



Testing of Inert-Gas-Shielded Plug Welds

Ultrasonic Application Solutions

Application

In body shell manufacture, slot or plug welds are increasingly used, for example in:

- columns in the passenger compartment,
- spring and shock absorber suspension,
- reinforcements of the underbody,
- instrument panel bridges.

The reason for this is they join a variety of multiple function components with variable geometrical designs and sheet thickness.

Mechanical stability and strength can only be obtained by completely filling the holes with weld metal bead to ensure fusion with the additional components.

To check this condition, an ultrasonic test method must be found that allows reliable information to be obtained and can be adapted to the geometrical challenges, such as restricted access to the second component surface and, at the same time, is easy to apply.

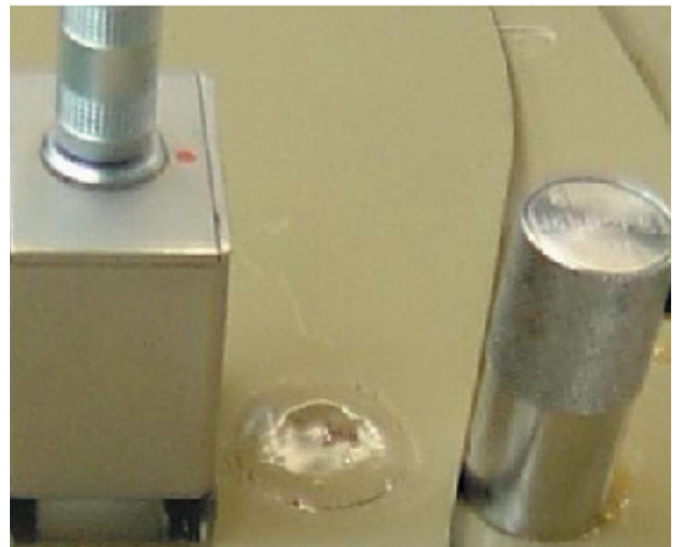


Figure 1: Measurement setup



Figure 2: Inspection with A-Scan result



Solution

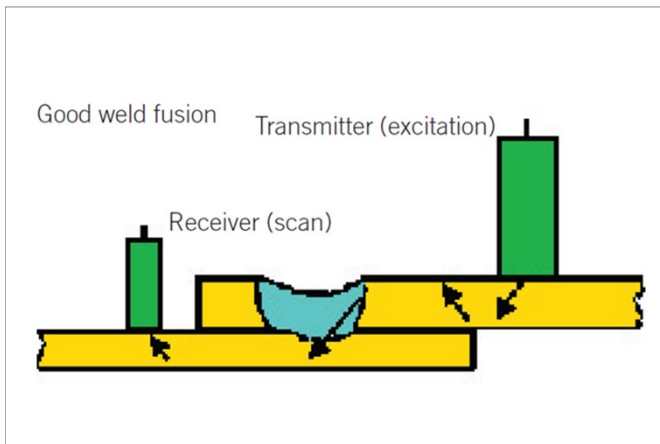


Figure 3: Testing setup with good weld fusion

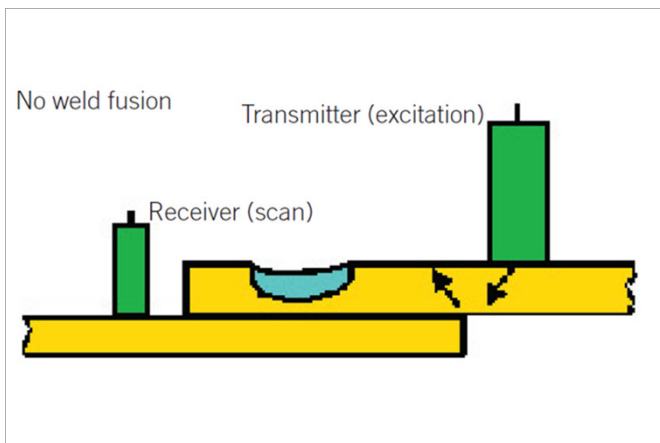


Figure 4: Testing setup without weld fusion

Similar to the testing of hinge welds in the body manufacture, the through-transmission technique is also used for testing plug welds.

The guided wave excited in the metal sheet by the transmitter probe, which is fixed magnetically to the coupling surface, passes through the weld metal bead in the case of good weld formation. It is scanned in the second component as a through-transmission signal. This is on the condition that the transmitter and receiver probes are aligned to each other, and that the plug weld is in the sound path. Even with a probe distance of approx. 150mm, it's possible to evaluate the intermediate plug weld by means of specially designed probes.

General solution information

- Flaw Detector: USM 36, USM Go+
- Transmitter Probe: W45B2KE1
- Receiver Probe: W45B2ME1

Your benefits

- Ensure high quality
- Reduce field failures and potential liability
- Save money by eliminating destructive testing and by process improvement

Part numbers			
USM 36	0037400	USM Go+	0113214
W45B2KE1	0068134	W45B2ME1	0068133

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