



Body Repair Manual Welding & Sectioning Guideline Revisions

OVERVIEW

In response to requests from the collision industry as the amount and tensile strength of steels used in our vehicles increase, Honda has made some significant changes to the approved welding methods and parts sectioning guidelines published in the body repair manuals. These changes will be integrated as each model's body repair manual is revised. The changes described here apply to all models and supersede previously published information.

REVISED WELDING GUIDELINES

Approved Welding Methods:

MAG butt welding is now an approved repair method for steel parts up to and including 780 MPa.

- The previous limit for butt welding was 590 MPa.
- The table at right lists approved welding methods.
- To minimize the heat affected zone (HAZ), butt welds on 780 MPa steel must be done as quickly as possible, while maintaining adequate penetration.
- MAG welding is never allowed on 1,500 MPa (hot stamp) steel parts.
- When doing STRSW or MAG plug welding, apply a weld-through primer (spot sealer) to bare steel areas being welded and wipe off any excess. Use approved respiratory protection when working around these primers.
- Refer to the body repair manual for complete information.

Steel Part Tensile Strength (MPa)	Welding Method		
	Spot Weld	MAG Welding	
		Plug	Butt
<590	○	○	○
590	○	○	○
780	○	○	○
980	○	○	X
1,500	○	X	X

Welding Methods For Steel Parts
(○ = Approved X = Not Approved)

MAG Welding Wire Selection Guidelines:

- Welding wire used during high strength steel repair must have a tensile strength equal to, or greater than, the lowest tensile strength of the parts being welded.
- Typical ER70S-6 wire has a minimum tensile strength of 70 ksi (483 MPa). This wire can be used when welding up to 440 MPa steel parts.
- The table shows the relationship of steel tensile strength (MPa) to the minimum welding wire tensile strength (ksi).
- Bosch DS980J solid welding wire has a rated tensile strength of 1,011 MPa (147 ksi). This wire, or equivalent, may be used when doing approved MAG welding methods on steel parts up to 980 MPa.
- Bosch DS980J wire is supplied in 4.4 lb. (2 kg) spools and may be ordered online through the [Honda Tool & Equipment Program](#).

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

(1,000 psi = 1 ksi)



Bosch DS980J
Solid Welding Wire

REVISED SECTIONING (CUT AND JOINT) GUIDELINES

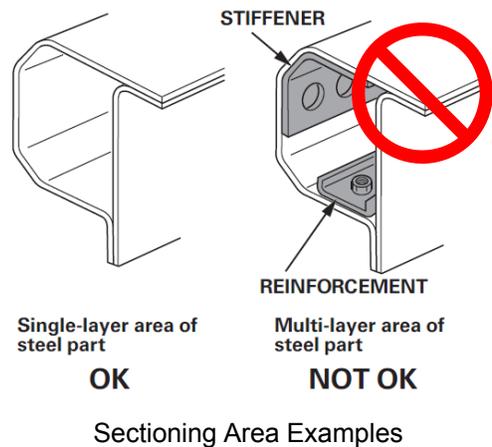
Replacement of steel parts at factory seams and matching the replacement part configuration remain the preferred repair methods. However, these methods alone are not always practical nor cost effective in all body repair situations. While some limited sectioning procedures are provided in the body repair manuals, it is not possible to develop published procedures covering every type and angle of impact.

The revised guidelines detailed below are intended as “basic rules” for properly trained collision repair professionals to use when sectioning steel parts on Honda vehicles.

Various high-strength steel materials with different sheet thicknesses and strengths are applied in many places that vary by body design in order to increase collision safety performance, body stiffness, and weight reduction. Stiffening members inside each part (patch, stiffener, etc.) are also specified in detail.

Follow these guidelines to avoid an unsafe repair:

- Avoid sectioning (cut and joint) except for outer panels and floor panels unless a specific procedure is provided in the body repair manual.
- However, depending on the type of vehicle damage, steel parts with a tensile strength less than or equal to 780 MPa may be sectioned (cut and weld) under the following conditions:
 - Sectioning must be done in a single-layer area of the part.
 - Multi-layer internal steel reinforcements and stiffeners must not be cut.
 - The repair must not be in a load bearing area such as engine, transmission, or suspension mounting points.
- To determine if a part has a single-layer area that can be sectioned, do the following:
 - Check the body construction pages in the General Information section of the appropriate body repair manual to determine the steel grade(s) and part configurations of the parts being replaced.
 - Inspect the original and replacement parts to confirm if there are internal reinforcements and/or stiffeners.
 - Spot welds not directly on a flange or joint indicate a reinforcement or stiffener inside.
 - The body repair manual Replacement section shows some internal reinforcements as a dotted line.
- Replace body structural components such as stiffeners, reinforcements, and other multi-layered steel parts as assemblies that match the replacement parts configuration.



USE OF HEAT DURING BODY STRAIGHTENING AND REPAIR

When you are doing body straightening and repair procedures:

- 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.

