I-CAR NEW ZEALAND

TECHNICAL REPORT

To Spot or not to Spot

Not many days of a week does the question not get asked;
"Can we use spot welds to fit a replacement panel when the vehicle maker repair method says MIG Plug?"

The simple answer to this is no, unless you have good evidence that can overrule the OEM information and all parties involved with the repair agree.

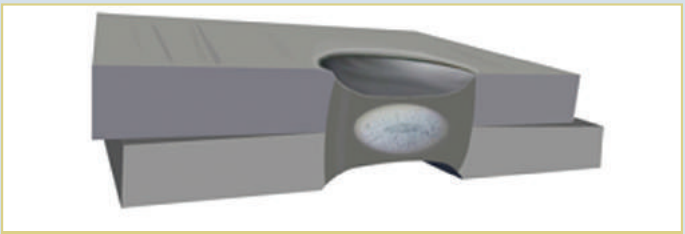
Next comes the question;
"So why should I have invested all that money on a spot welder when I can't use it?"

We will try and explain this.

This is then followed with;
"Well the CRA has made me buy a spot welder if I want to be a Structural Repairer Category (SRC) Repair facility, that's another rip-off"!!!!!

And at the end of all this comes;
"So what's I-CAR doing about it?"

If these questions and criticisms sound familiar you have probably thought or sung the same song. So in this technical article we will try and address some of these concerns.



Squeeze Type Resistance Spot Welding (STRSW)

The answer to the last question *"So what's I-CAR NZ doing about it?"* is, we have researched many motor vehicle repair manuals and identified where the concerns of Spot vs MIG Plug originate and in most all cases have had communication with that vehicle brand New Zealand motor company to try and resolve this concern.

In defence of the New Zealand companies approached, they could not have been more helpful. New Zealand repairers however, must understand that we don't have New Zealand vehicle manufactures only vehicle importers and importers are not in a position to make any statement or override an OEM technical specification.

This means any questions we may have must be referred via New Zealand to the parent company engineers and although this might sound easy and on non-technical issues it is, when anything involving the vehicle safety that could reflect back on their brand, it's not. Getting a quick answer or any statement will not happen until they have done whatever research is required.

A positive outcome from these requests is that Hyundai have communicated that squeeze type resistance spot welding (STRSW) with inverter technology can be used for repairing all models of their brand even if the manual shows MIG Plug. However, any spot welding cautions shown in the Hyundai manuals must be adhered to and followed.

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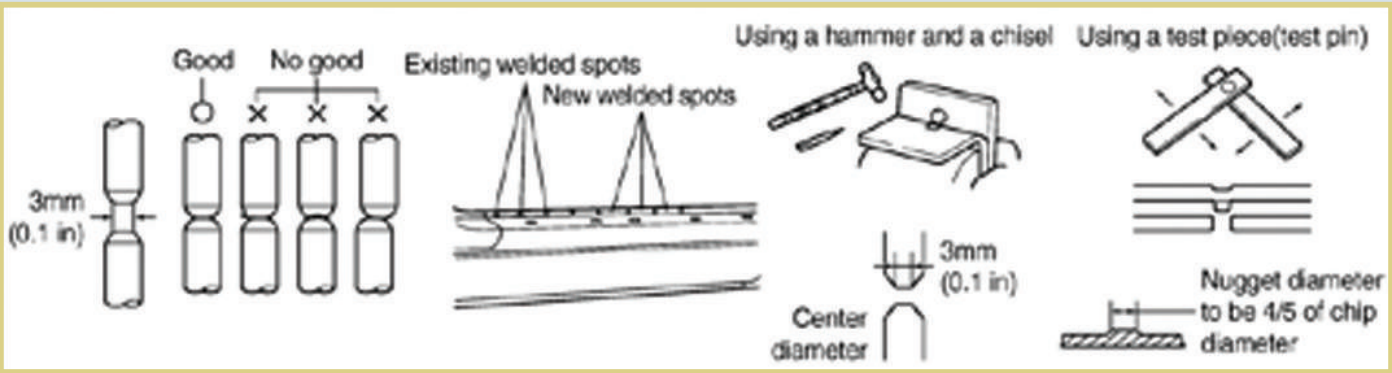

Image shows some of Hyundai cautions when spot welding

So why do repair manuals say we need to use MIG Plug and not Spot?

Well most large production vehicles brands are sold to many countries around the world and a lot of these countries don't have modern repair facilities equipped with STRSW as we do in New Zealand, so therefore a repair method is developed for a global market using MIG Plugs to replace OEM spot welds.

Some vehicle specifications however, such as the Captiva, now have different repair method options for both spot welding with structural adhesive or MIG Plug, so with any luck this could become a trend for the future.

We must also take into account that the introduction of STRSW with Invertor Technology equipment into New Zealand has only happened in recent years, so up until now we have not been in a position to present a good case on behalf of repairers. But with this equipment now being mandatory for SRC facilities, we have a stronger case to put forward to motor companies in hope for an approval that overrides those repair manuals stating MIG Plug only (such as Hyundai has done).

Spot welding duplicates OEM appearance

So why do we need a spot welder?

Because some vehicle makers repair methods for recent and current models now only show spot welding for replacing panels, or it can be a combination of both spot and Mig Plug or even some MIG bronze welding as well. In addition to this Weld Bonding using STRSW is also starting to be a favourite by some motor companies such as Chrysler who state that panels on all models should now be replaced using this method.

With all this debate about why can't we use spot welding, we perhaps also need to look at the equipment and the

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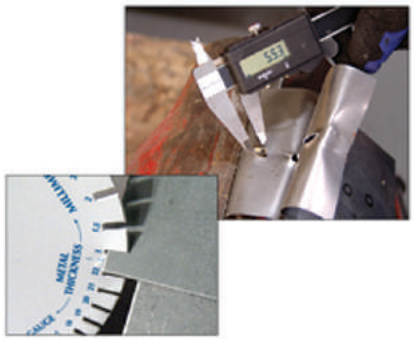
specifications likely to be requested for some vehicle brands repair method, plus we should also have a greater personal understanding of the welding process and the equipment being used. Even when a spot welder can be used you will find cautions and guidelines, these will most often include current and squeeze pressure of the machine and along with this the grade, thickness and the number of panel stack layers that can be welded, plus the minimum nugget diameters. Perhaps the most important caution given in all manuals is to perform and undertake destruction testing of practice welds carried out on the same metal type and thickness before welding on the vehicle. The vehicle maker may give the specifications for nugget size but if not the general recommendation for a minimum nugget size is five times the thickness of one of the panels being welded (how often is this done?)



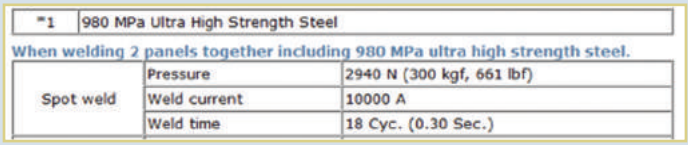
Checking the nugget size

There are many types of spot welders available and although we are fortunate that New Zealand equipment suppliers provide our industry with good quality equipment this is not something motor manufacturers know. It would be great if the equipment manufacturers could gain an endorsement for their machines from the vehicle manufacturer as this would solve a lot of the issues we are facing.

Welder specifications are as important as the repair method prior to commencing any repair as these can vary between brands and models; you need to check your machine against what a motor manufacturer requires prior to welding. These specifications are most often found in either the general information, cautions or welding section; a couple of examples from Honda and Toyota are:

HONDA STATE;

TOYOTA 86 MANUAL STATES;



Spot welding panels of different strengths and thicknesses using STRSW with inverter technology is a little more than just squeezing the trigger, the operator should have a good understanding of how this process works and what to be aware of to complete safe and quality repairs.

SO HOW DO WE GET AROUND THIS PROBLEM?

- I-CAR NZ will carry on with researching this issue for an outcome.
- Equipment suppliers maybe get their machines endorsed by vehicle manufacturers.
- Repairers understand more about the technology and specifications of their machine.
- Have all the required information and specifications prior to commencing any repair.
- Perhaps the most important, is to destructively test practice welds that have been done on the same type and thickness metal before welding on the vehicle.

Always check your welds

This edition of PaneTalk also features an I-CAR article from a few issues back that looks at STRSW guidelines for welding double or a multilayer panel stacks, please read this so you are familiar with the do's and don'ts when replacing panels with a spot welder.