

JAPANESE
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STANDARD

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JIS C 0922 : 2002
(IEC 61032 : 1997)

**Protection of persons
and equipment by enclosures
for electrical apparatus—
Probes for verification**

ICS 13.180; 13.260; 29.020

Reference number : JIS C 0922 : 2002 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

This Standard has been made based on **IEC 61032 : 1997** *Protection of persons and equipment by enclosures—Probes for verification* for the purposes of making easy to compare this Standard with International Standards; to prepare Japanese Industrial Standard conforming with International Standards; and to propose a draft of International Standard which is based on Japanese Industrial Standard.

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Protection of persons and equipment by enclosures for electrical apparatus— Probes for verification

Introduction This Japanese Industrial Standard has been prepared based on **IEC 61032** *Protection of persons and equipment by enclosures—Probes for verification* published in 1997 as the second edition without any modification in technical contents.

The “Information” underlined with dots means the matters not stated in the International Standard.

1 General

1.1 Scope and object This Standard specifies details and dimensions of test probes intended to verify the protection provided by enclosures of electrical apparatus with regard to:

- protection of persons against access to hazardous parts inside the enclosure;
- protection of the equipment inside the enclosure against ingress of solid foreign objects.

The object of this Standard is:

- to bring together in one publication object probes and access probes currently specified in other standards, together with any necessary new probes;
- to guide technical committees in the selection of test probes;
- to encourage those concerned to specify test probes in accordance with those already specified in this Standard rather than modify details and dimensions;
- to limit the further proliferation of types of test probe.

Note : The International Standard corresponding to this Standard is as follows.

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**.

IEC 61032 : 1997 *Protection of persons and equipment by enclosures—Probes for verification* (IDT)

1.2 General recommendations When selecting probes, priority should be given to IP code probes.

The use of other probes, particularly probes which are not specified in this Standard, should be limited to cases where the use of an IP code probe is for some reason impractical.

Note : The selection of a test probe for a particular purpose is the responsibility of the relevant technical committees.

Application of the probes, test conditions, acceptance conditions and the procedure in case of conflicting test results are the responsibility of the relevant product committee.

Information : Certificates based on test probes conforming to **JIS C 0920** should remain valid.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. If the indication of the year of coming into effect is given to these referred standards, only the edition of indicated year constitutes the provision of this Standard but the revision and amendment made thereafter are not applied. The normative references without the indication of the year of coming into effect apply limiting only to the most recent edition (including amendments).

JIS B 0601 *Geometrical Product Specification (GPS)—Surface texture : Profile method—Terms, definitions and surface texture parameters*

Note : **ISO 4287-1** : 1984 *Surface roughness—Terminology—Part 1 : Surface and its parameters* is identical with the above **JIS**.

JIS C 0365 *Protection against electric shock—Common aspects for installation and equipment*

Note : **IEC 61140** *Protection against electric shock—Common aspects for installation and equipment* is identical with the above **JIS**.

JIS C 0920 *Tests to prove protection against ingress of water and degrees of protection against ingress of solid objects for electrical equipment*

Note : **IEC 60529** : 1989 *Degrees of protection provided by enclosures (IP Code)* is equivalent to the above **JIS**.

IEC 60050(826) : 1982 *International Electrotechnical Vocabulary (IEV)—Chapter 826 : Electrical installations of buildings*

3 Definitions For the purpose of this Standard the following principal definitions apply:

3.1 Enclosure A part providing protection of equipment against certain external influences and, in any direction, protection against direct contact (IEV 826-03-12).

Note : This definition taken from the International Electrotechnical Vocabulary (IEV) needs the following additional explanations:

- a) Enclosures provide protection of persons or livestock against access to hazardous parts.
- b) Barriers, shapes of openings or any other means—whether attached to the enclosure or formed by the enclosed equipment—suitable to prevent or limit the penetration of the specified test probes are considered as a part of the enclosure, except when they can be removed without the use of a key or tool (see 3.1 of Annex to **JIS C 0920**).

3.2 Hazardous part A part that is hazardous to approach or touch (see 3.5 of Annex to **JIS C 0920**).

3.2.1 Hazardous live part A live-part which, under certain conditions of external influences, can give an electric shock (see **3.5.1** of Annex to **JIS C 0920**).

3.2.2 Hazardous mechanical part A moving part, other than a smooth rotating shaft, that is hazardous to touch (see **3.5.2** of Annex to **JIS C 0920**).

3.2.3 Hazardous hot or glowing part A hot or glowing part that is hazardous to touch.

3.3 Access probe A test probe simulating in a conventional manner a part of a person or a tool, or the like, held by a person to verify adequate clearance from hazardous parts (see **3.8** of Annex to **JIS C 0920**).

3.4 Object probe A test probe simulating a solid foreign object to verify the possibility of ingress into an enclosure (see **3.9** of Annex to **JIS C 0920**).

3.5 IP code probe A test probe to verify the degrees of protection specified in **JIS C 0920**.

3.6 Other probe A test probe, different from IP code probes.

3.7 Adequate clearance for protection against access to hazardous parts A distance to prevent contact or approach of an access probe to a hazardous part (see **3.7** of Annex to **JIS C 0920**).

Note : The requirements to verify adequate clearance are specified in **JIS C 0920**.

4 Classification of test probes Test probes are classified as follows:

- a) according to their designation
 - IP code probes;
 - other probes;
- b) according to the kind of protection they are intended to check
 - access probes;
 - object probes;
- c) according to the specific hazard they are intended to check
 - probes mainly intended to be used to verify the protection of persons against access to hazardous live parts or hazardous mechanical parts;
 - probes specifically intended to be used to verify the protection of persons against access to hazardous mechanical parts;
 - probes mainly intended to be used to verify the protection of persons against access to internal parts involving thermal hazard, for instance internal hot or glowing parts;
 - probes intended to be used to verify the protection of equipment against ingress of solid foreign objects.

5 List of test probes The comparative list of test probes with their application is given in Table 1. Other publications should refer to a test probe of this Standard by means of its code (column 2) and short description (column 4), without specifying Figures of 1 to 17.

Table 1 List of test probes

1	2	3	4	5
Probe and application ³⁾	Probe code ¹⁾	Figure No.	Short description mm	Forces to be applied N
Access probes of JIS C 0920 (IP code) to verify protection of persons against access to hazardous live parts or hazardous mechanical parts	A	1	— Sphere: $\phi 50$ with handle	50
	B	2	— Jointed test finger	10
	C ²⁾	3	— Rod: $\phi 2.5$ — length 100	3
	D ²⁾	4	— Wire: $\phi 1.0$ — length 100	1
Object probes of JIS C 0920 (IP code) to verify protection of equipment against ingress of solid foreign objects	1	5	— Sphere: $\phi 50$	50
	2	6	— Sphere: $\phi 12.5$	30
Other access probes to verify protection of persons against access to hazardous live parts or hazardous mechanical parts	11	7	— Unjointed test finger	50
	12	8	— Cylindrical pin: $\phi 4$ — length 50	*
	13	9	— Conical pin: $\phi 3$ to 4 — length 15	*
	14	10	— Bar: 3×1	20
	15	—	— Deleted	—
	16	—	— Deleted	—
	17	11	— Wire: $\phi 0.5$	*
	18	12	— Small finger probe: $\phi 8.6$ — length 57.9	10
	19	13	— Small finger probe: $\phi 5.6$ — length 44	10
Other access probes to verify protection of persons against access to hazardous mechanical parts	31	14	— Cone: $\phi 110/60$	50
	32	15	— Rod: $\phi 25$	30
	33	—	— Deleted	—
Other access probes to verify protection of persons against access to hot or glowing parts	41	16	— Probe: $\phi 30$	*
	42	—	— Deleted	—
	43	17	— Bar: 50×5	*

* Without appreciable force.

¹⁾ Letter codes and the single digit codes are related to the IP code.

The first numeral of the two digit codes is related to the intended use of the probe as indicated at the beginning of the respective row.

The second numeral denotes a serial number within the group.

²⁾ Test probes C and D are also used to verify the protection of equipment against ingress of solid foreign objects having a diameter of 2.5 mm or greater and 1 mm or greater respectively.

³⁾ The table lists probes and their main application only; there may be other applications as defined by the relevant product standard.

Information: In the table “— Deleted” means such a fact that this item was specified in the first edition of IEC 61032 which is the International Standard corresponding to this Standard, but deleted in the second edition.

6 Test probes

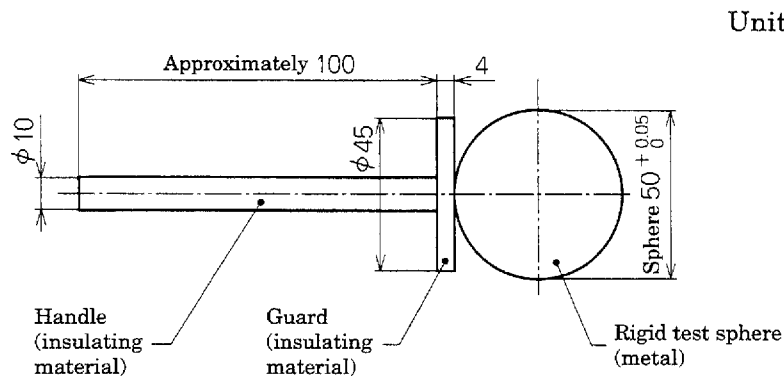
6.1 IP code probes

6.1.1 IP code probes are intended to verify

- the protection of persons against access to hazardous parts;
- the protection of the equipment against the ingress of solid foreign objects.

6.1.2 Access probes

a)



This probe is intended to verify the protection of persons against access to hazardous parts. It is also used to verify the protection against access with the back of the hand.

Figure 1 Test probe A