

ICS 77.040.20
CCS H 26



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 7735-2016

**Automated eddy current testing of seamless and welded
(except submerged arc-welded) steel tubes for detection of
imperfections**

无缝和焊接(埋弧焊除外)钢管缺欠的自动涡流检测

(English Translation)

Issued on: December 30, 2016

Implemented on: September 1, 2017

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Introduction
1 Scope
2 Normative References
4 General requirements
5 Detection Method
5.1 Detection
5.2 Detection Equipment
6.1 General requirements
6.2 technology through coil
6.3 Technical sector coil
6.4 stationary and rotating probe/flat coil technology
8 Test Report
Annex A (normative) eddy current testing method described limitations guidance

1 Scope

This standard specifies the requirements for automatic eddy current testing of seamless and welded (SAW excluded) of the defect, the defect level of acceptance, see

Tables 1 and 2.

This standard applies to the outer diameter of not less than 4mm pipe eddy current testing. This standard is also applicable to the detection of the hollow member.

2 Normative references

The following documents for the application of this document is essential. For dated references, only applies to the version dated paper

Pieces. For undated references, the latest edition (including any amendments) applies to this document.

ISO 9712 NDT personnel qualification and certification
(Non-destructive testing- Qualification and certification of NDT personnel)

ISO 11484 NDT personnel qualification employer steel products system
(Steel products- Employer's qualification system for non-destructive testing (NDT) personnel)

3 Terms and Definitions

Defined in ISO 11484 and the following terms and definitions apply to this document.

3.1 Standard contrast defect

Artificial defect nondestructive testing apparatus (such as drilling, grooves and dents) for verification.

3.2 Comparative sample tube referencetube

Comparative Sample containing steel or pipe section.

3.3 Comparative sample

Comparative sample containing standard sample (e.g., pipe, sheet or strip).

NOTE: This standard uses only the term "control sample tubes", also includes the term comparative sample.

3.4 Steel tube

Any cross-sectional shape are open at both ends of the hollow elongated products.

3.5 Seamless

The solid product obtained a perforated hollow tube, and then by hot working or cold working to obtain the final dimensions.

3.6 Pipe weldedtube

By welding adjacent edges of the flat product made of the steel pipe together, after welding can be subjected to further hot or cold working,

To obtain the final dimensions.

3.7 Manufacturers

Products manufactured in accordance with relevant standards and statements delivered products meet the relevant standards applicable to all organizations clauses.

3.8 Protocol agreement

At the time of inquiry and order, the contract between the manufacturer and the purchaser.

4.1

Unless the product specification or supply and demand sides agreed, steel pipe eddy current testing should operate in all major production processes (rolling, heat in

Li, cold and hot processing, sizing and straightening basic like) after completion of all.

4.2

detected steel pipe should have enough flatness to ensure the effectiveness of detection.

The surface should not affect detection reliability of foreign bodies.

4.3

Detection shall be in accordance with ISO 9712, ISO 11484 or equivalent standard trained and qualified operator appointed by the manufacturer have owned

Carried out under the supervision of personnel grid. In the case of testing by a third party, this should be consultation between the supplier.

The employer shall file a certificate issued by the authority to operate. NDT personnel shall be approved by the Employer of a NDT Level 3

Members authorized.

NOTE: 1,2,3 definitions can be found in the corresponding international standards such as ISO 9712 and ISO 11484.

5.1.1

Steel imperfections should follow mode "absolute" and/or automatic or semi-automatic method for eddy current "differential" is detected.

a) passing through the coil art --- entire periphery (see FIG. 1);

b) fixed or pivot point probe/flat coil technology --- entire periphery (see FIG. 2);

c) only for the sector coil technology --- welds (see FIG. 3) or a full tube (see FIG. 4).

All of the above detection, the relative volatility of the selected detection speed should not exceed $\pm 10\%$.

Pipe ends have a short length can not be detected. Any undetected tube end should be carried out according to the respective requirements of the product standards

Line processing.

NOTE: See Appendix A limitation of eddy current testing method for guidance instructions.

5.1.2

When passing through the coil technique employed, the maximum outer diameter of the subject steel should be limited to 180mm (acceptance level is employed E4H 250mm). Using a suitable probe may also be taken when the square and rectangular structural steel tubes for which the maximum value of not more than 180mm diagonal Detected by encircling coil technique.

5.1.3

when the fixed or rotating probe/flat coil technology, steel probe/movement should be relatively flat coil, the flat probe alone or

Li between single probe to simulate electronically commutated relative movement, so that the entire surface of the steel pipe is detected. Using this technology, steel

The maximum outside diameter of no limit.

Note: only emphasizes the defect detection cracking outer surface when using this technology.

5.1.4

When the sector detection coil weld pipe, there is no limit on the maximum outer diameter. Detecting coils should maintain concentricity of the weld, so that

Weld can be found throughout the sweep.

5.1.5

When using a fan coil to detect the whole tube, the maximum outside diameter steel pipe to be inspected is limited as follows.

--- coil for 2 x 180 °, the maximum outer diameter of 219.1mm;

--- coil for 4 x 100 °, the maximum outer diameter of 508.0mm.

NOTE: emphasis on the detection sensitivity at the maximum detection coil near the surface of the steel pipe, pipe wall thickness increases and decreases (see Appendix A).

5.2 Testing Equipment

Pipe testing equipment should be qualified or suspected steel tube automatically triggers/markers and the alarm threshold and/or sorting systems to distinguish.

Description.

1 --- secondary coil 1;