

Instructions for using the FERRITE INDICATOR

The Ferrite Indicator is a simple-to-operate device to be used for indicating the ferrite content of austenitic stainless steel weld metals.

The operation of the Indicator is based on the mutual attraction of a permanent bar magnet for a calibrated insert and an unknown material. In use, an insert is screwed into the top of the case. The magnet is then attracted to the insert by a force dependent upon the insert's ferrite value. The end of the magnet projecting from the opening in the bottom of the case is then brought into contact with the material being tested. *It is essential that the contact surface be clean* and free from oxide scale or foreign material. The Indicator is then moved away in a direction perpendicular to the contact surface. If the material being tested has higher ferrite content than that of the calibrated insert, then the magnet will completely separate from the bottom of the insert as the Indicator is moved away. A complete separation occurs when the metal collar holding the magnet strikes the bottom of the plastic case. If the ferrite content of the material being tested is *lower* than that of the insert value, the magnet *will first separate from the test material* as the Indicator is moved away. Thus, by interchanging the inserts, it is possible to bracket the ferrite content of the materials under test.

Two features of the Indicator deserve special mention. First, the balanced beam to which the magnet is attached permits the use of the Indicator in all positions without correction due to gravity. Secondly, the hemispherical magnet ends provide point contact with the inserts and the test materials.

Test Specimens: The test specimen is recommended to have a minimum area of 1 cm² and a minimum thickness of 0.3 cm [3mm]. The specimen may be laminated. Test specimens having a volume in excess of the minimum value quoted above may be in any form, shape or condition (for example, castings, forgings, bars, weld beads, etc.) The indicator may be placed on any location on the specimen to be tested provided the surface is suitably flat and in full contact with the magnet.

The Ferrite Indicator must be **handled with care**. Do **not adjust the nuts** on the Indicator. It will affect the accuracy of the measurements. Also, the following precautions should be observed:

1. Remove metal filings, chips and dirt from the surface of the material under test. Filings and dirt on the end of the magnet can be removed with masking tape.
2. ***Under no circumstances bring another magnet in contact with the indicator magnet.*** This will disturb the calibration of the Indicator to such an extent that it will necessitate its return and subsequent recalibration.
3. Be sure inserts are screwed firmly in place so as to establish contact with the magnet.
4. Do not jerk the Indicator away from the test material, especially with the 0.5 insert in place. This will tend to give a false indication.
5. Avoid as much as possible contacting the Indicator with strongly magnetic materials such as steel, cast iron, or straight chromium steels. This can be accomplished by first screening the materials under test with a hand magnet.
6. **Do not drop the Indicator.** Do not expose to temperatures below -18⁰ or above 48⁰ Centigrade.
7. When not in use keep the Indicator in its box with the **highest** value insert in place in the Indicator.
8. Inserts are **not** interchangeable between indicators.
9. The Indicator needs recalibration on a yearly basis to maintain measurement accuracy.

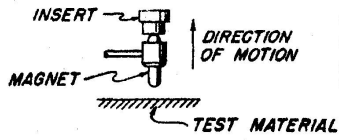
ADDITIONAL INSTRUCTIONS FOR INDICATORS HAVING A "CHECK" INSERT

To check the Indicator, place the designated "Go" FN threaded insert in the Indicator. Touch test end of magnet to the center of the metallic piece on the bottom of the "Check" insert (which is not threaded-it does not fit into the Indicator itself). The Indicator should go. Replace this insert with the insert designated as the "No-go" FN insert. Again touch the check insert. Indicator should not go. Should any deviation from the above occur, the Indicator should be returned.

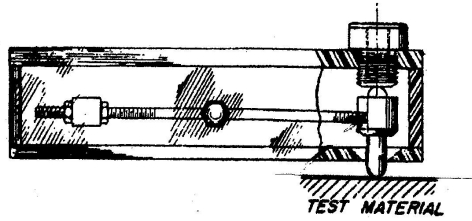
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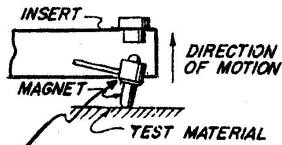
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FERRITE CONTENT OF TEST MATERIAL
LOWER THAN THAT OF INSERT
(MAGNET REMAINS IN CONTACT
WITH INSERT)



FERRITE CONTENT OF TEST MATERIAL
HIGHER THAN THAT OF INSERT
(MAGNET REMAINS IN CONTACT
WITH TEST MATERIAL)



MAGNET COLLAR
SHOULD TOUCH
PLASTIC CASE