary.

Many vehicles have multiple computers such as: Electronic Control Modules (ECM), Body Control Modules (BCM), individual computers for Anti-Lock Brake Systems and Electronic Suspension systems. All of these computers should be protected or removed before exposing them to high heat. Never connect or disconnect these units with ignition switch on, or charge a battery with battery cables connected. Before servicing, ground yourself and ground the work area to discharge stored static electricity. Computer control information is listed in the Electrical Section of all Mitchell Collision Estimating Guides. There is a footnote below the listing or an illustration describing the location of each unit.

Source: Portions Copyright 2012, Mitchell International, Inc. – Mitchell P-Pages, Rev. 2-10, Page 19
Procedure 29—Special Caution

Computer Modules
When working with vehicles equipped with on-board computers, manufacturers recommend removal if temperatures are likely to exceed 576°F (302°C). Do not apply heat from a torch or weld in the immediate vicinity of computers without protecting them. Remove if necessary.

Many vehicles have multiple computers such as: Electronic Control Modules (ECM), Body Control Modules (BCM), individual computers for Anti-Lock Brake Systems and Electronic Suspension systems. All of these computers should be protected or removed before exposing them to high heat. Never connect or disconnect these units with ignition switch on, or change a battery with battery cables connected. Before servicing, ground yourself and ground the work area to discharge stored static electricity.

Computer control information is listed in the Electrical Section of all Mitchell Collision Estimating Guides. There is a footnote below the listing or an illustration describing the location of each unit.

Structural Glass
Windshields, back windows, and other glass that was originally installed by vehicle manufacturer utilizing urethane, should be reinstalled with urethane. The urethane bonds the glass to the vehicle and makes the glass part of the vehicle’s structure. Ensure that the vehicle manufacturer and/or I-CAR recommended installation is followed, and that the urethane is properly cured before returning the vehicle to service.

Supplemental Restraint/Air Bag System
Vehicle manufacturer’s recommended service and repair procedures must be followed when servicing any Supplemental Restraint/Air Bag System. Certain safety precautions and disabling procedures must be observed when performing repairs.

See Mitchell’s Air Bag Service & Repair Manual for system description and operation checks, precautions, disabling and activating procedures, component removal and installation procedures, and diagnosis and testing information. Refer to Air Bag/SRS Component Inspection & Replacement Tables.

Seat Belts
Many vehicle manufacturer’s advise replacement of seat belts when stressed by occupants in a collision. Refer to vehicle manufacturer or service manual for specific clarification.

Rev. 02-10

Source: Portions Copyright 2012, Mitchell International, Inc. – Mitchell P-Pages, Rev. 2-10, Page 19
6. Personnel Safety (cont’d)

- Wear leather gloves and leather cape welding sleeves.
- Do not handle metal parts until they have cooled.
- Wear high-top leather shoes or boots.
- Make sure clothing and shoes are free from oil, grease, or other flammable materials.
- Remove all flammable materials from the area to be welded.
- Do not carry matches or butane lighters in pockets.
- Do not weld near parts containing fuel, such as fuel tanks, lines, pumps, etc.
- Keep a fire extinguisher in the work area while welding.

7. Environmental Safety

Does not apply.

8. Vehicle Protection

8.1 Electronic Parts

To protect computers and other sensitive parts from damage:

- Follow the vehicle maker’s recommendations for recording and resetting electronic memory settings, such as radio, seats, etc.
- Ensure that the ignition switch is in the LOCK position.
- Disconnect and isolate the negative battery cable, and disarm the passive restraint system.
- Carefully remove computer modules when welding or heating within 300 mm (12”). Some vehicle makers specify greater distances. Protect modules, connectors, and wiring from dirt, heat, static electricity, and moisture.
- Loosen or remove any wiring harnesses or electrical parts that could be damaged during the repair process.

Remove the battery if it is near an area to be welded or heated.

8.2 Sparks

To protect surfaces from welding sparks:

- Use welding blankets on surfaces that can be covered.
- Remove interior trim, headliners, upholstery, and other parts if the interior will be exposed to heat or sparks.

**Ford F-150**

**NOTICE:** Electronic modules and related wiring can be damaged when exposed to heat from welding procedures. Carefully disconnect and remove, or position away from heat affected areas.

**NOTE:** When it is necessary to carry out weld-bonding procedures, refer to **Weld-Bonding in this section.**

The correct equipment and settings must be used when welding mild or High-Strength Steel (HSS). Metal Inert Gas (MIG) and Squeeze-Type Resistance Spot Welding (STRW) are the preferred methods. Surfaces must be clean and free of foreign materials.

- Adequate ventilation must be provided to avoid accumulation of poisonous gases.
- A test weld should always be carried out on a test sample. Refer to the Weld Nugget Chart in Specifications for Ford-approved weld nugget information.
- Use cleaning brushes and abrasive grinding wheels dedicated to the type of materials being welded.
- Follow the equipment manufacturer’s prescribed procedures and equipment settings for the type of welder being used. ER70S-3 or ER70S-6 wire are typically used for MIG welding steel.
- Disconnect the battery ground cable. Refer to Section 414-013
- Disconnect on-vehicle modules adjacent to the welding area and protect them from possible heat damage and electrical currents when welding.

- Corrosion protection must be restored whenever body repairs are made. Refer to **Protective Corrosion Protection Following Repair** in this section.
- Adequate power supply needs to be used to make sure of correct equipment performance.
- Factory spot welds may be substituted with either STRW welds or MIG plug welds. Spot/plug welds should equal factory welds in both location and quantity. Do not place a new spot weld directly over an original weld location. Plug weld hole should equal 8 mm (0.31 in) diameter.

- Correct eye protection must be worn.
- The correct protective clothing should always be worn.
- Components made of HSS should not be heated to straighten or repair. If components are severely bent or kinked, new components should be installed.

Arc welding is an acceptable method for welding heavier metal components such as frame parts. When arc welding, the following guidelines should be followed:

- A temperature indicating crayon calibrated to 650°C (1,200°F) or below, should be used to avoid overheating and weakening the metal.
- Attach the ground clamp as close as possible to the work area.
- Choose welding electrodes according to the type of steel, thickness and polarity of the arc welder AC or DC.
- Do not use water or compressed air to cool welding. This can cause the metal to become brittle and weak.

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WARNING: Invisible ultraviolet and infrared rays emitted in welding can injure unprotected eyes and skin. Always use protection such as a welder's helmet with dark-colored filter lenses of the correct density. Electric welding will produce intense radiation, therefore, filter plate lenses of the deepest shade providing adequate visibility are recommended. It is strongly recommended that persons working in the weld area wear flash safety goggles. Also wear protective clothing. Failure to follow these instructions may result in serious personal injury.

The correct equipment and settings must be used when welding mild or high-strength steel. Metal Inert Gas (MIG) and Squeeze-Type Resistance Spot Welding (STRW) are the preferred methods. Surfaces must be clean and free of foreign materials.

- Correct eye protection must be worn.
- The correct protective clothing should always be worn.
- Adequate ventilation must be provided to avoid accumulation of poisonous gases.
- A test weld should always be carried out on a test sample.
- Use cleaning brushes and abrasive grinding wheels dedicated to the type of materials being welded.
- Follow equipment manufacturer's prescribed procedures and equipment settings for the type of welder being used. ER70S-3 or ER70S-6 wire are typically used for MIG welding steel.

Disconnect the battery ground cable:
- Disconnet on vehicle modules and protect them from possible heat damage and electrical currents when welding.
- Corrosion protection must be restored whenever bare metal repairs are made. Refer to Restoring Corrosion Protection Following Repair. See: Corrosion Protection > Procedures > Restoring Corrosion Protection Following Repair.
- Adequate power supply needs to be used to make sure of correct equipment performance.
- Factory spot welds may be substituted with either STRW or MIG plug welds. Spot/plug welds should equal factory welds in both location and quantity. Do not place a new spot weld directly over an original weld location. Plug weld hole should equal 8 mm (0.31 in) diameter.
- Vehicles equipped with optional safety canopy require removal of these components prior to any welding procedures being carried out in the roof-line or body side areas of the vehicle.

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31 - Collision Information/Standard Procedure

SECTIONING LOCATIONS AND PROCEDURES

WARNING:
Chrysler engineering's position on the use of heat during collision repair is as follows:

- Any body panel or frame component damaged which is to be repaired and reused, must be repaired using the "cold straightening" method. No heat may be used during the straightening process.
- During rough straightening prior to panel replacement, damaged panels or frame components may be heated to assist in body/frame realignment. The application of heat must be constrained to the parts which will be replaced and not allowed to affect any other components.

This "no heat" recommendation is due to the extensive use of advanced high strength steels in Chrysler Group LLC products. High strength materials can be substantially and negatively affected from heat input which will not be obviously known to the repairer or consumer.

Ignoring these recommendations may lead to serious compromises in the ability to protect occupants in a future collision event, reduce the engineered qualities and attributes, or decrease the durability and reliability of the vehicle.

This statement supersedes any previously released information by the Chrysler Group LLC.

Failure to follow these instructions may result in serious or fatal injury.

CAUTION:

- All restraint systems should be disabled before beginning repairs.
- Electronic modules located within 305 mm (12 in.) of any welding should be isolated.
- Protect vehicle from weld spatter damage.
- Vehicle service manual should be referenced for guidelines and warnings.

Service assemblies for body components may be disassembled if utilization of the subcomponents is more appropriate to the repair or to reduce vehicle disruption. The structural and non-structural metal on the Grand Cherokee (WK) may be sectioned in several areas providing the prescribed methods below are adhered to.

The joint should whenever possible be performed in as ‘flat’ an area as possible to simplify the repair. While the joint may include "holes" and formances, it is suggested they be avoided but where this is not possible, the technician must ensure that the additional material thickness does not interfere with installation of fasteners, etc. that the hole exists for.

All dimensions are to be reassembled to factory specifications prior to full or partial component replacement.

CAUTION:

- NVH foam should be removed from the weld area, as material may be flammable.

CAUTION:

Do not apply any corrosion protection or NVH foam prior to completion of welding, as materials are flammable.

Volvo S60

Welding, general

Note: The illustrations in this service information are used for different model years and/or models. Some variation may occur. However, the essential information in the illustrations is always correct.

General

Volvo bodies are manufactured to the highest quality. All bodywork repairs must therefore take place following the same principles. Use light tools. Take care of the surface coating, electro dip (ED) and phosphating. Always use welding primer between welded panel flanges.

Prior to welding

Caution! Always remove the battery cables before welding in accordance with: Battery disconnecting and connecting, B0304T4, B5254T12. See: Battery > Procedures > Battery Disconnecting And Connecting.

Caution! Locate the welding ground connection as close as possible to the welding point.

Caution! If the welding must be carried out in the immediate vicinity of an electronic unit then this must be removed.

Assembly

Spot welding is mainly used when the bodies are manufactured, and use of this method should always be avoided with a repair.

Caution! Gas welding must not be used on Volvo bodywork.

Warning! Use ventilation / extraction equipment.

Unless otherwise specified in the method, the distance between the welds must be the same as the original design.

Toyota CRIB #161

Please route this bulletin to your collision repair center manager and collision repair technicians.

Negotiation Question # 1- Summary

It has been established and proved thru the source documentation it is required to R&I/set back electrical components in order to return the vehicle to pre-accident condition. OEMs recommendations will vary, some 12” and some 18”.
Question 2. Is it included?
2. Is R&I/set back of electrical components within 12 inches of the weld zone included in any other labor operation?

Answer: No, R&I or set back of electrical components within 12 inches of the weld zone is not included with any other labor operation.

Answer Documentation:

- AudaExplore
- CCC/MOTOR
- Mitchell
- DEG Inquiry #6158

The original source documents from the leading Information Providers follow.
AudaExplore

Labor Exclusions

Disconnect / reconnect computer modules for welding purposes.

Section 4-2 Labor Exclusions

Labor Exclusions

Because each vehicle’s collision damage is unique, labor to perform some of the following operations may vary. In other cases, the operation is performed less than 80% of the time and may or may not be required due to the collision damage. To address these situations, Audatex provides:

- ‘Standard Manual Entries’ that are entered by the estimate preparer (for a complete listing, see Section 5-1).
- ‘Additional Labor’ operations which are Audatex pre-stored labor for many of these operations.

When the operation has a ‘Standard Manual Entry’ or an ‘Additional Labor’ operation available, a note will appear next to the appropriate exclusion.

- Additional labor for removal of parts that have been impeded by crash damage (access labor). (Standard Manual Entry M62 is available).
- Alignment of front or rear suspension (‘Additional Labor’).
- Alignment of parts adjacent to parts being replaced.
- Application of lubricant or similar material.
- Bleeding of brake, cooling, or hydraulic systems (‘Additional Labor’ for brake bleeding).

**Body Materials are not included in Audatex labor values.**

- Complete R&I of brake line, transmission line, or fuel line.
- Cutting and splicing of lamp wiring.
- Detailing.
- Disabling and enabling of Hybrid Vehicle components (i.e. high voltage systems, battery packs, and power cables).
- Diagnosis and testing of electronic components or systems (e.g., airbags).
- Disassembly of recycled parts and assemblies.
- Disconnect and reconnect of un-deployed airbag.
- **Disconnect / reconnect computer modules for welding purposes.**

- **Drain, refill and/or top off engine oil.**

*Any printed copy of this document may not contain the most current information. For the latest version, please refer to the Database Reference Manual accessed through the Help Menu in the current release of Audatex Estimating, ProPho or Shoplink. The current version of the Database Reference Manual may also be found at www.training.audatex.us.*

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SPECIAL NOTATION: The items listed below apply to all labor procedures.

- Battery D&R/recharge
- Computer control module D&R/relearn

Source: CCC/Motor Guide to Estimating, Rev. 9-14, Page G10
GUIDE TO ESTIMATING

LABOR TIME LISTINGS

All operation times are listed in hours and tenths of an hour. A time listed as 3.5 indicates three and one half hours.

LABOR TIME PREMISE

The times reported in this publication are to be used as a GUIDE ONLY. Reported times include normal align procedure to insure proper fit of the individual new part being replaced. Reported times include tube/paddled OEM seating and seam sealer removal/application on welded replacement panels. Sprayable seam sealer equipment requires preparation and adjustment before application and is NOT INCLUDED IN LABOR TIME.

Times do not apply to vehicles with equipment other than that supplied by the vehicle manufacturer as standard or regular production options. If other equipment is used, the time may be adjusted to compensate for the variables. Removal and replacement of exchanged or used parts is not considered. If additional aligning or repair must be made, such factors should be considered when developing the estimate. Items not listed under the INCLUDED/DOES NOT INCLUDE heading for any given procedure have not been considered in the estimated work time development for that procedure, unless specified by a footnote. All included/not included items for labor procedures listed between pages G10 and G33 are for component R&R and R&R procedures unless otherwise indicated in operation heading.

OPERATION TIMES LISTED ARE BASED ON NEW UNDAMAGED PARTS INSTALLED ON NEW UNDAMAGED VEHICLES AS INDIVIDUAL OPERATIONS. TIME HAS NOT BEEN CONSIDERED FOR ALIGNMENT PULLS, DAMAGE RELATED ACCESS TIME, DAMAGED, USED, REMANUFACTURED OR AFTERMARKET PARTS. SOME OPERATION TIMES ARE APPLICABLE AFTER BOLTED, ATTACHED OR RELATED PARTS HAVE BEEN REMOVED. REFER TO SPECIFICATIONS ATTACHED TO OPERATION TIME LISTING.

LABOR TIME DOES NOT INCLUDE:

- SPECIAL NOTATION:
  - The items listed below apply to all labor procedures.
  - A/C System, Evacuate and Recharge
  - Aftermarket & OEM accessories
  - Alignment, check or straightening related parts
  - Alignment check of front or rear suspension/steering
  - Anticorrosion material/lining/retouching
  - Battery, OA/Recharge
  - Brackets & braces transfer
  - Broken glass removal or clean up
  - Brakes, bleed and adjust
  - Caution, (non-OEM), sound insulated or paint inner areas
  - Computer control module D/K/relax
  - Connection, headlamp, component, equipment and testing
  - Cutting, pulling or pushing collision damaged parts for access
  - Damaged or defective replacement parts
  - Drain & fill fuel tank
  - Drilling, modification or fabrication of mounting holes
  - Fabricate templates, reinforcing inserts, sleeves or flanges
  - Filling, plugging and finishing of unneeded holes in new parts
  - Information label installation
  - Material costs
  - Pinch weld clamp damage repair
  - Refinishing

LABOR TIME PREMISE - Continued

- Reset electronic memory functions after battery disconnect
- Road test vehicle
- Rust, hole, broken or corrosion damaged components or fasteners
- Scan tool clear/reset electronic module
- Scan tool diagnostics
- Steering Angle Sensor recalibration
- Straighten or align used, reconditioned or non-OEM parts
- Structural damage diagnosis and vehicle set up time
- Structural foam removal or application
- Test panel, spray caulk
- Undercoating, tar or grease removal
- Untimed bumpers, removal of mold-release agents
- Waste disposal fees (all types)
- Weld through primer
- Welded seam surface finishing finer than 150 grit sandpaper
- Wheel or hub cap locks/R&I

FRONT BUMPER ASSEMBLY - R&R ALL TYPES

INCLUDED:
- Align to vehicle
- Face bar/bumper cover assembly R&R

DOES NOT INCLUDE:
- Air bag sensor
- Battery
- Emblems & nameplates
- Energy absorber, all types
- Lamp aiming
- Lamps (when not mounted in bumper)
- Molding & impact strip
- Strips, tape, decals or overlays
- Valence panel/cover (when not mounted to bumper)

FRONT BUMPER - R&R FACE BAR TYPE

INCLUDED:
- Align to vehicle
- Emblem & nameplate
- Face bar R&R
- Guard
- Guard cutouts
- Lamps (when mounted to bumper)
- Molding & impact strip

DOES NOT INCLUDE:
- Air bag sensor
- Battery
- Distance sensor
- Energy absorber, if mounted to frame rail (all types)
- Lamp aiming
- Lamps (optional equipment, or not mounted to bumper)
- License plate bracket
- Strips, tape, decals or overlays
- Valence panel/cover (when not mounted to bumper)

Footnotes found in a chapter contain vehicle-specific information. The content of footnotes is in addition to, and takes precedence over, information in the Guide to Estimating pages for the operation indicated.

Source: CCC/Motor Guide to Estimating, Rev. 9-14, Page G10
DEG Inquiry #6158

Fender

Section4_AreaVehicle
Front fender

Section4_PartName
A-pillar, Upper unirail, Apron of wheel well and internal reinforcements inside quarter panel

Section4_IssueSummary
Underestimation of required work time and materials.

Section4_NumberWelds
21 also 3 stich welds and 6 plug welds

Section4_TypeMaterials
steel, high strength steel, cavity wax, weld through primer, seam sealer, panel bond sealer

Section4_ProcedureSteps
Remove damaged fender.
Begin cleaning cavity wax off all surfaces with mechanical force.
Wipe down all surfaces with the proper solvents to remove any left over residue from cavity wax.
Sand and or grind both A-pillar and upper uni-rail to remove seam sealer and panel bond sealer from welded surfaces.
Apply weld through primer on all exposed surfaces.
Drill carefully all spot welds and plug welds with proper drill bits (high strength steel or titanium) to remove welds without damaging underlying surfaces.
clean all bonding off uni-rail internal structure/reinforcement to separate the two and insure a strong bond between surfaces on re-installation.
Clean replacement parts by grinding, sanding and wiping down with proper solvents to clean away any and all primers or other obstructions that may interfere with welding.
Resistance spot weld all 21 spot welds followed by stitch (3) and plug welds(6).
After priming and paint, apply cavity wax re-install sound deadening and then finish cavity waxing.

Section4_TechnicianSkill
high to very high

Section4_ActualTime
4 hours per side

Section4_SuggestedAction
Increase the given book time to remove and replace uni-rails and reinforcements due to
increased work times required on new model year design.

Section1_AreaVehicle
FRONT

Section5_AreaVehicle
Front cowl,

Section5_PartName
cowl panel, fuse box, coolant and washer reservoirs and related hardware

Section5_IssueSummary
No given book times for remove and install of a number of mechanical items in the engine bay and wiper cowl areas.

Section5_ProcedureSteps
Remove wiper cowl, fuse box on drivers side of engine bay and coolant and washer reservoirs on passenger side of engine bay.

Re-install all previously mentioned parts after uni rail replacement is completed.

Section5_TechnicianSkill
mechanical

Section5_ActualTime
3

Section5_SuggestedAction
Increase the given book time to remove and install needed mechanical elements to properly remove and replace upper uni-rail structures.

No Change

Estimated Release Date: Closed
Proposed Resolution: MOTOR stated:
After review, the following has been determined:
1. The estimated work time of 3.8 hours applied to the Upper Rail is appropriate, so an adjustment was not necessary.

2. The estimated work times applied to the Cowl, Fuse Box and Coolant Washer Reservoir are appropriate, so an adjustment was not necessary.

Please refer to the “Guide To Estimating, Fender-Inner Panel (Welded Apron & Rails,) for the complete list of included/not included items.
FENDER – INNER PANEL (Welded Apron & Rails)
SPECIAL NOTATION:
Detach and weld at floor pan, radiator support, hinge pillar and cowl panel.

INCLUDED:
- Adhesive application if required (all types)
- Battery tray
- Carpet & insulation turn back
- Caulk/seam sealer
- Cowl trim
- Cutting & welding as necessary
- Grind, fill and smooth welded seams (up to 150 grit sandpaper)

DOES NOT INCLUDE:
- Adjacent panels
- Air inlet system (if necessary)
- Attached standard items
- Battery
- Bolted-on parts
- Bumper assembly
- Carpet, insulation or seat R&I
- Cruise control
- Dash panel
- Decals/labels
- Electrical wiring
- Energy absorber
- Engine
- Front suspension assembly
- Hood hinges & support cylinder
- Horns
- Outer sheet metal
- Pulling or straightening time
- Reservoir
- Set up on frame machine & diagnosis
- Steering components
- Suspension/wheel alignment
- Washer/Coolant reservoir
- Welded brackets & braces transfer

Additional ‘not included’ items can be found in the “Guide To Estimating, Labor Time Premise, Does Not Include.”

LABOR TIME DOES NOT INCLUDE:

SPECIAL NOTATION:
The items listed below apply to all labor procedures.
- A/C System, Evacuate and Recharge
- Aftermarket & OEM accessories
• Alignment, check or straightening related parts • Alignment check of front or rear suspension/steering • Anticorrosion material restoration/application • Battery D&R/recharge • Brackets & braces transfer • Broken glass removal or clean up • Brakes, bleed and adjust • Caulk (non-OEM), sound insulate or paint inner areas • Clean up or detailing of vehicle prior to delivery • Computer control module D&R/relearn • Conversion Vans (special components, equipment and trim) • Cutting, pulling or pushing collision damaged parts for access • Damaged or defective replacement parts • Drain & refill fuel tank • Drilling, modification or fabrication of mounting holes • Fabricate templates, reinforcing inserts, sleeves or flanges • Filling, plugging and finishing of unneeded holes in new parts • Information label installation • Material costs • Pinch weld clamp damage repair • Refinishing • Reset electronic memory functions after battery disconnect • Road test vehicle • Rusted, frozen, broken or corrosion damaged components or fasteners • Scan tool clear/reset electronic module • Scan tool diagnostics • Steering Angle Sensor recalibration • Straighten or align used, reconditioned or non-OEM parts • Structural damage diagnosis and vehicle set up time • Structural foam removal or application • Test panel/spray caulk • Undercoating, tar or grease removal • Unprimed bumpers, removal of mold-release agents • Waste disposal fees (all types) • Weld through primer • Welded seam surface finishing finer than 150 grit sandpaper • Wheel or hub cap locks R&I

No changes required.

DEG Inquiry #6158

Inquiry #6158

DEG DATABASE INQUIRY

<table>
<thead>
<tr>
<th>Track_#</th>
<th>Estimating Platform</th>
<th>Inquiry Category</th>
<th>Year Make Model</th>
<th>Resolution Status</th>
<th>Origination Date</th>
<th>Submission Date</th>
<th>Resolution Date</th>
<th>Total Time to Resolve</th>
</tr>
</thead>
</table>

Inquiry Description

Fender

Section 4. Area/Vehicle

Front fender

Section 4. PartName

A-pillar, Upper unibody, Apron of wheel well and internal reinforcements inside quarter panel

Section 4. Issue/Summary

Underestimation of required work time and materials.

Section 4. Number/Parts

21 also 3 stich welds and 6 plug welds

Section 4. Type/Materials

Steel, high strength steel, cavity wax, weld through primer, seam sealer, panel bond sealer

Section 4. Procedure/Steps

- Remove damaged fender
- Begin cleaning cavity wax off all surfaces with mechanical force
- Wipe down all surfaces with the proper solvents to remove any left over residue from cavity wax
- Sand and or grind both A-pillar and upper uni-rail to remove seam sealer and panel bond sealer from welded surfaces
- Apply weld through primer on all exposed surfaces
- Drill carefully all spot welds and plug welds with proper drill bits (High strength steel or titanium) to remove welds without damaging underlying surfaces
- Clean all bonding off uni-rail internal structure/reinforcement to separate the two and insure a strong bond between surfaces on re-installation
- Clean replacement parts by grinding, sending and wiping down with proper solvents to clean away any and all primers or other obstructions that may interfere with welding
- Resistance spot weld all 21 spot welds

No Change

Estimated Release Date: Closed

Proposed Resolution: MOTOR stated. After review, the following has been determined:

1. The estimated work time of 3.8 hours applied to the Upper Rail is appropriate, so an adjustment was not necessary.

2. The estimated work times applied to the Cowl, Fuse Box and Coolant Reservoir were appropriate, so an adjustment was not necessary.

Please refer to the "Guide To Estimating, Panel-Inner Panel (Welded Apron & Rails,) for the complete list of included/not included items.

FENDER - INNER PANEL (Welded Apron & Rails)

SPECIAL NOTATION:

Detach and weld at floor pan, radiator support, hinge pillar and cowl panel.

INCLUDED:

- Adhesive application if required (all types)
- Battery tray
- Carpet & insulation turn back + Caulk/seam sealer + Cowl trim + Cutting & welding as necessary + Grind, fill and smooth welded seams (up to 150 grit sandpaper)

DOES NOT INCLUDE:

- Adjacent panels
- Air inlet system (if necessary)
- Attached standard items

- Body
- Bolts on parts
- Bumper assembly
- Carpet, insulation or seal R1I
- Cruise control
- Dash panel
- Decals/labels
- Electrical wiring
- Energy absorber
- Engine
- Front suspension assembly
- Hood hinges & support cylinder
- Hoses
- Outer sheet metal
- Pulling or straightening time
- Reservoir
- Set up on frame machine & diagnosis
- Steering components

Computer Modules

When working with vehicles equipped with on-board computers, manufacturers recommend removal if temperatures are likely to exceed 176°F (80°C). Do not apply heat from a torch or weld in the immediate vicinity of computers without protecting them. Remove if necessary.

Many vehicles have multiple computers such as: Electronic Control Modules (ECM), Body Control Modules (BCM), individual computers for Anti-Lock Brake Systems and Electronic Suspension systems. All of these computers should be protected or removed before exposing them to high heat. Never connect or disconnect these units with ignition switch on, or charge a battery with battery cables connected. Before servicing, ground yourself and ground the work area to discharge stored static electricity.

Source: Portions Copyright 2012, Mitchell International, Inc. – Mitchell P-Pages, Rev. 10-09. Page 19
Procedure 29—Special Caution

Computer Modules

When working with vehicles equipped with on-board computers, manufacturers recommend removal if temperatures are likely to exceed 170°F (80°C). Do not apply heat from a torch or weld in the immediate vicinity of computers without protecting them. Remove if necessary.

Many vehicles have multiple computers such as Electronic Control Modules (ECM), Body Control Modules (BCM), individual computers for Anti-Lock Brake Systems and Electronic Suspension systems. All of these computers should be protected or removed before exposing them to high heat. Never connect or disconnect these units with ignition switch on, or charge a battery with battery cables connected. Before servicing, ground yourself and ground the work area to discharge stored static electricity.

Structural Glass

Windshields, back windows and other glass that was originally installed by vehicle manufacturer utilizing urethane, should be reinstalled with urethane. The urethane bonds the glass to the vehicle and makes the glass part of the vehicle’s structure. Ensure that the vehicle manufacturer and/or I-CAR recommended installation is followed, and that the urethane is properly cured before returning the vehicle to service.

Supplemental Restraint/Air Bag System

Vehicle manufacturer’s recommended service and repair procedures must be followed when servicing any Supplemental Restraint/Air Bag System. Certain safety precautions and disabling procedures must be observed when performing repairs.

See Mitchell’s Air Bag Service & Repair Manual for system description and operation checks, precautions, disabling and activating procedures, component removal and installation procedures, and diagnosis and testing information. Refer to Air Bags/SRS Component Inspection & Replacement tables.

Seat Belts

Many vehicle manufacturers advise replacement of seat belts when stressed by occupants in a collision. Refer to vehicle manufacturer or service manual for specific clarification.

Rev 02-10

Source: Portions Copyright 2012, Mitchell International, Inc. – Mitchell P-Pages, Rev. 2-10, Procedure 28 – Refinish Procedure, Page 19
Question 3.
Are there pre-determined times?
3. Is there a pre-determined time for R&I/set back of electrical components within 12 inches of the weld zone?

Answer: There may or may not be a pre-determined time to R&I or set back electrical components. When available, use the times provided by the Information Providers. Here are some additional things to keep in mind:

- In the database references or estimating guides, there is not a time to disconnect and reconnect a battery. There is only time to R&I the battery.
- Often there are times to R&I airbag electronics.
- Sometimes there is a time to remove and replace components (R&R)
### Preliminary Estimate

**Customer: Johnson, Edward**

Vehicle: 2013 TOYOTA COROLLA LE 4D SED 4-1.8L-FI

<table>
<thead>
<tr>
<th>Line</th>
<th>Oper</th>
<th>Description</th>
<th>Part Number</th>
<th>Qty</th>
<th>Extended Price $</th>
<th>Labor</th>
<th>Paint</th>
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<tbody>
<tr>
<td>1</td>
<td><strong>RADIATOR SUPPORT</strong></td>
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<td>5320112B70</td>
<td>1</td>
<td>403.02</td>
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<td>Refrigerant recovery</td>
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<td></td>
<td>m</td>
<td>0.4 M</td>
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<tr>
<td>6</td>
<td>Add for auto trans</td>
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<td></td>
<td>m</td>
<td>0.2 M</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td># Rop Pressure test/purge cooling system</td>
<td></td>
<td></td>
<td></td>
<td>0.5 M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COOLING**

9    | R&A Radiator assy                          |                                           |             | m   |                  | Incl.  | M     |

**AIR CONDITIONER & HEATER**

10   | R&I Condenser US built                     |                                           |             | m   |                  | Incl.  | M     |

**ELECTRICAL**

12   | R&I Battery                                |                                           |             |     |                  | Incl.  |       |
14   | # Rop Reset Electrical Components          |                                           |             |     | 0.5 M            |       |       |
15   | R&I Engine harness US built, 18L auto trans, loosen/pull back |   |   | 0.5 M            |       |       |
16   | * R&I Fuse & relay box - loosen/pull back  |                                           |             | m   | 1.0 M            |       |       |

**Notes**

- Needs R&I bc it is within 12” of welding zone
- Needs to be more than 12” of welding zone

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### Preliminary Estimate

**Customer: Edwards, Michael**

Vehicle 2013 HYUN ELANTRA GLS 4D SED 4-1.8L-FI

<table>
<thead>
<tr>
<th>Line</th>
<th>Oper</th>
<th>Description</th>
<th>Part Number</th>
<th>Qty</th>
<th>Extended Price $</th>
<th>Labor</th>
<th>Paint</th>
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<td></td>
<td>0.5 M</td>
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<td></td>
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<tr>
<td>4</td>
<td># R&amp;I Loosen/Pull back wiring harness</td>
<td></td>
<td></td>
<td></td>
<td>0.5 M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

- Needs to be more than 12” of welding zone

**WHEELS**

6    | R&I LT/Rear R&I wheel                      |                                           |             | m   | 0.1 M            |       |       |

**RESTRANT SYSTEMS**

8    | R&I LT Side impact sens center pillar      |                                           |             | m   | 0.2 M            |       |       |
| 9    | R&I LT Head air bag sedan                 |                                           |             | m   | 0.8 M            |       |       |

**Notes**

- Needs R&I bc it is within 12” of welding zone

**QUARTER PANEL**

11   | Repl LT Quarter panel                     | 715033YU09 | 1     | 974.00 | 18.5 | 3.0   |
12   | Add for Clear Coat                        |                                           |             |     | 1.2              |       |       |
Question 4.
What is it worth?
4. If not, then what is R&I/set back of electrical components within 12 inches of the weld zone worth?

Answer Documentation:

- When you remove a component, click on it in the R&I time in the estimating system. If there is a time, use it.
- If there is no R&I time, take the R&R times and adjust it accordingly.
- You can also look for an inquiry on the DEG website. If there is nothing on the DEG website, you can designate a time based on how long it takes the average technician to gather up their tools, equipment, and supplies and perform the task in a safe manner and return the tools, equipment and supplies back to their storage location.
- Sometimes OEMs may have a warranty time.
- Sometimes ALLDATA®, TechAdvisor® and other similar systems have mechanical times.
How to submit a DEG inquiry

Go to http://www.degweb.org/open-inquiry-form/submit-a-database-inquiry and follow the steps to submit an inquiry.
Additional Thoughts
Additional Thoughts

- It is important to use the right terminology on your estimate. You should not say you need to R&I a wiring harness when we are just **setting it back** 12 inches. This is critical because if you charge to R&I the cable, but only set it back, you are charging for something you didn’t do. This is called Work Billed Not Performed (WBNP) and can have legal ramifications.

- You may need to R&I something to get to the battery, like an engine shield, and that will not be included, such as DEG 4300 (see image below)

- On a hybrid (high voltage) vehicle, you may have to activate and deactivate the system – DEG 5361 (see image)

- When disconnecting the battery, disconnecting the negative terminal first.

- **Reset of Electrical Components** - The resetting of electrical components is a NOT included operation in Audatex, CCC or Mitchell. Air bag lights, initializing of a power window, and steering angle sensors are just a few examples of items that require a manual line for the labor amount needed. DEG inquiries 7465, 6710, and 5845.

- Keep in mind that .1 = 6 minutes

- When determining labor times, remember it should be based on “How long it takes the average technician to gather up their tools, equipment, and supplies and perform the task in a safe manner and return their tools, equipment and supplies back to their storage location.”

- TIP: If you save the P-pages as a PDF and search for terms in the document by going to Edit, then Find or by hitting Ctrl+F
### DEG DATABASE INQUIRY

<table>
<thead>
<tr>
<th>Track_#</th>
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<th>Submission Date</th>
<th>Resolution Date</th>
<th>Total Time to Resolve</th>
</tr>
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<tbody>
<tr>
<td>5361</td>
<td>CCC</td>
<td>Non-Welded Part Operations</td>
<td>2012 Toyota Camry Hybrid</td>
<td>Resolved</td>
<td>1/10/2013 3:36:59 PM</td>
<td>1/14/2013 3:47:00 PM</td>
<td>1/15/2013 5:15:00 AM</td>
<td>01 Days</td>
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</table>

### Inquiry Description

- **Disconnect Hybrid Battery**
  - Section 5.1: AreaVehicle
  - Electrical
  - Section 5.2: Part Name
  - Hybrid Battery
  - Section 5.3: Issue Summary
  - System does not show an option in the additional operations to activate/deactivate the hybrid system
  - Section 5.4: Procedure Steps
  - Rear trim must come out of the vehicle, in order to gain access to the connector to activate/deactivate hybrid system
  - Section 5.5: Technician Skill
  - Experienced
  - Section 5.6: Actual Time
  - 0.7
  - Section 5.7: Suggested Action
  - Add operation in the electrical section of CCC. Suggested Activate/Deactivate on most hybrid vehicles is .7. Recommending .5-.7 with a note to be a mechanical item.

### Resolution Description

**Estimated Fix February 2013**

- Estimated UN Release Date: 02/01/2013
- Estimated DVD Release Date: 02/2013
- MOTOR Publication Fix Date: 04/2013

- Proposed Resolution: MOTOR stated:
  - After review, the following changes have been made:
  1. A “Special Caution” notation has been added to the “Electrical” group headnotes that states, “The high voltage system may remain powered for up to 10 minutes after vehicle is deactivated. To prevent serious injury or death from severe burns or electric shock, avoid touching, cutting or breach any orange high voltage power cable or high voltage component. Consult Toyota service procedures for service and safety information.”
  2. An “Add If Required” operation has been applied, “High voltage system deactivate/activate, 0.6 hours,” with a labor footnote that states, “LABOR: Time is for deactivating and activating the high-voltage power system as outlined in the OSM service manual.”