
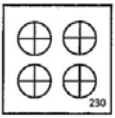


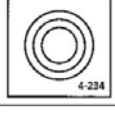


QUANTITATIVE QUALITY INDICATOR TEST PIECES



GENERAL DESCRIPTION

Magnaflux® Quantitative Quality Indicators (QZI) are magnetic particle test pieces with artificial defects used to verify field direction and relative strength. QZI's are also used to balance multi-directional fields and to increase productivity by minimizing magnetizing shots. The QZI indicator shims are packaged in sets of five.

QZI	TYPE	DESCRIPTION	PART NUMBER
	CX-230	Basic circular and crossed bar flaw configuration suitable for longitudinal and circular fields. Flaw depth of 30% of Shim thickness, .002" thick. Self adhesive.	625551
	CX4-230	Similar to CX-230, except miniature design for small areas on test part. The four circles may be cut apart for individual use. Flaw depth of 30% of Shim thickness, .002" thick.	625552
	CX-430	Basic circular and crossed bar flaw configuration suitable for longitudinal and circular fields. Flaw depth of 30% of Shim thickness, .004" thick.	625553
	3C2-234	Used for more quantitative work, three concentric circular flaws of differing depth. Flaws depth of 20%/30%/40% of Shim thickness, .002" thick. Self adhesive.	625554
	3C4-234	Used for more quantitative work, three concentric circular flaws of differing depth. Flaws depth of 20%/30%/40% of Shim thickness, .004" thick.	625555

UNI-DIRECTIONAL INSTRUCTIONS

1. The QZIs must be in intimate contact with the part being evaluated. This may be accomplished by placing the artificial flaw in intimate contact with the parts surface.
2. Apply single-sided cellophane tape to the QZIs to adhere them to the test object. It is recommended to use one of the following: Scotch Brand 191, 471, or the 600 series. Should the tape become loose and allow the particles and solution to get between the QZI and part surface, the QZI should be carefully removed. The cellophane tape used should have the following qualities...

- Good adhesion to steel
- Be impervious to oil
- Be clear, non-fluorescent
- Be available in .” or ó” widths

QQI can also be applied with a strong, permanent adhesive such as Super Glue. This should be applied evenly across the entire surface so there are no gaps or loose areas. Do not allow any glue to become attached to the inspection side of the QQI. If this happens, it can normally be removed with acetone.

3. Care should be taken not to cover more than about .100 of the indicator.
4. Use the circle or cross configuration QQIs to determine the field direction.
5. Determine where the QQIs should be placed to sufficiently monitor field strength direction.
6. In unidirectional applications, placing a Hall Effect probe adjacent to the QQI will assist in obtaining field strength measurements.

CONTINUOUS METHOD INSTRUCTIONS

1. Select the lowest level amperage and slowly increase it until the QQI provides a reading. Upon magnetization, one portion of the cross will illustrate a perpendicular indication to the field direction and the circular QQI will illustrate quadrants that are perpendicular to the applied field direction.

MULTI-DIRECTIONAL INSTRUCTIONS

1. Longitudinal and circular fields are illustrated by slowly increasing the amperage to a desired indication. Field strength for the first direction is determined by slowly increasing amperage until a satisfactory indication is present on the QQI.
2. Demagnetize the part and carefully clean the QQIs before determining the next direction of amperage. Field strength for the second direction is determined by slowly increasing the amperage until a satisfactory indication is illustrated on each QQI.
3. Place the selector switch in the multi-directional mode and magnetize the part at the previously recorded settings. If you can see the entire circle on the QQI, the fields are balanced. If any portion of the circle isn't visible, adjust the amperage accordingly and repeat the field verification process until the magnetic fields are balanced.

SPECIAL CONSIDERATIONS

1. Use care when applying the suspension to the QQIs. Proper QQI indications may not form unless the suspension is applied in a gentle manner.
2. The QQIs are made of a low retentivity and high permeability material that can't be used for indicating residual fields when developing magnetic particle testing procedures.

SPECIFICATIONS COMPLIANCE

ASTM E709-08 (Sections 20.8.5.2 & Appendix X2)

ASTM E1444/1444M-12 (Sections 6.2.6, 7.1.2 & Annex A1-A2)

BPVC (Section V, Article 7: T764.2 (b) (2))