

Technical Bulletin



Subject: Change to Repair Manual Welding Specification
Section: 08 Body Interior / Exterior

Date: 5 August 2016
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Model: All Models

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Background:

Based on a high standard of local auto body repairer capabilities Toyota New Zealand Limited has decided to allow Squeeze Type Resistant Spot Welds (STRSW) to be used in place of Gas Metal Arc/Metal Inert Gas-Welding (GMAW/MIG). The critical objective is to ensure spot weld penetration is at the same specification as the original manufacture, therefore approval of this substitution is on the proviso that the following criteria be strictly adhered to by the repairer:

- The repairer must ensure their STRSW Spot Welding Equipment meets industry standard & is subject to fully documented regular testing & calibration.
- In all cases where STRSW is used in place of GMAW/MIG there must be pre-repair spot weld test carried out & documented.
- The repair must be carried out by suitably certified & trained staff.
- All documented records of equipment calibration & individual sample tests must available on request & be kept for a minimum of 7 years.

Repair Method Change Details:

Welding Specifications for body components are published in Toyota ServiceNet– model specific Body Repair Manuals (BRM) for all Toyota vehicles. Welding component installation may require a combination of welding methods including:

Symbols as per BRM

- **STRSW (Squeeze Type resistant Spot Welds)**
- **GMAW/MIG (gas Metal Arc/Metal Inert gas – Welding)**
- **Arc Brazing**



STRSW may be substituted for GMAW/MIG plug welds, however STRSW must match size, strength and appearance. To ensure this condition the following conditions must be met:

1. **Facilities, Equipment & Training:** The repair facility must have a staff member with certificated STRSW training and the welding machine must have inverter technology with a

minimum specification rating to produce welds that will comply with the Toyota BRM requirements. As recommended by the BRM, use 30% more welds than were used in the original manufacture. The following specification is a minimum Toyota requirement for STRSW two panels including 980 MPa UHSS (Ultra High Strength Steel.)

Spot weld	Pressure	2940 N (300 kgf, 661 lbf)
	Weld current	10000 A
	Weld time	18 Cyc. (0.30 Sec.)

Note: the “weld time” rating may vary for different panel installations so the BRM should always be referenced prior to welding on the vehicle.

2. **Validation of Weld Strength:** Appearance alone does not validate the strength of the weld. Welded strength must be validated ensuring the following conditions are adhered to.
 - a. Test pieces & destructive testing must be performed on metal of the same size, thickness & composition of the component being replaced.
 - b. The destructive test method must follow an industry recognised standard eg. As per the process laid out in the I-CAR course WCS04.
 - c. Servicing & service history of the STRSW machine must be conducted & recorded.
 - d. Calibration of the STRSW machine must be performed prior to commencing any welds
 - e. A welding diagnostic report is to be recorded & filed with photo of destruction result

Example of test piece



Any questions relating to this bulletin should be directed to the Toyota New Zealand Limited, Service Operations Direct Support Group DSG.