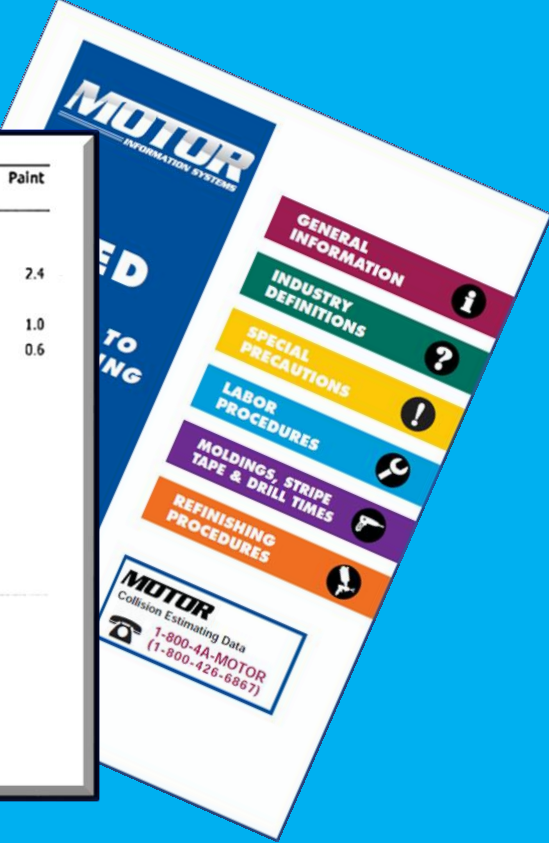


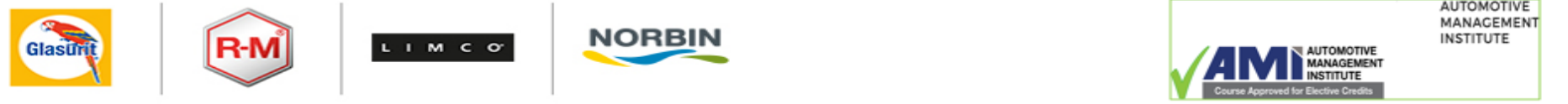


Line	Oper	Description	Part Number	Qty	Extended Price \$	Labor	Paint
1		<b>FRONT BUMPER</b>					
2		O/H bumper assy				2.2	
3	Repl	Bumper cover	865112H000	1	261.44	Incl.	2.4
		Note: Component comes unprimed from OEM. Preparation is required.					
4		Add for Clear Coat					1.0
5	Repl	Prep unprimed bumper		1			0.6
6	#	Repl Flex additive		1	8.95	T	
7	Repl	Bumper grille	865612H001	1	52.58	Incl.	
		Note: LABOR: Time is after bumper cover is removed. Time included with overhaul. Chipped on outside upper corner					
8	Repl	Energy absorber	865202H000	1	73.00	Incl.	
9	Repl	RT Outer bracket	865142H000	1	23.89	Incl.	
		Note: LABOR: Time is after bumper cover is removed. Time not included in overhaul.					
10	#	RT Outer bracket labor		1			0.1
		Note: System override labor: Time not included in overhaul.					
11		<b>FRONT LAMPS</b>					
12	Repl	RT fog lamp assy sedan	922022H000	1	119.33	Incl.	
		Note: Chipped on upper inside corner					
13		Aim fog lamps				0.3	
14	R&I	RT Headlamp assy				Incl.	
		Note: LABOR: RT Fender time is after headlamp assembly is removed.					
15	Repl	Aim headlamps		1			0.5
		Note: Impact on right side					



# Damage Assessment Documentation

## BASF AUTOMOTIVE REFINISH COATINGS





- \* Introductions
- \* Restrooms
- \* Fire Exits



BASF AUTOMOTIVE REFINISH COATINGS

Anti-Trust Disclaimer

- Please be advised that the following guidelines for conduct shall be established and followed:
  - No participant shall be allowed to discuss any subject relating to prices charged, discounts offered of any nature, hourly rate, employee benefits, or assignments made with third party entities.
  - Should any discussion of these items take place, said participant will be asked to refrain immediately, disregarding any pursuant discussion, and should said party deny such request, the meeting will be immediately disbanded.
  - All participants are herewith notified that the materials presented herein are not to be construed as information or direction to take concerted actions.
  - The information can be utilized by individuals acting within their own judgment, making sound business decisions, without agreements with other participants of this meeting.
- This notice is hereby read with regard to laws governing this conduct.

Product Disclaimer: Products mentioned in this presentation are for information purposes only and do not represent an endorsement by BASF.

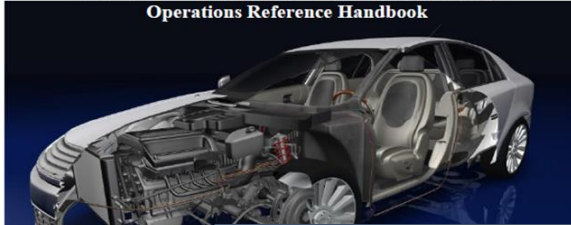


# BASF AUTOMOTIVE REFINISH COATINGS

# Information Sources



## Guide to Complete Repair Planning Operations Reference Handbook



This guide is owned by and maintained by the guide in future editions.

The Society of Collision Repair Specialists services our technicians provide that go. The purpose of this document is to aid in the estimate preparation process, to mirror intended to be used as a guide to develop as a reminder of steps that may be performed, that your shop can or should perform operations that are performed in.

The document does not contain pricing, determined based on your facility's individual notified that the materials presented here concerned actions. Information can be used

BASF AUTOMOTIVE REFINISH COATINGS



Labor Category Legend - By Color:  
• Body • Paint • Structural • Mechanical • Detail • Other

05 - HOOD:		
30. R&I WINDSHIELD WASHER NOSSELS (REPAIR SITUATION)		
31. R&I HOOD INSULATION		
32. WINDSHIELD WASHER HOSE RETAINERS (MORE THAN ONE DESIGN)		
33. REPAIR HOOD LATCH		
34. REPAIR HOOD HINGES AND/OR HINGE MOUNT AREA		
35. ACCESS TIME TO REPAIR DAMAGE		
36. FEATHEREDGE, FILL SAND AND BLOCK (REPAIRED HOOD)		
37. SEAM SEAL INNER EDGE OF NEW HOOD		
38. R&I OR R&R HOOD HINGE		
39. R&I COWL VENT PANEL (ACCESS TO HINGE)		
40. TEST FIT HOOD		
41. MIX PAINT FOR UNDERSIDE SECOND COLOR (AIDS FOR 3" AND 4" COLORE)		
42. COLOR TINT & TEST FOR UNDER SIDE SECOND COLOR		
43. MASK HOOD INNER EDGES		
44. WINDSHIELD WASHER HOSE FASTENERS (2" DESIGN)		
45. WINDSHIELD WASHER HOSE FASTENERS (2ND DESIGN)		
46. HOOD INSULATION RETAINER FASTENERS, REPLACE		
47. HOOD FRONT SEAL FASTENERS		
48. HOOD REAR SEAL FASTENERS		
49. ALUMINUM MATERIAL LABOR RATE		
50. HOOD LABELS ***HOW MANY?***		
10 - FENDER:		
51. R&I TIRE WHEEL		
52. R&I FENDER LINER		
53. R&I FENDER MOLDINGS, EMBLEMS AND FLARE		
54. R&I MUD FLAP		
55. R&I ROCKER COVER		
56. REPLACE ROCKER COVER FASTENERS (TWO DESIGNS?)		
57. REPLACE FENDER FLARE FASTENERS		
58. CLEAN AND RETAPE FENDER MOLDING-S AND EMBLEM		
59. REPLACE LINER FASTENERS		
60. FEATHEREDGE, FILL SAND AND BLOCK REPAIRED FENDER		
61. CAVITY WAX		
62. REMOVE FACTORY INSTALLED ADHESIVE FOR ACCESS		
63. ALIGN ADJACENT PANEL-S TO FENDER		
64. ANTENNA BASE CORROSION, REPAIR		
65. MASK FENDER JAMS AND OPENINGS		
66. FENDER KILN CLADDING PREP FOR "RAW"		
67. GRAVEL GUARD		
68. REMOVE STRIPES **ERASER WHEEL**		
69. FENDER BLACK OUT SECOND COLOR		
15 - CORESUPPORT:		
70. ACCESS/PRE-PULLING		
71. PROTECT ENGINE COMPARTMENT COMPONENTS		
72. REPAIR CUT WIRING		
73. ACQUIRE RADIO CODE		
74. RESET MEMORY FUNCTIONS		
75. MEMORY "SAVER" COLLISION TOOL		
76. REMOVE CAULKING & SEAM SEALER		

Society of Collision Repair Specialists • P.O. Box 905, Prosser, WA 99350 • (877) 841-0660 • Fax (877) 851-0660



## CEC GUIDE TO ESTIMATING

### GENERAL INFORMATION



### INDUSTRY DEFINITIONS



### SPECIAL PRECAUTIONS



### LABOR PROCEDURES



### GUIDE TO ESTIMATING

#### LABOR TIMES 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 and apply to standard stock models only. Reported times include tube/padded application of OEM caulking and seam sealer removal/application on welded replacement panels. Spray-on 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. Times published also do not include removal of replacement parts and/or assemblies from donor vehicle or assembly. 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.

Many OEMs recommend a pre- and post-repair diagnostic scan on all vehicles involved in a collision that could reveal pre-accident or accident-related damage. Please refer to OEM position statement and repair procedures for more information.

OPERATION TIMES LISTED ARE BASED ON UNDAMAGED OEM PARTS INSTALLED ON UNDAMAGED VEHICLES AS INDIVIDUAL OPERATIONS. TIME HAS NOT BEEN CONSIDERED FOR ALIGNMENT/PULLS, DAMAGE RELATED ACCESS TIME, DAMAGED, REMANUFACTURED OR AFTERMARKET PARTS. SOME OPERATION TIMES ARE APPLICABLE AFTER BOLTED, ATTACHED OR RELATED PARTS HAVE BEEN REMOVED. REFER TO SPECIFIC FOOTNOTES 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 & Recharge
- Alignment, check or straightening related parts
- Alignment check of front or rear suspension/steering
- Aftermarket & OEM accessories
- Anti-corrosion material restoration/application
- Battery D&R/recharge
- Brakes, bleed and adjust
- Broken glass removal or clean up
- Caulk (non-OEM), undercut or sound insulate on paint inner areas
- Clean up or detailing of vehicle prior to delivery
- Clean or recondition parts or assemblies
- Component, R&R or Transfer bolt-on, riveted or welded
- Computer control module D&R/reset
- 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
- Filing, plugging and finishing of unrimmed holes in replacement parts
- Information labels, install
- Material costs
- Pinch weld clamp damage repair
- Refinishing
- Removal of emblems, nameplates, trim, etc. from donor part or assembly
- Reset electronic memory functions after battery disconnect
- Road test vehicle
- Rusted, frozen, broken or corrosion damaged components
- Salvaged replacement assembly, preparation, trim, fit and/or modify
- 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

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.



# BASF AUTOMOTIVE REFINISH COATINGS

# Information Sources



## Service Information – Position Statement

### Pre- and Post-Scan of Collision Vehicles

October 2016

General Motors takes the position that all vehicles being assessed for collision damage repairs must be tested for Diagnostic Trouble Codes (DTCs) during the repair estimation in order to identify the required repairs. Additionally, the vehicle must be re-tested after all repairs are complete in order to verify that the faults have been repaired and new faults have not been introduced during the course of repairs.

Even minor body damage or glass replacement may result in damage to one or more safety-related systems on the vehicle. Any action that results in loss of battery-supplied voltage and disconnection of electrical circuits requires that the vehicle is subsequently tested to ensure proper electrical function.

Many safety and security-related components, sensors and Electronic Control Units (ECUs) require calibration and/or learns when replaced. These systems must be repaired according to the corresponding GM repair procedures in Service Information (GMSi).

### Technology Supported Diagnostic Aids

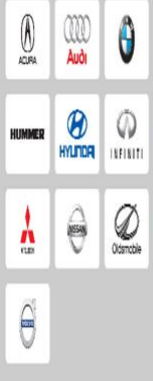
General Motors states that the method to correctly identify vehicle diagnostic trouble codes (DTCs) is by using the appropriate GM diagnostic software: GDS2 or Tech 2/Tech2Win, each of which can scan a vehicle for all DTCs in one operation. GM diagnostic software is supported by one of the GM approved diagnostic scan tools (MDI or a J2534 device). GM does not recommend the use of other scan tools and cannot guarantee their accuracy. For a list of vehicle covered by these applications, refer to the GM technical document titled *Vehicles Supported by GDS2 or Tech2/Tech2Win*.

GMSi is the factory source for all diagnostic and repair procedures, wiring diagrams and associated repair information.

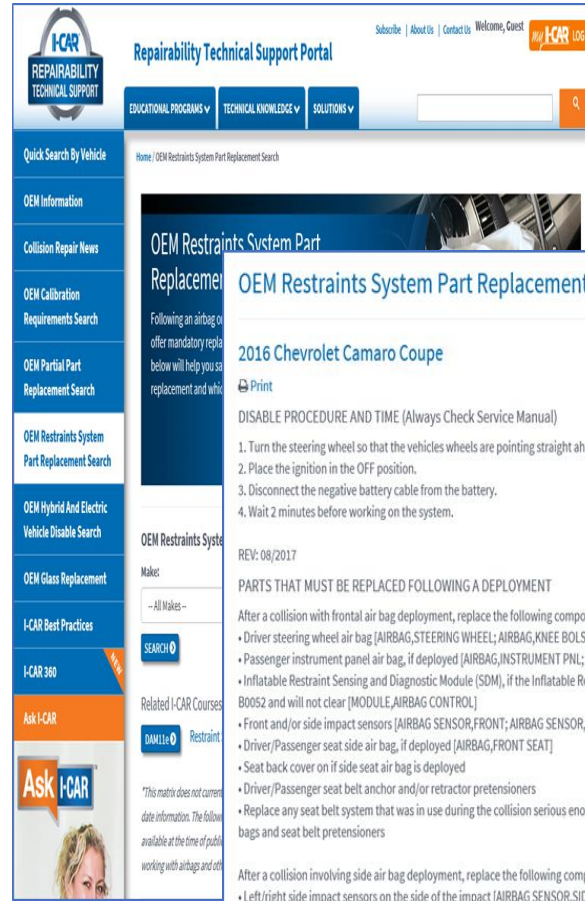
GM Service Programming System (SPS) is the ECU programming application that provides calibration updates and guided learn procedures where required.

Any repairs performed without using Genuine GM Parts and not following published GM collision repair procedures may result in erroneous DTCs and expose vehicle owners and occupants to unnecessary risk. GM collision repair information can be accessed for free on [genuinegmparts.com](http://genuinegmparts.com) or is available through a GMSi subscription.

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OEM1STOP © 2016. Presented by the OEM



## Repairability Technical Support Portal

Quick Search By Vehicle

OEM Information

Collision Repair News

OEM Calibration

Requirements Search

OEM Partial Part

Replacement Search

OEM Restraints System

Part Replacement Search

OEM Hybrid And Electric

Vehicle Disable Search

OEM Glass Replacement

I-CAR Best Practices

I-CAR 360

Ask I-CAR

Home / OEM Restraints System Part Replacement Search

### OEM Restraints System Part

### Replacement

Following an airbag or offer mandatory repairs below will help you search replacement and which

## OEM Restraints System Part Replacement Search

### 2016 Chevrolet Camaro Coupe

Print

DISABLE PROCEDURE AND TIME (Always Check Service Manual)

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery.
4. Wait 2 minutes before working on the system.

REV: 08/2017

### PARTS THAT MUST BE REPLACED FOLLOWING A DEPLOYMENT

After a collision with frontal air bag deployment, replace the following components:

- Driver steering wheel air bag [AIRBAG,STEERING WHEEL; AIRBAG,KNEE BOLSTER]
- Passenger instrument panel air bag, if deployed [AIRBAG,INSTRUMENT PNL.; AIRBAG,KNEE BOLSTER]
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]
- Front and/or side impact sensors [AIRBAG SENSOR,FRONT; AIRBAG SENSOR,SIDE]
- Driver/Passenger seat side air bag, if deployed [AIRBAG,FRONT SEAT]
- Seat back cover on if side seat air bag is deployed
- Driver/Passenger seat belt anchor and/or retractor pretensioners
- Replace any seat belt system that was in use during the collision serious enough to deploy any automatic restraint device such as air bags and seat belt pretensioners

After a collision involving side air bag deployment, replace the following components:

- Left/right side impact sensors on the side of the impact [AIRBAG SENSOR,SIDE]
- Left/right roof rail air bag on the side of the impact. [AIRBAG, ROOF]
- Inflatable restraint side seat impact module, on the side of the impact [AIRBAG,FRONT SEAT]
- Driver or passenger seat back cushion cover replacement
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]
- Inflatable restraint seat belt anchor and/or retractor pretensioner
- Replace any seat belt system that was in use during the collision serious enough to deploy any automatic restraint device such as air bags and seat belt pretensioners



# BASF AUTOMOTIVE REFINISH COATINGS

# Information Sources

**3M Science. Applied to Life.™** Help

PRODUCTS FOR BUSINESS | PRODUCTS FOR CONSUMERS | ABOUT US | PARTICLES BY 3M

3M United States > Automotive > Collision Repair > Applications > Metal Shop

**Collision Repair**

OVERVIEW | PRODUCTS | APPLICATIONS | RESOURCES | SUPPORT



## Resources for Smoother Metal Repairs

Body repair technicians have one thing in common: their commitment to technical tips, in-depth articles and more. From small dent repair to panel to help fuel that commitment and expertise for you and your entire shop.



### Standard Operating Procedures for Panel Repairs

3M helps ensure that you're using the best techniques and tools for a full repair and replacement jobs. You'll find clear, step-by-step procedures for repairs as well as specific jobs such as door panel replacement and panel

[VIEW STANDARD OPERATING PROCEDURES](#)

**3M Science. Applied to Life.™** | Standard Operating Procedures | Body Repair

Door Skin Replacement		Product List
<b>1</b>	<b>Door Frame Preparation</b> Using a grade 80 abrasive belt, remove remaining weld sputter material from door frame. Clean and prep remaining mating flanges on door frame with a coarse Scotch-Brite™ belt.	3M™ File Belt Sander, PN 02366 3M™ Cubitron™ II File Belt, grade 80, PN 33443 Scotch-Brite™ Durable Flex Belt, CR5, PN 64475
<b>2</b>	<b>Clean</b> Clean door frame and replacement panel mating flange areas with a VOC compliant surface cleaner.	Scotch-Brite™ Durable Flex Hand Pad, Very Fine, 4 1/2 in. x 9 in., PN 64659
<b>3</b>	<b>Replacement Skin Prep</b> Scuff replacement skin mating flange areas using Scotch-Brite™ hand pad.	Scotch-Brite™ 7447 PRO Hand Pad, Very Fine, 6 in. x 9 in., PN 64826
<b>4</b>	<b>Dry Fit Panel</b> Dry fit replacement panel and complete any necessary metal straightening at flange areas. Remove door skin in preparation for adhesive application.	3M™ NVH Dampening Material, PN 04274 3M™ Urethane Seam Sealer, PN 08361 3M™ MSP Seam Sealer, PN 08370
<b>5</b>	<b>NVH Replacement</b> Apply NVH material at original locations on intrusion beam.	3M™ Panel Bonding Adhesive, 80mL, PN 88316, 200mL, PN 08186, 200mL, PN 08196, 450mL, PN 88315
<b>6</b>	<b>Apply Bonding Adhesive</b> Re-clean bonding surfaces with a VOC compliant surface cleaner. Apply adhesive to door frame covering all bare metal areas. Apply an additional bead of adhesive at mating flange areas to ensure proper bond line thickness.	3M™ 8MAC/FRP Panel Adhesive, 200mL, PN 06279 3M™ Bare-Metal Seam Sealer 200mL, PN 08370, 600mL, PN 88310
<b>7</b>	<b>Install Door Skin</b> Install replacement door skin onto door frame. Crimp hem flange using hammer and dolly. Clamp as necessary. (For aluminum panels, follow OEM recommended flanging procedure.)	3M™ EZ Sand Multi-Propose Flexible Adhesive, 200mL, PN 06887, 600mL, PN 88687
<b>8</b>	<b>Clamp and Cure</b> Follow recommended adhesive clamp and cure times. Clean any adhesive squeeze-out from hem flange area with a VOC compliant cleaner.	3M™ E-A-A-8™ Skull Screws™ Ear Plug, PN P3200
<b>9</b>	<b>Seam Sealing</b> Re-apply seam sealer to hem flange as required following general seam sealing guidelines.	3M™ Half Facepiece Respirator, PN 07162 3M™ Less™ Protective Eyewear, PN 10200

Visit [www.3Mcollision.com](http://www.3Mcollision.com) for more SOPs and videos

For ordering information, contact your 3M Sales Representative

## BEST PRACTICES GUIDELINES FOR DIGITAL IMAGING





The Collision Industry Conference Insurer-Insurance Relations Committee of insurers, repairers, and industry partners has produced a set of working consensus on how to work together for the benefit of the vehicle owner with mutual respect in the event of a collision or an event which results in the repair of the vehicle.

Now the members of the Collision Industry Conference ask that all members endorse and adopt these common-sense practices.

*NOTE: This is a "living" document, designed to be modular in approach, and will provide the framework for all collision industry Best Practices. The act upon in any way other than review and comment from interested parties.*

- These guidelines describe such as severity, complexity, additional images or a
- Taking the images of impact, related and un
- Basic Imaging Procedure
  - Take initial images of odometer, and
  - Take images of damage
  - Review the images of the vehicle. Delete
- Minimum Requirements
  - 4 Corner shots
    - Always



- Related Damages
  - Take the first shot from a distance that depicts the location of the damages in relation to the vehicle.
 

  - Take detail shots to accurately support the damages written on the estimate.
 


- Unrelated Damages
    - Record and document all unrelated damages in the same manner you would document related damage
- Dash Warning Lights-C
    - If possible capture warning lights (i.e. Capture the Odometer)
    - Take a picture of the VIN - Take a picture preferably from the windshield.





# BASF AUTOMOTIVE REFINISH COATINGS

# Information Sources

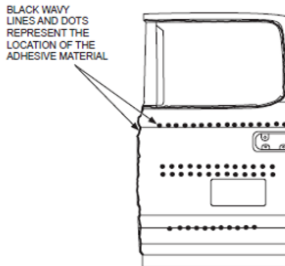
## F-SERIES ALL CABS FRONT DOOR OUTER PANEL INSTALLATION - SERVICE KIT INSTRUCTIONS

### KIT

Part Number	Part Number
FL34-1620204-AE	10. Scuff sand only, DO NOT GRIND, the inner structure bonding surfaces. Do not sand to bare substrate, leave original e-coat as intact as possible.
SKFL34-1620204-A	11. Trial fit the service replacement panel to the door
Part Number	12. Temporarily secure the outer panel to the door a skin alignment.
FL34-1620205-AE	13. Use reference marks to assist.
SKFL34-1620204-A	14. Scuff the replacement skin bonding areas, then
Part Number	15. Apply metal bonding adhesive to the following a panel, and outer belt reinforcement-to-outer pan
W790376-S900	16. Using a 501-080 Hem Closing Tool or the hamm any residual adhesive in the joints.
W702512-S900C	17. (Refer to Figure 2) to install ten (10) (W717188-1
Rotunda 501-078-1	18. Prime and Paint the door following Ford approve
Rotunda 501-078-2	19. Install the door to the vehicle, align, and reasser
501-080	20. Apply anti-corrosion treatments as outlined in w
Motorcraft TA-1, 3M or Fusor 108B	

### SERVICE GUIDELINES:

1. Aluminum repairs should aluminum repair should
  2. Replacement Self-Piercing locations, where feasible
  3. Remove the door trim pin refer to Section 501-11.
  4. Remove the outside dot
  5. Remove door trim includ
  6. Remove the door assen
  7. Insert TOOL 501-078-1 required for consistent b
- NOTE: The use of a heat g
8. Use a sharp knife to cut and intrusion beam.
  9. Remove original door ot



  
 CPR © 2014 FORD MOTOR COMPANY  
 DEARBORN, MICHIGAN 48121  
 10-14

10. Scuff sand only, DO NOT GRIND, the inner structure bonding surfaces. Do not sand to bare substrate, leave original e-coat as intact as possible.
11. Trial fit the service replacement panel to the door shell assembly.
12. Temporarily secure the outer panel to the door assembly and install on the vehicle to verify proper skin alignment.
13. Use reference marks to assist.
14. Scuff the replacement skin bonding areas, then clean with adhesive cleaner.
15. Apply metal bonding adhesive to the following areas: service replacement hem flange, flutter beam-to-outer panel, and outer belt reinforcement-to-outer panel. (Refer to figure 1).
16. Using a 501-080 Hem Closing Tool or the hammer and dolly method, close the perimeter door hem and smooth any residual adhesive in the joints.
17. (Refer to Figure 2) to install ten (10) (W717188-S900) SPR rivets code PW, or (W790376-S900) solid rivet.
18. Prime and Paint the door following Ford approved paint company materials/guidelines.
19. Install the door to the vehicle, align, and reassemble all components.
20. Apply anti-corrosion treatments as outlined in workshop manual section 501-35

NOTE: The location of SPR and adhesive shown below are based on the original production drawings and should only be used as a guideline. (Refer to Figure 1).

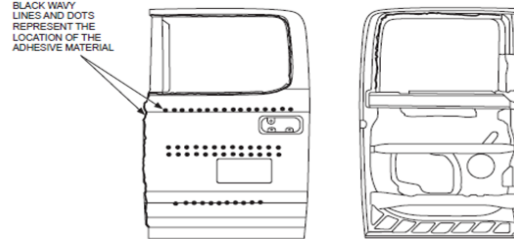
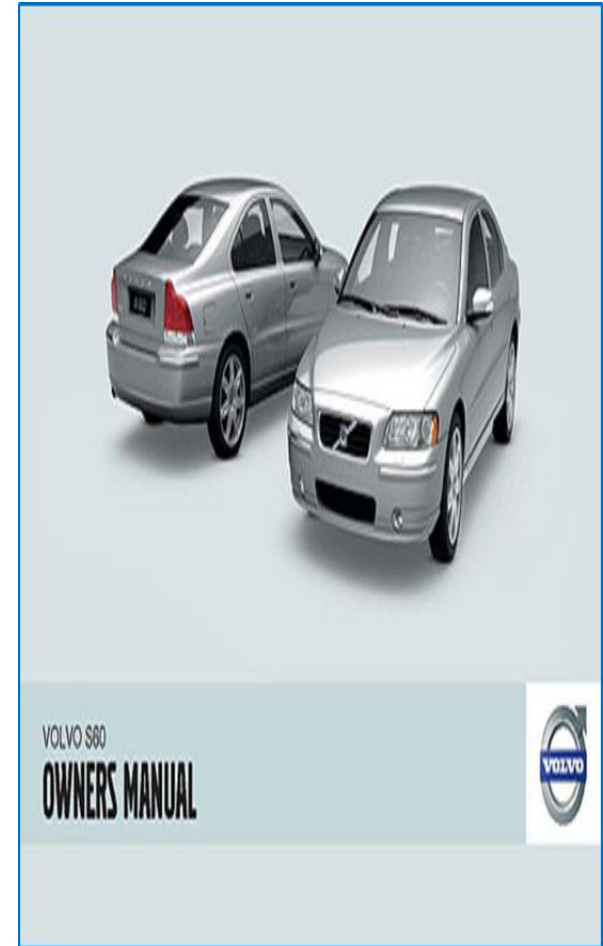


FIGURE 1

  
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 10-14

SKFL34-1620204-AA SHEET 2 OF 3  
 F-SERIES ALL CABS FRONT DOOR OUTER PANEL  
 INSTALLATION - SERVICE KIT INSTRUCTIONS



  
 CPR © 2014 FORD MOTOR COMPANY  
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 10-14

F-SERIES ALL CABS FRONT DOOR OUTER PANEL  
 INSTALLATION - SERVICE KIT INSTRUCTIONS



BASF AUTOMOTIVE REFINISH COATINGS

Vehicle Identification

VEHICLE

Year: 2008	Body Style: 4D SED	VIN: 4T1BK36B78U259355	Mileage In: 65034
Make: TOYO	Engine: 6-3.5L-FI	License: XDL-9761	Mileage Out:
Model: AVALON LIMITED	Production Date: 7/2007	State: VA	Vehicle Out:
Color: BLUE Int: GRAY	Condition:	Job #:	

- Make
- Model
- Trim Level Decoding
- Mileage
- Production Date
- Exterior Color
- Interior Trim Color

**TRANSMISSION**

Automatic Transmission  
Overdrive

**POWER**

Power Steering  
Power Brakes  
Power Windows  
Power Locks  
Power Mirrors  
Heated Mirrors  
Power Driver Seat  
Power Passenger Seat  
Memory Package

**DECOR**

Dual Mirrors  
Console/Storage

Wood Interior Trim

**CONVENIENCE**

Air Conditioning  
Intermittent Wipers  
Tilt Wheel  
Cruise Control  
Rear Defogger  
Keyless Entry  
Alarm  
Message Center  
Steering Wheel Touch Controls  
Telescopic Wheel  
Climate Control  
Home Link

**RADIO**

AM Radio

FM Radio

Stereo  
Search/Seek  
Auxiliary Audio Connection  
Premium Radio  
CD Changer/Stacker

**SAFETY**

Drivers Side Air Bag  
Passenger Air Bag  
Anti-Lock Brakes (4)  
4 Wheel Disc Brakes  
Front Side Impact Air Bags  
Head/Curtain Air Bags  
Hands Free Device

**ROOF**

Electric Glass Sunroof

**SEATS**

Bucket Seats  
Leather Seats  
Heated Seats  
Ventilated Seats

**WHEELS**

Aluminum/Alloy Wheels

**PAINT**

Clear Coat Paint

**OTHER**

Fog Lamps  
Signal Integrated Mirrors  
Xenon Headlamps  
Power Trunk/Gate Release





## BASF AUTOMOTIVE REFINISH COATINGS

## Paint Identification

### 2015 Audi Q7 Paint Colors

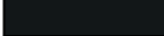
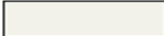









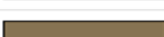
- ✓ Order the same touch up paint used by industry professionals
- ✓ Easy-to-follow instructions for selecting the right products
- ✓ Be sure to verify the color code on your vehicle
- ✓ We guarantee the color match to the factory color chip

### Select paint based only on your color code

[How do I find my color code?](#) [What is a color code?](#)

#### Audi Color Code Information:

The color plate location is around the spare tire area. Audi color codes can be shown differently on your vehicle. For example, the code 'LY9B/A2' can be shown as 'LY9B' or 'A2' on your car. Please note that some of the Pre-1980 Audi colors shown are estimates. If your color code matches, this is your paint even if the color shown is off! We mix the paint by color code, not what is shown on the screen.

-  Color Code: L041/A1  
Black
-  Color Code: LC9A/0Q  
Pure White
-  Color Code: LC9X/2T  
Deep Black Pearl
-  Color Code: LH5X/Z2  
Night Blue Metallic
-  Color Code: LM7W/9Q  
Graphite Grey Metallic
-  Color Code: LS9R/2Y  
Glacier White Pearl Tricoat
-  Color Code: LX1Z/6L  
Bahia Beige Metallic
-  Color Code: LX5Q/S9  
Scuba Blue Metallic
-  Color Code: LX7W/P5  
Ice Silver Metallic
-  Color Code: LZ7L/1R  
Lava Gray Pearl Effect
-  Color Code: LZ7S/6Y  
Daytona Gray Pearl
-  Color Code: LZ8W/4U  
Teak Brown Pearl

2015 AUDI Q7 Premium Plus Quattro 4D UTV 6-3.0L Supercharged Gasoline Gasoline Direct Injection grey

VIN: WA1LGAF6FD031461	Interior Color:	Mileage In: 28,547	Vehicle Out:
License: 159M428	Exterior Color: <b>grey</b>	Mileage Out: 28,547	
State: MD	Production Date: 6/2015	Condition:	Job #: x

## Identifying paint color important

- Reimbursements
- Paint processes

## Three shades of "grey" available

- One Metallic
- Two with Pearl

Either would have different costs and paint processes



BASF AUTOMOTIVE REFINISH COATINGS

Preliminary Photos

## BEST PRACTICES GUIDELINES FOR DIGITAL IMAGING

The **Collision Industry Conference Insurer-Insurance Relations Committee**, a dedicated volunteer group of insurers, repairers, and industry partners has produced a set of working guidelines that represent a consensus on how to work together for the benefit of the vehicle owner using good faith business practices and mutual respect in the event of a collision or an event which results in the need for collision repair.

### 3. Basic Imaging Procedures

- a. Take initial images to capture all four corners of the vehicle including the license plate.
- b. Take images of the instrument panel, dash warning lights, (if possible, with engine running), odometer, and VIN plate, including vehicle production date.
- c. Take images of all loss related damaged parts listed on the estimate. The sequence of the images should mirror the sequence in which the repair estimate was written. Remember to take establishing or overall images for context in addition to close ups.
- d. Take images of all unrelated damage and label as such.
- e. Review the images to ensure they are clear, well lit and fully depict the extent of damage to the vehicle. Delete and recapture any blurry, dark or unusable images.



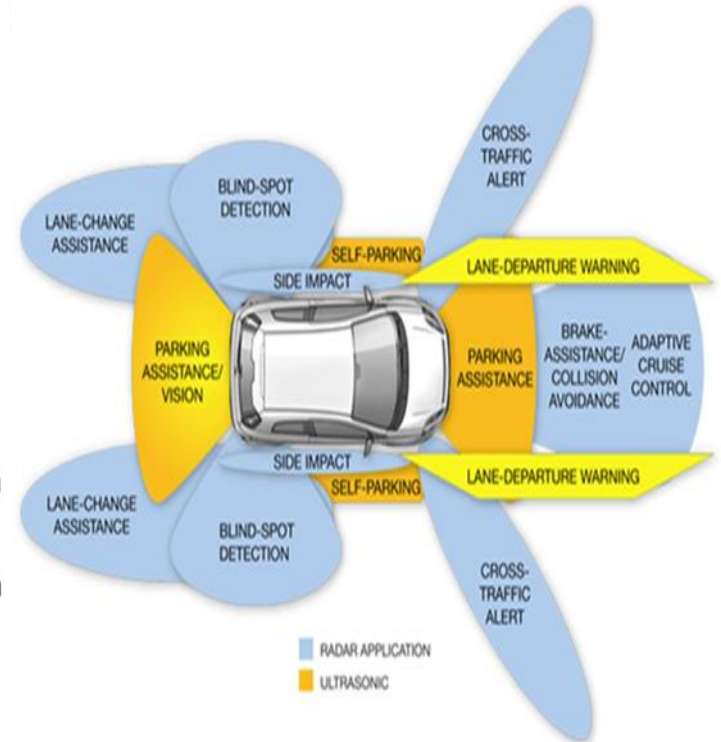
- Reference **CIC Best Practices**
  - [ciclink.com](http://ciclink.com)
- **Four Corners**
- **License Plate**
- **Instrument cluster**
  - **With engine running**
  - **Dash warning lights**
  - **Mileage**
- **VIN Plate**
  - **Production Date**





BASF AUTOMOTIVE REFINISH COATINGS

On Board Systems



■ RADAR APPLICATION  
■ ULTRASONIC



### BASF AUTOMOTIVE REFINISH COATINGS

### Pre-Scan Procedures

Preliminary Estimate																																																																																																																																
1	Rpr	Pre-Scan per OEM requirements		.3																																																																																																																												
2		Note: All vehicles being assessed for collision																																																																																																																														
		<table border="1"> <thead> <tr> <th></th> <th colspan="2">CCC</th> <th colspan="2">Mitchell</th> <th colspan="2">Audatex</th> </tr> <tr> <th></th> <th>Included</th> <th>Not Included</th> <th>Included</th> <th>Not Included</th> <th>Included</th> <th>Not Included</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>DATABASE ENHANCEMENT-GATEWAY</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Subscription Cost/ Research OEM Info/ Internet time</td> <td></td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>Pre Repair Scan</td> <td></td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>Post Repair Scan</td> <td></td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>Resetting and clearing stored faults</td> <td></td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>Testing and Diagnostics</td> <td></td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>Re programming of computers/ modules</td> <td></td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>Initialization of computers/ Modules</td> <td></td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>19</td> <td></td> <td>Calibrations of radar/ Sensors/ Cameras</td> <td>x</td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>20</td> <td>Rpr</td> <td>Wheel Alignment in conjunction of Calibration</td> <td>x</td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>21</td> <td></td> <td>Calibration and Aiming Lights after R/I or R/R</td> <td>x</td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td></td> <td></td> <td>Calibration of OCS/ WSS (Seat Weight Sensors)</td> <td>x</td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>24</td> <td></td> <td>Disconnect/ Reconnect Battery and HV System's</td> <td>x</td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>25</td> <td>Rpr</td> <td>Test driving to relearn</td> <td>x</td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>26</td> <td></td> <td colspan="3">Note: Pre-scan identified lost communication with multi-axis acceleration sensor module</td> </tr> </tbody> </table>				CCC		Mitchell		Audatex			Included	Not Included	Included	Not Included	Included	Not Included								DATABASE ENHANCEMENT-GATEWAY							Subscription Cost/ Research OEM Info/ Internet time		x		x		x	Pre Repair Scan		x		x		x	Post Repair Scan		x		x		x	Resetting and clearing stored faults		x		x		x	Testing and Diagnostics		x		x		x	Re programming of computers/ modules		x		x		x	Initialization of computers/ Modules		x		x		x	19		Calibrations of radar/ Sensors/ Cameras	x	x		x	20	Rpr	Wheel Alignment in conjunction of Calibration	x	x		x	21		Calibration and Aiming Lights after R/I or R/R	x	x		x			Calibration of OCS/ WSS (Seat Weight Sensors)	x	x		x	24		Disconnect/ Reconnect Battery and HV System's	x	x		x	25	Rpr	Test driving to relearn	x	x		x	26		Note: Pre-scan identified lost communication with multi-axis acceleration sensor module		
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Service Information – Position Statement

diagnostic software is supported by one of the GM approved diagnostic scan tools (MDI or a J2534 device). GM does not recommend the use of other scan tools and cannot guarantee their accuracy. For a list of vehicle covered by these applications, refer to the GM technical document titled *Vehicles Supported by GDS2 or Tech2/Tech2Win*.

GMSi is the factory source for all diagnostic and repair procedures, wiring diagrams and associated repair information.

GM Service Programming System (SPS) is the ECU programming application that provides calibration updates and guided learn procedures where required.

Any repairs performed without using Genuine GM Parts and not following published GM collision repair procedures may result in erroneous DTCs and expose vehicle owners and occupants to unnecessary risk. GM collision repair information can be accessed for free on [genuinegmparts.com](http://genuinegmparts.com) or is available through a GMSi subscription.

Create an estimate line after vehicle is scanned with a note identifying requirement and describing what was found during the scan. Create separate lines for each fault within vehicle area.

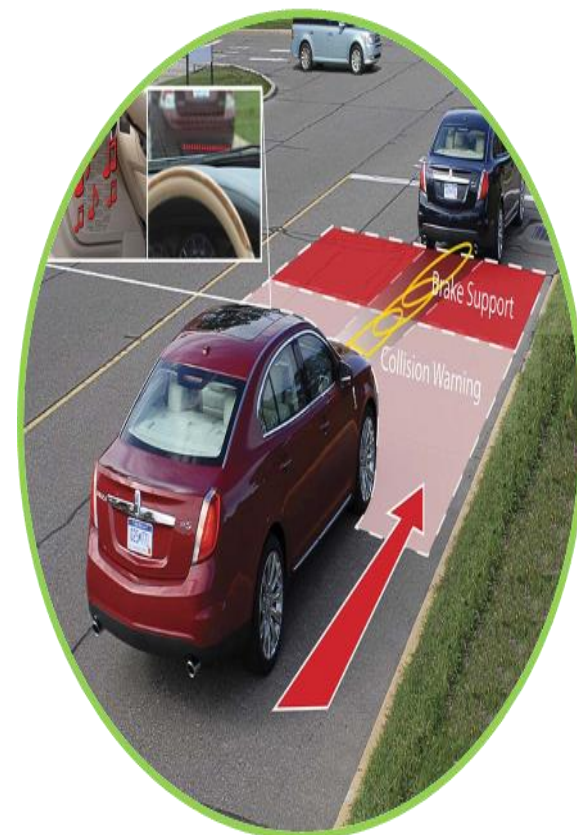


BASF AUTOMOTIVE REFINISH COATINGS

Identify Calibration Requirements



50% of repair time will be spent on recalibrations





## BASF AUTOMOTIVE REFINISH COATINGS

## Identify Calibration Requirements

### American Honda Position Statement

### HONDA

Issued: October 2017

#### SUBJECT: POST-COLLISION DIAGNOSTIC SCAN AND CALIBRATION REQUIREMENTS FOR HONDA AND ACURA VEHICLES

It is the position of American Honda that all vehicles\*\* involved in a collision\* must have the following minimum diagnostic scans, inspections, and/or calibrations done to avoid improper repair:

- A preliminary diagnostic scan during the repair estimation phase to determine what diagnostic trouble codes DTCs may be present, so proper repairs may be included. See Background on Scan Requirements for more information.
- A post repair diagnostic scan to confirm that no DTCs remain.
  - Any repair that requires disconnection of electrical components in order to perform the repair will require a post-repair diagnostic scan to confirm if the component is reconnected properly and functioning.
  - Damage that requires body parts replacement will always require a post-repair diagnostic scan.
- Some safety and driver assistive systems will require inspections, calibration, and/or aiming after collision or other body repairs. See page 2 for additional information.

\*A collision is defined as damage that exceeds minor outer panel cosmetic distortion.

#### Background on Scan Requirements

\*\*All vehicles indicates any model year Honda or Acura vehicle that is capable of being scanned. This includes: all 1996 to current model year vehicles, certain 1994 to 1995 model year vehicles that contain a 16 pin OBD2 connector, and certain 1992-1995 model year vehicles that contain a 3 pin diagnostic connector. Honda and Acura vehicles include numerous electronic control systems, including those that operate safety and driver assist systems. Most of these systems include onboard self-diagnostics that monitor the state of health and/or rationality of input and output circuits.

When monitored circuit values fall outside predetermined thresholds, DTCs may be set in one or more electronic control units (ECUs).

The mechanical forces encountered in a collision can damage electrical circuits and components in ways that are not easily diagnosed with visual inspection methods.

Here are some other electronic control system self-diagnostic facts:

- The proliferation of electronic control systems has increased the number of potential DTCs beyond the point where a dashboard indicator can be installed and/or illuminated for every DTC. Dashboard indicators are intended for driver notification, not vehicle diagnostics.
- Therefore, the presence or absence of dashboard indicators/warning lights is not an acceptable method to determine if post collision diagnostic scans are necessary.
- Many DTCs do not illuminate any dashboard indicators, but an electronic control system may still operate improperly or be completely inoperative.
- Because of the complexities of serial data networking, dashboard indicators that do illuminate may appear unrelated to the actual vehicle problem.
- Some self-diagnostics require multiple failures, or other criteria such as a number of drive cycles, to be met before illuminating any indicators.

### Front Passenger's Seat Weight Sensor - Inspections and Calibration:

These sensors control passenger's front airbag operation and the PASSENGER AIRBAG OFF indicator based on the occupant's weight. Like any scale, weight sensors are a precision device.

- The service information may refer to these sensors as the seat weight sensor (SWS) system or occupant detection system (ODS), depending on model and year.
- This inspection requires a scan tool to fully check the seat weight sensor's operation using the following criteria:
  - Empty front passenger seat weight to confirm the sensors can detect this condition
  - ~~Seat weight with a known calibration weight amount if necessary~~
- **This check must be done after any collision, regardless of damage, even if no airbags deployed.**
- ~~The check confirms sensor operation and that no binding or damage exists in the relationship between the seat frame, weight sensors, and floor pan.~~
- Weight sensor calibration is also required when front passenger seat components have been removed or replaced. Refer to the service information for procedures.

		Preliminary Estimate	
12	Rpr	Front passenger's seat weight sensor	.8
13		Note: Required per Honda Service Bulletin Oct 2017: check must be done after any collision, regardless of damage, even if no airbags were deployed. Test includes adding weight to the passenger seat to reset the seat weight sensors operation using OEM scan tool.	

During pre-scan processes it is important to identify calibration requirements




# BASF AUTOMOTIVE REFINISH COATINGS

# Damage Documentation

Line	Oper	Description	Part Number	Qty	Extended Price \$	Labor	Paint
1		<b>FRONT DOOR</b>					
2	*	Rpr RT Outer panel (HSS)				3.0	2.0
3		Add for Three Stage					
4	R&I	RT Belt molding					
5	R&I	RT Handle, outside w/painted white pearl					
6	R&I	RT R&I trim panel					
7	R&I	RT Mirror assy w/o blind spot monitor white pearl					
8		<b>SIDE LOADING DOOR</b>					
9	*	Rpr RT Outer panel (HSS)					
10		Overlap Major Adj. Panel					
11		Add for Three Stage					
12	R&I	RT Belt molding					
13	R&I	RT Handle, outside white pearl					
14	R&I	RT R&I trim panel					
15		<b>SIDE PANEL</b>					
16	Blnd	RT Side panel Touring w/Elite					
17	R&I	RT Rail cover white pearl				0.3	
18		<b>REAR LAMPS</b>					
19	R&I	RT Lens & housing				0.2	

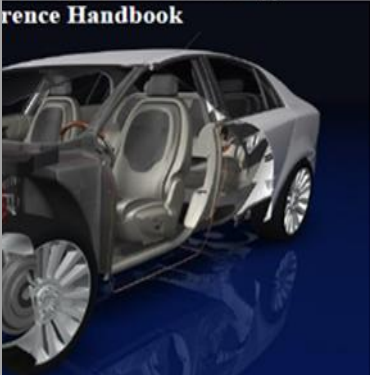
### 55 - DOOR SKIN/SHELL:

- 250. DISCONNECT AND RECONNECT BATTERY
- 251. PROTECT INTERIOR FOR PROTECTION
- 252. ACQUIRE RADIO CODE & PLACE TO OFF POSITION
- 253. RESET MEMORY FUNCTIONS
- 254. REMOVE ADHESIVE AT INTRUSION BEAM, BELT REINF & DR EDGE
- 255. REPLACE CAULKING & SEAM SEALER
- 256. WELD-THRU PRIMER
- 257. CAVITY WAX
- 258. FLUTTER BONDING
- 259. SOUND DEADENER PAD-S
- 260. CLEAN & RETAPE ADHESIVE DOOR MOLDING
- 261. REPLACE DOOR EDGE GUARD MOLDING
- 262. REPAIR VAPOR BARRIER WEATHER SHIELD
- 263. REPLACE VAPOR BARRIER, (OEM)
- 264. REPLACE BELT MOLDING FASTENERS
- 265. TEST FIT DOOR BEFOR WELD-BONDING
- 266. REPAIR EDGE OF DOOR SHELL, (REMOVAL DISTORTION)
- 267. RE-BOND INTRUSION BEAM/BELT REINSTALL FLUTTER MATERIAL
- 268. DOOR SKIN BONDING KIT
- 269. ADJUST/RECALIBRATE POWER DOOR LOCK SYSTEM



## Repair Planning


### Reference Handbook




Mission Repair Specialists. If you have suggestions to update your suggestions to [info@scrs.com](mailto:info@scrs.com)

recognizes that there are many legitimate operations and the estimate development and final billing processes. Personnel in formulating the most accurate repair plan in or expense of a supplement. This document is processes performed in your repair facility, and serves the repair process. This document does not suggest, or item listed; and is only intended to be a reminder for

or hours or any additional information as that should be. All recipients of this document are herewith be construed as information or direction to take equals acting within their own judgment.







**BASF AUTOMOTIVE REFINISH COATINGS**

**Damage Documentation**

3	FRONT BUMPER							
4	R&I	R&I bumper assy				1.5		
5	FRONT LAMPS							
6	*	Repl	RCY RT Headlamp assy +25%	15926966	1	387.50	0.6	
7			Deduct for Overlap				-0.3	
8	FENDER							
9	**	Repl	A/M CAPA RT Fender	88890926	1	330.00	2.5	
10			Add for Clear Coat				0.9	
11			Add for Edging				0.5	
12	*	S03	Repl	RT Liner extension w/o sport pkg	15926323	1	59.98	Incl.
13	*	S03	Repl	RT Fender liner	15925401	1	71.98	Incl.
14			R&I	RT Lower molding				Incl.
15	*		R&I	RT Emblem GM MARK OF EXCELLENC				0.2

16	FRONT DOOR	12	Rpr	RT Fender				.2
17		13		Note: Clean fender with 3M P/N 38350 All Purpose Cleaner Degreaser to prepare for cavity wax				
18		14	Repl	Cavity wax	\$12.65			.3
19		15		Note: Repair requires 30% of 3M P/N 08852 to restore cavity wax to inside of fender				
20	*	16	Repl	Emblem adhesive tape	1.35			.2
21	#	17		Note: Replace adhesive tape on GM Emblem using 3M P/N 06376				
22		18		Wheel				
23		19	R&I	Rt front wheel				.2
24	*	20		Note: Repair access – fender replacement				

**10 - FENDER:**

- 51. R&I TIRE WHEEL
- 52. R&I FENDER LINER
- 53. R&I LOWER MOLDINGS, EMBLEMS AND FLARE
- 54. R&I LOWER MOLDINGS
- 55. R&I LOWER MOLDINGS
- 56. R&I LOWER MOLDINGS
- 57. R&I LOWER MOLDINGS
- 58. R&I LOWER MOLDINGS
- 59. R&I LOWER MOLDINGS
- 60. R&I LOWER MOLDINGS
- 61. R&I LOWER MOLDINGS

**3M Science. Applied to Life.™**

**Standard Operating Procedures**  
Sealing and Coating

**Corrosion Protection (Cavity Wax)**

- Pre-Cleaning**  
Pre-wash/clean vehicle prior to disassembly (power wash underneath area at repair).
- Shake Aerosol**  
Apply the aerosol can thoroughly—one minute of shaking is required to mix the components prior to use. Attach the desired accessory extension and actuator if needed to access the area inside the panel enclosure.
- Application with Standard Actuator**  
If applying to new panels prior to installation use the standard actuator. Spray up to three (3) coats to ensure full coverage and maximize protection.
- Mark Extension Wand**  
If using the 30" accessory wand, mark the extension about one inch from the end as a reference to reduce overspray.
- Insert Wand Into Panel Opening**  
Insert the wand to the farthest point. Begin spraying as you remove the wand until the reference mark comes into view. Repeat up to three (3) times to ensure complete coverage and maximize corrosion protection.
- Clean Accessory Nozzle**  
After application, invert the can and clear material from the accessory wand and nozzle by depressing the actuator.
- Remove Excess Cavity Wax**  
Re-assemble the associated parts and wipe off any excess using a VOC-compliant surface cleaner.

**Product List**

- 3M™ Car Wash Soap Concentrate, 1 gallon, PN 35377
- 3M™ All Purpose Cleaner and Degreaser Concentrate, 1 gallon, PN 38350
- 3M™ Cavity Wax Plus 30" aerosol, PN 08852
- 3M™ Cavity Wax Plus Actuator Wand Kit, PN 08851

**Think About Your Health**

- 3M™ E-A-R® Dual Sides™ Ear Plug, PN 75500
- 3M™ Respirator/Assembly/Disposal Vapor Filter Cartridge, PN 07852
- 3M™ Lens™ Protective Goggles, PN 05200

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For individual product instruction and safety information, please SOPs and videos visit 3MCollision.com.





**BASF AUTOMOTIVE REFINISH COATINGS**

**Damage Documentation**

8	Repl	Replace door skin	FL34-1620204-AE	1	\$148.65	4.5	3.2
9	Ref	Add for clear					1.2
10	Repl	Solid Rivet	W790376-S900	10			
11	Repl	Door skin adhesive	3M 08115	1	\$56.89	Incl	
12		Note: Door skin replacement requires 100% of 3M P/N 08115 tube to complete repair. Labor included in door skin					
13	Repl	Door intrusion beam adhesive	3M 04275	1	\$12.13	.3	
14		Note: Intrusion beam requires 30% of 3M P/N 04275 tube to complete repair					
15	Repl	Door seam sealer	3M 08323	1	\$45.51	Incl	
16		Note: Door requires 80% of 3M P/N 08323 to complete repair. Labor included in door skin					
17	Repl	Door cavity wax	3M 08852	1	\$17.85	.3	
18		Note: Door requires 25% of 3M P/N 08852 to complete repair					

**F-SERIES ALL CABS FRONT DOOR OUTER PANEL INSTALLATION -**

SE	
Part Number	
FL34-1620204-AE	Fr
SKFL34-1620204-AA	Inst
NOT IN	
Part Number	
FL34-1620205-AE	Fr
SKFL34-1620204-AA	Inst
Part Number	
W790376-S900	Solid
W702512-S900C	Blind
Rotunda 501-078-1	Hem
Rotunda 501-078-2	Hem
501-080	Hem
Motorcraft TA-1, 3M 8115 or Fusor 108B	Metal

- Scuff sand only. DO NOT GRIND, the inner structure bonding surfaces. Do not sand to bare substrate, leave original e-coat as intact as possible.
  - Trial fit the service replacement panel to the door shell assembly.
  - Temporarily secure the outer panel to the door assembly and install on the vehicle to verify proper skin alignment.
  - Use reference marks to assist.
  - Scuff the replacement skin bonding areas, then clean with adhesive cleaner.
  - Apply metal bonding adhesive to the following areas: service replacement hem flange, flutter beam-to-outer panel, and outer belt reinforcement-to-outer panel. (Refer to figure 1).
  - Using a 501-080 Hem Closing Tool or the hammer and dolly method, close the perimeter door hem and smooth any residual adhesive in the joints.
  - (Refer to Figure 2) to install ten (10) (W717188-S900) SPR rivets code PW, or (W790376-S900) solid rivet.
  - Prime and Paint the door following Ford approved paint company materials/guidelines.
  - Install the door to the vehicle, align, and reassemble all components.
  - Apply anti-corrosion treatments as outlined in workshop manual section 501-35
- NOTE: The location of SPR and adhesive shown below are based on the original production drawings and should only be used as a guideline. (Refer to Figure 1).

**SERVICE GUIDELINES:**

- Aluminum repairs should be performed aluminum repair should be quarantined
  - Replacement Self-Piercing Rivets (SPR) locations, where feasible. Hemlocks are
  - Remove the door trim panel from the a refer to Section 501-11.
  - Remove the outside door handle and r
  - Remove door trim including mouldings
  - Remove the door assembly and secur
  - Insert TOOL 501-078-1 (RH) or TOOL required for consistent tool operation).
- NOTE: The use of a heat gun may be rec
- Use a sharp knife to cut the adhesive t and intrusion beam.
  - Remove original door outer panel.

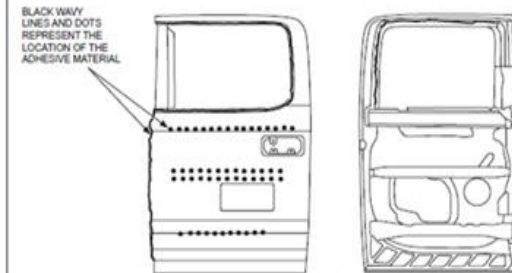


FIGURE 1



SKFL34-1620204-AA SHEET 2 OF 3

F-SERIES ALL CABS FRONT DOOR OUTER PANEL INSTALLATION - SERVICE KIT INSTRUCTIONS



CPR © 2014 FORD MOTOR COMPANY, DEARBORN, MICHIGAN 48121, 10-14

SKFL34-1620204-AA SHEET 1 OF 3

F-SERIES ALL CABS FRONT DOOR OUTER PANEL INSTALLATION - SERVICE KIT INSTRUCTIONS



**BASF AUTOMOTIVE REFINISH COATINGS**

**R&I Processes**

15 - CORESUPPORT:		
70. ACCESS/PRE-PULLING		
71. PROTECT ENGINE COMPARTMENT COMPONENTS		
72. REPAIR CUT WIRING		
73. ACQUIRE RADIO CODE		
74. RESET MEMORY FUNCTIONS		
75. MEMORY "SAVER" COLLISION TOOL		
76. REMOVE CAULKING & SEAM SEALER		
77. TEST FIT PARTS ATTACHED TO CORESUPPORT		
78. PULL BACK WIRE HARNESS		
79. REPAIR WIRE HARNESS FASTENERS		
80. CLOSE/SECURE OPEN TUBES AND LINES		
81. FEATHER AND FILL WELDS AT WELD LOCATIONS		
82. R&I WHEELS		
83. R&I ROCKER COVERS AND/OR MUD FLAPS		
84. R&I FENDERS (ADD FOR SPLASH SHIELDS & FASTENERS)		
85. R&I ENGINE UNDERCOVER SHIELD		
86. R&I WINDSHIELD WASHER RESERVOIR		
87. R&I AC DRIER		
88. R&I AIR INTAKE DUCTING, AND/OR REPAIR		
89. R&I RADIATOR OVERFLOW TANK, AND/OR REPAIR		
90. R&I SECOND BATTERY		
91. R&I BATTERY TRAY		

12	Repl	Core Support			4.6	1.6
13		Fenders				
14	R&I	RT Fender			1.2	
15		Note: Required to access core support mounting area				
16	R&I	LT Fender			1.2	
17		Note: Required to access core support mounting area				



### 135 - FRAME SET UP:

684. UNIBODY CLAMP SYSTEM

685. FULL FRAME CLAMP SYSTEM

686. NON-DRIVE VEHICLE (NO START)

687. DISABLE VEHICLE (DOES NOT ROLL)

688. LIFTED/LOWERED VEHICLE

689. TRAM VEHICLE TO DETERMINE IF MOVEMENT EXISTS

690. INSTALL MECHANICAL MEASURING SYSTEM

691. ELECTRONIC MEASUREMENT DOCUMENT

692. R&I ROCKER MLDGS- ACCESS TO CLAMP AREA

693. ACCESS PULLING TO FACILITATE TEAR DOWN

694. R&I INTERFERING WIRES, TUBING/LINES, EXHAUST

695. R&I SUSPENSION/STEERING, PARTIAL

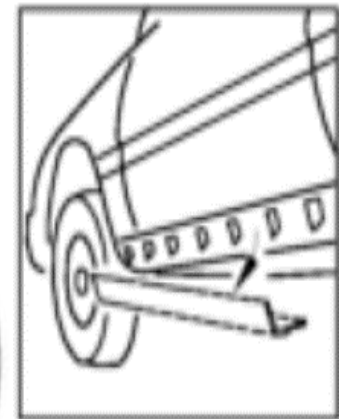
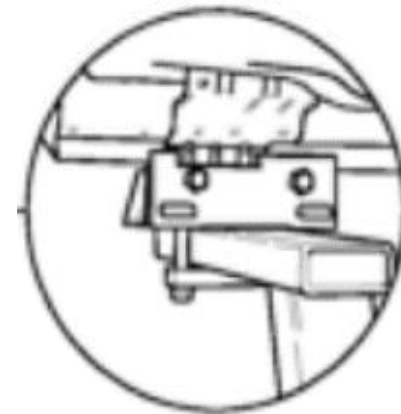
696. REPAIR CLAMP SCARING ON ROCKER FLANGE

697. REPAIR ANCHOR DAMAGE AT LOCKING POINTS

698. REPAIR PROTECTIVE COATING AT ROCKER

699. PAINT ROCKER FLANGE

18	R&I	LT Rocker panel molding				4
19		Note: Required for frame machine clamping				
20	R&I	RT Rocker panel molding				4
21		Note: Required for frame machine clamping				



Use line notes to define reasons

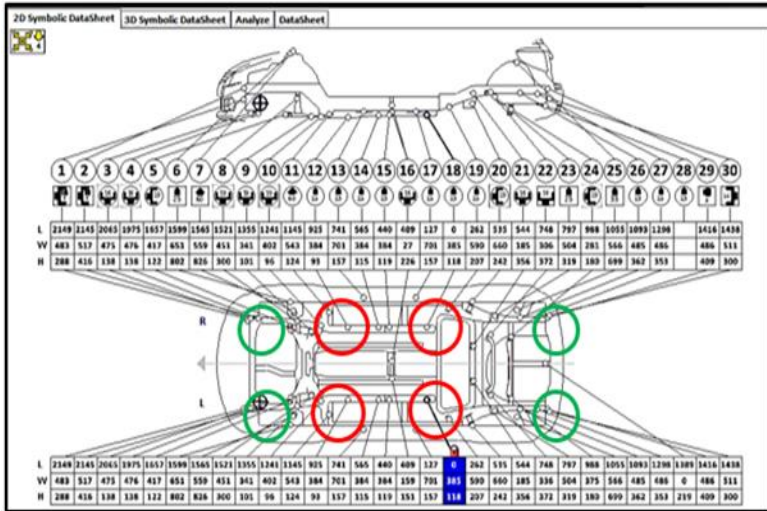


BASF AUTOMOTIVE REFINISH COATINGS

Frame Setup and Measure

100 E01 Alignment Set Up & Measure

2.5 Body



<b>135 - FRAME SET UP:</b>		
684. UNIBODY CLAMP SYSTEM		
685. FULL FRAME CLAMP SYSTEM		
686. NON-DRIVE VEHICLE (NO START)		
687. DISABLE VEHICLE (DOES NOT ROLL)		
688. LIFTED/LOWERED VEHICLE		
689. TRAM VEHICLE TO DETERMINE IF MOVEMENT EXISTS		
690. INSTALL MECHANICAL MEASURING SYSTEM		
691. ELECTRONIC MEASUREMENT DOCUMENT		
692. R&I ROCKER MLDGS- ACCESS TO CLAMP AREA		
693. ACCESS PULLING TO FACILITATE TEAR DOWN		
694. R&I INTERFERING WIRES, TUBING/LINES, EXHAUST		
695. R&I SUSPENSION/STEERING, PARTIAL		
696. REPAIR CLAMP SCARING ON ROCKER FLANGE		
697. REPAIR ANCHOR DAMAGE AT LOCKING POINTS		
698. REPAIR PROTECTIVE COATING AT ROCKER		
699. PAINT ROCKER FLANGE		

29	Rpr	Frame Machine Setup		.8
		Set vehicle up on Car-O-Liner Bench rack		
30	Rpr	Set-up EVO anchors		1.2
		Note: Vehicle requires EVO 1 clamps and adapters		
31	Rpr	Measure vehicle structure		1.3
		Note: Initial measurement of torque box and outer four corners to determine damage to structure using Car-O-Liner Vision2		

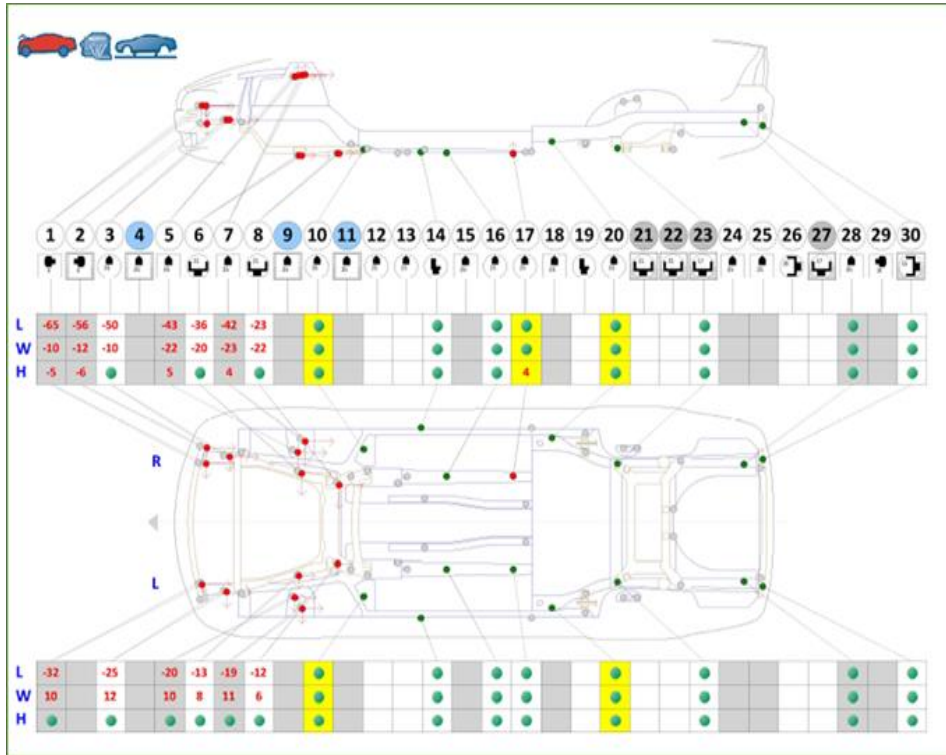
**FRAME MACHINE SET-UP**

Due to the different types of frame machines used in the collision repair industry, labor times for frame machine set-up are not developed by MOTOR, nor otherwise included in any operation. Each frame machine manufacturer may have its own unique configurations and setup processes. For example, some machines are of a "drive-on" type while others are of a "dedicated bench" type, and there are procedural differences between the two set-up methods. Additionally, there may be variables unique to the actual vehicle that may increase or decrease frame machine set-up time. MOTOR suggests using an on-the-spot evaluation to determine an appropriate frame machine set-up time.



BASF AUTOMOTIVE REFINISH COATINGS

Structure Pull/Frame Labor



29	Align	RT lower rail		1.2	S
		Note: Correct width -10mm			
30	Align	RT lower rail		.8	S
		Note: Correct height -5mm			
31	Align	Rt lower rail		1.6	S
		Note: Correct length -65mm			
32	Align	Lt lower rail		1.0	S
		Note: Correct length -32mm			
33	Align	Lt lower rail		.8	S
		Note: Correct width 10mm			

145 - FRONT END DAMAGE:		
799. PRE-PULL TO FACILITATE TEAR DOWN		
800. PULL & REPOSITION CORESUPPORT		
801. REPAIR FRONT BUMPER WELDED MOUNTING BRACKET (EACH)		
802. CORRECT UPPER RAIL/APRON SWAY, LEFT		
803. CORRECT UPPER RAIL/APRON SWAY, RIGHT		
804. CORRECT UPPER RAIL/APRON HEIGHT, LEFT		
805. CORRECT UPPER RAIL/APRON HEIGHT, RIGHT		

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Identify proper labor category



## STRUCTURAL COMPONENT IDENTIFICATION

Structural component identification information as presented in I-CAR Enhanced Delivery programs.

Welded structural parts can be made from different types of metal. Identification is not based on metal type. Replacement requires specific measuring equipment and vehicle dimensions must be correct. If improperly repaired, road performance and/or crashworthiness of the vehicle may be affected. Airbag deployment may also be affected.

Welded structural parts on a unibody vehicle typically include:

- APRONS/STRUT TOWER
- CENTER PILLAR
- CORNER PILLAR
- FRONT RAIL
- HINGE PILLAR
- LOCK PILLAR
- RADIATOR CORE SUPPORT
- REAR RAIL
- REAR STRUT TOWER
- ROCKER PANEL
- SUSPENSION CROSSMEMBER
- UPPER RAIL

Welded structural parts of the body on a body-over-frame vehicle typically include:

- APRON ASSEMBLY
- CAB CORNER (PICK-UP)
- CAB BACK PANEL (PICK-UP)
- CENTER PILLARS
- CORNER PILLARS
- FRONT RAIL
- HINGE PILLARS
- LOCK PILLARS
- RADIATOR CORE SUPPORT
- REAR RAIL
- ROCKER PANELS
- UPPER RAIL





**BASF AUTOMOTIVE REFINISH COATINGS**

**Structure Alignment**

27	E01		<b>QUARTER PANEL</b>						
28	E01	Remove/Replace	LT Quarter panel	1	1,055.57T	OEM	18.5	Body	3.5
40	E01	Repair	LT Inner panel (HSS)				4.0	Body	1.5
46	E01		<b>REAR BODY &amp; FLOOR</b>						
47	E01	Remove/Replace	Rear body panel (HSS)	1	153.53T	OEM	3.6	Body	1.1
99	E01		<b>ROUGH PULL</b>				4.0	Body	



29	Align	LT Quarter panel					1.5	B
30		Note: Restore structure alignment prior to removing quarter panel						
41	Align	LT Quarter inner structure					1.0	S
42		Note: Align inner structure at wheelhouse						
48	Align	Rear body panel					2.0	B
49		Note: Remove crush from rear structure prior to removing panel						



**BASF AUTOMOTIVE REFINISH COATINGS**

**Associated Labor**



15	Rpr	RT Tail light pocket			.4	.3
		Note: Repair damage to mating flange and outer edge distortion				
16	Rpr	RT Lower quarter panel			.6	.4
		Note: Repair damage to mating flange and rolled edge				
17	Rpr	RT Trough			.3	.2
		Note: Trough edge rolled under				
18	Rpr	Outer wheelhouse flange			.5	.3
		Note: Repair damage to mating flange. Repl e-coat prior to installing new quarter panel.				

8	<b>QUARTER PANEL</b>						
9	Repl	RT Quarter panel	8V5809838	1	920.00	19.5	3.0
10		Add for Clear Coat					1.2
11	R&I	RT Splash shield				0.3	
12	R&I	RT Lower qtr trim w/rear seat air bag black				Incl.	
13	*	Subl	RT Qtr glass Audi w/black molding +25%	1	<u>93.75</u> X		
14	R&I	RT Upper qtr trim black				Incl.	





## Use welder's manual to determine process

- Identify steps
- Establish time required

## Verify with OEM on weld requirements

- Determine number of test welds
- Determine type of welds required
- Establish time required

### 4.6 Setting/Changing the weld program

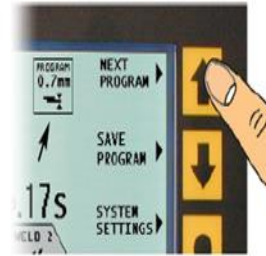


Figure 4.7

The i4 features 6 different strength weld power modes. It defaults to 0.7mm program. To change weld program press "Next Program" (fig. 4.7).

The program box indicates the weld power (thickness). For example, when welding two HSS Galv. metals that are 1.2mm thick, you should use the 1.2mm program.

If more power is desired, press "Next Program" to reach the next level.

**NOTE:** The Factory Password (1234) must be entered in order to modify weld programs. To enter the Factory Password press the Help button while booting at the third screen to access the System Settings menu. The text located near the Down Arrow button reads WELD SETTING CONTROL MODE: AUTO/MANUAL. Auto is selected by default. Press the Down Arrow button to enter Manual mode. In the PASSWORD REQUIRED pop up window enter 1234 using the arrow keys. Exit by pressing the Open Circle button. The welder is in manual mode and weld programs can now be modified.

### WELDER SET-UP AND WELDING PREPARATION

Due to the different types of welding equipment used in the collision repair industry, labor times for welded replaced parts do not include equipment manufacturer procedural steps for welder setup and/or welding tests and preparation. Each welding machine manufacturer may have its own unique configurations and setup processes. Additionally, there may be vehicle-specific variables that may increase or decrease the amount of welding machine set-up time and pre-weld preparation. MOTOR suggests using an on-the-spot evaluation to determine an appropriate set-up and preparation time.



- Align with repair area
  - Rear Body
    - Panel adhesive
    - Seam sealer
    - Weld primer
  - Quarter Panel
    - Seam sealer
    - Weld primer
    - Cavity Wax
  - Floor
    - Seam sealer
    - Weld primer
  - Doors
    - Panel adhesive
    - Seam Sealer
    - Intrusion beam foam
    - Cavity wax
  - Rockers
    - Cavity wax
    - Weld primer

3M Automotive Aftermarket Division

## Corrosion Protection at a Glance

Between the ALL Welded Flanges

**If MIG Welding:**

- Weld Thru II (If OEM Recommended)

**If Resistance Spot Welding, One of the following:**

- Adhesive
- One Part Urethane or MSP Seam Sealer
- Weld Thru II (If OEM Recommended)
- OEM E-Coat

**Acceptable Substrates:**

- All 2 Part Seam Sealers: 2K Epoxy or 2K Urethane Primer (Inc. primer fillers and sealers), Scuffed E-Coat, Scuffed OEM paint.
- Bare Metal Seam Sealer or 1 Part Urethane/MSP Seam Sealers: All of the above and clean Bare Metal
- Do Not Seam Seal Over: Etch or 1K Primer, Body Filler, Weld Through Primer, burned paint, soot, rust, or unsound surfaces..

**Typical Joint Configuration**

1. Adhesive/Sealer or weld Primer
2. Seam Sealer
3. Cavity Wax

The diagram illustrates a cross-section of a joint between two panels. A seam sealer is applied to the top surface of the joint. Below it, a cavity wax coating is applied to the inner surface of the joint. The panels are labeled as 'Steel or Aluminum Panel'.

**IMPORTANT NOTE:** There are many factors that can affect an individual repair, so the technician and repair facility need to evaluate each specific application and repair process and determine what's appropriate. 3M recommends referring to relevant vehicle repair and OEM guidelines prior to starting all repairs.

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BASF AUTOMOTIVE REFINISH COATINGS

Corrosion Protection Documentation

26	<b>QUARTER PANEL</b>						
27	*	Rpr LT Quarter panel	0	0.00	<u>10.0</u>		2.2
28		Add for Clear Coat	0	0.00	0.0		0.9

50	**	Subl A/M Car Cover	1	5.00 T	0.0		0.0
51	**	Subl A/M Restore Corrosion Protection	1	10.00 T	0.0		0.0
52	**	Subl A/M Flex Additive	1	5.00 T	0.0		0.0
53	**	Subl A/M Hazardous waste removal	1	3.00 X	0.0		0.0

29	Repl	Restore cavity wax	\$17.85		.3		
		Note: Quarter panel repair required 25% of 3M P/N 08852 to complete repair					
30	Repl	Restore undercoating	\$9.10		.2		
		Note: Quarter panel repair required 50% of 3M P/N 08744 to complete repair					

Eliminate "Restore Corrosion Protection" line at the bottom of an estimate

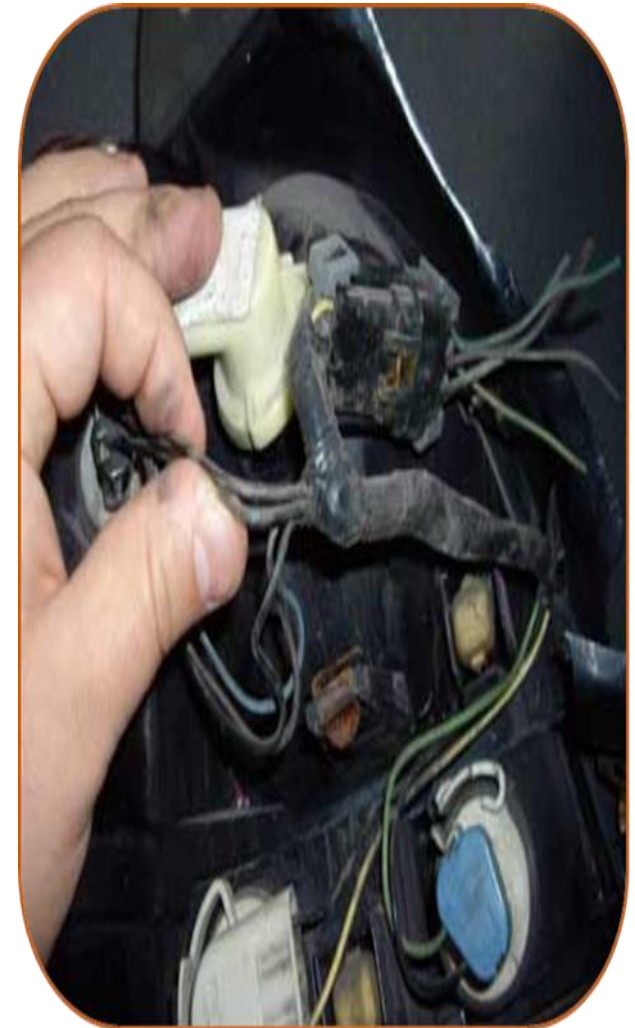
- Add the corrosion protection as a part where protection is applied
- Use line note to justify requirement.
- Add labor for application time

On this particular RO you gained \$16.95 in part sales and \$21.00 in labor.



- Identify number of wires broken
  - Indicate number of wires in line note
  - Add a parts line for connectors – tape – solder

23	Rpr	Cooling Fan Harness				.9
		Note: Cooling fan harness has 3 wires, repair calculated at .3 per wire				
24	Repl	Wire connectors	3	\$ .27	\$ .81	incl
		Note: Repair requires 3 heat shrink wire connectors P/N 92005				
25	Repl	Wire covering	2	\$ .14	\$ .28	.2
		Note: Repair requires 2ft of 3M P/N 88 ¾ inch electrical tape @ \$.14 per ft				





BASF AUTOMOTIVE REFINISH COATINGS

Mechanical Damage Documentation



## 35 - SUSPENSION/MECHANICAL:

179. BLEED BRAKES AND ADD FLUID (PINT)

180. BLEED BRAKES (ADC)

181. RESE

182. SHIF

183. MEM

184. SHIF

185. ADJU

186. DRAI

187. CHEC

### LABOR TIME DOES NOT INCLUDE:

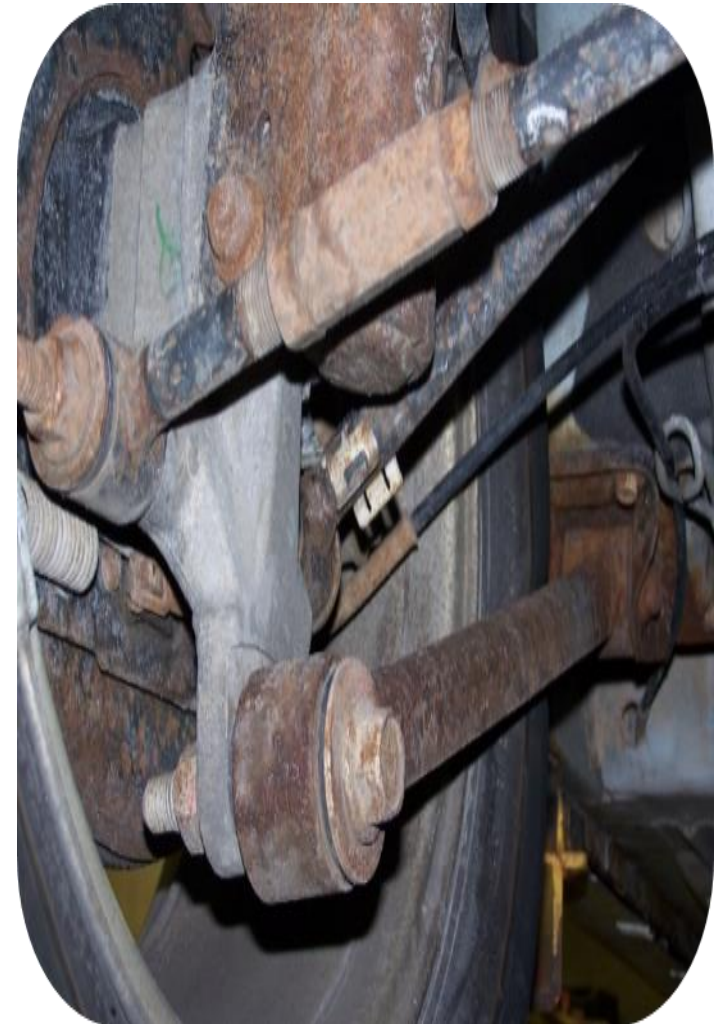
**SPECIAL NOTATION:** The items listed below apply to all labor procedures.

- A/C system, Evacuate & Recharge
- Alignment, check or straightening related parts
- Alignment check of front or rear suspension/steering
- Aftermarket & OEM accessories
- Anti-corrosion material restoration/application
- Battery D&R/recharge
- Brakes, bleed and adjust
- Broken glass removal or clean-up
- Caulk (non-OEM), undercoat or sound insulate on paint inner areas
- Clean up or detailing of vehicle prior to delivery
- Clean or recondition parts or assemblies
- Component, R&R or Transfer (bolt-on, riveted or welded)
- 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 replacement parts
- Information labels, Install
- Material costs
- Pinch weld clamp damage repair
- Refinishing
- Removal of emblems, nameplates, trim, etc. from donor part or assembly
- Removal of outer panel from salvaged replacement assembly
- Reset electronic memory functions after battery disconnect
- Road test vehicle
- Rusted, frozen, broken or corrosion damaged components
- Salvaged replacement assembly preparation, trim, fit and/or modify
- 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 for water leaks
- Test panel/Spray caulk
- Undercoating, tar or grease removal
- Waste disposal fees (all types)
- Weld through primer
- Welded seam surface finishing finer than 150 grit sandpaper
- Welder set-up or preparation
- Wheel or hub cap locks R&I



- Itemize all parts requiring replacement
  - Create line notes to describe damage
  - Itemize associated repairs

19	Repl	LT Lower control arm	1		\$213.77	1.1	M
20		Note: Lower control arm bent at forward mount – rubbing tire					
21	Rpr	Lower control arm bolts				.4	
22		Note: Lower control arm nuts are rusted to bolts					
23	Repl	Lower control arm bolts	2	\$2.35	\$4.70	Incl	
24	Repl	Lower control arm nuts	2	\$.98	\$1.96	Incl	





BASF AUTOMOTIVE REFINISH COATINGS

Tires/Wheels

1	E01		<b>WHEELS</b>					
2	E01	Remove/Replace	LT/Front Wheel, alloy 5 solid spoke	1	552.50T	RECOND	0.0	Body
3	E01	Remove/Replace	Valve stem road wheel	1	28.22T	OEM	0.0	Body
4	E01	Sublet	LT/Rear Wheel, alloy 5 solid spoke	1	125.00	Sublet		
5	E01		Mount & Balance	2	60.00T	Other		
6	E01		<b>TIRES</b>					
7	E01		Four Wheel Alignment	1	169.95T	Other		
8	E01	Remove/Replace	PIR 275/45R20 XL Scorpion Verde AS BW 110H	2	469.98T	Other	0.0	Body

1	Repl	LT/Front Wheel, Alloy 5 solid spoke	\$552.50	.2	M
		Note: Reconditioned wheel source			
2	Repl	LT/Front valve stem road wheel	\$28.22	.1	M
3	Subl	LT/Front Mount and balance	\$30.00		
		Note: Sublet vendor			
18	Rpr	Recalibrate TPMS Sensor		.2	M

8	Repl	LT/Front PIR 275/45R20 XL Scorpion	\$234.99	incl	M
		Note: Original tire had 8/32, labor included in wheel replacement			
9	Subl	Tire disposal fee	3.50		
10		Tire Tax	\$11.75		
		Note: Sublet vendor			

- Using mechanical labor for mechanical operations increases your effective labor rate.
- It is a requirement to recalibrate TPMS

- Tires should be listed separately
- Clearly identify tire replaced
- Make a habit of recording tread depth  
Important on all-wheel drive vehicles



BASF AUTOMOTIVE REFINISH COATINGS

Restraint Systems

The screenshot shows the top of the I-CAR website. It includes the I-CAR logo, the text 'REPAIRABILITY TECHNICAL SUPPORT', and navigation links for 'Subscribe', 'About Us', 'Contact Us', 'Hi, John!', 'LOGOUT', and 'My I-CAR LOGIN'. There is also a search bar and a 'RTS Access!' badge.

## Validate Restraint System Requirements

This screenshot shows the search results page for 'OEM Restraints System Part Replacement Search'. It includes a sidebar with navigation options like 'Quick Search By Vehicle', 'OEM Information', 'Collision Repair News', 'OEM Calibration Requirements Search', 'OEM Partial Part Replacement Search', and 'OEM Restraints System Part Replacement Search'. The main content area has a heading and introductory text about mandatory replacement and inspection criteria.



This screenshot shows the detailed search results for a 2015 Chevrolet Camaro. It includes a 'Print' button, a 'DISABLE PROCEDURE AND TIME' section with a 4-step list, a 'REV: 08/2014' date, and three sections of 'PARTS THAT MUST BE REPLACED FOLLOWING A DEPLOYMENT' with bulleted lists of components to be replaced after frontal, side, and driver/passenger seat belt retractor or anchor pretensioner deployment.

- Use websites to verify process

- OEM

- [I-CAR](#)

- AllData

- OEMstop





## BASF AUTOMOTIVE REFINISH COATINGS

## Restraint Systems

Home / OEM Restraints System Part Replacement Search / 2015 Chevrolet Camaro

### OEM Restraints System Part Replacement Search

#### 2015 Chevrolet Camaro

Print

#### DISABLE PROCEDURE AND TIME (Always Check Service Manual)

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery.
4. Wait 2 minutes before working on the system.

REV: 08/2014

#### PARTS THAT MUST BE REPLACED FOLLOWING A DEPLOYMENT

After a collision with frontal air bag deployment, replace the following components:

- Driver steering wheel air bag [AIRBAG,STEERING WHEEL]
- Passenger instrument panel air bag, if deployed [AIRBAG,INSTRUMENT PNL]
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]
- Front and/or side impact sensors [AIRBAG SENSOR,FRONT; AIRBAG SENSOR,QTR PANEL]
- Driver/Passenger seat side air bag, if deployed [AIRBAG,FRONT SEAT]
- Seat back cover on if side seat air bag is deployed
- Driver/Passenger seat belt anchor and/or retractor pretensioners
- Replace any seat belt system that was in use during the collision serious enough to deploy any automatic restraint device such as air bags and seat belt pretensioners

After a collision involving side air bag deployment, replace the following components:

- Left/right side impact sensors on the side of the impact [AIRBAG SENSOR,QTR PANEL]
- Left/right roof rail air bag on the side of the impact. [AIRBAG, ROOF]
- Inflatable restraint side seat impact module, on the side of the impact [AIRBAG,FRONT SEAT]
- Driver or passenger seat back cushion cover replacement
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]
- Inflatable restraint seat belt anchor and/or retractor pretensioner
- Replace any seat belt system that was in use during the collision serious enough to deploy a bags and seat belt pretensioners

After a collision involving driver/passenger Seat Belt Retractor or Anchor Pretensioner deployment:

- Driver and Passenger Inflatable restraint seat belt anchor pretensioner and/or retractor pretensioner
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]

14		Electrical						
15	Rpr	Battery				.4		
16		Note: Disconnect negative battery cable and wait two minutes before working on restraint system.						

#### DISABLE PROCEDURE AND TIME (Always Check Service Manual)

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery.
4. Wait 2 minutes before working on the system.



Home / OEM Restraints System Part Replacement Search / 2015 Chevrolet Camaro

### OEM Restraints System Part Replacement Search

#### 2015 Chevrolet Camaro

Print

##### DISABLE PROCEDURE AND TIME (Always Check Service Manual)

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery.
4. Wait 2 minutes before working on the system.

REV: 08/2014

##### PARTS THAT MUST BE REPLACED FOLLOWING A DEPLOYMENT

After a collision with frontal air bag deployment, replace the following components:

- Driver steering wheel air bag [AIRBAG,STEERING WHEEL]
- Passenger instrument panel air bag, if deployed [AIRBAG,INSTRUMENT PNL]
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]
- Front and/or side impact sensors [AIRBAG SENSOR,FRONT; AIRBAG SENSOR,QTR PANEL]
- Driver/Passenger seat side air bag, if deployed [AIRBAG,FRONT SEAT]
- Seat back cover on if side seat air bag is deployed
- Driver/Passenger seat belt anchor and/or retractor pretensioners
- Replace any seat belt system that was in use during the collision serious enough to deploy any automatic restraint device such as air bags and seat belt pretensioners

After a collision involving side air bag deployment, replace the following components:

- Left/right side impact sensors on the side of the impact [AIRBAG SENSOR,QTR PANEL]
- Left/right roof rail air bag on the side of the impact. [AIRBAG, ROOF]
- Inflatable restraint side seat impact module, on the side of the impact [AIRBAG, FRONT SEAT]
- Driver or passenger seat back cushion cover replacement
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]
- Inflatable restraint seat belt anchor and/or retractor pretensioner
- Replace any seat belt system that was in use during the collision serious enough to deploy any automatic restraint device such as air bags and seat belt pretensioners

After a collision involving driver/passenger Seat Belt Retractor or Anchor Pretensioner deployment, replace the following components:

- Driver and Passenger Inflatable restraint seat belt anchor pretensioner and/or retractor pretensioner
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]

#### PARTS THAT MUST BE REPLACED FOLLOWING A DEPLOYMENT

After a collision with frontal air bag deployment, replace the following components:

- Driver steering wheel air bag [AIRBAG,STEERING WHEEL]
- Passenger instrument panel air bag, if deployed [AIRBAG,INSTRUMENT PNL]
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear [MODULE,AIRBAG CONTROL]

• Front and/or side impact sensors [AIRBAG SENSOR,FRONT; AIRBAG SENSOR,QTR PANEL]

• Driver/Passenger seat side air bag, if deployed [AIRBAG,FRONT SEAT]

• Seat back cover on if side seat air bag is deployed

• Driver/Passenger seat belt anchor and/or retractor pretensioners

• Replace any seat belt system that was in use during the collision serious enough to deploy any automatic restraint device such as air bags and seat belt pretensioners

Scan Requirement



## BASF AUTOMOTIVE REFINISH COATINGS

## Restraint Systems

• Replace any seat belt system that was in use during the collision serious enough to deploy any automatic restraint device such as air bags and seat belt pretensioners. This not only includes seat belt systems in use by people of adult size, but seat belt systems used to secure child restraints, infant carriers and booster seats, including LATCH system and top tether anchorages.

Do NOT replace single seat belt system components in vehicles that have been in a collision as described above. Always replace the entire seat belt system with the buckle, guide and retractor assembly, which includes the latch and webbing material.

### PARTS THAT MUST BE INSPECTED AND REPLACED IF DAMAGED

After any collision, inspect the following components as indicated. If you detect any damage, replace the component. If you detect any damage to the mounting points or mounting hardware, repair the component or replace the hardware as needed:

- The steering column--Perform the steering column accident damage checking procedures. Refer to Steering Column Accident Damage Inspection .
- The instrument panel knee bolsters and mounting points--Inspect the knee bolsters for bending, twisting, buckling, or any other type of damage.
- The instrument panel brackets, braces, etc.--Inspect for bending, twisting, buckling, or any other type of damage.
- The seat belts--Perform the seat belt operational and functional checks. Refer to Operational and Functional Checks .
- The instrument panel cross car beam--Inspect for bending, twisting, buckling, or any other

### PARTS THAT MUST BE INSPECTED AND REPLACED IF DAMAGED

After any collision, inspect the following components as indicated. If you detect any damage, replace the component. If you detect any damage to the mounting points or mounting hardware, repair the component or replace the hardware as needed:

- The steering column--Perform the steering column accident damage checking procedures. Refer to Steering Column Accident Damage Inspection .
- The instrument panel knee bolsters and mounting points--Inspect the knee bolsters for bending, twisting, buckling, or any other type of damage.
- The instrument panel brackets, braces, etc.--Inspect for bending, twisting, buckling, or any other type of damage.
- The seat belts--Perform the seat belt operational and functional checks. Refer to Operational and Functional Checks .
- The instrument panel cross car beam--Inspect for bending, twisting, buckling, or any other type of damage.
- The instrument panel mounting points and brackets--Inspect for bending, twisting, buckling, or any other type of damage.
- The seats and seat mounting points--Inspect for bending, twisting, buckling, or any other type of damage.
- The roof and headliner mounting points
- The brake pedal - Inspect the brake pedal for bending, twisting, buckling or any type of damage

• Impacted seat cushion side covers and switches

14		Instrument Panel					
15	Rpr	Steering column				.8	
16		Note: Perform accident damage checking procedures					
17	Rpr	Knee bolster brackets				.2	
18		Note: Inspect for bending, twisting, buckling or other damage					
19	Rpr	Instrument panel cross car beam				.3	
		Note: Inspect for bending, twisting, buckling or other damage					
21	Rpr	Instrument panel brackets				.2	
22		Note: Inspect for bending, twisting, buckling or other damage					



## BASF AUTOMOTIVE REFINISH COATINGS

## Restraint Systems

23		Restraint Systems				
24	Rpr	Inflatable restraint system diagnostic module			.2	
25		Note: Inspect mounting points and hardware for damage				
26	Rpr	Seat belt anchor pretensioners			.2	
27		Note: Inspect mounting points and hardware for damage				
28	Rpr	Seat belt retractor pretensioners			.3	
		Note: Inspect mounting points and hardware for damage				
29	Rpr	Instrument panel brackets			.2	
30		Note: Inspect for bending, twisting, buckling or other damage				

After a collision involving driver/passenger Seat Belt Retractor or Anchor Pretensioner deployment, Perform additional inspections for any damage and repair or replace each component as needed on the following components:

- Mounting points or mounting hardware for the Inflatable Restraint Sensing and Diagnostic Module
- Mounting points or mounting hardware for the Seat Belt Anchor Pretensioners
- Mounting points or mounting hardware for the Seat Belt Retractor Pretensioners

Impact Sensor Replacement Guidelines:

- The impact sensor replacement policy requires replacing sensors in the area of the accident damage. The area of accident damage is defined as the portion of the vehicle which is crushed, bent, or damaged due to a collision.

After a collision involving driver/passenger Seat Belt Retractor or Anchor Pretensioner deployment, Perform additional inspections for any damage and repair or replace each component as needed on the following components:

- Mounting points or mounting hardware for the Inflatable Restraint Sensing and Diagnostic Module
- Mounting points or mounting hardware for the Seat Belt Anchor Pretensioners
- Mounting points or mounting hardware for the Seat Belt Retractor Pretensioners

- Do NOT replace single seat belt system components in vehicles that have been in a collision as described above. Always replace the entire seat belt system with the buckle, guide and retractor assembly, which includes the latch and webbing material.



# Important notes

### Impact Sensor Replacement Guidelines:

- The impact sensor replacement policy requires replacing sensors in the area of the accident damage. The area of accident damage is defined as the portion of the vehicle which is crushed, bent, or damaged due to a collision.

### Impact Sensor Replacement Guidelines:

- The impact sensor replacement policy requires replacing sensors in the area of the accident damage. The area of accident damage is defined as the portion of the vehicle which is crushed, bent, or damaged due to a collision.
- Replace any seat belt system that has torn, worn, or damaged components. This not only includes adult seat belt systems, but built-in child restraints and LATCH system components, if any.
- Replace any seat belt system if you observe the words "REPLACE" or "CAUTION", or if a yellow tag is visible. Do not replace a seat belt if only the child seat caution label is visible.
- Replace any seat belt system if you are doubtful about its condition. This not only includes adult seat belt systems, but built-in child restraints, LATCH system components, and any restraint system used to secure infant carriers, child restraints, and booster seats.
- Do NOT replace single seat belt system components in vehicles that have been in a collision as described above. Always replace the entire seat belt system with the buckle, guide and retractor assembly, which includes the latch and webbing material.

components. This not only includes adult seat belt systems, but built-in

"REPLACE" or "CAUTION", or if a yellow tag is visible. Do not replace a seat belt

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ers, child restraints, and booster seats.

that have been in a collision as described above. Always replace the

nbly, which includes the latch and webbing material.



## BASF AUTOMOTIVE REFINISH COATINGS

## Fluid Requirements

### 20 - RADIATOR, AC AND FLUIDS:

- 114. REPAIR RADIATOR
- 115. REPAIR FAN SHROUD(S)
- 116. REPAIR AC CONDENSER/LINES
- 117. FLUSH LKQ CONDENSER/LINES
- 118. FLUSH LKQ RADIATOR/LINES
- 119. REPAIR AC LINES & TUBES
- 120. REPLACE RADIATOR "O"-RINGS \*\*TRANS\*\*
- 121. REPAIR TRANS COOLER/LINES
- 122. REPAIR WIRING/FASTENERS ATTACHED TO FAN SHROUDS
- 123. PRESSURE TEST COOLING SYSTEM
- 124. BLEED COOLING SYSTEM
- 125. TEST AC SYSTEM/CONTIMANITES
- 126. RECOVER AC FREON
- 127. EVACUATE & RECHARGE AC SYSTEM
- 128. TEST KIT REFRIGERANT RECOVERY
- 129. COOLANT, OEM RECOMMENDED PER GALLON
- 130. VACUUM FILL RADIATOR
- 131. TRANSMISSION FLUID (PINT)
- 132. STEERING FLUID (PINT)
- 133. WINDSHIELD WASHER FLUID
- 134. R-134 FREON AND OIL (TWO POUNDS)
- 135. O-RING SEAL KIT FOR AC LINES

### Cooling system

Capacity (Reference)	<ul style="list-style-type: none"> <li>▶ 2.5 L 4-cylinder (2AR-FE) engine 7.7 qt. (7.3 L, 6.4 Imp. qt.)</li> <li>▶ 3.5 L V6 (2GR-FE) engine 9.6 qt. (9.1 L, 8.0 Imp. qt.)</li> </ul>
Coolant type	<p>Use either of the following:</p> <ul style="list-style-type: none"> <li>• "Toyota Super Long Life Coolant"</li> <li>• A similar high-quality ethylene glycol-based non-silicate, non-amine, non-nitrite, and non-borate coolant with long-life hybrid organic acid technology</li> </ul> <p>Do not use plain water alone.</p>



VS





BASF AUTOMOTIVE REFINISH COATINGS

Fluid Requirements

8	Rpr	Recover AC Freon				.6	
9		Note: System requires 1.8 lbs. of R134A Freon. Recovered 1.1 lbs.					
10	Rpr	Recharge AC System				.6	
11	Repl	Freon – 134A	R134-A		\$11.19	Incl	
12		Note: Recharge requires an additional .7 lbs. to fully restore system after recovery.					
13	Repl	Compressor oil	15-118	1	\$9.97	Incl	
14		Note: Repair procedure indicates ½ pint of compressor oil is required to restore system.					

20 - RADIATOR, AC AND FLUIDS:
114. REPAIR RADIATOR
115. REPAIR FAN SHROUD(S)
116. REPAIR AC CONDENSER/LINES
117. FLUSH LKQ CONDENSER/LINES
118. FLUSH LKQ RADIATOR/LINES
119. REPAIR AC LINES & TUBES
120. REPLACE RADIATOR "O"-RINGS **TRANS**
121. REPAIR TRANS COOLER/LINES
122. REPAIR WIRING/FASTENERS ATTACHED TO FAN SHROUDS
123. PRESSURE TEST COOLING SYSTEM
124. BLEED COOLING SYSTEM
125. TEST AC SYSTEM/CONTIMANITES
126. RECOVER AC FREON
127. EVACUATE & RECHARGE AC SYSTEM
128. TEST KIT REFRIGERANT RECOVERY
129. COOLANT, OEM RECOMMENDED PER GALLON
130. VACUUM FILL RADIATOR
131. TRANSMISSION FLUID (PINT)
132. STEERING FLUID (PINT)
133. WINDSHIELD WASHER FLUID
134. R-134 FREON AND OIL (TWO POUNDS)
135. O-RING SEAL KIT FOR AC LINES



### Introduction

General Motors continuously pursues quality improvement. Therefore GM has established automotive refinishing standards for itself as well as its Marketing Division Dealers and Retailers. GM was the first domestic car company to set a specification for aftermarket paint finishes.

GM has established standards for paint refinishing. Each Division requires the Dealer to use only materials and methods that meet GM Standard GMW15406 when repairing, replacing, or refinishing vehicles. Where it is determined that the Dealer is using paint systems or materials which do not meet GMW15406 standards, appropriate counsel and/or corrective action may be taken.

### The Bottom Line

Dealer(s) or Retailer(s) in North America, must ensure that all finish repairs, including sublets, meet GM Specification GMW15406. Use of materials (and associated methods) that do not meet this GM standard may result in a review of claim(s) leading to chargeback(s).

As warranty periods increase, customer expectations continue to rise. Many Dealers/Retailers understand customer expectations. As a result, they have chosen a

single, complete system approach and only use the systems that meet the highest standards of quality and durability.

All the paint manufacturers that meet the GMW15406 Specification have spent thousands of man hours in research and development to ensure the approved system gives the appearance, performance, and durability comparable to the OEM finish. The products in the systems listed in this book are the very best products to use. They are guaranteed to produce the consistent, quality results that GM customers expect. This makes it easier for you, as the Dealer/Retailer, to confidently choose a system that will maximize your customers' satisfaction.

Each year, all new paint systems will be tested and evaluated. New or improved products will also be tested. The paint systems that pass this annual testing process will be published in this booklet, updated annually.

The National Rule was implemented in January 1999. You are required to use only VOC systems listed in this book for business in the United States. Some non-VOC systems that meet GMW15406 Specifications are still approved for Canada. For other countries, check with our paint supplier to see if a listed non-VOC system is one of those.





BASF AUTOMOTIVE REFINISH COATINGS

Refinish Operations

### Clearcoat Blending:

BASF recommends applying the specified amount of clear to the entire panel when doing Basecoat/Clearcoat repairs. This will make the repair eligible for the Glasurit or R-M lifetime warranty.

Because there are situations when clearcoating an entire panel is not possible, when a roof and a quarter panel have no break-off point for example, BASF has developed processes and products for blending clearcoats. These processes and products can be found in the Glasurit and R-M technical manuals.

Blending the clearcoat requires that the thickness of clear be reduced in the blend area. This can result in the clearcoat blend edge becoming visible after a period of exposure to sunlight and weather. The blend edge can also become visible if it is polished too aggressively.

For these reasons, BASF will not warrant the blended edges of clearcoats. Blending procedures recommended by BASF are intended as a cost saving measure in those instances where an economical repair is required.



### Collision Position Statement

February 15, 2018

#### CLEARCOAT BLENDING PROCEDURE NOT APPROVED

DEARBORN, Mich. – Ford Motor Company does not approve the procedure of clearcoat blending or using clearcoat blending in any warranty or collision repair. Furthermore, Ford never allows for partial clearcoat blending on warranty paint repairs and does not approve clearcoat blending on customer-pay or insurance-pay repairs.

Paint companies and vehicle manufacturers agree that a repair using this material and procedure is not robust, and that over time, the edge will begin to lift and discolor, making the edge around the repair very noticeable. To resist ultraviolet light and other environmental factors, the clearcoat needs approximately two mils of thickness, however, the millage of the clearcoat in a blended area tapers out at the edge.

Ford's position is continually reinforced in all approved paint system manuals. Furthermore, paint companies will not warrant any products if clearcoat blending has been done. The preferred process – and the one that Ford approves – is to blend the basecoat color as necessary and then clearcoat the entire panel. On a quarter panel or roof, the ditch area is usually the line to make a break point. Most Ford vehicles include a ditch area, which makes it easier to perform the procedure the right way the first time.

More information on specific paint company recommendations will generally appear with their clearcoat application guidelines and mix information.



15		Hood			
16	Repl	Hood	\$398.50	1.2	3.4
17	Refn	Add for clear			1.2
18	Refn	Add for underside			1.1
19	Refn	Add for second color			.6
20		Note: Under hood color is a tinted two-component sealer			
21	Refn	Color tint under hood color			.3

05 - HOOD:
30. R&I WINDSHIELD WASHER NOSSELS (REPAIR SITUATION)
31. R&I HOOD INSULATION
32. WINDSHIELD WASHER HOSE RETAINERS (MORE THAN ONE DESIGN)
33. REPAIR HOOD LATCH
34. REPAIR HOOD HINGES AND/OR HINGE MOUNT AREA
35. ACCESS TIME TO REVEAL DAMAGE
36. FEATHEREDGE, FILL SAND AND BLOCK (REPAIRED HOOD)
37. SEAM SEAL INNER EDGE OF NEW HOOD
38. R&I OR R&R HOOD HINGE
39. R&I COWL VENT PANEL (ACCESS TO HINGE)
40. TEST FIT HOOD
41. MIX PAINT FOR UNDERSIDE SECOND COLOR (ADD FOR 3 <sup>RD</sup> AND 4 <sup>TH</sup> COLOR)
42. COLOR TINT & TEST FOR UNDER SIDE SECOND COLOR
43. MASK HOOD INNER EDGES

**Underhood Repair Process**

BASF recommends applying catalyzed solventborne basecoat without clearcoat to the underhood and other interior areas that originally were not finished in the exterior BC/CC system. This system produces the same color tone, gloss and physical performance characteristics as the OEM finish.

When using waterborne basecoats, the color is mixed with a tintable, transparent, two-component sealer to achieve the desired finish characteristics.



**BASF AUTOMOTIVE REFINISH COATINGS**

**Base Coat Reduction**

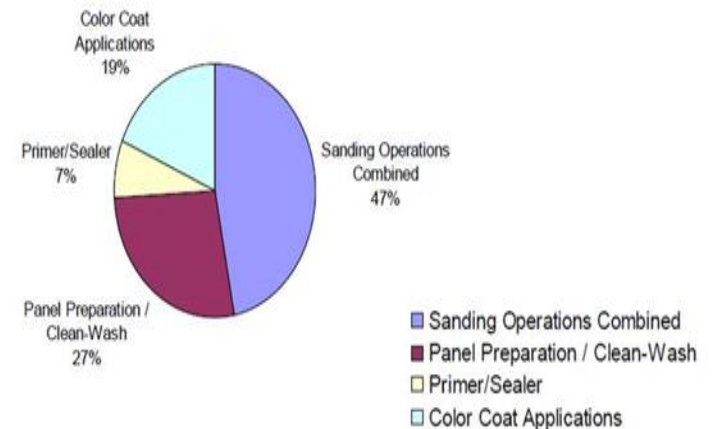
15	<b>QUARTER PANEL</b>					
16	*	Rpr	RT Quarter panel		3.5	2.4
			Note: Blend within panel, full clear coat time			
17			Add for Clear Coat			1.0
18	#	S01	Refn partial refinish w/full clear			-0.4

15	Rpr	RT Quarter panel				3.5	2.4
9		Note: Blend within panel, full clear coat time					
10	Refn	Add for clear					1.0
11	Refn	Partial refinish with full clear					-1
12		Note: Color coat application is only 19% of the refinish operation. 19% of 2.4 is .5, the .4 reduction indicates 1/6 of total refinish time. 1/6 of the actual color coat application is .1 so only a .1 reduction was allowed.					

### 2004 MOTOR Procedural Analysts Base Coat Application

Data based on MOTOR 2004 Procedural Analysts  
Base Coat Application 2003 Ford Taurus new hood

Chart does not include all operations outlined in MOTOR Guide to Estimating





# BASF AUTOMOTIVE REFINISH COATINGS

# Four Stage Paint

## Inquiry Details

### Submission Information

Tracking #: 10051      Date Submitted: 11/07/2016      Status: Resolved (IP Change)

### Inquiry Resolution

#### IP Explanation

Estimated Release Date: Closed  
Proposed Resolution: MOTOR stated:  
After review of MOTOR Crash Estimating data and paint manufacturer's information we have determined the following.

4 stage colors may be developed as a 3Stage formula, 4Stage formula, or both 3Stage and 4Stage formulas depending on the paint manufacturer. In general a 4Stage formula will require the application of a ground coat in addition to the base coat and mid coat application while others may use a tinted clear coat in addition to the final clear coat (non-tinted). The use of a ground coat or tinted clear coat has not been considered in MOTOR's THREE-STAGE FINISHES (Base/Mica/Clear Coat) and is not included.

The following addition steps would not be included in the 3Stage formula and would require an on-the-spot evaluation to determine an estimated refinish time:

1. Test spray-out panel or let down panel to match color.

2. Application of a

3. Application of a

4. Sanding the tinted clear coat  
MOTOR suggests

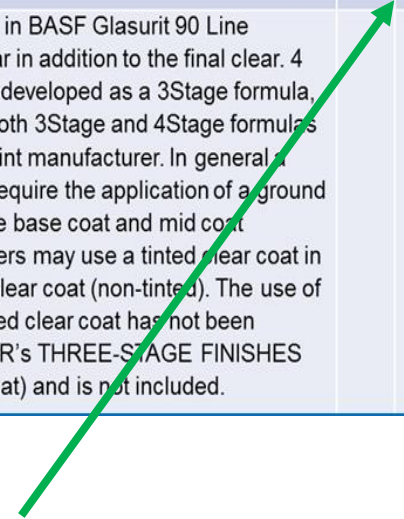
According to the MOTOR will add PROCEDURES TH

No changes requi

### 4 STAGE REFINISH

In addition to the base and mid coat applications of a 3-Stage process, the 4-Stage refinish process, depending on paint manufacturer, may possibly require the application of an additional ground coat. Some paint manufacturers may use a tinted clear coat in addition to the final non-tinted clear coat. These additional steps are not included and should be considered when developing an estimate using an on-the-spot evaluation. MOTOR does not offer a formula for 4-Stage refinish.

16	Hood				
17		Rpr	Hood	2.5	2.6
18			Add for Three Stage		2.0
19			Add for Four Stage		1.0
<p>Note: Paint code RR in BASF Glasurit 90 Line requires a tinted clear in addition to the final clear. 4 stage colors may be developed as a 3Stage formula, 4Stage formula, or both 3Stage and 4Stage formulas depending on the paint manufacturer. In general a 4Stage formula will require the application of a ground coat in addition to the base coat and mid coat application while others may use a tinted clear coat in addition to the final clear coat (non-tinted). The use of a ground coat or tinted clear coat has not been considered in MOTOR's THREE-STAGE FINISHES (Base/Mica/Clear Coat) and is not included.</p>					



To account for the extra steps for the fourth stage take half of time allowed for three stage.

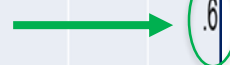


## BASF AUTOMOTIVE REFINISH COATINGS

## Ground Coats

22		Trunk			
23	Repl	Trunk lid	\$558.60	1.1	3.4
24	Refn	Add for clear			1.2
25	Refn	Add for ground coat			.6
26		Note: Paint code 46V has a translucent color coat and requires the use of ground coat color to achieve color-match which cannot be achieved by additional coats of basecoat only.			

To account for ground coat materials and labor use half of the clear coat time



The use of a colored ground coat under the primary color is becoming increasingly necessary for proper automotive refinish repair due to the increased use of transparent coatings by automotive manufacturers. More transparent coatings provide the high chroma and depth wanted by color designers and the modern consumer.

There are two main areas where ground coats are a vital part of the refinish repair process. The first is with three-stage color formulations, also referred to as "tri-coats." These are colors that are styled with an opaque ground coat, followed by a transparent mid-coat, usually mostly containing mica, then completed with a high-gloss clearcoat. The ground coat is an integral part of the color styling and has a direct effect on the color as the mid-coat is very translucent. In these cases, the use of a step panel is recommended to determine the proper amount of mid-coat, to be applied for proper color-match.

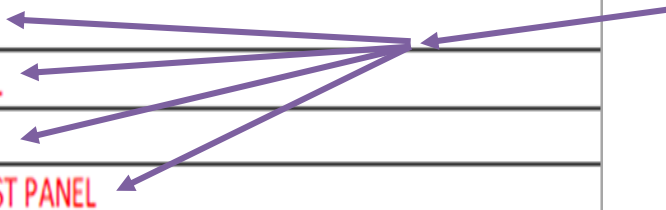
The second use of ground coats is when the color coat is very translucent, often with high levels of mica and/or transparent pigments. In the factory, these are applied over color-coded primers so that the proper film build is achieved in the plant. The color is not applied to hiding in most cases. Therefore, to achieve a proper color-match during the repair & refinish process, use of a ground coat that simulates the color-coded primer used in production is required to ensure the proper film build of the color coat. The use of the required ground coat color is required to achieve color-match of translucent colors, and cannot be achieved with additional coats of basecoat only.

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115 - REFINISH PROCESS:

643. DIFFICULT COLOR, TINTING & TESTING ( <i>INACCURATE VARIANCE</i> )
644. MASK FOR PRIMING
645. SPOT PAINT CORESUPPORT AFTER INSTALLED ( <i>SECOND PAINT</i> )
646. SPRAY OUT TEST PANEL
647. SPRAY OUT LET-DOWN PANEL FOR THREE STAGE
648. SPRAY OUT LET-DOWN PANEL FOR TRANSPARENT COLOR
649. COLOR TINT & TEST TO BLENDABLE MATCH
650. COLOR TINT SECOND COLOR
651. GRAVEL GUARD FIRST PANEL
652. GRAVEL GUARD SECOND PANEL
653. GRAVEL GUARD THIRD PANEL
654. GRAVEL GUARD SPRAY-OUT TEST PANEL
655. HAZARDOUS WASTE DISPOSAL
656. UNDERSIDE COLOR TINTING & TESTING ( <i>CORESUPPORT &amp; TRUNK AREAS</i> )
657. UNDERSIDE COLOR REFINISH
658. COVER VEHICLE (FOR REFINISHING ONE TIME)
659. REFINISHING JAMBS (SEPARATE COLOR THAN EXTERIOR-EACH COLOR*)
660. MASKING JAMBS



- Itemize Blend Panels
  - “A” Pillar
  - Up and Over
- Document flex additive requirement
  - Align with panel refinished
- Identify rock guard needs
  - Align with panel refinished
- Document raw plastic preparation requirement
  - Use line notes to describe
- Identify items painted off vehicle



BASF AUTOMOTIVE REFINISH COATINGS

Striping

48 MISCELLANEOUS OPERATIONS

49	**	Repl	A/M Pinstripe Per Panel			2	30.00	T	0.4
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23		Front Door							
24	Rpr	RT Front door				2.5	3.2		
25	Repl	Pinstripe – First panel	3M 746-66	\$12.00	.2				
26		Rear Door							
27	Rpr	RT Rear door				3.0	3.2		
28	Repl	Pinstripe – Second panel	3M 746-66	\$8.00	.2				
29		Quarter Panel							
29	Rpr	RT Quarter panel				4.0	3.8		
30	Repl	Pinstripe – Third panel	3M 746-66	\$8.00	.2				
31	Repl	Pinstripe – “Tahoe”		\$12.00	.1				
32		Note: Aftermarket Tahoe script in pinstripe							





## BASF AUTOMOTIVE REFINISH COATINGS

## Post Scan Requirement

### Service Information – Position Statement

#### Pre- and Post-Scan of Collision Vehicles

October 2016

General Motors takes the position that all vehicles being assessed for collision damage repairs must be tested for Diagnostic Trouble Codes (DTCs) during the repair estimation in order to identify the required repairs. Additionally, the vehicle must be re-tested after all repairs are complete in order to verify that the faults have been repaired and new faults have not been introduced during the course of repairs.

Even minor body damage or glass replacement may result in damage to one or more safety-related systems on the vehicle. Any action that results in loss of battery-supplied

General Motors takes the position that all vehicles being assessed for collision damage repairs must be tested for Diagnostic Trouble Codes (DTCs) during the repair estimation in order to identify the required repairs. Additionally, the vehicle must be re-tested after all repairs are complete in order to verify that the faults have been repaired and new faults have not been introduced during the course of repairs.

or a J2534 device). GM does not recommend the use of other scan tools and cannot guarantee their accuracy. For a list of vehicle covered by these applications, refer to the GM technical document titled *Vehicles Supported by GDS2 or Tech2/Tech2Win*.

GMSi is the factory source for all diagnostic and repair procedures, wiring diagrams and associated repair information.

GM Service Programming System (SPS) is the ECU programming application that provides calibration updates and guided learn procedures where required.

Any repairs performed without using Genuine GM Parts and not following published GM collision repair procedures may result in erroneous DTCs and expose vehicle owners and occupants to unnecessary risk. GM collision repair information can be accessed for free on [genuinegmparts.com](http://genuinegmparts.com) or is available through a GMSi subscription.

31	Rpr	Post-Scan per OEM requirements	.3
32		Note: Vehicle must be retested after all repairs are complete in order to verify that the faults have been repaired and new faults have not been introduced. Post-Scan performed using XX scan tool and did not detect any new fault codes.	

- After vehicle a vehicle is repaired a Post-Scan is required to verify repairs did not create faults.
- If a fault is detected you must follow with re-calibration processes to clear the fault code.
- A second Post-Scan will be required once the re-calibration is completed.





BASF AUTOMOTIVE REFINISH COATINGS

Appraisal Validation

3	<b>FRONT BUMPER &amp; GRILLE</b>							
4		O/H front bumper					3.5	
5	**	Repl	A/M CAPA Bumper cover w/o park sensors	CJ5Z17D957BCPTM	1	281.00	Incl.	3.0
6			Add for Clear Coat					1.2
7	**	Repl	A/M CAPA Bumper grille SE	CJ5Z17K945AA	1	54.00	Incl.	
8		R&I	RT Outer grille SE				Incl.	
9		R&I	LT Outer grille SE				Incl.	
10		R&I	Valance				Incl.	
11		R&I	Grille SE				Incl.	
12	**	Repl	A/M CAPA Reinforcement	CJ5Z8A284B	1	97.00	Incl.	
13		Repl	Support panel	CJ5Z8A284C	1	98.23	0.2	
14		R&I	Sight shield				Incl.	

**Bumper Assembly O/H**

**Included Operations**

- Remove assembly from frame, impact absorbers or mounting arms
- Disassemble and replace damaged parts
- Assemble and install
- Adjust alignment to vehicle
- Remove and install or replace: License plate/bracket, Parklamp if so equipped

**Not Included Operations**

- Refinish bumper
- Remove and replace impact absorbers or mounting arms
- Remove and install or replace optional accessories (example: auxiliary lamps, brush guard, fog lamps, headlamp washer systems, laser/radar cruise control sensors, parking aid sensors, spoilers)
- Remove and install adhesive exterior trim; add to clean and retape
- Replace new adhesive exterior trim; deduct one-half of R&R time
- Install stripes, decals, transfers or overlays

Anything still bolted to the vehicle after the bumper is removed is not included in the overhaul operation.



**BASF AUTOMOTIVE REFINISH COATINGS**

**Appraisal Validation**

Line	Oper	Description	Part Number	Qty	Extended Price \$	Labor	Paint
1		<b>FRONT BUMPER</b>					
2		O/H bumper assy				2.2	
3	Repl	Bumper cover	865112H000	1	261.44	Incl.	2.4
		Note: Component comes unprimed from OEM. Preparation is required.					
4		Add for Clear Coat					1.0
5	Repl	Prep unprimed bumper		1			0.6
6	#	Repl Flex additive		1	8.95	T	
7	Repl	Bumper grille	865612H001	1	52.58	Incl.	
		Note: LABOR: Time is after bumper cover is removed. Time included with overhaul.					
		Chipped on outside upper corner					
8	Repl	Energy absorber	865202H000	1	73.00	Incl.	
9	Repl	RT Outer bracket	865142H000	1	23.89	Incl.	
		Note: LABOR: Time is after bumper cover is removed. Time not included in overhaul.					
10	#	RT Outer bracket labor		1		0.1	
		Note: System override labor: Time not included in overhaul.					

DEG DATABASE INQUIRY								1/23/2017
Track_#	Estimating Platform	Inquiry Category	Year Make Model	Resolution Status	Origination Date	Submission Date	Resolution Date	Total Time to Resolve
8266	CCC	- Missing Information - Welded Panel Operations	2013 Dodge Durango	Resolved	7/22/2015 9:55:11 AM	7/29/2015 3:35:00 PM	7/31/2015 3:33:00 PM	02 Days
Inquiry Description				Resolution Description				
<b>Rear Body Panel</b>				<b>Estimated Fix September 2015</b>				
AreaVehicle Rear Body Panel				Estimated UM Release Date: 09/01/2015 Estimated DVD Release Date: 09-2015 MOTOR Publication Fix Date: 10-2015				
Section4_PartName Bracket				Proposed Resolution: MOTOR stated After review, in the Rear Body & Floor group, Floor & Rails subgroup, the following changes have been made:				
Section4_PartNumber 55079164AA				Added the Bumper Cover Outer Support Brackets (55079164AA) and Center Support Bracket (55079164AA) to the data.				
Section4_IssueSummary NO DATABASE TIME to install weld on brackets. Brackets do not come welded to new rear body panel. Bumper Brackets Require Measure, Drill & Welding				An estimated work time of 0.5 hours has been applied to the Outer Support Brackets with a footnote that states, "LABOR: Time is after all necessary bolted-on parts are removed."				
Section4_NumberWelds 9 (3 per bracket)				An estimated work time of 0.5 hours has been applied to the Center Support Bracket with a footnote that states, "LABOR: Time is after all necessary bolted-on parts are removed."				
Section4_ProcedureSteps Measure old rear body panel for bracket locations.								



## BEST PRACTICES GUIDELINES FOR DIGITAL IMAGING

The Collision Industry Conference Insurer-Insurance Relations Committee, a dedicated volunteer group of insurers, repairers, and industry partners has produced a set of working guidelines that represent a consensus on how to work together for the benefit of the vehicle owner using good faith business practices and mutual respect in the event of a collision or an event which results in the need for collision repair.

Now the members of the Collision Industry Conference ask that all responsible repairers and insurers endorse and adopt these common-sense practices.

*NOTE: This is a "living" document, designed to be modular in approach. It is intended to be global in nature and will provide the framework for all collision industry Best Practices. This is a draft and is not intended to be acted upon in any way other than review and comment from interested industry colleagues.*

1. These guidelines describe such as severity, complete additional images or appropriate
2. Taking the images of the impact, related and unre
3. Basic Imaging Procedures
  - a. Take initial image
  - b. Take images of t
  - c. Take images of a
  - d. Take images of a
  - e. Review the imag
4. Minimum Requirements
  - a. 4 Corner shots
    - i. Always tr

### 3. Basic Imaging Procedures

- a. Take initial images to capture all four corners of the vehicle including the license plate.
- b. Take images of the instrument panel, dash warning lights, (if possible, with engine running), odometer, and VIN plate, including vehicle production date.
- c. Take images of all loss related damaged parts listed on the estimate. The sequence of the images should mirror the sequence in which the repair estimate was written. Remember to take establishing or overall images for context in addition to close ups.
- d. Take images of all unrelated damage and label as such.
- e. Review the images to ensure they are clear, well lit and fully depict the extent of damage to the vehicle. Delete and recapture any blurry, dark or unusable images.





BASF AUTOMOTIVE REFINISH COATINGS

Damage Appraisal Errors

40	E01	Sublet	CARCOVER	1	10.00T	Other
41	E01	Sublet	FLEX ADDITIVE	1	8.00T	Other
42	E01	Sublet	HAZARDOUS WASTE REM	1	5.00T	Other
43	E01	Sublet	4 WHEEL ALIGNMENT	1	69.95T	Sublet
			NOTE: Vehicleis pulling when driven. Impact to front edge of wheel and tire. Align and balance wheel.			
44	E01	Sublet	Tire-Left Front Balanced	1	12.00T	Other

We have to quit writing appraisals like this

We often create more questions than answers

48	E01		Cover Car for Over Spray	1	15.00T	Other
49	E01		Hazardous Waste	1	5.00T	Other
50	E01		Flex Agent	1	8.00T	Other
51	S01	Repair	Block Sand & Prime			0.5T Body
52	E01		Corrosion Protection	1	15.00T	Other 0.5T Body

96	E01		<b>MISCELLANEOUS OPERATIONS</b>			
97	E01		Hazardous Waste	1	5.00	Other
98	S01		Cover Car for Over Spray	1	15.00T	Other
99	S01		Flex Agent	1	8.00T	Other
100	S01		Corrosion Protection	1	15.42T	Other 0.5T Body
101	S01	Repair	Clean & Retape Molding			0.3T Body
102	S01	Repair	Color Sand and Buff Per Panel			1.0T Body

Itemize within area repairs are needed



- Be Thorough
- Itemize all repairs
  - Be descriptive
  - Make line notes
- Take photos
  - Let them illustrate the repair
  - Label them



Document \* Document \* Document



BASF AUTOMOTIVE REFINISH COATINGS

Useful Websites

AllData Collision

[www.alldata.com/collision](http://www.alldata.com/collision)

Collision Industry Conference

[www.ciclink.com](http://www.ciclink.com)

Collision Hub

[www.collisionhub.com](http://www.collisionhub.com)

Data Enhancement Gateway

[www.degweb.org](http://www.degweb.org)

I-CAR

[www.i-car.com](http://www.i-car.com)

OEM1Stop – Position Statements

[www.oem1stop.com](http://www.oem1stop.com)

Paintscratch – Paint information

[www.paintscratch.com](http://www.paintscratch.com)

Society of Collision Repair Specialists

[www.scrs.com](http://www.scrs.com)

3M Collision SOP's

[www.3mcollision.com](http://www.3mcollision.com)



BASF AUTOMOTIVE REFINISH COATINGS



# Thank You!

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