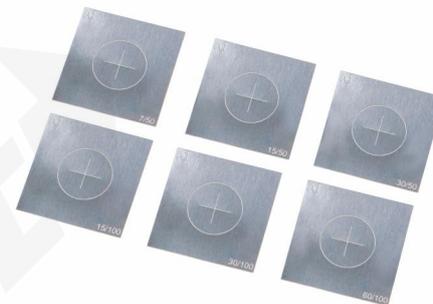




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## MPI-PA1 A1 STANDARD SENSITIVITY TEST CHART OPERATION MANUAL

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## A1 Standard Sensitivity Test Chart

1. This test specimen was manufactured by our company in accordance with the requirements for Type A1 specimens (material annealed) specified in GB/T 23906, JB/T 4730-2005, and JB/T 6065-2004, "Test Specimens for Magnetic Particle Testing in Non-Destructive Testing."

1.1 This test specimen is used to verify the direction and magnitude of the surface magnetic field strength during continuous magnetic particle inspection, as well as to evaluate the overall performance of magnetic particle inspection.

### 2. Component Configuration and Specifications

2.1 This test specimen includes six specifications: A1-7/50, A1-15/50, A1-30/50, A1-15/100, A-30/100, and A-60/100.

### 2.2 Test Specimen Dimensions and Corresponding Magnetic Field Strength

Test Specimen Thickness:  $50 \pm 5 \mu\text{m}$  and  $100 \pm 10 \mu\text{m}$

Test Specimen Edge Length:  $20 \pm 1 \text{mm}$  for both

Circular Artificial Groove Diameter:  $10 \pm 0.5 \text{mm}$  for both

Cross-shaped Artificial Groove Length:  $6 \pm 0.3 \text{mm}$  for both

Artificial Groove Width:  $60\text{-}80 \mu\text{m}$

Specifications: Artificial Groove Depth ( $\mu\text{m}$ ) Corresponding Sensitivity Circumferential Magnetization Specifications and Corresponding Magnetic Field Strength

A1 7/50 $\pm$ 1.0 $\mu\text{m}$  High Sensitivity (11-12) D3520-3840 A/m (44-48 0e)

A1 15/50 $\pm$ 2.0 $\mu\text{m}$  Medium Sensitivity (8-9) D2560-2880 A/m (32-36 0e)

A1 30/50 $\pm$ 4.0 $\mu\text{m}$  Low Sensitivity (5-6) D1600-1920 A/m (20-24 0e)

A1 15/100 $\pm$ 2.0 $\mu\text{m}$  High Sensitivity (11-12) D3520-3840A/m (44-48 0e)

A1 30/100 $\pm$ 4.0 $\mu\text{m}$  Medium Sensitivity (8-9) D2560-2880A/m (32-36 0e)

A1 60/100 $\pm$ 8.0 $\mu\text{m}$  Low Sensitivity (5-6) D1600-1920 A/m (20-240e)

※ The circumferential magnetization specifications and corresponding magnetic field strengths in the table are test results for normalized 45 steel specimens, provided for reference.

### 3. Instructions for Use

3.1 Select an appropriately sized Type A test piece based on the required flaw detection sensitivity.

3.2 The surface where the test piece is to be affixed must be flat and smooth, free of unevenness. Position the test piece with the side bearing the artificial groove facing downwards. Secure it tightly to the workpiece by applying adhesive tape with good tack around the perimeter.

Note: When affixing, the tape must not cover the grooved area on the back of the test piece. The edges must be tightly adhered without any lifting (especially when affixed to shaft surfaces).

3.3 Workpieces with attached test pieces may serve as magnetic particle inspection (MPI) quality control specimens. At the start of each work shift, use them to verify the overall performance of the MPI system. If poor magnetic indication occurs, after ruling out issues unrelated to test piece adhesion, analyze the cause (equipment, magnetic suspension, process, etc.) and implement corresponding corrective measures to ensure MPI quality.

3.4 Test pieces are manufactured from pure iron sheets. Handle with care to prevent creasing during use. After use, apply rust-preventive grease and store properly (remove grease before reuse).

3.5 Test pieces exhibiting creases, cracks, or extensive rusting will compromise effectiveness and should not be reused.