

ICS 77.040.20

H 26



PROFESSIONAL STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

中华人民共和国行业标准

NB/T 47013.8-2012(JB/T 4730.8)

---

**Nondestructive Testing of Pressure  
Equipment**

**Part 8: Leak Testing**

**规范承压设备无损检测**

**第 8 部分: 泄漏检测**

Issued on: January 04, 2012

Implemented on: March 01, 2012

---

Issued by

the National Energy Administration of the People's  
Republic of China

# **Announcement of the National Energy Administration**

No. 1, 2012

According to the requirements of "Management Method for Standardization of Power Industry" (tentative), the National Energy Administration hereby approves to issue 182 professional standards (see Annex) such as "Nondestructive Testing of Pressure Equipment - Part 7: Visual Examination", including 3 professional standards on energy (NB), 81 professional standards on electric power (DL) and 98 professional standards on oil and gas (SY).

Annex: Catalogue of Professional Standards

January 4, 2012

**Annex:****Catalogue of Professional Standards**

No.	Standard No.	Standard name	Replaced standard	Adopted standard No.	Approval date	Implementation date
1	NB/T 47013.7-2012 (JB/T 4730.7)	Nondestructive Test of Pressure Equipment - Part 7: Visual Examination		Modified in relation to: 1. "Boiler and Pressure Vessel Specifications" (ASME:2001) - Volume V - Chapter 9 2. "General Provisions on Non-destructive Testing and Visual Examination" (EN 13018:2001)	2012-01-04	2012-03-01
2	NB/T 47013.8-2012 (JB/T 4730.8)	Nondestructive Test of Pressure Equipment - Part 8: Leak Testing		Modified in relation to: 1. "Boiler and Pressure Vessel Specifications" (ASME:2001) - Volume V - Chapter 10; 2. ASTM E1066-95R06	2012-01-04	2012-03-01
3	NB/T 47013.9-2012 (JB/T4730.9)	Nondestructive Testing of Pressure Equipment - Part 9: Acoustic Emission Testing			2012-01-04	2012-03-01
4~182	(omitted)					

## Contents

Foreword .....	I
1 Scope .....	2
2 Normative References .....	2
3 Terms and Definitions .....	2
4 General Requirements .....	2
5 Testing .....	4
6 Result Evaluation .....	5
7 Records and Reports .....	5
Appendix A (Normative) Bubble Leak Testing - Direct Pressurization Technology .....	6
Appendix B (Normative) Bubble Leak Testing - Vacuum Cover Technology .....	8
Appendix C (Normative) Halogen Diode Leak Testing Technology .....	11
Appendix D (Normative) Helium Mass Spectrometer Leak Testing – Suction Gun Technology .....	15
Appendix E (Normative) Helium Mass Spectrometer Leak Testing - Tracer Probe Technology .....	19

## Foreword

This Part is the Part 8 of "Nondestructive Testing of Pressure Equipment" (NB/T 47013): Leak Testing

This Part is formulated according to the relevant requirements of Chapter 10, Volume V, "Boiler and Pressure Vessel Specifications" (ASME:2001) as well as the actual domestic conditions, thereof, Appendix G "Ammonia Leak Testing Technology" is formulated by reference to ASTM E1066.95R06 while Appendix H "Pipeline Acoustic Leak Testing Technology" is formulated by reference to the research achievements of "Research on the Leakage Point Location and Detection of Embedded Gas Piping and Relevant Equipment Development" of 11th Five-Year Plan undertaken by China Special Equipment Inspection and Research Institute.

Appendixes A~F of this Part is normative.

This Part was proposed by and is under the jurisdiction of the National Technical Committee on Boilers and Pressure Vessels of Standardization Administration of China (SAC/TC 262).

Drafting organizations of this Part: China Special Equipment Inspection and Research Institute., Nanjing boiler and pressure vessel inspection institute, Hefei General Machinery Research Institute, Shanghai Research Institute of Materials Sinopec Engineering Incorporation, Aerosun Corporation, Sinopec Nanjing Chemical Industrial Co., Ltd. Chemical Machinery Works, Nanjing Baose Co., Ltd, Hebei Supervision and Inspection Institute of Boiler and Pressure Vessel and Pressure Vessel Inspection and Research Institute of Boiler and Pressure Vessel of Jiangxi Province.

Cheif drafting staff of this Part: Shen Gongtian, Jing Weike, Lin Shuqing, Ye Cheng, Tao Yuankong, Jin Yufei, Xu Feng, Wang Xiaomei, Chen Guozhu, Liu Hongyan, Zhou Qinming, Liu Canrong, Ma Jianyu, Xiao Zhongqun, Hu Bin, Qin Xianyong and Cui Qiang.

National Technical Committee on Boilers and Pressure Vessels of Standardization Administration of China (SAC:/TC 262) in charge of the explanation of this Part.

# Nondestructive Testing of Pressure Equipment

## Part 8: Leak Testing

### 规范承压设备无损检测

### 第 8 部分: 泄漏检测

## 1 Scope

This Part of NB/T 47013 specifies the leak testing method of pressure equipment.

This Part is applicable to the leak testing of pressure equipment in manufacturing and use to determine the leaking position and measure the leakage rate.

The testing methods and technical requirements specified in this Part are detailed in Appendixes.

## 2 Normative References

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB 11533 Standard Logarithmic Visual Acuity Charts

GB/T 12604.7 Terminology for Non-destructive Testing - Leak Testing

JB/T4730.1 Nondestructive Testing of Pressure Equipment - Part 1: General Requirements

NB/T 47013.7 Nondestructive Test of Pressure Equipment - Part 7: Visual Examination

## 3 Terms and Definitions

For the purposes of this standard, the terms and definitions given in GB/T 12604.7 apply.

## 4 General Requirements

### 4.1 General

The general requirements of leak testing shall not only in accordance with the relevant requirements of JB/T 4730.1, but also meet the requirements of Sections 4.2~4.4.

### 4.2 Testing personnel

The uncorrected or corrected near vision and distance vision of leak testing personnel shall not be less than 5.0 (the decimal record value is 1.0) and the testing method shall meet

the requirements of GB 11533. The testing personnel shall receive vision inspection every 12 months to guarantee a normal or correct visual resolution in short distance.

### **4.3 Process specification**

**4.3.1** The process specification of leak testing shall be formulated in accordance with the requirements of JB/T 4730.1, and shall include the following contents at least:

- a) application scope;
- b) normative regulations and standards;
- c) testing personnel qualification;
- d) testing equipment and apparatus;
- e) testing conditions (temperature, gas or concentration)
- f) test pressure and pressure holding time;
- g) tested surface preparation;
- h) testing time;
- i) testing process and technology;
- j) evaluation of testing results;
- k) testing record forms and their preservation;
- l) formats and requirements of testing report;
- m) developer, reviewer, and approver;
- n) development date.

**4.3.2** The process specification shall be verified; where the important factors specified in the Appendixes or that have a strong impact on the testing sensitivity are changed, the process specification shall be verified again.

### **4.4 Equipment and apparatus**

**4.4.1** Pressure gauge/vacuum gauge

**4.4.1.1** Measuring range

Where the scale indication and record pressure gauge is adopted for leak testing, its measuring range shall be around 2 times as the maximum expected testing pressure with the testing pressure as 1.5~4 times the testing pressure. Such measuring range requirements are not applicable to the vacuum gauge, and other pressure gauges listed in the Appendixes of this Part shall meet the requirements of the corresponding Appendix.

**4.4.1.2** Accuracy

Unless otherwise specified, the accuracy of pressure gauge used for leak testing shall not be less than Grade 1.6.

**4.4.1.3** Location

Where the pressure or vacuum leak testing is carried out on the tested piece, the scale indication pressure gauge shall be connected to the tested piece directly or from a remote position so that the testing personnel can observe the pressure gauge/vacuum gauge during the whole process. As for large container or tested system which requires one or more pressure gauge(s)/vacuum gauge(s), a record pressure gauge/vacuum gauge is recommended to replace one of the two or more indication pressure gauges/vacuum gauges.

**4.4.1.4** Application

Where other pressure gauges/vacuum gauges are required by the normative appendixes, they may replace the scale indication or record pressure gauge/vacuum gauge or be used in combination with the latter.



北京文心雕语翻译有限公司  
Beijing Lancarver Translation Inc.

---

---

---

**完整版本请在线下单/Order Checks Online for Full version**

**联系我们/or Contact:**

TEL: 400-678-1309

QQ: 19315219 | Skype: Lancarver

Email : [info@lancarver.com](mailto:info@lancarver.com)

<http://www.lancarver.com>

---

---

**线下付款方式：**

**I. 对公账户：**

**单位名称：**北京文心雕语翻译有限公司

**开 户 行：**中国工商银行北京学清路支行

**账 号：**0200 1486 0900 0006 131

---

---

**II. 支付宝账户：**[info@lancarver.com](mailto:info@lancarver.com)

**III. Paypal:** [info@lancarver.com](mailto:info@lancarver.com)

---

---

注: 付款成功后，请预留电邮，完整版本将在一个工作日内通过电子 PDF 或 Word 形式发送至您的预留邮箱，如需索取发票，下单成功后的三个工作日内安排开具并寄出，预祝合作愉快！

**NOTE** All documents on the store are in electronic Adobe Acrobat PDF format, there is not sell or ship documents in hard copy. Mail the order and payment information to [info@lancarver.com](mailto:info@lancarver.com), you will shortly receive an e-mail confirming your order.

---

