

Magnetic Particle Test Bar

MPI Test Bar

The MPI Test Bar is a standardized test piece conforming to the requirements of NAVSEA T9074-AS-GIB-010/271 to demonstrate magnetic particle equipment performance. The MPI Test Bar can be used with wet bench equipment, power packs, or magnetic yokes. The test bar includes both surface and sub-surface flaws for use with AC, HWDC, and FWDC magnetizing currents. Surface notches in two directions on each side of the bar are used to confirm both circular and longitudinal AC magnetization. Multiple subsurface defects at progressive depths provide confirmation of HWDC and FWDC field penetration. All machined flaws are epoxy filled to prevent magnetic particles from becoming trapped within the test bar.

FEATURES

Dimensions	10.0 in x 1.25 in x 0.375 in
Surface flaws (L x W x D)	
Top Side	Lengthwise (2.0 in x 0.008 in x 0.040 in) Transverse (0.063 in x 0.008 in x 0.020 in)
Bottom Side	Lengthwise (0.063 in x 0.008 in x 0.020 in) Transverse (1.25 in x 0.008 in x 0.025 in)
Subsurface flaws	
Transverse	0.064 in dia x 0.75 in deep holes <ol style="list-style-type: none"> 1. 0.051 in from surface 2. 0.061 in from surface 3. 0.071 in from surface 4. 0.081 in from surface 5. 0.091 in from surface 6. 0.131 in from surface
	0.064 in dia x 1.75 in deep hole 0.093 in from surface
Lengthwise	0.064 in dia x 1.75 in deep hole 0.093 in from surface



INSTRUCTIONS

Position test bar in magnetizing equipment

- Wet bench equipment: Clamp bar between head and tail stock
- Power pack equipment: Use contact clamps to attach cables to test bar or place test bar inside cable wrap coil.

Magnetize test bar according to table below. Apply particles to form indications. AC fields will detect surface flaws. HWDC and FWDC fields will detect subsurface flaws.

For yoke magnetization, position yoke legs on either end of the test bar.

Magnetize and apply particles to form transverse indications.

Waveform	Field Direction	Minimum Amperage	Indications
AC (wet)	Circular Head Shot	160 A	Lengthwise
	Longitudinal Coil Shot	450 A	Transverse
HWDC / FWDC	Circular Head Shot	400 A	Lengthwise
	Longitudinal Coil Shot	780-890 A	Transverse

SPECIFICATIONS

For use with systems conforming to:

- NAVSEA T9074-AS-GIB-010/271
- ASME BPVC Section V Article 7
- ASTM E709
- ASTM E1444
- ASTM E3024

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