Spotwelds on automotive components and other structures require inspection for a number of possible failure modes. Adhesive (stick) welds, burnt welds and unfused welds are several types of failure modes.

Sonatest rubber tips are designed to be used with the Sonatest RDT family. Rubber delay tips offer an effective alternative to the more traditional solution of water filled contact probes. They offer a robustness that gives a longer life than water filled tips.

The rubber can dramatically reduce the couplant required for the inspection. 10 MHz probes are recommended.

Findings
When considering a spotweld test, these round rubber delay tips offer an effective solution. The surface face is flexible and can be applied to uneven surfaces to give good results. The rubber material has the advantage of extended life time and the reduction in couplant required.

Features and Benefits
- Higher productivity and Improved Reliability

RECOMMENDED TOOL PACKAGE
- Sonatest Couplant - (Sonagel W)  
- RB2010  
- 10 mm Spotweld Ball - 151631
1. Good Weld
With a good spot weld, the amplitudes of the subsequent echoes drop relatively quickly because the weld structure is coarse grained and therefore has a high sound attenuation characteristic. The echo intervals correspond to the total thickness of the welded sheets less the electrode indentation.

2. Adhesive/Loose/Stick Weld
If there is an Adhesive Weld (also called a cold shot or a stick weld), then an extended echo sequence is received from the two sheet thicknesses. In the case of a cold shot, however, the grain structure is different (fine grained), and this leads to a long echo sequence because of reduced sound attenuation.

3. Burnt Weld
If a burnt weld condition is present then the weld material is highly attenuative due to the coarser grain structure it possesses. This leads to the transmitted ultrasound dropping off rapidly because of the higher attenuation, as shown above with the reduction in echoes received and amplitude.

4. Unfused/Loose Plate
Finally, an unfused/loose weld leads to a long echo sequence with short echo intervals corresponding to the single (upper) plate thickness.

Conclusion
Manual testing can be very effective in detecting ‘defective’ weld conditions associated with spot weld joining process. This is always operator dependant and needs a good basic understanding of ultrasonic principles and application: the benefits of manually testing come primarily from the low cost and portability when compared to larger fixed and robotic systems.

Get in touch with our local Sonatest expert, available in more than 50 countries over 5 continents!