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JJG

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

JJG 112-2013

Replacing JJG 112-2003

**Verification Regulation of Metallic Rockwell Hardness Testing
Machines (Scales A, B, C, D, E, F, G, H, K, N, T)
(English Translation)**

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Table of Contents

Introduction (II)	
1 Scope (1)	
2. References (1)	
3 Overview (1)	
4 Metering performance requirements (2)	
4.1 Spindle squareness and concentricity (2)	
4.2 Test Force (2)	
4.3 Indenter (2)	
4.4 Indentation depth measuring means (3)	
4.5 Deformation rack (3)	
4.6 Shows the value of the maximum permissible error and Repeatability (3)	
5 General technical requirements (4)	
6 Control of measuring instruments (4)	
6.1 Verification condition (4)	
6.2 Test items and test methods (5)	
6.3 Test results processing (10)	
6.4 Test cycle (10)	
Appendix A Standard Rockwell hardness test (11)	
Appendix B Rockwell hardness test recording format (13)	
Appendix C Rockwell hardness test certificate within the page format (15)	
Appendix D Rockwell hardness test results in the notice page format (16)	

6.4 Test cycle (10)

Appendix A standard Rockwell hardness test (11)	
Appendix B Rockwell hardness test recording format (13)	
Appendix C Rockwell hardness test certificate within the page format (15)	
Appendix D Rockwell hardness test results in the notice page format (16)	

Introduction

The regulations drafted in accordance with the rules JJF1002-2010 "national verification procedures write rules" given.

The procedures in place JJG 112-2003 "metal Rockwell hardness (A, B, C, D, E, F, G, H, K, N, T scales). " Compared with JJG 112-2003, this procedure is mainly technical changes are as follows.

- Expand the scope of work for the Rockwell hardness and Rockwell hardness standard machine (see Chapter 1);
- The carbide ball as Rockwell ball indenter of the standard ball (see 4.3.2.1);
- Remove hardness should "CMC" signs;
- Remove the test cycle time requirements;
- Not clearly defined early verification test force must 98.07N or 196.1N dynamometer, just to meet the requirements the can (see 6.2.4.1);
- Increase during test indenter ball diameter, should carry out random checks of the same batch of balls provisions (see 6.2.5.2);
- Feeler increase the maximum permissible error of $\pm 8\mu\text{m}$ (see Table 4);
- Modify the reticle maximum permissible error of $\pm 3\mu\text{m}$ (see Table 4);
- The test project "afterburner speed" to "urging and holding time" (see Table 5);
- Modify indenter hardness test block with the usual range of hardness block consensus (see Tables 6 and 7);
- Modify test methods indentation depth measuring device, so that it is not limited to dial-type hardness meter (see 6.2.6.1);
- Modify the application time (1 ~ 8) s (see 6.2.8.5) the main test force;
- Increasing the standard Rockwell hardness test machine (see Appendix A);
- Indentation depth measurement device standard machine is modified to the maximum permissible error $\pm 0.2\mu\text{m}$ (see A.3);
- Diamond cone indenter test cycle from five to four years to modify (see 6.4 and A.9);
- More than the standard method of Rockwell hardness machine and the reference machine (see A.8);

Test cycle --- standard Rockwell hardness machine modified to four years from five years (see A.9);

--- Increased test records indentation depth measurement device and the indenter and test certificate within the page format (see Appendix B, C).

The procedures in the development process to fully consider the JJG 144-2007 "standard dynamometer test procedures", GB/T 230.1-2009 "metallic materials Rockwell hardness

test - Part 1. Test methods (A, B, C, D, E, F, G, H, K, N, T scale) ", GB/T 230.2-2002" metallic materials Rockwell hardness test 2 Part I. hardness (A, B, C, D, E, F, G, H, K, N, T scale) test and calibration " GB/T 230.3-2002 "metallic materials Rockwell hardness test - Part 3. Standard hardness block (A, B, C, D, E, F, G, H, K, N, T scale) calibration ", GB/T 4340.1-2009" metallic materials - Vickers Hardness test - Part 1. Test methods ", ISO 6508-1:2005" metallic materials Rockwell hardness test 1 . Test methods ", ISO 6508-2:2005" metallic materials Rockwell hardness test - Part 2. durometer Verification and calibration ", ISO 6508-3:2005" metallic materials Rockwell hardness test - Part 3. Calibration of reference blocks Quasi "and the Rockwell hardness of the relevant documents terminology, symbols and definitions, as well as technical requirements, technical indicators and Testing method.

JJG 112-2003 of previously issued as follows.

--- JJG 112-1984;

--- JJG 112-1991.

Metal Rockwell hardness (A, B, C, D, E, F, G, H, K, N, T scale) test procedures

1 Scope

The order applies to fixed metal Rockwell hardness (A, B, C, D, E, F, G, H, K, N, T Ruler) of the initial verification, use and subsequent verification check.

2. References

This procedure references the following documents.

JJG 144-2007 standard dynamometer GB/T 4340.1-2009 metal materials - Vickers hardness test - Part 1. Test methods for dated references, only the dated edition applies to this procedure; undated reference documents Member, the latest edition (including any amendments) applies to this procedure.

3 Overview

Metal Rockwell hardness (hereinafter referred to as hardness) suitable for measuring the hardness of various metal materials. Its original test Reason is. In the initial test force F_0 and total test force F has the role of the diamond cone indenter (or predetermined diameter ball Indenter) into the surface of the sample, removable main test force F_1 , measuring the residual indentation depth h retention time of initial test force.

Rockwell and Rockwell hardness scale is calculated in Table 1.

Table 1 Rockwell hardness scale

hardness

Staff

Indenter type

Preliminary test force F0/N Main test force F1/N Total test force F/N Hardness values the formula Scope A diamond cone B $\phi 1.5875\text{mm}$ ball C diamond cone D diamond cone E $\phi 3.175\text{mm}$ ball F $\phi 1.5875\text{mm}$ ball G $\phi 1.5875\text{mm}$ ball H $\phi 3.175\text{mm}$ ball K $\phi 3.175\text{mm}$ ball 98.07 490.3 588.4 882.6 980.7 882.6 980.7 882.6 980.7 490.3 588.4 490.3 588.4 100- h0.002 130 h0.002 100- h0.002 130- h0.002 (20 ~ 88) HRA (20 ~ 100) HRBW (20 ~ 70) HRC (40 ~ 77) HRD (70 ~ 100) HREW (60 ~ 100) HRFW (30 ~ 94) HRGW (80 ~ 100) HRHW (40 ~ 100) HRKW