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(JSNDI/JSA)

**Non-destructive testing—Magnetic
particle testing—Part 3: Equipment**

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In the event of any doubts arising as to the contents,
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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japanese Society for Non-Destructive Inspection (JSNDI)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently, **JIS Z 2320-3:2007** is replaced with this Standard, and **JIS Z 2321:1993** has been withdrawn and replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

JIS Z 2320 series consists of the following 3 parts under the general title “*Non-destructive testing—Magnetic particle testing*”:

Part 1: General principles

Part 2: Detection media

Part 3: Equipment

Non-destructive testing—Magnetic particle testing—Part 3: Equipment

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 9934-3:2015**, Edition 2, with some modifications of the technical contents in order to correspond to the conventionally used method.

The portions given dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard describes three types of equipment for magnetic particle testing:

- a) portable or transportable equipment;
- b) fixed installations;
- c) specialized testing systems for testing components on a continuous basis, comprising a series of processing stations placed in sequence to form a process line.

Equipment for magnetizing, demagnetizing, illumination, measurement, and monitoring are also described.

This Standard specifies the properties to be provided by the equipment supplier, minimum requirements for application and the method of measuring certain parameters. Where appropriate, measuring and calibration requirements and in-service checks are also specified.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 9934-3:2015 *Non-destructive testing—Magnetic particle testing—Part 3: Equipment* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are **IDT** (identical), **MOD** (modified), and **NEQ** (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS C 0920 *Degrees of protection provided by enclosures (IP Code)*

NOTE : Corresponding International Standard: IEC 60529 *Degrees of protection provided by enclosures (IP Code)* (IDT)

JIS G 3101 *Rolled steels for general structure*

JIS G 4051 *Carbon steels for machine structural use*

JIS Z 2300 *Terms and definitions of nondestructive testing*

JIS Z 2320-1 *Non-destructive testing—Magnetic particle testing—Part 1: General principles*

NOTE : Corresponding International Standard: ISO 9934-1 *Non-destructive testing—Magnetic particle testing—Part 1: General principles* (MOD)

JIS Z 2323 *Non-destructive testing—Penetrant testing and magnetic particle testing—Viewing conditions*

NOTE : Corresponding International Standard: ISO 3059 *Non-destructive testing—Penetrant testing and magnetic particle testing—Viewing conditions* (IDT)

2A Terms and definitions

For the purposes of this Standard, the terms and definitions given in **JIS Z 2300** apply.

3 Safety requirements

Safety requirements shall be as given in clause 5 of **JIS Z 2320-1**.

4 Types of devices

4.1 Portable electromagnets

4.1.1 General

Hand-held portable electromagnets (AC yoke magnet or yokes) produce a magnetic field between the two poles (when testing according to **JIS Z 2320-1**, DC electromagnets should only be used if agreed by the purchaser and the manufacturer).

Magnetization shall be determined by measuring the tangential field strength, H_t , at the centre of a line joining the centres of the pole faces of the electromagnet with pole extenders where used. The electromagnet with a pole spacing, s , is placed on a steel plate as shown in Figure 1. The plate shall have the dimensions (500 ± 25) mm $\times$ (250 ± 13) mm $\times$ (10 ± 0.5) mm and shall be of steel conforming to S20C or S25C specified in **JIS G 4051**, or SS400 specified in **JIS G 3101**.

Periodic functional checks may be carried out either by the method described above or by a lift test.

The electromagnet shall be capable of supporting a steel plate or rectangular bar conforming to S20C, S25C or SS400 and having a minimum mass of 4.5 kg, with the magnet poles set at their recommended spacing. The major dimension of the plate or bar shall be greater than the pole spacing, s , of the electromagnet.

NOTE : To lift a steel plate with a mass of 4.5 kg requires a lifting force of 44 N.