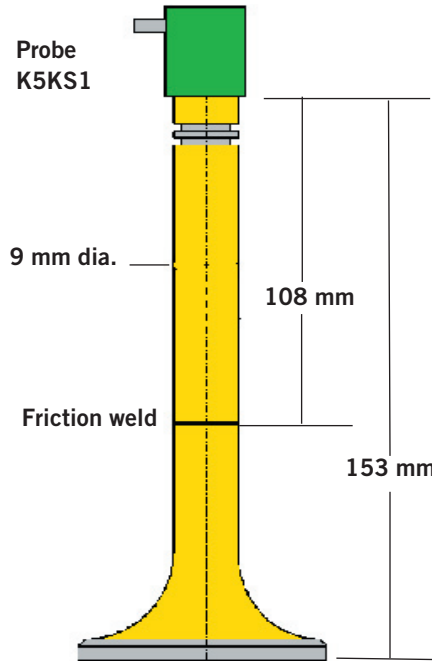


Application Solutions

70013EH
Date: July 2004

Flaw detection in friction welds on valve shafts



Category
• Automotive
Material
• Steel

Fig. 1: Valve shaft inspection

Application

The friction weld of valve shafts must be inspected. This concerns new valves as well as assembled valves, where only the front end of the valve shaft is accessible.

What you need

- Flaw Detector: USD 15X, USM 25
- Probe: K5KS1

Your solution

It is proposed to use the probe K 5 KS1 with direct coupling to the front end of the valve shaft.

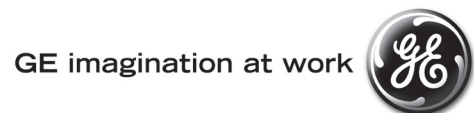
The probe's crystal element diameter is matched to the shaft's diameter. The acoustically absorbent protection layer (coupling membrane) reduces coupling deviations caused by standard hard-faced probes.

The complete weld area is covered by guiding the sound beam into the valve shafts. The coarse grain structure of the welded zone generates a noise level, see Fig. 2. Flaws, i.e. lack of fusion, are indicated by clear echoes, see Figs. 3 and 4.

It is recommended that the test method be used due to its easy application and its clear indications in engine production and for input checks.

How you benefit

- Ensure a high quality rating
- Reduce field failures and potential liability
- Save money by eliminating destructive testing
- Save money by improving your process



Typical display indications

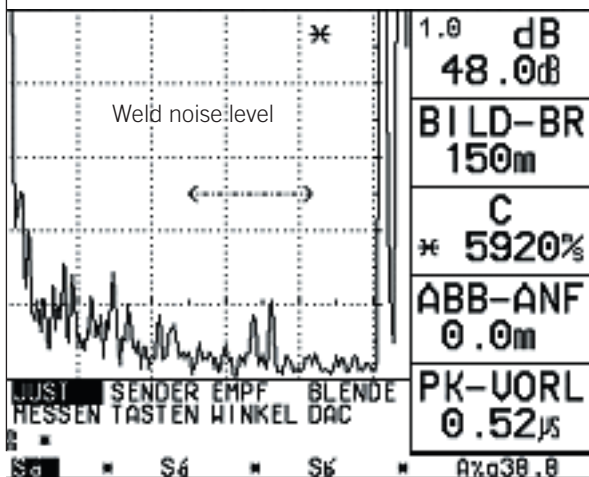


Fig. 2: Noise from the weld, no defect

Translation of menu text:

dB = GAIN

BILD-BR = RANGE

C = MTL VEL

ABB-ANF = D-DELAY

PK-VORL = P-DELAY

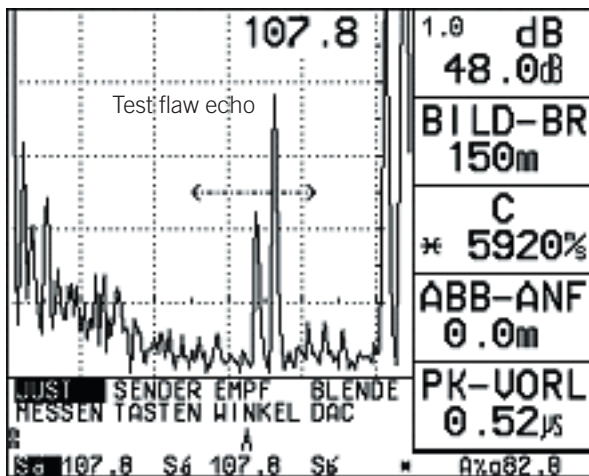


Fig. 3: Echo from the artificial defect, saw notch, 0.2 mm deep

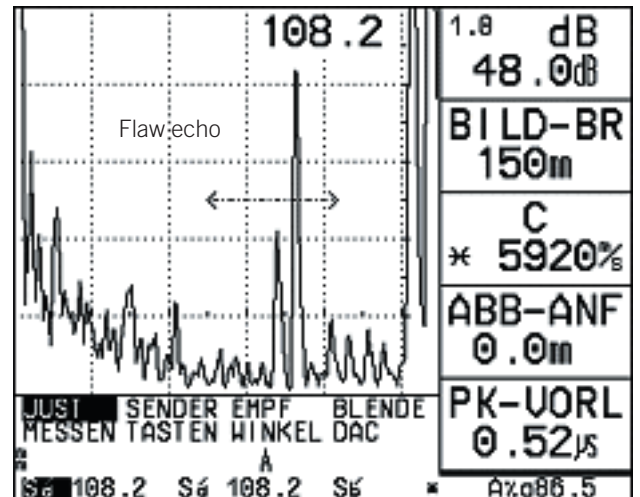


Fig. 4: Echo from a natural bonding defect

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