

## 2017–18 Clarity Series New Model Body Repair Information

This publication contains a summary of new body and vehicle technologies that may affect collision and other body repairs. Always refer to the appropriate body repair manual and service information for complete repair information. A subscription may be purchased at: [techinfo.honda.com](http://techinfo.honda.com)

### APPLIES TO

Year	Model
2017	Clarity Fuel Cell
2017	Clarity Electric
2018	Clarity Plug-In Hybrid

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### IDENTIFYING THE TYPE OF CLARITY MODEL

To determine the type of Honda Clarity you are working on, refer to characters 4 thru 6 of the VIN.

JHMZC4\*\*\*\*\*000001

ZC4	Clarity Fuel Cell
ZC5	Clarity Plug-In Hybrid
ZC6	Clarity Electric

**CUSTOMER INFORMATION:** The information in this bulletin is intended for use only by skilled technicians who have the proper tools, equipment, and training to correctly and safely maintain your vehicle. These procedures should not be attempted by “do-it-yourselfers,” and you should not assume this bulletin applies to your vehicle, or that your vehicle has the condition described. To determine whether this information applies, contact an authorized Honda automobile dealer.

## OVERVIEW OF BODY FEATURES



- The same basic body platform supports three electric-powered model variations.
- Body construction using 52% lightweight materials, including aluminum and ultra-high-strength steel (UHSS - 980 MPa and higher).
- World's first Glass Fiber Reinforced Polymer/Plastic (GFRP) rear bumper beam.
- Bolt-on resin composite front bulkhead assembly.
- All models are equipped with Honda Sensing®, which includes these advanced safety and driver-assistive technologies: Adaptive Cruise Control with Low Speed Follow, Lane Keeping Assist System, Road Departure Mitigation, and Collision Mitigation Braking System™ with pedestrian sensing capability.

### WARNING

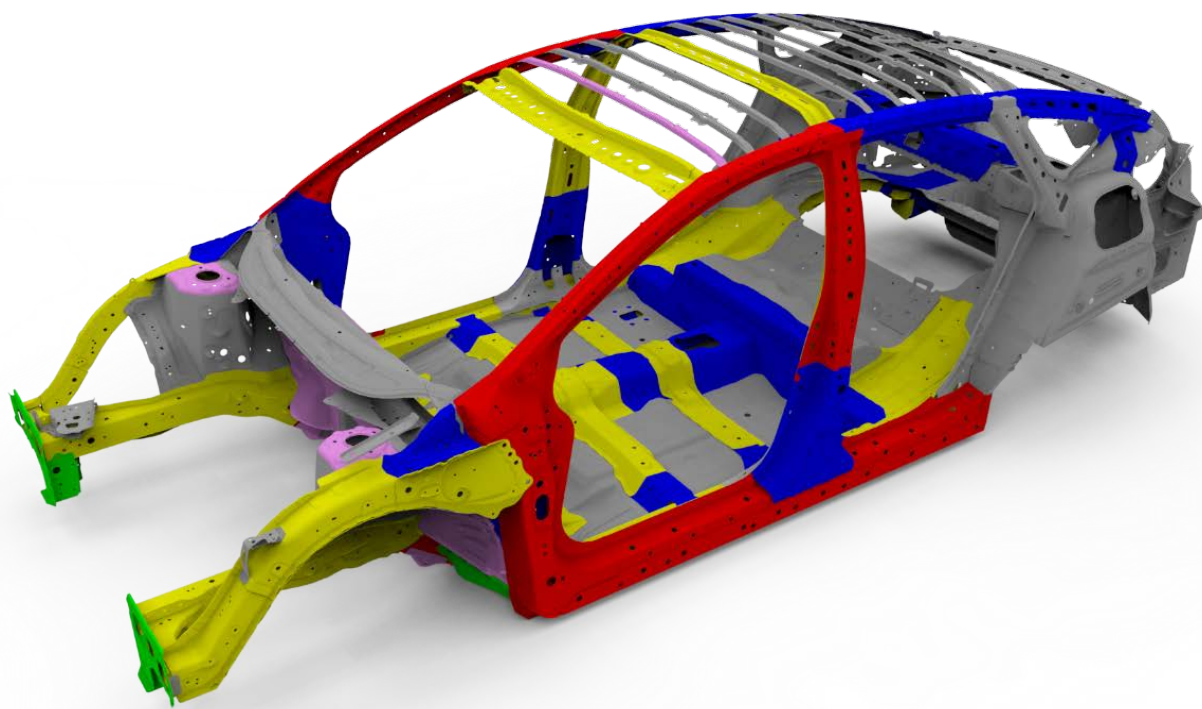
- Compressed hydrogen gas is flammable and highly explosive. You could be killed or seriously injured if leaking hydrogen gas is ignited.
- Keep heat, sparks, and flames away. In addition, keep electronic devices that can emit static discharge away.
- Hydrogen burns very quickly and radiates less heat than gasoline or other fuels; its flames are invisible.
- Always, have a fire extinguisher (dry powder type or carbon dioxide gas type) at the work location at all times.
- Only properly trained technicians should inspect and repair the Clarity's high-voltage and/or hydrogen supply systems.
- The California Fire Code has specific requirements for welding and open flame repairs on hydrogen fueled vehicles like the Clarity Fuel Cell. Do not conduct welding or open flame repairs on the Clarity Fuel Cell without first determining whether your facility is properly equipped and the vehicle is properly prepared.

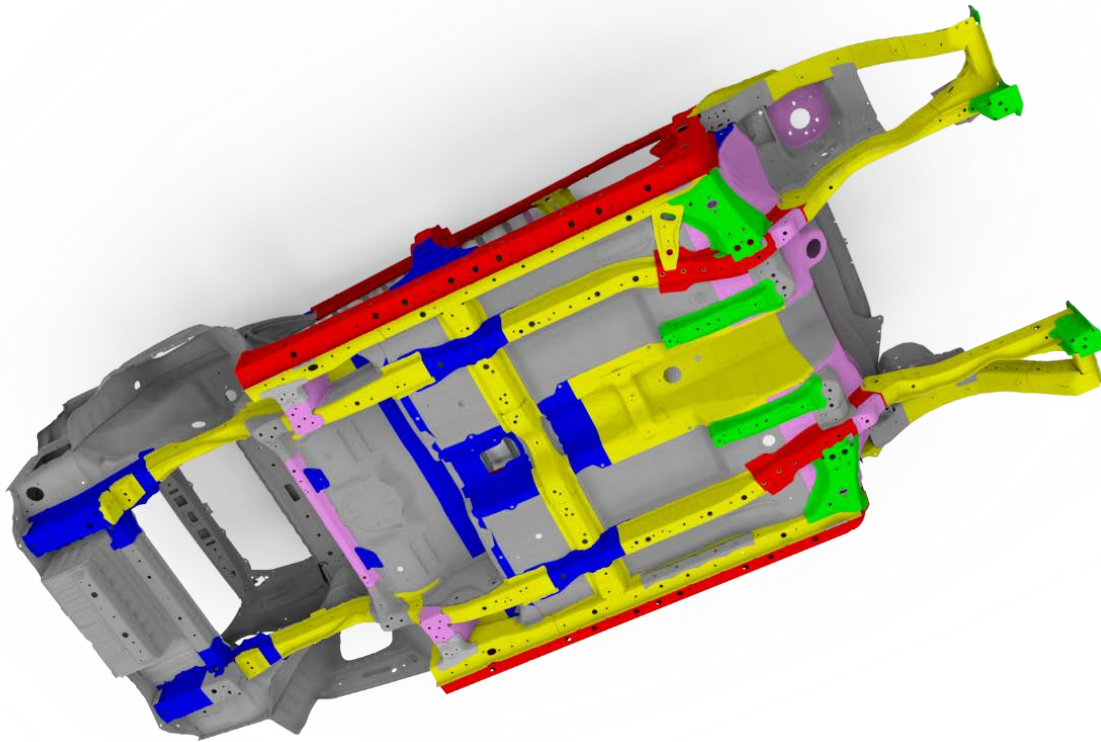
## NEW MODEL BODY TECHNOLOGY

### Body Construction and High-Strength Steel Content

- Steel parts are color coded based on their tensile strength in megapascals (MPa).
- High-strength steel (HSS) is defined as any steel with a tensile strength of 340 MPa or higher.
- Ultra-high-strength steel (UHSS) is defined as any steel with a tensile strength of 980 MPa or higher.
- Steel repair and welding procedures vary, depending on the tensile strength of the parts involved.

NOTE: The following illustrations are for general reference only. Some body parts are made from multiple layers of different tensile strength steels. Refer to the Body Construction section of the body repair manual for specific steel tensile strengths.

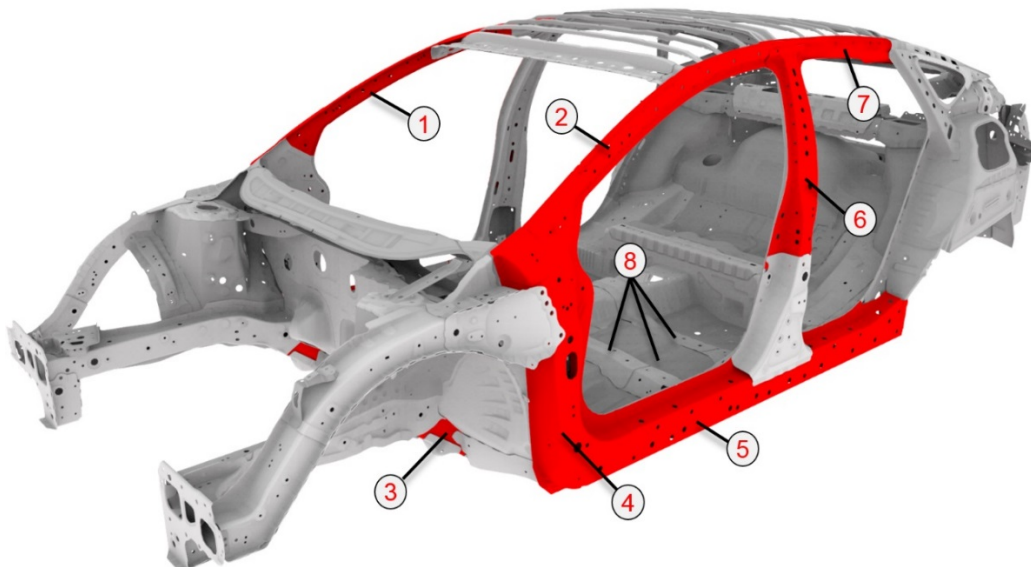




### 1,500 MPa (Hot Stamp) Steel Locations

1,500 MPa steel is stronger than ordinary steel, so it can help protect vehicle occupants while reducing overall vehicle weight to improve fuel efficiency.

The numbered parts in the illustration below are made of 1,500 MPa steel.



1	Front Inner Upper Panel	5	Side Sill Reinforcement
2	Front Pillar Upper Stiffener	6	Center Pillar Upper Stiffener
3	Front Side Frame Extension	7	Roof Side Stiffener
4	Front Pillar Lower Stiffener	8	Floor Crossmember Stiffener

Note: 1,500 MPa Stiffeners are located inside the front floor frame, front floor crossmember, and front floor rear crossmember.

### Resin Composite (Plastic) Front Bulkhead Assembly

The Clarity has a front bulkhead assembly made from resin composite material.

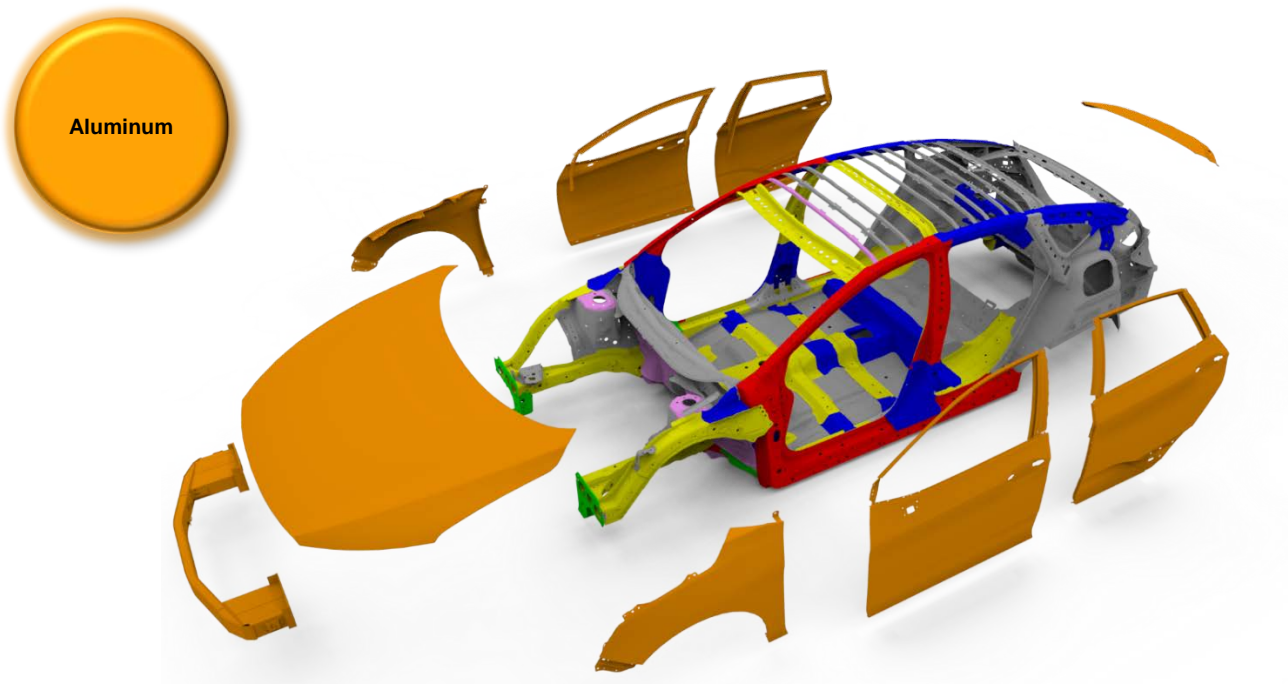
- The bulkhead design improves engine compartment access during factory assembly and service.
- The front bulkhead is attached with multiple bolts and is sold and replaced only as a complete assembly.
- The cooling fans, radiator, A/C condenser, hood lock, outside air temperature sensor, and related piping/components are attached to the front bulkhead using molded-in M6/M8 threaded inserts.
- Over torqueing or using power tools may break these inserts loose, requiring front bulkhead replacement.
- A damaged bulkhead must be replaced, not repaired.
- For more information, refer to “Front Bulkhead Replacement” in the body repair manual.



### Aluminum Parts and Repairs

The following parts are made from aluminum alloy.

Front Bumper Beam	Rear Shelf Panels
Hood Panel	Trunk Lid
Front Fenders	Front and Rear Subframe (Not shown)
Front and Rear Doors	





## Laser-Brazed Roof Attachment

The factory-installed roof panel is attached using a laser-brazed joint to the outer side panels.

- Laser-brazed joints cannot be duplicated during roof panel replacement.
- The original roof panel must be cut off near the laser-brazed joint and the remaining flange removed separately.
- The service roof panel is attached using service replacement bolted clamp-type brackets (five per side) and panel bonding adhesive.
- The roof panel, service brackets, and bolts must be ordered separately. Refer to the online parts catalog.
- Refer to “Roof Panel Replacement” in the body repair manual.



Service Replacement Roof Panel (Underside View)

## BODY REPAIR INFORMATION

NOTE: The following content is intended only to highlight new/special concerns. No body repairs should be attempted without first referencing the applicable body repair manual.

### Use of Heat During Body Straightening and Repair

When you are doing body straightening and repair procedures, follow these guidelines:

- **Do not** apply heat to any body part during straightening. This may compromise the internal structure and strength of high-strength steel parts.
- Any part that has heat applied to it during straightening **must** be replaced with new parts.
- Ignoring these instructions may significantly reduce occupant protection in any subsequent collision.

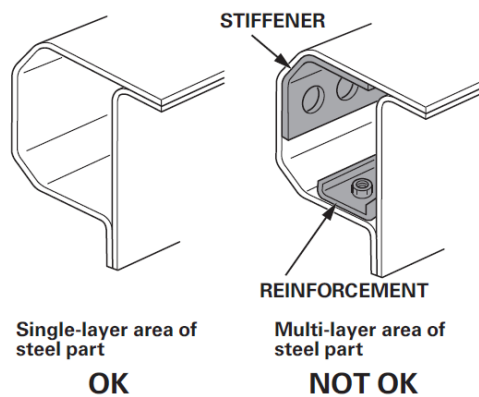


### Sectioning (Cut and Joint) Guidelines

Various high-strength and ultra-high-strength steel materials with different sheet thicknesses and strengths are applied in many places that vary with body design in order to increase collision safety performance, body stiffness, and weight reduction. Stiffening members are also applied inside some steel parts (patches, reinforcements, stiffeners, etc.)

Follow these guidelines to avoid an unsafe repair:

- Outer body and floor panels may be sectioned as necessary. Specific sectioning procedures are not provided in the body repair manual.
- Depending on the type of vehicle damage, steel parts with a tensile strength of 780 MPa or less may be sectioned, as long as all three of the following conditions are met:
  - Sectioning must be done in a single-layer area of the part.
  - Multi-layer internal steel reinforcements and stiffeners must not be cut.
  - Sectioning must be done in load bearing areas such as engine, transmission, or suspension mounting points.



**Sectioning Area Examples**

- If any of the above sectioning conditions cannot be met, replace those body structural components (stiffeners, reinforcements, and other multi-layered steel parts) as assemblies that match the replacement parts configuration.
- Approved welding methods are shown in the table at below.
- Refer to the body repair manual for complete procedures.
- MAG plug welding is now allowed on 1,500 MPa (hot stamp) steel parts in select locations **only** as specified in the body repair manual.

### Welding Method for Steel Parts

O = Approved    X = Not Approved    O\* = Approved only if specified in BRM

Steep Part Tensile Strength	Welding Method		
	Spot Welding	MAG Weld	
		Plug	Butt

<590	O	O	O
590	O	O	O
780	O	O	O
980	O	O	X
1,500	O	O*	X

- Welding instructions must be followed exactly as specified to ensure adequate weld strength.

## WELDING PRECAUTIONS AND INFORMATION

### REPAIRING 1,500 MPa STEEL PARTS

Observe these precautions when repairing 1,500 MPa steel parts:

- Never attempt to straighten damaged 1,500 MPa steel parts; they may crack.
- 1,500 MPa steel parts must be replaced at factory seams using only approved repair methods. Do not section these parts.
- MIG-brazed joints should be used only in locations not accessible by a spot welder.
- To ensure adequate weld tensile strength, always manually set the spot welder to the specifications provided in the body repair manual.
- Unapproved MAG welding procedures on 1,500 MPa steel may generate heat levels that will significantly reduce the strength and structural integrity of 1,500 MPa steel parts.
- The photo below shows a tensile strength test results of an improperly MAG welded 1,500 MPa steel part. The 1,500 MPa side fractured first because excessive welding heat reduced its strength.
- For more details, refer to “Basic Welding Information” the Body section of the service information.

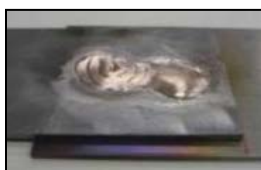
#### Important Information

Parts made of Ultra-High-Strength Steel (UHSS/1,500MPa/USIBOR) must be installed as a complete part. No sectioning is allowed. Ultra-High-Strength Steel requires special welding equipment, procedures, and settings. See the welding section of the body repair manual. Failure to use the proper equipment or follow the proper procedures can result in an unsafe repair.

### MIG Brazing Guidelines for 1,500 MPa Steel Parts

NOTE: Refer to the body repair manual for complete procedures.

- MIG-brazed joint locations are specified in the body repair manual.
- A single- or double-hole MIG braze may be specified, depending on the tensile strength of the parts being joined.
- The size and number of holes are critical to achieving adequate joint strength.
- A MIG welder with pulse control must be used. Refer to the equipment manufacturer’s instructions for welder voltage and current setup.
- The photos below show the difference in results between pulsed and non-pulsed MIG brazing.



Pulsed MIG (OK)



w/o Pulsed MIG (NG)



## MAG Welding Specifications for 590–980 MPa High-Strength Steel Parts

NOTE: In this publication and the body repair manual, gas metal arc welding (GMAW) is referred to by its subtypes depending on requirements as follows:

- **MIG Welding/Brazing** = This refers to metal inert gas welding or brazing where 100% argon (Ar) shielding gas is used. Argon is inert and does not react with the molten weld pool or brazing operation.
- **MAG Welding** = This refers to metal active gas welding where the shielding gas being used contains a mixture of 80% argon (Ar) and 20% carbon dioxide (CO<sub>2</sub>). It is considered active because the CO<sub>2</sub> undergoes a limited reaction with the molten weld pool.
- For MAG welding, 80/20 shielding gas (C20) is preferred. However, 75/25 (C25) is acceptable

### Important Information

Parts made of high-strength steel (590-980 MPa) must often be installed as a complete part. Section only according to published repair information and guidelines. This high-strength steel requires special welding equipment, procedures, and settings. See the Welding section of the body repair manual. Failure to use the proper equipment or follow the proper procedures can result in an unsafe repair.

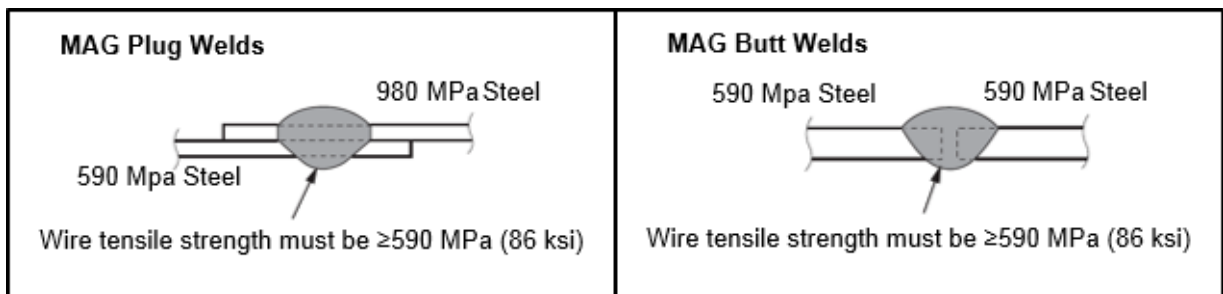
The body repair manual specifies the weld types and locations for each body panel as follows:

- The welding wire used must have a tensile strength equal to or greater than the lowest tensile strength of the parts being welded. The conversion chart below shows the relationship of steel tensile strength (MPa) to the minimum welding wire tensile strength (in kilopound per square inch [ksi]).

Steel Tensile (MPa)	Wire Tensile (ksi)
590	≥86
780	≥113
980	≥142

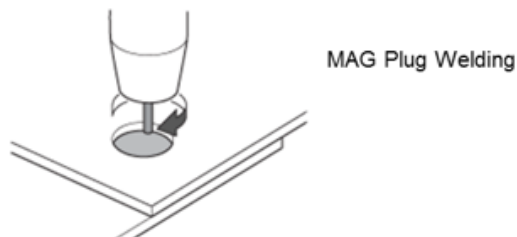
(1,000 psi = 1 ksi)

- Typical ER70S-6 MIG wire has a minimum tensile strength of 70 ksi (483 MPa). It can be used when welding up to 440 MPa steel parts. Refer to the diagrams below:



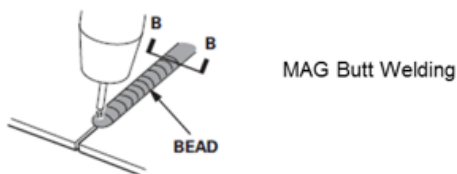
### MAG Plug Welding Guidelines

- MAG plug welding may be done when joining body components to 590–980 MPa steel parts.
- MAG plug may also be used on 1,500 MPa steel parts **only** as specified in the body repair manual.
- Follow the recommendations described in the body repair manual.



### MAG Butt Welding Guidelines

- MAG butt welding may be done only on steel parts with a tensile strength of 780 MPa and lower.
- Welding speed is critical to achieve the correct weld strength and minimize the heat affected zone (HAZ).
- Follow the recommendations described in the body repair manual.



## BEFORE STARTING COLLISION REPAIRS

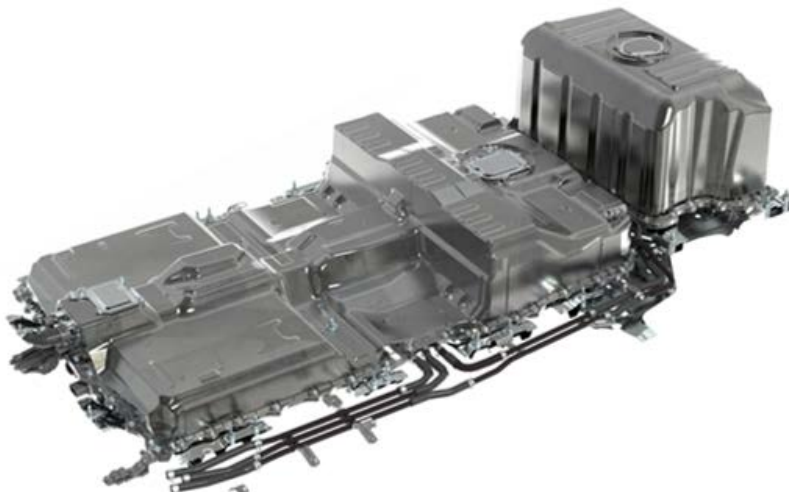
With any collision repairs, always refer to and follow the information outlined in the Generation Information section of the body repair manual. The following information outlines special consideration when repairing a Honda Clarity.

### IPU (Intelligent Power Unit) Leak Test After Airbag Deployment

Applies To	
Clarity Electric	Clarity Plug-In Hybrid

An IPU leak test must be done on any Clarity Electric or Clarity Plug-In Hybrid involved in a collision severe enough to deploy the airbags. The test consist of pressurizing the IPU with shop air to check for any leaks. If the IPU does not pass leak check, it must be replaced.

The Clarity Electric has a front and rear IPUs. Both of these units must be checked. If you have a vehicle with deployed airbags, take it to an authorized Honda dealer to have this test done before starting any repairs.



### High-Voltage System Components

Applies To		
Clarity Electric	Clarity Plug-In Hybrid	Clarity Fuel Cell

If you are doing any repairs that require the removal of high-voltage system components, the vehicle must be taken to an authorized Honda dealer. Authorized Honda dealers have the training and equipment needed to remove and install high-voltage components.

Refer to the Electrical Powertrain Component Location Index in the service information for a complete list of high-voltage system components.

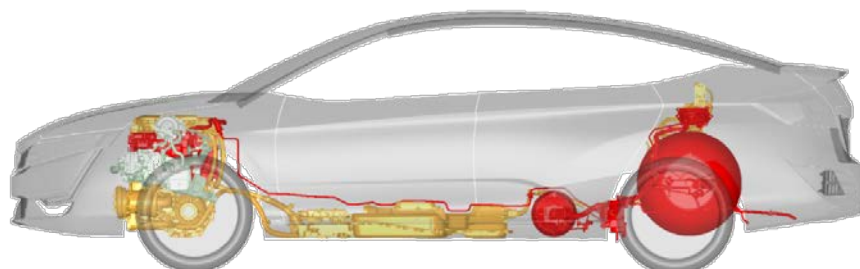
### Hydrogen System/Fuel Cell System Components

Applies To
Clarity Fuel Cell

According to California Fire Code, the hydrogen level in the hydrogen tanks must be less than 0.5 kg before the vehicle is brought inside the shop for repairs related to the hydrogen system. These rules do not apply for servicing/repair of non-hydrogen system components and collision repairs as long as no repairs involving welding or open flame are done and the hydrogen system components are not involved.

If you are doing any repairs that involve any hydrogen system or fuel cell system related components or involve welding or open flame, the vehicle must be taken to an authorized Honda Clarity Fuel Cell dealer. For a list of authorized Honda dealers, for a list of authorized Honda dealers, refer to page 12.

Refer to the Fuel Cell System Component Location Index in the service information for a complete list of hydrogen/fuel cell system components.



## DURING COLLISION REPAIRS

With any collision repairs, always refer to and follow the information outlined in the General Information section of the body repair manual. The following information outlines special consideration when repairing a Honda Clarity.

### Precautions When Using a Heated Paint Booth

System	Precautions
<b>SRS</b>	<ul style="list-style-type: none"><li>Do not apply heat greater than 212°F (100°C) when drying painted surfaces anywhere around the SRS components.</li></ul>
<b>Fuel Cell</b>	<ul style="list-style-type: none"><li>When drying paint in a heated paint booth, cover the air intake duct, exhaust pipe, and ventilation ducts with a tape. Refer to the Fuel Cell System Component Location Index in the service information for the location of these components.</li><li>High temperature may damage the fuel cell (FC) stack and the compressed hydrogen gas (CHG) tank. When drying paint in a heated paint booth, make sure the temperature does not exceed 149°F (65°C).</li></ul>
<b>Electric Powertrain</b>	<ul style="list-style-type: none"><li>High temperature may damage the battery module. When drying paint in a heated paint booth, make sure the temperature does not exceed 149°F (65°C).</li></ul>

## AFTER COLLISION REPAIRS

### Collision Shut-off History Clear Command

When the battery condition monitor module receives a collision detection signal (CDS) from the SRS unit or the H2 (hydrogen) shut-off unit (Clarity Fuel Cell only), it updates the collision shut-off history and stores it in the module's nonvolatile memory. The battery condition monitor module stops supplying power to the high-voltage circuits disrupting the control signal to be sent to the high-voltage contactor inside the battery module the next time the system is being turned on.

The battery condition monitor module also stops supplying hydrogen to the FC stack by turning the FC cut relay at the same time. To resume power supply to the high-voltage circuits and hydrogen supply to the FC stack, the collision shut-off history must be cleared.

### Aiming Driving Support Systems

The Honda Clarity is equipped with advanced safety driving support systems to help warn drivers and mitigate hazards. It is very important that the components making up this system are properly aimed after a collision repair.

Use the following table to determine what component requires aiming.

Component	When to Aim
Multipurpose Camera	<ul style="list-style-type: none"><li>Whenever the multipurpose camera unit is removed or replaced</li></ul>
Millimeter Wave Radar	<ul style="list-style-type: none"><li>Whenever the millimeter wave radar unit is removed or replaced</li><li>After any front-end collision repairs</li></ul>
LaneWatch™ Camera	<ul style="list-style-type: none"><li>Whenever the LaneWatch™ camera, right-side power mirror or right-front door is removed or replaced</li><li>Whenever the right-front door is adjusted</li><li>Whenever the right-front door is repaired</li></ul>

If aiming is required, take the vehicle to an authorized Honda dealer.

## AUTHORIZED HONDA CLARITY DEALERS

The Clarity Electric and Clarity Plug-In Hybrid can be taken to any Honda dealer for service and repairs. To locate an authorized Honda dealer, contact Honda Customer Service at **(800) 999-1009**. Repairs to the Clarity Fuel Cell only should be undertaken by Authorized Clarity Fuel Cell dealers.

For a list of authorized Honda Clarity Fuel Cell dealers, see below:

### Authorized Honda Clarity Fuel Cell Dealers

Southern California		
City	Dealer Name	Telephone Number
Cerritos, CA	Norm Reeves Honda Superstore	(888) 849-4466
Culver City, CA	Culver City Honda	(424) 298-4875
Irvine, CA	Norm Reeves Honda Superstore Irvine	(888) 721-4053
Pasadena, CA	Honda of Pasadena	(866) 788-5832
Torrance, CA	Scott Robinson Honda	(855) 725-2211
Woodland Hills, CA	Woodland Hills Honda	(800) 494-1164

Northern California		
City	Dealer Name	Telephone Number
Colma, CA	Honda of Serramonte	(888) 892-5396
Dublin, CA	Dublin Honda	(877) 412-7199
Oakland, CA	Honda of Oakland	(800) 352-1859
Palo Alto, CA	Anderson Honda	(650) 843-6041
Roseville, CA	AutoNation Honda Roseville	(916) 467-8056
San Jose, CA	Honda of Stevens Creek	(855) 357-6146

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