Bolted Exterior Body Panels and Closures
Bumpers and Fascias
Collision Repair
Frame and Underbody
Paint and Coatings
Plastic Panel Information and Repair

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Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Bumper Impact Bar Bolt	100 N·m	74 lb in
Front End Upper Tie Bar Bolt	9 N·m	80 lb in
Front End Upper Tie Bar Lower Bolt	22 N·m	16 lb in
Front Fender Bolts	9 N·m	80 lb in
Front Fender Nut	9 N·m	80 lb in
Front Side Door Check Link Bolt to Body	22 N·m	16 lb in
Front Side Door Check Link Nut	9 N·m	80 lb in
Front Side Door Lower Hinge to Body Bolt	32 N·m	24 lb ft
Front Side Door Lower Hinge to Door Bolt	25 N·m	18 lb ft
Front Side Door Upper Hinge to Body Bolt	32 N·m	24 lb ft
Front Side Door Upper Hinge to Door Bolt	25 N·m	18 lb ft
Hood Hinge Bolts	22 N·m	16 lb ft
Hood Hinge Nuts	22 N·m	16 lb ft
Hood Primary and Secondary Latch Bolts	22 N·m	16 lb ft

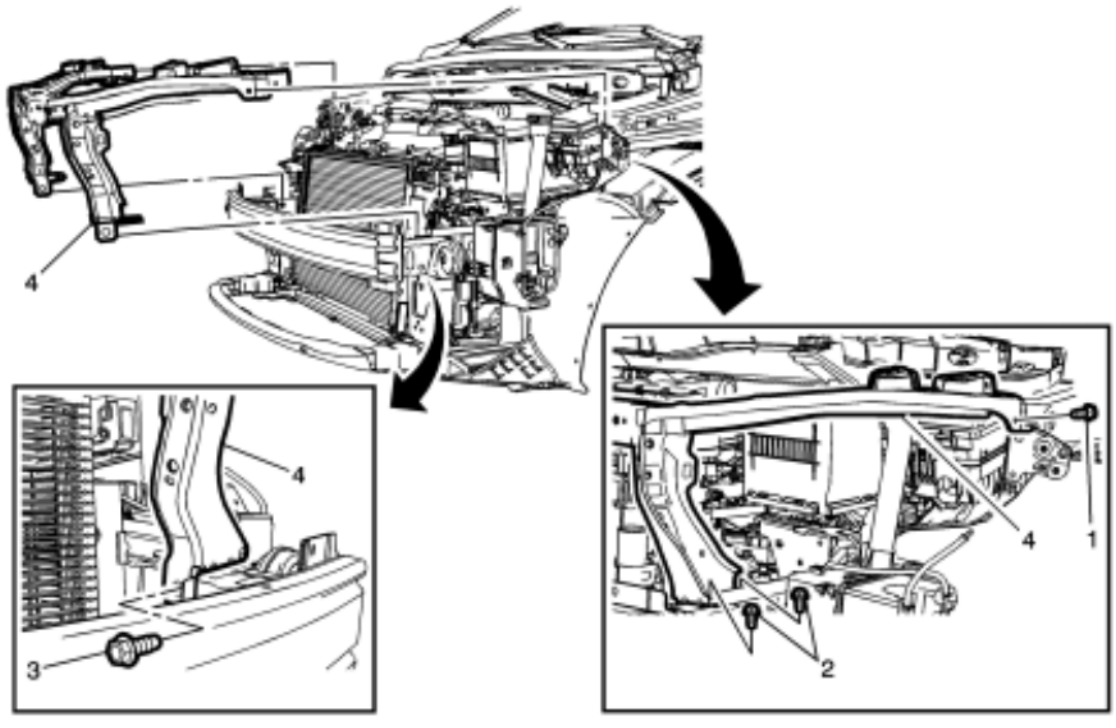
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Liftgate Hinge Bolts	22 N·m	16 lb ft
Liftgate Hinge Nuts	40 N·m	30 lb ft
Radiator Opening Upper Cover Bolts	9 N·m	80 lb in
Rear Compartment Lid Bolt	9 N·m	80 lb ft
Rear Compartment Lid Rear Hinge Bolt	9 N·m	80 lb in
Rear Side Door Check Link Bolt to Body	22 N·m	16 lb in
Rear Side Door Check Link Nut	9 N·m	80 lb in
Rear Side Door Lower Hinge to Body Bolts	32 N·m	24 lb ft
Rear Side Door Lower Hinge to Door Bolts	25 N·m	18 lb ft
Rear Side Door Upper Hinge to Body Bolts	32 N·m	24 lb ft
Rear Side Door Upper Hinge to Door Bolts	25 N·m	18 lb ft

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Front End Upper Tie Bar Replacement

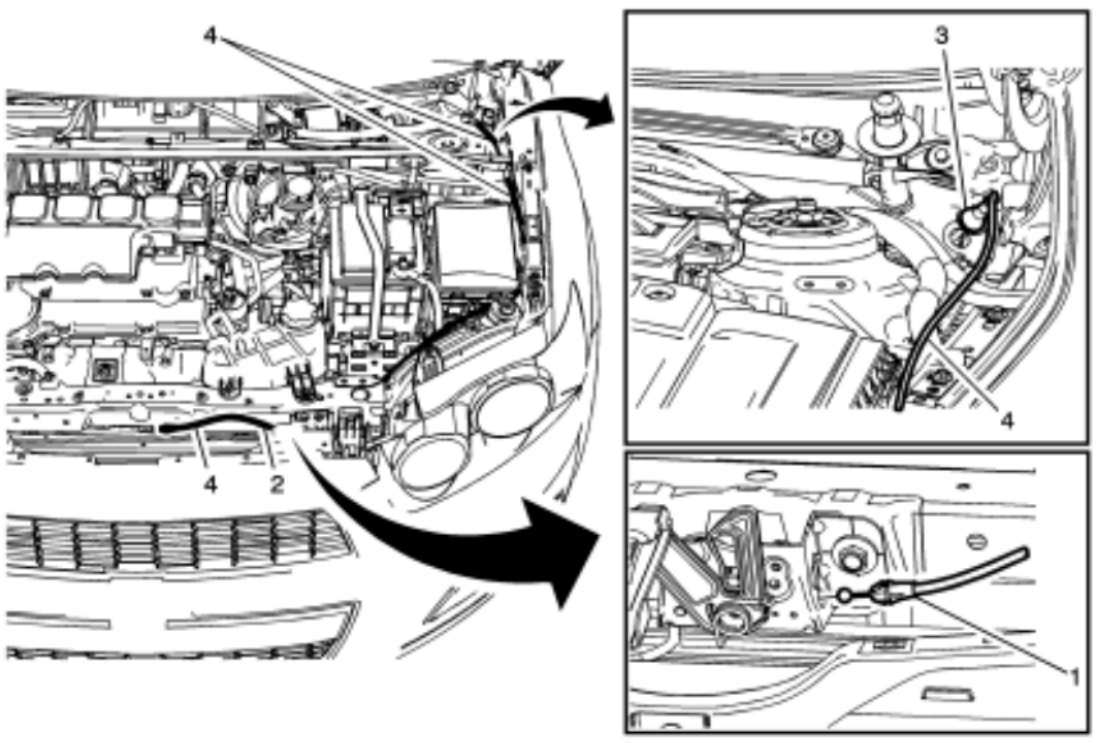


Callout	Component Name
Preliminary Procedures 1. Disable the SIR system. Refer to SIR Disabling and Enabling . 2. Remove the front fascia. Refer to Front Bumper Fascia Replacement . 3. Remove the headlamps. Refer to Headlamp Replacement . 4. Remove the front fenders. Refer to Front Fender Replacement . 5. Reposition the radiator with the A/C condenser from the upper tie bar. Refer to Radiator Replacement . 6. Remove the hood primary and secondary latch. Refer to Hood Primary and Secondary Latch Replacement . 7. Remove the front end inflatable restraint discriminating sensor. Refer to Front End Inflatable Restraint Discriminating Sensor Replacement .	
1	Front End Upper Tie Bar Bolt (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
2	Front End Upper Tie Bar Lower Bolt (Qty: 4) **Tighten** 22 N·m (16 lb ft)
3	Front Bumper Impact Bar Bolt (Qty: 2) **Tighten** 100 N·m (74 lb ft)
4	Front End Upper Tie Bar **Procedure** 1. Disconnect the electrical connectors/harnesses as needed. 2. Disconnect the hood latch cable from the tie bar. 3. Transfer any parts as needed.

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Hood Primary Latch Release Cable Replacement

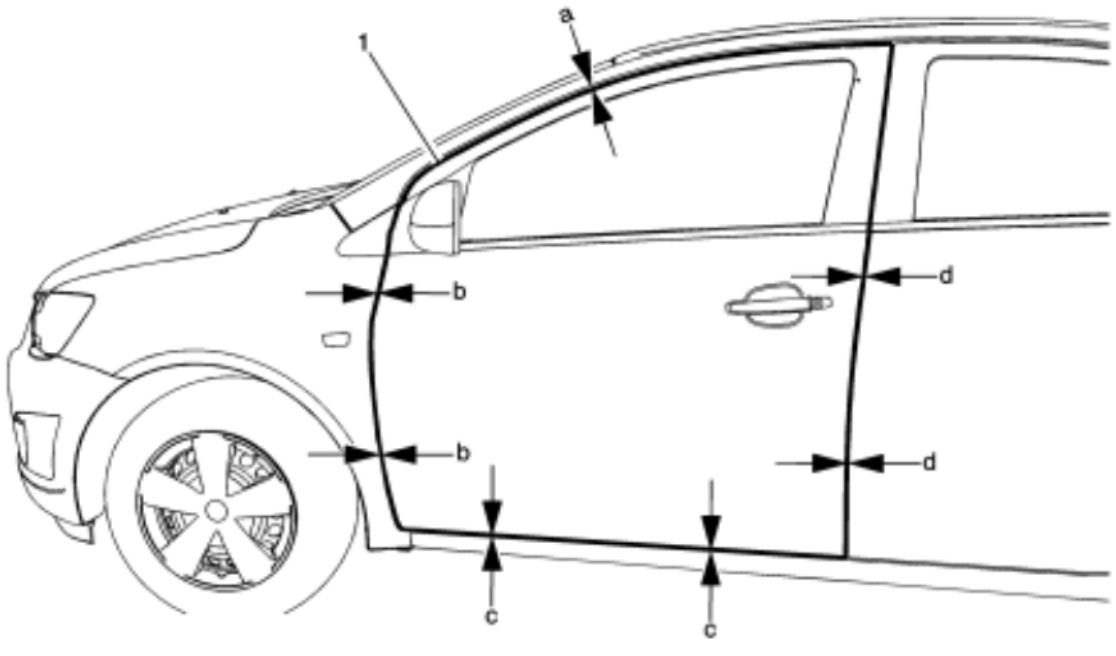


Callout	Component Name
Preliminary Procedures 1. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement . 2. Remove the air inlet grille. Refer to Air Inlet Grille Panel Replacement .	
1	Hood Primary Latch Cable **Procedure** Disconnect the hood primary latch release cable from the primary hood latch.
2	Hood Primary Latch Release Cable Retainer **Procedure** Disconnect the hood release cable retainers from the hood release cable.
3	Hood Primary Latch Release Cable Grommet
4	Hood Primary Latch Release Cable **Procedure** Disconnect the hood primary latch release cable handle from the hood latch cable. Refer to Hood Primary Latch Release Cable Handle Replacement .

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Front Side Door Adjustment

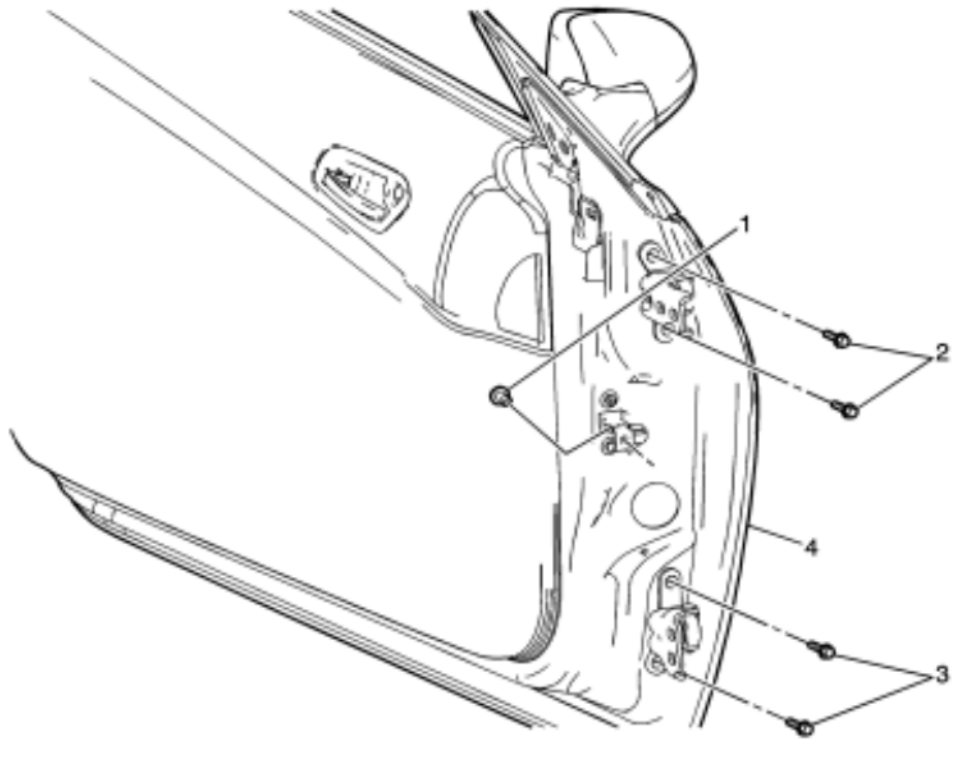


Callout	Component Name
Preliminary Procedure Remove the front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement .	
1	Front Side Door **Caution:** Refer to Fastener Caution . **Procedure** 1. Loosen the front side door hinge bolt (Qty: 4) to adjust the front side door. 2. Adjust the front side door in order to obtain an even gap between the front side door and the roof, the rear door, the rocker panel and the front fender and so that the front side door is flush with the roof, the rear door, the rocker panel and the front fender. **Adjustment** • Front side door to roof (a) 4.5 mm ± 1.0 mm (0.18 in ± 0.04 in) • Front side door to rear door (b) 3.5 mm ± 0.75 mm (0.14 in ± 0.03 in) • Front side door to rocker panel (c) 5.0 mm ± 1.0 mm (0.20 in ± 0.04 in) • Front side door to front fender (d) 3.5 mm ± 0.75 mm (0.14 in ± 0.03 in) **Tighten** 25 N·m (19 lb ft)

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Front Side Door Replacement

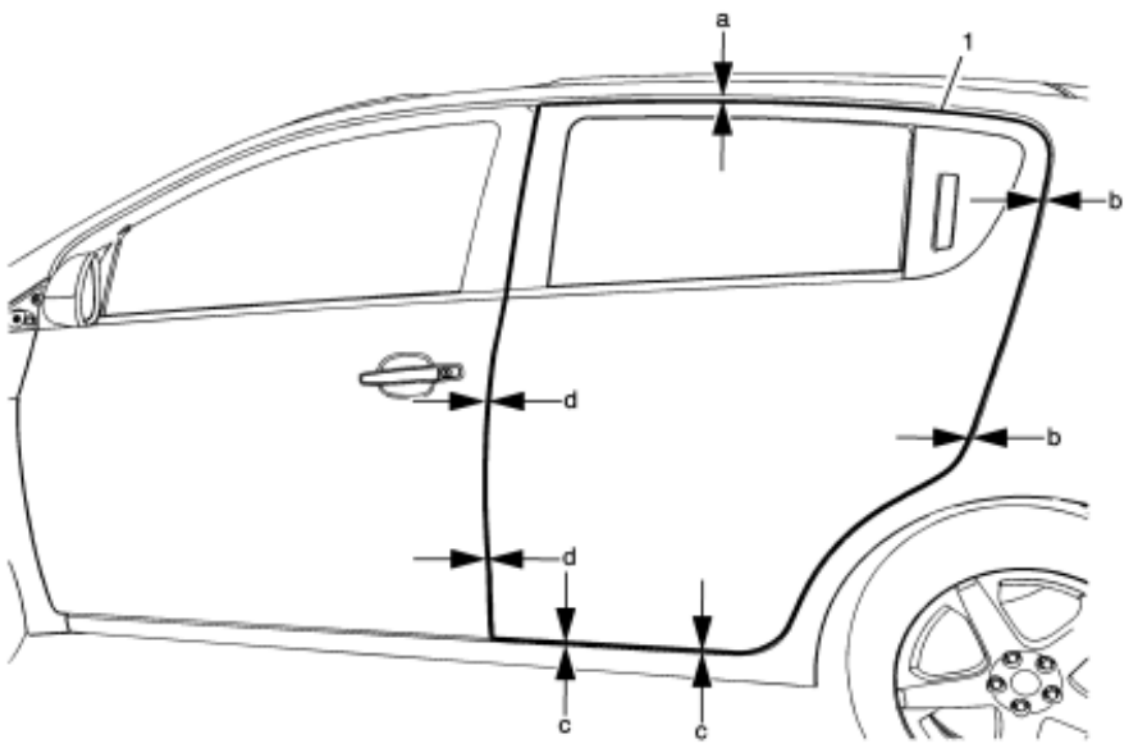


Callout	Component Name
Warning: Refer to SIR Warning . **Preliminary Procedures** 1. Mark the location of the hinge before removing the bolts with a grease pencil. 2. Remove the front door trim panel. Refer to Front Side Door Trim Replacement .	
1	Front Side Door Check Link Bolt to Body **Caution:** Refer to Fastener Caution . **Procedure** 1. Remove the water deflector. 2. Disconnect the door electrical connector. 3. Support the door before removing the hinge bolts. 4. With an assistant, remove the door. 5. After the door has been removed, ensure that the dome lamp is off. If the dome lamp is on remove the fuse. **Tighten** 22 N·m (16 lb ft)
2	Front Side Door Upper Hinge Bolt to Door (Qty: 2) **Tighten** 25 N·m (18 lb ft)
3	Front Side Door Lower Hinge Bolt to Door (Qty: 2) **Tighten** 25 N·m (18 lb ft)
4	Front Side Door Assembly
	Procedure 1. When replacing the door it is necessary to transfer all of the internal components. 2. If the door striker needs adjust. Refer to Front Side Door Lock Striker Adjustment . 3. Front door adjustment. Refer to Front Side Door Adjustment .

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Rear Side Door Adjustment (4 Door Notch Back 69)

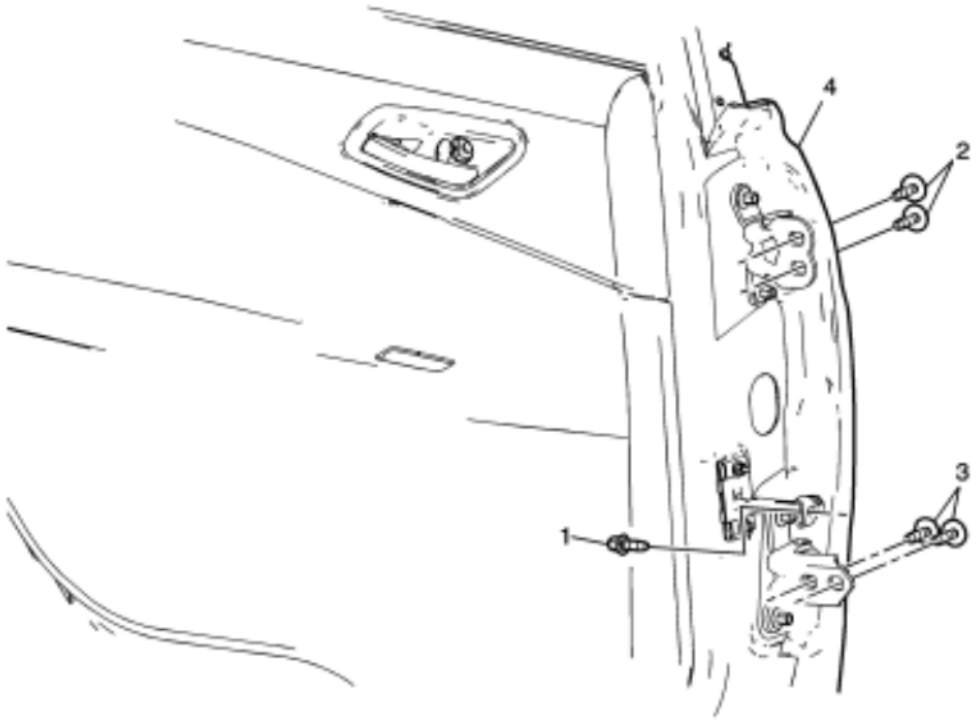


Callout	Component Name
1	Rear Side Door **Caution:** Refer to Fastener Caution . **Procedure** 1. Loosen the rear door hinge bolt (Qty: 4) to adjust the rear door. 2. Adjust the rear door in order to obtain an even gap between the rear door and the roof, the quarter outer panel, the rocker panel and the front side door and so that the rear door is flush with the roof, the quarter outer panel, the rocker panel and the front side door. Adjustment Rear side door to roof (a) 4.5 mm ± 1.0 mm (0.18 in ± 0.04 in) Rear side door to quarter outer panel (b) 3.8 mm ± 0.75 mm (0.15 in ± 0.03 in) Rear side door to rocker panel (c) 5.0 mm ± 1.0 mm (0.20 in ± 0.04 in) Rear side door to front side door (d) 3.5 mm ± 0.75 mm (0.14 in ± 0.03 in) **Adjustment** • Rear side door to roof (a) 4.5 mm ± 1.0 mm (0.18 in ± 0.04 in) • Rear side door to quarter outer panel (b) 3.8 mm ± 0.75 mm (0.15 in ± 0.03 in) • Rear side door to rocker panel (c) 5.0 mm ± 1.0 mm (0.20 in ± 0.04 in) • Rear side door to front side door (d) 3.5 mm ± 0.75 mm (0.14 in ± 0.03 in) **Tighten** 25 N·m (19 lb ft)

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Rear Side Door Replacement

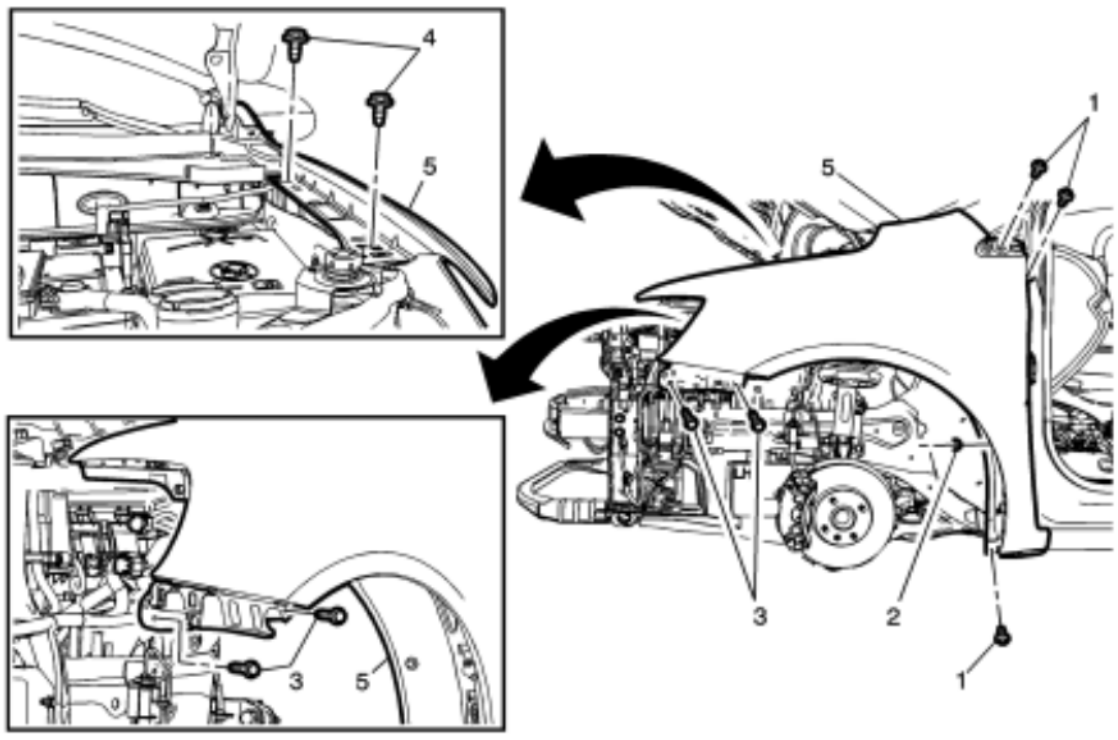


Callout	Component Name
Warning: Refer to SIR Warning . **Preliminary Procedures** 1. Mark the location of the hinge before removing the bolts with a grease pencil. 2. Remove the rear door trim panel. Refer to Rear Side Door Trim Replacement .	
1	Rear Side Door Check Link Bolt to Body **Caution:** Refer to Fastener Caution . **Procedure** 1. Remove the water deflector. 2. Disconnect the door electrical connector. 3. Support the door before removing the hinge bolts. 4. With an assistant, remove the door. 5. After the door has been removed, ensure that the dome lamp is off. If the dome lamp is on remove the fuse. **Tighten** 22 N·m (16 lb ft)
2	Rear Side Door Hinge Bolt to Door (Qty: 2) **Tighten** 32 N·m (24 lb ft)
3	Rear Side Door Hinge Bolt to Door (Qty: 2) **Tighten** 32 N·m (24 lb ft)
4	Rear Side Door Assembly
	Procedure 1. When replacing the door it is necessary to transfer all of the internal components. 2. If the door striker needs adjust. Refer to Rear Side Door Lock Striker Adjustment . 3. Rear door adjustment. Refer to Rear Side Door Adjustment .

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Front Fender Replacement

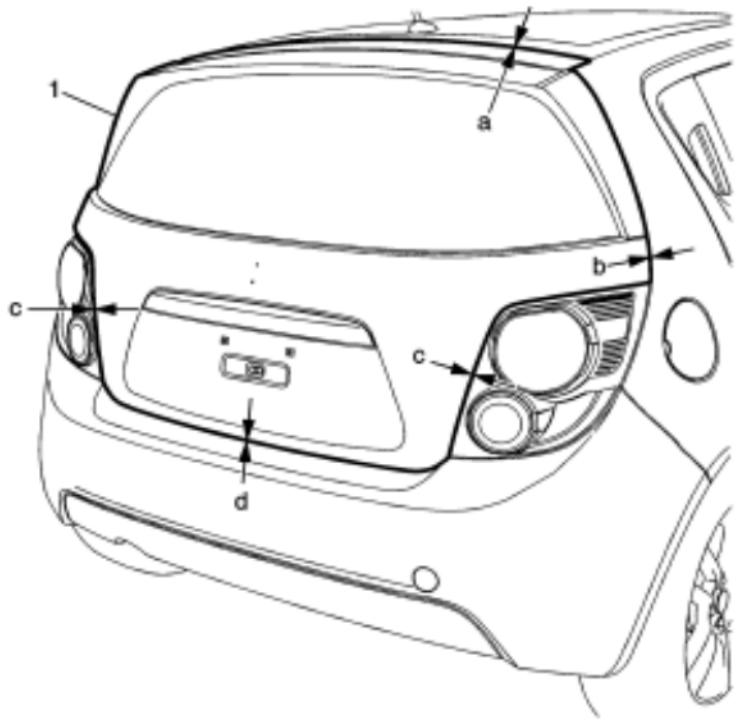


Callout	Component Name
Preliminary Procedures 1. Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement . 2. Remove the headlamp. Refer to Headlamp Replacement . 3. Remove the front wheelhouse liner front and rear. Refer to Front Wheelhouse Liner Replacement . 4. Remove the body side upper front applique. Refer to Body Side Upper Front Applique Replacement . 5. Remove the front bumper fascia guide. Refer to Front Bumper Fascia Guide Replacement .	
1	Front Fender Bolt (Qty: 3) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
2	Front Fender Nut **Tighten** 9 N·m (80 lb in)
3	Front Fender Bolt (Qty: 2) **Tighten** 9 N·m (80 lb in)
4	Front Fender Bolt (Qty: 2) **Tighten** 9 N·m (80 lb in)
5	Front Fender **Procedure** 1. Disconnect the electrical connectors. 2. Transfer parts as needed.

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Liftgate Adjustment

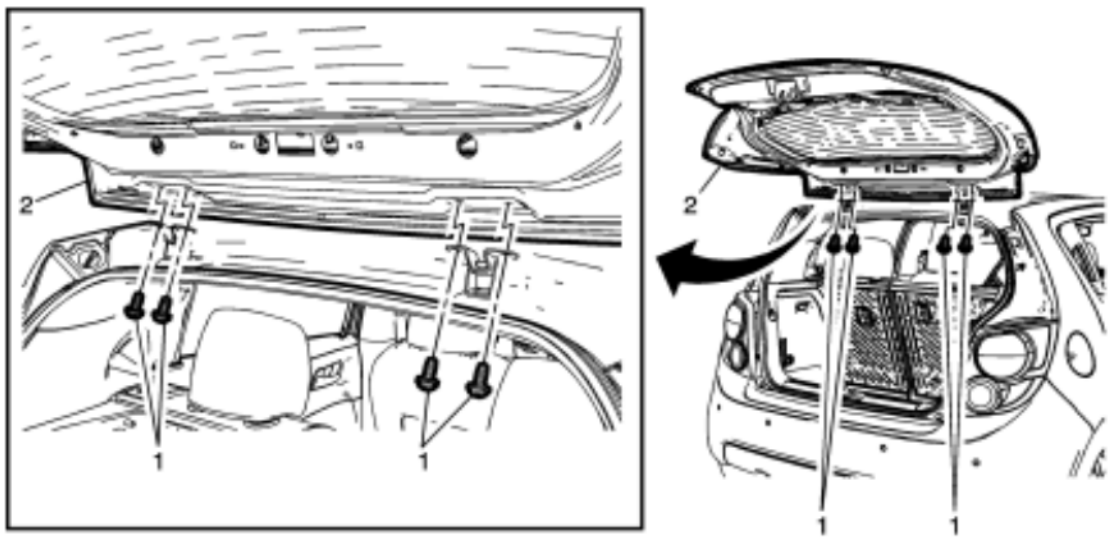


Callout	Component Name
1	Liftgate **Caution:** Refer to Fastener Caution . **Procedure** 1. Loosen the 4 liftgate hinge bolts to adjust the liftgate. 2. Adjust the liftgate in order to obtain an even gap between the liftgate and the roof, the quarter outer panel, the tail lamp and rear bumper fascia and so that the liftgate is flush with the roof, the quarter outer panel, the tail lamp and rear bumper fascia. **Adjustment:** • Liftgate to roof (a) 5.5 mm ± 1.0 mm (0.22 in ± 0.04 in) • Liftgate to quarter outer panel (b) 4.0 mm ± 1.0 mm (0.16 in ± 0.04 in) • Liftgate to tail lamp (c) 3.5 mm ± 1.0 mm (0.14 in ± 0.04 in) • Liftgate to rear bumper fascia (d) 5.0 mm ± 1.0 mm (0.20 in ± 0.04 in) **Tighten** 22 N·m (16 lb ft)

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Liftgate Replacement

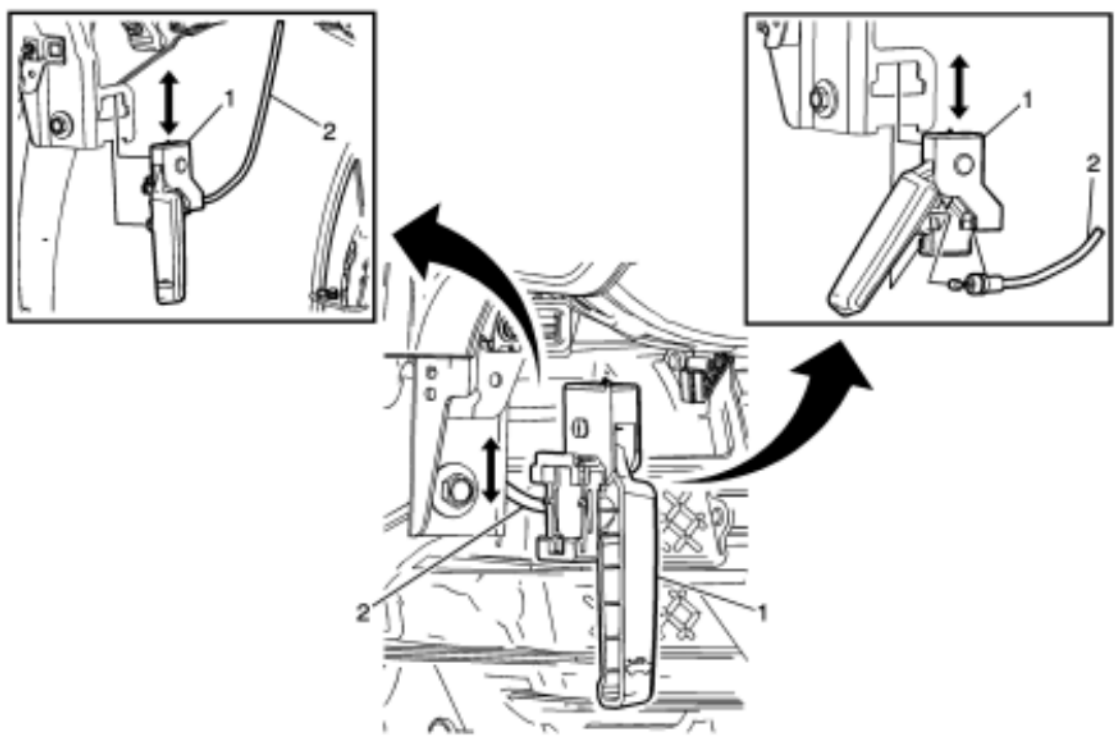


Callout	Component Name
Preliminary Procedures 1. Disconnect the electrical connectors. 2. Disconnect the liftgate struts. Refer to Liftgate Strut Replacement . 3. Remove the body lock pillar upper trim. Refer to Body Lock Pillar Upper Trim Panel Replacement .	
1	Liftgate Hinge Bolt (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
2	Liftgate **Procedure** 1. Transfer parts as needed. 2. Adjust the liftgate if needed. Refer to Liftgate Adjustment .

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Hood Primary Latch Release Cable Handle Replacement

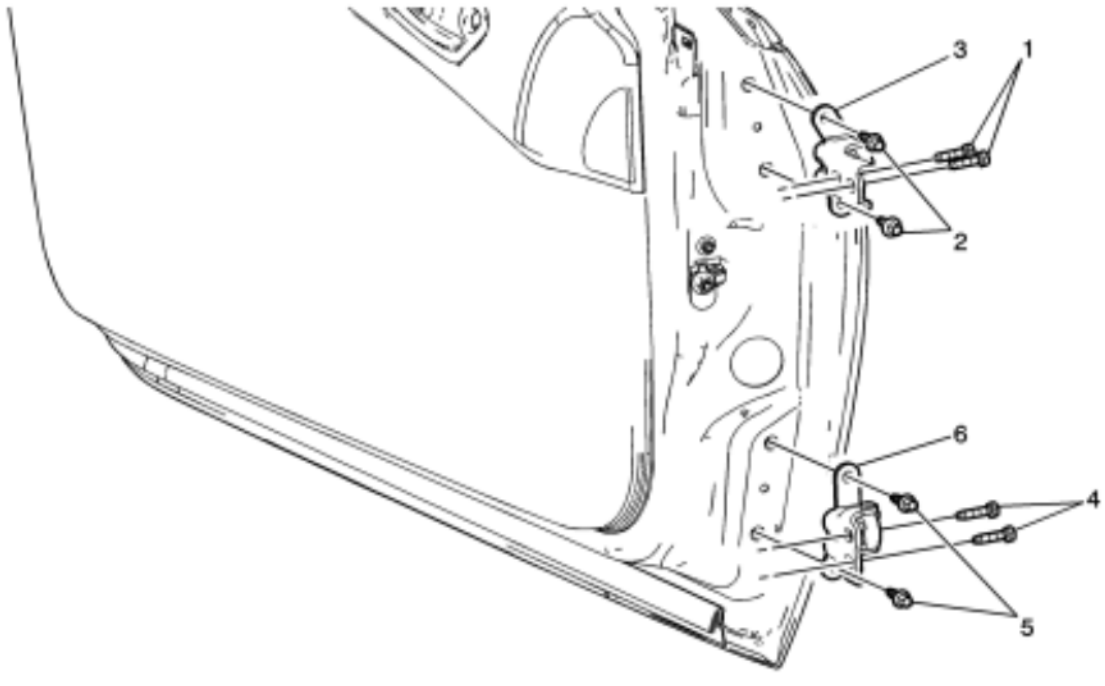


Callout	Component Name
Preliminary Procedure Remove the front side door opening floor carpet retainer. Refer to Front Side Door Opening Floor Carpet Retainer Replacement .	
1	Hood Primary Latch Release Cable Handle **Procedure** Press the release cable handle upward to release the retainers from the instrument panel bracket.
2	Hood Primary Latch Release Cable **Procedure** Disconnect the hood release cable from the hood release handle.

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Front Side Door Upper Hinge and Lower Hinge Replacement

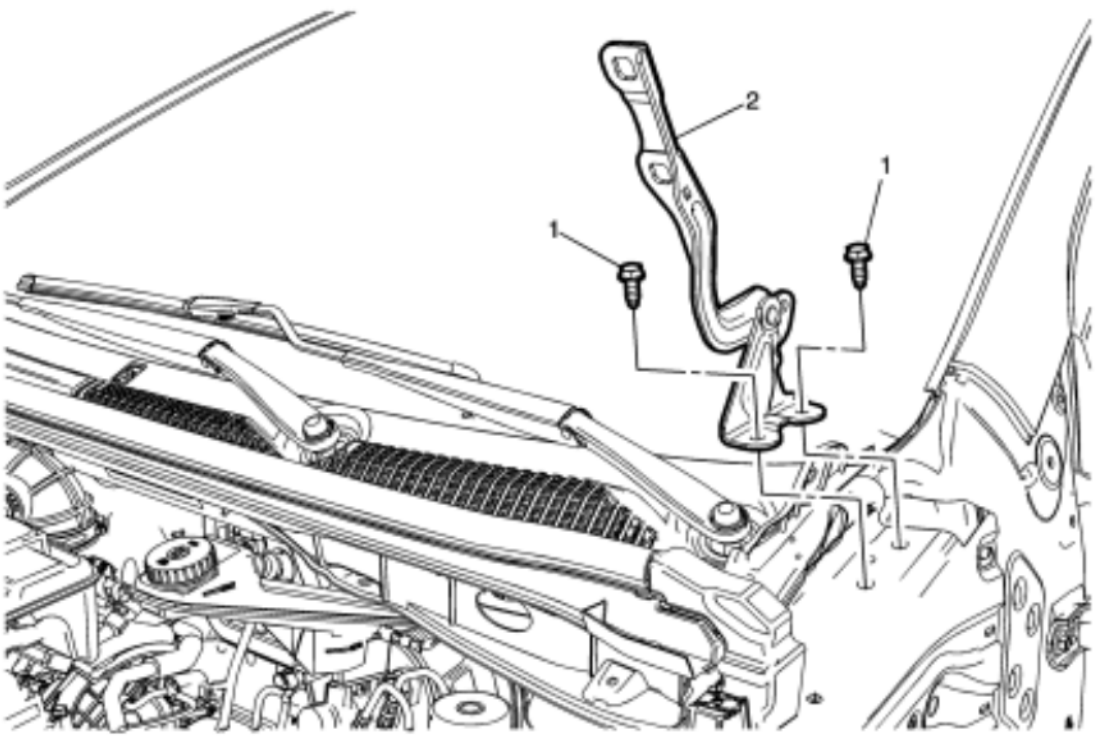


Callout	Component Name
1	Front Side Door Upper Hinge to Body Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Procedures** 1. Before removing the door, apply a double layer of masking tape around the perimeter of the painted surfaces. 2. Mark the location of the hinge being removed. 3. Remove the front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement . 4. Support the door before removing the hinge bolts. **Tighten** 32 N·m (24 lb ft)
2	Front Side Door Upper Hinge to Door Bolt (Qty: 2) **Tighten** 25 N·m (18 lb ft)
3	Front Side Door Upper Hinge
4	Front Side Door Lower Hinge to Body Bolt (Qty: 2) **Tighten** 32 N·m (24 lb ft)
5	Front Side Door Lower Hinge to Door Bolt (Qty: 2) **Tighten** 25 N·m (18 lb ft)
6	Front Side Door Lower Hinge **Procedure** If the door striker needs adjust. Refer to Front Side Door Lock Striker Adjustment .

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Hood Hinge Replacement

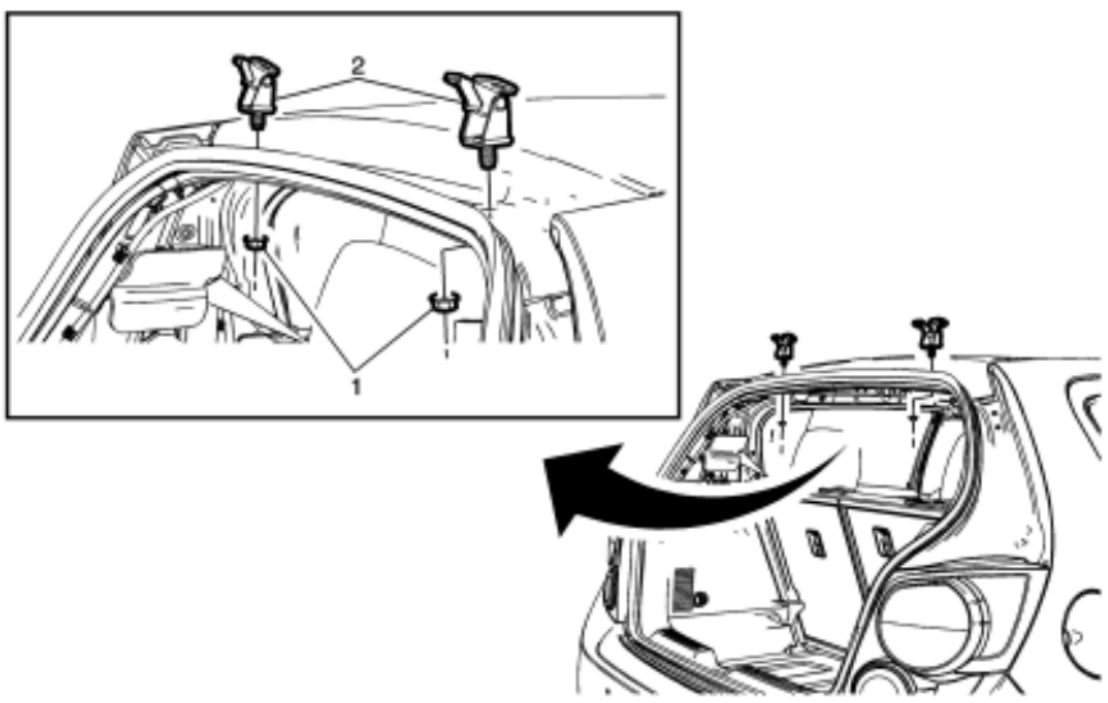


Callout	Component Name
Preliminary Procedures 1. Remove the hood. Refer to Hood Replacement . 2. Remove the front fender. Refer to Front Fender Replacement .	
1	Hood Hinge Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
2	Hood Hinge **Procedure** Adjust the hood and hinge if needed. Refer to Hood Adjustment .

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Liftgate Hinge Replacement

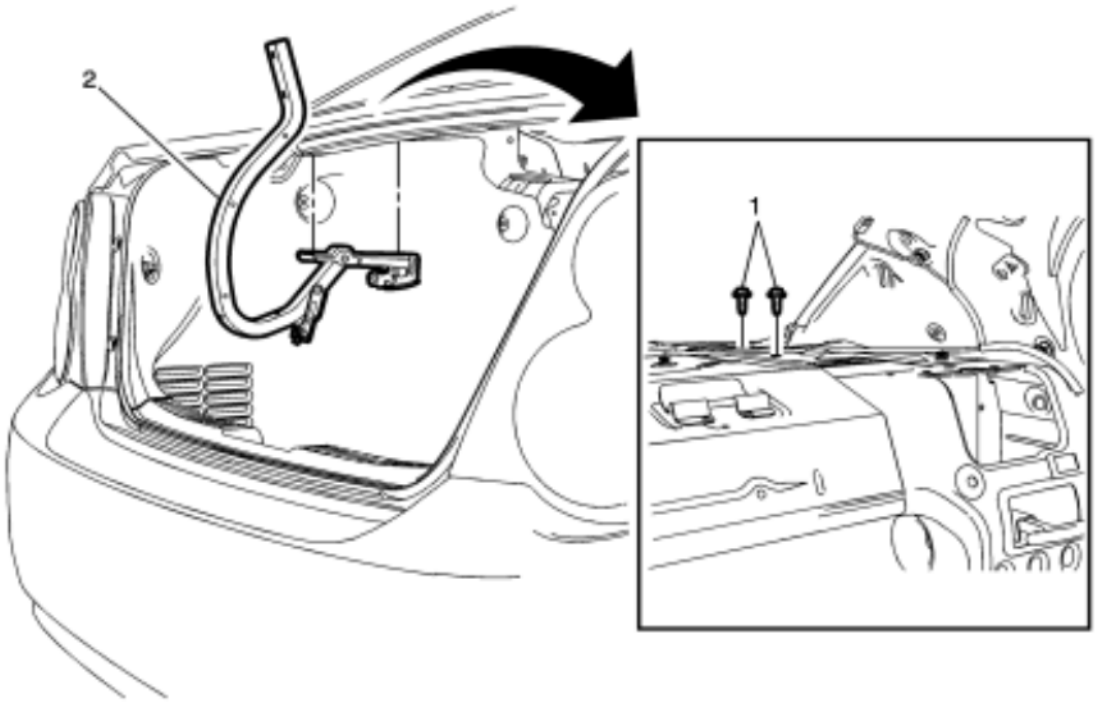


Callout	Component Name
Preliminary Procedures 1. Remove the liftgate. Refer to Liftgate Replacement . 2. Lower the rear of the headliner to access the inner bolts. Refer to Headlining Trim Panel Replacement . 3. Use a grease pencil to mark the liftgate hinge position to the body prior to removal.	
1	Liftgate Hinge Nut (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 40 N·m (30 lb ft)
2	Liftgate Hinge (Qty: 2) **Procedure** Adjust the liftgate if needed.

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Rear Compartment Lid Rear Hinge Replacement

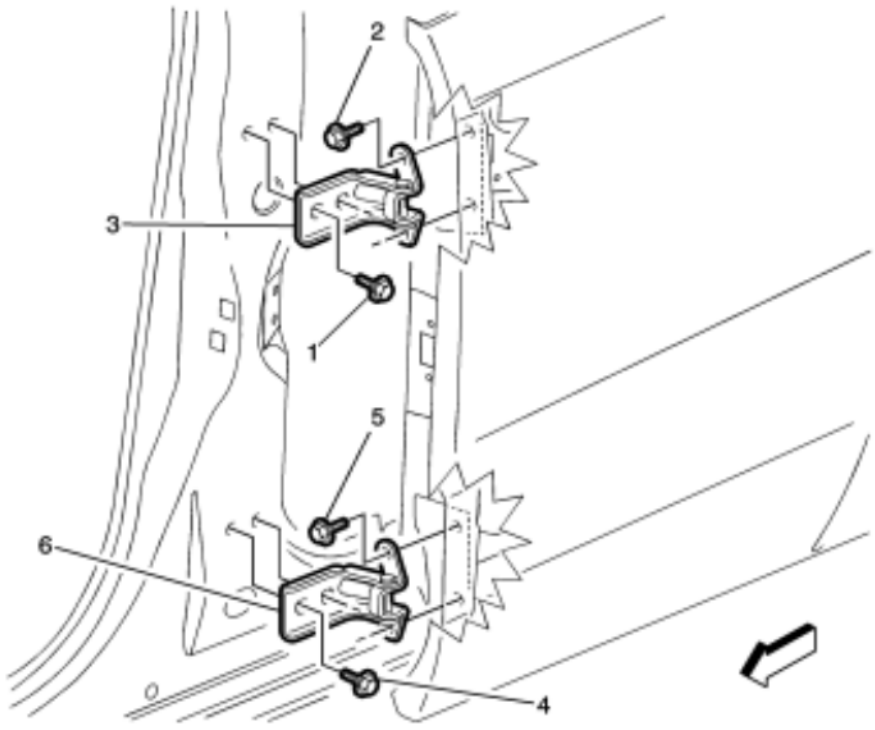


Callout	Component Name
	Preliminary Procedures 1. Remove the rear window trim panel. Refer to Rear Window Panel Trim Replacement . 2. Remove the rear compartment lid. Refer to Rear Compartment Lid Replacement . 3. Disconnect the rear compartment lid hinge torque rods. Refer to Rear Compartment Lid Hinge Torque Rod Replacement .
1	Rear Compartment Lid Rear Hinge Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
2	Rear Compartment Lid Rear Hinge **Procedures** 1. Transfer parts as needed. 2. Adjust the rear compartment lid if needed. Refer to Rear Compartment Lid Adjustment .

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Rear Side Door Upper Hinge and Lower Hinge Replacement

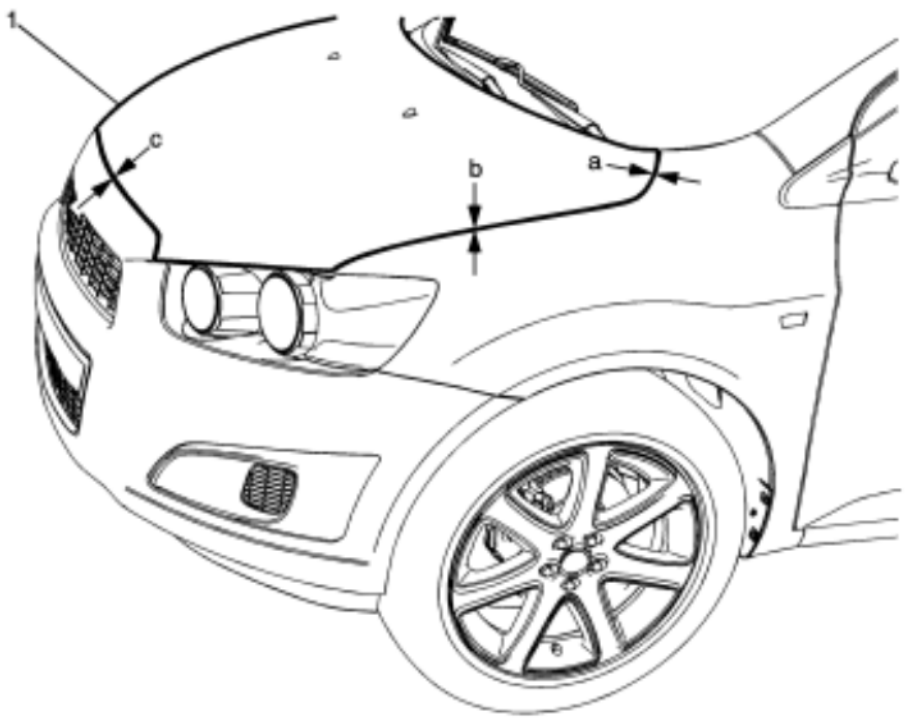


Callout	Component Name
1	Rear Side Door Upper Hinge to Body Bolts (Qty: 2) **Caution:** Refer to Fastener Caution . **Procedures** 1. Before removing the door, apply a double layer of masking tape around the perimeter of the painted surfaces. 2. Mark the location of the hinge being removed. 3. Support the door before removing the hinge bolts. **Tighten** 32 N·m (24 lb ft)
2	Rear Side Door Upper Hinge to Door Bolts (Qty: 2) **Tighten** 25 N·m (18 lb ft)
3	Rear Side Door Upper Hinge
4	Rear Side Door Lower Hinge to Body Bolts (Qty: 2) **Tighten** 32 N·m (24 lb ft)
5	Rear Side Door Lower Hinge to Door Bolts (Qty: 2) **Tighten** 25 N·m (18 lb ft)
6	Rear Side Door Lower Hinge **Procedure** If the door striker needs adjust. Refer to Rear Side Door Lock Striker Adjustment .

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Hood Adjustment

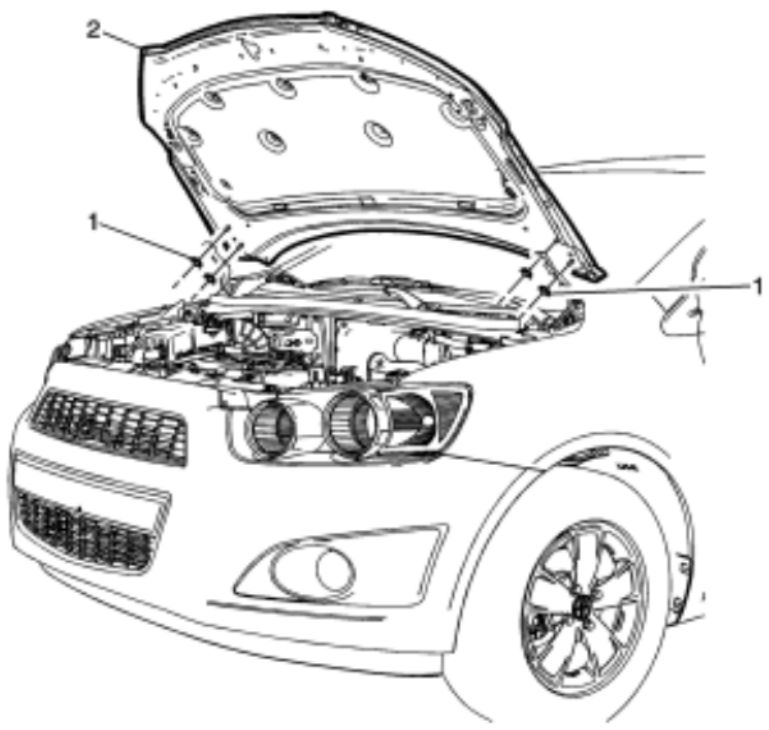


Callout	Component Name
1	Hood **Caution:** Refer to Fastener Caution . **Procedure** 1. Loosen the 4 hood hinge nuts. 2. Adjust the hood in order to obtain an even gap on both sides between the hood and the fenders, the headlamps and the front bumper fascia and so that the hood is flush with both fenders on the front edge, the front bumper fascia and the headlamps. **Adjustment:** • Hood to front fender (a) 3.0 mm ± 0.75 mm (0.12 in ± 0.03 in) • Hood to headlamp (b) 3.0 mm ± 1.0 mm (0.12 in ± 0.04 in) • Hood to front bumper fascia (c) 3.0 mm ± 1.0 mm (0.12 in ± 0.04 in) **Tighten** 22 N·m (16 lb ft)

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Hood Replacement

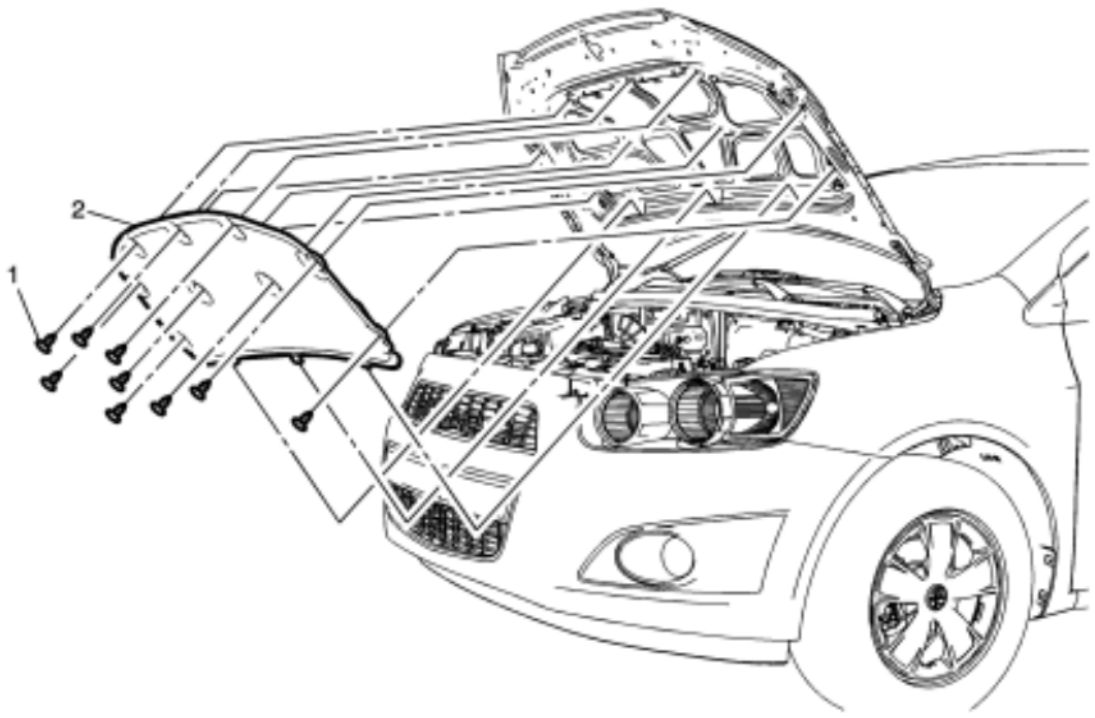


Callout	Component Name
Preliminary Procedure Disconnect the windshield washer nozzle hose.	
1	Hood Hinge Nut (Qty: 4) **Caution:** Refer to Fastener Caution . **Procedure** Mark the location of the hinge to the hood with a grease pencil to aid in alignment. **Tighten** 22 N·m (16 lb ft)
2	Hood **Procedure** 1. Transfer parts as needed. 2. Adjust the hood if needed. Refer to Hood Adjustment .

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Hood Insulator Replacement

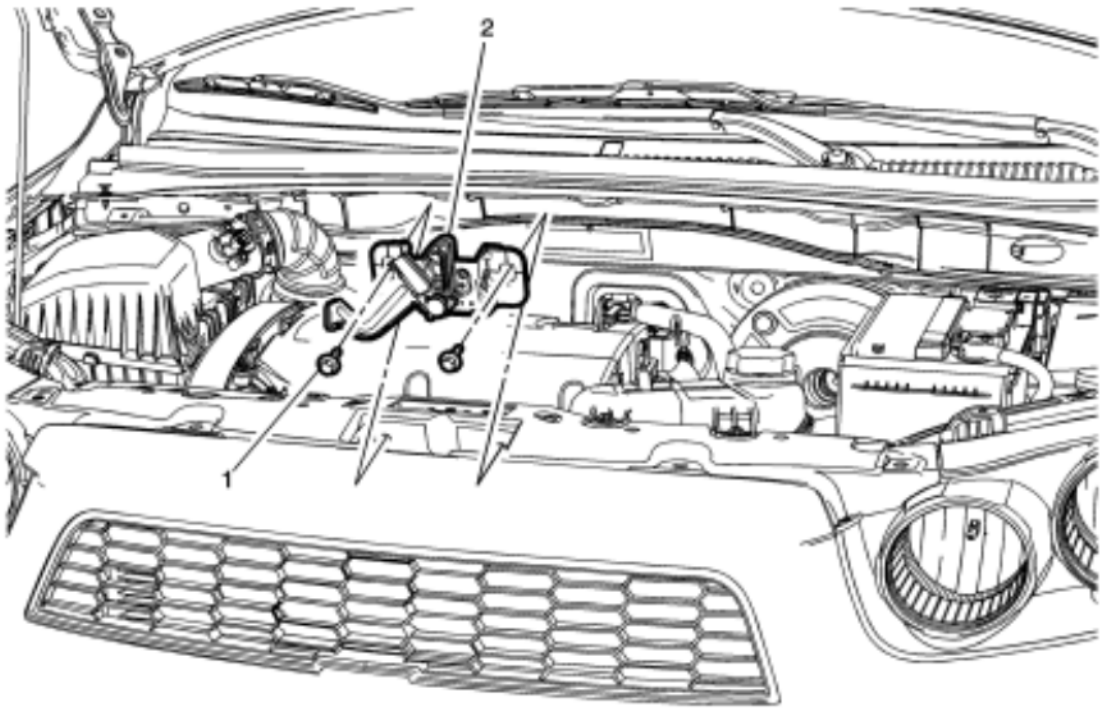


Callout	Component Name
1	Hood Insulator Plastic Retainer (Qty: 9)
2	Hood Insulator **Procedure** Ensure the 3 integral tabs are secured to the hood.

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Hood Primary and Secondary Latch Replacement

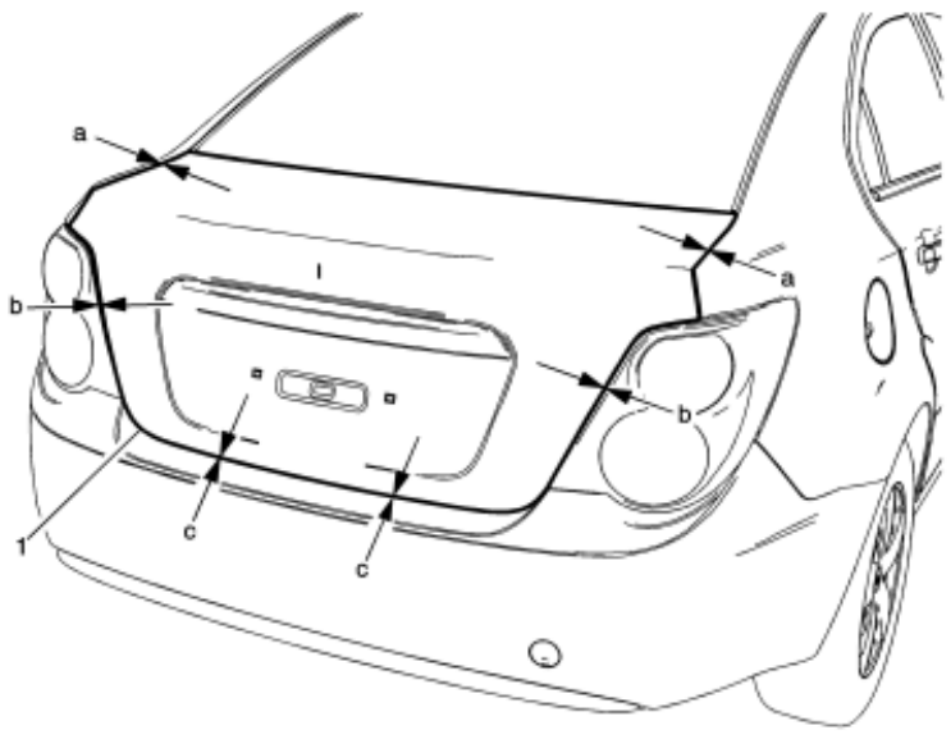


Callout	Component Name
1	Hood Primary and Secondary Latch Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
2	Hood Primary and Secondary Latch **Procedure** Disconnect the release cable from the hood primary latch.

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Rear Compartment Lid Adjustment

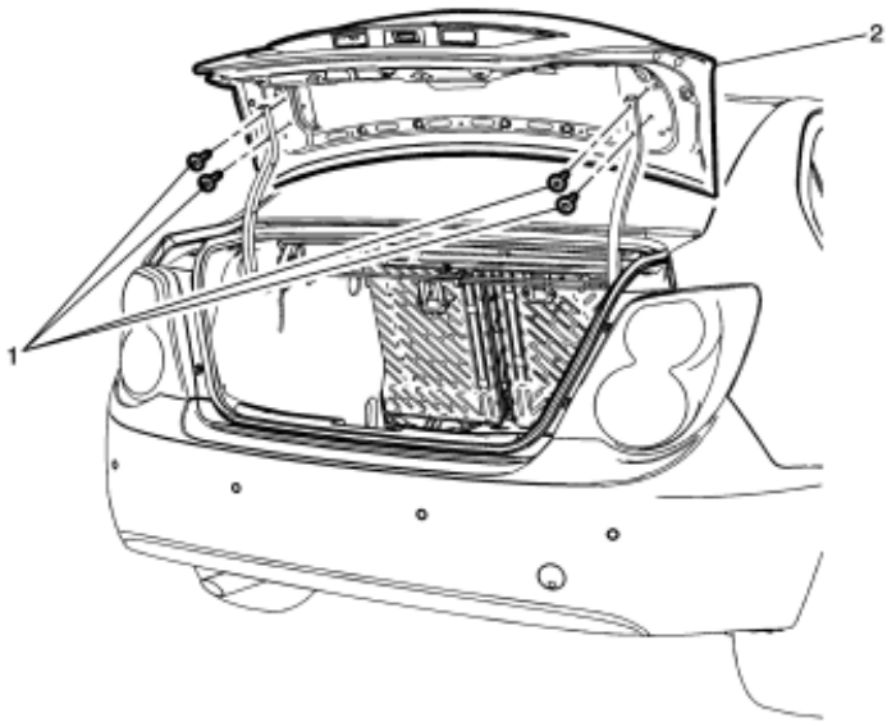


Callout	Component Name
1	Rear Compartment Lid **Caution:** Refer to Fastener Caution **Procedure** 1. Loosen the rear compartment lid hinge bolts (Qty: 4) to adjust the rear compartment lid. 2. Adjust the rear compartment lid in order to obtain an even gap between the rear compartment lid and the quarter outer pan the rear fog lamp and the rear bumper fascia and so that the rear compartment lid is flush with the quarter outer panel, the rear fog lamp and the rear bumper fascia. Adjustment Rear compartment lid to quarter outer panel (a) 3.0 mm ± 0.75 mm (0.12 in ± 0.03 in) Tail lamp to rear compartment lid (b) 3.0 mm ± 1.0 mm (0.12 in ± 0.04 in) Rear compartment lid to rear bumper fascia (c) 5.5 mm ± 1.5 mm (0.22 in ± 0.06 in) **Adjustment** • Rear compartment lid to quarter outer panel (a) 3.0 mm ± 0.75 mm (0.12 in ± 0.03 in) • Tail lamp to rear compartment lid (b) 3.0 mm ± 1.0 mm (0.12 in ± 0.04 in) • Rear compartment lid to rear bumper fascia (c) 5.5 mm ± 1.5 mm (0.22 in ± 0.06 in) **Tighten** 22 N·m (16 lb ft)

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Rear Compartment Lid Replacement

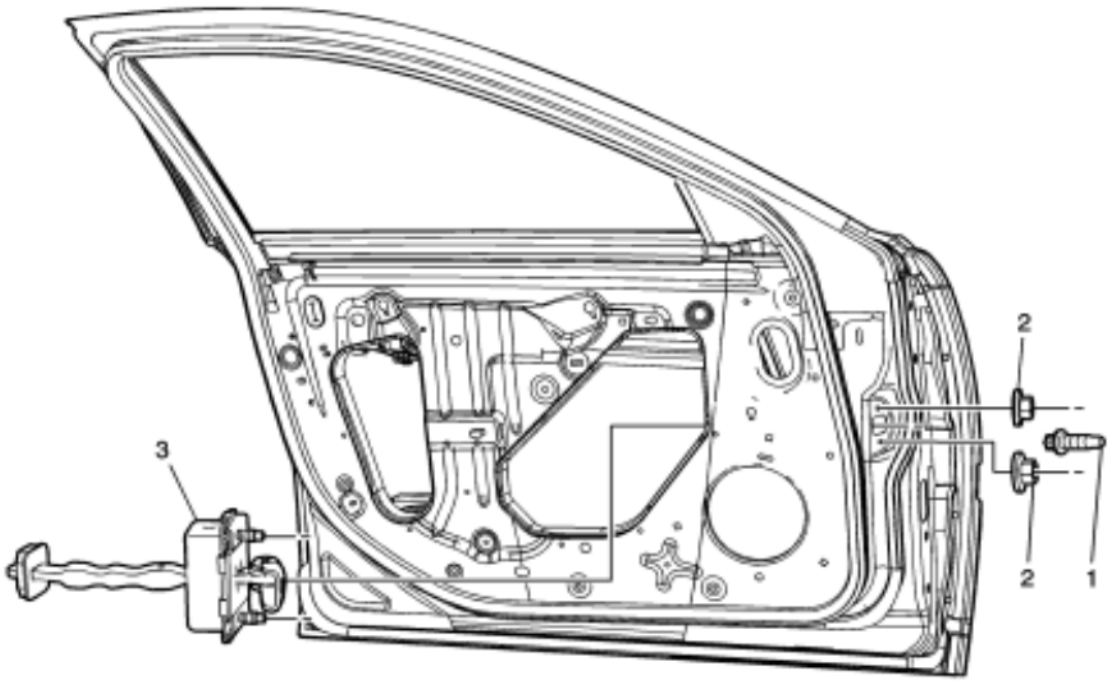


Callout	Component Name
Preliminary Procedure Remove the rear compartment lid inner panel trim. Refer to Rear Compartment Lid Inner Panel Trim Replacement .	
1	Rear Compartment Lid Bolt (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb ft)
2	Rear Compartment Lid **Procedure** 1. Disconnect the electrical connector. 2. Adjust the rear compartment lid as needed. Refer to Rear Compartment Lid Adjustment . 3. Transfer components as necessary.

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Front Side Door Check Link Replacement

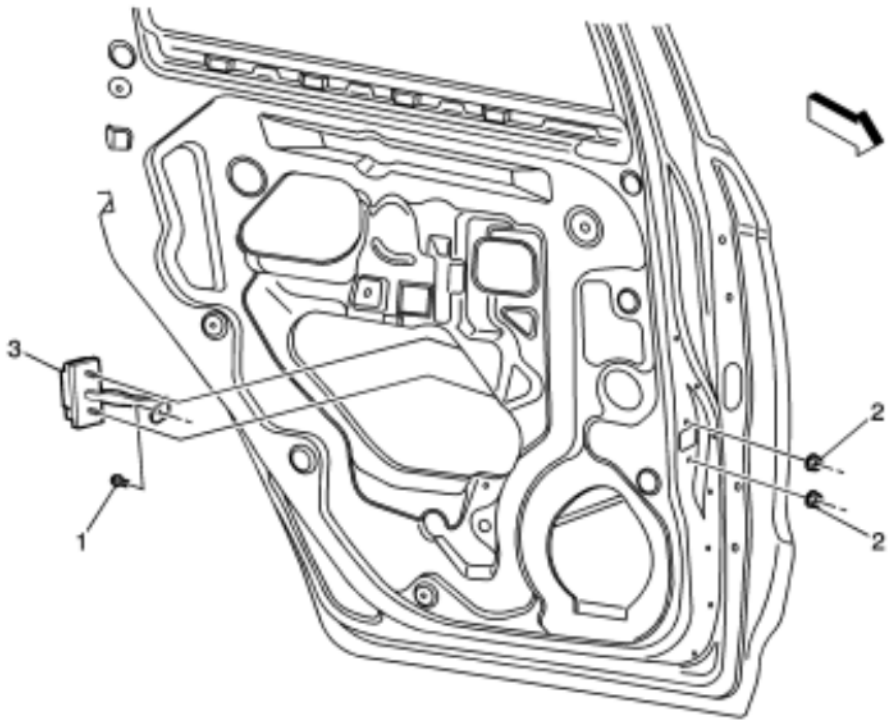


Callout	Component Name
Preliminary Procedure Remove the front side door trim panel. Refer to Front Side Door Trim Replacement .	
1	Front Side Door Check Link Bolt to Body **Caution:** Refer to Fastener Caution . **Note:** Place the door window in the full open position. **Tighten** 22 N·m (16 lb ft)
2	Front Side Door Check Link Nut (Qty: 2) **Procedure** Remove the water deflector. **Tighten** 9 N·m (80 lb in)
3	Front Side Door Check Link

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Rear Side Door Check Link Replacement

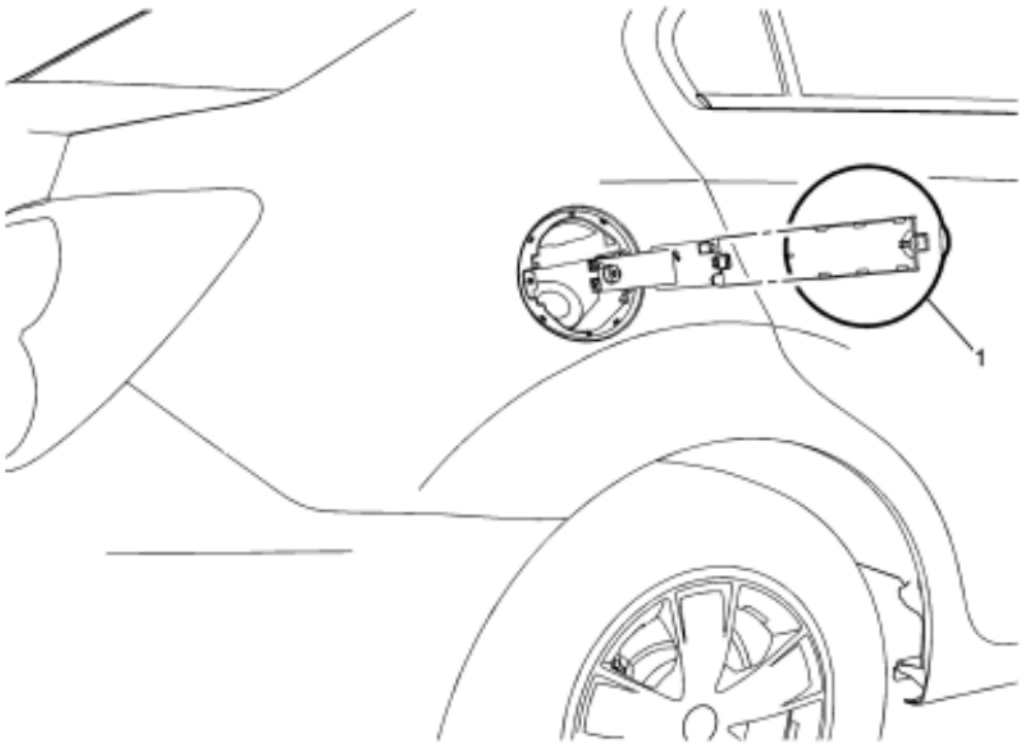


Callout	Component Name
Preliminary Procedures 1. Move the window to the full up position. 2. Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement	
1	Rear Side Door Check Link Bolt to Body **Caution:** Refer to Fastener Caution **Tighten** 22 N·m (16 lb ft)
2	Rear Side Door Check Link Nut (Qty: 2) **Procedure** Remove the water deflector. **Tighten** 9 N·m (80 lb in)
3	Rear Side Door Check Link Assembly

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Fuel Tank Filler Door Replacement

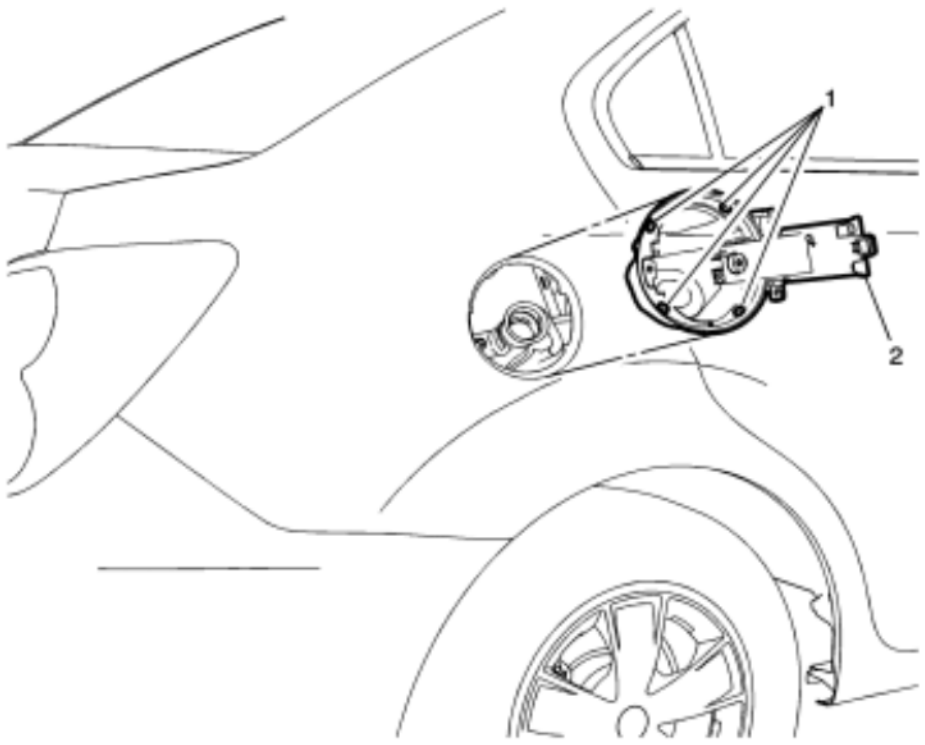


Callout	Component Name
1	Fuel Tank Filler Door **Procedure** Position the fuel tank filler door to the full open position. Using light outward sliding pressure on the filler door, release the retainer on the fuel tank filler door from the hinge.

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Fuel Tank Filler Door Latch Housing Replacement

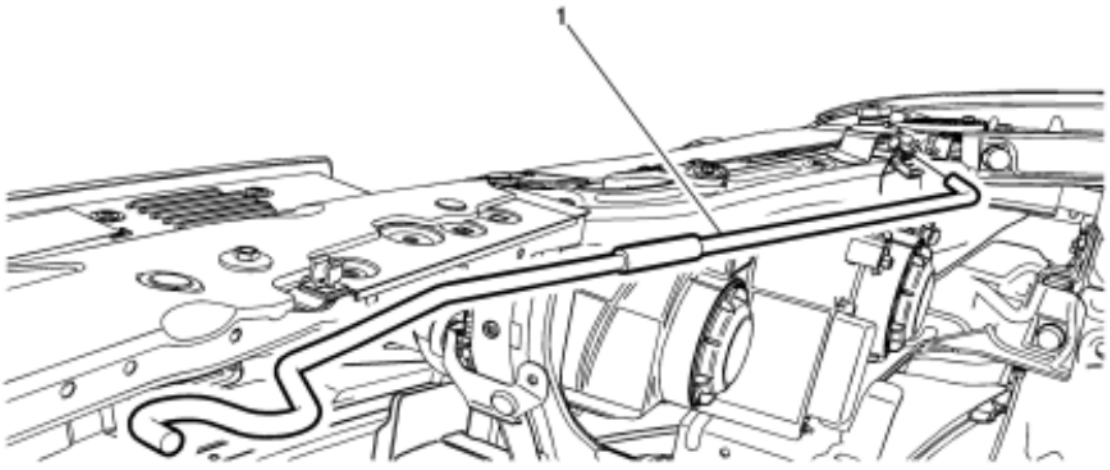


Callout	Component Name
Preliminary Procedures 1. Remove the rear wheelhouse panel liner. Refer to Rear Wheelhouse Panel Liner Replacement . 2. Remove the fuel tank filler door. Refer to Fuel Tank Filler Door Replacement .	
1	Fuel Tank Filler Door Latch Housing Retainer (Qty: 4) **Procedure** Release the 4 filler door latch housing retainers on the back of the housing.
2	Fuel Tank Filler Door Latch Housing **Procedure** Press the fuel tank filler housing outward from the fuel filler pipe and the quarter panel.

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Hood Hold-Open Rod Replacement

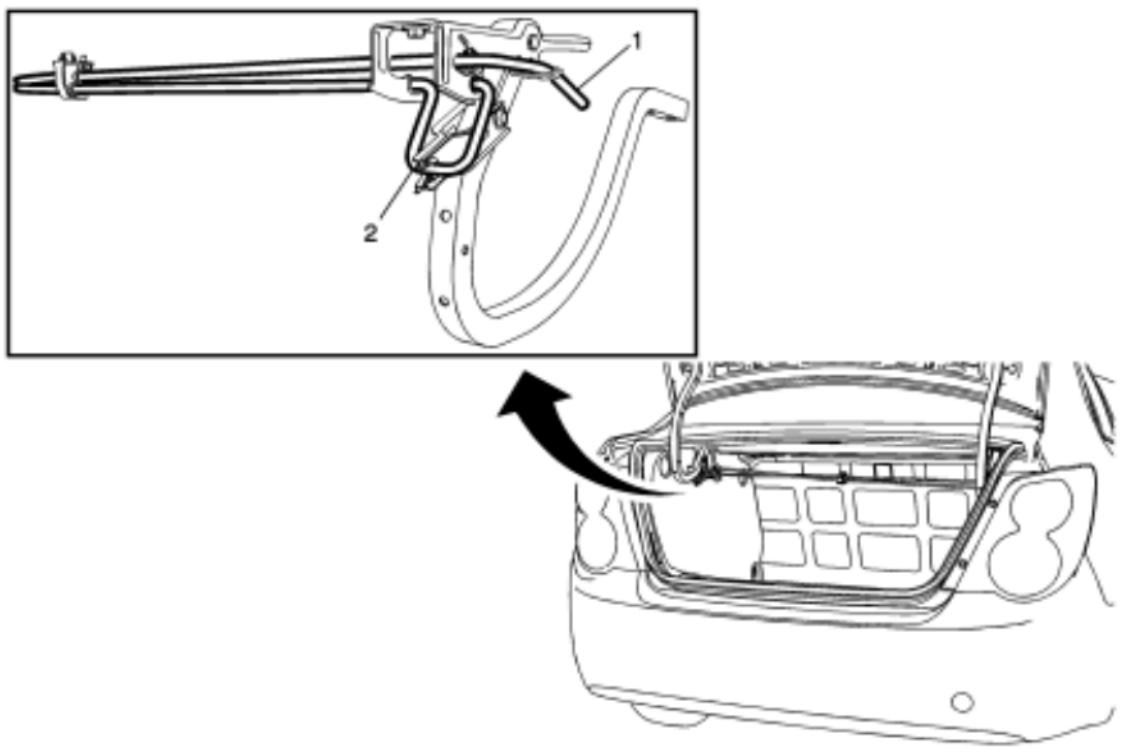


Callout	Component Name
1	Hood Hold-Open Rod **Warning:** When a hood hold open device is being removed or installed, provide alternate support to avoid the possibility of damage to the vehicle or personal injury. **Procedure** Open the retainer and remove the hood hold-open rod.

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Rear Compartment Lid Hinge Torque Rod Replacement

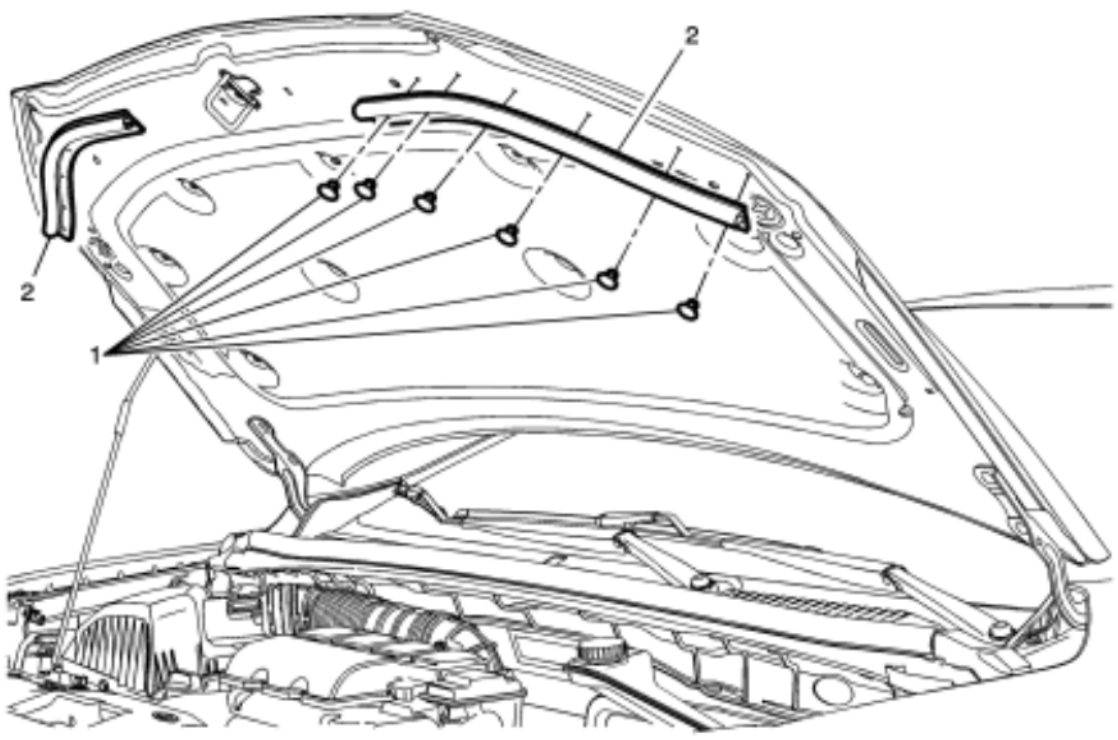


Callout	Component Name
Warning: Refer to Hood Hold-Open Device Warning . **Preliminary Procedure** Open and support the rear compartment lid. **Special Tools** *BO-125* Torque Rod Lifter For equivalent regional tools, refer to Special Tools .	
1	Rear Compartment Lid Hinge Torque Rod– Right Side **Note:** Only use the special tool to remove and install the rear compartment lid hinge torque rod.
2	Rear Compartment Lid Hinge Torque Rod– Left Side **Note:** Only use the special tool to remove and install the rear compartment lid hinge torque rod.

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Hood Side Seal Replacement

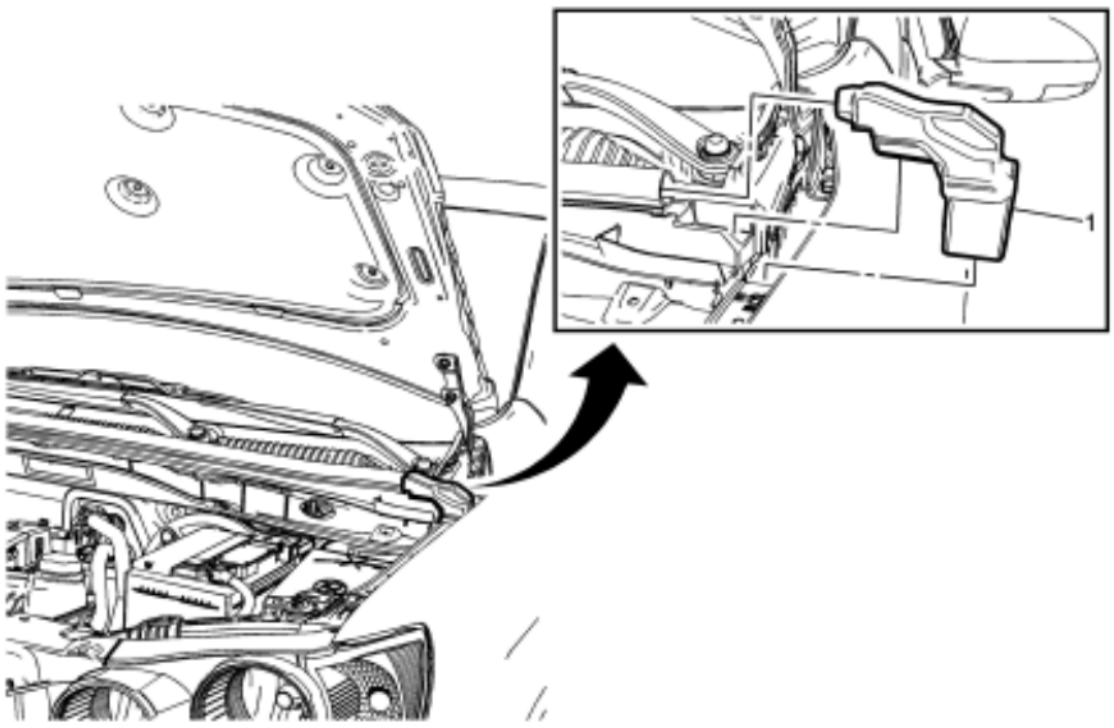


Callout	Component Name
1	Hood Side Seal Push-In Retainer (Qty: 6)
2	Hood Side Seal

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Hood Rear Seal Replacement

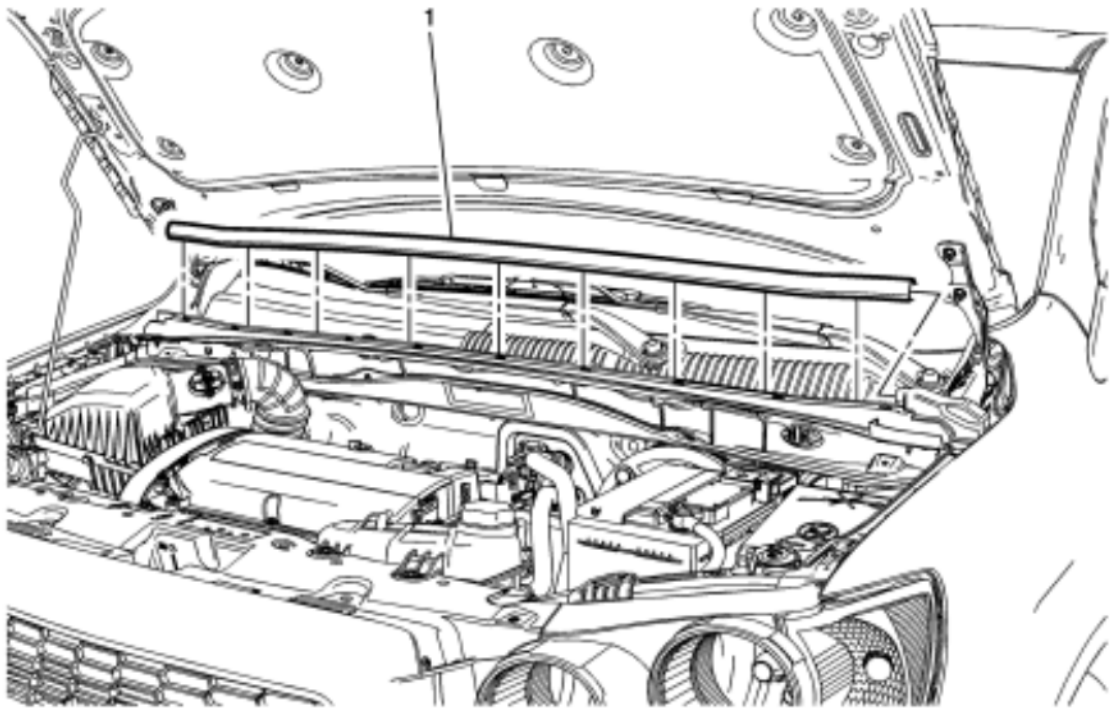


Callout	Component Name
1	Hood Rear Seal **Procedure** 1. Clean the area where the seal will be mounted. Use a suitable solvent with a mixture of 50 percent isopropyl alcohol and 50 percent water by volume, or high-flash naphtha. 2. Warm the air inlet panel using a heat gun, to a minimum, prior to the hood rear outer seal installation. 3. Do NOT touch the adhesive surface when tape is removed. Peel the tape liner off and install the outer rear hood seal. 4. Position the end of the seal into the end of the hood rear weatherstrip.

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Hood Rear Weatherstrip Replacement

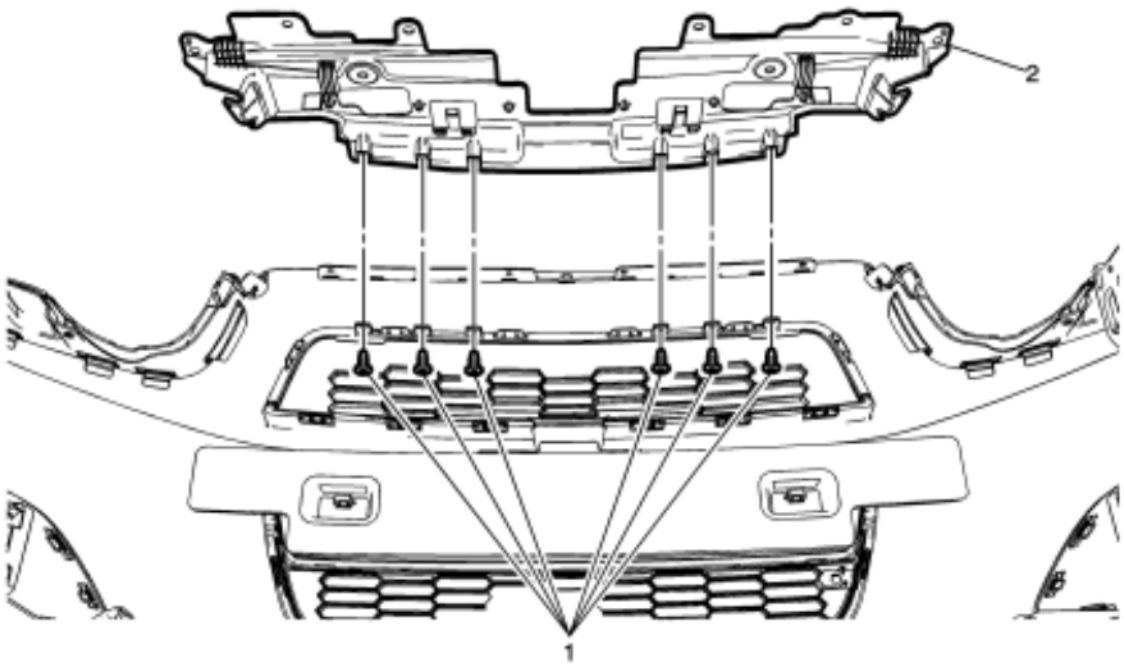


Callout	Component Name
1	Hood Rear Weatherstrip **Procedure** The hood rear weatherstrip is held in place with 10 plastic retainers that are part of the air inlet grille. Carefully pull the weatherstrip to the right/left to release from the retainers on the air inlet grille.

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Radiator Grille Bumper Replacement

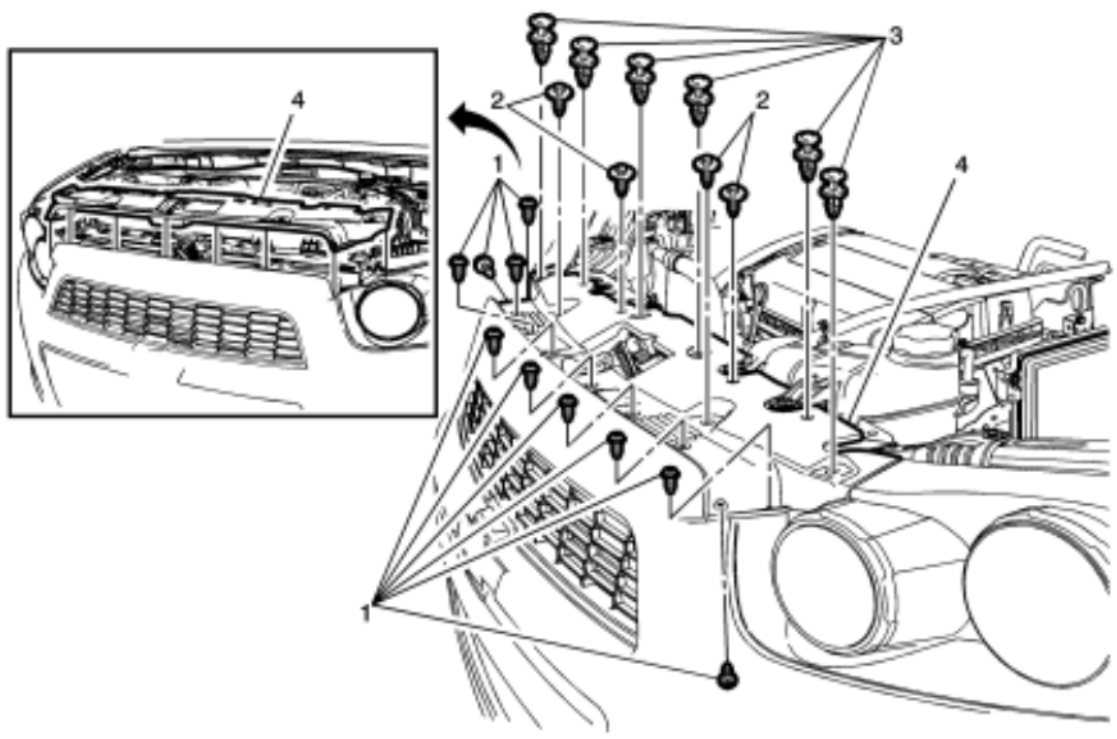


Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
1	Radiator Grille Bumper Screw (Qty: 6) **Caution:** Refer to Fastener Caution .
2	Radiator Grille Bumper **Procedure** Pull gently on each side of the radiator grille bumper to disengage from the front bumper fascia.

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Radiator Opening Upper Cover Replacement



Callout	Component Name
1	Radiator Opening Upper Cover Screw (Qty: 10) **Caution:** Refer to Fastener Caution .
2	Radiator Opening Upper Cover Bolt (Qty: 4) **Tighten** 9 N·m (80 lb in)
3	Radiator Opening Upper Cover Push-In Retainer (Qty: 6)
4	Radiator Opening Upper Cover

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Liftgate Strut Replacement

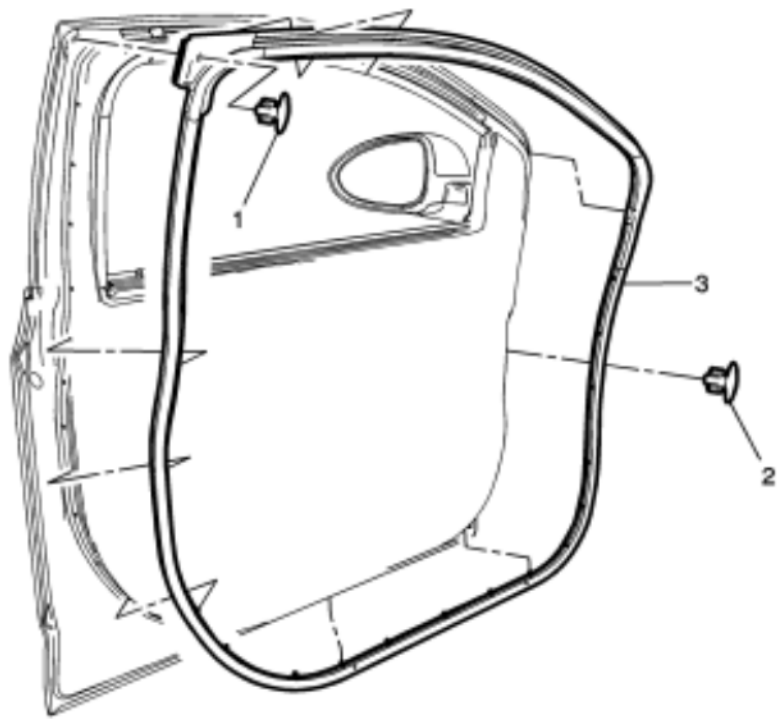


Callout	Component Name
1	Liftgate Strut **Warning:** When a lift gate hold open device is being removed or installed, provide alternate support to avoid the possibility of damage to the vehicle or personal injury. **Caution:** Apply pressure only at the end of the liftgate/hood assist rod that you are removing or attaching. Do NOT apply pressure to the middle of the rod because damage or bending will result. **Procedure** 1. Release the locking tabs on the strut. 2. Ensure the clip is fully seated when the strut is reinstalled. If the clip cannot be fully seated, a new strut should be installed.

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Front Side Door Weatherstrip Replacement - Door Side

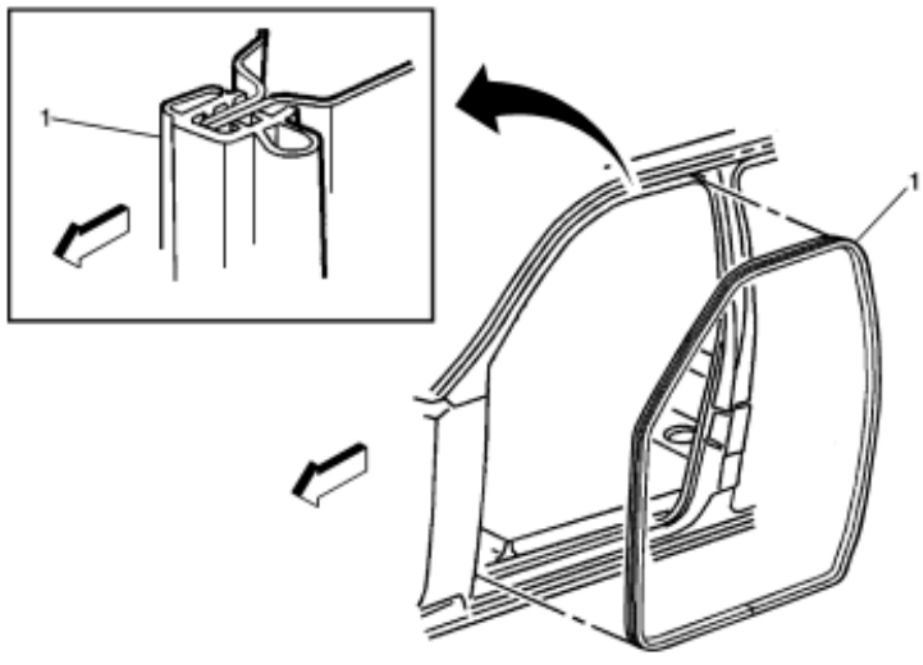


Callout	Component Name
1	Front Side Door Weatherstrip Upper Retainer **Procedure** 1. Open the front side door to the fully open position. 2. Remove the front side door check link bolt from the body side only . Refer to Front Side Door Check Link Replacement . 3. Use a suitable tool, remove the push-in retainer from the upper rear corner of the door. 4. Pull the weatherstrip out of the door retainer.
2	Front Side Door Weatherstrip Retainers (Qty:21)
3	Front Side Door Weatherstrip **Procedure** 1. Ensure that the weatherstrip is fully seated in the door frame retainer. 2. Verify proper door operation.

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Front Side Door Weatherstrip Replacement - Body Side

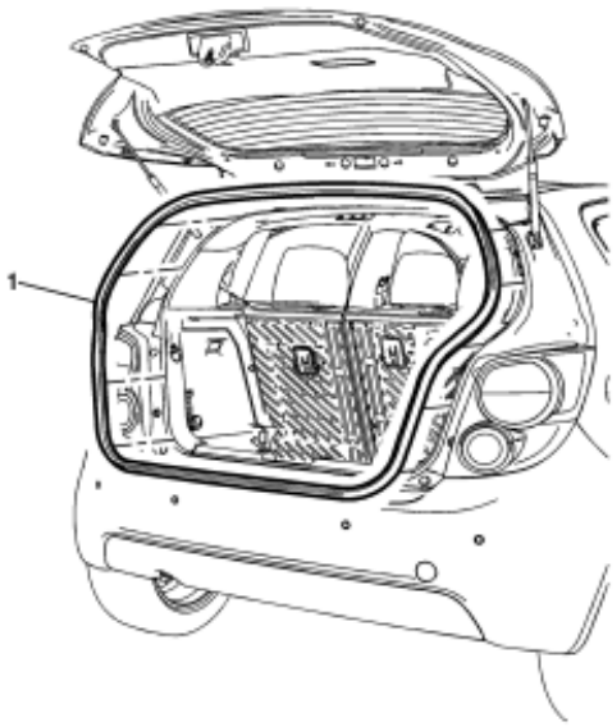


Callout	Component Name
	Preliminary Procedure 1. Remove the upper center pillar trim. Refer to Center Pillar Upper Trim Panel Replacement . 2. Remove the lower center pillar trim. Refer to Center Pillar Lower Trim Panel Replacement 3. Remove the carpet retainer. Refer to Front Side Door Opening Floor Carpet Retainer Replacement .
1	Front Side Door Weatherstrip Body Side **Preliminary Procedure** 1. Starting in the center bottom of the weatherstrip, pull the weatherstrip upward and away from the pinch-weld flange. 2. Start in the center bottom of the pinch-weld flange. 3. Ensure that the weatherstrip and retainers are fully seated on the flange before installing the front carpet retainer. 4. Inspect the door for proper operation.

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Liftgate Weatherstrip Replacement

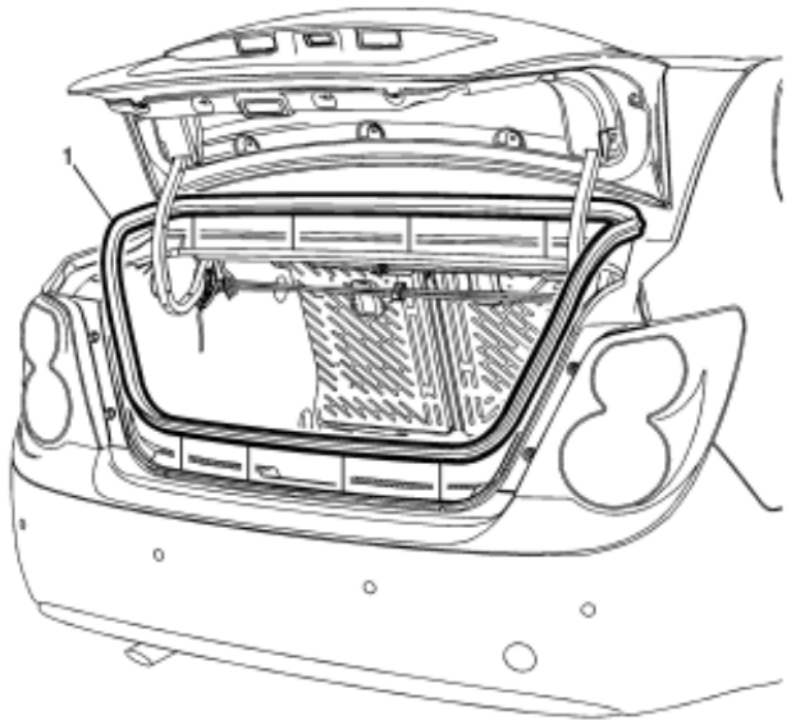


Callout	Component Name
1	Liftgate Weatherstrip **Procedure** Clean the area where the seal will be mounted. Use a suitable solvent with a mixture of 50 percent isopropyl alcohol and 50 percent water by volume, or high-flash naphtha.

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Rear Compartment Lid Weatherstrip Replacement

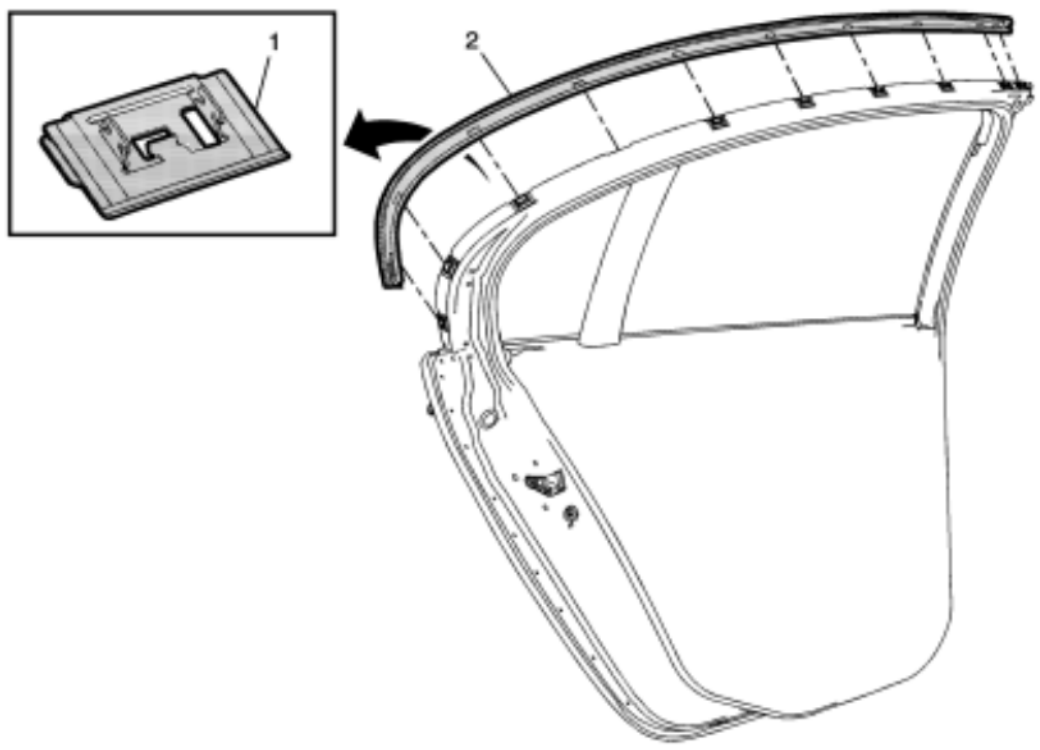


Callout	Component Name
1	Rear Compartment Lid Weatherstrip **Procedure** 1. Disconnect any electrical connector. 2. Clean the area where the seal will be mounted. Use a suitable solvent with a mixture of 50 percent isopropyl alcohol and 50 percent water by volume, or high-flash naphtha.

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Rear Side Door Upper Front Auxiliary Weatherstrip Retainer Replacement

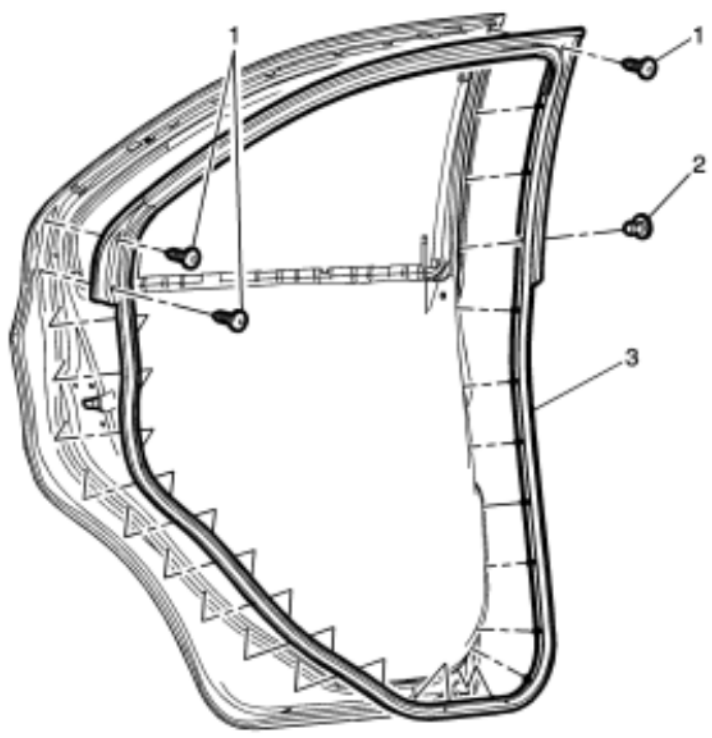


Callout	Component Name
1	Front Side Door Upper Front Auxiliary Weatherstrip Retainer (Qty:10) **Note:** If the retainers are damaged when removing they must be replaced.
2	Front Side Door Upper Front Auxiliary Weatherstrip Retainer **Preliminary Procedure** 1. Rear side door weatherstrip door side. Refer to Rear Side Door Weatherstrip Replacement - Door Side . It is only necessary to remove the upper second of the weatherstrip from the door to replace the weatherstrip retainer. 2. Starting in the center top of the weatherstrip, pull the weatherstrip upward and away from the door retainer. 3. Inspect the door for proper operation and sealing.

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Rear Side Door Weatherstrip Replacement - Door Side

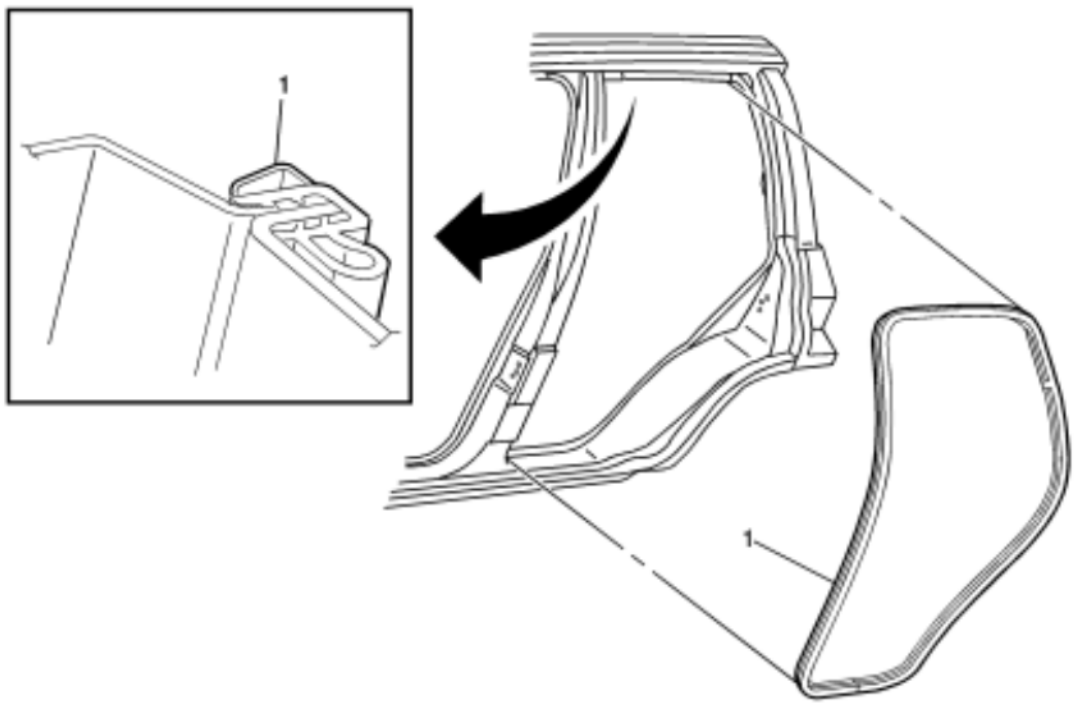


Callout	Component Name
1	Rear Side Door Weatherstrip Upper Retainers (Qty:3) **Procedure** 1. Open the front side door to the fully open position. 2. Remove the front side door check link bolt from the body side only . Refer to Front Side Door Check Link Replacement . 3. Use a suitable tool, remove the push-in retainers from the corners of the door. 4. Pull the weatherstrip out of the door retainer.
2	Rear Side Door Weatherstrip Retainers (Qty:21)
3	Rear Side Door Weatherstrip **Procedure** 1. Ensure that the weatherstrip is fully seated in the door frame retainer. 2. Verify proper door operation.

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Rear Side Door Weatherstrip Replacement - Body Side



Callout	Component Name
	Preliminary Procedures 1. Remove the upper center pillar trim. Refer to Center Pillar Upper Trim Panel Replacement . 2. Remove the lower center pillar trim. Refer to Center Pillar Lower Trim Panel Replacement 3. Remove the carpet retainer. Refer to Rear Side Door Opening Floor Carpet Retainer Replacement .
1	Rear Side Door Weatherstrip Body Side **Preliminary Procedure** 1. Starting in the center bottom of the weatherstrip, pull the weatherstrip upward and away from the pinch-weld flange. 2. Start in the center bottom of the pinch-weld flange. 3. Ensure that the weatherstrip and retainers are fully seated on the flange before installing the front carpet retainer. 4. Inspect the door for proper operation.

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Hood Ajar Indicator Description and Operation

Hood Ajar Switch

The body control module (BCM) applies B+ to the hood ajar signal circuit and monitors the voltage to determine the position of the hood. When the hood is closed, the switch is open and voltage remains high. When the hood is open, the switch is closed and the voltage is pulled low.

The BCM uses the hood ajar switch as a content theft deterrent alarm trigger.

Hood Ajar Indicator/Message

When the hood is ajar, a message is displayed on the DIC or the hood ajar indicator will be illuminated.

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Special Tools

Illustration	Tool Number/ Description
	BO-125 KM-125 Torque Rod Lifter

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Specifications
Front Bumper Energy Absorber Replacement
Front Bumper Upper Impact Bar Replacement
Front Bumper Lower Impact Bar Replacement
Front Bumper Impact Bar Lower Bracket Replacement
Front Bumper Fascia Replacement
Front Bumper Fascia Guide Replacement
Front Bumper Fascia Center Support Bracket Replacement
Front Bumper Fascia Opening Lower Cover Replacement
Front Bumper Fascia Bracket Replacement
Front Air Deflector Replacement
Front Bumper Fascia Air Deflector Replacement
Rear Bumper Fascia Replacement (Sedan)
Rear Bumper Fascia Replacement (Hatchback)
Rear Bumper Fascia Outer Guide Replacement (Sedan)
Rear Bumper Fascia Outer Guide Replacement (Hatchback)
Rear Bumper Impact Bar Replacement (Hatchback)
Rear Bumper Impact Bar Replacement (Sedan)
Special Tools

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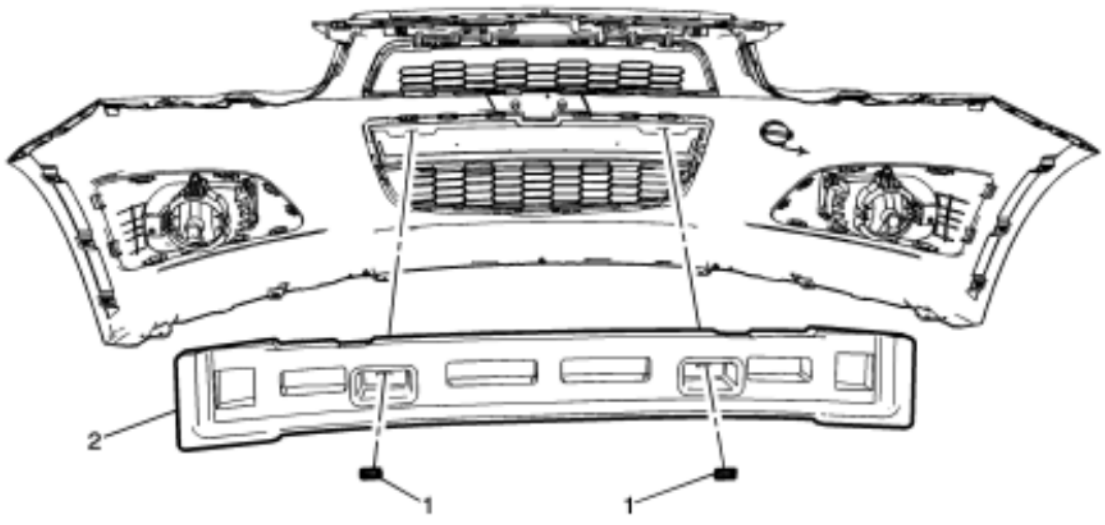
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Air Deflector Bolts	8 N·m	71 lb in
Front Bumper Fascia Air Deflector Screws	2.5 N·m	22 lb in
Front Bumper Fascia Bracket Bolts	9 N·m	80 lb in
Front Bumper Fascia Center Support Bolts	9 N·m	80 lb in
Front Bumper Fascia Lower Screws	2.5 N·m	22 lb in
Front Bumper Fascia Opening Lower Cover Bolts	22 N·m	16 lb ft
Front Bumper Fascia Opening Lower Cover Screws	2.5 N·m	22 lb in
Front Bumper Fascia Screws	2.5 N·m	22 lb in
Front Bumper Impact Bar Bolts	100 N·m	74 lb in
Front Bumper Impact Bar Lower Bracket Screws	2.5 N·m	22 lb in
Front Bumper Lower Impact Bracket Bolts	22 N·m	16 lb ft
Headlamp Bolt	2.5 N·m	22 lb in
Rear Bumper Impact Bar Bolts	40 N·m	30 lb ft
Rear Bumper Impact Bar Nuts	40 N·m	30 lb ft
Rear Fascia Screws	2.5 N·m	22 lb in

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Front Bumper Energy Absorber Replacement

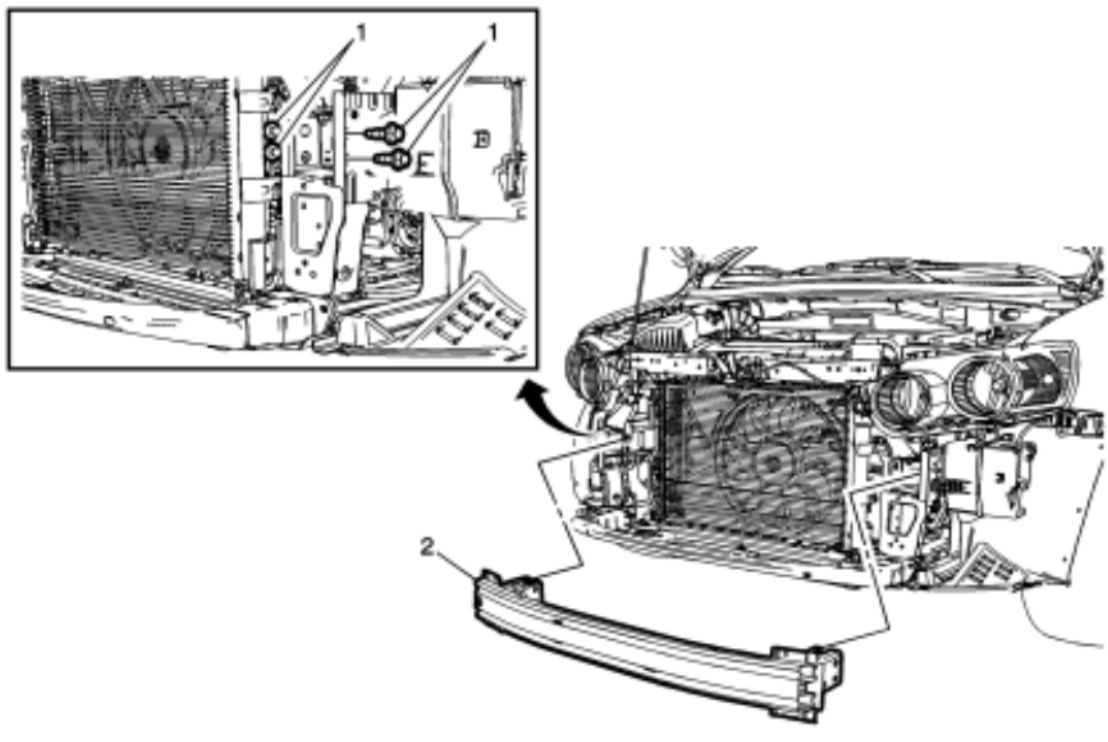


Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
1	Front Bumper Energy Upper Absorber Push-On Retainer (Qty: 2)
2	Front Bumper Energy Upper Absorber **Procedure** Reposition the electrical harness from the absorber.

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Front Bumper Upper Impact Bar Replacement

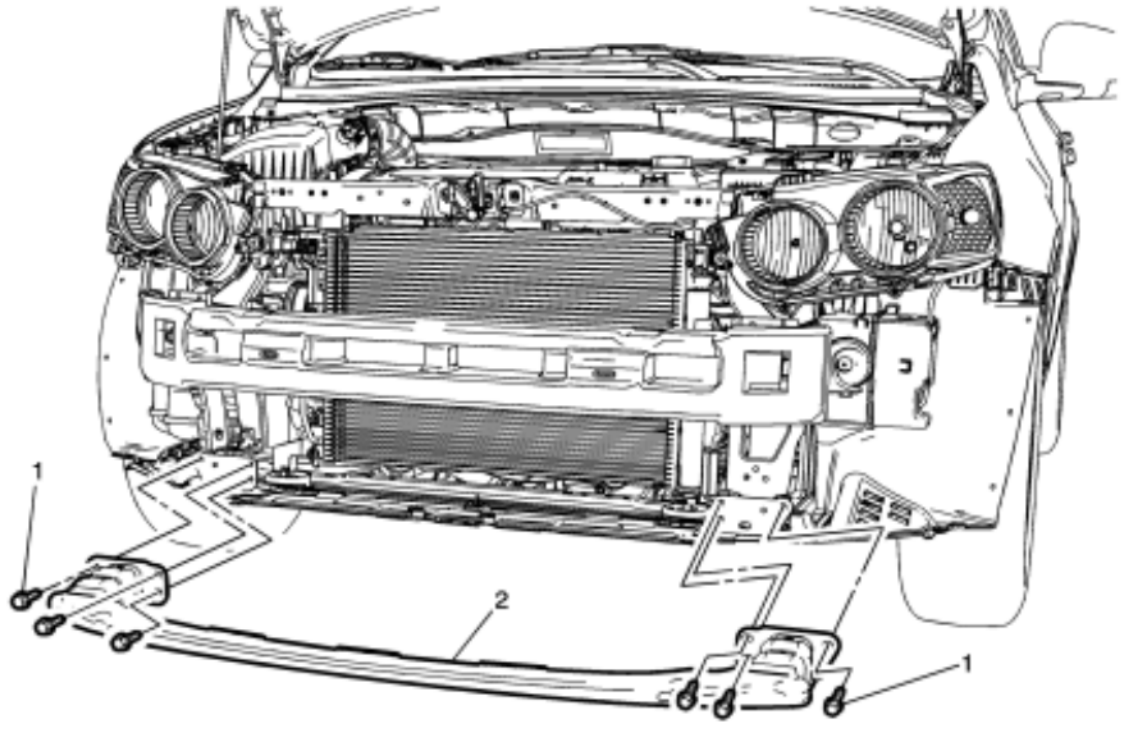


Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
1	Front Bumper Impact Bar Bolt (Qty: 8) **Caution:** Refer to Fastener Caution . **Tighten** 100 N·m (74 lb ft)
2	Front Bumper Impact Bar **Procedure** 1. Disconnect the electrical connectors/harnesses as needed. 2. Transfer any parts as needed.

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Front Bumper Lower Impact Bar Replacement

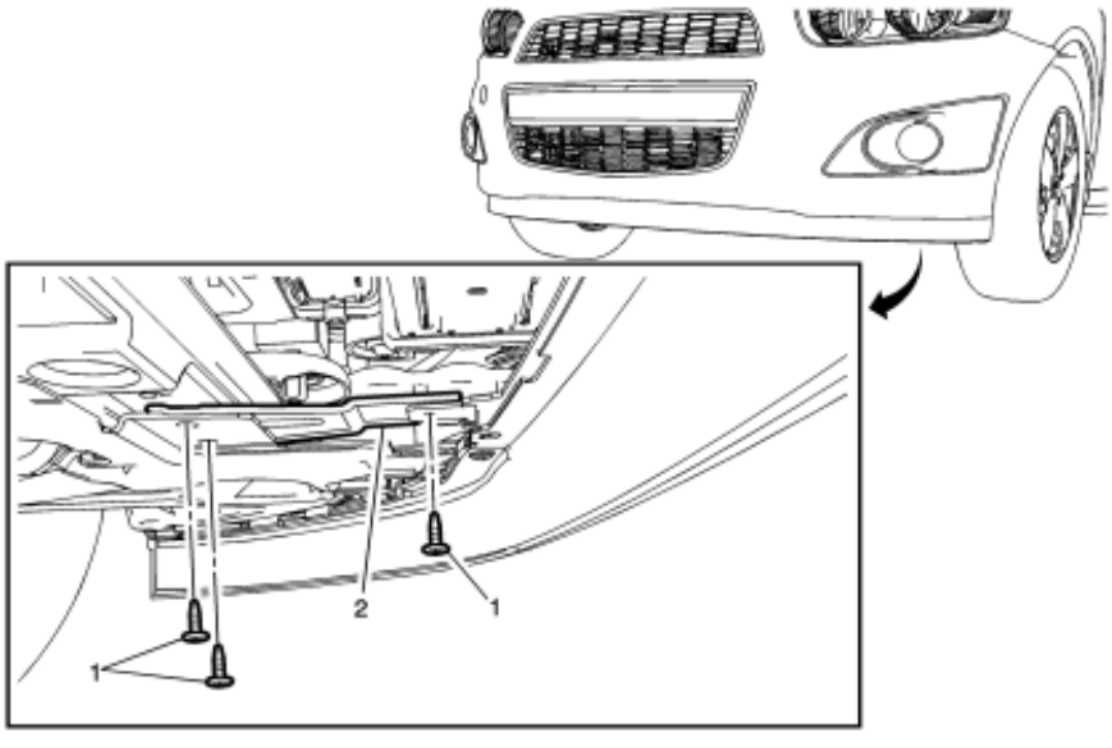


Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
1	Front Bumper Lower Impact Bar Bracket Bolt (Qty: 6) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
2	Front Bumper Lower Impact Bar

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Front Bumper Impact Bar Lower Bracket Replacement

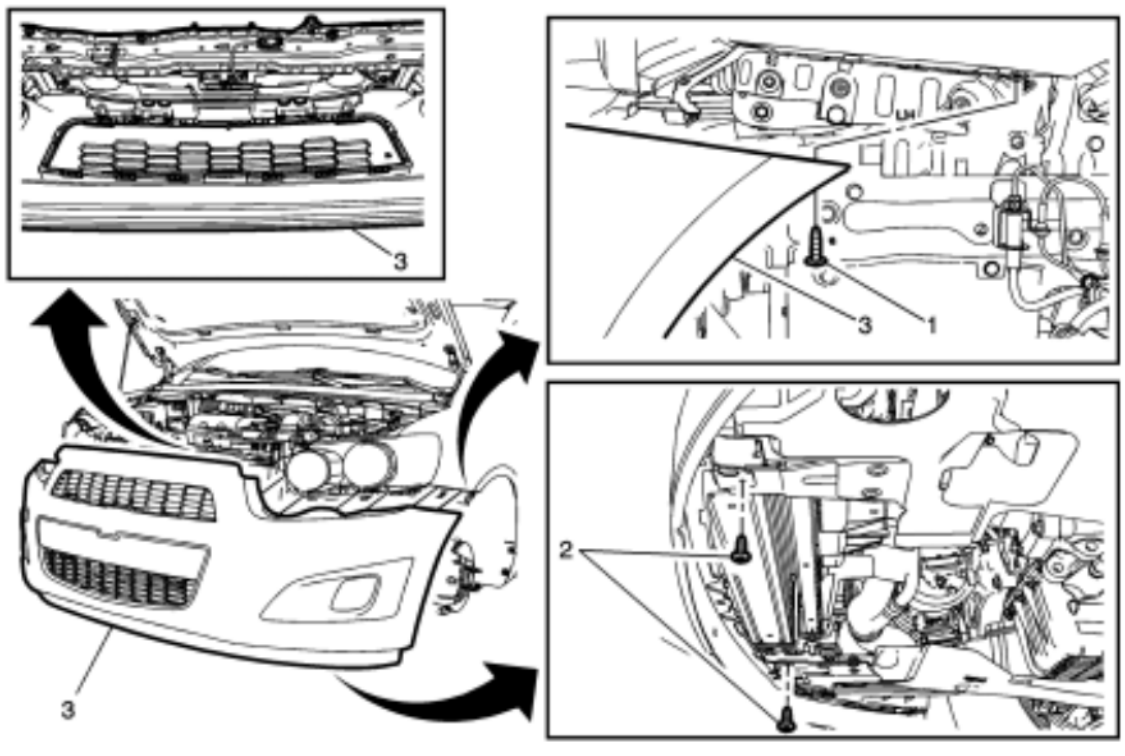


Callout	Component Name
	Preliminary Procedure Remove the front bumper opening cover. Refer to Front Bumper Fascia Opening Lower Cover Replacement .
1	Front Bumper Impact Bar Lower Bracket Screw (Qty: 3) **Caution:** Refer to Fastener Caution . **Tighten** 8 N·m (71 lb in)
2	Front Bumper Impact Bar Lower Bracket **Procedure** Lift up the front of the lower bracket enough to release the front guide tab from the front fascia.

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Front Bumper Fascia Replacement

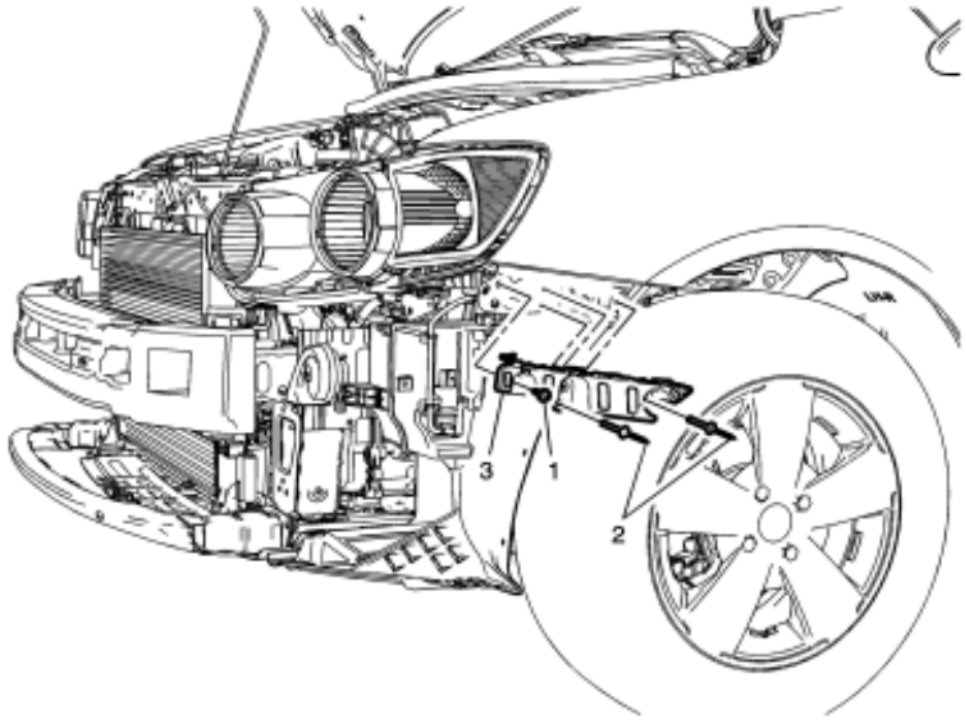


Callout	Component Name
Preliminary Procedures 1. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement . 2. Remove the front bumper opening lower cover. Refer to Front Bumper Fascia Opening Lower Cover Replacement . 3. Remove the front wheelhouse front liner. Refer to Front Wheelhouse Liner Replacement . 4. Disconnect the ambient air temperature sensor from the lower grille.	
1	Front Bumper Fascia Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 6 N·m (53 lb in)
2	Front Bumper Fascia Lower Screw (Qty: 2) **Tighten** 6 N·m (53 lb in)
3	Front Bumper Fascia **Procedure** 1. Carefully push a small nylon wedge between the fascia and the bracket. Insert a small flat-bladed tool into the fascia slot and depress the tabs one at a time and pull the fascia wings off in the forward direction rather than outboard to gradually remove the fascia from the bracket. 2. Disconnect the electrical connectors. 3. On reassembly of the front fascia to the vehicle, ensure the 4 support retainers on the inside of the radiator grille bumper are in position to the front bumper fascia center support bracket.

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Front Bumper Fascia Guide Replacement

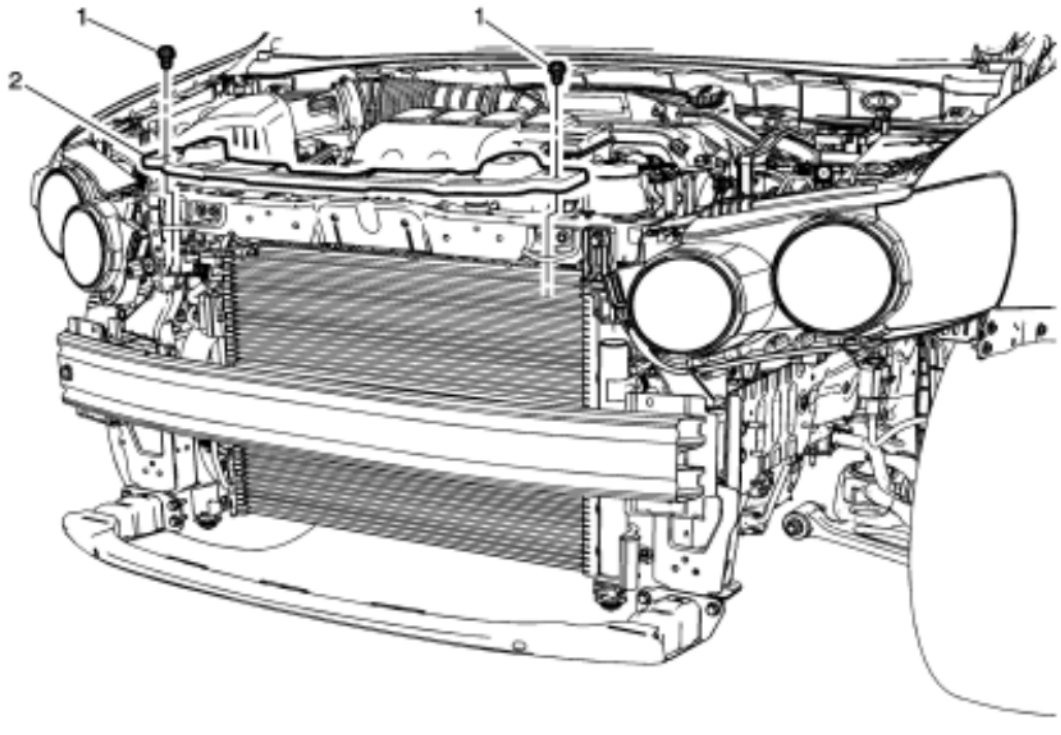


Callout	Component Name
Warning: Refer to Eye Protection Warning . **Preliminary Procedure** Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
1	Headlamp Bolt **Caution:** Refer to Fastener Caution . **Tighten** 10 N·m (89 lb in)
2	Front Bumper Fascia Guide Rivet (Qty: 2) **Special Tools** *BO-594-A* Hand Rivet Tongs For equivalent regional tools, refer to Special Tools .
3	Front Bumper Fascia Guide **Procedure** Slide the guide forward to release the front retainer from the fender.

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Front Bumper Fascia Center Support Bracket Replacement

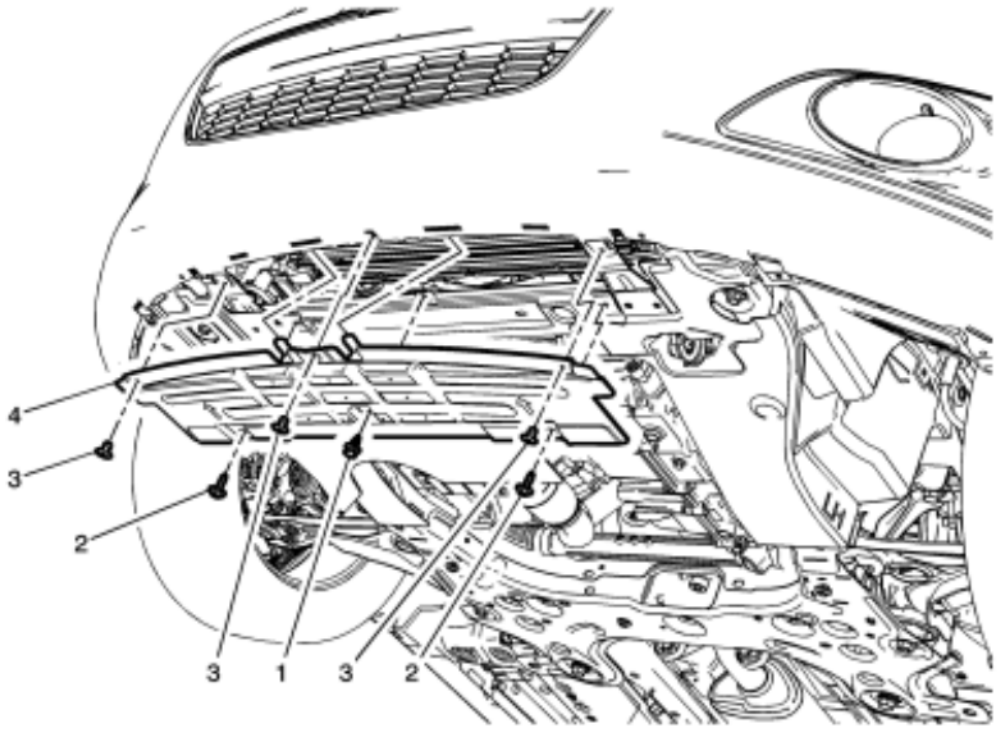


Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
1	Front Bumper Fascia Center Support Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
2	Front Bumper Fascia Center Support

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Front Bumper Fascia Opening Lower Cover Replacement

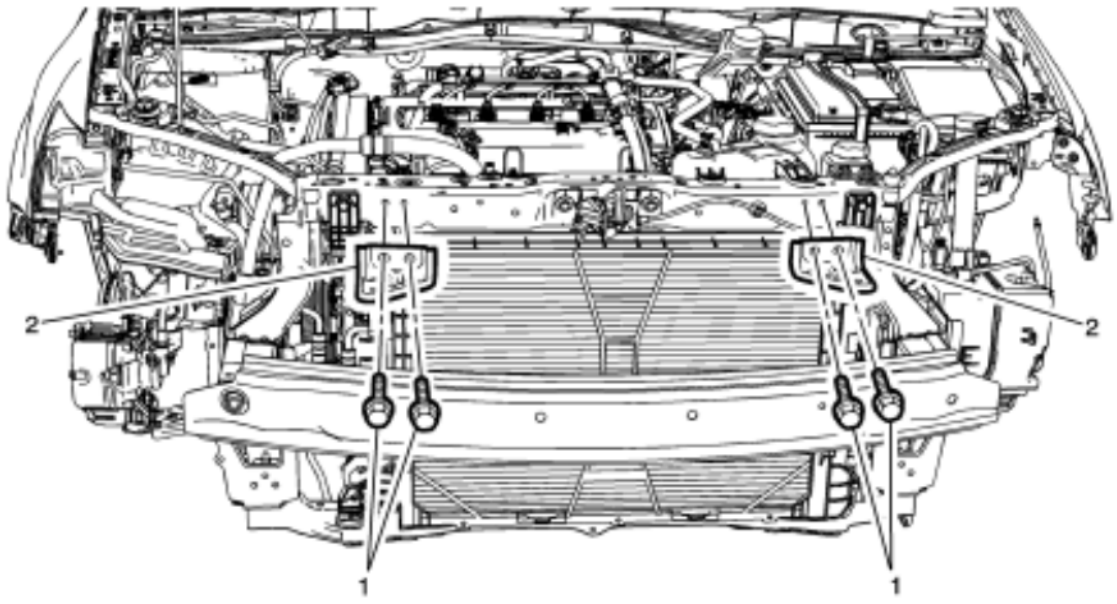


Callout	Component Name
1	Front Bumper Fascia Opening Lower Cover Push-In Retainer
2	Front Bumper Fascia Opening Lower Cover Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
3	Front Bumper Fascia Opening Lower Cover Screw (Qty: 3) **Tighten** 2.5 N·m (22 lb in)
4	Front Bumper Fascia Opening Lower Cover

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Front Bumper Fascia Bracket Replacement

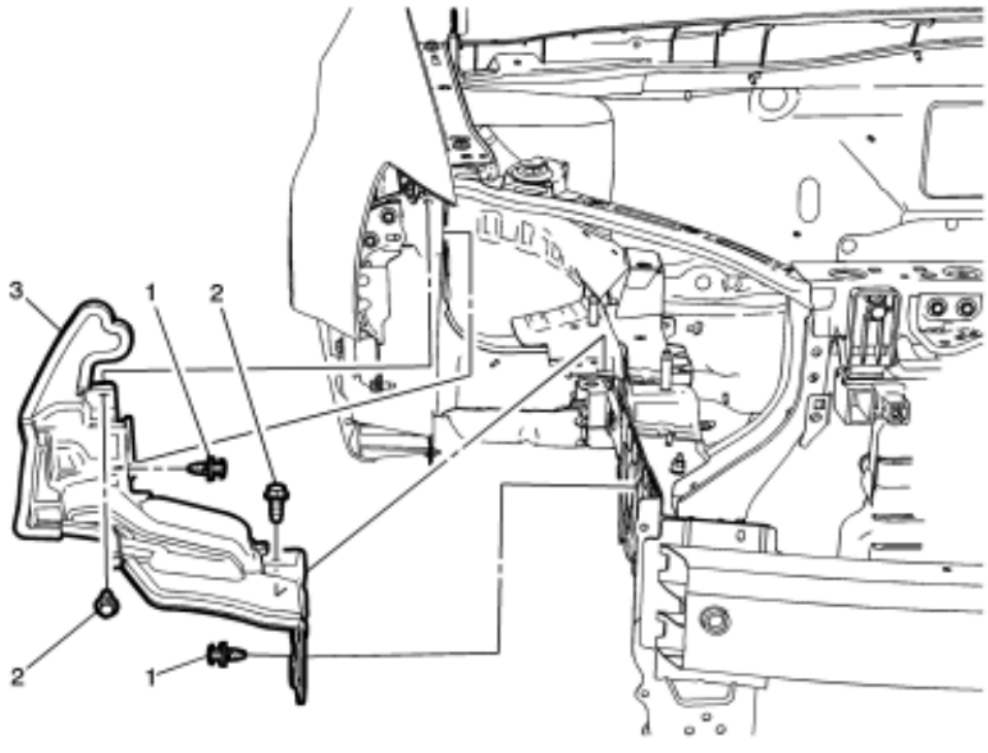


Callout	Component Name
Preliminary Procedure 1. Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement . 2. Remove the front bumper fascia center support bracket. Refer to Front Bumper Fascia Center Support Bracket Replacement .	
1	Front Bumper Fascia Bracket Bolt (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
2	Front Bumper Fascia Bracket **Note:** Transfer any parts as needed.

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Front Air Deflector Replacement

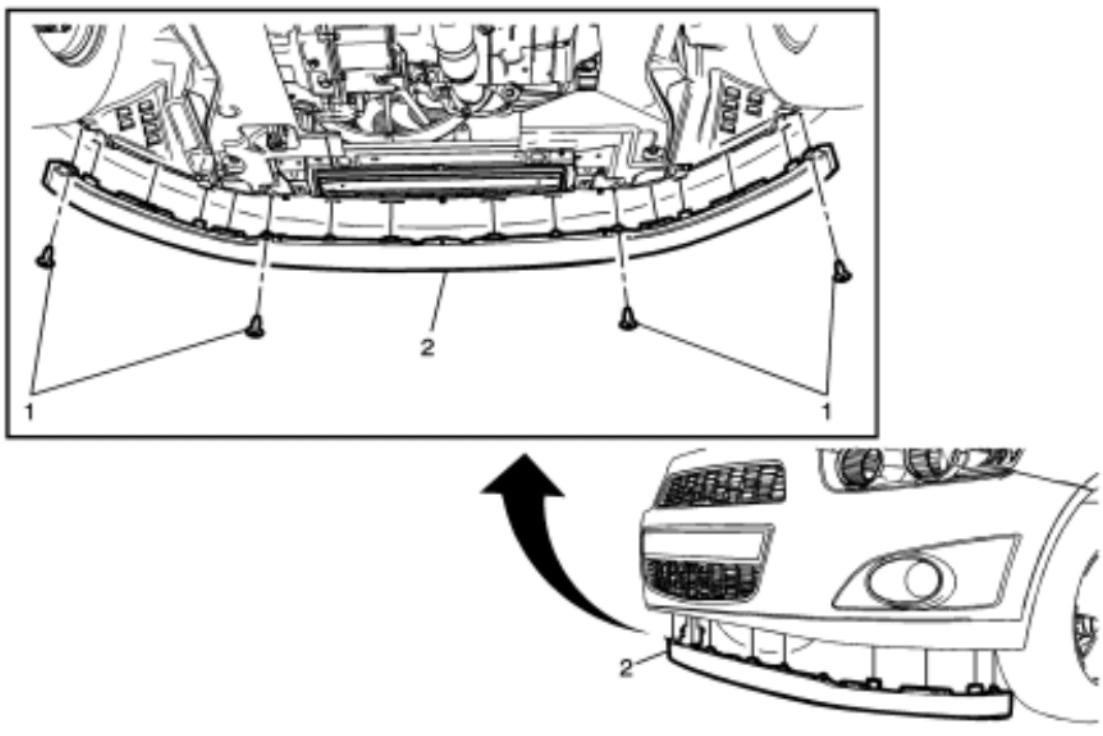


Callout	Component Name
Preliminary Procedure 1. Remove front bumper fascia. Refer to Front Bumper Fascia Replacement 2. Remove the headlamp. Refer to Headlamp Replacement .	
1	Front Air Deflector Retainers (Qty:2)
2	Front Air Deflector Bolts (Qty:2) **Caution:** Refer to Fastener Caution . **Tighten** 8 N·m (71 lb in)
3	Front Air Deflector

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Front Bumper Fascia Air Deflector Replacement

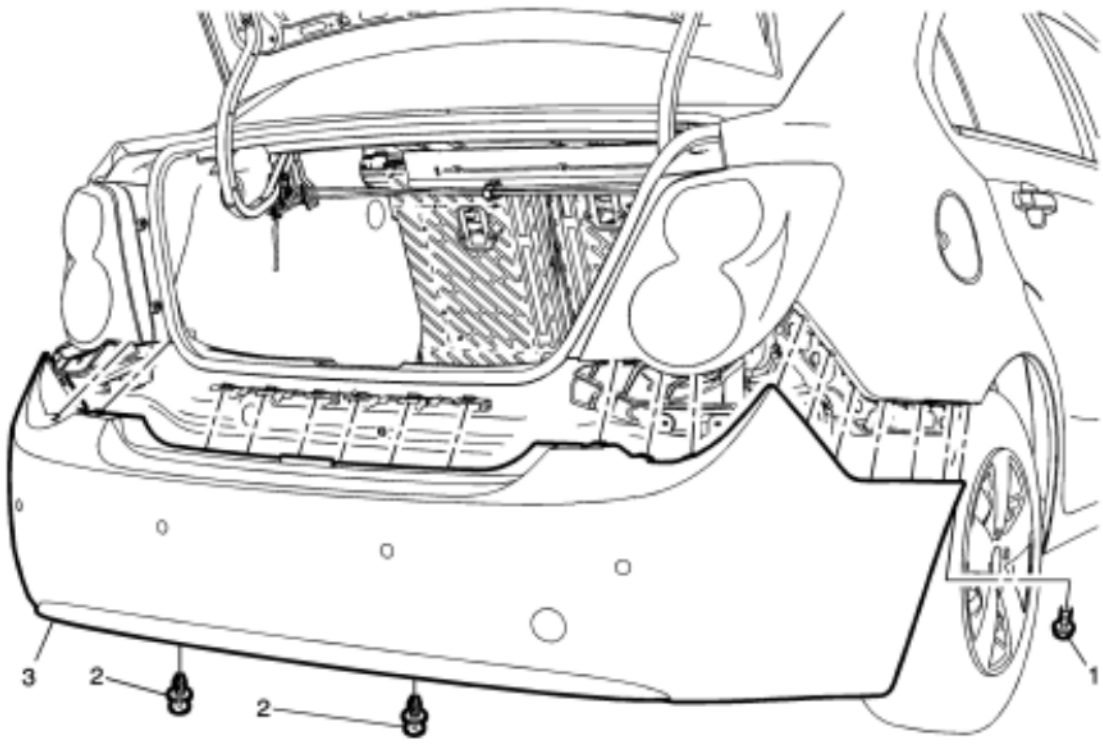


Callout	Component Name
Preliminary Procedure Remove the front bumper fascia opening lower cover. Refer to Front Bumper Fascia Opening Lower Cover Replacement .	
1	Front Bumper Fascia Air Deflector Screw (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 8 N·m (71 lb in)
2	Front Bumper Fascia Air Deflector

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Rear Bumper Fascia Replacement (Sedan)

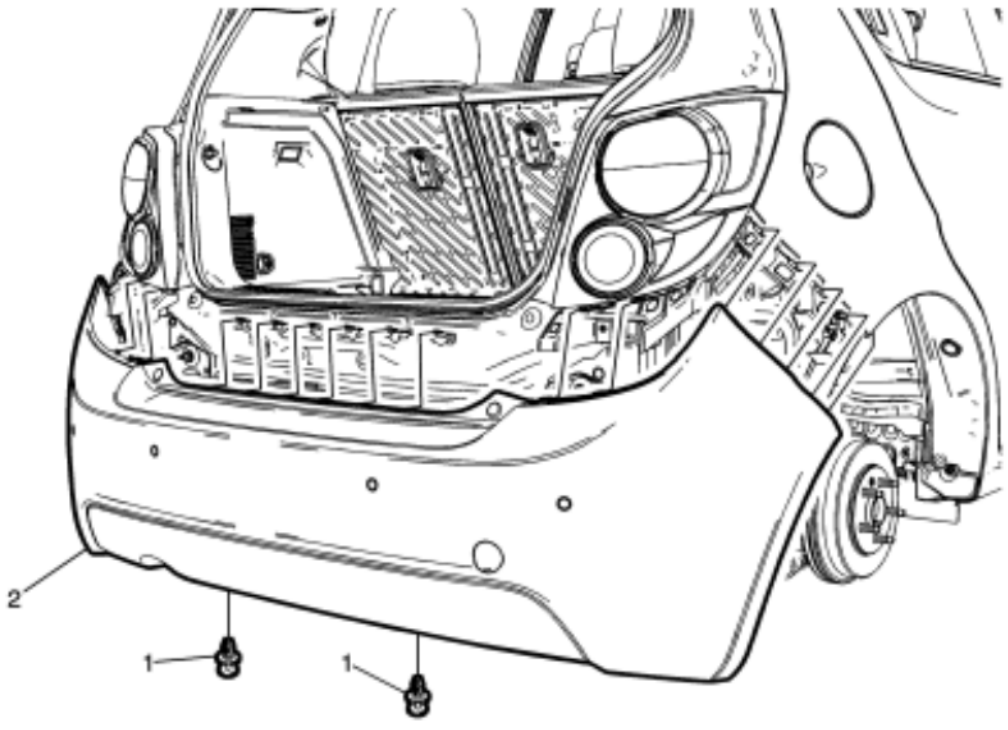


Callout	Component Name
Preliminary Procedures 1. Remove the screws from the rear wheelhouse liners to the rear fascia. Refer to Rear Wheelhouse Panel Liner Replacement . 2. Disconnect the rear electrical connectors.	
1	Rear Fascia Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 10 N·m (89 lb in)
2	Rear Fascia Lower Push-In Retainer (Qty: 2)
3	Rear Fascia **Procedure** 1. Carefully push a small nylon wedge between the fascia and the rear fascia guide. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the fascia from the rear fascia guide. 2. Transfer parts as needed.

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Rear Bumper Fascia Replacement (Hatchback)

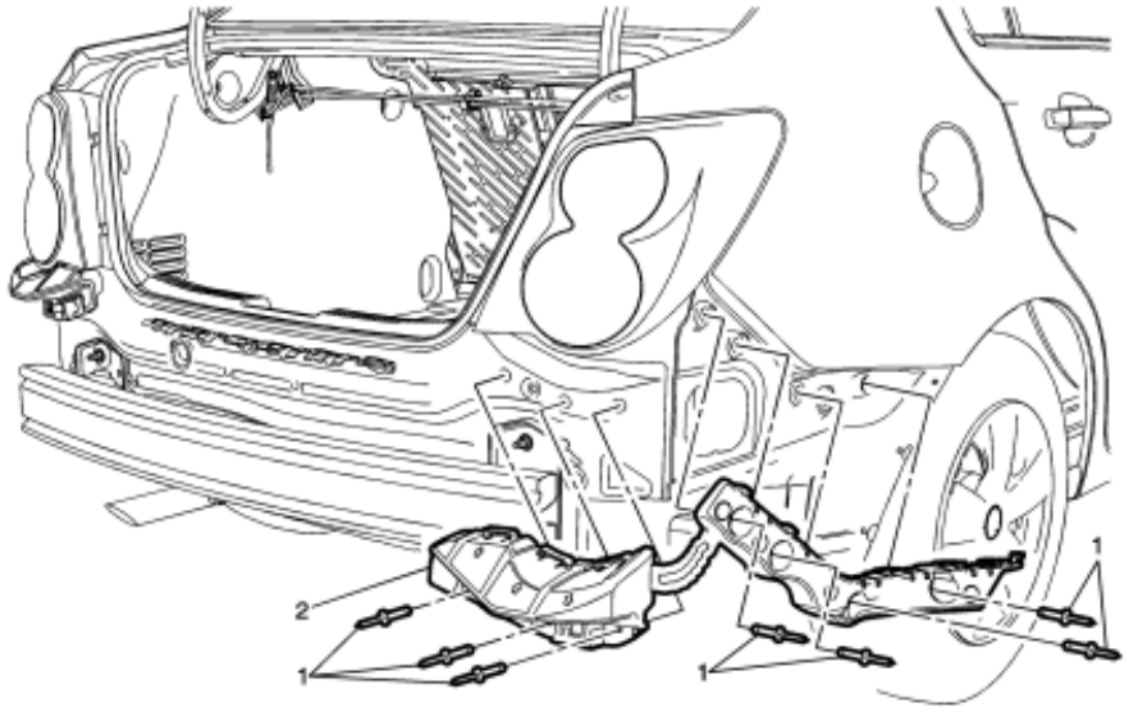


Callout	Component Name
Preliminary Procedures 1. Remove the screws from the rear wheelhouse liners to the rear fascia. Refer to Rear Wheelhouse Panel Liner Replacement . 2. Disconnect the rear electrical connectors.	
1	Rear Fascia Lower Push-In Retainer (Qty: 2)
2	Rear Fascia **Procedure** 1. Carefully push a small nylon wedge between the fascia and the rear fascia guide. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the fascia from the rear fascia guide. 2. Transfer parts as needed.

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Rear Bumper Fascia Outer Guide Replacement (Sedan)

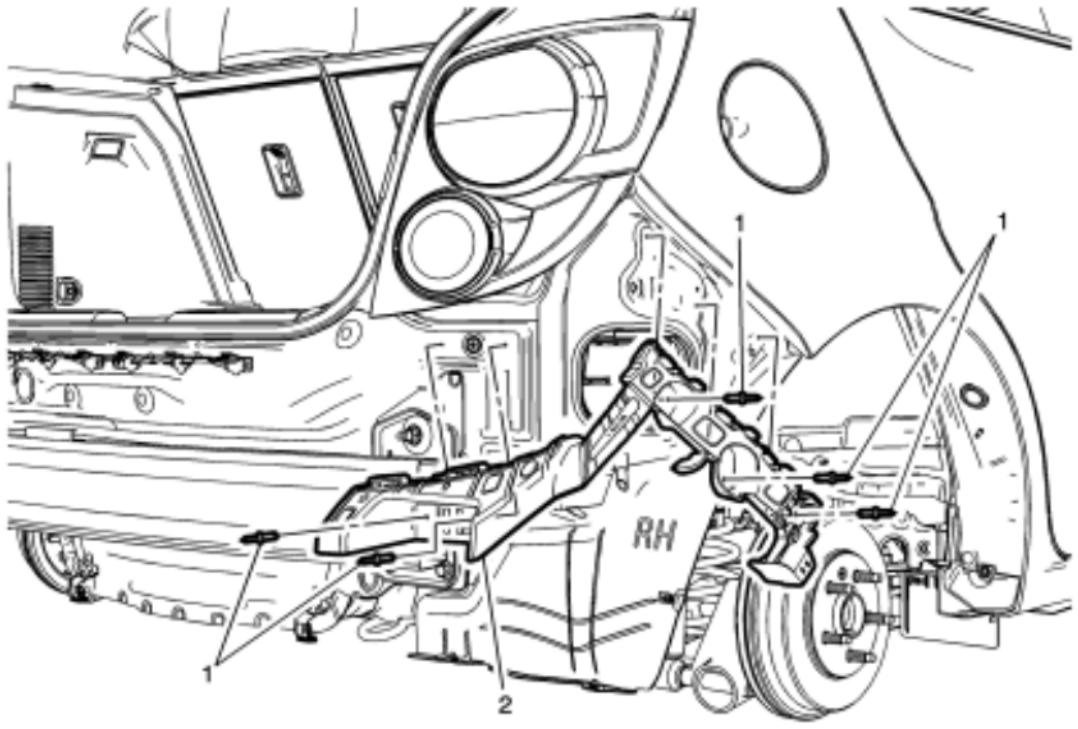


Callout	Component Name
Warning: Refer to Eye Protection Warning . **Preliminary Procedure** Remove the rear bumper fascia. Refer to Rear Bumper Fascia Replacement .	
1	Rear Bumper Fascia Outer Guide Rivet (Qty: 7) **Special Tools** *BO-594-A* Hand Rivet Tongs For equivalent regional tools, refer to Special Tools .
2	Rear Bumper Fascia Outer Guide

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Rear Bumper Fascia Outer Guide Replacement (Hatchback)

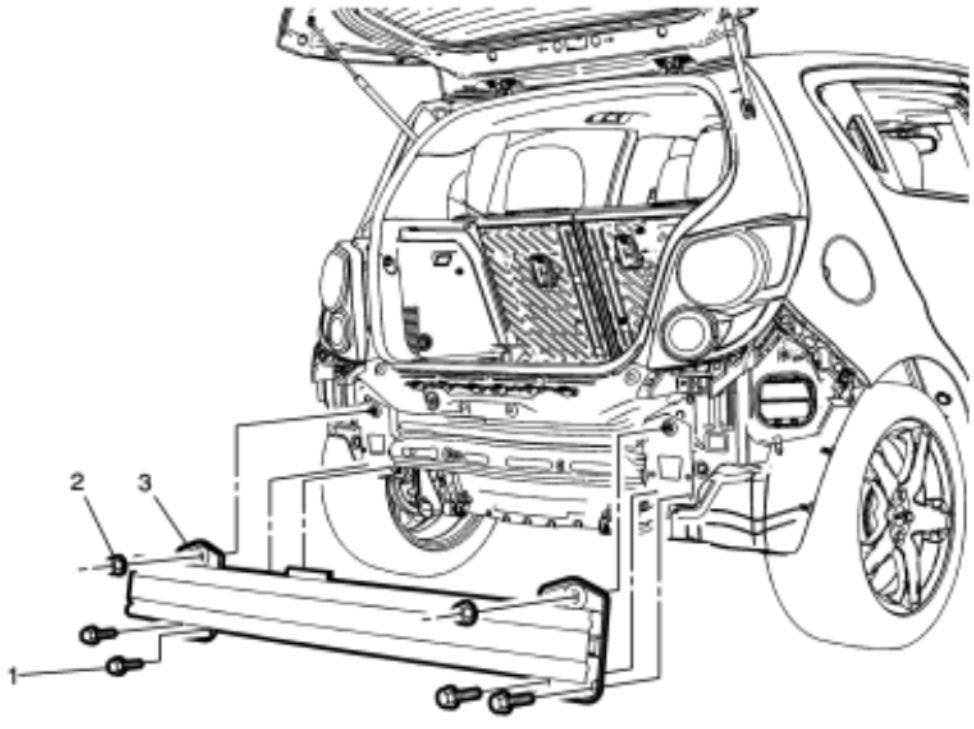


Callout	Component Name
Warning: Refer to Eye Protection Warning . **Preliminary Procedure** Remove the rear bumper fascia. Refer to Rear Bumper Fascia Replacement .	
1	Rear Bumper Fascia Outer Guide Rivet (Qty: 5) **Special Tools** *BO-594-A* Hand Rivet Tongs For equivalent regional tools, refer to Special Tools .
2	Rear Bumper Fascia Outer Guide

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Rear Bumper Impact Bar Replacement (Hatchback)

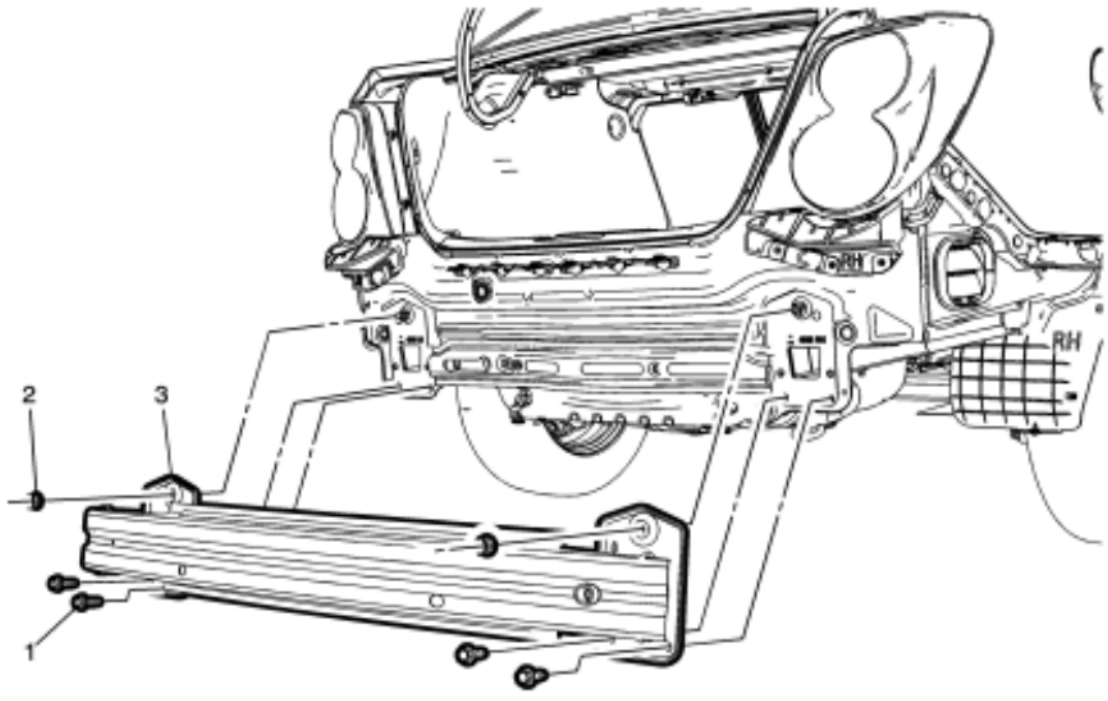


Callout	Component Name
Preliminary Procedure Remove the rear bumper fascia. Refer to Rear Bumper Fascia Replacement .	
1	Rear Bumper Impact Bar Bolt (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 40 N·m (30 lb ft)
2	Rear Bumper Impact Bar Nut (Qty: 2) **Tighten** 40 N·m (30 lb ft)
3	Rear Bumper Impact Bar **Procedure** Transfer any parts as needed.

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Rear Bumper Impact Bar Replacement (Sedan)

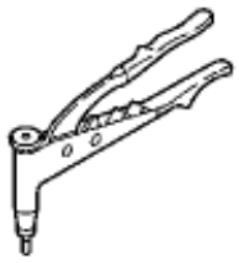


Callout	Component Name
Preliminary Procedure Remove the rear bumper fascia. Refer to Rear Bumper Fascia Replacement .	
1	Rear Bumper Impact Bar Bolt (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 40 N·m (30 lb ft)
2	Rear Bumper Impact Bar Nut (Qty: 2) **Tighten** 40 N·m (30 lb ft)
3	Rear Bumper Impact Bar **Procedure** Transfer any parts as needed.

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Special Tools

Illustration	Tool Number/ Description
	BO-594-A Hand Rivet Tongs

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Specifications
Front Wheelhouse Front Panel Replacement
Front Wheelhouse Panel Reinforcement Replacement
Front Compartment Side Rail Replacement
Front Hinge Pillar Body Sectioning
Body Hinge Pillar Lower Reinforcement Replacement
Roof Outer Panel Replacement (5HB)
Roof Outer Panel Replacement (4NB)
Roof Front Header Panel Replacement
Roof Rear Header Panel Replacement (5HB)
Rocker Inner Panel Replacement
Rocker Outer Panel Sectioning
Body Side Frame Rocker Reinforcement Replacement
Front Side Door Outer Panel Replacement
Rear Side Door Outer Panel Replacement
Rear Compartment Floor Panel Replacement
Quarter Outer Panel Sectioning (5HB)
Quarter Outer Panel Sectioning (4NB)
Quarter Inner Panel Replacement (4NB)
Quarter Inner Panel Sectioning (5HB)
Center Pillar Inner Panel Replacement
Center Pillar Reinforcement Replacement
Center Pillar Sectioning - Outer
Rear Rail Sectioning
Underbody Rear Side Rail Extension Replacement
Rear End Panel Replacement
Tail Lamp Pocket Replacement (5HB)
Tail Lamp Pocket Replacement (4NB)
Description and Operation
Special Tools

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Dimensions - Body (5HB)

Dimensions - Body (4NB)

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Dimensions - Body (5HB)

Point-to-point measurements are for reference only. All measurements are given in millimeters. Use these measurements for diagnosing and estimating. Point-to-point measurements are duplicated with tram bar pointers set at equal lengths. All die marks, holes, slots, and fasteners are measured to the center. All dimensions are symmetrical unless otherwise specified.

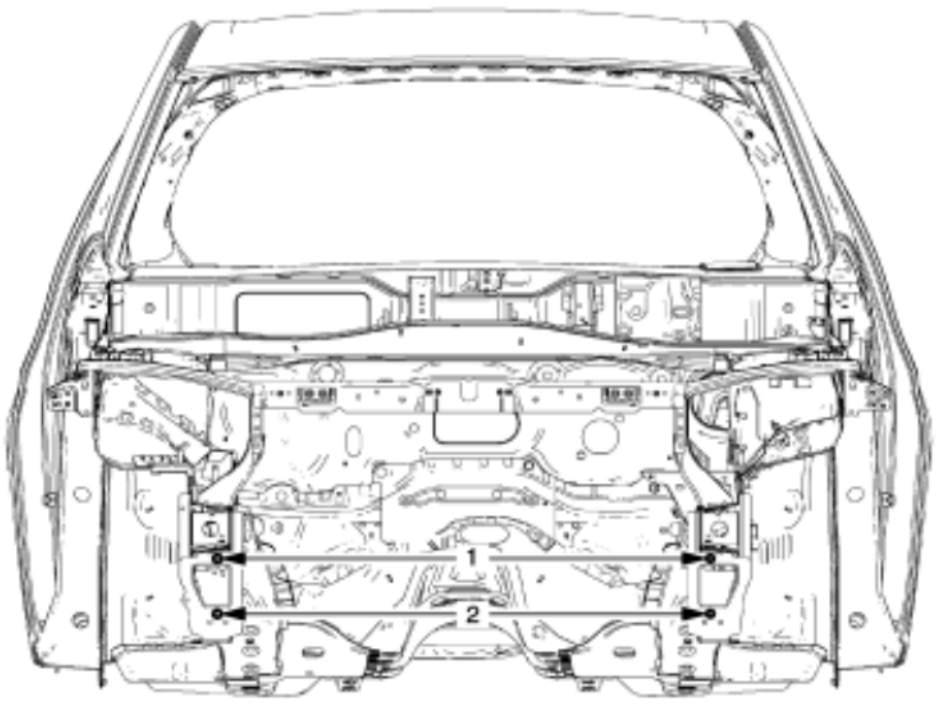
Point-to-Point Measurements

Front End Engine Compartment Front End Lower Rear End Lower Rear End Side

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Front End

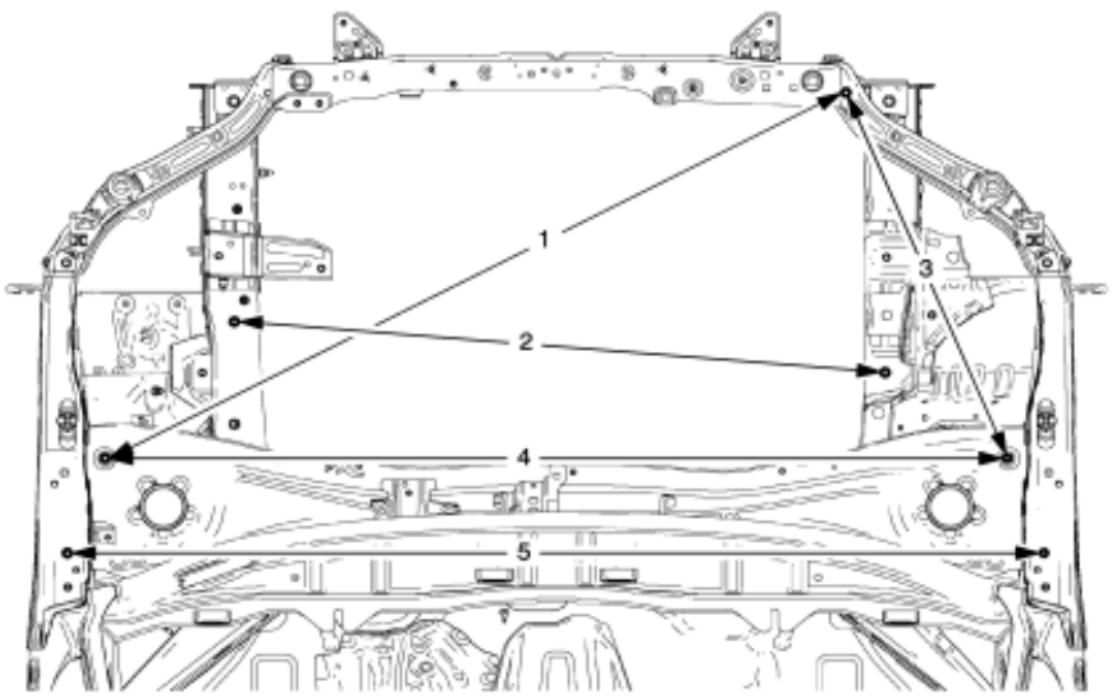


(1) 926 mm
(2) 926 mm

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Engine Compartment

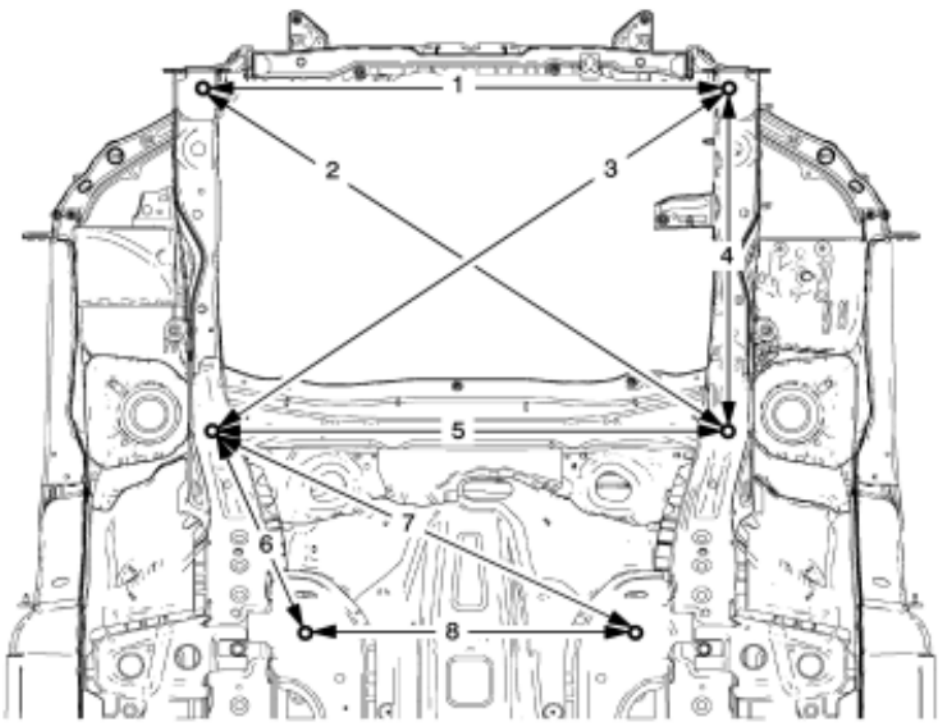


(1) 1201 mm
(2) 944 mm
(3) 599 mm
(4) 1300 mm
(5) 1409 mm

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Front End Lower

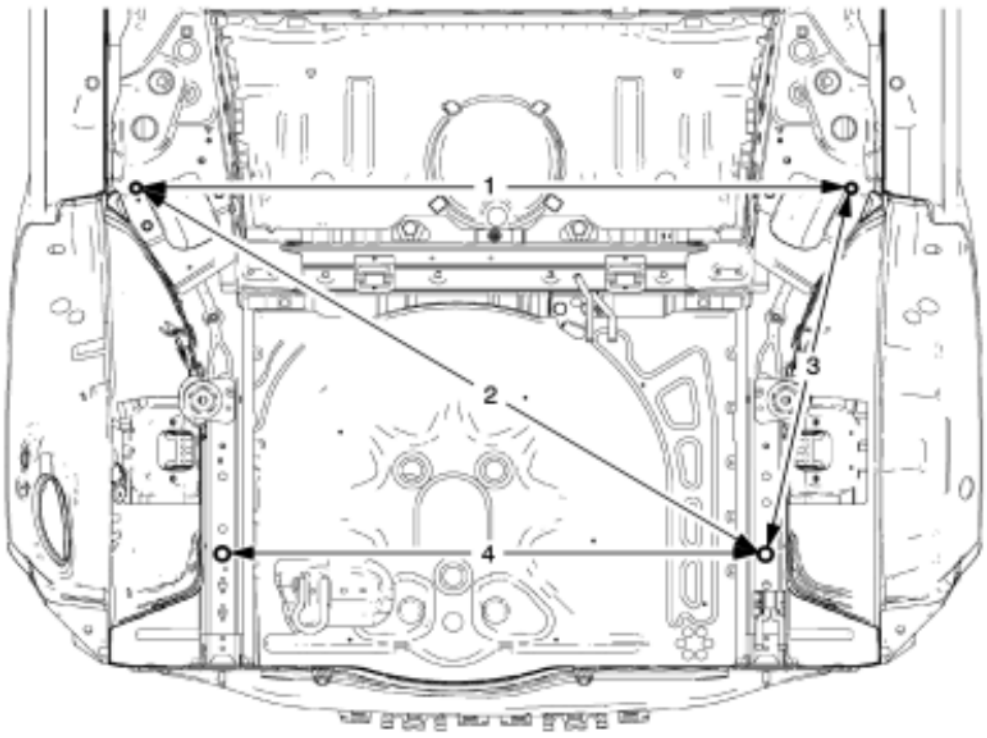


(1) 928 mm
(2) 1122 mm
(3) 1110 mm
(4) 633 mm
(5) 910 mm
(6) 440 mm
(7) 852 mm
(8) 584 mm

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Rear End Lower

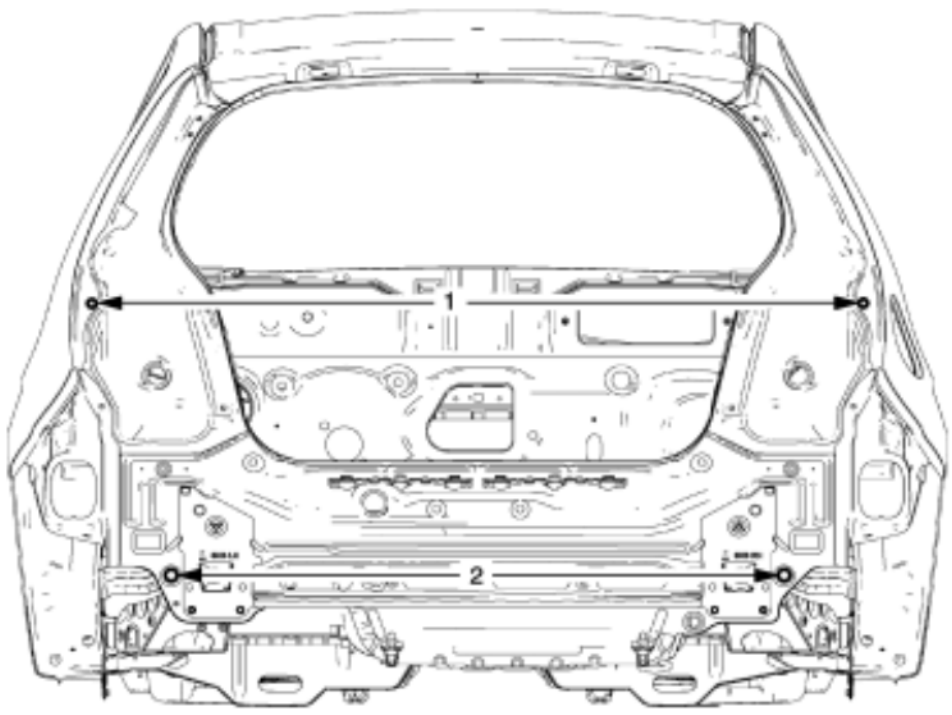


(1) 1233 mm
(2) 1259 mm
(3) 627 mm
(4) 966 mm

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Rear End

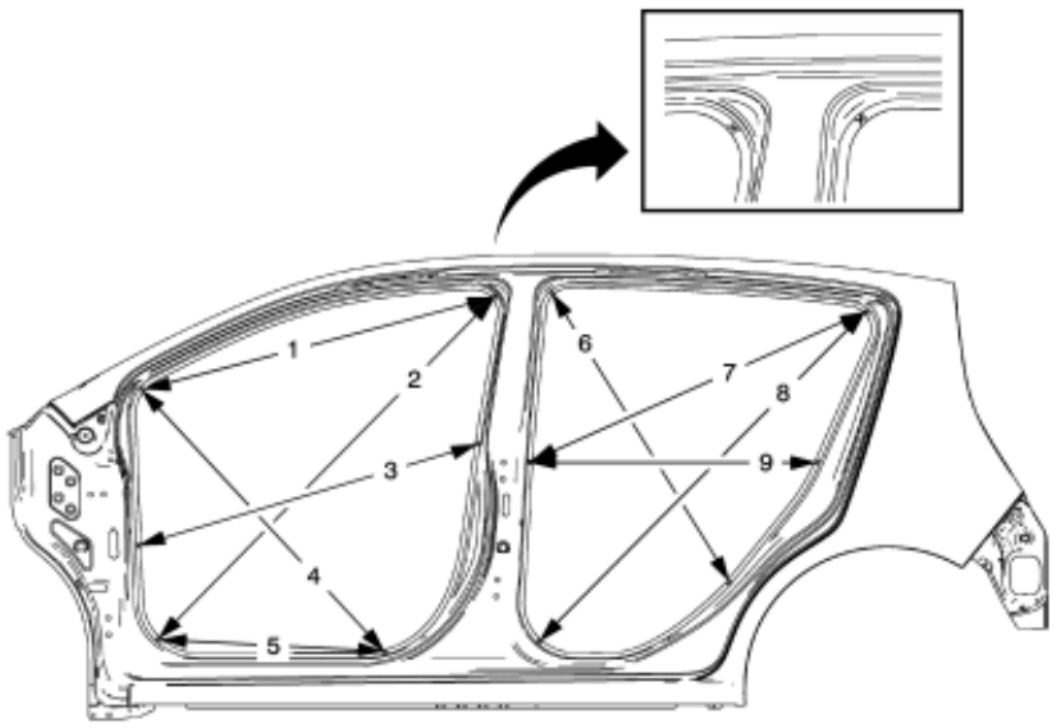


(1) 1425 mm
(2) 1132 mm

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Side



(1) 985 mm
(2) 1319 mm
(3) 955 mm
(4) 981 mm
(5) 611 mm
(6) 946 mm
(7) 1005 mm
(8) 1277 mm
(9) 772 mm

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Dimensions - Body (4NB)

Point-to-point measurements are for reference only. All measurements are given in millimeters. Use these measurements for diagnosing and estimating. Point-to-point measurements are duplicated with tram bar pointers set at equal lengths. All die marks, holes, slots, and fasteners are measured to the center. All dimensions are symmetrical unless otherwise specified.

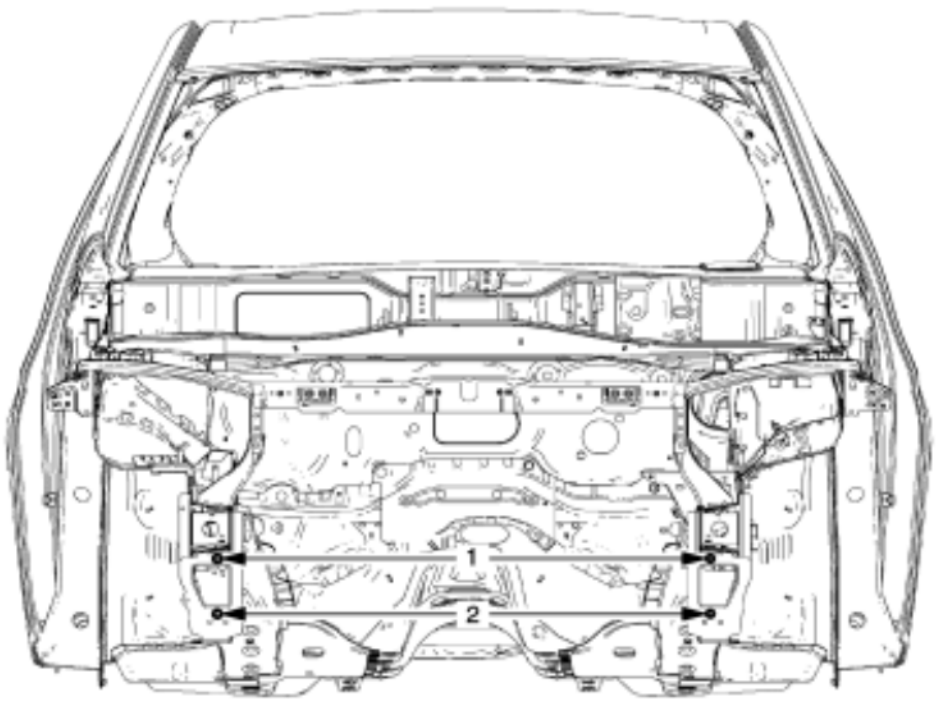
Point-to-Point Measurements

Front End Engine Compartment Front End Lower Rear End Lower Rear End Side

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Front End

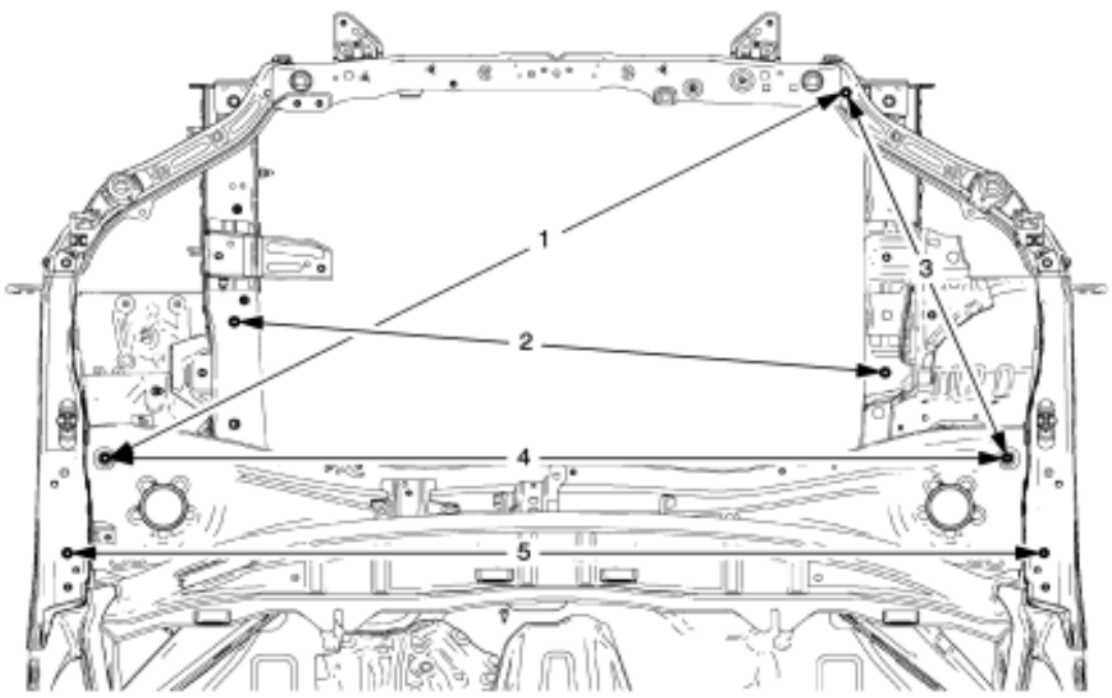


(1) 926 mm
(2) 926 mm

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Engine Compartment

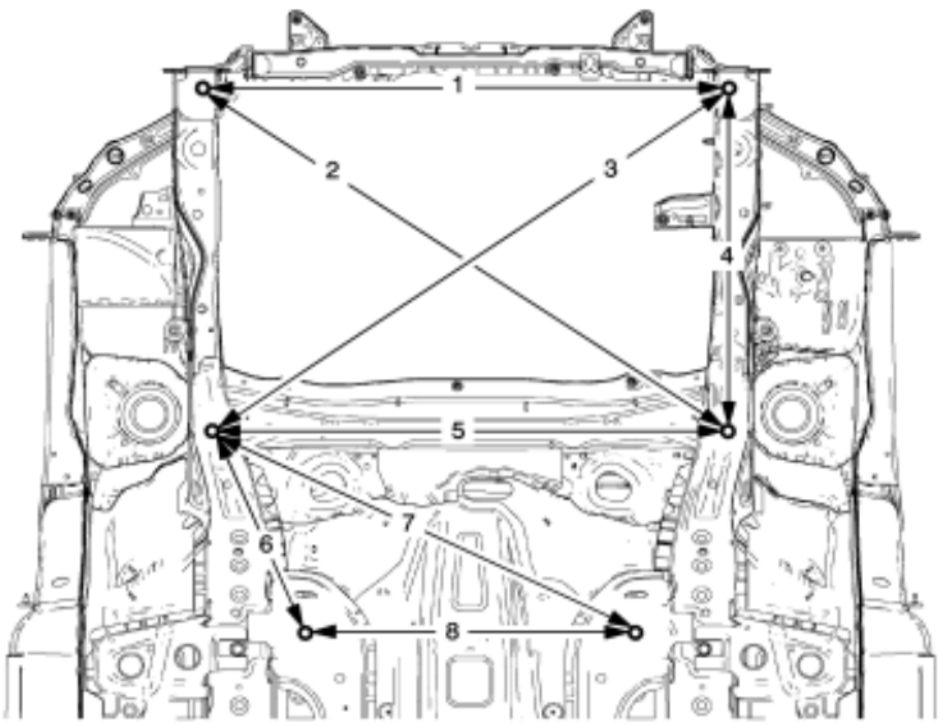


(1) 1201 mm
(2) 944 mm
(3) 599 mm
(4) 1300 mm
(5) 1409 mm

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Front End Lower

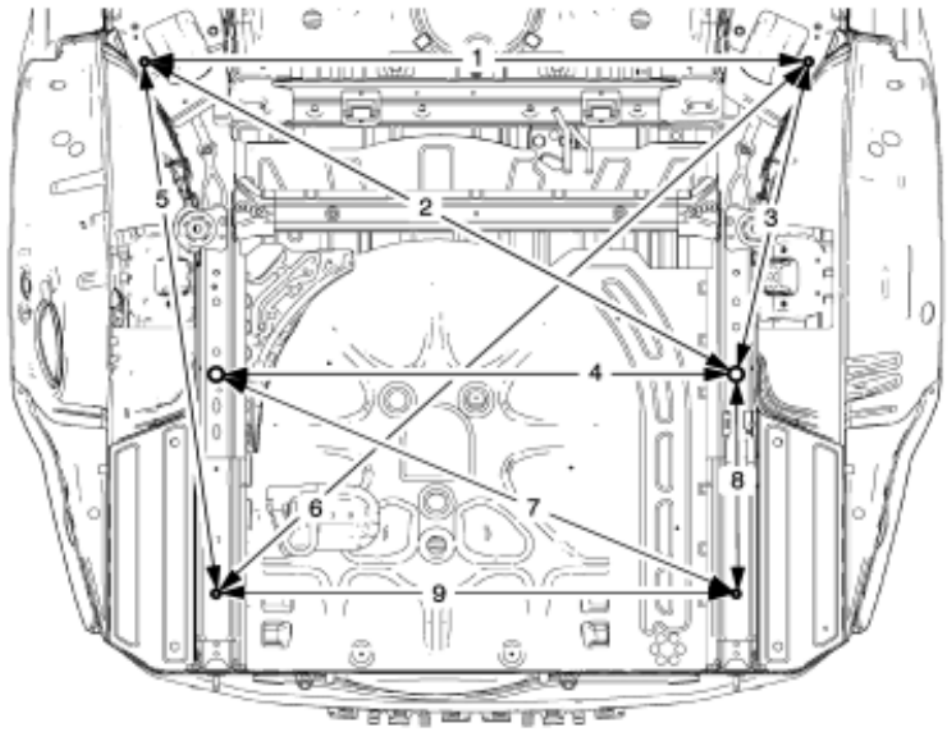


(1) 928 mm
(2) 1122 mm
(3) 1110 mm
(4) 633 mm
(5) 910 mm
(6) 440 mm
(7) 852 mm
(8) 584 mm

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Rear End Lower

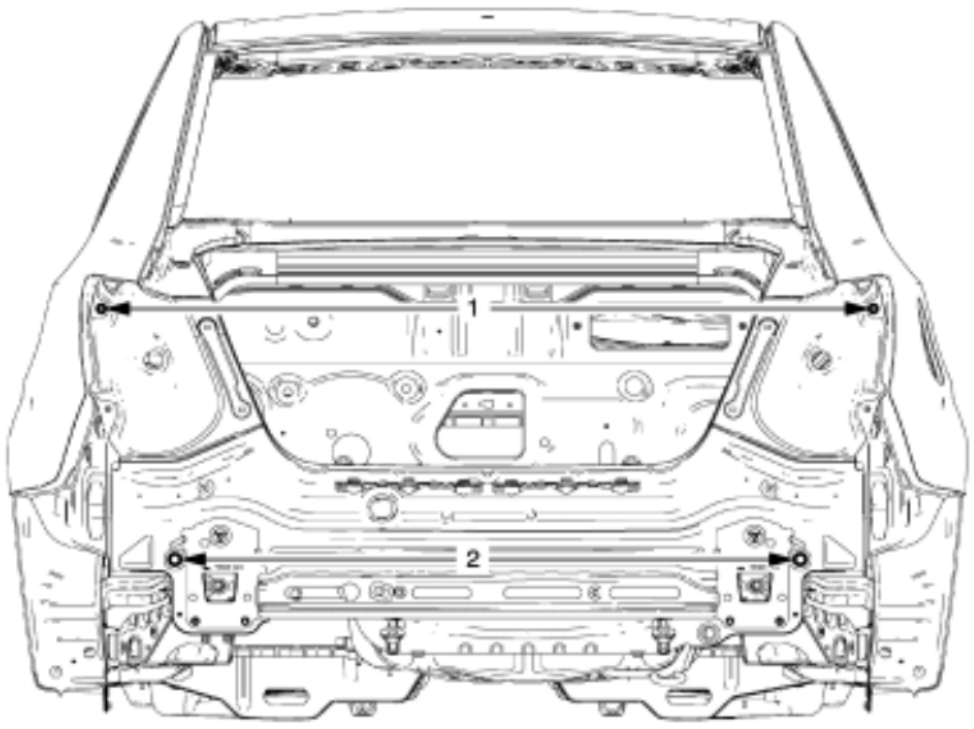


(1)	1233 mm
(2)	1259 mm
(3)	627 mm
(4)	966 mm
(5)	1035 mm
(6)	1504 mm
(7)	1052 mm
(8)	417 mm
(9)	965 mm

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Rear End

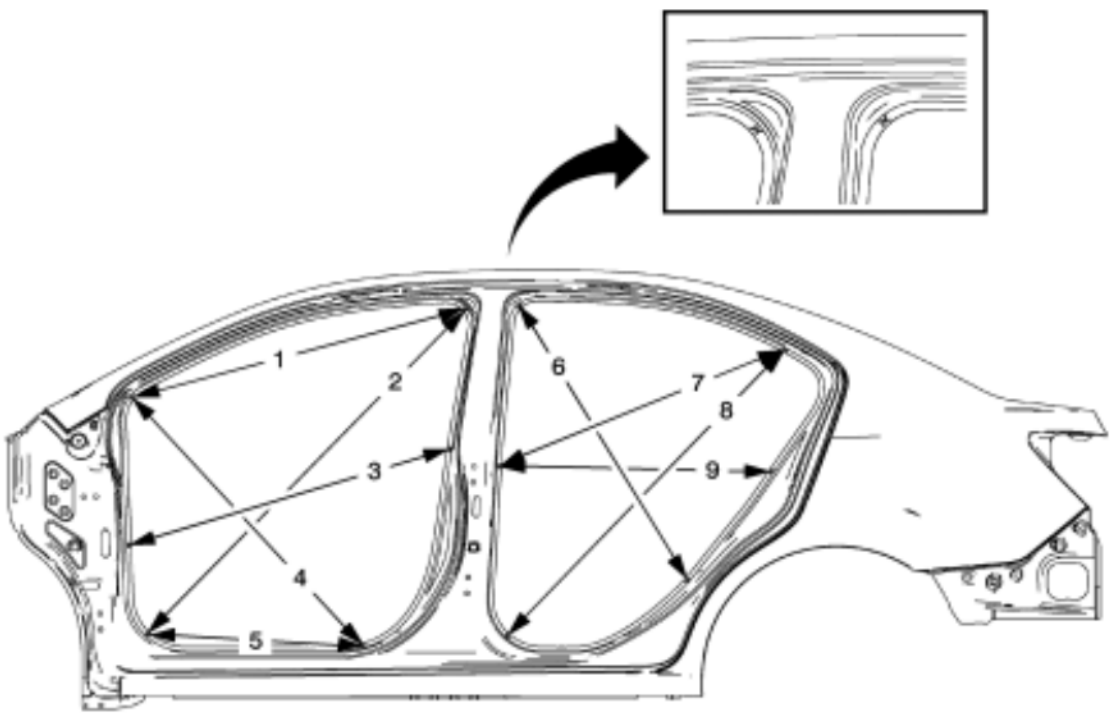


(1) 1396 mm
(2) 1130 mm

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Side



(1) 985 mm
(2) 1319 mm
(3) 955 mm
(4) 981 mm
(5) 611 mm
(6) 946 mm
(7) 886 mm
(8) 1155 mm
(9) 776 mm

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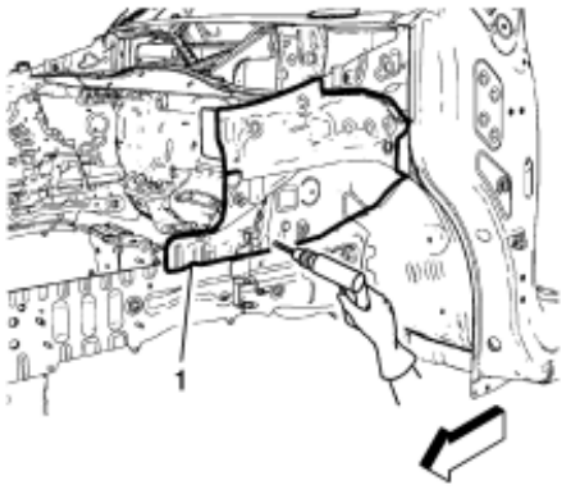
Front Wheelhouse Front Panel Replacement

Removal Procedure

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .

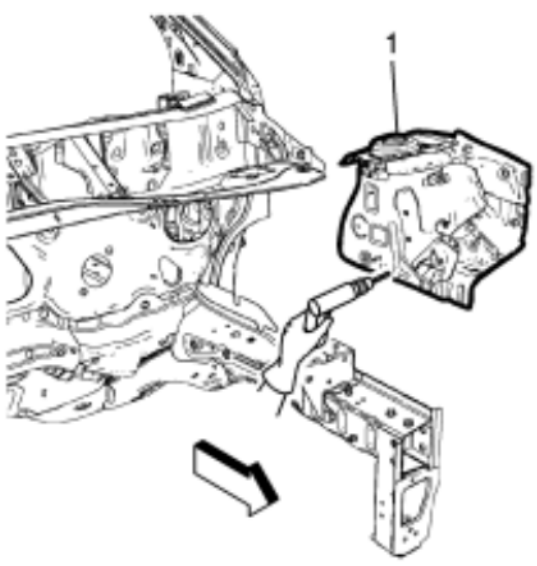
   Note: Sectioning of the front wheelhouse assembly is not recommended. The front wheelhouse service panel is serviced as a complete assembly, which includes the upper front strut mounting surface. The upper strut mounting surface is a dimensionally critical area.
3. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

   Note: Inspect the front of the cowl for damage. If the metal surface is damaged, the cowl panel must be repaired to restore the structural integrity of the vehicle.
4. Repair as much of the damage as possible.



5. Locate, mark, and drill out all factory welds(1). Note the number and location of welds for installation of the service assembly.
6. Remove the front wheelhouse from the vehicle.

Installation Procedure

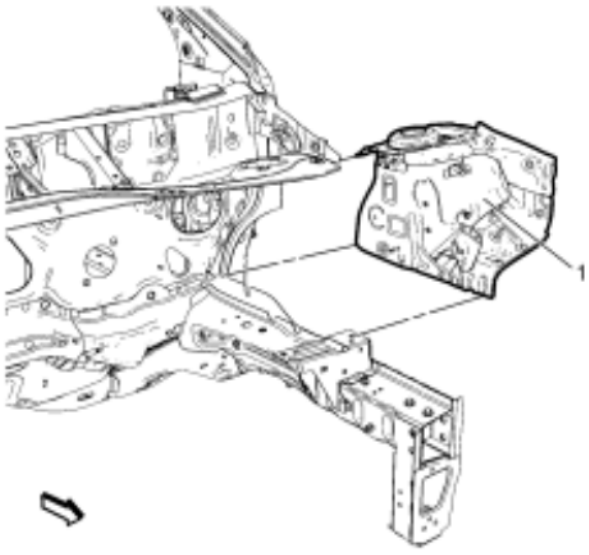


Note: If the location of the original plug weld holes cannot be determined, or if structural weld-thru adhesive is present, space the plug weld holes every **40 mm (1 in)**.

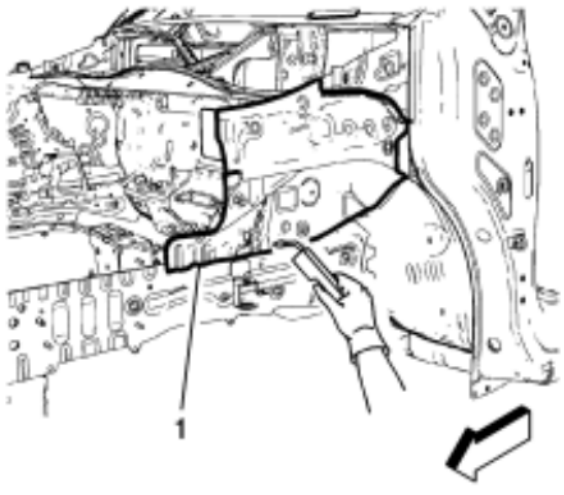
1. Drill **8 mm (5/16 in)** plug weld holes as necessary on service part, in the locations noted from the original assembly(1).
2. Clean and prepare the mating surfaces for welding, as necessary.
3. Apply GM-approved weld-thru coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair .

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4. Position the service front wheelhouse front panel to the vehicle (1). Clamp the front wheelhouse in place.



5. When the service assembly is correctly positioned, plug weld accordingly (1).
6. Measure frequently to ensure proper fit and alignment.
7. Clean and prepare all welded surfaces.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
12. Enable the SIR system. Refer to SIR Disabling and Enabling .

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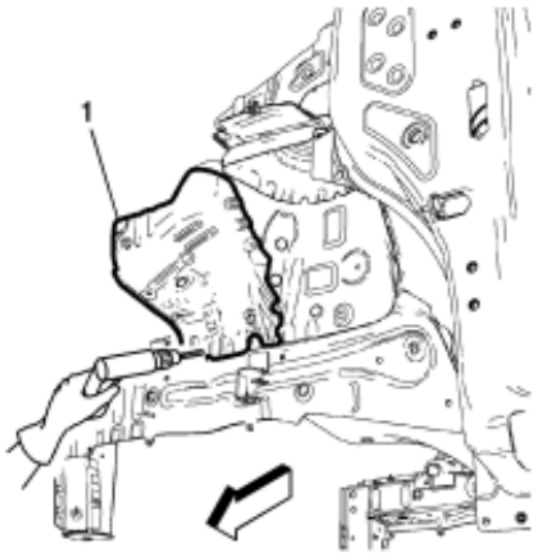
Front Wheelhouse Panel Reinforcement Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

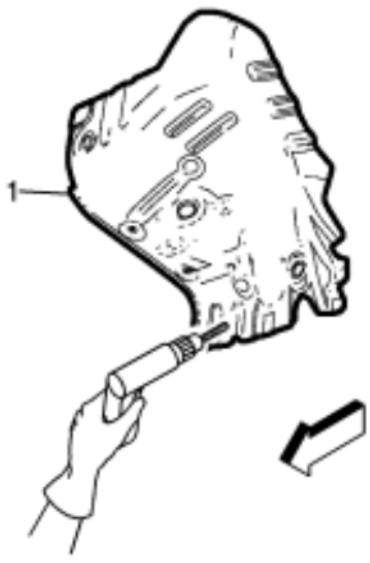
Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



6. Locate and mark all the necessary factory welds of the front wheelhouse panel reinforcement.
7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.
8. Remove the front wheelhouse panel reinforcement.

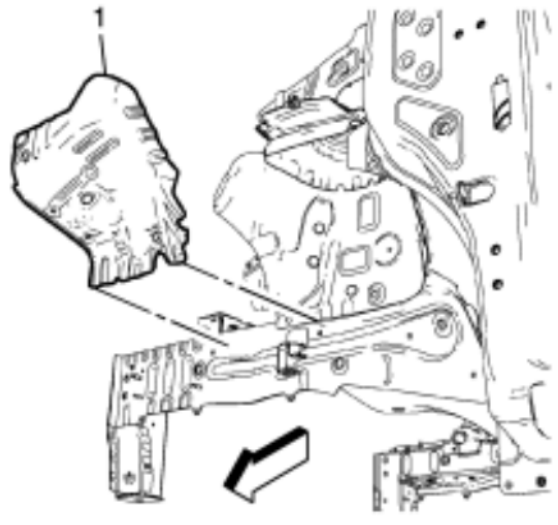
Installation Procedure



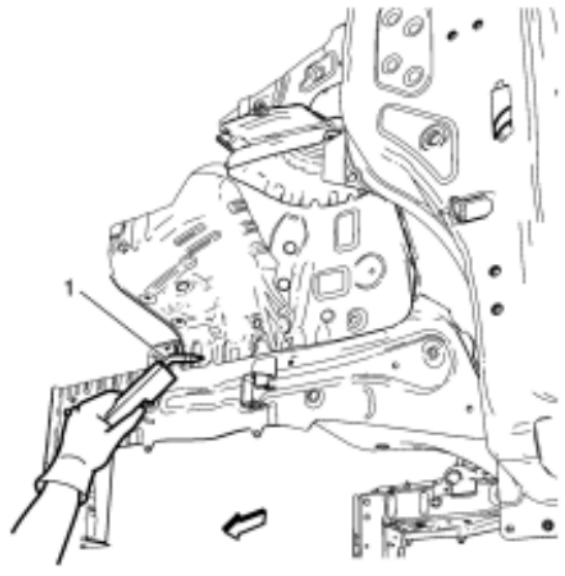
1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the front wheelhouse panel reinforcement as noted from the original panel (1).
2. Clean and prepare the attaching surfaces for welding.

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3. Position the front wheelhouse panel reinforcement on the vehicle(1).
4. Verify the fit of the front wheelhouse panel reinforcement.
5. Clamp the front wheelhouse panel reinforcement into position.



6. Plug weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repained area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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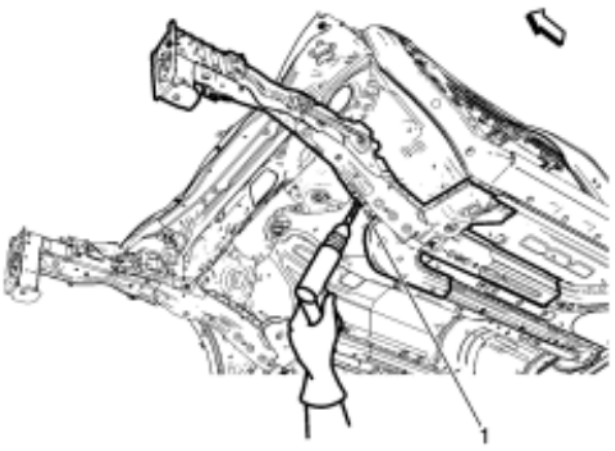
Front Compartment Side Rail Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

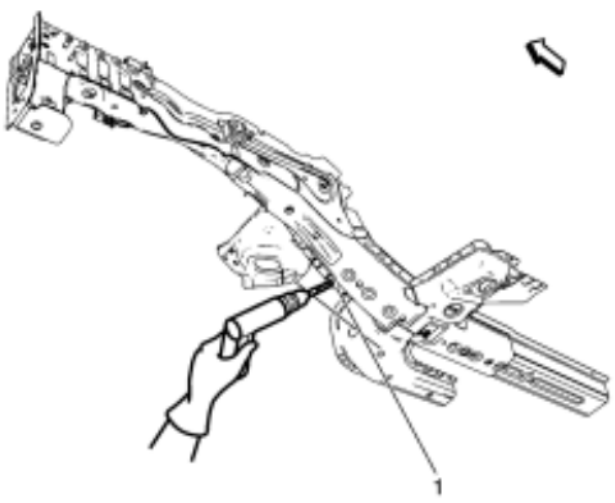
Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



6. Locate and mark all the necessary factory welds of the front compartment side rail.
7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.
8. Remove the front compartment side rail.

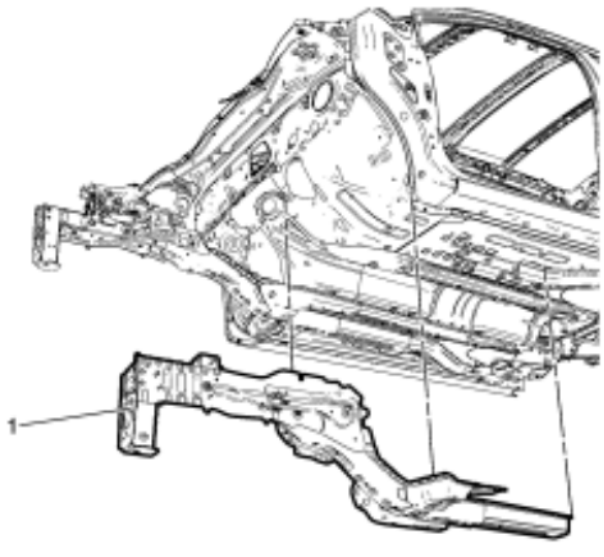
Installation Procedure



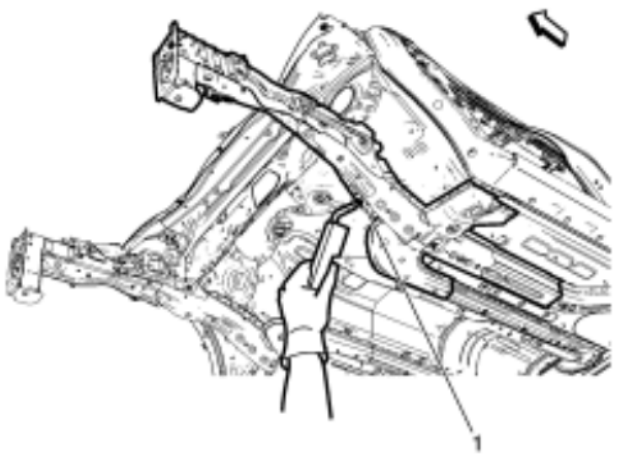
1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the front compartment side rail as noted from the original panel (1).
2. Clean and prepare the attaching surfaces for welding.

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3. Position the front compartment side rail on the vehicle(1).
4. Verify the fit of the front compartment side rail.
5. Clamp the front compartment side rail into position.



6. Plug weld accordingly(1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Front Hinge Pillar Body Sectioning

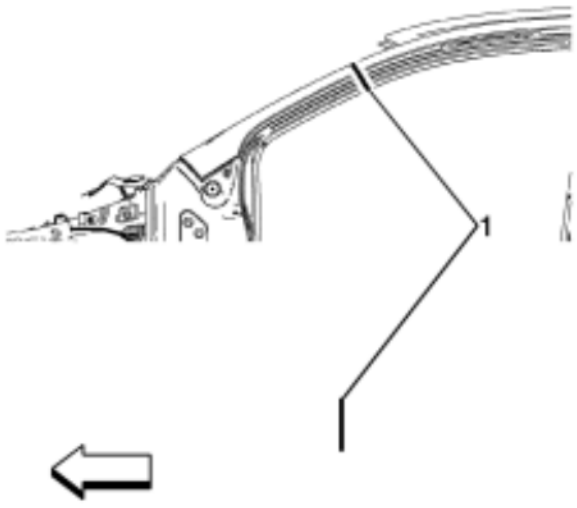
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Collision Sectioning Warning .

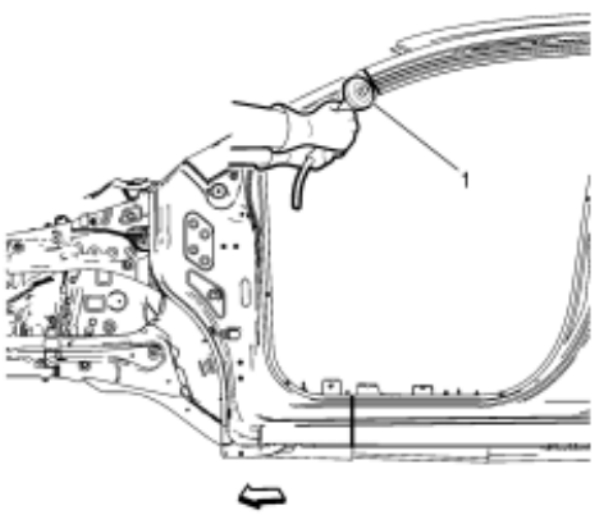
Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all the related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



Note: Sectioning can be done anywhere in the straight area along the rocker panel.

6. Create cut lines(1) on the front hinge pillar body.

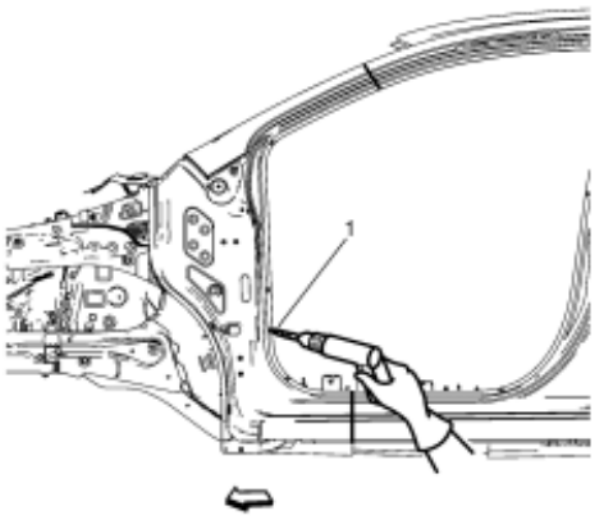


Note: Do not damage any inner panels or reinforcements.

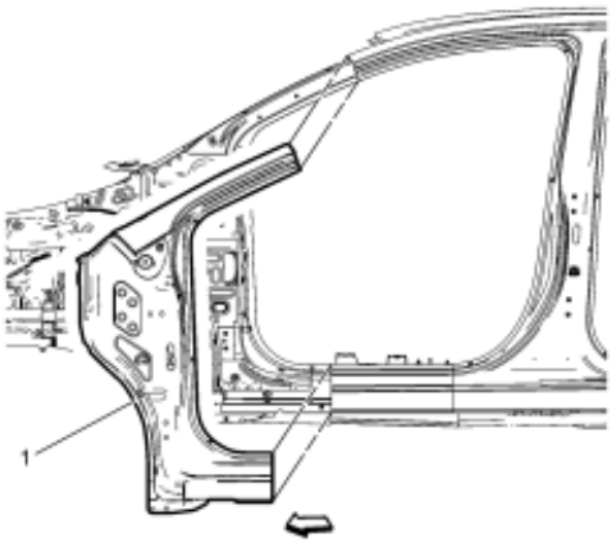
7. Cut the panel where sectioning is to be performed (1).
8. Locate and mark all the necessary factory welds of the front hinge pillar body.

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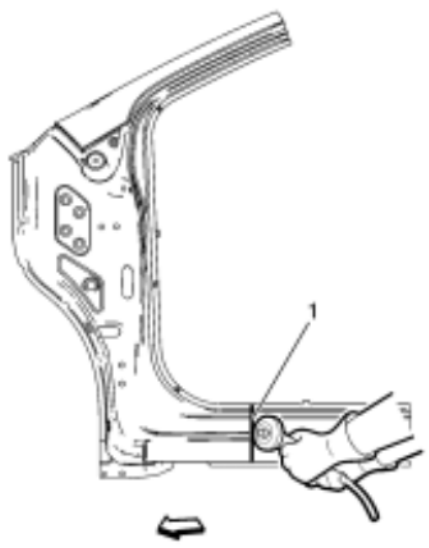


9. Drill all the factory welds (1). Note the number and location of welds for installation of the service assembly.



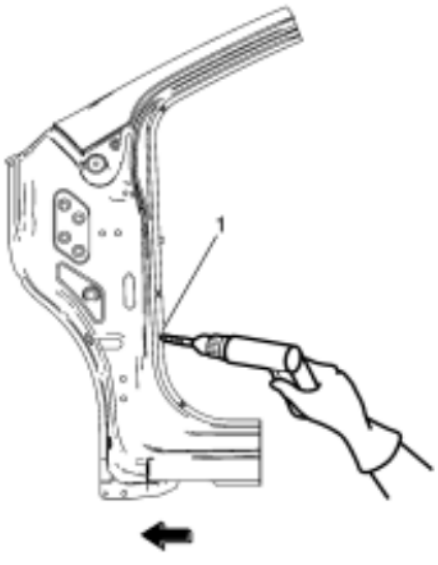
10. Remove the damaged front hinge pillar body (1).

Installation Procedure

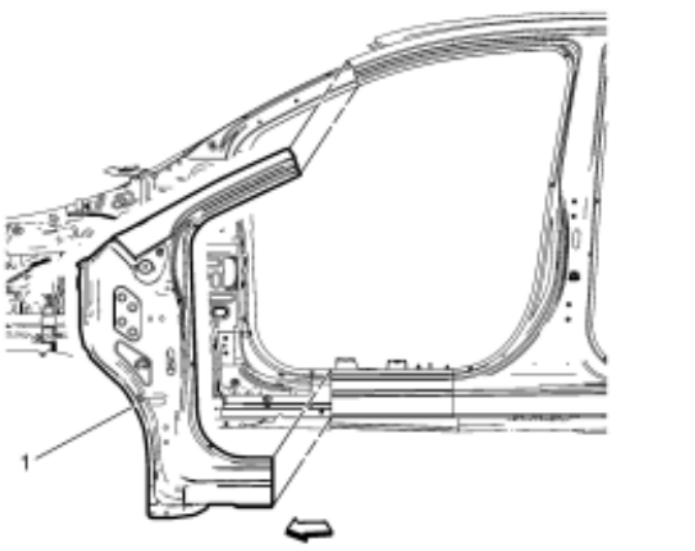


1. Cut the front hinge pillar body in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to overlap the remaining original panel by **25 mm (1 in)** at each joint location (1).
2. Prepare all mating surfaces as necessary.

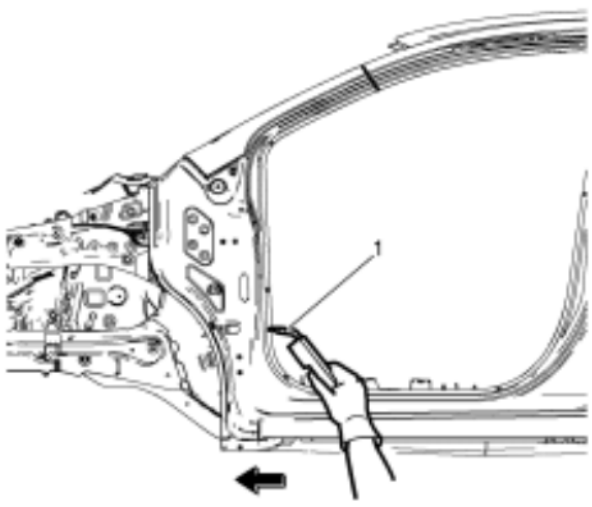
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3. Drill **8 mm (5/16 in)**holes for plug welding along the edges of the front hinge pillar body as noted from the original panel (1).
4. Clean and prepare the attaching surfaces for welding.



5. Position the front hinge pillar body on the vehicle (1).
6. Verify the fit of the front hinge pillar body.
7. Clamp the front hinge pillar body into position.



8. Plug weld accordingly (1).
9. To create a solid weld at the sectioning joint, with minimum heat distortion, make **25 mm (1 in)**stitch welds along the seam with **25 mm (1 in)**gaps between them. Then go back and complete the stitch weld.
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
11. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
12. Install all related panels and components.
13. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
14. Enable the SIR system. Refer to SIR Disabling and Enabling .

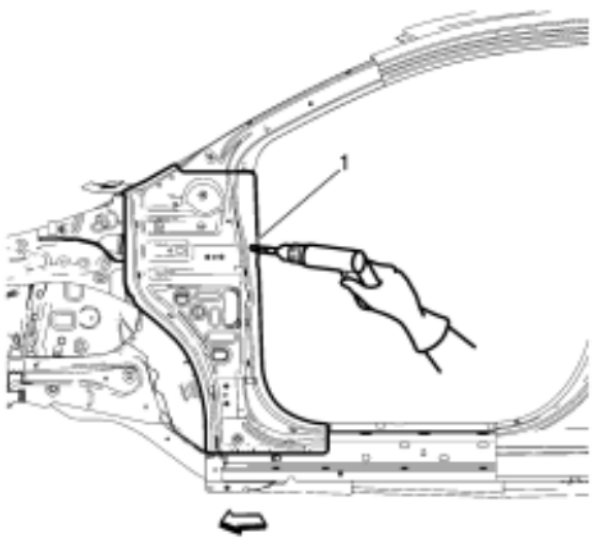
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Body Hinge Pillar Lower Reinforcement Replacement

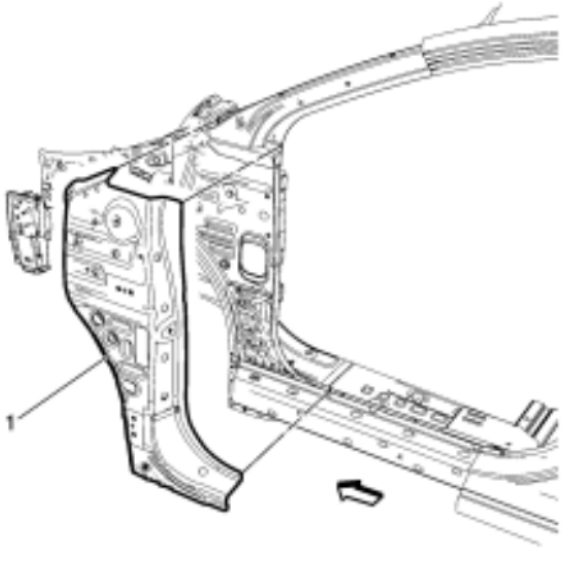
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible. Refer to Dimensions - Body .
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all the necessary factory welds of the front hinge pillar body.



7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



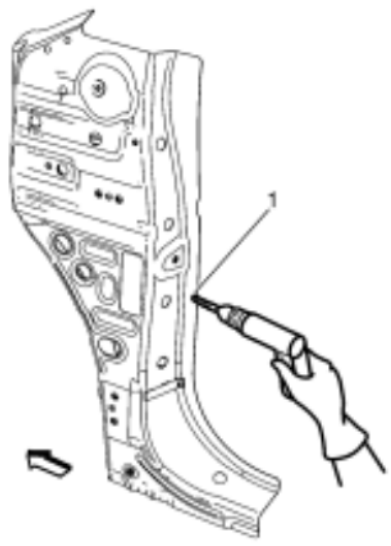
8. Remove the damaged front hinge pillar body reinforcement (1).

Installation Procedure

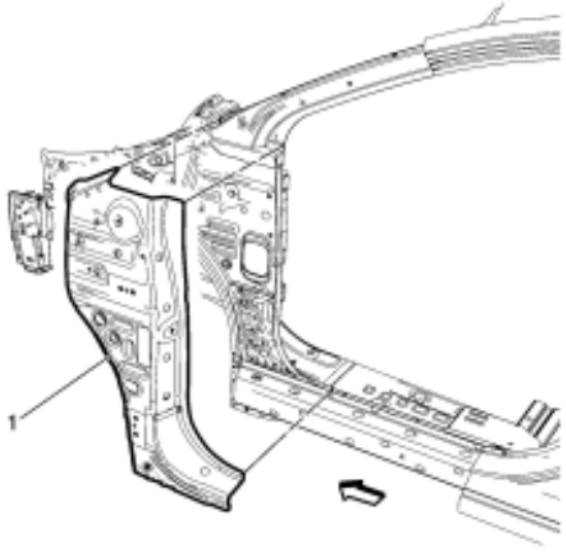
1. Prepare all mating surfaces as necessary.
2. Align the front hinge pillar body reinforcement.

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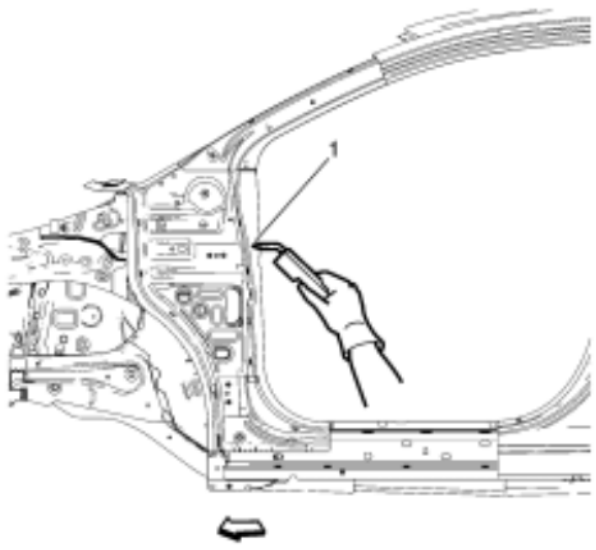
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3. Drill **8 mm (5/16 in)**holes for plug welding along the edges of the front hinge pillar body as noted from the original panel (1).
4. Clean and prepare the attaching surfaces for welding.



5. Position the front hinge pillar body reinforcement on the vehicle (1).
6. Verify the fit of the front hinge pillar body reinforcement.
7. Clamp the front hinge pillar body reinforcement into position.



8. Plug weld accordingly (1).
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
10. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
11. Install all related panels and components.
12. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
13. Enable the SIR system. Refer to SIR Disabling and Enabling .

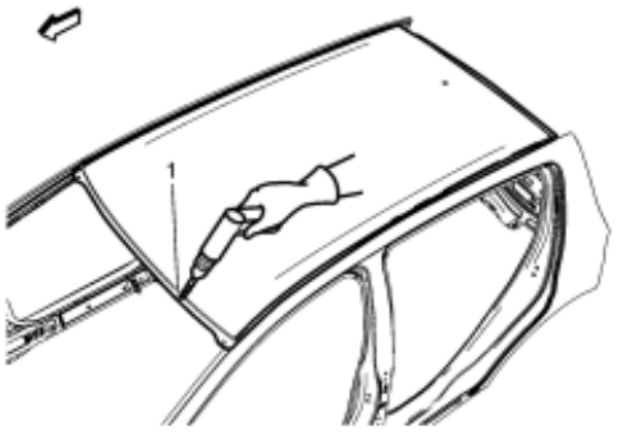
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Roof Outer Panel Replacement (5HB)

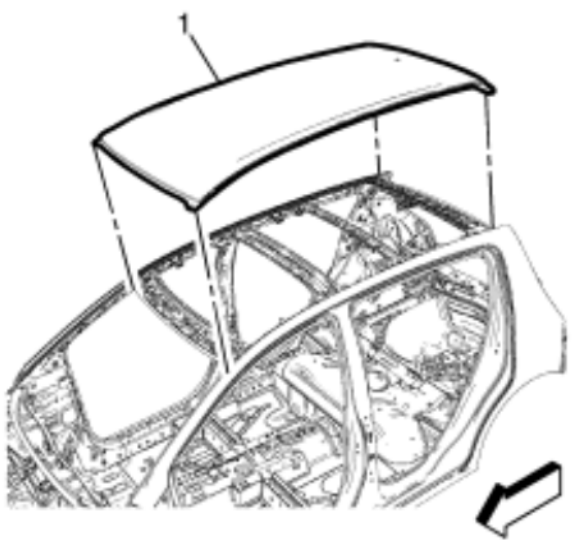
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all factory welds.



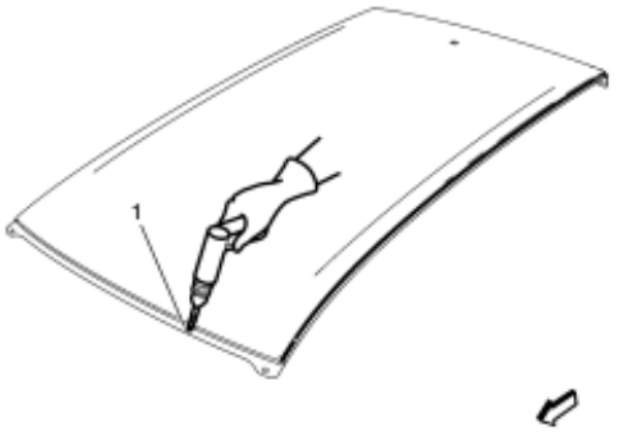
7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.
8. Cut the adhesive with an appropriate tool.



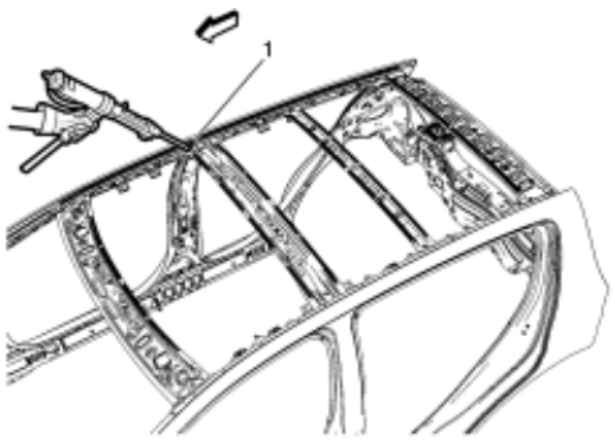
9. Remove the damaged roof panel (1).

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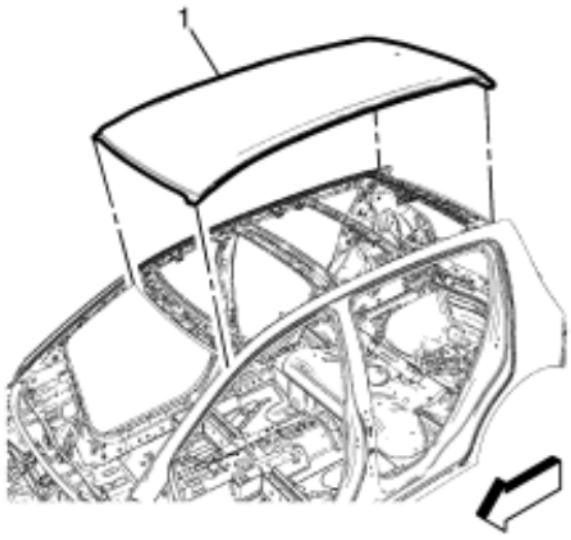
Installation Procedure



1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the service panel as noted from the original panel (1).
2. Clean and prepare the attaching surfaces for welding.

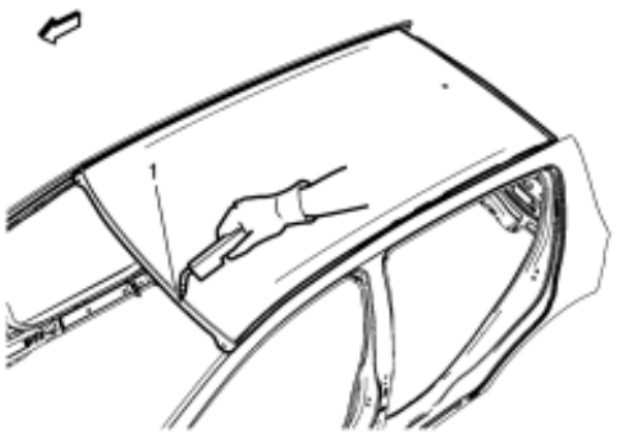


3. Apply one-part windshield urethane adhesive as noted from the original panel (1).



4. Position the roof panel (1) on the vehicle.
5. Verify the fit of the panel.
6. Clamp the panel into position.

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7. Plug weld accordingly (1).
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
12. Enable the SIR system. Refer to SIR Disabling and Enabling .

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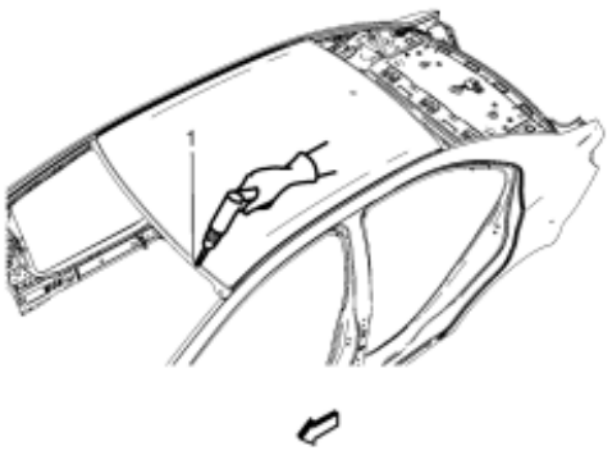
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Roof Outer Panel Replacement (4NB)

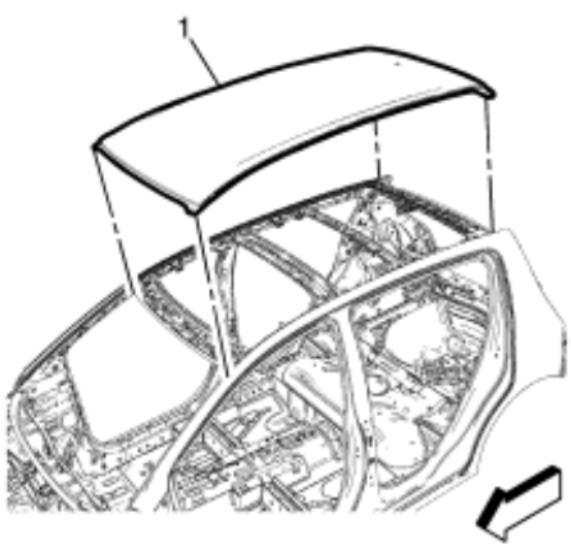
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all factory welds.



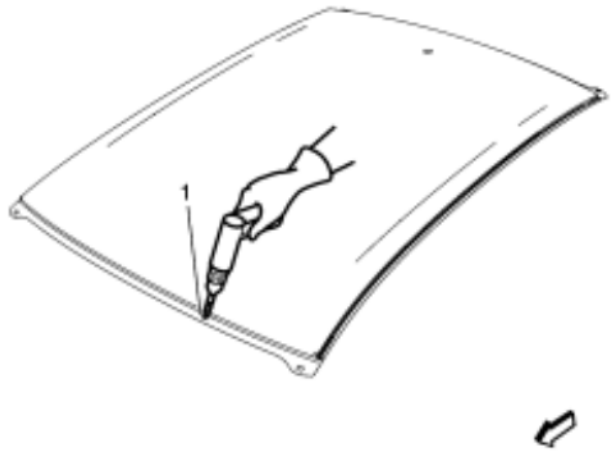
7. Drill all factory welds(1). Note the number and location of welds for installation of the service assembly.
8. Cut the adhesive with an appropriate tool.



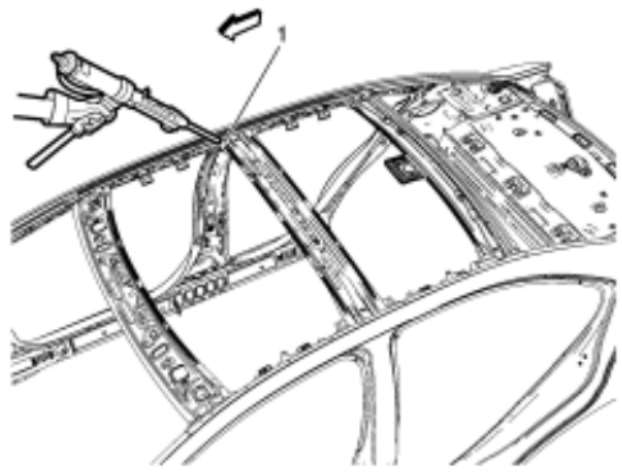
9. Remove the damaged roof panel(1).

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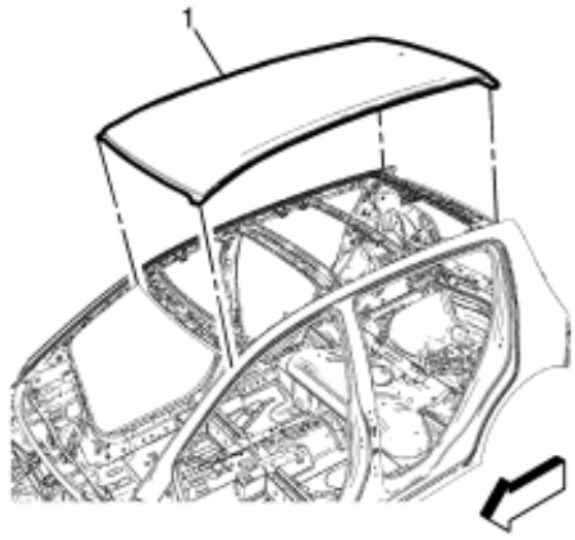
Installation Procedure



1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the service panel as noted from the original panel (1).
2. Clean and prepare the attaching surfaces for welding.

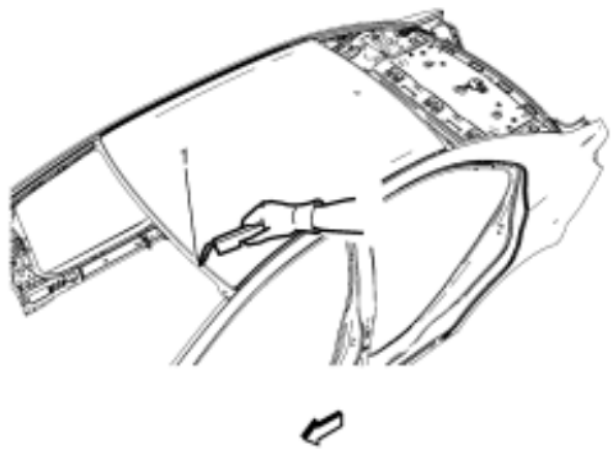


3. Apply one-part windshield urethane adhesive (1) as noted from the original panel.



4. Position the roof panel (1) on the vehicle.
5. Verify the fit of the panel.
6. Clamp the panel into position.

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7. Plug weld accordingly (1).
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
12. Enable the SIR system. Refer to SIR Disabling and Enabling .

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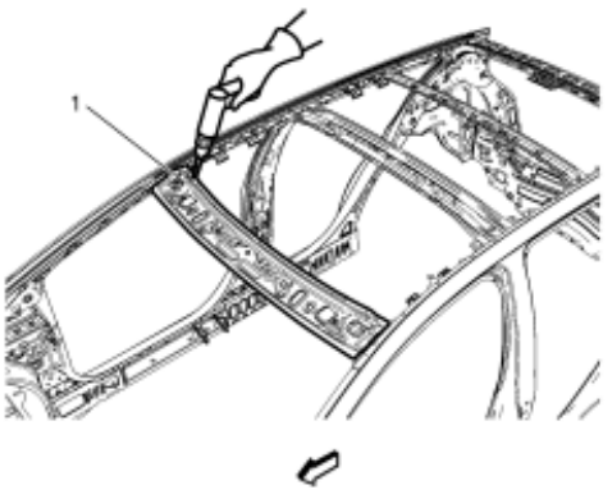
Roof Front Header Panel Replacement

Removal Procedure

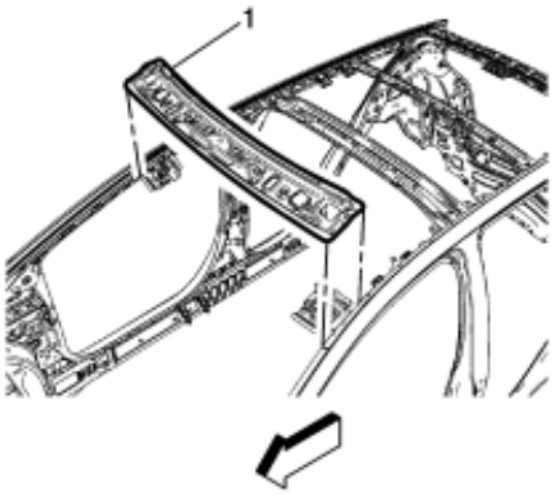
Warning: Refer to Approved Equipment for Collision Repair Warning .

Note: The roof front header panel is made of Ultra High Strength Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to Ultra High Strength Steel .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body .
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all factory welds.



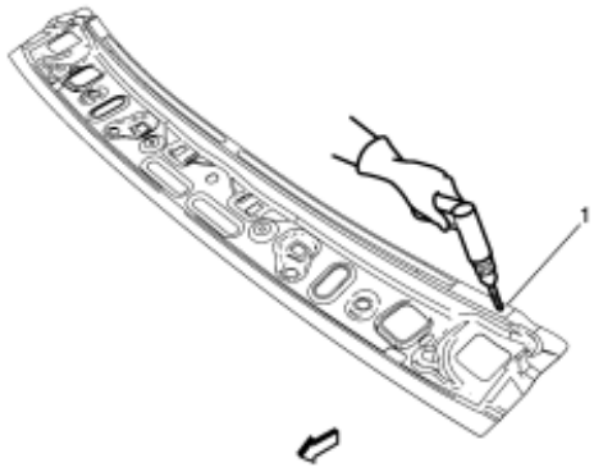
7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



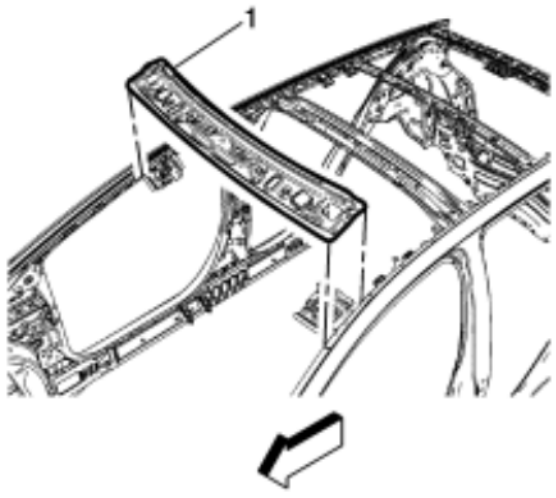
8. Remove the damaged roof front header panel (1).

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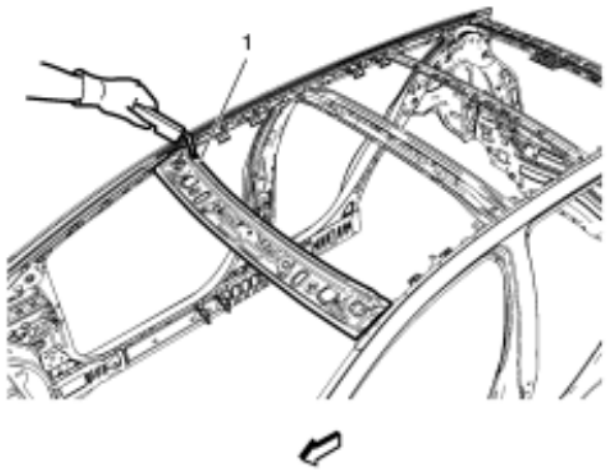
Installation Procedure



1. Drill **8mm (5/16in)** holes for plug welding along the edges of the service panel as noted from the original panel (1).
2. Clean and prepare the attaching surfaces for welding.



3. Position the roof front header(1) panel on the vehicle.
4. Verify the fit of the panel.
5. Clamp the roof front header panel into position.



6. Plug weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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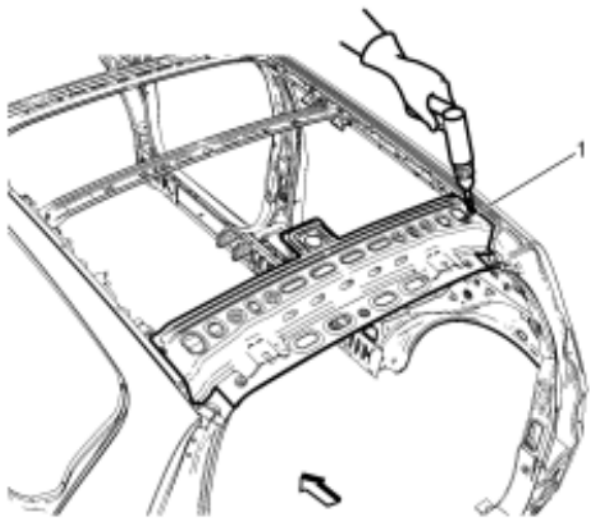
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Roof Rear Header Panel Replacement (5HB)

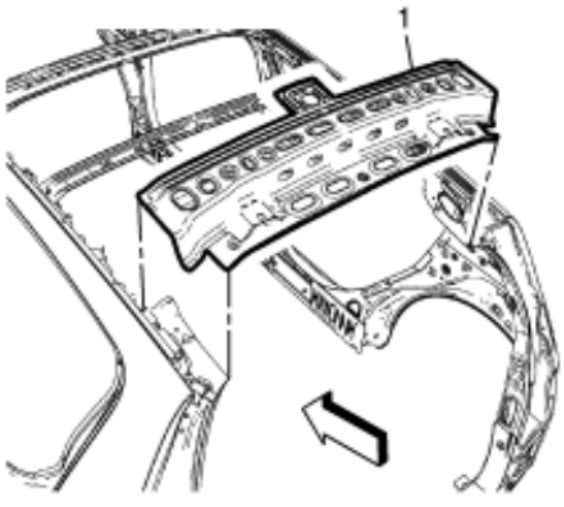
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body .
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all factory welds.

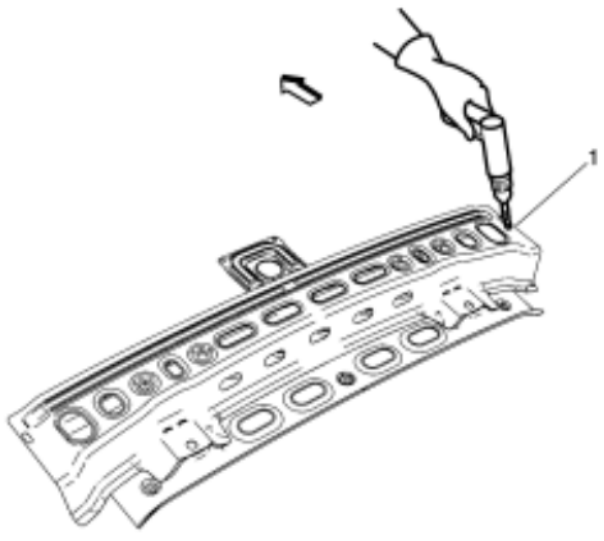


7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



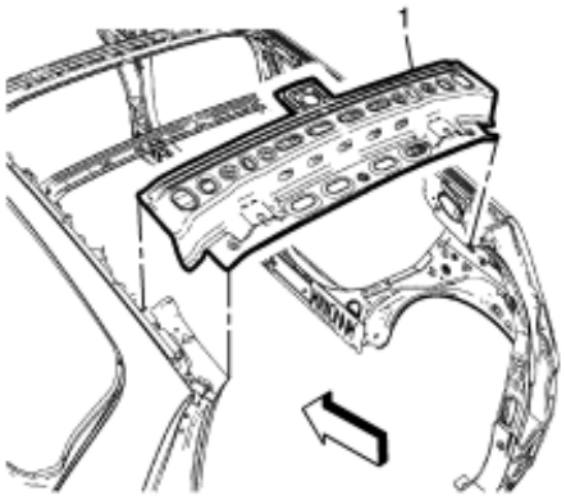
8. Remove the damaged rear header panel (1).

Installation Procedure

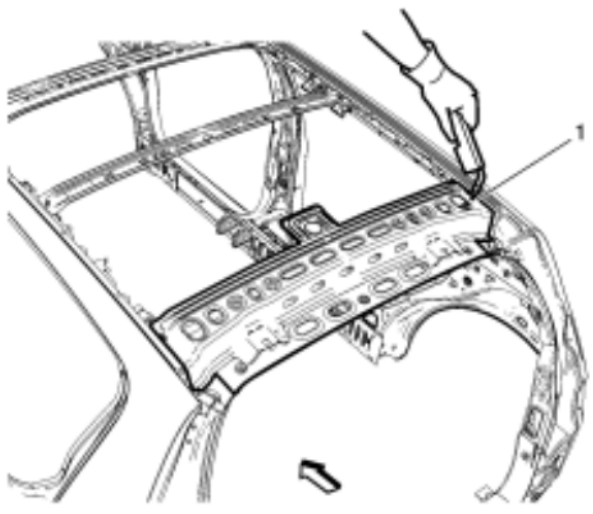


1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the service panel (1) as noted from the original panel.
2. Clean and prepare the attaching surfaces for welding.

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3. Position the roof rear header (1) panel on the vehicle.
4. Verify the fit of the panel.
5. Clamp the roof rear header panel into position.



6. Plug weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repained area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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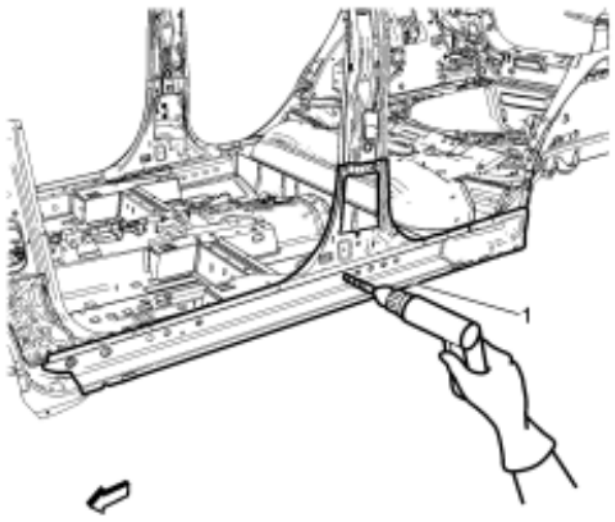
Rocker Inner Panel Replacement

Removal Procedure

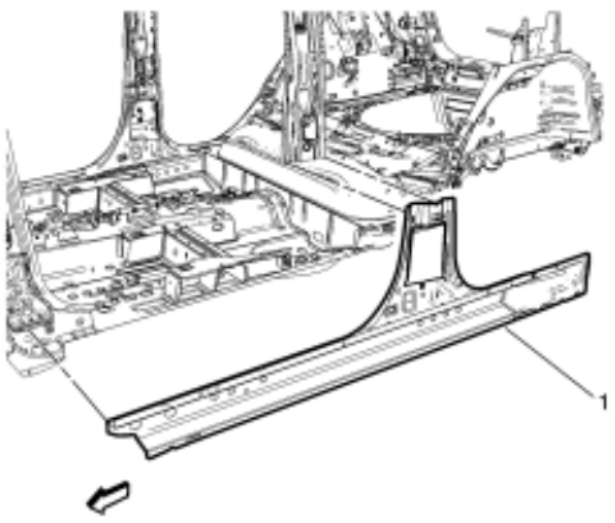
Warning: Refer to Approved Equipment for Collision Repair Warning .

Note: The rocker inner panel is made of Ultra High Strength Dual Phase Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to Ultra High Strength Dual Phase Steel .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body .
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to Anti-Corrosion Treatment and Repair .



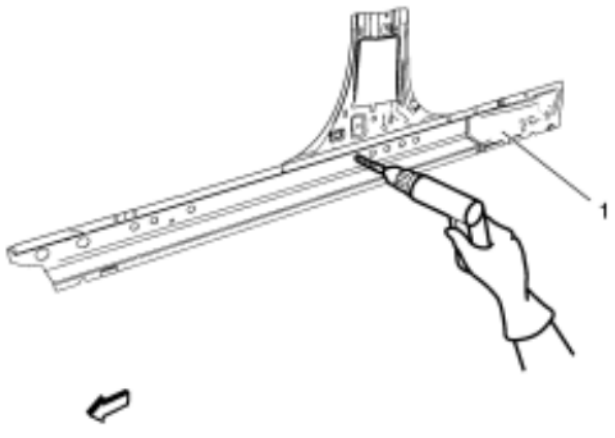
6. Locate and mark all the necessary factory welds of the rocker inner panel.
7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



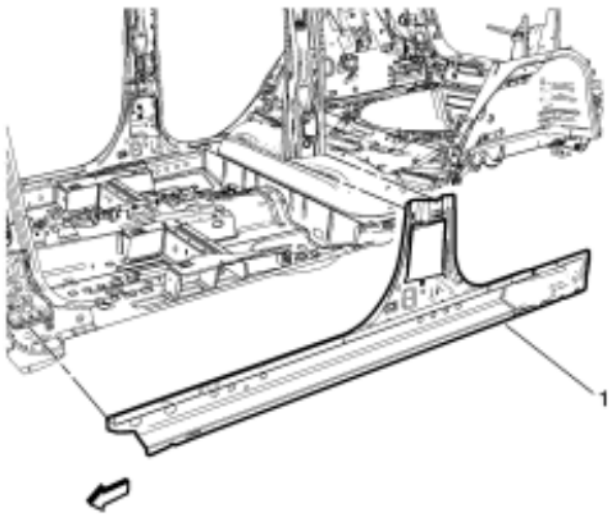
8. Remove the damaged rocker inner panel (1).

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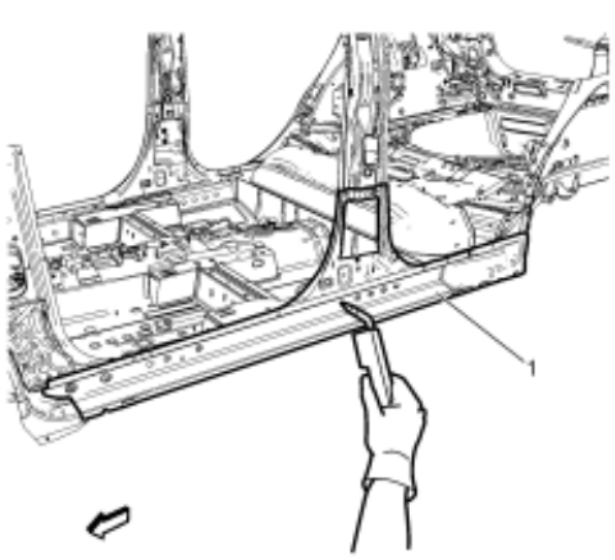
Installation Procedure



1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the quarter outer panel (1) as noted from the original panel.
2. Clean and prepare the attaching surfaces for welding.



3. Position the rocker inner panel on the vehicle (1).
4. Verify the fit of the panel.
5. Clamp the rocker inner panel into position.



6. Plug the weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Rocker Outer Panel Sectioning

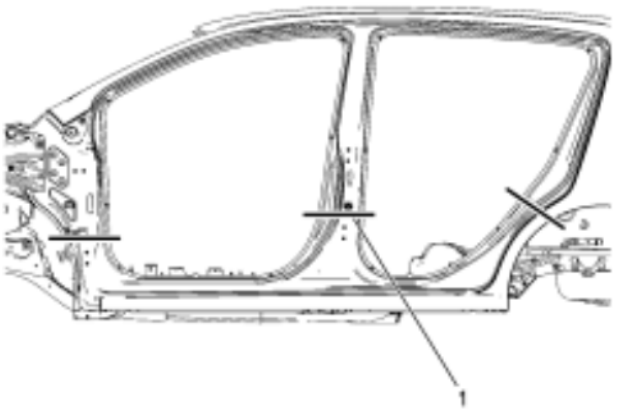
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

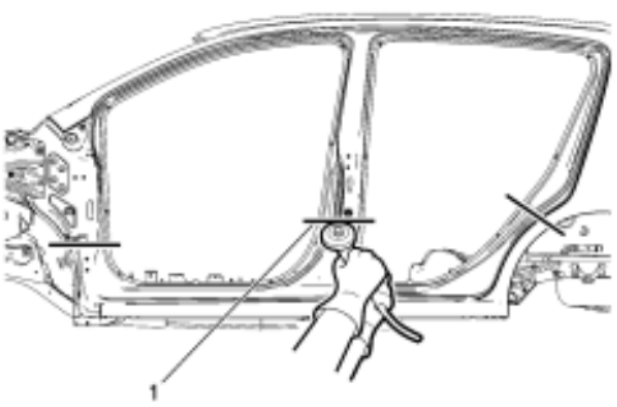
Warning: Refer to Collision Sectioning Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



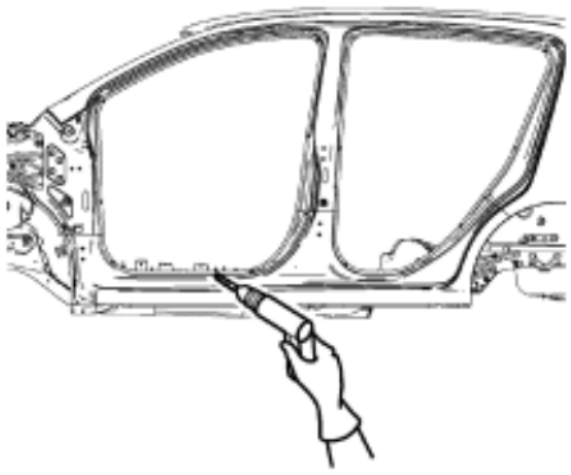
6. Create cut lines on the rocker outer panel (1).



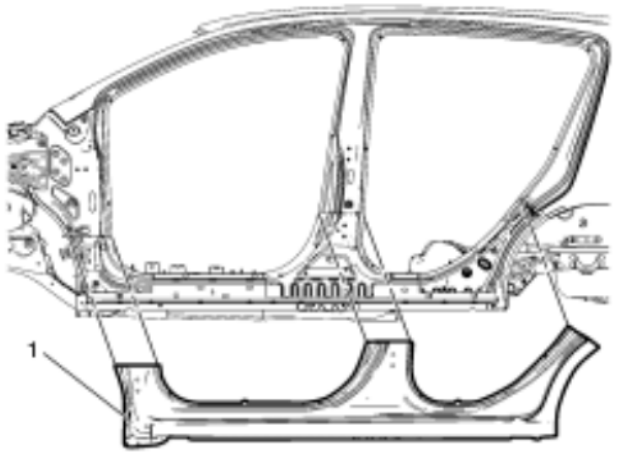
Note: Do not damage any inner panels or reinforcements.

7. Cut the panel where sectioning is to be performed (1).

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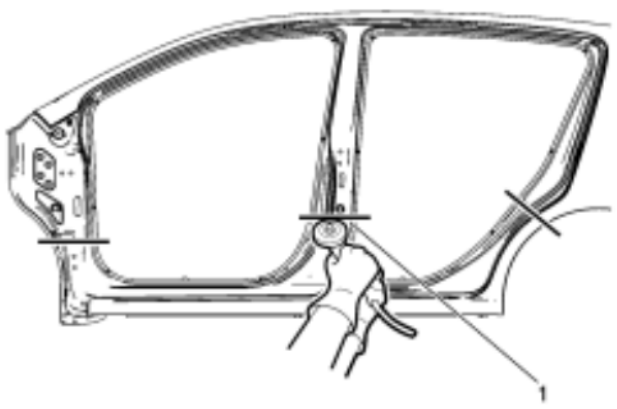


8. Locate and mark all the necessary factory welds of the rocker outer panel.
9. Drill all factory welds. Note the number and location of welds for installation of the service assembly.



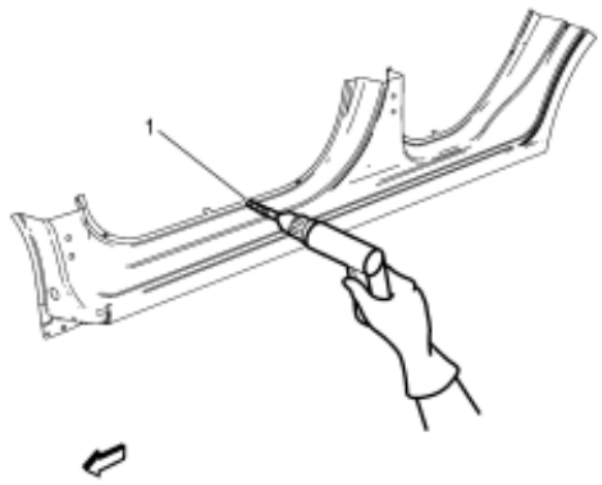
10. Remove the damaged rocker outer panel (1).

Installation Procedure

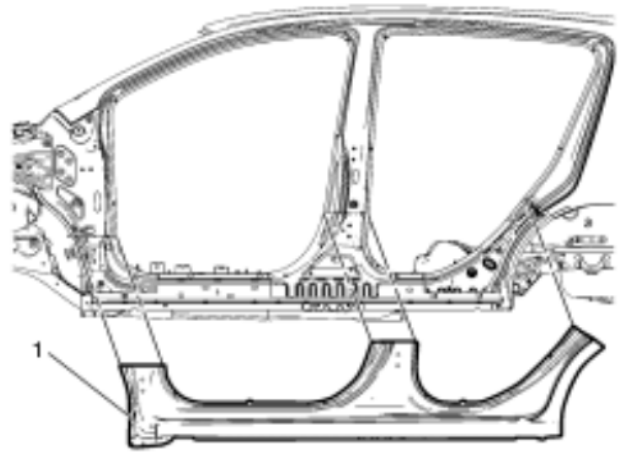


1. Cut the rocker outer panel in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to overlap the remaining original panel by **25 mm (1 inch)** at each joint location (1).
2. Prepare all mating surfaces as necessary.

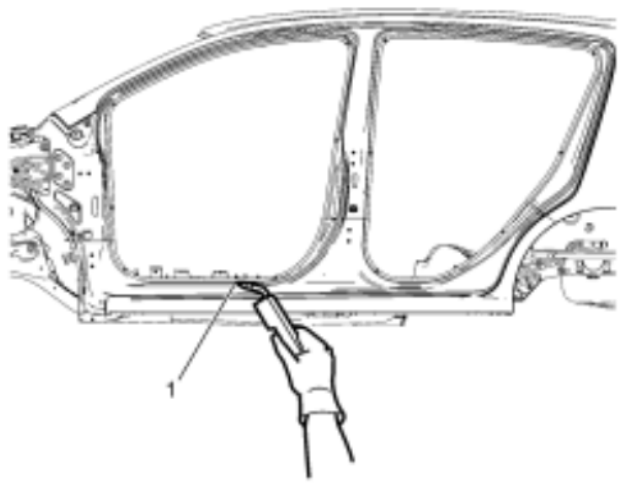
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3. Drill a **8 mm (5/16 in)** holes for plug welding along the edges of the rocker outer panel as noted from the original panel (1).
4. Clean and prepare the attaching surfaces for welding.



5. Position the rocker outer panel on the vehicle (1).
6. Verify the fit of the rocker outer panel.
7. Clamp the rocker outer panel into position.



8. Plug weld accordingly (1).
9. To create a solid weld with minimum heat distortion, make **25 mm (1 in)** stitch welds along the seam with **25 mm (1 in)** gaps between them. Then go back and complete the stitch weld.
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
11. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
12. Install all related panels and components.
13. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
14. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Body Side Frame Rocker Reinforcement Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

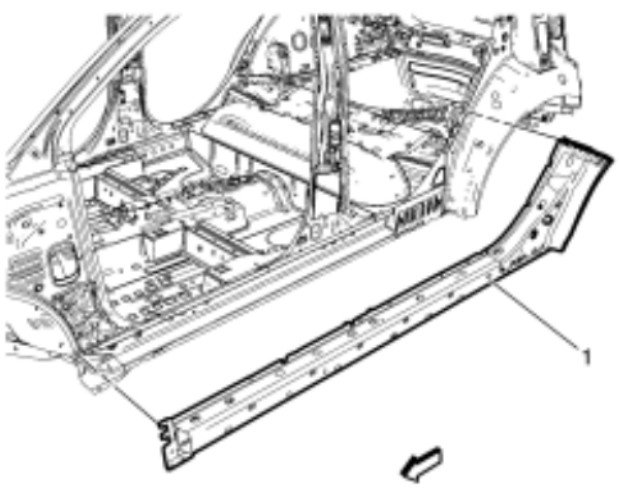
Warning: Refer to Glass and Sheet Metal Handling Warning .

Note: The body side frame rocker reinforcement is made of Ultra High Strength Dual Phase Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to Ultra High Strength Dual Phase Steel .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body .
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all the necessary factory welds of the body side frame rocker reinforcement.



7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.

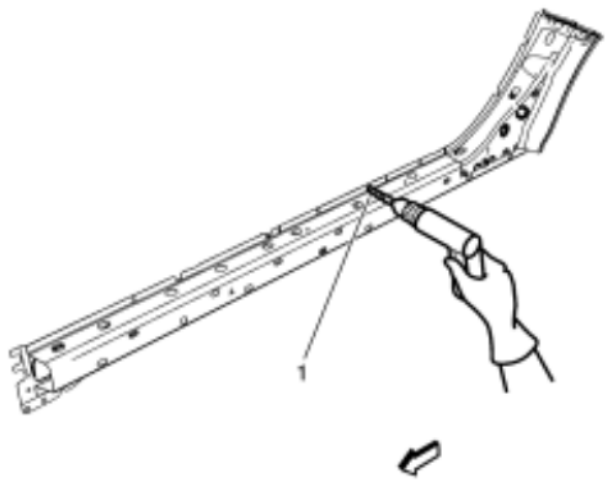


8. Remove the damaged body side frame rocker reinforcement (1).

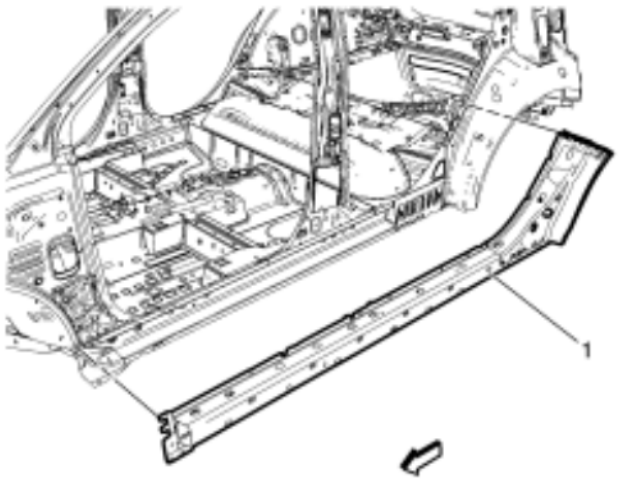
Installation Procedure

1. Align the body side frame rocker reinforcement.

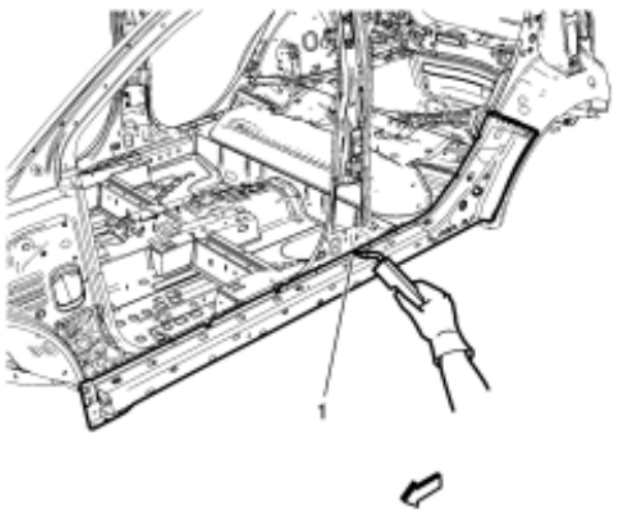
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2. Drill a **8 mm (5/16 in)** holes for plug welding along the edges of the quarter outer panel (1) as noted from the original panel.
3. Clean and prepare the attaching surfaces for welding.



4. Position the body side frame rocker reinforcement on the vehicle (1).
5. Verify the fit of the body side frame rocker reinforcement.
6. Clamp the body side frame rocker reinforcement into position.



7. Plug the weld accordingly (1).
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
12. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Front Side Door Outer Panel Replacement

Special Tools

- *BO-6392* Flanging Tool Kit
- *BO-6396* Bonding Pliers

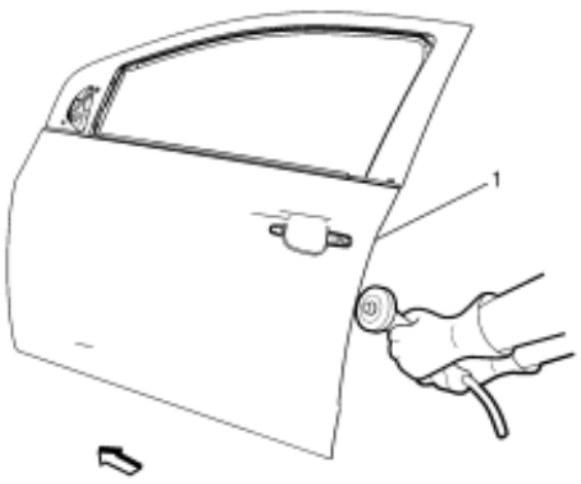
For equivalent regional tools, refer to Special Tools .

Note: According to different corrosion warranties, only the regional mandatory joining methods are allowed.

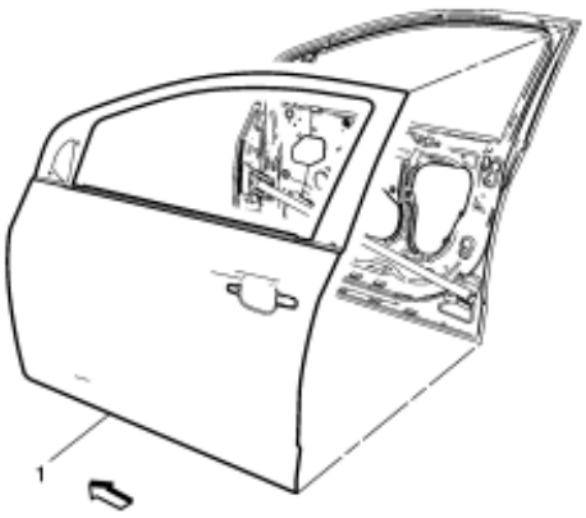
Removal Procedure

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove the front side door. Refer to Front Side Door Replacement .
4. Remove the front side door outside handle. Refer to Front Side Door Outside Handle Replacement .
5. Remove the outside rearview mirror. Refer to Outside Rearview Mirror Replacement .
6. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



7. Grind the edges of the front side door outer panel (1) to separate the outer door panel from the door shell.

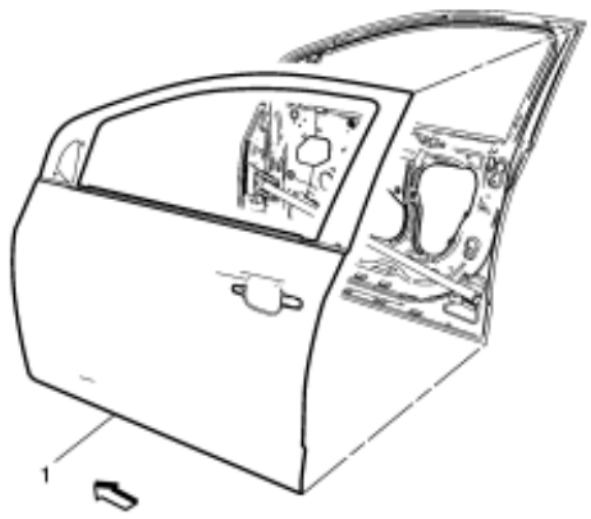


8. Remove the front side door outer door panel (1).
9. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
10. Straighten the edges of the door shell.

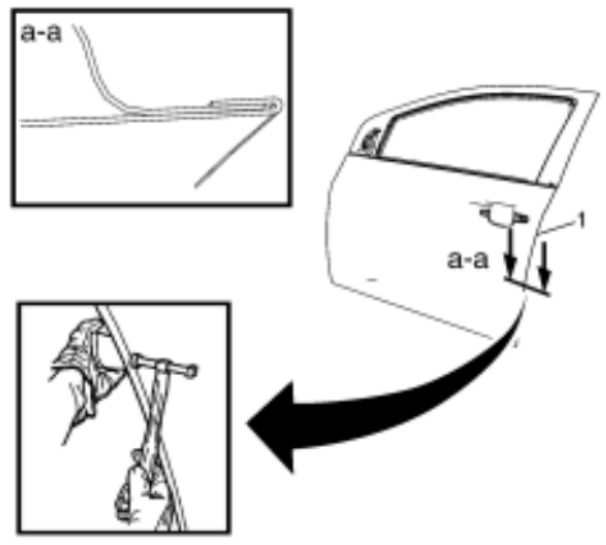
Installation Procedure

1. Align the front side door outer panel.
2. Verify the fit of the front side door outer panel.

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3. Clamp the front side door outer panel (1) into position.
4. Pre-flanging the flange with *BO-6396* pliers and *BO-6392* tool kit .



5. Continue to hammer in stages along the hem flanges (1).
6. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
7. Install the outside rearview mirror. Refer to Outside Rearview Mirror Replacement .
8. Install the front side door outside handle. Refer to Front Side Door Outside Handle Replacement .
9. Install the front side door. Refer to Front Side Door Replacement .
10. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
11. Install all related panels and components.
12. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
13. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Rear Side Door Outer Panel Replacement

Special Tools

- *BO-6392* Flanging Tool Kit
- *BO-6396* Bonding Pliers

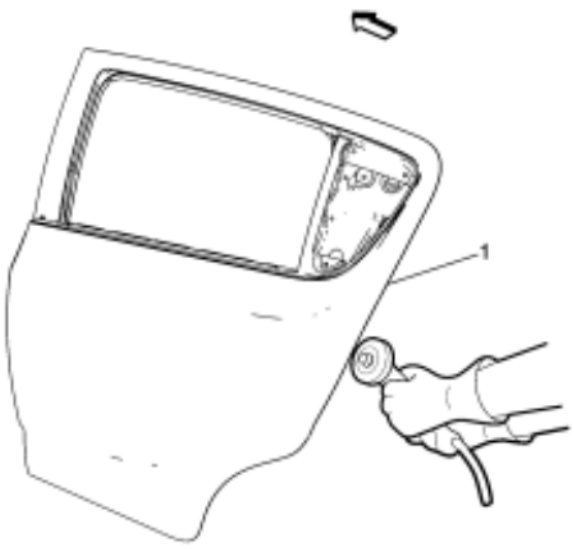
For equivalent regional tools, refer to Special Tools .

Note: According to different corrosion warranties, only the regional mandatory joining methods are allowed.

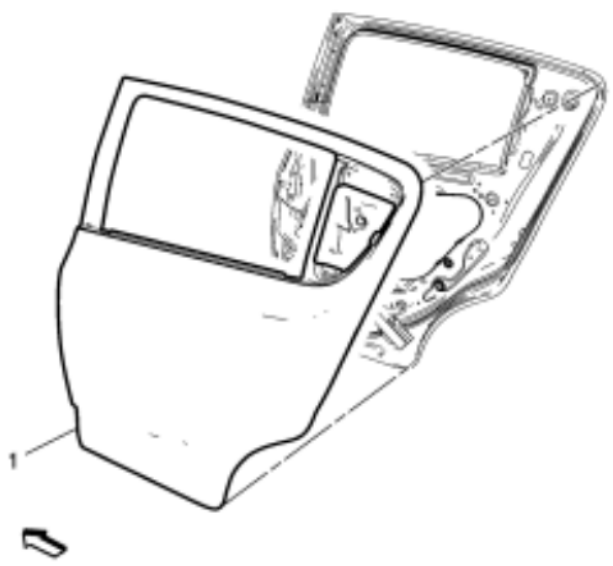
Removal Procedure

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove the rear side door. Refer to Rear Side Door Replacement .
4. Remove the rear side door outside handle. Refer to Rear Side Door Outside Handle Replacement .
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



6. Grind the edges of the rear side door outer panel (1) to separate the outer door panel from the door shell.



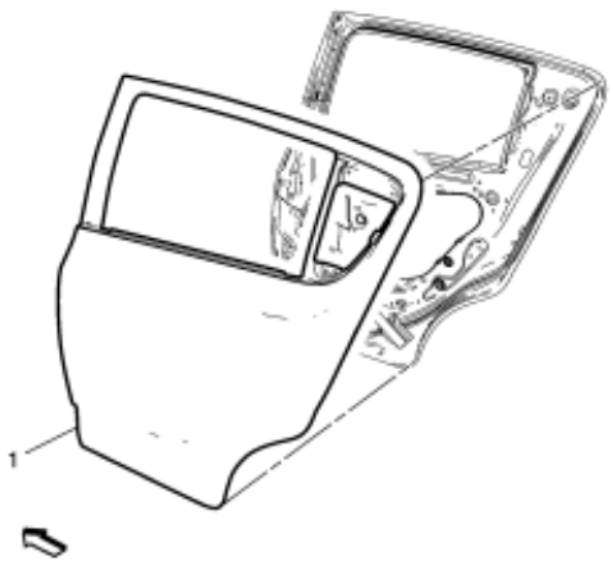
7. Remove the rear side door outer door panel (1).
8. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
9. Straighten the edges of the door shell

Installation Procedure

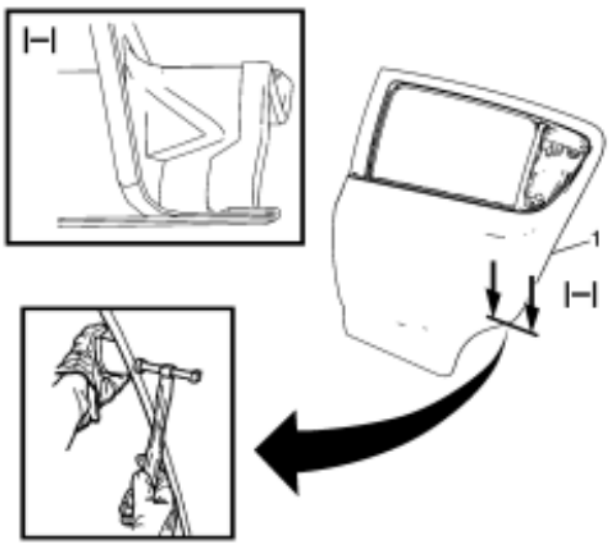
1. Align the rear side door outer panel.
2. Verify the fit of the rear side door outer panel.

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3. Clamp the rear side door outer panel (1) into position.
4. Pre-flanging the flange with *BO-6396* pliers and *BO-6392* tool kit .



5. Continue to hammer in stages along the hem flanges (1).
6. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
7. Install the rear side door outside handle. Refer to Rear Side Door Outside Handle Replacement .
8. Install the rear side door. Refer to Rear Side Door Replacement .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
12. Enable the SIR system. Refer to SIR Disabling and Enabling .

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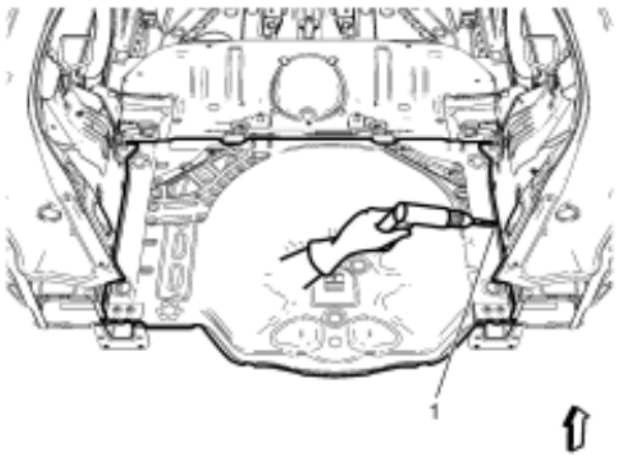
Rear Compartment Floor Panel Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all the necessary factory welds of the rear compartment floor panel.
7. Note the number and location of weld studs for installation of the service assembly.



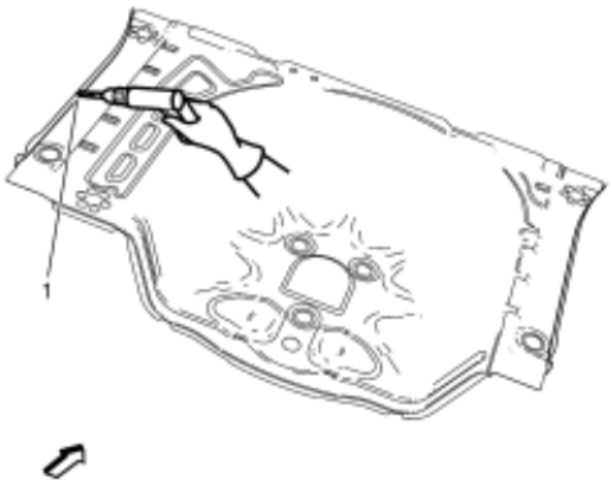
8. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.

9. Remove the damaged rear compartment floor panel (1).

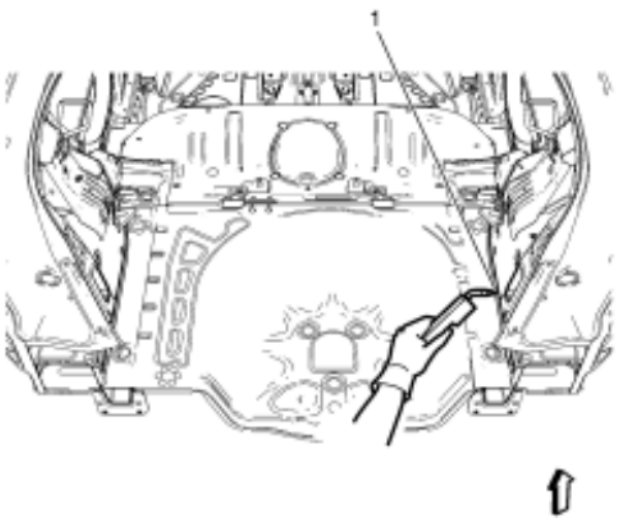
Installation Procedure

1. Align the rear compartment floor panel.

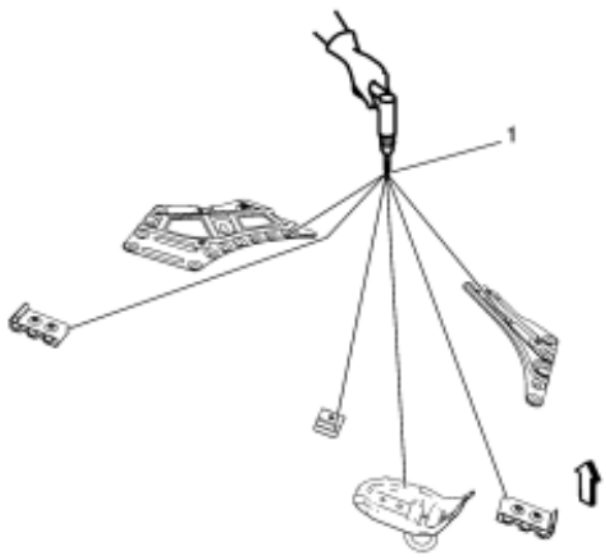
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2. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the rear compartment floor panel as noted from the original panel (1).
3. Clean and prepare the attaching surfaces for welding.
4. Position the rear compartment floor panel on the vehicle.
5. Verify the fit of the rear compartment floor panel.
6. Clamp the rear compartment floor panel into position.



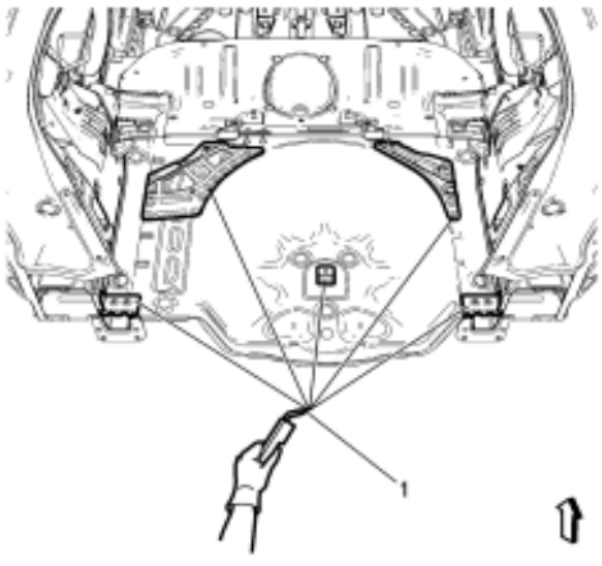
7. Plug the weld accordingly (1).



8. Drill **8 mm (5/16 in)** for plug welding along the edges of the floor panel rear reinforcement, the spare wheel carrier bracket, the shipping device and the floor panel reinforcement as noted from the original panel (1).
9. Clean and prepare the attaching surfaces for welding.
10. Position the floor panel rear reinforcement, the spare wheel carrier bracket, the shipping device and the floor panel reinforcement on the vehicle.
11. Verify the fit of the floor panel rear reinforcement, the spare wheel carrier bracket, the shipping device and the floor panel reinforcement.

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12. Plug weld accordingly (1).
13. Weld accordingly the weld studs as noted.
14. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
15. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
16. Install all related panels and components.
17. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
18. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Quarter Outer Panel Sectioning (5HB)

- *BO-6392* Flanging Tool Kit
- *BO-6396* Bonding Pliers

For equivalent regional tools, refer to Special Tools .

Note: According to different corrosion warranties, only the regional mandatory joining methods are allowed.

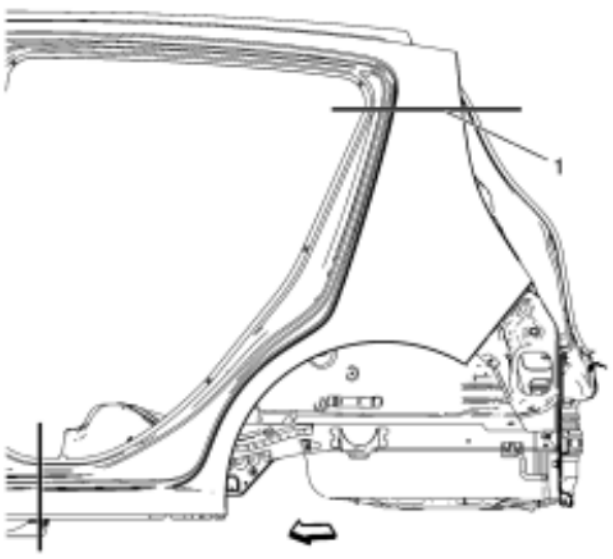
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

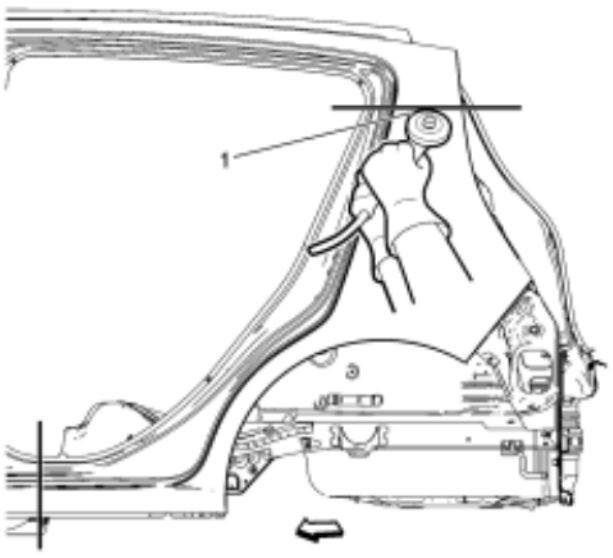
Warning: Refer to Collision Sectioning Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



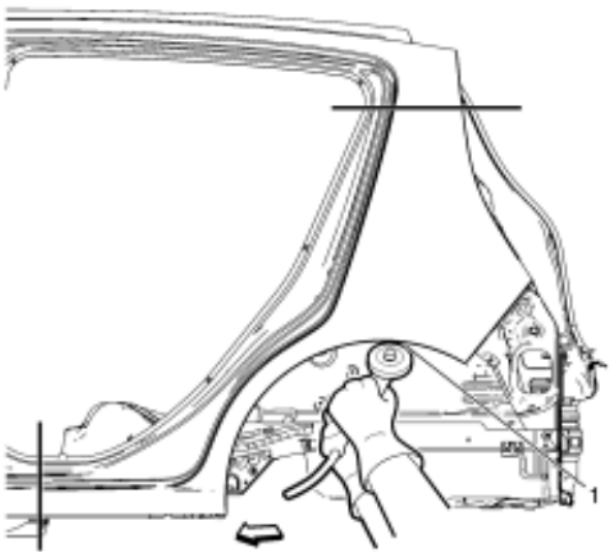
6. Create cut lines on the quarter outer panel (1).



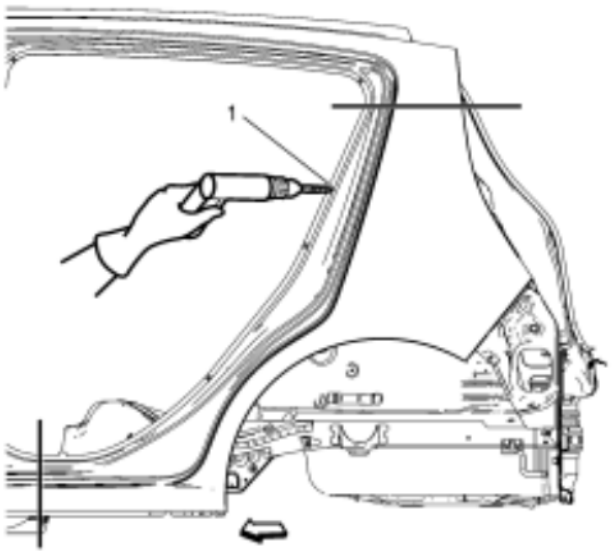
Note: Do not damage any inner panels or reinforcements.

7. Cut the panel where sectioning is to be performed (1).

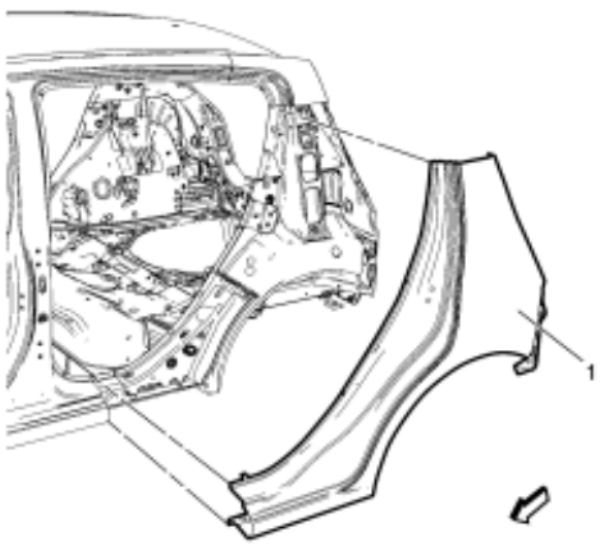
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8. Open the wheelhouse flanging (1).
9. Locate and mark all the necessary factory welds of the quarter outer panel.



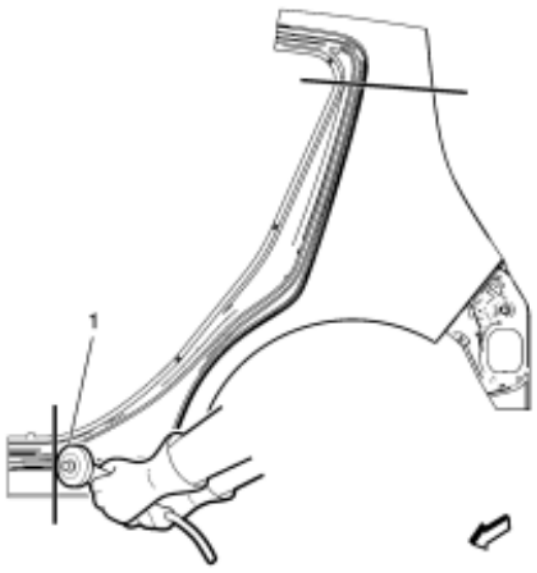
10. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



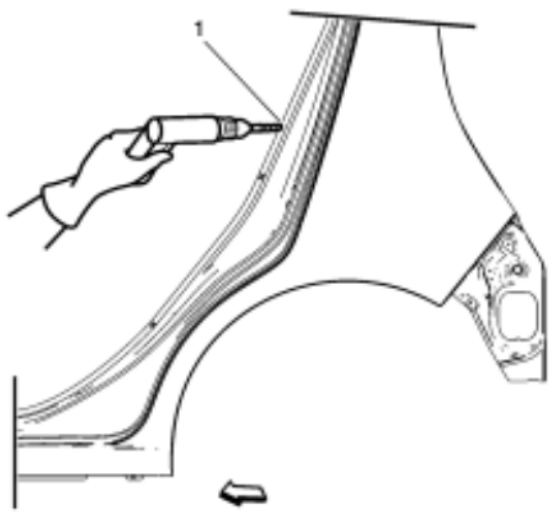
11. Remove the damaged quarter outer panel (1).

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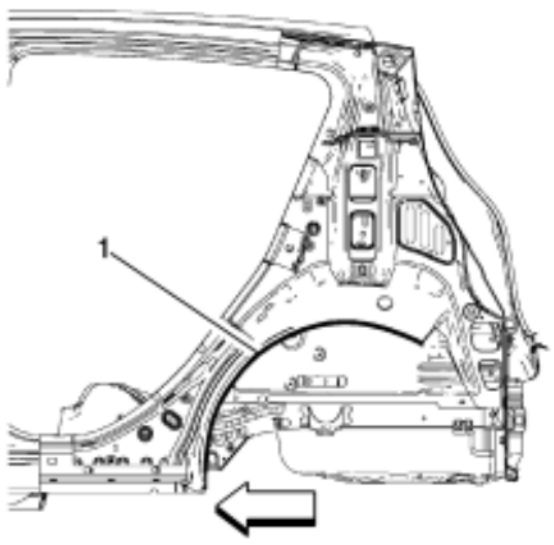
Installation Procedure



1. Cut the quarter outer panel in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to overlap the remaining original panel by 25 mm (1 inch) at each joint location (1).
2. Prepare all mating surfaces as necessary.

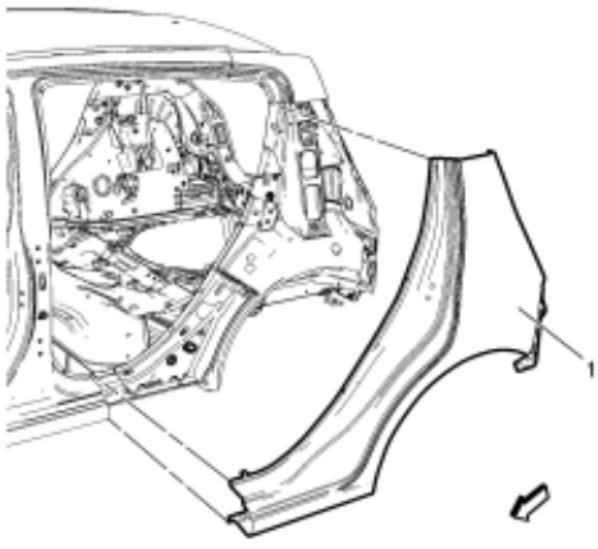


3. Drill 8 mm (5/16 in) holes for plug welding along the edges of the quarter outer panel as noted from the original panel (1).
4. Clean and prepare the attaching surfaces for welding.

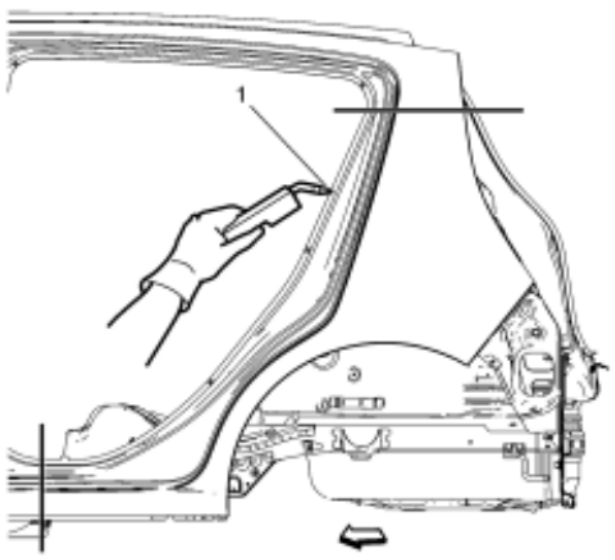


5. Apply one-part windshield urethane adhesive (1) as noted from the original panel.

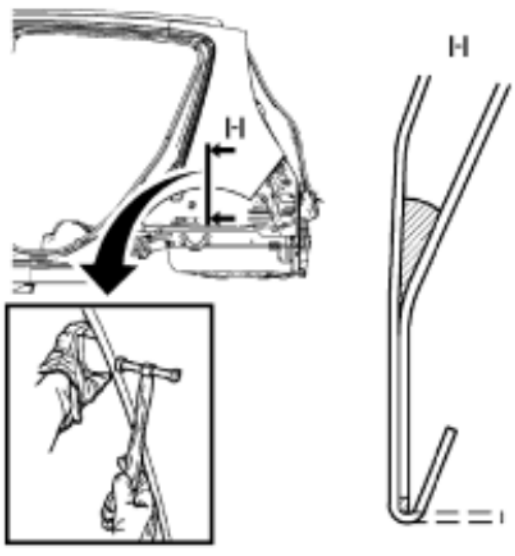
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6. Position the quarter outer panel on the vehicle (1).
7. Verify the fit of the quarter outer panel.
8. Clamp the quarter outer panel into position.



9. Plug weld accordingly (1).
10. To create a solid weld with minimum heat distortion, make **25 mm (1 in)**stitch welds along the seam with **25 mm (1 in)**gaps between them. Then go back and complete the stitch weld.
11. Pre-flanging the flange with *BO-6396* pliers and *BO-6392* tool kit .



12. Finish closing the wheelhouse flanging.
13. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
14. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
15. Install all related panels and components.
16. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
17. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Quarter Outer Panel Sectioning (4NB)

Special Tools

- *BO-6392* Flanging Tool Kit
- *BO-6396* Bonding Pliers

For equivalent regional tools, refer to Special Tools .

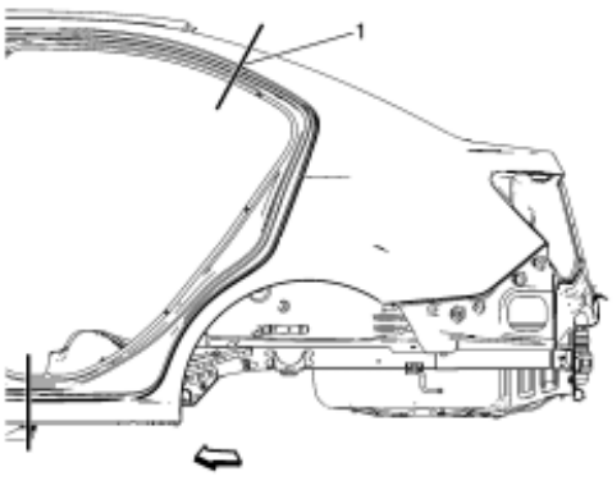
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

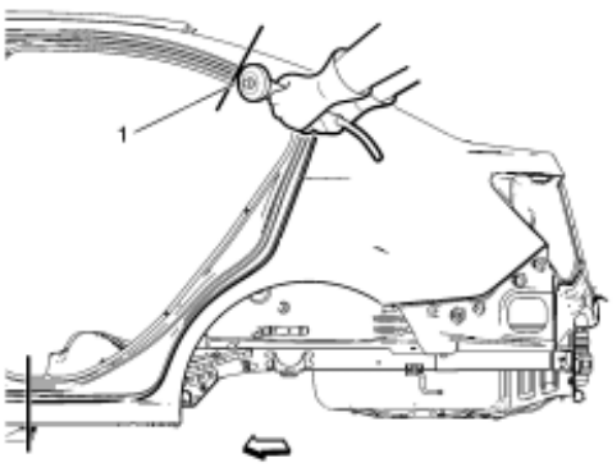
Warning: Refer to Collision Sectioning Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



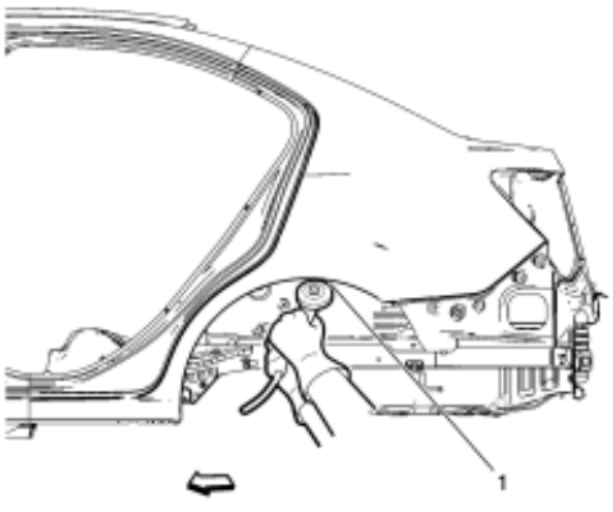
6. Create cut lines on the quarter outer panel (1).



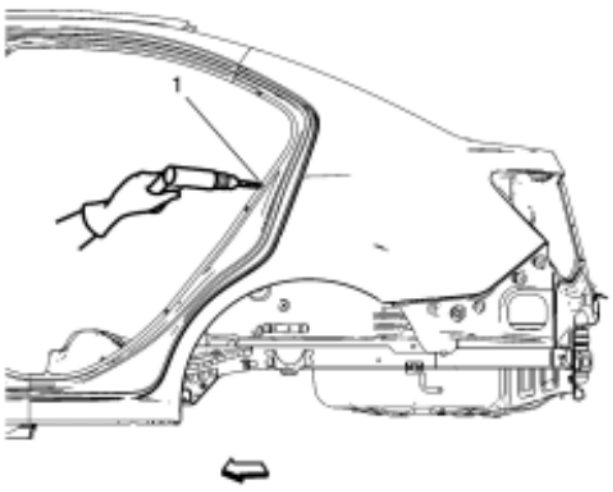
Note: Do not damage any inner panels or reinforcements.

7. Cut the panel where sectioning is to be performed (1).

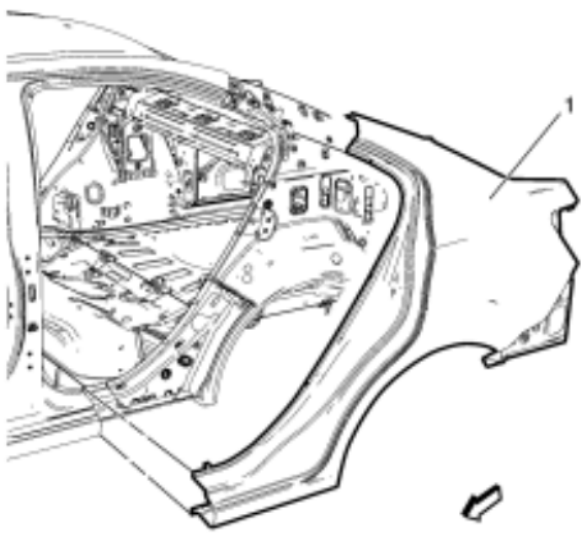
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8. Open the wheelhouse flanging (1).
9. Locate and mark all the necessary factory welds of the quarter outer panel.



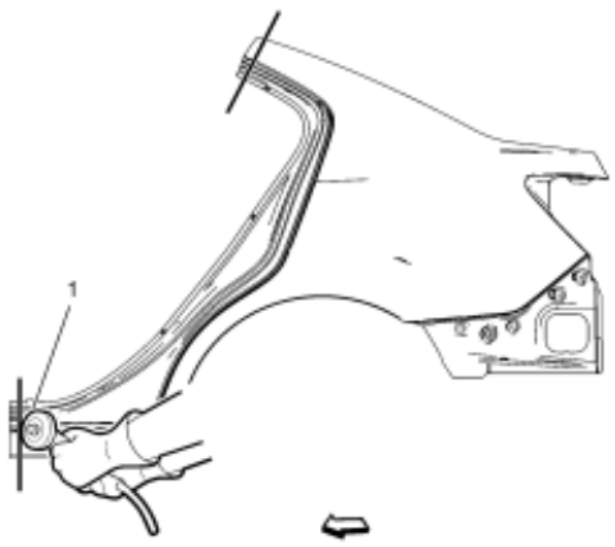
10. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



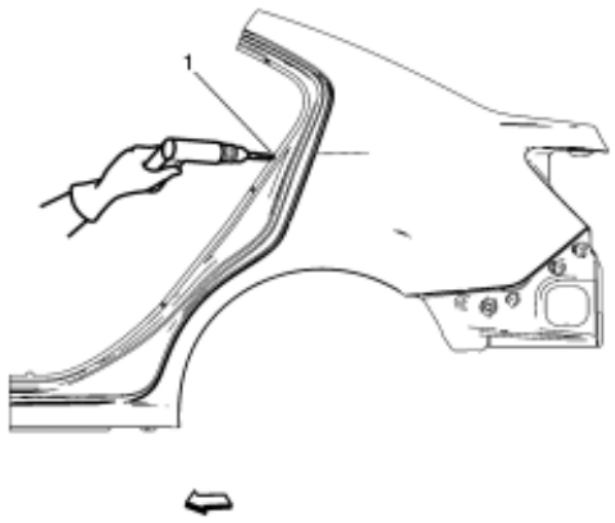
11. Remove the damaged quarter outer panel (1).

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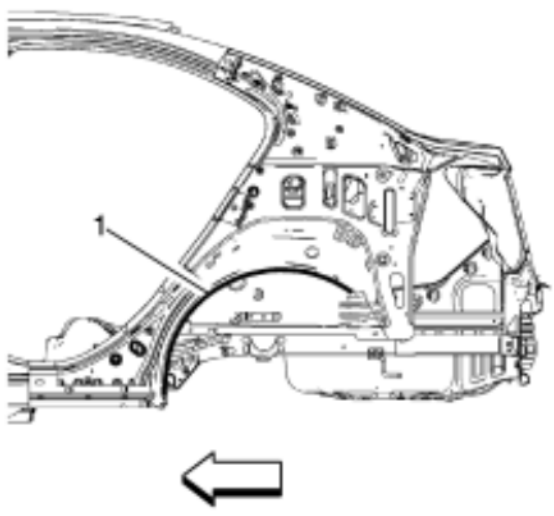
Installation Procedure



1. Cut the quarter outer panel in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to overlap the remaining original panel by 25 mm (1 inch) at each joint location (1).
2. Prepare all mating surfaces as necessary.

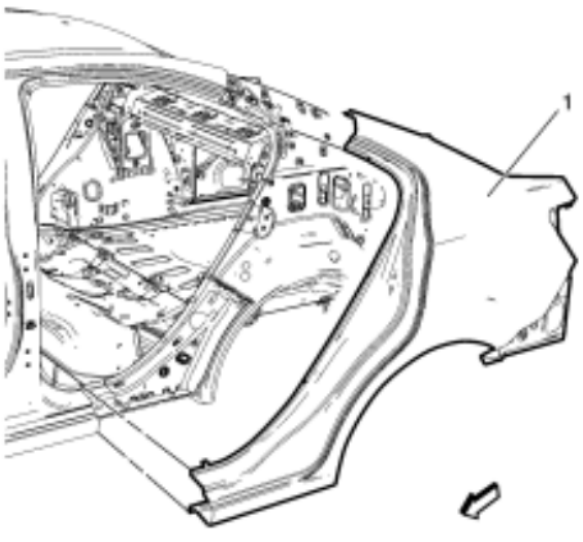


3. Drill a **8 mm (5/16 in)** holes for plug welding along the edges of the quarter outer panel as noted from the original panel (1).
4. Clean and prepare the attaching surfaces for welding.

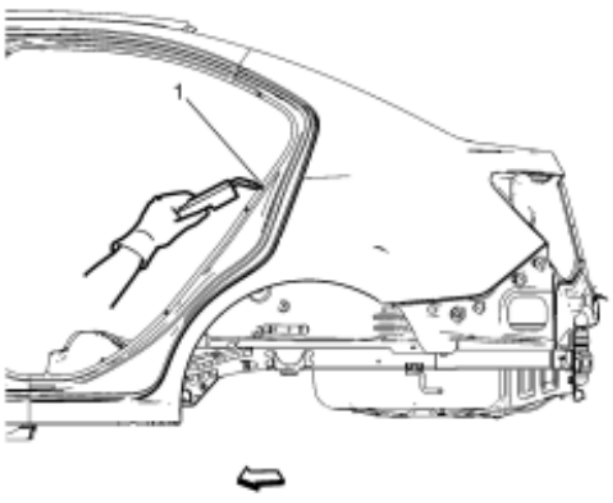


5. Apply one-part windshield urethane adhesive (1) as noted from the original panel.

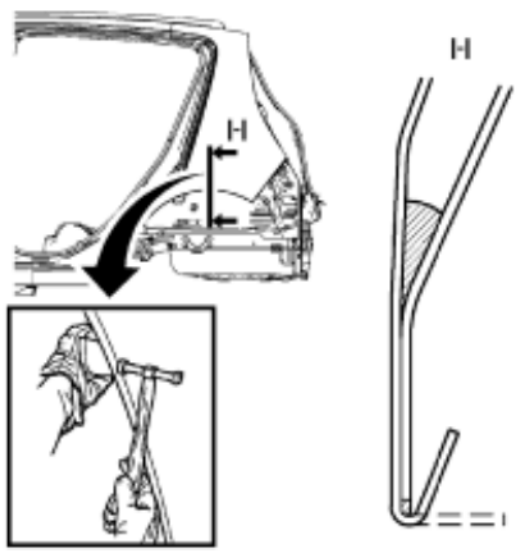
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6. Position the quarter outer panel on the vehicle (1).
7. Verify the fit of the quarter outer panel.
8. Clamp the quarter outer panel into position.



9. Plug weld accordingly (1).
10. To create a solid weld with minimum heat distortion, make **25 mm (1 in)**stitch welds along the seam with **25 mm (1 in)**gaps between them. Then go back and complete the stitch weld.
11. Pre-flange the flange with *BO-6396* pliers and *BO-6392* tool kit.



12. Finish closing the wheelhouse flanging.
13. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
14. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
15. Install all related panels and components.
16. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
17. Enable the SIR system. Refer to SIR Disabling and Enabling .

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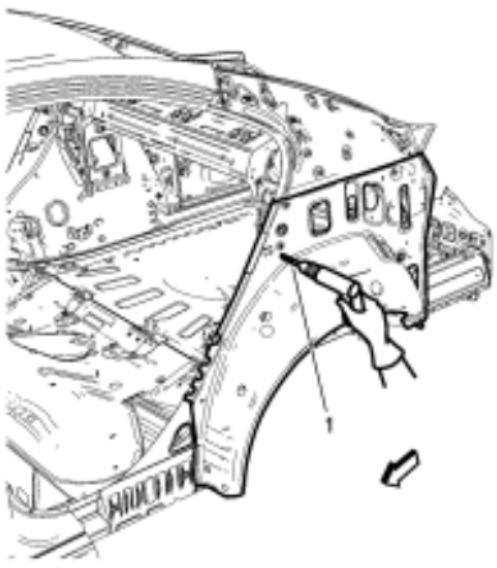
Quarter Inner Panel Replacement (4NB)

Removal Procedure

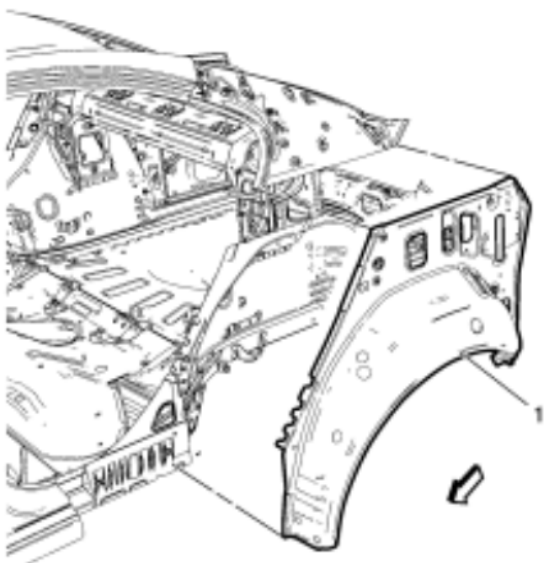
Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all the necessary factory welds of the rear wheelhouse outer panel.



7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.

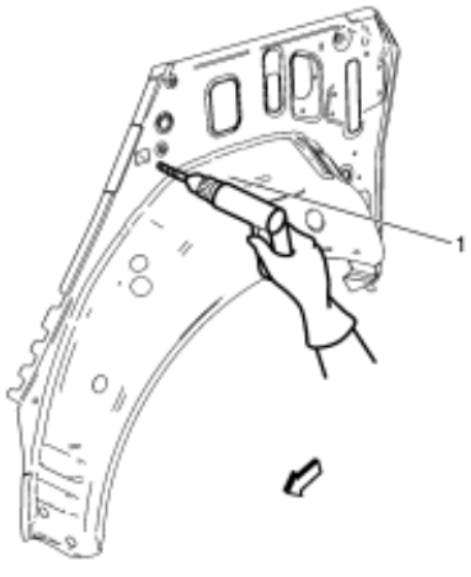


8. Remove the damaged rear wheelhouse outer panel (1).

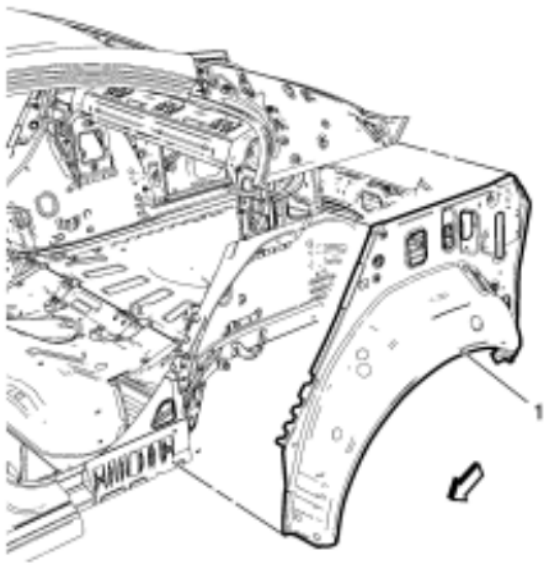
Installation Procedure

1. Prepare all mating surfaces as necessary.
2. Align the rear wheelhouse outer panel.

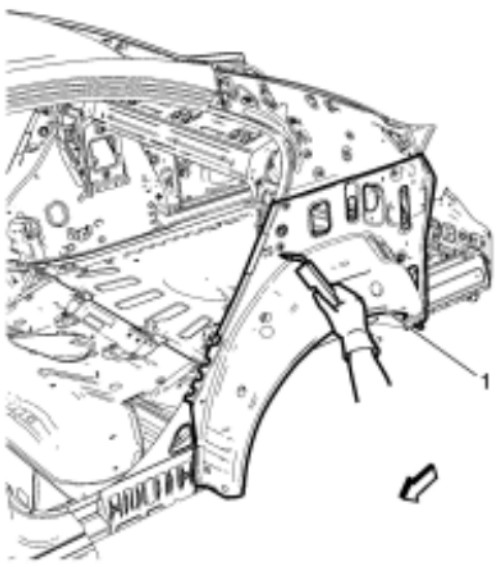
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3. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the rear wheelhouse outer panel as noted from the original panel (1).
4. Clean and prepare the attaching surfaces for welding.



5. Position the rear wheelhouse outer panel on the vehicle (1).
6. Verify the fit of the rear wheelhouse outer panel.
7. Clamp the rear wheelhouse outer panel into position.



8. Plug weld accordingly (1).
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
10. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
11. Install all related panels and components.
12. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
13. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Quarter Inner Panel Sectioning (5HB)

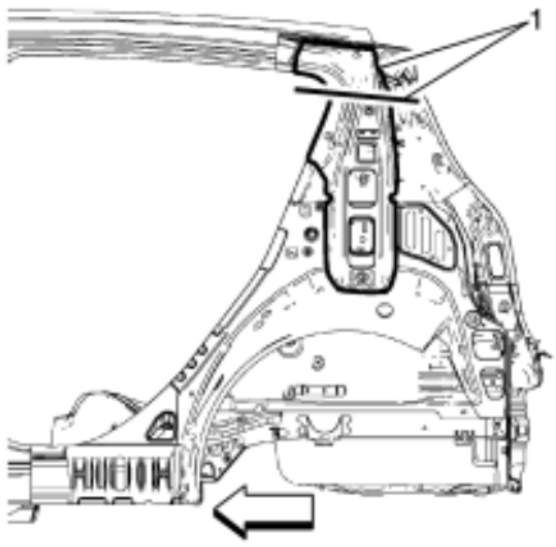
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

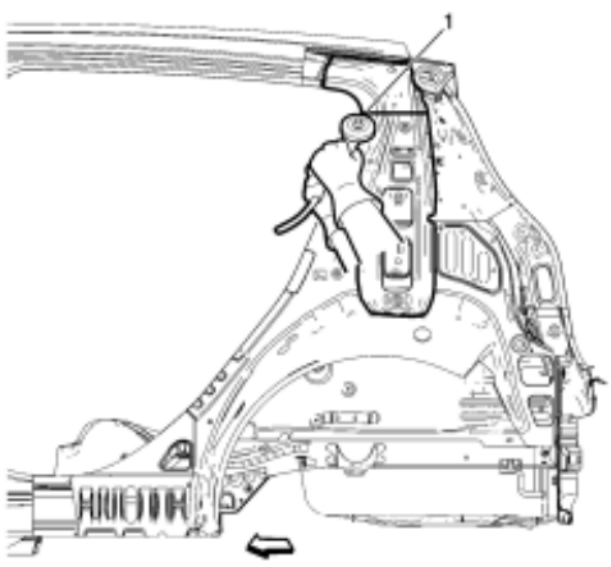
Warning: Refer to Collision Sectioning Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



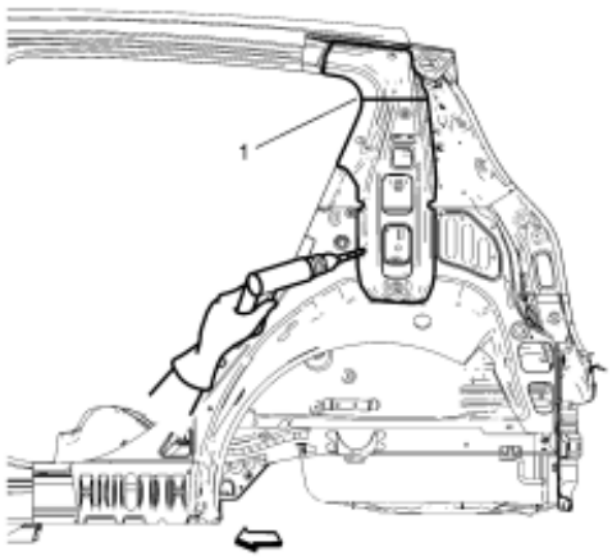
6. Create cut lines on the body lock pillar inner reinforcement (1).



Note: Do not damage any inner panels or reinforcements.

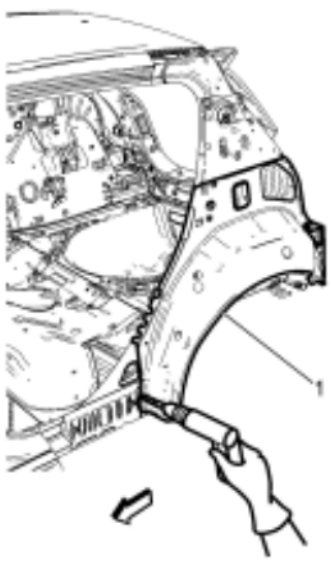
7. Cut the panel where sectioning is to be performed (1).
8. Locate and mark all the necessary factory welds of the body lock pillar inner reinforcement.

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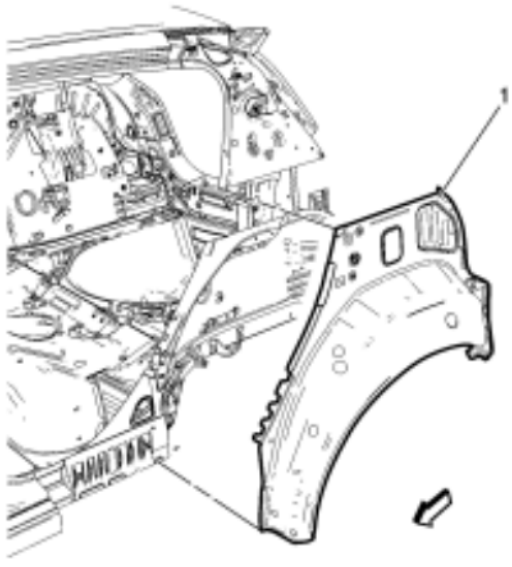
9. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.

10. Remove the damaged body lock pillar inner reinforcement (1).



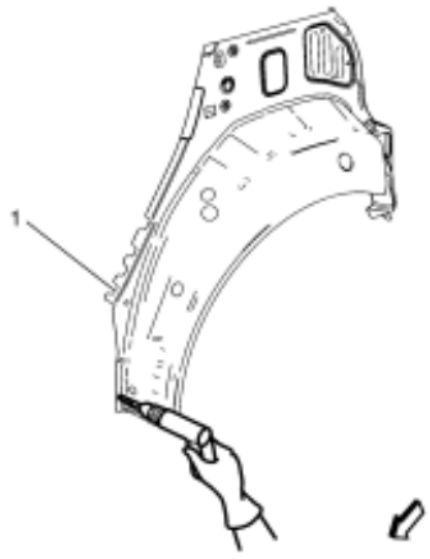
11. Locate and mark all the necessary factory welds of the rear wheelhouse outer panel.
12. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.

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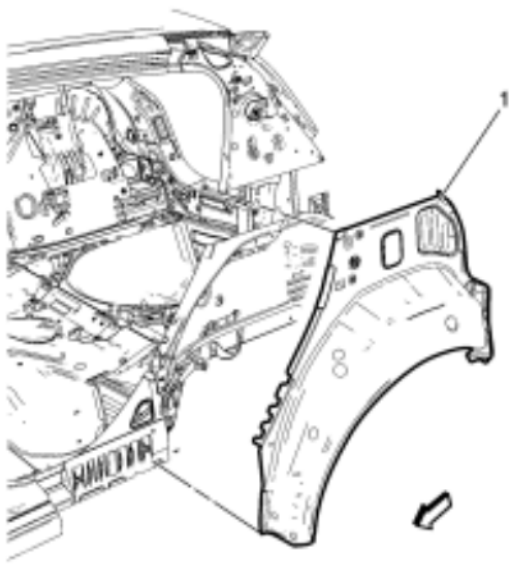


13. Remove the damaged rear wheelhouse outer panel (1).

Installation Procedure



1. Drill **8 mm (5/1 in)** holes for plug welding along the edges of the rear wheelhouse outer panel as noted from the original panel (1).
2. Clean and prepare the attaching surfaces for welding.

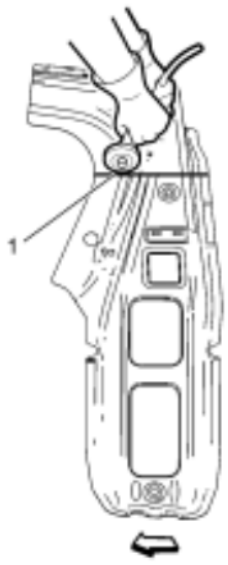


3. Position the rear wheelhouse outer panel (1).
4. Verify the fit of the panel.
5. Clamp the rear wheelhouse outer panel into position.

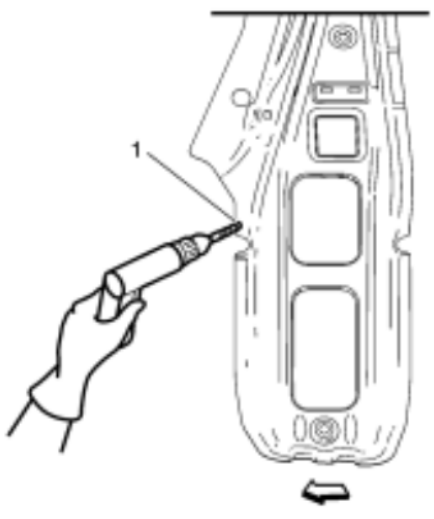
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6. Plug weld accordingly (1).

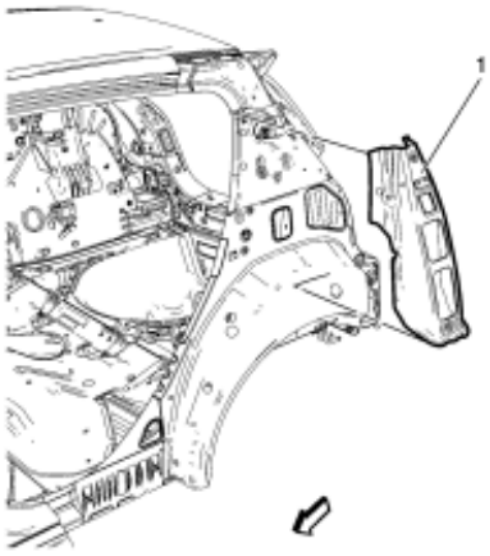


7. Cut the body lock pillar inner reinforcement in corresponding locations to fit the remaining original panel (1). The sectioning joint should be trimmed to allow a gap of one-and-one-half-times the metal thickness at the sectioning joint.
8. Create a **50 mm (2 in)** backing plate from the unused portion of the service part.
9. Drill **8 mm (5/16 in)** along the sectioning cut on the remaining original part. Locate these holes **13 mm (1/2 in)** from the edge of part and spaced **40 mm (1 1/2 in)** apart.
10. Prepare all mating surfaces as necessary.
11. Fit the backing plates halfway into the sectioning joints, clamp in place and plug weld to the vehicle.
12. Align the body lock pillar inner reinforcement.

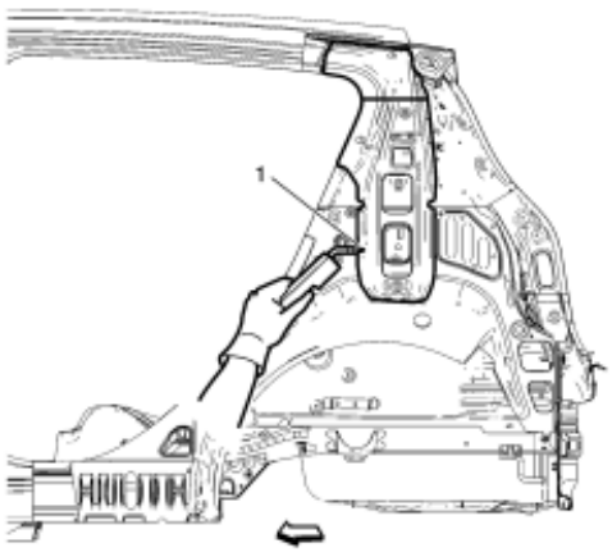


13. Drill **8 mm (5/1 in)** holes for plug welding along the edges of the body lock pillar inner reinforcement as noted from the original panel (1).
14. Clean and prepare the attaching surfaces for welding.

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15. Position the body lock pillar inner reinforcement (1).
16. Verify the fit of the panel.
17. Clamp the body lock pillar inner reinforcement into position.



18. Plug weld accordingly (1).
19. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
20. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
21. Install all related panels and components.
22. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
23. Enable the SIR system. Refer to SIR Disabling and Enabling .

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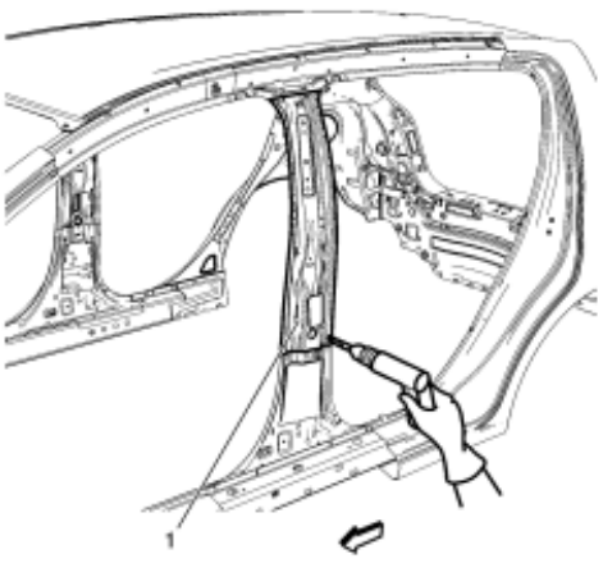
Center Pillar Inner Panel Replacement

Removal Procedure

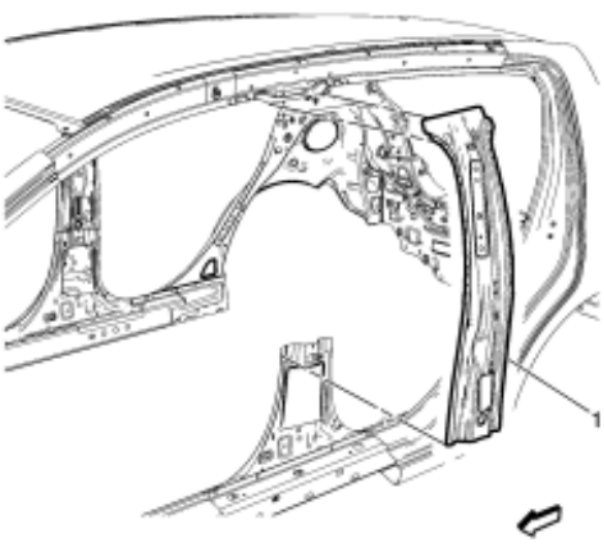
Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all factory welds.



7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.

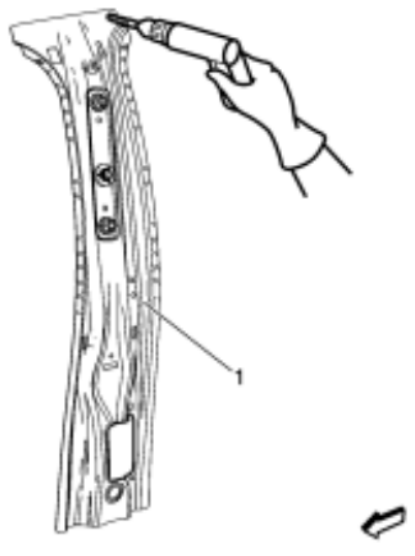


8. Remove the damaged center pillar inner panel (1).

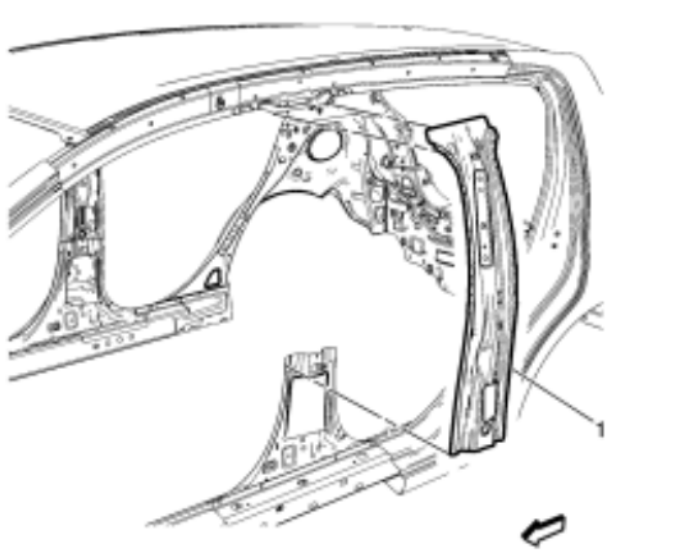
Installation Procedure

1. Prepare all mating surfaces as necessary.
2. Align the center pillar inner panel.

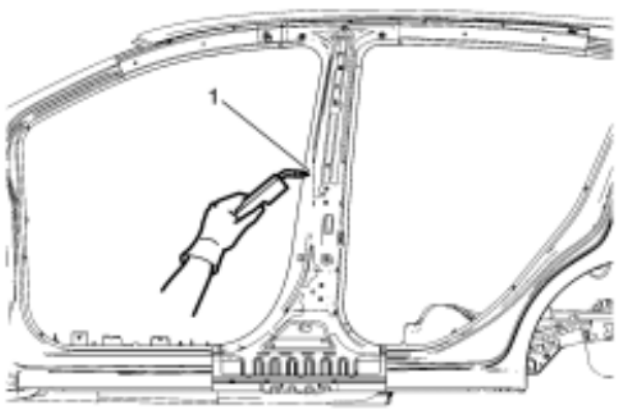
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3. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the center pillar inner panel (1) as noted from the original panel.
4. Clean and prepare the attaching surfaces for welding.



5. Position the center pillar inner panel on the vehicle (1).
6. Verify the fit of the center pillar inner panel.
7. Clamp the center pillar inner panel into position.



8. Plug weld accordingly (1).
9. To create a solid weld with minimum heat distortion, make **25 mm (1 in)** stitch welds along the seam with **25 mm (1 in)** gaps between them. Then go back and complete the stitch weld.
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
11. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
12. Install all related panels and components.
13. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
14. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Center Pillar Reinforcement Replacement

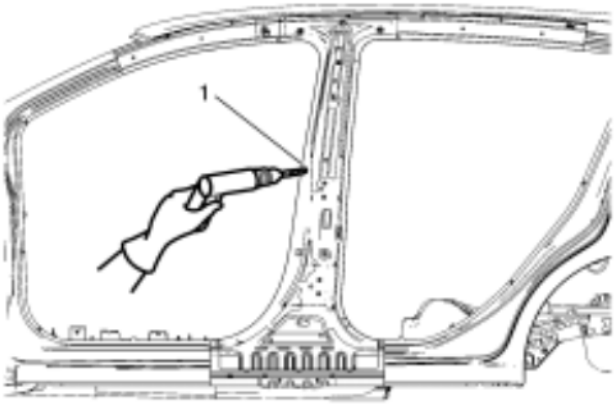
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

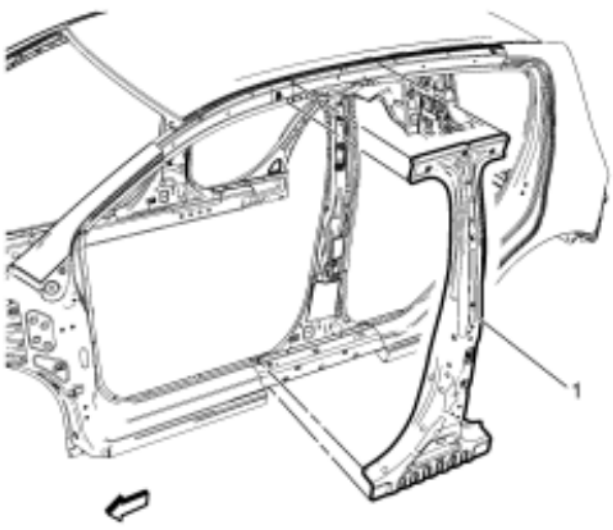
Warning: Refer to Glass and Sheet Metal Handling Warning .

Note: The center pillar upper stiffener is made of Dual Phase Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to Dual Phase Steel .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all the necessary factory welds of the center pillar reinforcement.



7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.

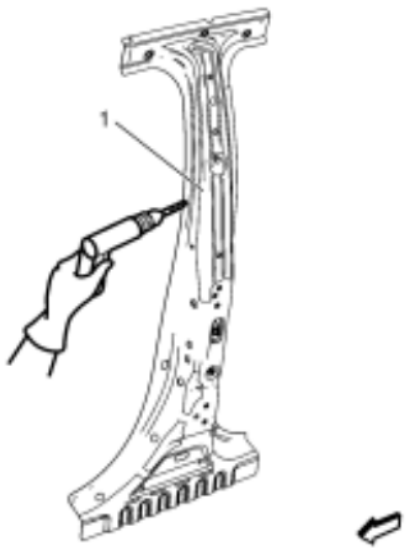


8. Remove the damaged center pillar reinforcement (1).

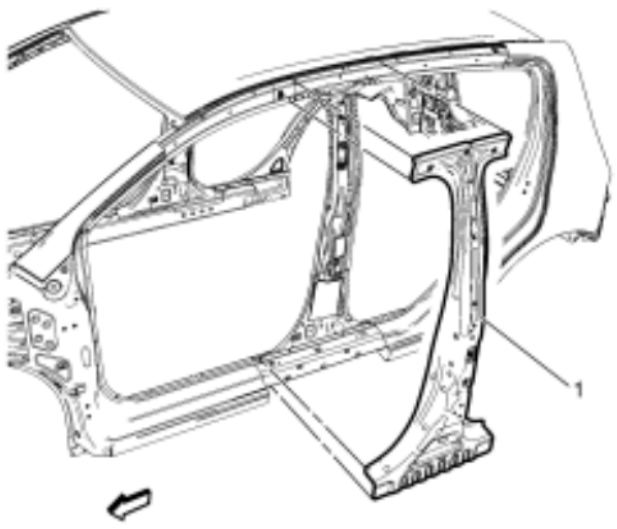
Installation Procedure

1. Prepare all mating surfaces as necessary.
2. Align the center pillar reinforcement.

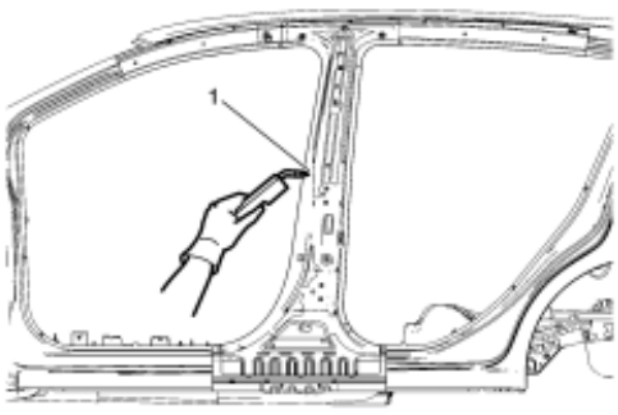
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3. Drill a **8 mm (5/16 in)** holes for plug welding along the edges of the center pillar reinforcement as noted from the original panel (1).
4. Clean and prepare the attaching surfaces for welding.



5. Position the center pillar reinforcement on the vehicle (1).
6. Verify the fit of the center pillar reinforcement.
7. Clamp the center pillar reinforcement into position.



8. Plug weld accordingly (1).
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
10. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
11. Install all related panels and components.
12. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
13. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Center Pillar Sectioning - Outer

Removal Procedure

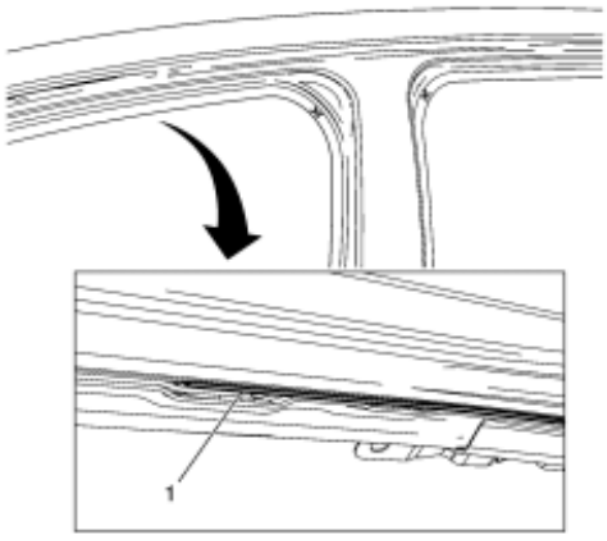
Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Collision Sectioning Warning .

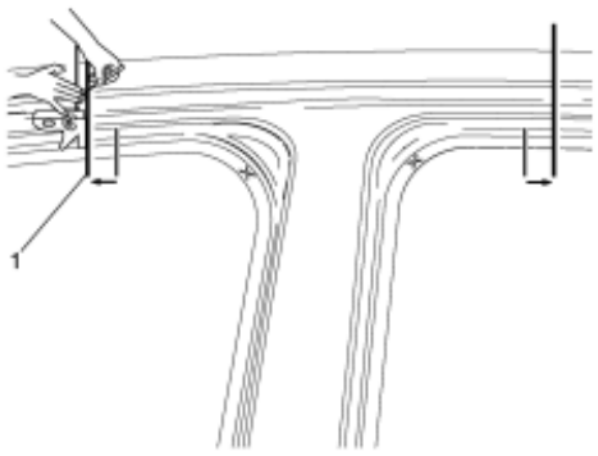
Warning: Refer to Glass and Sheet Metal Handling Warning .

Note: This procedure was developed to allow full access for the replacement of the center pillar reinforcement replacement since sectioning is not endorsed or recommended to the reinforcement due to the Ultra High Strength Steel .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

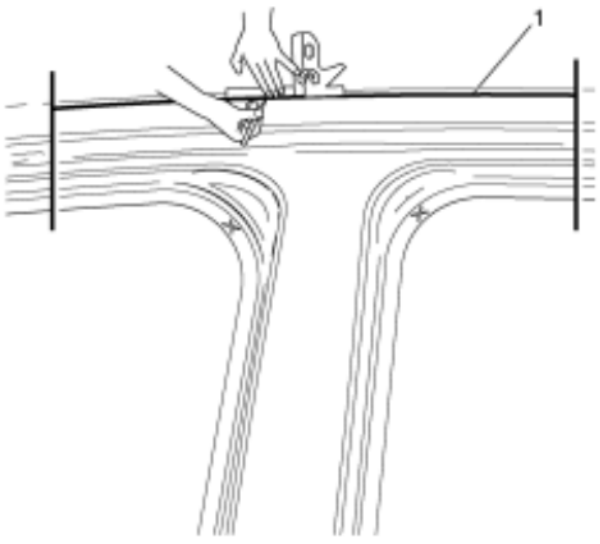


6. Remove the weather-strip, observe the flange in the center pillar area. There will be a 3-metal stack-up. The center layer is the center pillar reinforcement (1).

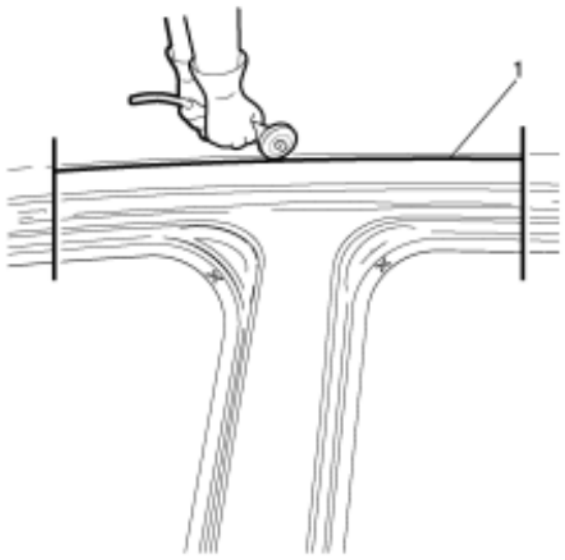


7. Measure **13 mm (1/2 in)** from the forward and rearward edges of the center pillar reinforcement and mark a vertical line (1).

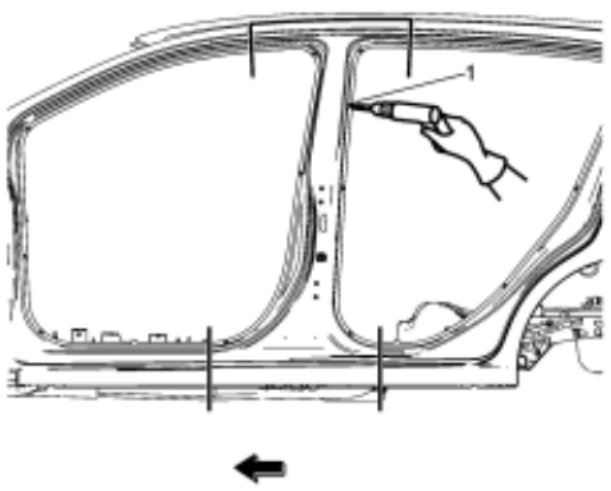
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8. Measure up 1 inch from the door opening feature line (1) and mark a horizontal line.

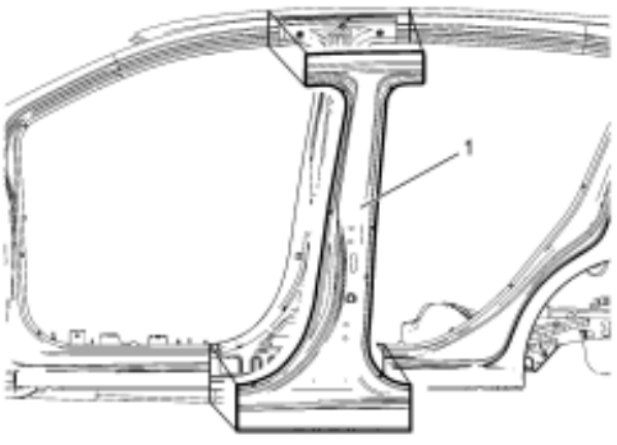


9. Cut access window (1) in the center pillar outer.
10. Perform additional sectioning procedures as needed depending on damage to vehicle. Refer to Rocker Outer Panel Sectioning or Front Hinge Pillar Body Sectioning .



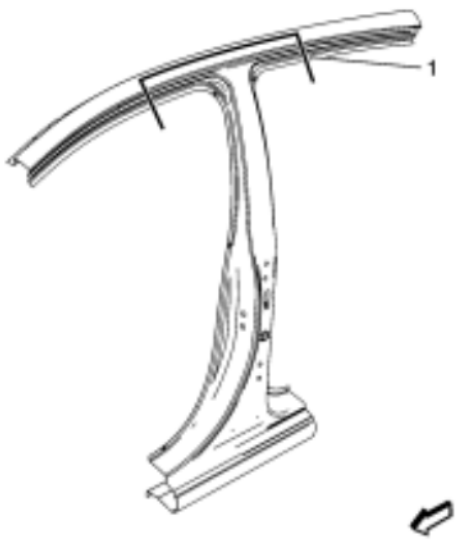
11. Locate and drill out all factory welds (1). Note the number and location of welds for installation of the service part.

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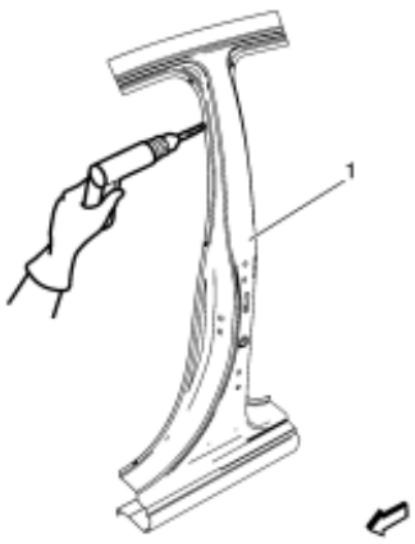


12. Remove the damaged center pillar outer panel section (1).

Installation Procedure

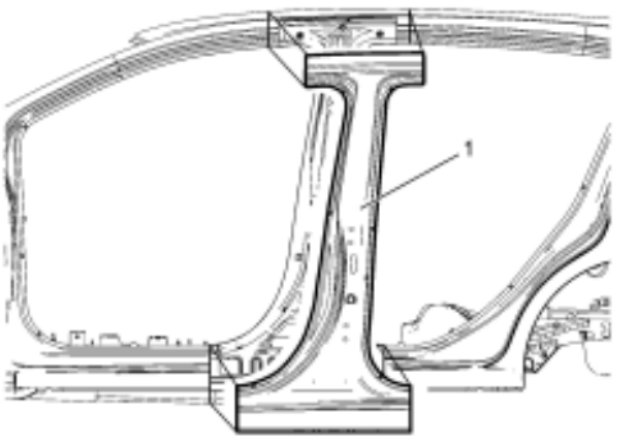


1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1).

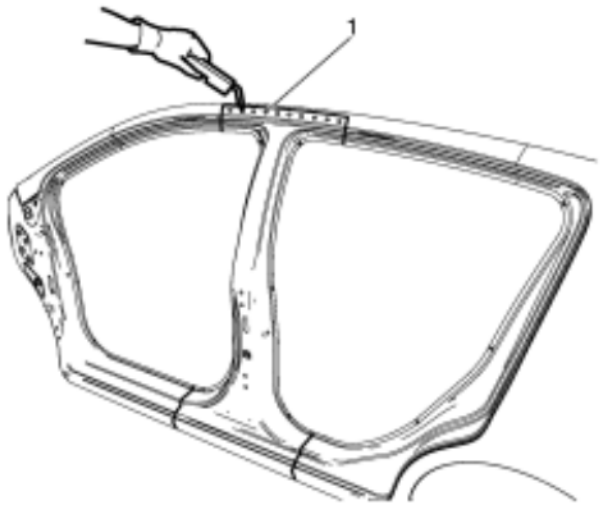


2. Drill 8 mm (5/16 in) holes for plug welding in the service part (1), as necessary, in the corresponding locations noted on the original panel and along sectioned joint.
3. Clean and prepare the attaching surfaces for welding.

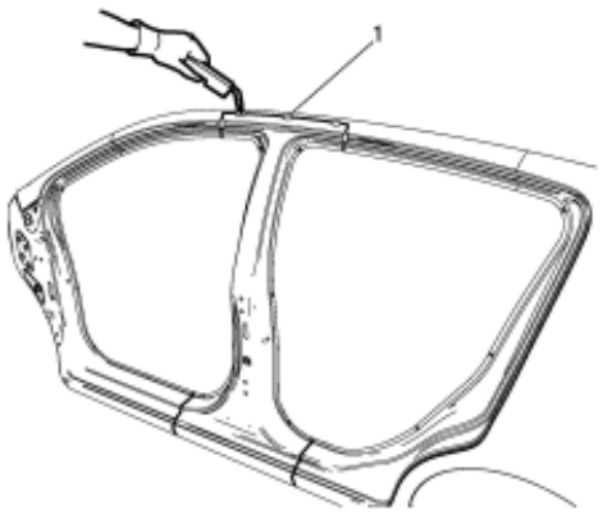
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4. Position the center pillar outer panel (1) to the vehicle. Clamp the pillar in place.



5. Plug weld accordingly (1).



6. To create a solid weld with minimum heat distortion, make a 25 mm (1 in) stitch weld along the seam with gaps of 25 mm (1 in) gaps between them. Go back and complete the stitch weld (1).
7. Clean and prepare all of the welded surfaces
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary.Refer to Anti-Corrosion Treatment and Repair .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
12. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Rear Rail Sectioning

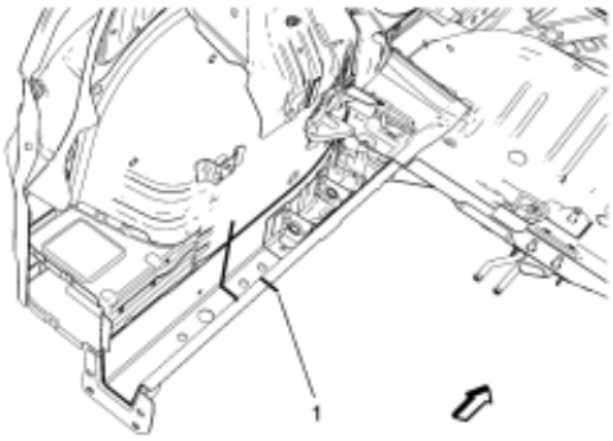
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning .

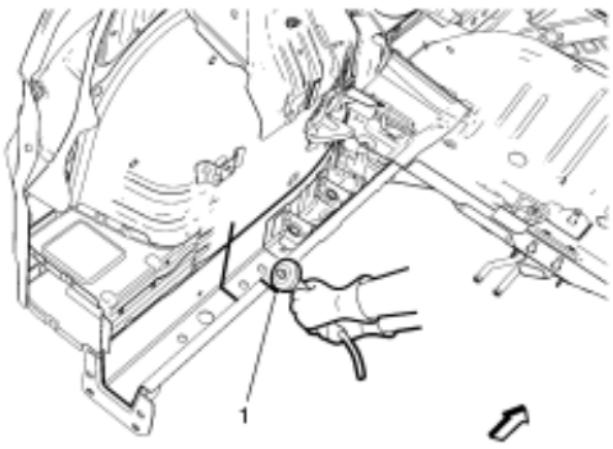
Warning: Refer to Collision Sectioning Warning

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .



6. Create cut lines on the rear side rail (1).

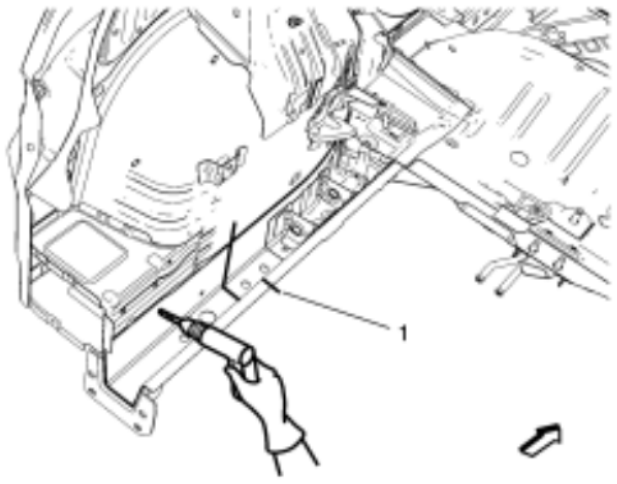


Note: Do not damage any other panels or reinforcements.

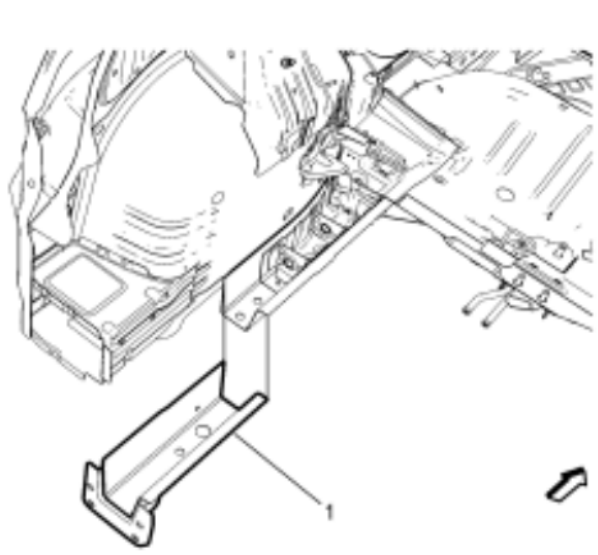
7. Cut the panel where sectioning is to be performed (1).
8. Locate and mark all the necessary factory welds of the rear side rail.

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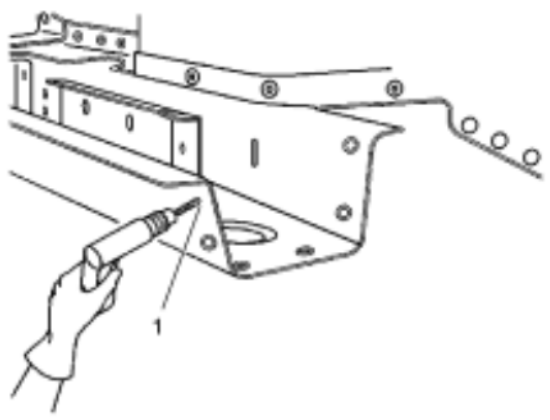
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9. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



10. Remove the damaged rear side rail (1).

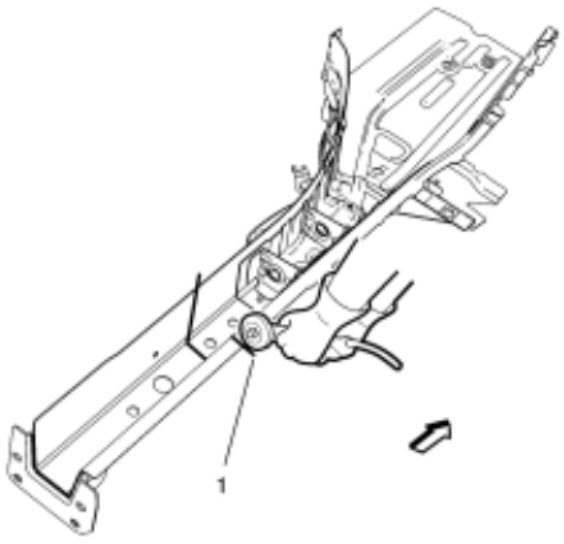


11. Drill two **8 mm (5/16 in)** plug weld holes on each of the 3 sides of the rear rail (1). Position the center of the holes **10 mm (3/8 in)** from the cut edge.

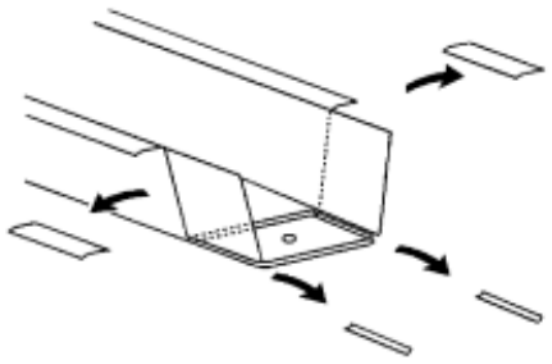
Installation Procedure

1. Locate the original cutting line on the service part rear rail.
2. Align a sliding square or similar tool to the original cutting line and scribe a line across the rail.
3. Use the same tool to transfer this scribed line onto the sides and the weld flanges of the rail.
4. Place a mark forward, **25 mm (1 in)** from the scribed line on all 3 sides of the service rail.
5. Use the tool to scribe a line on all 3 sides and weld flanges of the rail.

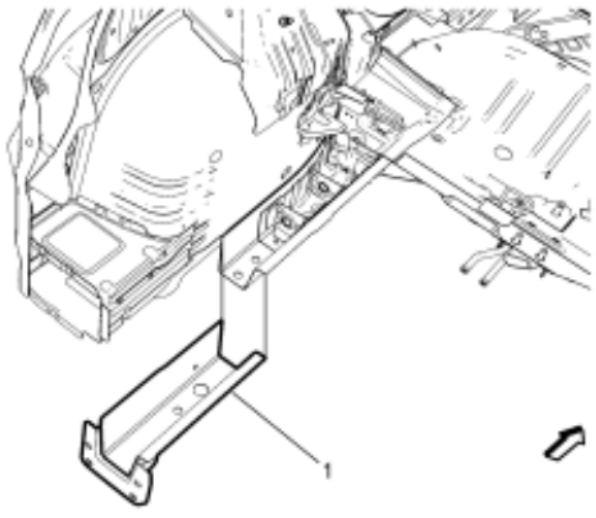
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6. Cut at the scribe line (1).
7. Remove the rear portion of the rail.

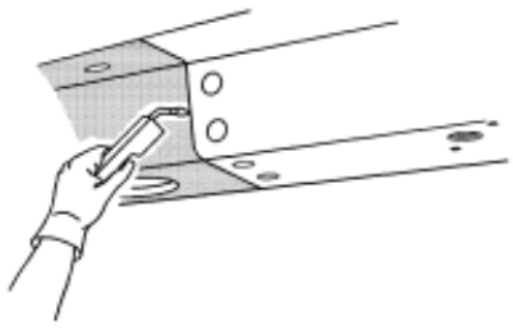


8. Cut the upper outer flanges of the rear portion of the rear rail service part. Cut the flanges back to the first scribe line and remove the tabs
9. Cut the lower radius corners of the service part back to the first scribe line and remove the small corners.
10. Bend the bottom side of the service part at the sectioning location inward slightly by aligning a vice grip flanging tool or similar tool at the first scribed line.
11. Clean and prepare the attaching surfaces for welding.



12. Position the rear side rail (1) on the vehicle.

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13. Tack weld the part into position.
14. Inspect the service rear rail for proper dimensions, using 3-dimensional measuring equipment.
15. Plug weld at each **8 mm (5/16 in)** plug weld hole location.
16. Stitch weld along the entire sectioning joint. Make welds along the seam with **25 mm (1 in)** gaps between. Weld the gaps.
17. Clean and prepare the welded surfaces.
18. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
19. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
20. Install all related panels and components.
21. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
22. Enable the SIR system. Refer to SIR Disabling and Enabling .

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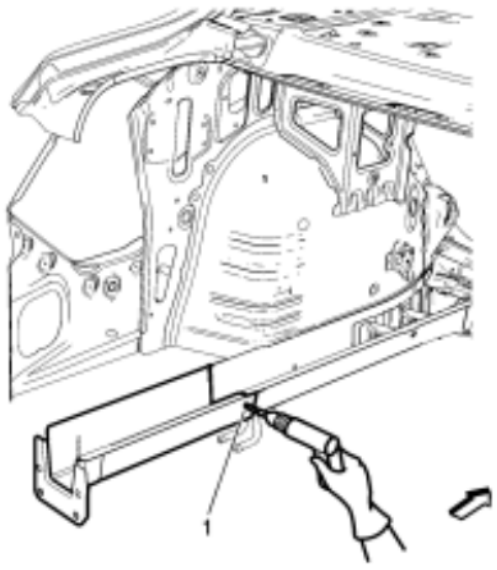
Underbody Rear Side Rail Extension Replacement

Removal Procedure

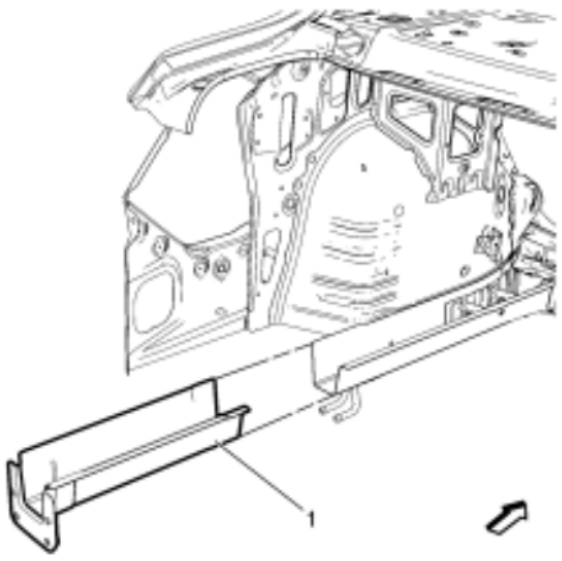
Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all factory welds.



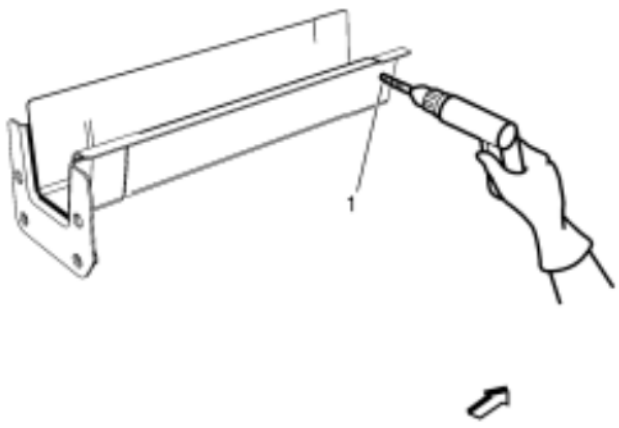
7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



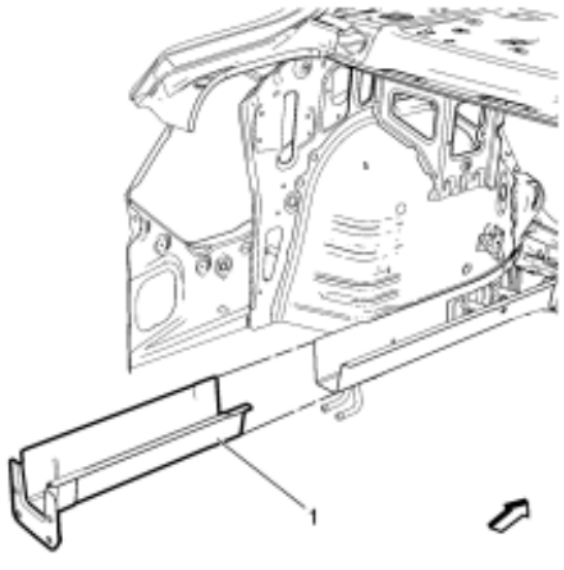
8. Remove the damaged rear side rail extension (1).

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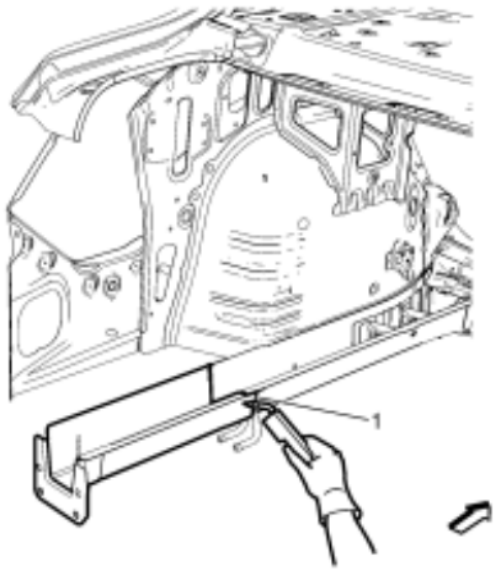
Installation Procedure



1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the rear side rail extension (1) as noted from the original panel.
2. Clean and prepare the attaching surfaces for welding.



3. Position the rear side rail extension on the vehicle (1).
4. Verify the fit of the rear side rail extension.
5. Clamp the rear side rail extension into position.



6. Plug weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Rear End Panel Replacement

Removal Procedure

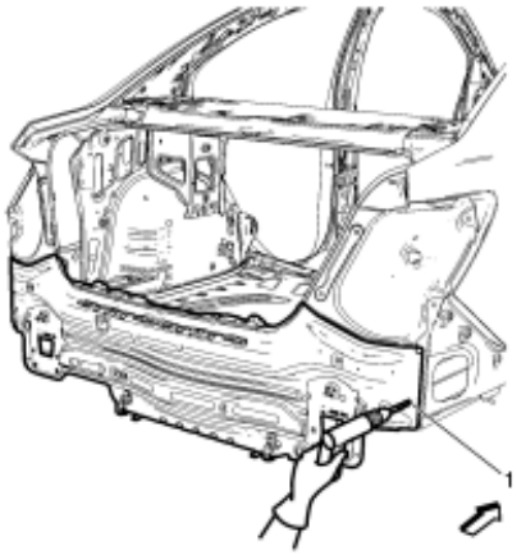
Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

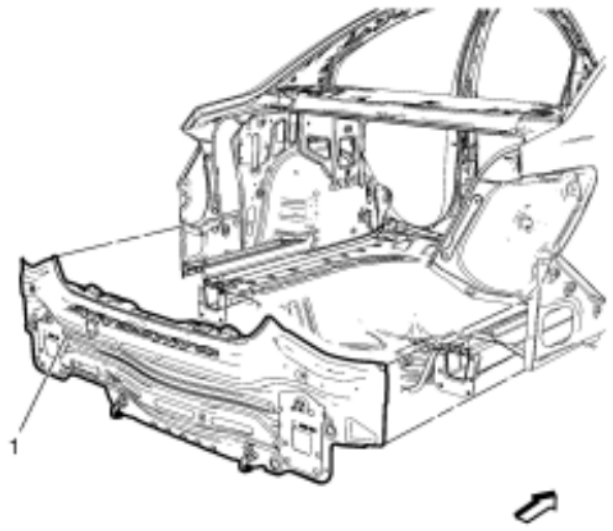
Note: The rear end lower panel reinforcement extension is made of Ultra High Strength Dual Phase Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to Ultra High Strength Dual Phase Steel .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

   Note: Note the number and location of welds for installation of the service assembly.
6. Locate and mark all the necessary factory welds of the body rear end panel.



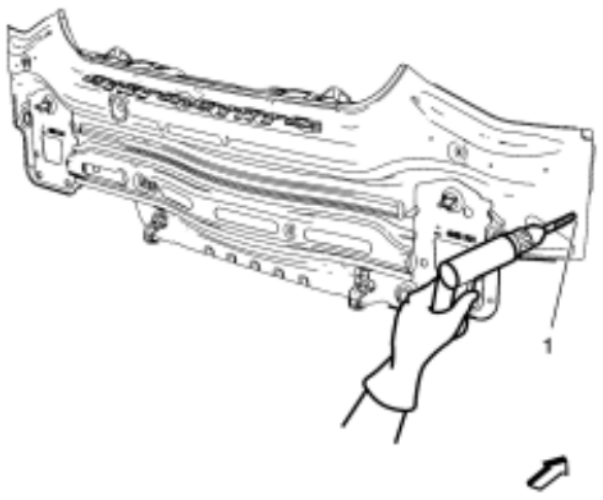
7. Drill all factory welds (1).



8. Remove the body rear end panel (1).

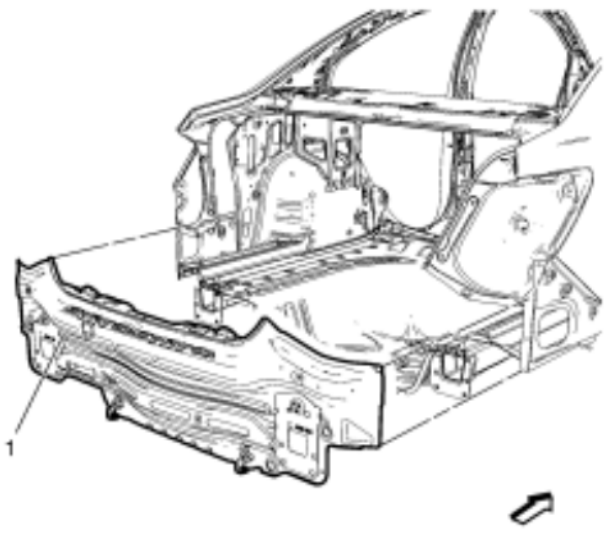
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Installation Procedure

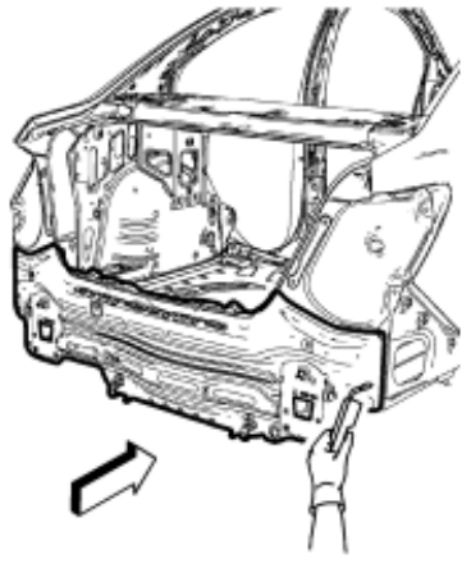


Note: If the location of the original plug weld holes can not be determined, space the plug weld holes every **40 mm (1 1/2 in)**.

1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the body rear end panel (1) as noted from the original panel.
2. Clean and prepare the attaching surfaces for welding.



3. Position the body rear end panel on the vehicle (1).
4. Verify the fit of the body rear end panel.
5. Clamp the body rear end panel into position.



6. Plug weld accordingly.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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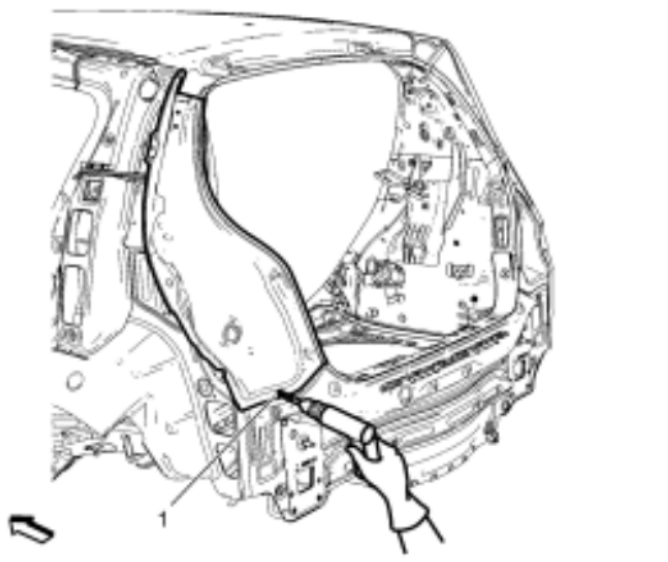
Tail Lamp Pocket Replacement (5HB)

Removal Procedure

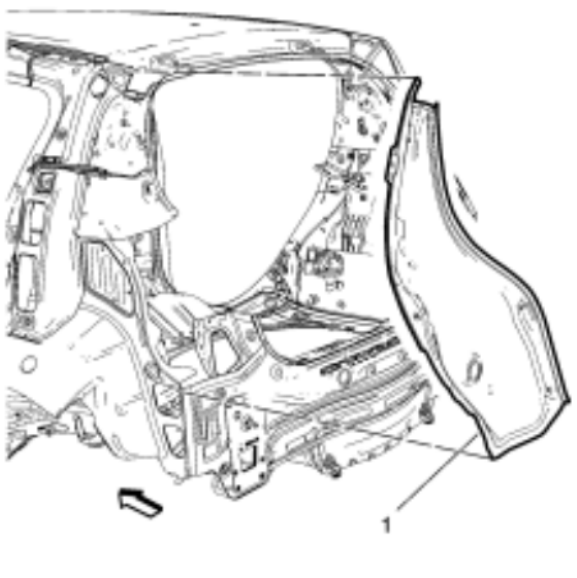
Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all the necessary factory welds of the body rear end panel.



7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



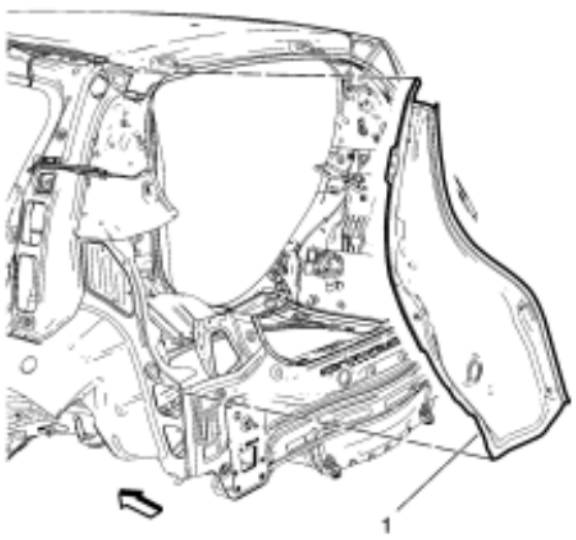
8. Remove the tail lamp pocket (1).

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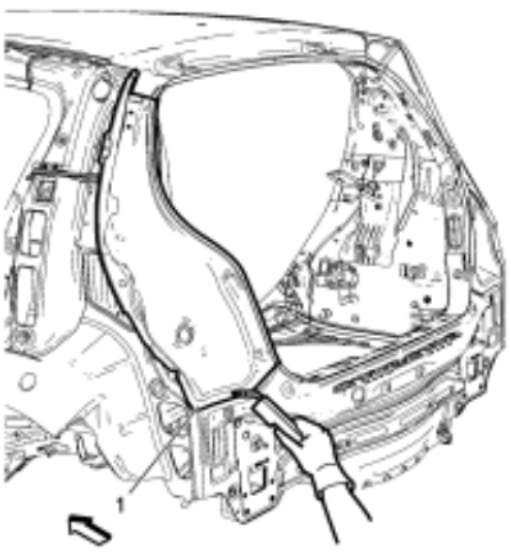
Installation Procedure



1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the tail lamp pocket (1) as noted from the original panel.
2. Clean and prepare the attaching surfaces for welding.



3. Position the tail lamp pocket on the vehicle (1).
4. Verify the fit of the tail lamp pocket.
5. Clamp the tail lamp pocket into position.



6. Plug the weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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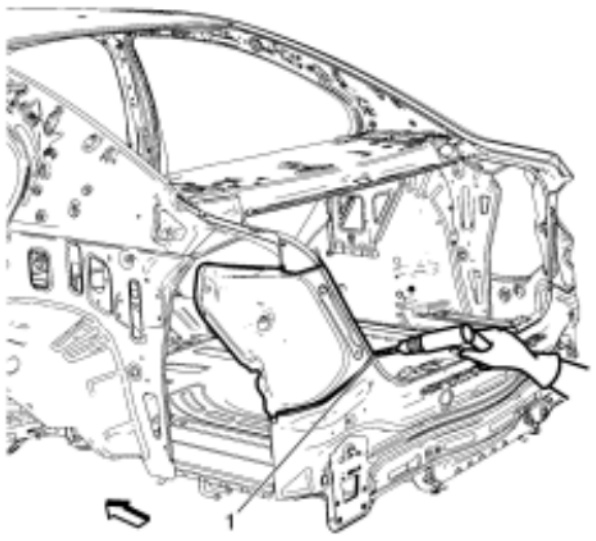
Tail Lamp Pocket Replacement (4NB)

Removal Procedure

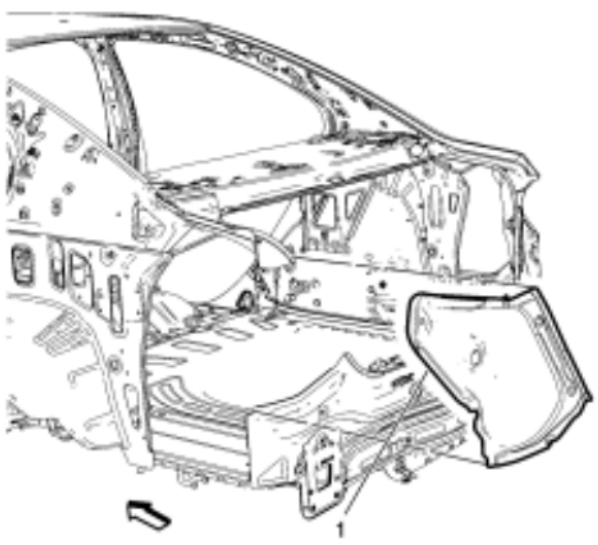
Warning: Refer to Approved Equipment for Collision Repair Warning .

Warning: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all the necessary factory welds of the body rear end panel.



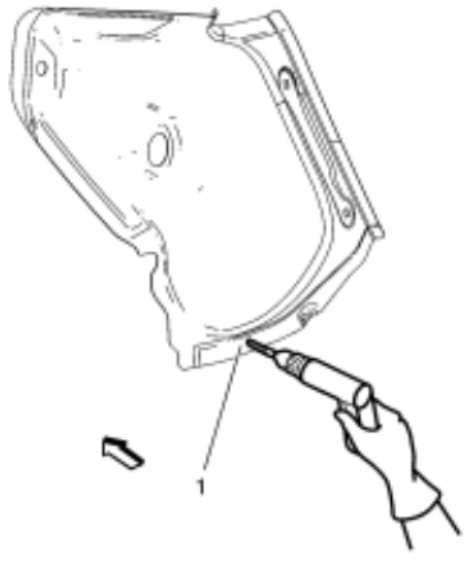
7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



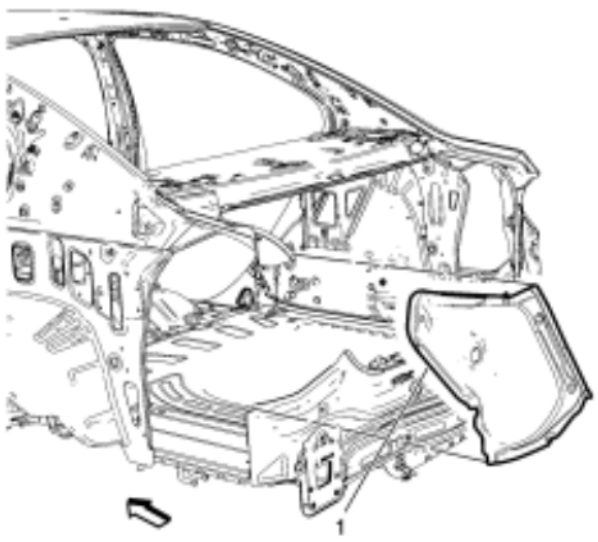
8. Remove the tail lamp pocket (1).

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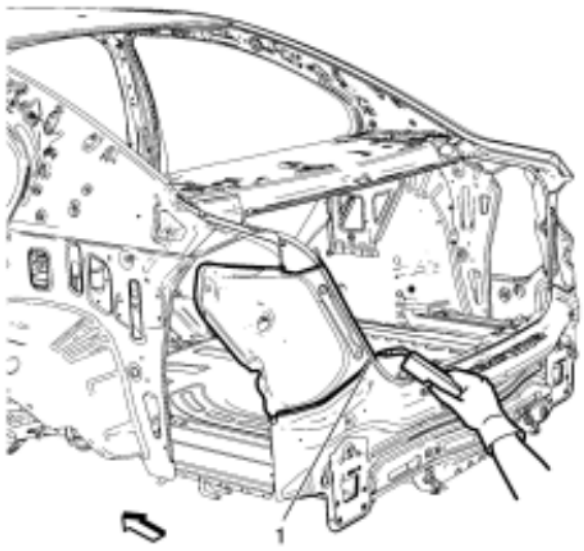
Installation Procedure



1. Drill **8 mm (5/16 in)** holes for plug welding along the edges of the tail lamp pocket (1) as noted from the original panel.
2. Clean and prepare the attaching surfaces for welding.



3. Position the tail lamp pocket on the vehicle (1).
4. Verify the fit of the tail lamp pocket.
5. Clamp the tail lamp pocket into position.



6. Plug the weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

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Dual Phase Steel
High Strength Low Alloy Steel
Mild Steel
Ultra High Strength Dual Phase Steel
Ultra High Strength Steel

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Dual Phase Steel

This information provides repair recommendations and general guidelines for steel classified as Dual Phase Steel (dual phase steel with a tensile strength up to and including 800 MPa), also known as DP.

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

Note: The use of heat to repair damage is not recommended for this classification of steel.

Recommended Repairs

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- This type of steel can be used as a sleeve, or backer plate, when recommended in a specific sectioning procedure.
- Squeeze resistance spot welding can be used to replace factory spot welds, where applicable.
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG brazing can be used on this type of steel.

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High Strength Low Alloy Steel

This information provides repair recommendations and general guidelines for steel classified as High Strength Low Alloy Steel, also known as HSLA. This type of steel normally has a tensile strength range from 300–700 MPa.

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

Recommended Repairs

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Controlled use of heat can be used to repair damage, if the heat does not exceed 650°C (1200°F). The heat should be applied a maximum of 2 times, for up to 90 seconds.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- This type of steel can be used as a sleeve, or backer plate, during sectioning procedures.
- Squeeze resistance spot welding can be used to replace factory spot welds, where applicable.
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG brazing can be used on this type of steel.

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Mild Steel

This information provides repair recommendations and general guidelines for steel classified as Mild Steel. This type of steel normally has a tensile strength less than 270 MPa. This includes the common steel names of:

- Mild Steel
- Bake Hardenable Steel (BH)
- Solid Solution Strengthened Steel

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

Recommended Repairs

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Controlled use of heat can be used to repair damage, if the heat does not exceed 650°C (1200°F). The heat should be applied a maximum of 2 times, for up to 90 seconds.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- This type of steel can be used as a sleeve, or backer plate, when recommended in a specific sectioning procedure.
- Squeeze resistance spot welding can be used to replace factory spot welds, where applicable
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG brazing can be used on this type of steel.

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Ultra High Strength Dual Phase Steel

This information provides repair recommendations and general guidelines for steel classified as Ultra High Strength Dual Phase Steel (dual phase steel with a tensile strength greater than 800 MPa), also known as DPX.

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

Note:

- Repair of this type of steel is not recommended.
- This type of steel should be replaced at factory joints only. Sectioning or partial replacement is not recommended.
- The use of heat to repair damage is not recommended for this type of steel.
- Stitch welding is not recommended for this type of steel.
- This classification of steel cannot be used as a backing reinforcement or a sleeve for a sectioning joint, unless a specific procedure is available.

Recommended Repairs

- Squeeze resistance spot welding can be used to replace factory spot welds, where applicable.
- MIG plug welding can be used to replace factory spot welds.
- MIG brazing can be used to replace factory spot welds.

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Ultra High Strength Steel

This information provides repair recommendations and general guidelines for steel classified as Ultra High Strength Steel, also know as UHSS. This type of steel normally has a tensile strength greater than 700 MPa.

This includes the common steel names of:

- Ultra High Strength Steel (UHSS)
- Martensitic Steel (MS)
- Press Hardened Steel (PHS)
- Boron Steel

Note:

- Repair of this type of steel is not recommended.
- This type of steel should be replaced at factory joints only. Sectioning or partial replacement is not recommended.
- The use of heat to repair damage is not recommended for this type of steel.
- Stitch welding is not recommended for this type of steel.
- This type of steel can not be used as a backing reinforcement or a sleeve for a sectioning joint.

Recommended Repairs

- Squeeze resistance spot welding can be used to replace factory spot welds, where applicable.
- MIG plug welding can be used to replace factory spot welds.
- MIG brazing can be used to replace factory spot welds.

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Special Tools

Illustration	Tool Number/ Description
	BO-6392 MKM-6392 Flanging Tool Kit
	BO-6396 MKM-6396 Bonding Pliers

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Specifications
Drivetrain and Front Suspension Frame Skid Plate Replacement
Drivetrain and Front Suspension Frame Replacement
Front Wheelhouse Liner Inner Front Extension Replacement
Front Wheelhouse Liner Replacement (Front)
Front Wheelhouse Liner Replacement (Rear)
Rear Wheelhouse Panel Liner Replacement (Sedan - Right)
Rear Wheelhouse Panel Liner Replacement (Hatchback - Left)
Rear Wheelhouse Panel Liner Replacement (Hatchback - Right)
Rear Wheelhouse Panel Liner Replacement (Sedan - Left)
Rear Wheelhouse Panel Liner Extension Replacement
Front Compartment Front Insulator Cover Replacement
Special Tools

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Fastener Tightening Specifications

Application	Specification	
	Metric	English
Drivetrain and Front Suspension Frame Bolt Center	135 N·m	100 lb ft
Drivetrain and Front Suspension Frame Bolt Front	58 N·m	43 lb ft
Drivetrain and Front Suspension Frame Bolt Rear	135 N·m	100 lb ft
Front Compartment Front Insulator Cover Bolts	22 N·m	16 lb ft
Front Compartment Front Insulator Cover Screws– Europe Only	2.5 N·m	22 lb in
Front Wheelhouse Liner Inner Front Extension Screws	3 N·m	27 lb in
Front Wheelhouse Liner Screw– Front	3 N·m	27 lb in
Front Wheelhouse Rear Liner Nut	3 N·m	27 lb in
Front Wheelhouse Rear Liner Screw	3 N·m	27 lb in
Power Steering Fluid Cooling Pipe Bolt, if equipped	9 N·m	80 lb in
Power Steering Inlet and Outlet Hose Bolt, if equipped	9 N·m	80 lb in
Rear Wheelhouse Panel Liner Nut	2 N·m	18 lb in
Rear Wheelhouse Panel Liner Screw	3 N·m	27 lb in
Skid Plate Fasteners	22 N·m	16 lb ft
Steering Gear Fasteners	70 N·m	52 lb ft

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Steering Linkage Tie Rod Nut	65 N·m	48 lb ft
Transmission Rear Mount Bracket Bolts	100 N·m	74 lb ft

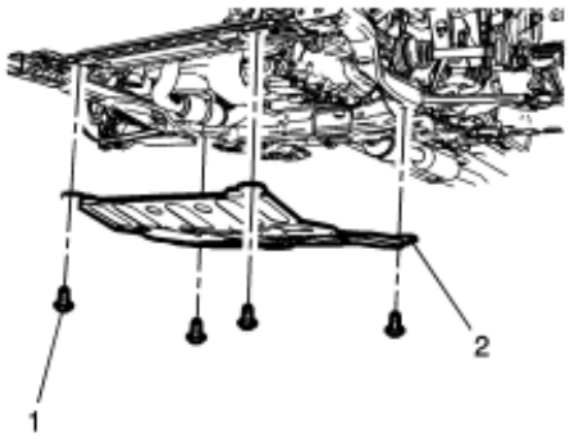
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Drivetrain and Front Suspension Frame Skid Plate Replacement

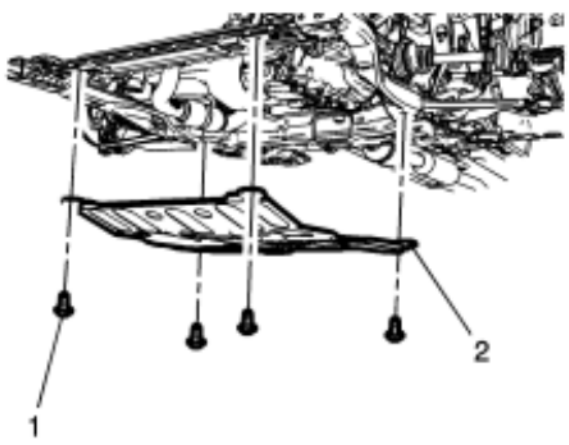
Removal Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .



2. Remove the mounting bolts (1) for the front suspension frame skid plate.
3. Remove the front suspension frame skid plate (2).

Installation Procedure



1. Position the front suspension frame skid plate (2) on the frame.

Caution: Refer to Fastener Caution .

2. Install the front suspension frame skid plate mounting bolts (2) and tighten to **22 N·m (16 lb ft)**.

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Drivetrain and Front Suspension Frame Replacement

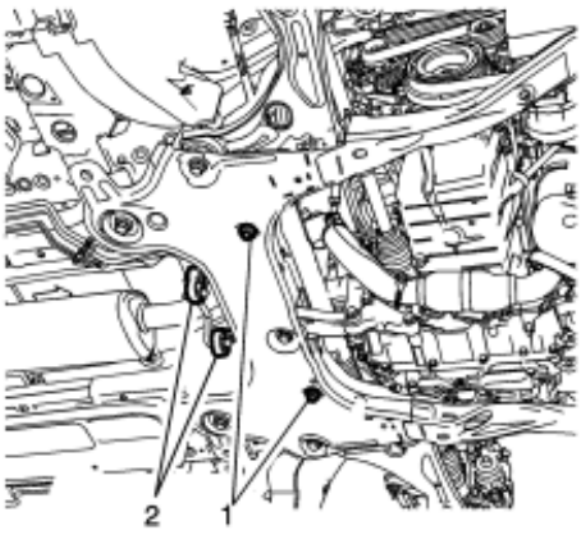
Special Tools

- *EN-45059* Angle Meter
- *CH-50619* Front Suspension Frame Adjusting Pins

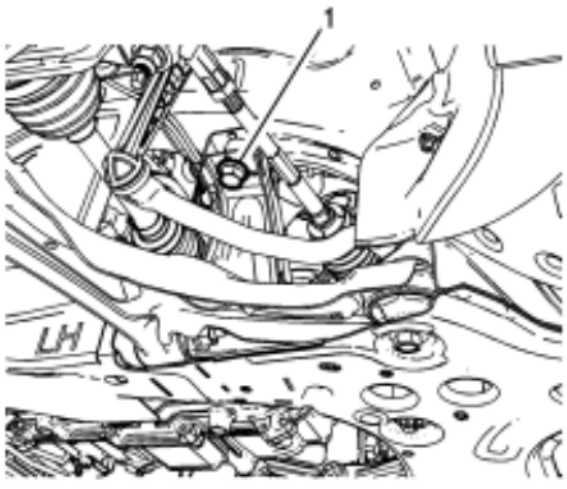
For equivalent regional tools, refer to Special Tools .

Removal Procedure

1. Support the radiator and condenser from above using the upper brackets on each side.
2. Raise the vehicle on a hoist. Refer to Lifting and Jacking the Vehicle .
3. Remove the front tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
4. Remove the skid plate from the front frame, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement .
5. Remove the left and right front wheel house liner inner front extensions. Refer to Front Wheelhouse Liner Inner Front Extension Replacement .
6. Remove the front bumper impact bar lower bracket. Refer to Front Bumper Impact Bar Lower Bracket Replacement .
7. Disconnect the steering linkage tie rod end from the steering knuckle. Refer to Steering Linkage Outer Tie Rod Replacement .
8. Disconnect the lower ball joints from the steering knuckles. Refer to Lower Control Arm Replacement .
9. Disconnect the stabilizer links from the strut assemblies.

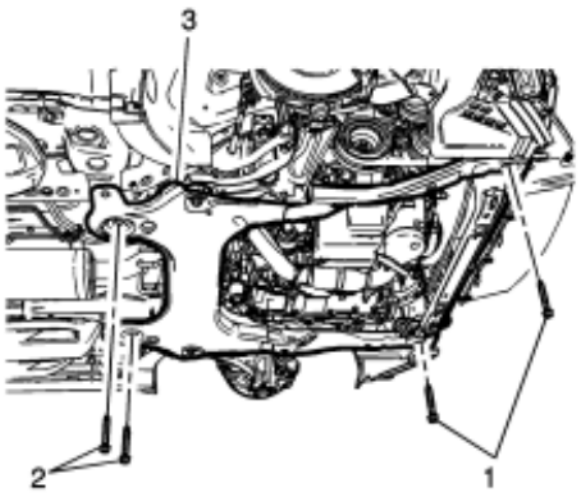


10. Remove the steering rack retaining bolts (1) and discard.
11. Using mechanics wire, secure the power steering gear to the vehicle.
12. Disconnect the hydraulic power steering hoses from the front frame, if equipped.
13. Disconnect the exhaust isolators (2) from the front suspension frame.
14. Disconnect the power brake booster pump hose and connector, if equipped.
15. Remove the rear transmission mount bracket to rear mount through bolt (1).
16. Using a suitable support table or equivalent, support the front suspension frame.



17. Remove the upper frame suspension retaining bolts (1).

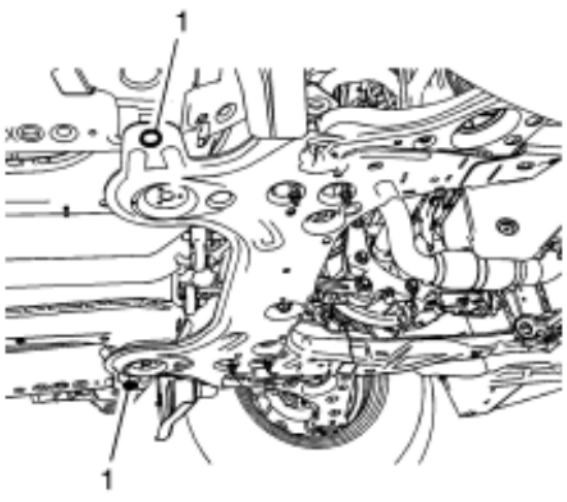
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18. Remove the frame front bolts (1).
19. Remove the frame rear bolts (2).
20. Remove the frame (3) from the vehicle.
21. Remove the following components, if replacing the frame:
    - The lower control arms—Refer to Lower Control Arm Replacement .
    - The stabilizer shaft—Refer to Stabilizer Shaft Replacement .
    - The front bumper lower impact bar—Refer to Front Bumper Lower Impact Bar Replacement .
    - The power brake booster pump, if equipped—Refer to Power Brake Booster Pump Replacement .

Installation Procedure

1. Install the following components on the drivetrain and front suspension frame if removed:
    - The power brake booster pump, if equipped—Refer to Power Brake Booster Pump Replacement .
    - The front bumper lower impact bar—Refer to Front Bumper Lower Impact Bar Replacement .
    - The stabilizer shaft—Refer to Stabilizer Shaft Replacement .
    - The lower control arms—Refer to Lower Control Arm Replacement .
2. Install the frame (3) into the vehicle.

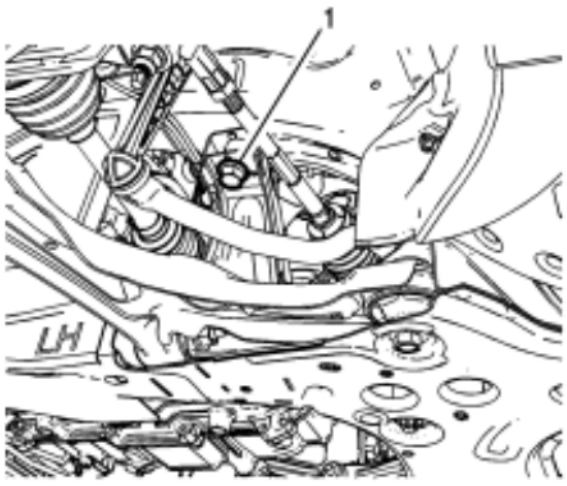


3. Using the CH-50619 front suspension frame adjusting pins, have an assistant vertically insert and hold the pins through the front suspension frame and floor panel (1).

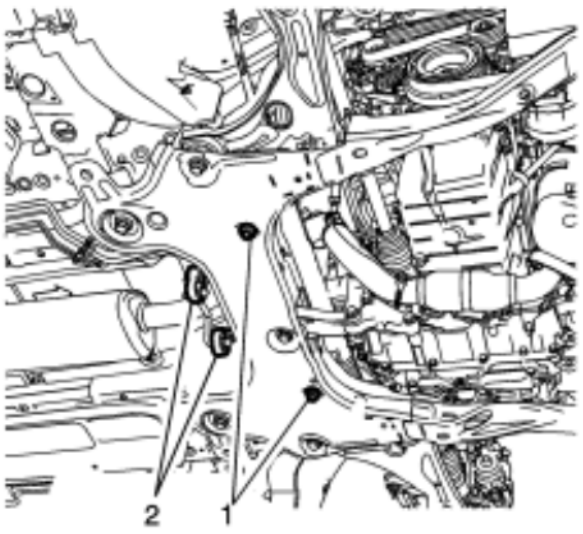
Caution: Refer to Fastener Caution .

4. Install the frame rear bolts (2) and tighten to **135 N·m (100 lb ft)**.
5. Install the frame front bolts (1) and tighten to **58 N·m (43 lb ft)**.

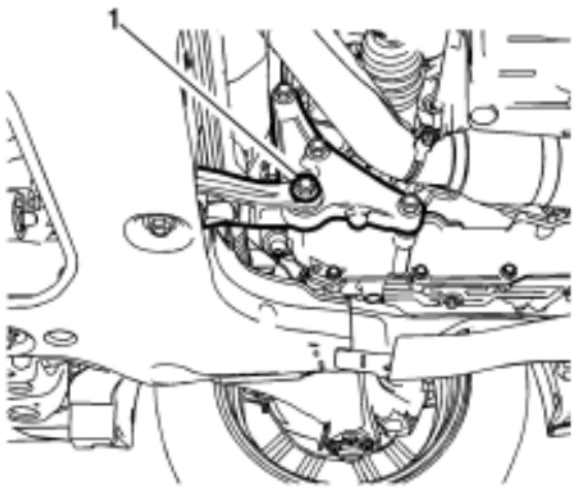
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6. Install the upper frame suspension retaining bolts (1) and tighten to **135 N·m (100 lb ft)**
7. Remove the support for the power steering gear.



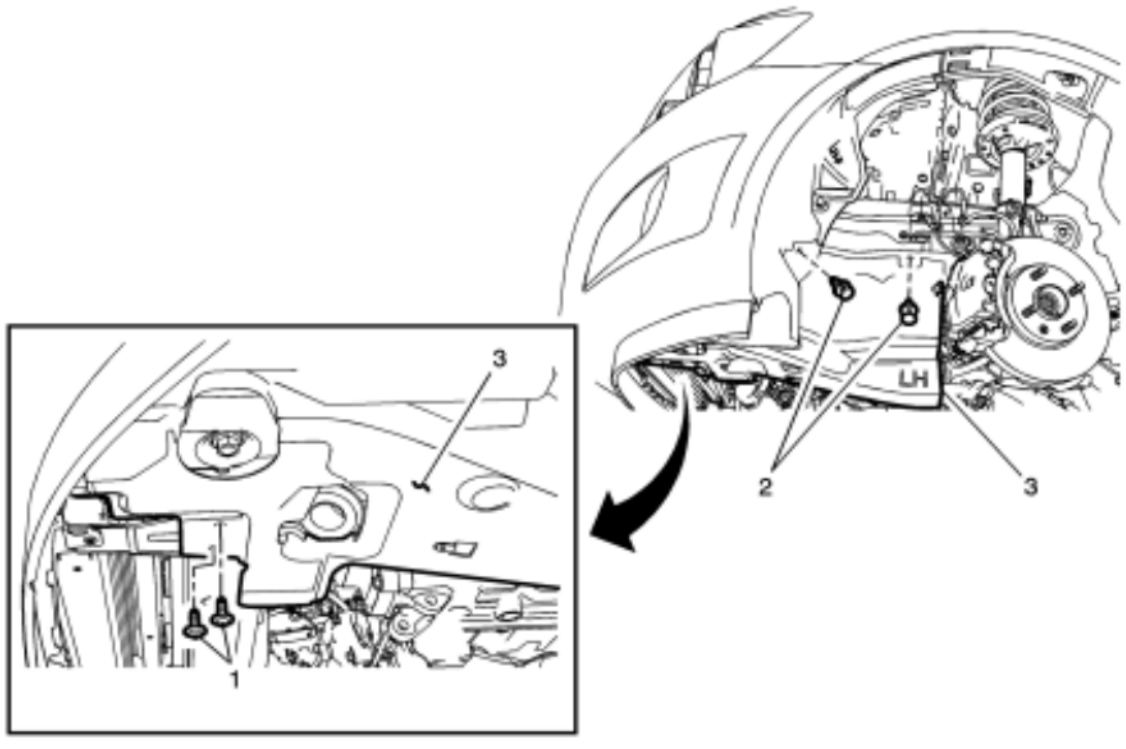
8. Install the steering gear retaining fasteners (1). Refer to Steering Gear Boot Replacement .
9. Connect the hydraulic power steering hoses to the front frame, if equipped.
10. Connect the exhaust isolators (2) to the front suspension frame.



11. Install the rear transmission mount bracket to rear mount through bolt (1). Refer to Transmission Rear Mount Replacement .
12. Connect the power brake booster pump hose and connector, if equipped.
13. Connect the lower ball joints to the steering knuckles. Refer to Lower Control Arm Replacement .
14. Connect the stabilizer links to the strut assemblies. Refer to Stabilizer Shaft Link Replacement .
15. Connect the steering linkage tie rod end to the steering knuckle. Refer to Steering Linkage Outer Tie Rod Replacement .
16. Install the front bumper impact bar lower bracket. Refer to Front Bumper Impact Bar Lower Bracket Replacement .
17. Install the left and right front wheel house liner inner front extensions. Refer to Front Wheelhouse Liner Inner Front Extension Replacement .
18. Install the skid plate to the front frame, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement .
19. Install the front tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
20. Lower the vehicle.
21. Remove the support of the radiator and condenser.

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Front Wheelhouse Liner Inner Front Extension Replacement

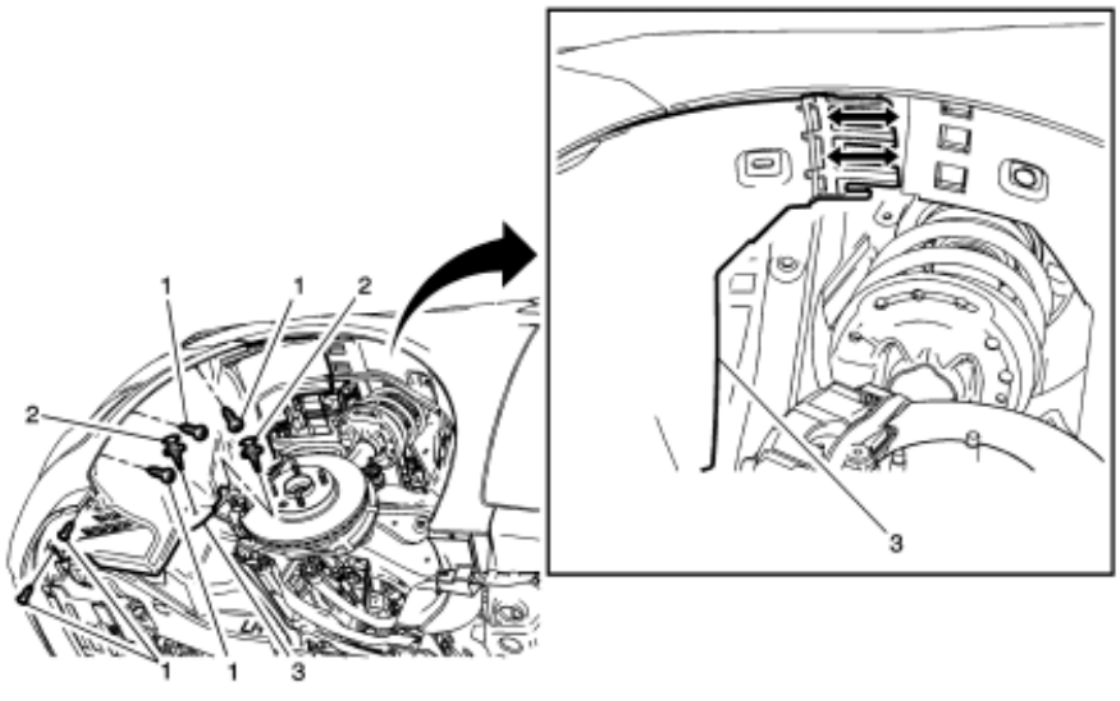


Callout	Component Name
Preliminary Procedure Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .	
1	Front Wheelhouse Liner Inner Front Extension Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 3 N·m (27 lb in)
2	Front Wheelhouse Liner Inner Front Extension Push-In Retainer (Qty: 2)
3	Front Wheelhouse Liner Inner Front Extension

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Front Wheelhouse Liner Replacement (Front)

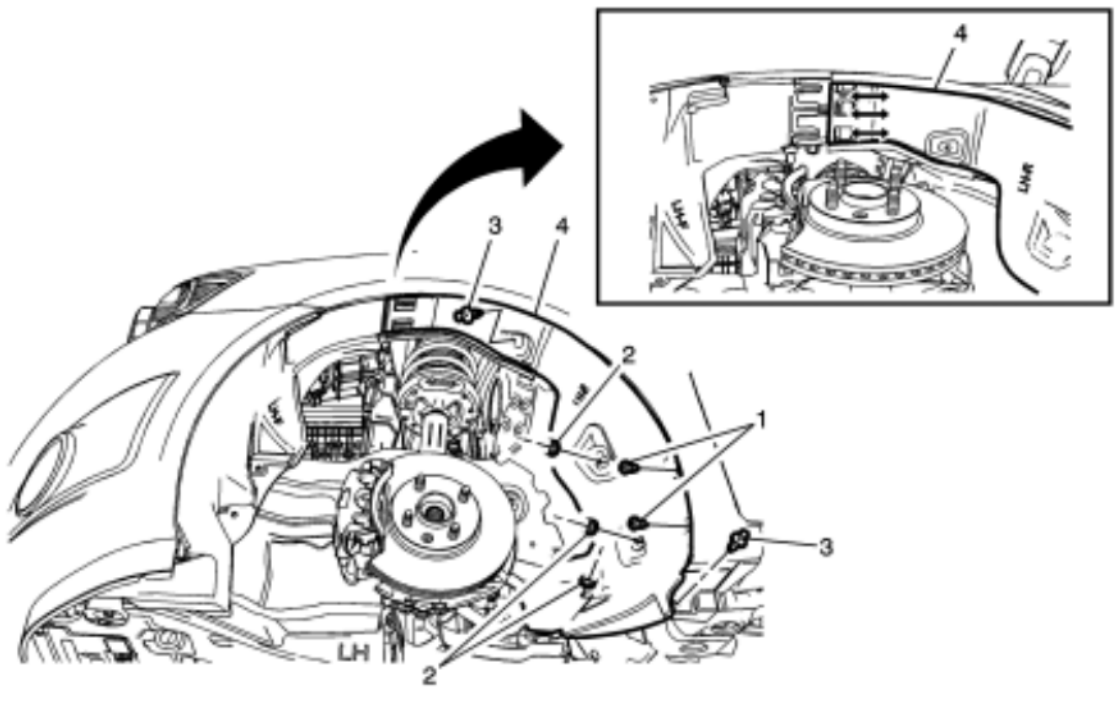


Callout	Component Name
Preliminary Procedure Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .	
1	Front Wheelhouse Liner Screw – Front (Qty: 5) **Caution:** Refer to Fastener Caution . **Tighten** 2.5 N·m (22 lb in)
2	Front Wheelhouse Liner Push-In Retainer – Front (Qty: 2)
3	Front Wheelhouse Liner – Front **Procedure** Disengage the upper interlocking retainers.

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Front Wheelhouse Liner Replacement (Rear)

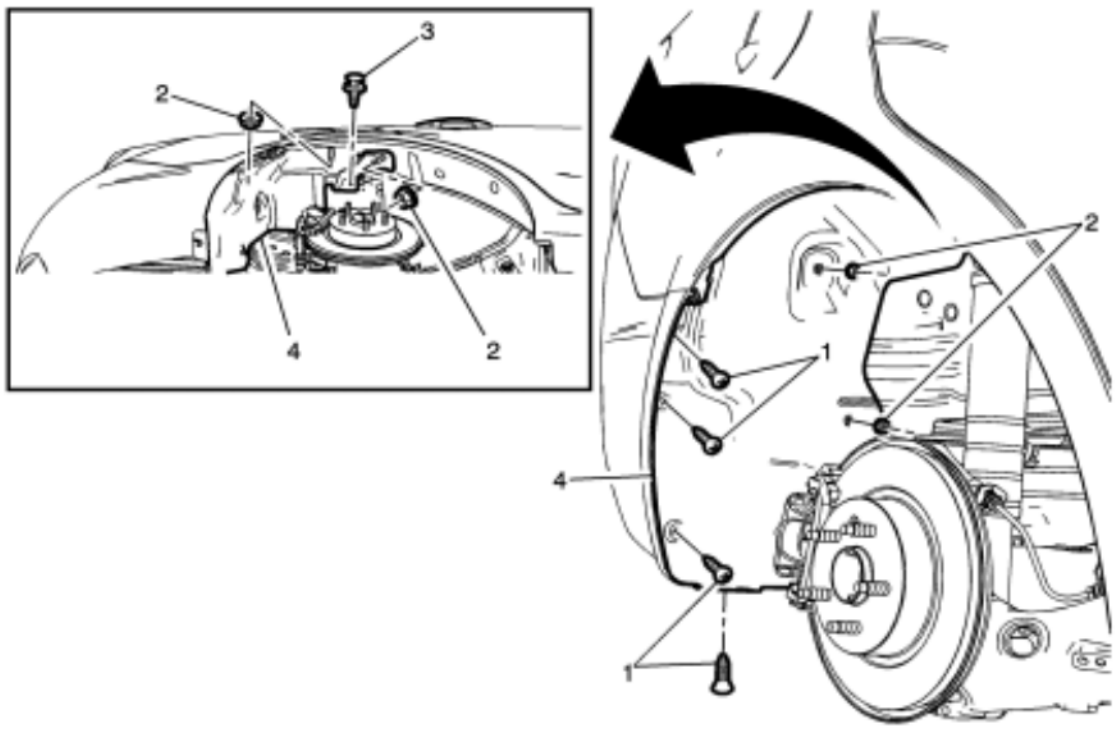


Callout	Component Name
Preliminary Procedure Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .	
1	Front Wheelhouse Rear Liner Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 3 N·m (27 lb in)
2	Front Wheelhouse Rear Liner Nut (Qty: 3) **Tighten** 3 N·m (27 lb in)
3	Front Wheelhouse Rear Liner Push-In Retainer (Qty: 2)
4	Front Wheelhouse Rear Liner **Procedure** Disengage the upper interlocking retainers.

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Rear Wheelhouse Panel Liner Replacement (Sedan - Right)

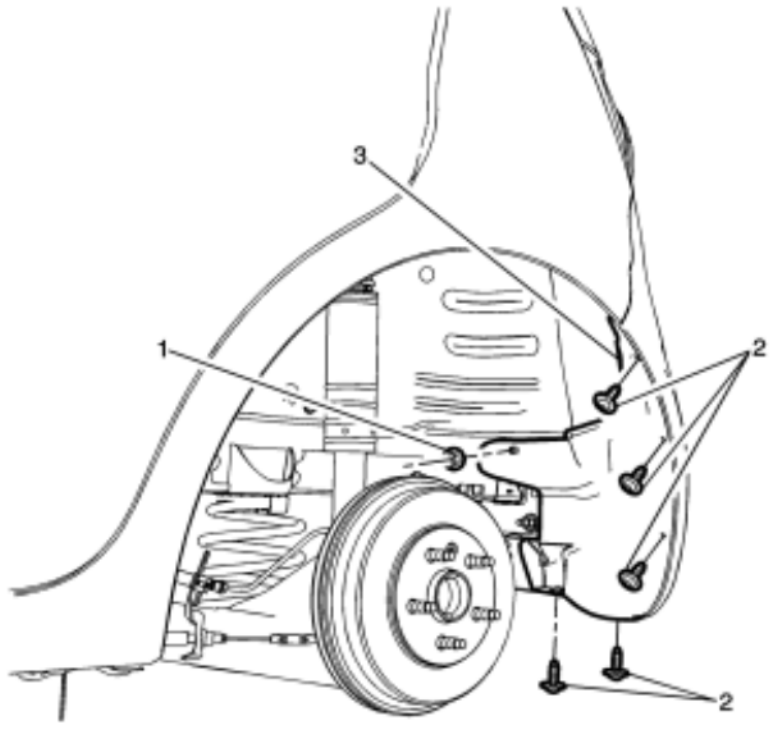


Callout	Component Name
Preliminary Procedure Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .	
1	Rear Wheelhouse Panel Liner Screw (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 3 N·m (27 lb in)
2	Rear Wheelhouse Panel Liner Nut (Qty: 4) **Tighten** 2 N·m (18 lb in)
3	Rear Wheelhouse Panel Liner Push-In Retainer
4	Rear Wheelhouse Panel Liner

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Rear Wheelhouse Panel Liner Replacement (Hatchback - Left)

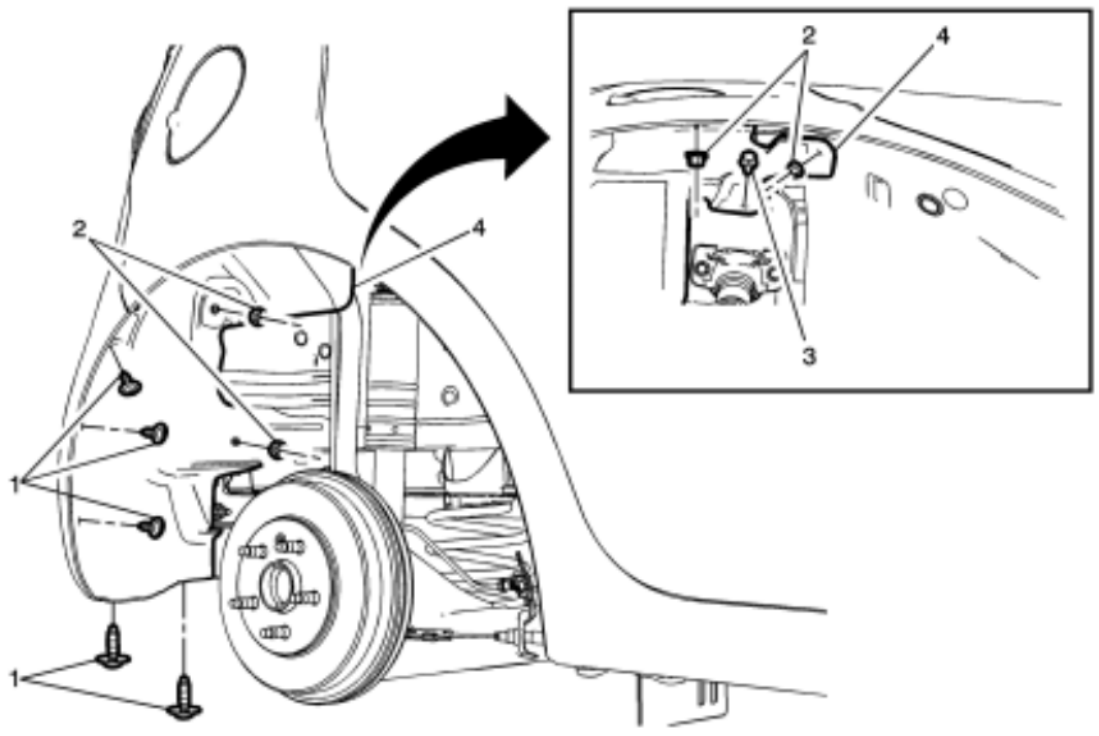


Callout	Component Name
Preliminary Procedure Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .	
1	Rear Wheelhouse Panel Liner Nut **Caution:** Refer to Fastener Caution . **Tighten** 2 N·m (18 lb in)
2	Rear Wheelhouse Panel Liner Screw (Qty: 5) **Tighten** 3 N·m (27 lb in)
3	Rear Wheelhouse Panel Liner

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Rear Wheelhouse Panel Liner Replacement (Hatchback - Right)

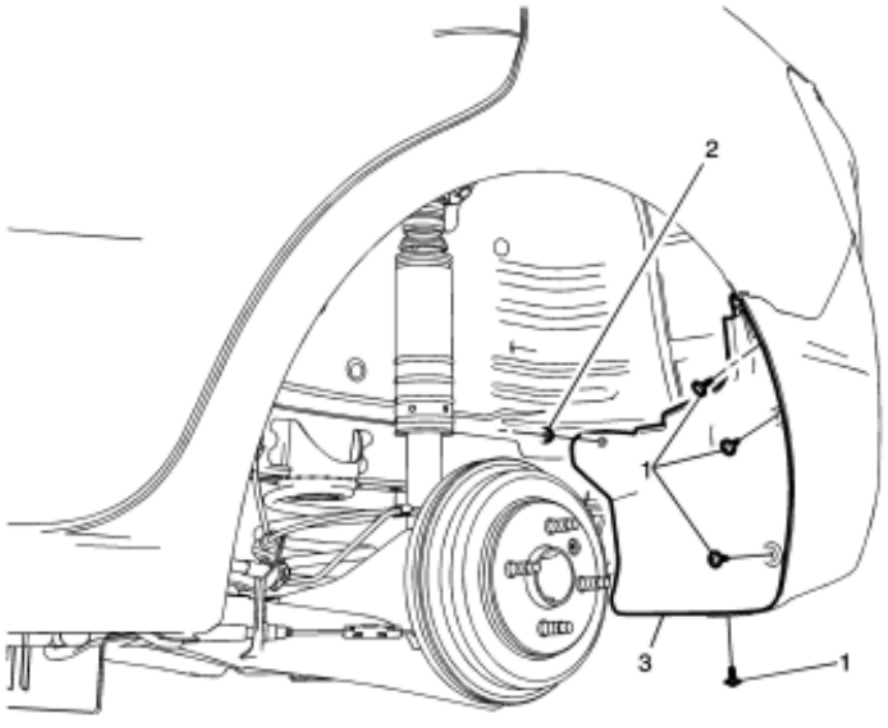


Callout	Component Name
Preliminary Procedure Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .	
1	Rear Wheelhouse Panel Liner Screw (Qty: 5) **Caution:** Refer to Fastener Caution . **Tighten** 3 N·m (27 lb in)
2	Rear Wheelhouse Panel Liner Nut (Qty: 4) **Tighten** 2 N·m (18 lb in)
3	Rear Wheelhouse Panel Liner Push-In Retainer
4	Rear Wheelhouse Panel Liner

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Rear Wheelhouse Panel Liner Replacement (Sedan - Left)

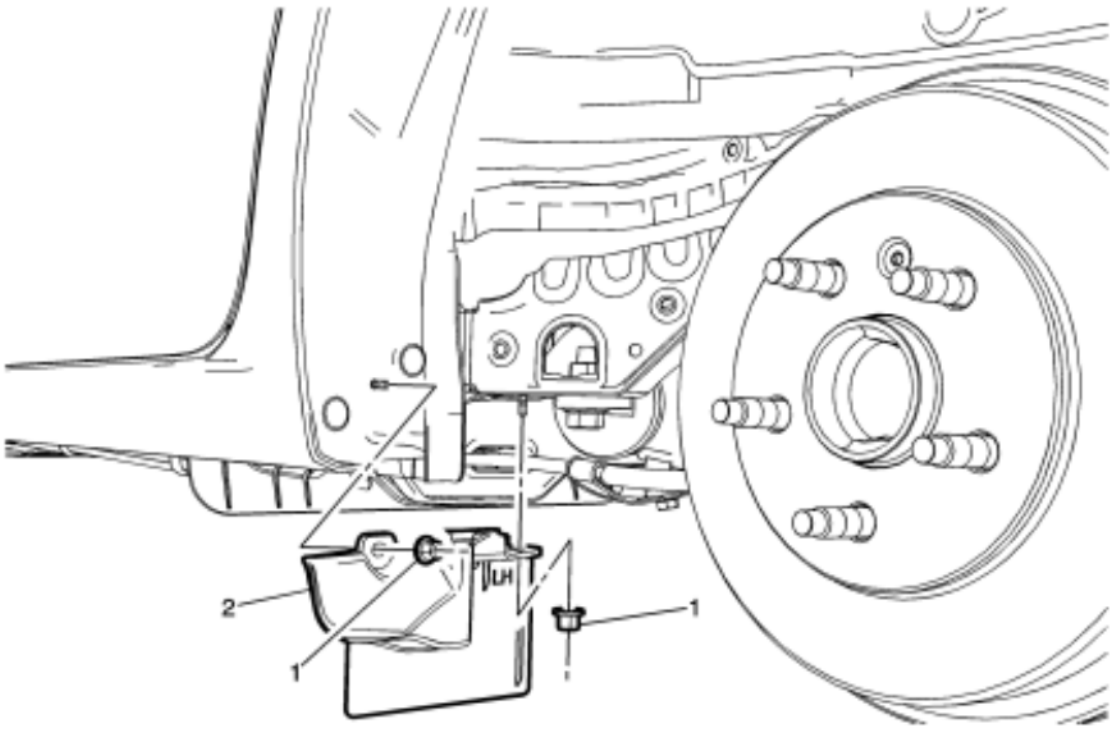


Callout	Component Name
Preliminary Procedure Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .	
1	Rear Wheelhouse Panel Liner Screw (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 3 N·m (27 lb in)
2	Rear Wheelhouse Panel Liner Push-In Retainer
3	Rear Wheelhouse Panel Liner

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Rear Wheelhouse Panel Liner Extension Replacement

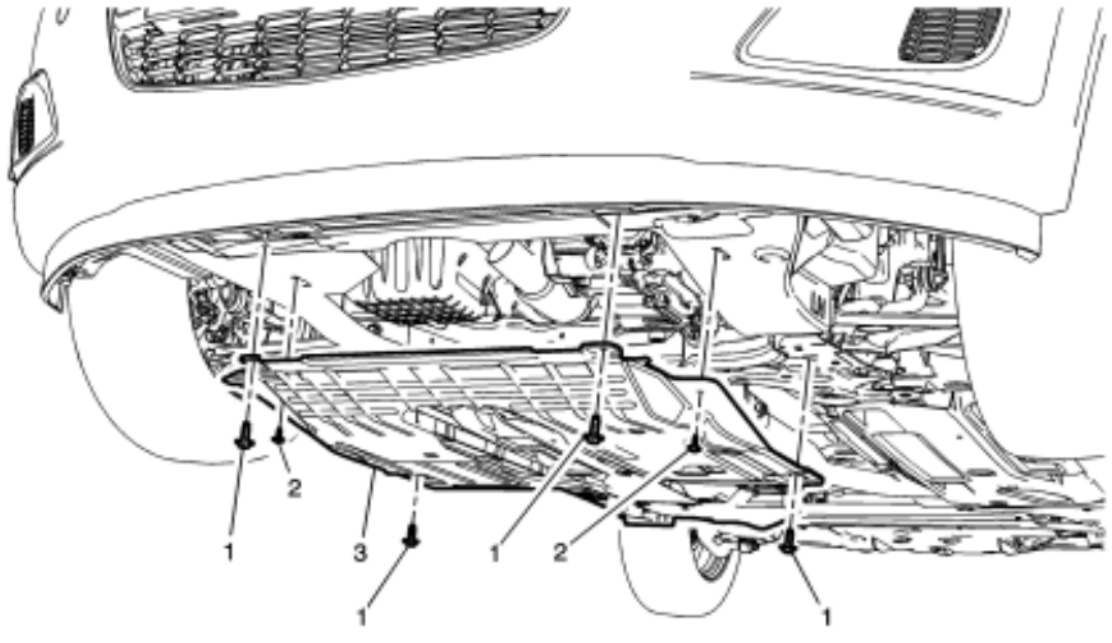


Callout	Component Name
Preliminary Procedure Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .	
1	Rear Wheelhouse Panel Liner Extension Nut (Qty: 2) **Caution:** Refer to Fastener Caution .
2	Rear Wheelhouse Panel Liner Extension

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Front Compartment Front Insulator Cover Replacement

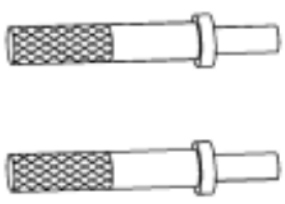


Callout	Component Name
1	Front Compartment Front Insulator Cover Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 2.5 N·m (22 lb in)
2	Front Compartment Front Insulator Cover Bolt (Qty: 4) **Tighten** 22 N·m (16 lb ft)
3	Front Compartment Front Insulator Cover

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Special Tools

Illustration	Tool Number/ Description
	EN-45059 J-45059 Angle Meter
	CH-50619 Front Suspension Frame Adjusting Pins

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Basecoat/Clearcoat Paint Systems
Anti-Corrosion Treatment and Repair (Base)
Clearcoat Repair without Repainting
Environmental Fallout (Acid Rain)
Paint Gauges
Clearcoat Thickness
Rail Dust Damage Repair

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Basecoat/Clearcoat Paint Systems

Warning: Exposure to isocyanates during paint preparation and application processes can cause severe breathing problems. Read and follow all of the instructions from the manufacturers of painting materials, equipment, and protective gear.

All paint finish repairs of rigid exterior surfaces must meet GM standards. Refer to the latest revision of the GM Approved Refinish Materials book to identify the paint systems you may use that have been engineered to meet GM standards. The GM Approved Refinish Materials book supplies all approved products, including volatile organic compound (VOC) compliant regulations recommended by the individual manufacturer, and detailed procedures for materials used in their paint system.

The latest revision of the GM Approved Refinish Materials booklet is located on the Genuine GM Parts website at www.genuinegmparts.com.

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Anti-Corrosion Treatment and Repair (Base)

Warning: When applying sound deadeners, or anti-corrosion materials due care and preventative measures must be exercised to prevent any material from being sprayed into door and quarter panel mechanisms such as door locks, window run channels, window regulators and seat belt retractors, as well as any moving or rotating mechanical or suspension parts on the underbody, particularly the parking brake cable. After material application, be sure that all body drain holes are open. Improper application may increase chance of corrosion damage or limit the operation of moving parts, resulting in personal injury.

Any procedure that disturbs these special treatments, such as panel replacement or collision damage repair operations, may leave the metal unprotected and result in corrosion. Proper recoating of these surfaces with service-type anti-corrosion material is essential.

After repair and/or replacement parts are installed, all accessible bare metal surfaces must be treated with metal conditioner and reprimed. Refer to the GM Approved Refinish Materials book which identifies the paint systems you may use.

The latest revision of the GM Approved Refinish Materials booklet is located on the Goodwrench website at www.gmgoodwrench.com.

Anti-corrosion compounds are light-bodied materials designed to penetrate between metal-to-metal surfaces, such as pinch-weld joints, hem flanges, and integral panel attaching points where metal surfaces are difficult to coat with conventional undercoating materials, and are inaccessible for painting. The materials that are suitable for interior and exterior are listed in the chart below. Conventional undercoating is recommended in order to coat large areas, such as replacement door and quarter outer panels, floor pan sections, lids, hoods, fenders, etc. During undercoating operations, care should be taken to prevent the material from being sprayed into door and quarter panel hardware mechanisms, such as door locks, window run channels, window regulators, and seat belt retractors. On the underbody, the material should not be applied to any moving or rotating part, energy absorbing bumper components, or shock absorbers. After undercoating, ensure that all body drain holes are open.

Interior Protectant

The following products are available from GM Dealer Equipment. For technical information, call 187-Permatex (1-877-376-2839):

Permatex Part Number	Description
310-JDI-UCA1	Permatex Canister and Wand Assembly
310-81881	Permatex Amber Rust Proofing (24 oz) (Qty of 12)
310-81882	Permatex Amber Rust Proofing (1 gal)

Exterior Protectants

The following product is available from *ECP, Inc. Contact them at 1-800-323-3521 or www.ecpinc.net.

Part Number	Description
178660	Nox Rust X-121B (12 cans per case)

The following products are available from your local *3M® distributor, or call 1-800-521-8180, ext. 779-5165.

3M® Part Number	Description
08804	Water-Based Undercoat
08801	No Clean-Up Applicator Gun

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05917	Weld-Thru Coating
08891	Rust Fighter-I

The following product is available from *Transtar Autobody Technologies. Contact the company at 1-800-824-2843 or www.tat-co.com

Part Number	Description
4353	Weld-Through Primer

*We believe these sources and their products to be reliable. There may be additional manufacturers of such material. General Motors does not endorse, indicate any preference for, or assume any responsibility for the products from these firms, or for any such items which may be available from other sources.

These sealers are intended to prevent water and dust from entering the vehicle and also are anti-corrosion barriers. Sealers are applied to such areas as rear compartment lid hem flanges, wheelhouse, quarter outer, floor, cowl, roof, and various other panel to panel attaching points. The originally sealed joints are obvious and any damage to these sealed locations should be corrected by resealing. Attaching points of new replacement panels should be resealed. Replacement lids and doors will also require sealing in the hem flange areas.

Flanged joints, overlap joints, and seams should be sealed using a quality sealer of medium-bodied consistency. The sealer used must retain its flexible characteristics after curing and be paintable.

Open joints which require bridging of the sealer in order to close a gap should be sealed using a heavy-bodied caulking material. Follow the label directions for the material selected.

Color application may be required in order to restore repaired areas such as hood, fenders, doors, quarters, lid, roof, engine compartment, underbody, and inner panels to original appearance. When this is necessary, conventional refinishing preparation, undercoat buildup, and color application techniques should be followed.

Deadener materials, spray-on type, are used on various metal panels in order to provide corrosion resistance and joint sealing. They control the general noise level inside the passenger area of the vehicle. When deadeners are disturbed because of damage, are removed during repair operations, or a new replacement panel is installed, the deadener material must be replaced by a service equivalent material. The application pattern and location of deadener materials can be determined by observing the original production installation.

Cleaning of the interior and underbody panel surfaces is necessary when original galvanized or other anti-corrosion materials have been burned off during welding or heating operations. Removal of the residue from burning will require additional care in such areas as interior surfaces of box-type construction and when configurations of the metal panels limit access to interior surfaces.

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Clearcoat Repair without Repainting

Repair Procedure

1. Thoroughly wash the repair area with Liquid Wash and Wax GMP/N1052870 or the equivalent.
2. Environmental damage may be corrected. Refer to Environmental Fallout (Acid Rain) or Rail Dust Damage Repair .

   Important: Follow all of the instructions from the manufacturer of the polishing material.
3. Use a paint gauge before, during, and after sanding and/or polishing, to avoid removing too much clearcoat. Refer to Paint Gauges .

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Environmental Fallout (Acid Rain)

Caution: Refer to Clearcoat/Ultraviolet Screeners Caution .

Note: Always refer to the manufacturer's packaged instructions for the detailed procedures of materials used for compounding and/or polishing.

Since the severity of the condition varies from area to area, proper diagnosis of the contamination extent is critical to the success of the repairs. Perform the diagnosis under high intensity fluorescent lighting on the horizontal surfaces (hood, roof panel, rear compartment lid), after the surfaces have been properly cleaned by washing the vehicle with a GM approved Liquid Wash and Wax kit.

There are 3 basic types of acid rain damage:

Surface Level Contamination: May be repaired by simply washing the vehicle, cleaning the surface with a silicone wax and grease remover, neutralizing acidic residue, and finesse polishing—Refer to Surface Level Contamination Repair.

Clearcoat Etching: Slight etching is still noticeable after the above washing and finesse polishing procedure. Refer to Slight Clearcoat Damage – Wet Sanding, Finesse Polishing.

Basecoat Etching: Severe etching beyond the clearcoat into the basecoat in the affected areas will require refinishing. Refer to Basecoat/Clearcoat Paint Systems .

Surface Level Contamination Repair

1. Thoroughly wash and dry the contaminated area with a GM approved Liquid Wash and Wax kit.
2. Clean the affected area with silicone, wax and grease remover.
3. Remove and neutralize acidic residue by cleaning the contaminated areas with a mixture of baking soda and water (1 tablespoon of baking soda per 1 liter or 1 quart of water). Rinse thoroughly and dry the panel completely.
4. Apply finesse-type polish with a foam panel. If damage has been repaired, remove any swirl marks with a dual action orbital polisher and foam pad.
5. If some damage remains, refer to Slight Clearcoat Damage – Wet Sanding, Finesse Polishing.

Slight Clearcoat Damage – Wet Sanding, Finesse Polishing

1. Select a small contaminated test area.
2. Film thickness should be taken prior to the sanding and polishing. Refer to Paint Gauges .
3. Wet sand and finesse polish the contaminated test area. If during the polishing you suspect or observe that etching has penetrated into the basecoat, too much clearcoat has been removed during sanding, or base color is transferred to the polishing pad during polishing, then the affected areas will require refinishing. Refer to Basecoat/Clearcoat Paint Systems .

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Paint Gauges

Paint thickness gauges measure the total thickness of the vehicle finish. It is important to accurately measure the thickness of the finish on each vehicle as the thickness of the finish will vary on each vehicle. Use a paint gauge before the sanding process in order to accurately measure how much finish there is to remove before, during, and after the sanding process. Paint gauges range from magnetic pull type to sophisticated electronic types, and are available from a variety of sources. The older magnetic type gauges, at best have a 5 percent accuracy range and are not sensitive enough to detect removal of 0.02 mm 0.5 mil (0.0005 in) clearcoat. The newer type magnetic gauges have improved accuracy ranges. Most gauges are confined to checking either ferrous metal, steel, non-ferrous metal, or aluminum panel. At this time, there are no viable gauges for reading film thickness on composite (SCM doors, RIM fenders) panels. The more sophisticated (ETG) electronic paint thickness gauges digital type gauges are able to read film thickness on both ferrous and non-ferrous metal panel. Digital ETG gauges may have an accuracy range of 1 percent and include thickness standards for recalibration. The following paint thickness gauges are available. Call 1-800-GM-TOOLS for information:

Paint Thickness Gauges

- 147-5437-ETG Standard model
- 147-5437-ETG-P Standard model with print option
- 147-5437-N-ETG-N Non-ferrous model for aluminum panels
- 147-5437-NP-ETG-NP Non-ferrous model with print option
- 147-54437-SD-ETG Steel and aluminum gauge

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Clearcoat Thickness

The clearcoat on the vehicle is typically 0.059–0.078 mm (1.5–2 mils [0.0015–0.0020 in]) thick. The clearcoat contains ultraviolet screeners. Removing more than 0.5 mils (0.019 in) of the clearcoat may result in early paint failure.

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Rail Dust Damage Repair

Warning: Refer to Eye Protection Warning .

Note: If rail dust has penetrated into the basecoat, the panel requires refinishing. Ensure all the rail dust has been removed prior to refinishing or the rust spots will return.

Rail dust damage comes from the tiny iron particles produced from the friction between the train wheels and the track. It can also be deposited on vehicles if stored near any operation producing iron dust (i.e., steel ore yards). This dust can either lay on top of, or embed into the paint surface. It is usually diagnosed as bumps in the paint surface or rust colored spots in the paint.

1. Move the vehicle to a cool shaded area and ensure the vehicle surfaces are cool during the removal process.
2. Thoroughly wash the repair area with a GM approved Liquid Wash and Wax kit
3. Wipe the area dry.
4. Clean the affected area with silicone, wax and grease remover.
5. Perform the removal process according to the manufacturer's directions of the type of repair material used (Gel Type Oxalic Acid or Clay Type Non-Acid Based). If, upon inspection, some particles are still present, the process may be repeated. If the damage has been repaired, complete the repair to the entire panel.
6. Polish the entire panel after the removal process. If small pits remain in the clearcoat after all of the damage has been repaired, refer to Clearcoat Repair without Repainting .

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General Plastic Repair

Warning: In order to reduce the risk of personal injury when exposed to toxic fumes while grinding, cutting, or applying repair material on any type of sheet molded compound or RIM rigid plastic, observe the following guidelines:

- Work in a properly ventilated area
- Apply protective cream to any exposed skin
- Remove any mixture that comes into contact with skin
- Wash skin with cold water to remove glass and resin dust
- Use a sander with a vacuum attachment
- Follow the repair material manufacturer's instructions

Also, always wear the following:

- An approved respirator, or air supplied respirator
- Eye protection
- Rubber gloves
- Earplugs
- Protective clothing

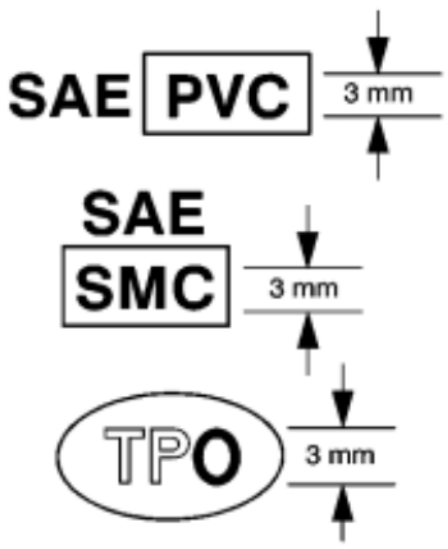
The following procedures should be followed when repairing all types of thermoset plastic:

- Follow the manufacturer's application and curing recommendations.
- Do not intermix systems. Use the supplies and the repair materials from the same manufacturer.
- Clean the inner and outer surfaces of the repair area with a soap impregnated scouring pad in order to remove any dirt or mold release agent.
- Clean the area with a wax and grease remover, using only enough of the remover to dampen a cloth. Allow the panel to dry thoroughly.
- Remove the surface finish from the area to be repaired. Adhesives are designed to adhere to the plastic substrate, not the finish.
- Prime a metal surface before applying the repair material.
- Inspect the rear side of the work area before making repairs in order to avoid possible damage to wires, motors, etc.

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How to Identify Plastic Parts



Plastic parts can be identified by the SAE code, which is usually found on the rear of the part, and/or by the characteristics of the plastic. Knowing the type of plastic aids in selecting the proper repair materials and in selecting the proper repair procedure.

Look for the SAE code stamped into the part.

Code Found

Match the code to those in the plastic identification chart to determine whether the plastic is thermoplastic or thermoset plastic, and whether the plastic is rigid or flexible. Refer to Plastic Identification and Refinishing Systems .

No Code Found

Warning: Do NOT use a plastic burn test to distinguish the type of plastic. The burn test produces vapors which are harmful.

Perform one or both of the following tests to determine if the part is thermoplastic polyolefin or thermoset non-polyolefin.

Float Test

1. Cut a shaving of plastic from the back of the part.
   The shaving should be free of mold release agents and paint.
2. Place the shaving in a container of water.
   - Thermoplastic polyolefin floats.
   - Thermoset non-polyolefin sinks.

Abrasion Test

- Sand a spot near the damaged area with Grade 36 Roloc Disc.
- Thermoplastic polyolefin material melts or frays when sanded.
- Thermoset non-polyolefin material sands cleanly.

Thermoplastic and thermoset plastics can be either rigid or flexible. Thermoplastic plastic parts are best repaired with a hot iron plastic material-feed welder, but are usually replaced. Thermoset plastic can be repaired with epoxy or other more rigid 2 package repair material.

For general repair instructions, refer to General Plastic Repair .

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Plastic Identification and Refinishing Systems

Identifying Symbol– Old Symbol in ( )s	Chemical Composition or Plastic Family Name	Typical Area(s) Where Part is Used	Examples of Common / Trade Names	Type of Plastic
ABS	Acrylonitrile / Butadiene-Styrene	Armrest Support, Console, IPC, Steering Column Bracket / Jacket, Trim Molding	ABS, Absafil, Magnum, Cycolac, Dyel, Kralastic, Lustran	Thermoplastic
ABS + PC	Acrylonitrile / Butadiene-Styrene + Polycarbonate	Instrument Panel, IPC	Bayblend, Cycoloy, KHA, Pulse	Rigid
ABS / PVC	ABS/Vinyl (Soft)	Head Rest Cover, Instrument Panel Pad, Trim Molding / Panel	ABS Vinyl	Flexible, Vinyl
EPDM	Ethylene Propylene Diene Monomer	Body Panel, Bumper Impact Strip	EPDM, Nordel	Rigid
EVA (EVAC)	Ethylene / Vinyl Acetate	Head Rest Cover, Misc Soft Trim	Elvax, Microthane	Flexible
PA	Polyamide	Headlamp Bezels, Quarter Panel Extensions, Exterior Finish Trim Panels	Nylon, Capron, Zytel, Rilsan, Minion, Vydyne, Welland	Rigid
PA, PAG, PAGG	Polyamide	Exterior Finish Trim Panel, Headlamp Bezel, Quarter Panel Extension	Capron, Minlon, Nylon, Rilsan, Vydyne, Wellamid, Zytel	Rigid, Thermoset
PA + PPE	Polymide + Polypheneylene Ether	Exterior Trim, Fender	GTX	Rigid, Thermoset
PBT + TEEE (PBTP + EEBC)	Polybutylene, Terephthalate + Ether, Ester Block Compound	Fascia, Rocker Panel Molding	Bexloy M	Rigid
PC	Polycarbonate	Interior Rigid / Hard Trim Panel, Valance Panel	Calibre, Lexan, Merlon, Makrolon	Rigid, Thermoset
PC + PETP	Polycarbonate + Polybutylene, Terephthalate	Bumper Fascia	Macroblend, Valox, Xenoy	Flexible, Thermoset
PE	Polyethylene	Fuel Tank Shield, Inner Fender Panel, Interior Trim Panel, Seat Belt Cover,	Alathon, Dylan, Foriflex, Hi-fax, Hosalen, Marlex,	Rigid, Thermoplastic

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PF	Phenol Formaldehyde	Ashtray	Amberol, Bakelite, Durez, Genal, Phenolic, Plyophen, Resinox	Rigid, Thermoset
PP	Polypropylene	Bumper Fascia, Cowl Panel, Deflector Panel, Door Panel, Inner Fender, Interior Molding, Kick Panel, Load Floor, Radiator Shroud, Wheel Cover	Azdel, Daplen, Escorene, Marlex, Novolen, Oleflo, Profax, Tenite	Flexible, Thermoplastic
PPE (PPO)	Polyphenylene Ether	Bezels, Chromed Plastic, Headlamp Door, Ornaments	Noryl, Oleflo, Prevex	Rigid, Thermoset
PS	Polystyrene	Dash Panel, Door Panel	Durathon, Dylan, Lustrex, Polystyrol, Styron	Flexible, Soft
PUR	Polyurethane, Thermoset (Unsaturated)	Bumper Fascia, Filler Panel, Front/Rear Body Panel, Pickup Box	Bayflex, Castethane, RIM, RRIM, SRIM	Thermoset
PVC	Polyvinyl Chloride (Vinyl)	Interior Soft Trim, I/P Skins, Roof Cover	Geon, Pliovic, Unichem, Vinoflex, Vinyl, Vinylite	Flexible, Vinyl
SAN (SA)	Styrene Acrylonitrite	Center Console, Glove Box Door, Interior Trim Panel	Foracryl, Lustran, Tyril	Rigid
TEO (EP, EPM, TPO)	Ethylene / Propylene (Rubber)	Air Dam, Bumper Fascia, Valance Panel	EPI, EPII, TPO, TPR (Thermoplastic Rubber)	Flexible, Thermoplastic
TPO	Thermal Plastic Oletin	Bumper Covers	TPO	Flexible Thermoplastic
TPU (TPUR)	Polyurethane, Polyolefin	Bumper Fascia, Gravel Deflector, Soft Filler Panel, Window Molding	Estane, Pellethane, Roylar, Toxin	Flexible, Thermoplastic
UP	Polyester / Thermoset	Air Scoop, Air Spoiler, Fascia Extension, Hood, Instrument Housing, Rear Compartment Lid, Roof, Ventilation Grid	Fiberglass, Premi-glass, Selectron, SMC, Vibrinmat	Rigid, Thermoset
For symbols not listed in this table, contact the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001.				

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