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**ENERGY INDUSTRY STANDARD OF THE PEOPLE'S
REPUBLIC OF CHINA**

中华人民共和国能源行业标准

NB/T 47013.4-2015

Replacing JB/T 4730.4-2005

Nondestructive testing of pressure equipments-

Part 4: Magnetic particle testing

承压设备无损检测

第 4 部分：磁粉检测

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Foreword

This Standard NB/T 47013 Nondestructive testing of pressure equipments is divided into the following 13 parts:

- Part 1 General requirements
- Part 2 Radiographic testing
- Part 3 Ultrasonic testing
- Part 4 Magnetic particle testing
- Part 5 Penetrant testing
- Part 6 Eddy current testing
- Part 7 Visual testing
- Part 8 Leak testing
- Part 9 Acoustic emission testing
- Part 10 Ultrasonic time of flight diffraction technique testing
- Part 11 X-ray digital radiosopic examination
- Part 12 Magnetic flux leakage testing
- Part 13 Pulsed eddy current testing

This Part is part 4 of NB/T 47013: Magnetic particle testing

This Part is drafted according to the rules provided in GB/T 1.1-2009 *Directives for standardization—Part 1:Structure and drafting of standards*

This Part replaced JB/T 4730.4-2005 Nondestructive testing of pressure equipments Part 4: Magnetic particle testing and the main technical changes are as follows compared with JB/T 4730.4-2005:

- Put terms and definitions about magnetic particle testing in the original JB/T 4730.1-2005 in this Part;
- Added contents of testing process procedure and specified relevant factors of process procedure;
- Added relevant content about the use of standard test piece and cross yoke testing method;
- Added relevant provisions that verification shall be done through standard test piece

- after determining magnetizing current according to empirical formula;
- Changed the offset mandrel method into eccentric conductor method according to GB/T 12604.5—2008.
 - Adjusted the effective width and overlapping range of yoke testing;
 - Adjusted relevant content of testing of magnetic particle with non-conductive coating and expanded the limitation conditions of detection;
 - Adjusted the effective magnetized regions of magnetization of coil method;
 - Adjusted the requirements of qualified level of welded joints, machining parts of compress machine and materials according to national safety technology specification of pressure equipments and product standards and ASME, ISO and other foreign standards;
 - Adjusted relevant provisions of records indication and added methods of records display;
 - Added content of safety of magnetic particle testing;
 - Adjusted relevant content of magnetic particle testing to pressure equipments in use and increased the requirements of the sensitivity of magnetic particle testing to the inner wall of pressure equipments in use.

This part is proposed and is under the jurisdiction of National Technical Committee of Boiler and Pressure Vessel Standardization (SAC/TC262).

Drafting units of this Part: Hefei General Machinery Research Institute, China Special Equipment Inspection Institute, Special Equipment Inspection and Research Institute of Zhejiang Province, China Nuclear Power Engineering Co., Ltd. and Shanghai Boiler Works Co., Ltd.

Main drafters of this standard: Chen Wenhui, Zhou Yufeng, Guo Weican, Zhu Congbin, Wang Xiaomei, Cheng Huayun and Zhang Peiming.

The historical version replaced by this Part is as follows:

JB 4730—1994 and JB/T 4730.4—2005.

Nondestructive testing of pressure equipment

Part 4: Magnetic particle testing

1 Scope

1.1 This part of NB/T 47013 specifies the magnetic particle testing method and qualified level of welding lines of pressure equipments and raw materials and machining parts.

1.2 This part applies to the testing of surface and near surface flaws of sheets manufactured by iron magnetic materials, composite sheets, pipes, fittings, forgings and others and the testing of surface or near surface flaws of ferromagnetic material butt joints, T-joints and welded corner joints and others. It does not apply to the testing of non-ferromagnetic materials.

1.3 Magnetic particle testing to relevant supporting members and structural members of pressure equipments can also be done according to this part.

2 Normative references

The following documents are necessary to the application of this document. For all dated references, only the dated edition applies to this document. For all undated references, the latest edition (including all amendments) applies.

GB/T 5097	Non-destructive testing—Penetrant testing and magnetic particle testing—Viewing conditions
GB 11533	Standard for logarithmic visual acuity charts
GB/T 12604.5	Non-destructive testing - Terminology - Terms used in magnetic particle testing
GB/T 23906	Non-destructive testing—Rings for magnetic particle testing
GB/T 23907	Non-destructive testing—Shims for magnetic particle testing
JB/T 6063	Non-destructive testing-Materials for magnetic particle testing
JB/T 8290	Non-destructive testing instruments — Magnetic particle flaw detectors
NB/T 47013.1	Nondestructive testing of pressure equipments-Part 1: General requirements

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