Term of Validity of Certificates for Testing Machines and Force Meters

Amended Rules and Guidance

Rules for Testing Machines
Guidance for Testing Machines

Reason for Amendment

Although the Rules for Testing Machines specify that both the inspection date and term of validity are to be listed on the certificates for testing machines and force meters (e.g. term of validity for testing machines and associated equipment: 12 months; term of validity force meters: 24 months), certificates issued by the Japan Calibration Service System (JCSS) only list the calibration date (i.e. the inspection date), and the JCSS certificate format is the one that is most commonly used with respect to certificates for testing machines and force meters.

Accordingly, relevant requirements were amended to specify that the term of validity of certificates for testing machines and force meters is not required to be listed on such certificates in accordance with the format used for certificates issued by the JCSS.

In addition to the above, relevant requirements were amended to clarify that it is necessary to refer to the most recently published of the Japanese Industrial Standards (JIS) with respect to calibration methods for testing machines and force meters.

Outline of Amendment

(1) Amended requirements related to the term of validity.
(2) Clarified that it is necessary to refer to the most recently published version of the JIS with respect to calibration methods for testing machines and force meters.

“Rules for testing machines” has been partly amended as follows:

Chapter 1 GENERAL

1.2 Inspections

1.2.4 Execution and Due Date of Inspection*

Sub-paragraph -2(1) has been amended as follows.

2 The renewal inspection specified in **Chapter 2** and subsequent Chapters is to be carried out according to the type of testing machines, associated equipment and calibration devices (hereinafter referred to as the “testing machines and equipment”) in the following cases **(1)** through **(3)**, in order to verify whether the requirements specified in the relevant Chapters have been complied with or not. However, records of the maintenance works on important components done prior to undergoing a renewal inspection are presented, and when the quality management for the maintenance works are to be deemed appropriate by the Society, a part of the inspections are to be omitted. In case of **(2)** and **(3)**, the Society may require to carry out an inspection equivalent to the initial inspection.

(1) When ~~the validity of~~ certificate is to be renewed.
(2) When the safety device and principal parts of testing machines, associated equipment and calibration devices are to be changed.
(3) When testing machines and associated equipment are to be reinstalled (excluding hardness testing machines).

1.3 Certificates, etc.

Title of Paragraph 1.3.1 has been amended as follows.

1.3.1 Issue of Certificates, etc.~~*~~

1 Certificates, inspection records and identification plates will be issued by the Society for the testing machines that have been verified to be in compliance with the Rules.
2 Certificates and inspection records will be issued by the Society for force proving instruments and reference test pieces that have been verified to be in compliance with the Rules.
3 The owner may apply for reissuance of a certificate when the valid certificate is lost or damaged.

Paragraph 1.3.3 has been amended as follows.

1.3.3 ~~Validity~~ Renewal of Certificates

1 The ~~validity~~ renewal interval of a certificate for a testing machine and associated equipment is, in principle, not to exceed twelve *months*.
2 The ~~validity~~ renewal interval of a certificate for a force proving instrument used for verifying material testing machines is, in principle, not to exceed twenty-four *months*.

“Guidance for testing machines” has been partly amended as follows:

Chapter 1 GENERAL

1.3 Certificates, etc.

Paragraph 1.3.1 has been deleted.

~~**1.3.1 Issue of Certificates, etc.**~~
~~**1** Certificates are shown in **Form TM2-1, Form TM2-2** and **Form TM2-3.**~~
~~**2** When a inspection is carried out on only a part of the capacity, based on the provisions specified in **1.2.1-2 of the Rules**, the partial capacity is to be marked on the identification plate of the machine.~~

1.3.5 Markings

Sub-paragraph -4(1) has been amended as follows.

4 “Particulars as deemed appropriate by the Society” specified in **1.3.5-2 of the Rules** are to be as follows:

(1) Force proving instruments
  (a) Maximum capacity
  (b) Manufacture’s name
  (c) Date of Manufacture
  (d) ID. No.
  (e) Date of calibration
  ~~(f) Date of validity~~

Chapter 2 TENSILE TESTING MACHINES AND COMPRESSION TESTING MACHINES

2.2 Construction

Paragraph 2.2.1 has been amended as follows.

2.2.1 Construction

1 The expression "when the Society deems appropriate" referred to in **2.2 of the Rules** means the case of a testing machine in which a test force is applied manually.

2 The "extensometer" specified in **2.2.1-5 of the Rules** is to comply with the provisions for "Class of machine 2" of ~~"~~*ISO* 9513~~: Metallic materials - Calibration of extensometers used in uniaxial testing"~~. The aforementioned standard, in principle, refers to the most recent version published.

3 The "loading speed control device" referred to in **2.2.1-6 of the Rules** is to be approved by the Society on the basis of the inspection plan submitted by the applicant.

2.4 Initial Inspection and Renewal Inspection

2.4.1 General

Sub-paragraph (3) has been amended as follows.

(3) A test force indicating or recording device is to allow easy readings of the force applying to a test specimen, and is to be capable of indicating or recording a force at all time and without remarkable lead or lag following up the changes of the force. The wording "to allow easy readings of the force applied to a test specimen" means to be provided with a force indicating pointer, scale plate or a recording pen and paper in accordance with the provisions of *ISO* 7500-1~~, Metallic materials - Verification of static uniaxial testing machines - Part 1: Tensile/compression testing machines~~ for the force indicating device in which a test force is indicated on a scale plate with a load indicating pointer, or the force recording device in which a force is read out on recording paper. The aforementioned standard, in principle, refers to the most recent version published.

2.4.2 Inspection of Function

Sub-paragraphs -3 and -4 have been amended as follows.

3 The wording "the procedures deemed appropriate by the Society" specified in **2.4.2-5 of the Rules** means procedures in accordance with the provisions of ~~"~~*ISO* 7500/1~~, Metallic materials - Verification of static uniaxial testing machines - Part 1: Tensile/compression testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

4 "The accuracy" specified in **2.4.3-5 of the Rules** is to comply with the provisions for "Class of machine 1" of ~~"~~*ISO* 7500/1~~, Metallic materials - Verification of static uniaxial testing machines - Part 1: Tensile/compression testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

Chapter 3 CHARPY PENDULUM IMPACT TESTING MACHINES

3.4 Initial Inspection

3.4.2 Inspection of Function

Sub-paragraphs -4 and -5 have been amended as follows.

4 The wording "the procedures deemed appropriate by the Society" specified in **3.4.2-2 of the Rules** means procedures specified in ~~the provisions 7. "Foundation/installation", 8. "Machine frame work", 9. "Pendulum", 10. "Anvil and supports" and 11. "Indicating equipment" of "*ISO* 148-2~~, ~~Metallic materials - Charpy pendulum impact test - Part 2: Verification of testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

5 The wording "the procedures deemed appropriate by the Society" specified in **3.4.2-3 of the Rules** means the procedures in t~~he provisions 12. "Indirect verification by use of reference test pieces" and 14. "Error and repeatability" of "*ISO* 148-2~~, ~~Metallic materials - Charpy pendulum impact test - Part 2: Verification of testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

Chapter 4 HARDNESS TESTING MACHINES

4.2 Brinell Hardness Testing Machines

Paragraph 4.2.3 has been amended as follows.

4.2.3 Initial Inspection

1 Construction and installation

"The procedures deemed appropriate by the Society" specified in **4.2.3-1 of the Rules** are to be as follows:

(1) The horizontalness of a testing machine is to be within 1/1000, as a standard.

(2) The testing machine is to be installed on a foundation or floor.

(3) "General condition" specified in ~~the provision 3 of "~~*ISO* 6506-2~~, Metallic materials - Brinell hardness test - Part 2: Verification of testing machines"~~ is to be confirmed. The aforementioned standard, in principle, refers to the most recent version published.

2 In the "construction" referred to in **4.2.3-1 of the Rules**, the rigidity of the machine frame and anvil is to be measured in terms of the displacements of the machine frame and anvil under the condition in which a test force of 29420 *N* being applied. The standard levels of sufficient rigidity are to be as follows:

(1) In the case of a "C-shape" machine frame, the displacement measured on the loading axis center line is to be within 0.5 *mm*.

(2) In the case of a "gate" type machine frame with a 3-*meters* span or thereabouts, displacement measured on the loading axis center line is to be within 2 *mm*. In the gate type machine frames, it is recommended that the construction is such that the backlash of the elevating screws can be eliminated.

3 Direct verification

(1) The wording "the procedures deemed appropriate by the Society" specified in **4.2.3-3 of the Rules** means the procedures specified in ~~the provision 4. "Direct verification" of "~~*ISO* 6506-2~~, Metallic materials - Brinell hardness test - Part 2: Verification of testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

(2) The wording "force proving instruments specified otherwise by the Society" specified in **4.2.3-3(1) of the Rules** means those in accordance with the provisions in **2.4.2-2.**

(3) In **4.2.3-3(1) of the Rules**, if plural weights are used under the same nominal test force, the dispersion of their masses is to be confirmed within 0.1 % of the mean of their masses.

4 Indirect verification

(1) The wording "the procedures deemed appropriate by the Society" specified in **4.2.3-4 of the Rules** means the procedures specified in ~~the provision 5. "Indirect verification" of "~~*ISO* 6506-2~~, Metallic materials - Brinell hardness test - Part 2: Verification of testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

(2) The wording "reference blocks specified otherwise by the Society" specified in **4.2.3-4 of the Rules** means the reference blocks verified in accordance with ~~"~~*ISO* 6506-3~~, Metallic materials - Brinell hardness test - Part3: Calibration of reference blocks"~~ by the Society or other firms deemed appropriate by the Society. The aforementioned standard, in principle, refers to the most recent version published.

4.3 Rockwell Hardness Testing Machines

Paragraph 4.3.3 has been amended as follows.

4.3.3 Initial Inspection

1 Construction and installation

"The procedures deemed appropriate by the Society" specified in **4.3.3-1 of the Rules** are to be as follows:

(1) The horizontalness of a testing machine is to be within 1/1000, as a standard.

(2) A testing machine is to be installed on an exclusive foundation provided with a shock absorber.

(3) "General condition" specified in ~~the provision 3. of "~~*ISO* 6508-2~~, Metallic materials - Rockwell hardness test - Part 2: Verification of testing machines (scale A, B, C, D, E, F, G, H, K, N, T)"~~ is to be confirmed. The aforementioned standard, in principle, refers to the most recent version published.

2 Direct verification

(1) The wording "the procedures deemed appropriate by the Society" specified in **4.3.3-3 of the Rules** means the procedures specified in ~~the provision 4. "Direct verification" of "~~*ISO* 6508-2~~, Metallic materials - Rockwell hardness test - Part 2: Verification of testing machines (scale A, B, C, D, E, F, G, H, K, N, T)"~~. The aforementioned standard, in principle, refers to the most recent version published.

(2) The wording "force proving instruments specified otherwise by the Society" specified in **4.3.3-3(1) of the Rules** means those in accordance with the provisions in **2.4.2-2.**

3 Indirect verification

(1) The wording "the procedures deemed appropriate by the Society" specified in **4.3.3-4 of the Rules** means the procedures specified in ~~the provision 5. "Indirect verification" of "~~*ISO* 6508-2~~, Metallic materials - Rockwell hardness test - Part 2: Verification of testing machines (scale A, B, C, D, E, F, G, H, K, N, T)"~~. The aforementioned standard, in principle, refers to the most recent version published.

(2) The wording "reference blocks specified otherwise by the Society" specified in **4.3.3-4 of the Rules** means the reference blocks verified in accordance with ~~"~~*ISO* 6508-3~~, Metallic materials - Rockwell hardness test - Part 3: Calibration of reference blocks (scale A, B, C, D, E, F, G, H, K, N, T)"~~ by the Society or other firms deemed appropriate by the Society. The aforementioned standard, in principle, refers to the most recent version published.

4.4 Vickers Hardness Testing Machines

Paragraph 4.4.3 has been amended as follows.

4.4.3 Initial Inspection

1 Construction and installation

The wording "the procedures deemed appropriate by the Society" specified in **4.4.3-1 of the Rules** means the procedures to confirm the "General condition" specified in ~~the provision 3. of "~~*ISO* 6507-2~~, Metallic materials - Vickers hardness test - Part 2: Verification of testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

2 Direct verification

(1) The wording "the procedures deemed appropriate by the Society" specified in **4.4.3-3 of the Rules** means the procedures specified in~~ the provision 4. "Direct verification" of "~~*ISO* 6507-2~~, Metallic materials - Vickers hardness test - Part 2: Verification of testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

(2) The wording "force proving instruments specified otherwise by the Society" specified in **4.4.3-**

3(1) of the Rules means those in accordance with the provisions in **2.4.2-2**.

(3) In **4.4.3-3(1) of the Rules**, if plural weights are used under the same nominal test force, the dispersion of their masses is to be confirmed within 0.1 % of the mean of their masses.

3 Indirect verification

(1) The wording "the procedures deemed appropriate by the Society" specified in **4.4.3-4 of the Rules** means the procedures specified in ~~the provision 5. "Indirect verification" of "~~*ISO* 6507-2~~, Metallic materials - Vickers hardness test - Part 2: Verification of testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

(2) The wording "reference blocks specified otherwise by the Society" specified in **4.4.3-4 of the Rules** means the reference blocks verified in accordance with ~~"~~*ISO* 6507-3~~, Metallic materials - Vickers hardness test - Part 3: Calibration of reference blocks"~~ by the Society or other firms deemed appropriate by the Society. The aforementioned standard, in principle, refers to the most recent version published.

4.5 Shore Hardness Testing Machines

Paragraph 4.5.3 has been amended as follows.

4.5.3 Initial Inspection and Renewal Inspection

(1) The wording "the procedures deemed appropriate by the Society" specified in **4.5.3-2 of the Rules** means the procedures specified in ~~the provision 4. "Indirect verification" of "~~*JIS B* 7731~~, Shore hardness test — Verification of testing machines"~~. The aforementioned standard, in principle, refers to the most recent version published.

(2) The wording "reference blocks specified otherwise by the Society" specified in **4.5.3-2 of the Rules** means the reference blocks verified in accordance with ~~"~~*JIS B* 7731~~, Shore hardness test — Calibration of reference blocks"~~ by the Society or other firms deemed appropriate by the Society. The aforementioned standard, in principle, refers to the most recent version published.

Chapter 5 FORCE PROVING INSTRUMENTS USED FOR THE VERIFICATION OF UNIAXIAL TEST MACHINES

5.3 Initial Inspection and Renewal Inspection

Paragraph 5.3.1 has been amended as follows.

5.3.1 General

The following verifications are to be carried out in accordance with *ISO* 376~~: Metallic materials - Calibration of force-proving instruments used for the verification of uniaxial testing machines~~ in order to verify "effectiveness of the device and construction" specified in **5.3.1-2 of the Rules**. The aforementioned standard, in principle, refers to the most recent version published.

(1) Verification relating to application of forces
(2) Verification for resolution of indicator
(3) Verification of minimum force

Paragraph 5.3.2 has been amended as follows.

5.3.2 Inspection of Function

1 "Overloading test" specified in **5.3.2-1 of the Rules** may be substituted by a manufacturer's test carried out prior to the delivery or service.

2 The wording "the procedures deemed appropriate by the Society" specified in **5.3.2-2 of the Rules** means the procedures specified in *ISO* 376~~: Metallic materials - Calibration of force-proving instruments used for the verification of uniaxial testing machines~~. And the force-proving instruments is to comply with the provisions for "class 1" of this standard. The aforementioned standard, in principle, refers to the most recent version published.

Chapter 6 REFERENCE TEST PIECES FOR CHARPY PENDULUM IMPACT TESTING MACHINES

Section 6.2 has been amended as follows.

6.2 Material

The wording “Material deemed appropriate by the Society” specified in **6.2 of the Rules** means the material specified in ~~the provisions 6.1 of~~ *ISO* 148-3~~: Metallic materials - Charpy pendulum impact test - Part 3: Preparation and characterization of Charpy V reference test pieces for verification of test machines~~. The aforementioned standard, in principle, refers to the most recent version published.

Section 6.3 has been amended as follows.

6.3 Shape and Dimensions

The wording “the provisions as deemed appropriate by the Society” specified in **6.3.1 of the Rules** means ~~the provisions 6.2 of~~ *ISO* 148-3~~: Metallic materials - Charpy pendulum impact test - Part 3: Preparation and characterization of Charpy V reference test pieces for verification of test machines~~. The aforementioned standard, in principle, refers to the most recent version published.

6.4 Inspection of Reference Test Pieces

Paragraph 6.4.2 has been amended as follows.

6.4.2 Determination of Reference Energy by Impact Test

The wording “the procedures deemed appropriate by the Society” specified in **6.4.2 of the Rules** means the procedures specified in ~~the provisions 6.4 of~~ *ISO* 148-3~~: Metallic materials - Charpy pendulum impact test - Part 3: Preparation and characterization of Charpy V reference test pieces for verification of test machines~~. The aforementioned standard, in principle, refers to the most recent version published.

Form TM2-1, TM2-2 and TM2-3 have been deleted.

~~Form TM2-1~~

NIPPON KAIJI KYOKAI

Certificate of Testing Machine
試 験 機 検 査 証 明 書

No. *Date :*

THIS IS TO CERTIFY *that the following testing machine was inspected on by the undersigned surveyor to the Nippon Kaiji Kyokai, in accordance with the requirements of the "Rules for the Testing Machines", and was found to be satisfactory.*
下記試験機は，　年　月　日，本会検査員によって，本会試験機規則に基づいて検査を受け，同規則に適合したと認められた。

Type :
型式

Capacity :
容量

Manufacturer :
製造者

Manufacturing date :
製造年月　年　月

Manufacturing No. :
製造番号

Owner's name and address :
所有者名及び住所

Place of inspection :
検査場所

Remark :
備考

For identification, inspection mark and number were stamped as follows:
検査記章及び番号は，以下のとおり。

Surveyor,
検査員

This certificate will remain in force until the
本証明書は，　年　月　日まで有効である。

~~Form TM2.2~~

NIPPON KAIJI KYOKAI

Certificate of Force Proving Instrument
力 計 検 査 証 明 書

No. *Date :*

THIS IS TO CERTIFY *that the following force proving instrument was inspected on by the undersigned surveyor to the Nippon Kaiji Kyokai, in accordance with the requirements of the "Rules for the Testing Machines", and was found to be satisfactory.*

下記力計は，　年　月　日，本会検査員によって，本会試験機規則に基づいて検査を受け，同規則に適合したと認められた。

Type & Mfg. No. : *Capacity* :
力計の種類及び製造番号　容量

Manufacturer :
製造者

Manufacturing date :
製造年月　年　月

Owner :
所有者

Remark :
備考

Characteristic constant ;
指示値は，下記のとおりである。

Force (*kN*) 試験力	constant 定数 increase 増加	decrease 減少	Force (*kN*) 試験力	constant 定数 increase 増加	decrease 減少

For identification, inspection mark and number were stamped as follows:
検査記章及び番号は，以下のとおり。

Surveyor,
検査員

This certificate will remain in force until the
本証明書は，　年　月　日まで有効である。

~~Form TM2-3~~

NIPPON KAIJI KYOKAI

Certificate of Reference Test Pieces for Charpy Pendulum Impact Testing Machines

シャルピー振子式衝撃試験機の検証用 基準試験片 検査証明書

No. *Date :*

THIS IS TO CERTIFY *that the following reference test pieces for Charpy pendulum impact testing machines were inspected on by the undersigned surveyor to the Nippon Kaiji Kyokai, in accordance with the requirements of the "Rules for the Testing Machines", and were found to be satisfactory.*

下記シャルピー振子式衝撃試験機の検証用基準試験片は，　　年　　月　　日，本会検査員によって，本会試験機規則に基づいて検査を受け，同規則に適合したと認められた。

Name of supplier 基準試験片供給者	:				
Lot No. ロット番号	:				
Manufacturing date ~~製造年月~~	:	年　月			
Level of energy エネルギーレベル	:	☐ Low Energy 低エネルギー A_s <30	☐ Middle Energy 中エネルギー 30≦ A_s <110	☐ High Energy 高エネルギー 110≦ A_s <220	☐ Super-high Energy 超高エネルギー 220≦ A_s
Reference energy value A_s (*J*) 基準エネルギー A_s (*J*)	:				
Standard deviation 標準偏差	:				
Test temperature 試験温度	:				
Striker geometry 衝撃刃の形状	:	2*mm* – Striker 2*mm* 刃			
Reference machine 基準試験機	:				
Remark 備考	:				

Surveyor,
検査員