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

GB 5959.3-2008

Replacing GB 5959.3-1988

**Safety in electro-heat installations -- Part 3: Particular
requirements for induction and conduction heating and
induction melting installations**

电热装置的安全 第3部分：对感应和导电加热装置以及感应熔炼装置的特殊要求
(English Translation)

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Foreword

All technical contents of this section is mandatory.

GB 5959 "electric safety devices" has the following 13 sections.

--- Part 1. General requirements (GB 5959.1-2005, IEC 60519-1:2003, IDT);

--- Part 2. Particular requirements for arc furnace apparatus (GB 5959.2-2008, IEC 60519-4:2006, IDT);

--- Part 3. Particular requirements for induction and conduction heating apparatus and an induction melting apparatus (GB 5959.3-2008, IEC 60519-3:2005, IDT);

--- Part 4. Particular requirements (GB 5959.4-2008, IEC 60519-2:2006, IDT) resistance heating means;

--- Part 41. Particular requirements for resistance heating means for heating and melting glass --- means (GB 5959.41-2004, IEC 60519-21:1998, IDT);

Safety regulations plasma apparatus (GB 5959.5-1991, eqv IEC 60519-5.. 1980) --- first portion 5;

--- Part 6. Safety Specification Industrial microwave heating apparatus (GB 5959.6-2008, IEC 60519-6:2002, IDT);

--- Part 7. Particular requirements for the apparatus having the electron gun (GB 5959.7-2008, IEC 60519-7:2008, IDT);

--- Part 8. Particular requirements for electroslog remelting furnace (GB 5959.8-2007, IEC 60519-8:2005, IDT);

- Part 9. Particular requirements (GB 5959.9-2008, IEC 60519-9:2005, IDT) high-frequency dielectric heating apparatus;
- Part 10. for industrial and commercial heating systems special requirements (IEC 60519-10:2005, to be transformed) resistor profiling;
- Part 11. electromagnetic stirring of the liquid metal, the special requirements of the transport or pouring (GB 5959.11-2000, idt IEC 60519-11:1997);
- Part 13. Particular requirements for the heating apparatus having an explosive atmosphere (GB 5959.13-2008).

In addition to this standard an outer part 13, are used to develop each of IEC 60519 part "safe heating apparatus" corresponds. This is Part of 3 GB 5959.

This section is equivalent to using IEC 60519-3:2005 "Safety heating means Part 3. induction and conduction heating apparatus and an induction Particular requirements melter "(third edition, English).

For ease of use, for IEC 60519-3:2005, made in this section, the following editorial changes.

- "This standard" be replaced by "this section";
- deleted international standards foreword and preface.

This partial replacement GB 5959.3-1988 "safe third portion of the electrothermal device. induction and conduction heating and induction melting apparatus Special requirements "means, as compared with the latter the main technical changes are as follows.

- Press GB 5959.1-2005, expanding its scope, including not more than 3600V AC or DC voltage to the third section device of.

- Definition and GB/T 2900.23-2008 "Industrial Electrical heating device term" consistency.

- in the chapter, deleting "7 of the motor generator inverter unit of formula (variable frequency drive)", and "9 ferromagnetic double frequency" on the other two sections and chapters It relates to the two power related content, such as deleting the original 10.1. Due to technological advances, the two power has been eliminated.

2 Normative references

Terms of the following documents constitute provisions of this section by reference in this part of the GB 5959, dated references, All subsequent amendments (excluding corrections) or revisions do not apply to this section, however, encouraged to reach an agreement under this section Whether the parties to use the latest versions of these files, undated reference documents, the latest versions apply to this section.

GB/T 2900.23-2008 Electrotechnical term industrial heating means (IEC 60050-841:2004, IDT)

GB/T 3984.1-2004 induction heating Power capacitors Part 1: General (IEC 60110-1:1998, IDT)

GB 5959.1-2005 electric safety devices - Part 1: General requirements (IEC 60519-1:2003, IDT)

GB/T 6115.1-2008 Series capacitors for power systems - Part 1: General (IEC 60143-1:2004, MOD)

IEC 60364-4-41:2005 low voltage electrical installations Part 4-41. 1 safety Protection against electric shock)

1) adopt standard conditions. 4-41 GB 16895.21-2004 part Electrical installations of buildings. Protection for safety Protection against electric shock (currently valid version) (IEC 60364-4-41:2001, IDT).

3 Terms and Definitions

GB/T 2900.23-2008 and GB 5959.1-2005 established following terms and definitions apply to this section.

3.2

Current through the resistive heating material to be heated

3.1 Joule effect using electrical heating induced current

[GB/T 2900.23-2008,841-27-04]

3.3

Or conductive induction heating portion generating device

3.4

Induction heating means or induction melting apparatus, such as a coil or coil set, and generating a magnetic field for carrying an alternating current induced in the charge Current. [GB/T 2900.23-2008,841-27-48]

3.5

The conductive member of the heating station, with which the heating circuit is electrically connected in the charge.

3.6 Using

a crucible surrounded by one or more induction coils, heat generated in the charge directly or in a crucible containing the charge in the sense Should induction melting furnace or holding furnace. [GB/T 2900.23-2008,841-27-32]

3.7

Induction melting furnace or holding furnace induced by one or more of the refractory lining of the furnace configuration, into the furnace charge to be melted or heat and Configuring one or more channel inductor. [GB/T 2900.23-2008,841-27-30]

Inductor 4 heating 4.1 heating the high power sensor may be configured yoke (coil flux guide means), to guide the magnetic flux outside the induction coil to reduce the possibility of stray fields Heating the surrounding metal structure.

4 Heating inductor ---

Added to the high power heating inductor disposed about the requirements of the yoke (see 4.1);

Added cooling aspect heating inductor (including spare cooling source) technical requirements (see 4.3, 4.4);

Add the required configuration of the voltage limiting system (see 4.6).

--- 5 capacitor New requirements for discharge capacitors connected in series (see 5.4);

Requirements for liquid cooling of the capacitor to direct reference to the provisions of GB 5959.1-2005 in 6.2.8.

--- 6 frequency power He added the last paragraph, that the design should pay attention to a possible hazard due to the parallel resonance.

--- 7 solid drive Added to the event of failure due to the role of energy storage protection requirements.

--- 9 cable, wires and busbars New requirements for cables, wires and the busbar arrangement (see first paragraph 9.1). Another new action to avoid stray field requirements (see 9.1 third paragraph).

4.2

When the heating member due to wear or a sensor or to meet new production requirements need to be replaced, it should be carried out in accordance with manufacturer's instructions.