

**SRI LANKA STANDARD 841 : 1988**

UDC 621.317.736

**SPECIFICATION FOR  
STANDARD TEST FINGERS AND TEST PROBES**

**SRI LANKA STANDARDS INSTITUTION**



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AND TEST PROBES

SLS 841 : 1988

Gr. 9

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SRI LANKA STANDARDS INSTITUTION

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# SRI LANKA STANDARD

## SPECIFICATION FOR STANDARD TEST FINGERS AND TEST PROBES

### FOREWORD

This Sri Lanka Standard was authorised for adoption and publication by the Council of the Sri Lanka Standards Institution on 1988-12-12, after the draft finalized by the Drafting Committee on Standard Test Fingers and Test Probes had been approved by the Electrical Engineering Divisional Committee.

This Sri Lanka Standard supersedes SLS 278 : 1974 Standard test fingers and other accessibility test probes, which gave details and dimensions of a Flexible Test Finger, a Rigid Test Finger, a Test Pin, a Long Test Pin and a Test Cone. Since 1974 several improvements have taken place in the design of test fingers and probes internationally. Therefore this standard was formulated incorporating the latest developments and protection concepts covering electrical, mechanical or thermal hazard, to be in line with International Standards.

In order to avoid confusion with the previous issue of this standard all test fingers, pins and cones are renamed as follows :

Flexible Test Finger becomes Test finger II

Rigid Test Finger becomes Test finger III

Test Pin becomes Test pin I

Long Test Pin becomes Test pin II

Test Cone becomes Test probe

Two new test fingers namely Test finger I and Test finger IV are introduced

Two new test pins namely Test pin III and Test pin IV are introduced

Probing devices, serving purposes similar to those of test fingers and test pins, but not having same characteristic shape are included in this standard for the first time. These are the new Test cone, the Test blade the Test rod I and Test rod II.

The opportunity has been taken to include three further items of test equipment, namely a test chain, a test hook and a test ball which, although not strictly probing devices, are used for the same purpose, namely the checking of protection against a hazard.

This standard should be regarded as a catalogue, introduced in the interests of rationalization, which specifies the constructional details and intended method of use of preferred types of probing devices including test fingers. The selected probing device and details of the method of its use with a particular type of equipment should be given in the relevant standard for the equipment.

Attention is drawn to the fact that openings in the enclosures of household and similar electrical equipment which give access to live parts (or, in the case of Class II equipment, to parts separated from live parts only by functional insulation), are permissible only when necessary for the use and working of the equipment.

All values given in this standard are in SI units.

The assistance derived from the publications of the British Standards Institution in the preparation of this specification is gratefully acknowledged.

## 1 SCOPE

This standard specifies the details and dimensions of standard test fingers, probes and similar devices. It also prescribes their general use in testing for protection against electrical, mechanical or thermal hazard due to contact through openings in electrical equipment and accessories.

## 2 REFERENCES

BS 5304 Safeguarding of machinery.

## 3 CONSTRUCTION

### 3.1 General

Unless otherwise stated in this standard, tolerances on dimensions shown shall be as follows :

Angular dimensions	$\pm 5'$
Linear dimensions, less than 25 mm	+ 0.0 mm - 0.05 mm
25 mm or over	$\pm 0.2$ mm

A terminal shall be provided at the end of the handle, when it is necessary to check for contact by electrical means, to permit connection of an extra low voltage supply in order to operate an electrical contact indicator.

*NOTE - It is recommended that the voltage of the indicator circuit is not less than 40 volts.*

### 3.2 Test fingers

The Test fingers shall be constructed according to the details and dimensions given in Figs. 1 to 4 as follows :

Test finger I,	Fig. 1
Test finger II,	Fig. 2
Test finger III,	Fig. 3
Test finger IV,	Fig. 4

The handles and guard plates of Test fingers I, II and IV shall be of insulating material and the other parts shall be of copper alloy except for any friction washer that may be incorporated in the joints. Fingers I, II and IV shall be provided with two joints in the same plane and so constructed that they will remain in any pre-set position.

Test finger III is a rigid, non-jointed finger and may be of any suitable metal.

### 3.3 Test pins

The Test pins shall be constructed according to the details and dimensions given in Figs. 5 to 8 as follows :

Test pin I,	Fig. 5
Test pin II,	Fig. 6
Test pin III,	Fig. 7
Test pin IV,	Fig. 8

The handles and guard plates (where fitted) shall be of insulating material. The actual pin shall be of any suitable metal.

### 3.4 Test blade

The Test blade shall be constructed according to the details and dimensions given in Fig. 9. The handle shall be of insulating material. The blade itself shall be of any suitable metal.

### 3.5 Test probe

The Test probe shall be constructed according to the details and dimensions given in Fig. 10. The probe shall be of any suitable material.

### 3.6 Test rods

The Test rods shall be constructed according to the details and dimensions given in Figs. 11 and 12 as follows :

Test rod I,	Fig. 11
Test rod II,	Fig. 12

They shall be of wood or other suitable material. For ease of manipulation a handle of smaller diameter may be provided.

### 3.7 Test chain

The Test chain shall be of any suitable metal, and shall have a diameter of 2 mm. It shall consist of small links and be of the endless type. In use the chain shall be arranged to take up the form shown in Fig. 13, unless otherwise specified.

### 3.8 Test hook

The Test hook shall be of steel and shall have the dimensions and shape shown in Fig. 14.

### 3.9 Test ball

The Test ball shall be of any suitable metal and shall be of the dimensions shown in Fig. 15. A ball as used in a standard ball bearing is suitable.

### 3.10 Test cone

The Test cone shall be of wood or other suitable material and shall be constructed according to the details and dimensions given in Fig. 16.

## 4 APPLICATION

### NOTES

1. *The following clauses giving the present applications of test fingers and other probing devices are not intended to preclude their use in other applications, details of which would then appear in the standard relevant to the equipment being considered.*
2. *In the case of test fingers it is not intended that joints should be bent in opposite directions.*

### 4.1 General methods of application

Unless otherwise specified, fingers and probes are applied as dimensional gauges, and care is taken not to distort the parts being checked.

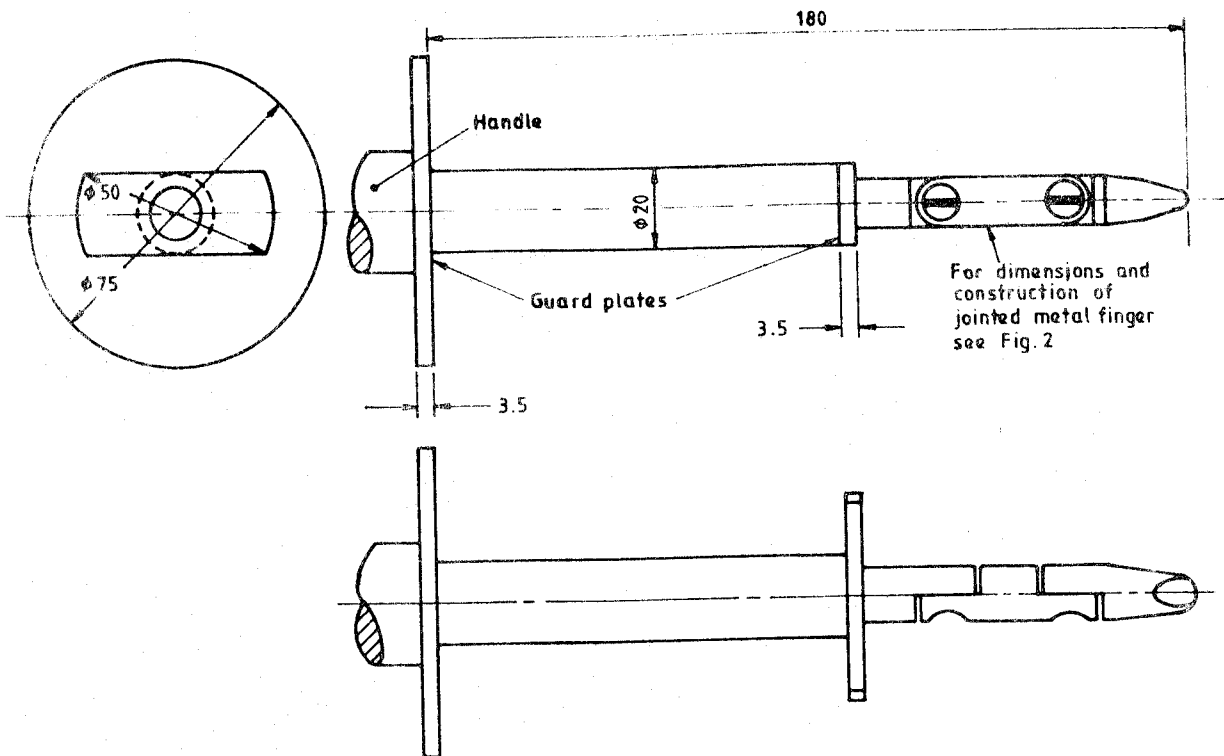
#### 4.1.1 Test finger I

The Test finger I is intended to be used to explore, in the equipment under test, all cavities and openings into which it shall be inserted in every possible position. It is used to prove the inaccessibility of

- a) parts which become live when the equipment is connected to the mains, or
- b) parts of Class II appliances separated from live parts by functional insulation only.

*NOTE - It has been agreed by the International Commission on Rules for the approval of Electrical Equipment (CEE) that this finger should be used as the standard test finger in testing for protection against electric shock.*





*Dimensions in millimetres*

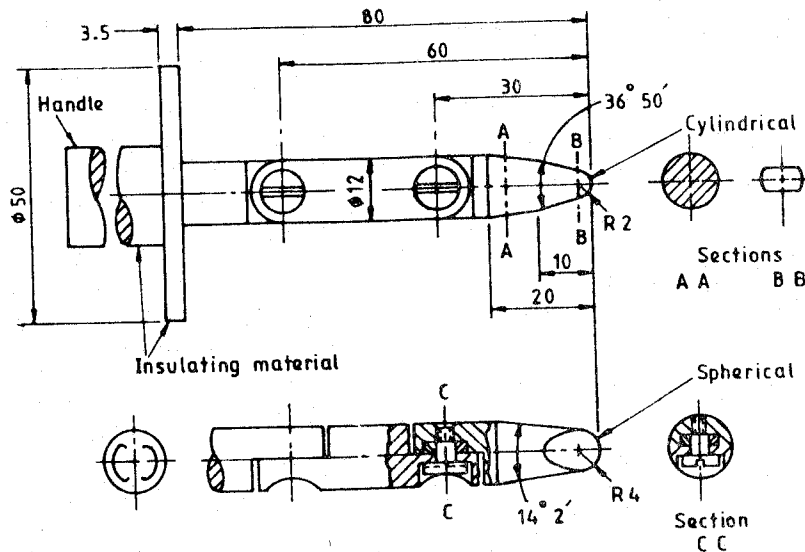
*NOTE - The size of the handle is immaterial*

FIGURE 1 - Test finger I

#### 4.1.2 Test finger II

The Test finger II is intended to be used in the same manner as Test finger I, but for checking the inaccessibility of moving parts. The possibility of using Test finger I in place of this finger should be considered.

*NOTE - It has been agreed by CEE that this finger should be used as the standard test finger in testing for mechanical hazard. Its use has also been agreed by International Electrotechnical Commission (IEC) and by CEE (for telecommunication equipment) as a standard test finger in testing for protection against electric shock.*



*Dimensions in millimetres*

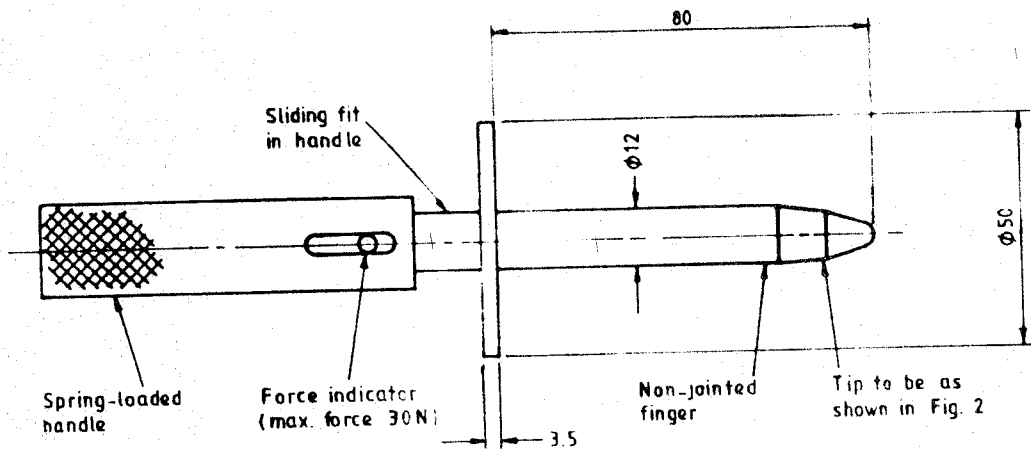
**FIGURE 2 - Test finger II**

#### 4.1.3 Test finger III

The Test finger III is an unjointed test finger for checking the rigidity of guards. It is intended to be applied, with a maximum force of 30 N, to any aperture where the entry of the tip of Test finger I has been prevented. If Test finger III enters the aperture and touches live parts, the appliance is considered not to meet the requirements. If it enters beyond the tip without touching live parts, the test with Test finger I is repeated, this being pushed, if necessary, through the aperture and bent into any position. Care should be taken to avoid wedge or lever action when applying Test finger III.

## NOTES

1. In testing some appliances Test finger III may be applied around any opening or at any place where deformation may cause an opening, at the same time as Test finger I is applied, without force, to determine if live parts have become accessible.
2. The use of this finger has been agreed by the IEC and the CEE.



Dimensions in millimetres

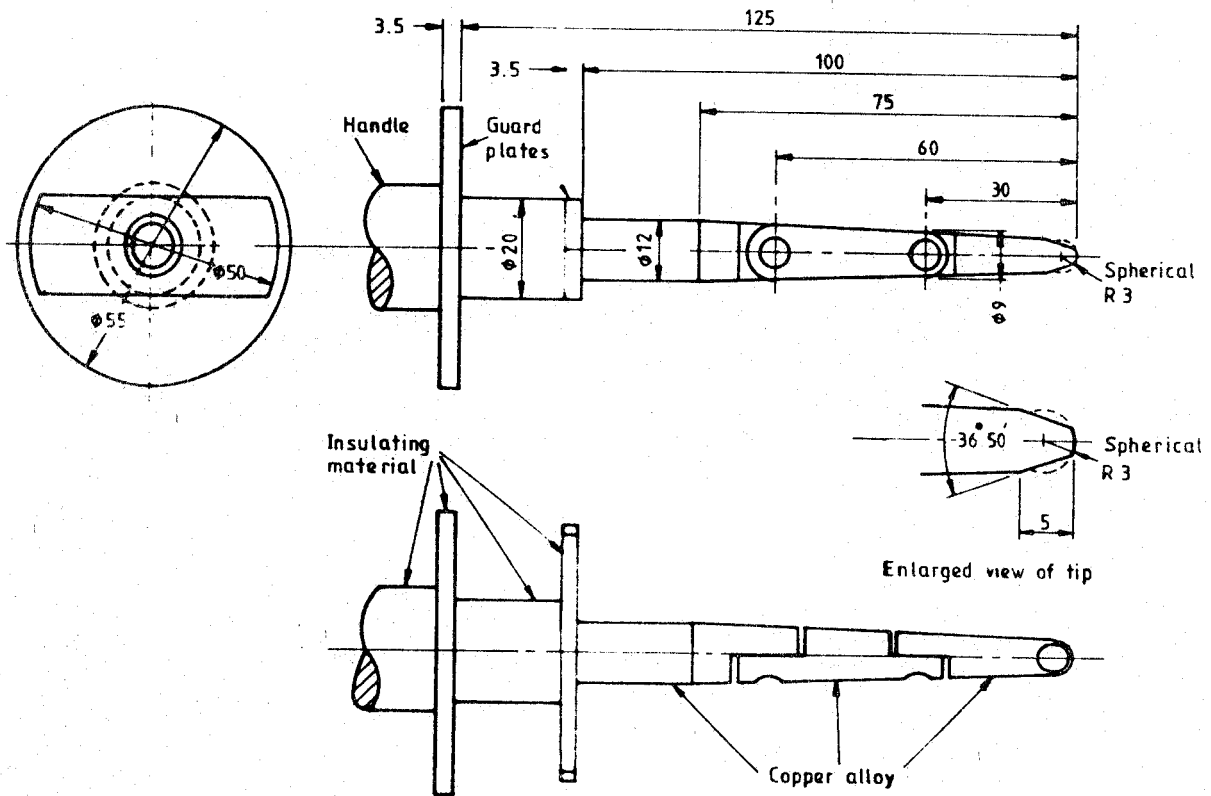
FIGURE 3 - Test finger III

4.1.4 Test finger IV

The Test finger IV is intended to meet the standard of protection implied by the recommendations of BS 5304 and is included as a guide to manufacturers who have to meet these requirements.

NOTE - This finger incorporates the following deviations from Test finger I and II which are not acceptable for the purpose of meeting the recommendations of BS 5304.

- a) The constant diameter probe in front of the first guard plate is replaced by a tapered probe.
- b) The distance of the first guard plate from the tip is increased to 100 mm.
- c) The diameter of the second guard plate is decreased to 55 mm and its distance from the tip decreased to 125 mm.



Dimensions in millimetres

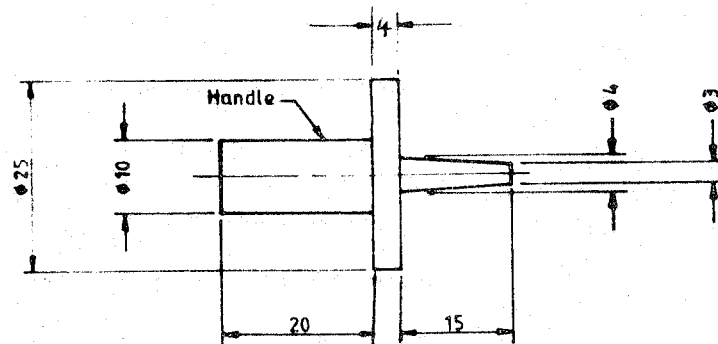
NOTE - The size of the handle is immaterial.

FIGURE 4 - Test finger IV

#### 4.1.5 Test pin I

The Test pin I is intended to be inserted into all holes in insulating material and in unearthed metal parts in Class II appliances to prove the inaccessibility of all live parts.

*NOTE - The use of this pin has been agreed by the CEE as a test pin for checking apertures,*



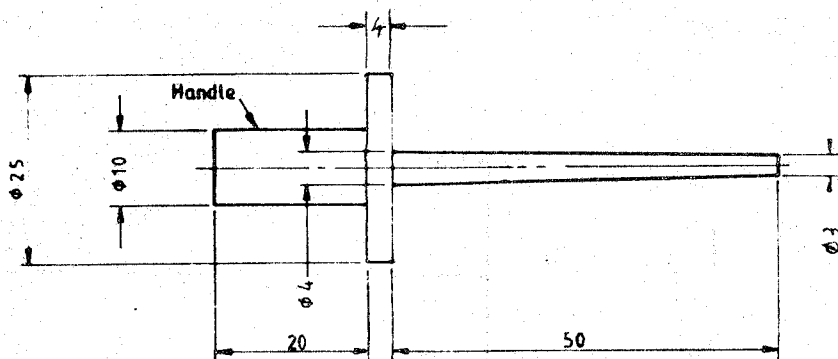
*Dimensions in millimetres*

FIGURE 5 - Test pin I

#### 4.1.6 Test pin II

The Test pin II is intended to be used for the same purpose as Test pin I but in those equipments or appliances requiring a more onerous test, this pin being longer than Test pin I.

*NOTE - It has been agreed by the CEE that this pin should be used as a long test pin to check the protection of certain heating elements.*



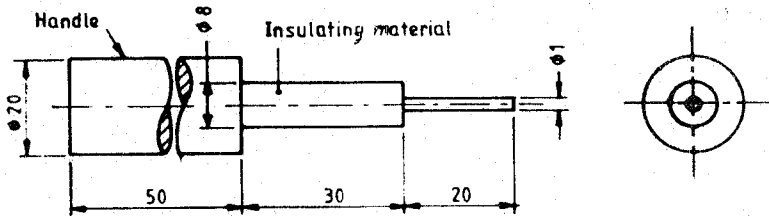
*Dimensions in millimetres*

FIGURE 6 - Test pin II

4.1.7 Test pin III

The Test pin III is intended to be used to prove the inaccessibility of live parts in equipment or appliances for which it is deemed necessary to use a pin of smaller diameter than that of Test pin I or II. It is used to test for protecting against electric shock.

NOTE - The use of this pin has also been agreed by IEC and CEE as a test pin for terminal devices, normally operating at less than 34 V, which accept single pole plugs or bare wires.

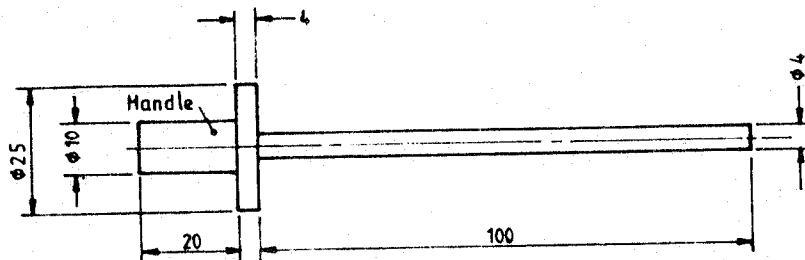


Dimensions in millimetres

FIGURE 7 - Test pin III

4.1.8 Test pin IV

The Test pin IV is intended to be used to check the protection within appliances against suspended foreign matter introduced within the appliance. It is inserted vertically through ventilation and other holes over live parts. It is also intended to be inserted into holes giving access to preset controls which require the use of a screwdriver or similar tool. It is used to test for protection against electric shock.

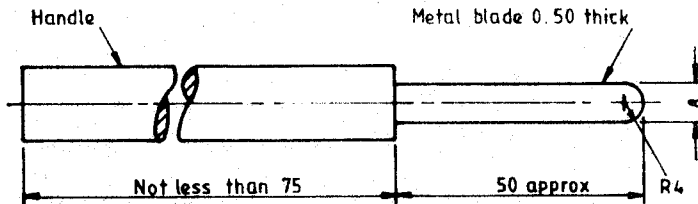


Dimensions in millimetres

FIGURE 8 - Test pin IV

#### 4.1.9 Test blade

The Test blade is intended to be used to prove the inaccessibility of live parts in equipment and appliances against the ingress of thin foreign matter. It is used, for example, to check the protection of lamp holders in Christmas tree lighting sets against the ingress of metallic tinsel foil.



*Dimensions in millimetres*

*NOTE - The other dimensions of the handle are immaterial*

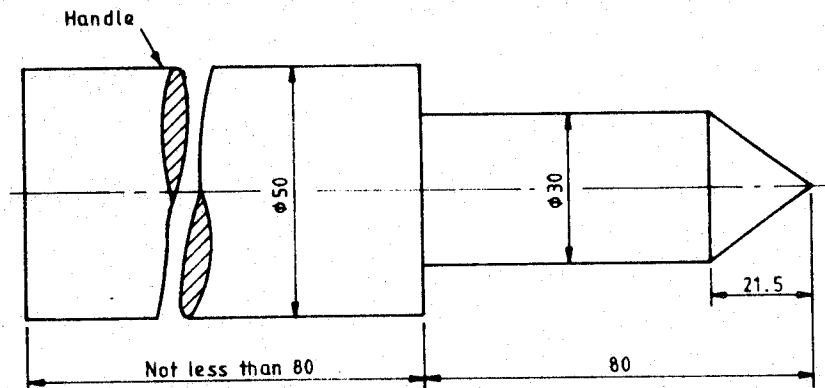
FIGURE 9 - Test blade

#### 4.1.10 Test probe

The use of this Test probe is mandatory for testing electric fires to prove compliance with the Statutory requirements of the Heating Appliances (Fireguards) Regulations.

It is intended to be inserted through the apertures of the guard and around the guard of heating appliances to check that the guarding of elements which glow visibly in use is satisfactory.

*NOTE - The use of this Test probe has been agreed by CEE for checking the inaccessibility of heating elements.*

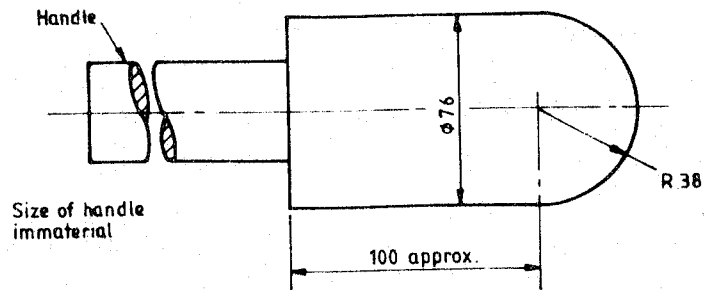


*Dimensions in millimetres*

FIGURE 10 - Test probe

4.1.11 Test rod I

The Test rod I is intended to be used to determine, for example, the degree of accessibility of heated surfaces of electric heating appliances for which a certain value of temperature rise is specified in the relevant standard.

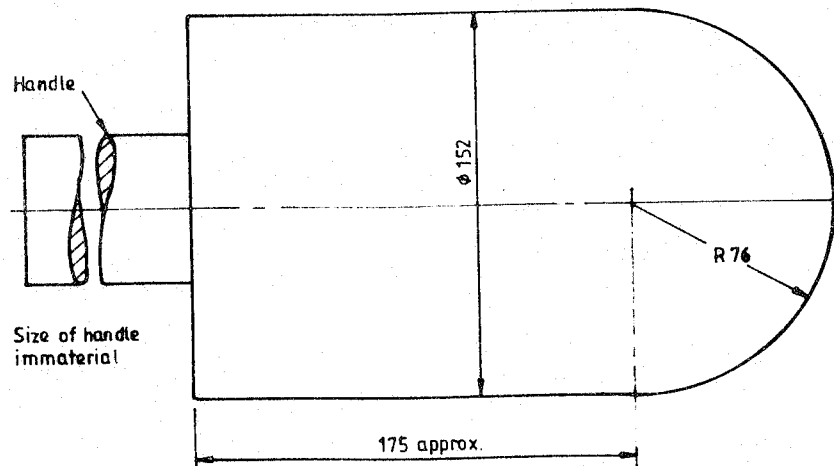


*Dimensions in millimetres*

FIGURE 11 - Test rod I

4.1.12 Test rod II

The Test rod II is intended to be used for the same purpose as Test rod I, but when a greater degree of accessibility of the surface being examined is acceptable.



*Dimensions in millimetres*

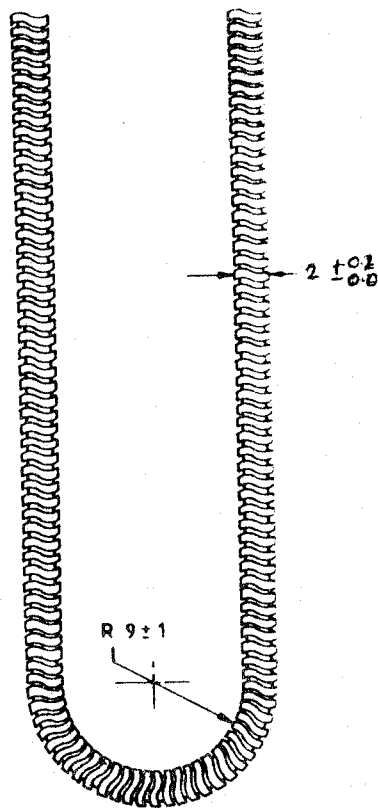
FIGURE 12 - Test rod II



#### 4.1.13 Test chain

The Test chain is intended to be used to prove the inaccessibility of live operating shafts of the controls of domestic sound and vision equipment and their fixing screws. During the test the chain shall take up the form shown in Fig. 13 unless otherwise specified.

NOTE - The use of this Test chain has been agreed by IEC for testing the protection of live operating shafts.



Dimensions in millimetres

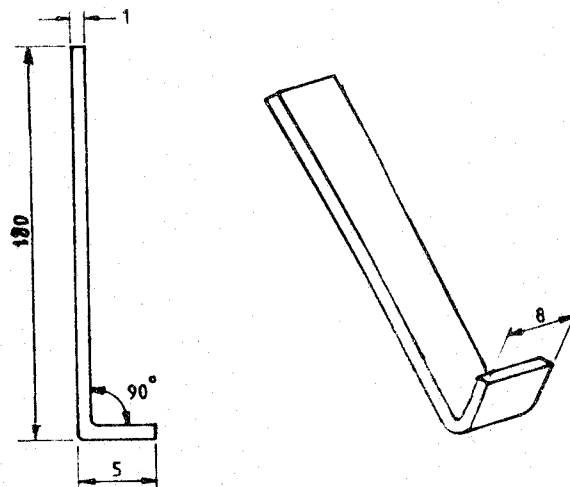
FIGURE 13 - Test chain

4.1.14 Test hook

The test hook is intended to be used to check the enclosures of appliances, such as domestic sound and vision equipment for resistance to external forces at elevated temperatures.

It is applied to all possible points and a force is directed outwards for a particular time.

NOTE - The use of this Test hook has been agreed by IEC for checking resistance to heat with external forces.



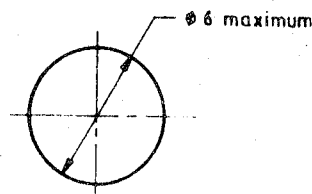
Dimensions in millimetres

FIGURE 14 - Test hook

4.1.15 Test ball

The test ball is intended to be used to prove the inaccessibility of live parts in equipment and appliances against the entry of small parts into airways.

NOTE - It has been agreed by the CEE that this ball should be used for checking openings adjacent to live parts of portable motor - operated tools.



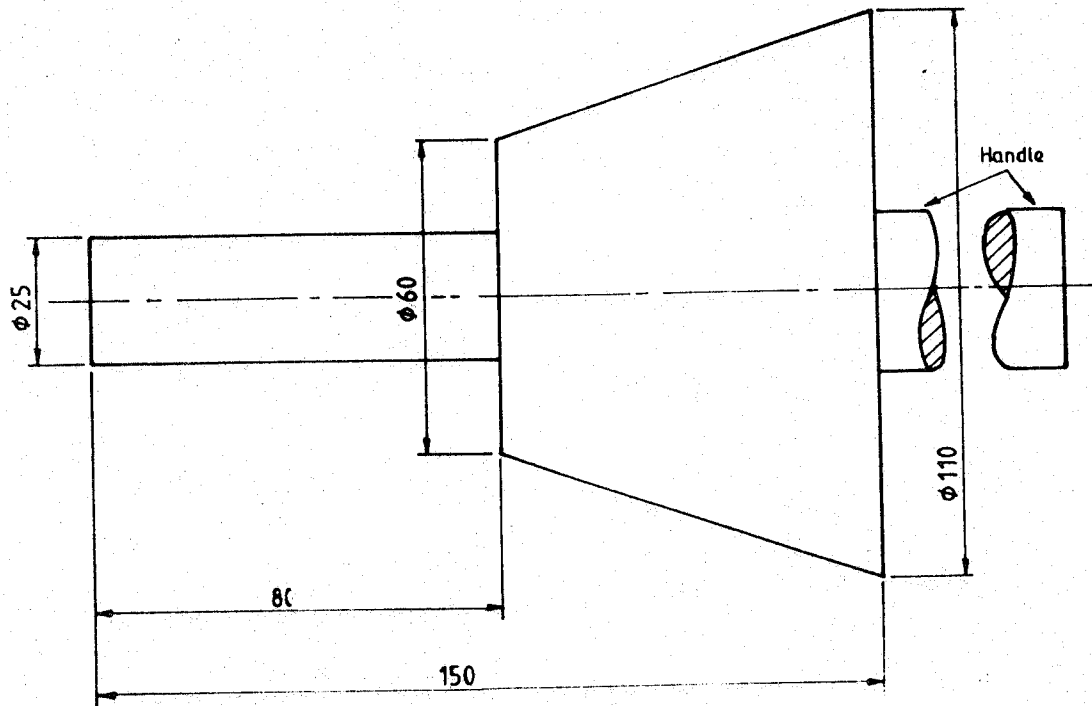
Dimensions in millimetres

FIGURE 15 - Test ball

## 4.1.16 Test cone

The Test cone is intended to be used in combination with other requirements to test the accessibility of moving parts of the grinding system of continuous feed, waste disposal units.

It is applied with the force specified in the relevant standard.



*Dimensions in millimetres*

*NOTE - The size of the handle is immaterial*

FIGURE 16 - Test cone



## **SRI LANKA STANDARDS INSTITUTION**

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