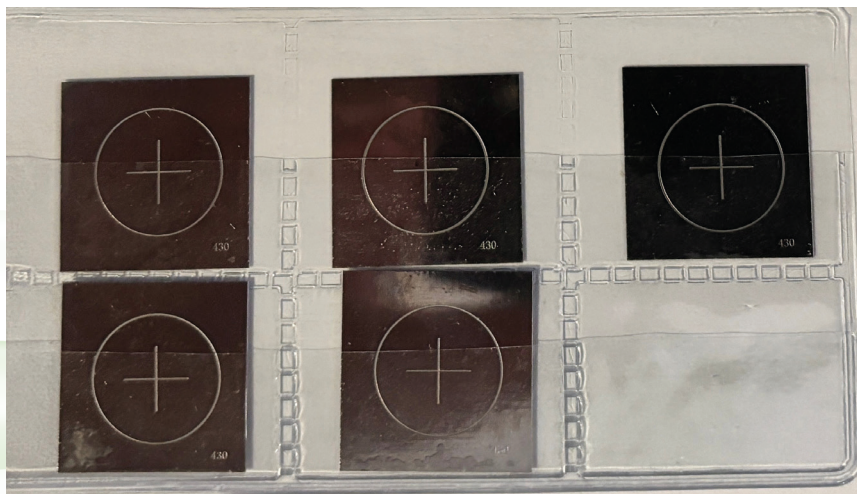




SHIMS TYPE – QQIs



DESCRIPTION

Quantitative Quality Indicators (QQIs) are one of the test samples used to ensure the correct direction of the magnetic field and to verify its adequate intensity. Together with QQIs, a gaussmeter is often used to set up the inspection procedure for a specific single component. QQIs can only be used with wet method and, like other verification devices, can only be used with in continuous magnetization.

QQIs are thin strips of AISI 1005 steel, 0.002" or 0.004" (0.0508 or 0.1016 mm) thick. A photoengraving process is used to engrave a specific pattern, such as concentric circles or the + sign. QQIs are normally square with sides measuring approximately 1.9 cm, but smaller sizes are also available. QQIs must be in close contact with the part under inspection.

In compliance with: ASTM E 1444; ASME V ART. 7.



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Controlli Non Distruttivi - Non Destructive Testing



USER INSTRUCTIONS

STEP-BY-STEP DESCRIPTION

1. Shim and surface under inspection preparation

- Remove the protective coating. New QQIs are often coated with a protective paint to prevent corrosion. This paint must be removed with a suitable solvent, such as acetone or an adhesive solvent (Velnet/Solnet is recommended).
- Clean and dry both surfaces. Before use, ensure that the surface under inspection and the engraved side of the QQI are clean and dry.

2. QQIs application

- Place the QQI with the defective side facing downwards. The engraved pattern must be placed in direct contact with the part under inspection. Ensure that there are no gaps between the shim and the surface under inspection.
- Attach the shim in the correct position. Use transparent pressure-sensitive adhesive tape to attach the QQI to the piece. Cover only the edges of the shim to avoid obscuring the design in the centre. Alternatively, for a more durable attachment, use extra-strong glue.

3. Piece magnetization and particles application

- Perform magnetic particle inspection (MPI). Apply the magnetic field to the part (e.g. with a yoke or a bench) and simultaneously apply the wet particles. This process is commonly known as the "in continuous method" and it is essential for obtaining indications from QQIs.

4. Observation and interpretation of results

- Analyze the indications. The magnetic particles will be attracted to the artificial defects on the shim. A visible indication of the engraved pattern (cross and circle) confirms the presence of a magnetic field.
- Verify the field direction. The magnetic particles will align along the axis of the applied magnetic field.
 - If a unidirectional magnetization technique is used, a distinct indication will appear on the part of the cross perpendicular to the magnetic field.
 - When using a multidirectional magnetization technique, the field is considered balanced when the entire cross and circle pattern is visible on the QQI.
- Verify the field strength. QQIs are designed to produce indications at a specific magnetic field strength (e.g., approximately 30 gauss). If the defect pattern does not appear, the magnetic field is too weak.



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5. Final cleaning

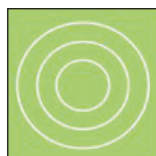
- At the end of the test, clean the component and the test sample according to standard procedures. QQIs can be reused, but they can also become damaged or corroded if not cleaned and stored properly.

IMPORTANT CONSIDERATIONS

- Do not confuse QQIs with laminated strips:** QQIs can verify both the direction and relative strength of the magnetic field, while strips can only indicate its direction.
- Positioning:** use QQIs where the magnetic flux may vary or be low, such as in the centre of long parts or in the centre of an area inspected using a magnetic yoke.
- Reusability:** shims can be reused, but must be handled with care to avoid damage or deformation that could compromise their effectiveness.
- Storage:** when not in use, always protect QOI shims from corrosion by storing them in solvent or in their original packaging.

AVAILABLE MODELS

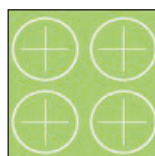
PART NUMBER	DESCRIPTION	REF.
04099901	Shim QQI Type CX-230 – thickness: 0,002"	90.1M
04099902	Shim QQI Type CX-430 – thickness: 0,004"	90.2M
04099903	Shim QQI Type CX4-230 (CM-230) – thickness: 0,002"	90.3M
04099904	Shim QQI Type 3C2-234 – thickness: 0,002"	90.4M
04099905	Shim QQI Type 3C4-234 – thickness: 0,004"	90.5M



Type 3C2-234
Type 3C4-234



Type CX-230
Type CX-430



Type CX4-230