

Plugs and socket-outlets for household and similar purposes up to 20 A/250 Va.c. - Standardization

ABNT - Brazilian Association of Technical Standards

Main office:
Rio de Janeiro
Av. Treze de Maio, 13 – 28th floor
ZIP CODE 20003-900 – P.O. box 1680
Rio de Janeiro - RJ
Tel.: (21) 3974-2300
Fax: (21) 2240-8249/2220-6436
Web: www.abnt.org.br

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ABNT/CB-03 - Brazilian Committee of Electricity
CE-03:023.02 - Study Commission for Switches, Socket-outlets, Pins and Plates for General Use
NBR 14136 - Plugs and socket-outlets for household and similar purposes Standardization
Descriptors: Plug, Socket-outlet
This Standard has been based on IEC 60906-1:1986
This Standard cancels and replaces NBR 14136:1998
Valid from December 29, 2002

Key-words: Plug, Socket-outlet

20 pages

Summary

Foreword

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Foreword

ABNT – The Brazilian Association of Technical Standards - is the National Committee of Standardization. The Brazilian standards, which content is responsibility of Brazilian Committees (ABNT/CB) and the Organizations of Sectorial Standardization (ABNT/ONS), are elaborated by Study Commissions (CE), composed by representatives of the involved sections, like: producers, consumers and neutral (universities, laboratories and other).

The drafts of Brazilian standards, elaborated in the extent of ABNT/CB and ABNT/ONS, are circulated for Public Consultation among ABNT associates and interested parties.

This Standard contains the annex A, it is normative.

1 Scope

1.1 This Standard sets the dimensions for plugs and socket-outlets with nominal characteristics up to 20 A/250 V a.c., intended for household and similar purposes, to be used in the connection to distribution systems with nominal tensions rated between 100 V and 250 V a.c.

1.2 This Standard is applied to the plugs and socket-outlets specified in NBR 6147.

1.3 This Standard is not applied to the plugs and socket-outlets designed to the class 0 equipments.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Standard. The indicated issues were in force when this Standard was published. As every Standard might suffer revisions, it is recommended to those that accomplish agreements based on this document to verify the convenience of using the most recent issue of the mentioned Standards. ABNT maintains registers of currently valid editions.

NBR 6147:2000 - Plugs and socket-outlets for household and similar purposes - Specification

NBR 11467:1991 - graphic Symbols for use in equipments - Symbols

3 Requirements

3.1 Dimensions

The plugs and socket-outlets shall be in agreement with the dimensions of the appropriate figures of annex A.

3.2 Compatibility

The 20 A socket-outlets shall admit the insertion of 10 A and 20 A plugs, and the socket-outlets with earthing-contact shall admit the insertion of plugs with and without earthing-pin.

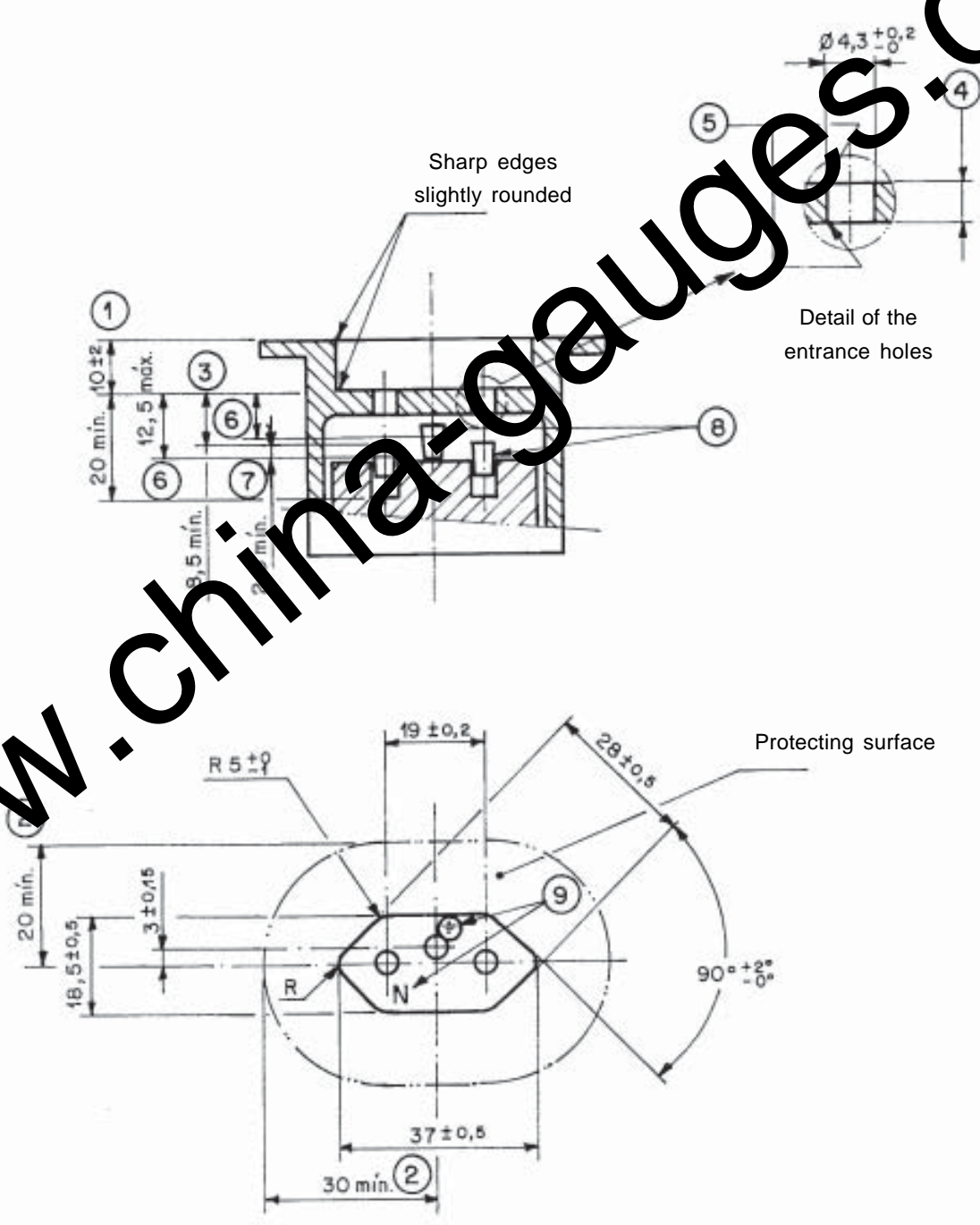
The 10 A socket-outlets shall not admit the insertion of 20 A plugs.

/ ANNEX A

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Annex A (normative)
Figures

Dimensions in millimetres

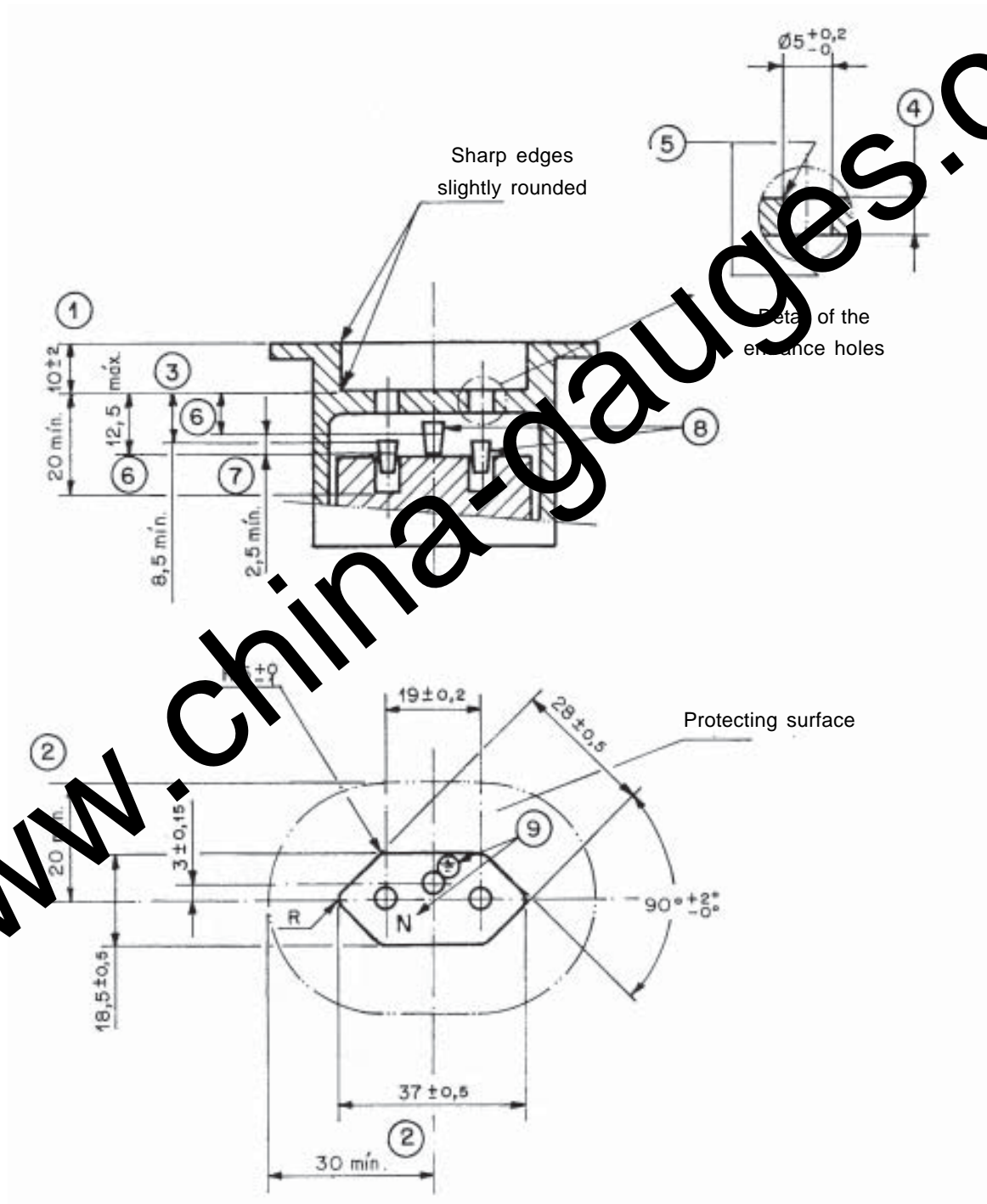


NOTES

- 1 See explanatory notes on page 9.
- 2 These figures are not intended to govern the plan, except in the shown dimensions.
- 3 Several constructions can be used, such as multiple socket-outlets.

Figure 1 – Socket-outlet to built-in, two-pole, with earthing contact - 10 A/250 Vc.a.

Dimensions in millimeters

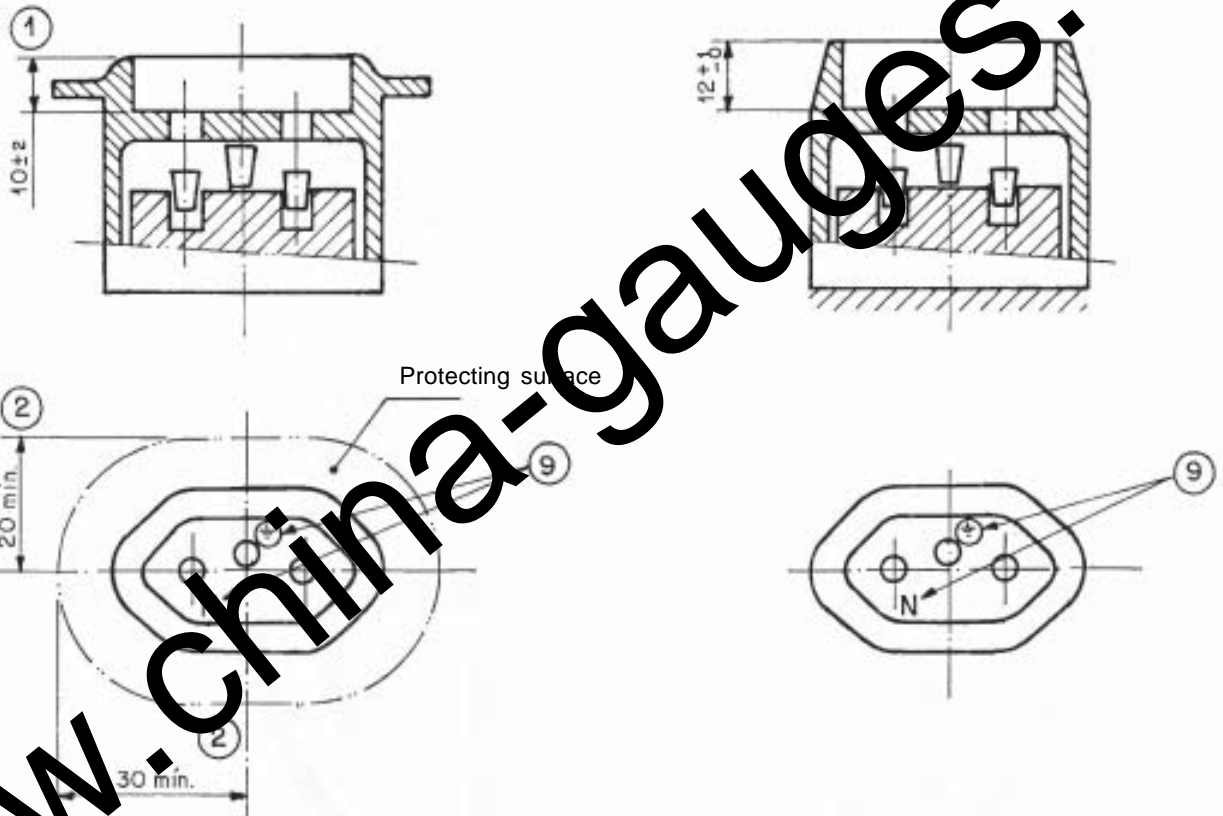


NOTES

- 1 See explanatory notes on page 9.
- 2 These figures are not intended to govern the plan, except in the shown dimensions.
- 3 Several constructions can be used, such as multiple socket-outlets.

Figure 2 – Socket-outlet to built-in, two-pole, with earthing contact - 20 A/250 Vc.a.

Dimensions in millimeters



With protecting surface

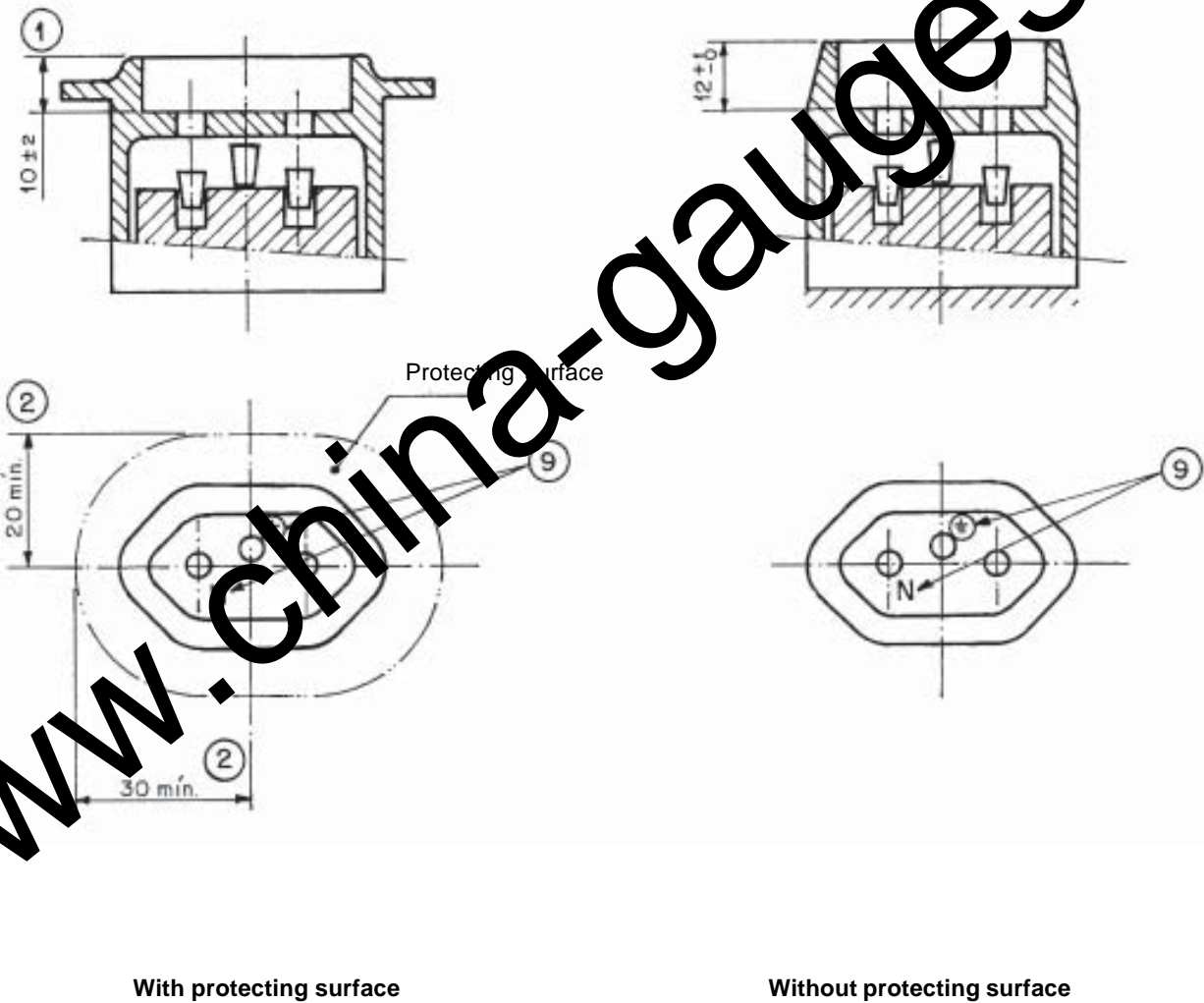
Without protecting surface

NOTES

- 1 See explanatory notes on page 9.
- 2 For the dimensions that were not indicated see figure 1.
- 3 These figures are not intended to govern the plan, except in the shown dimensions.
- 4 Several constructions can be used, such as multiple socket-outlets.

Figure 3 - Socket-outlet to semi-built-in or to put upon, two-pole, with earthing-contact - 10 A/250 Vc.a.

Dimensions in millimeters

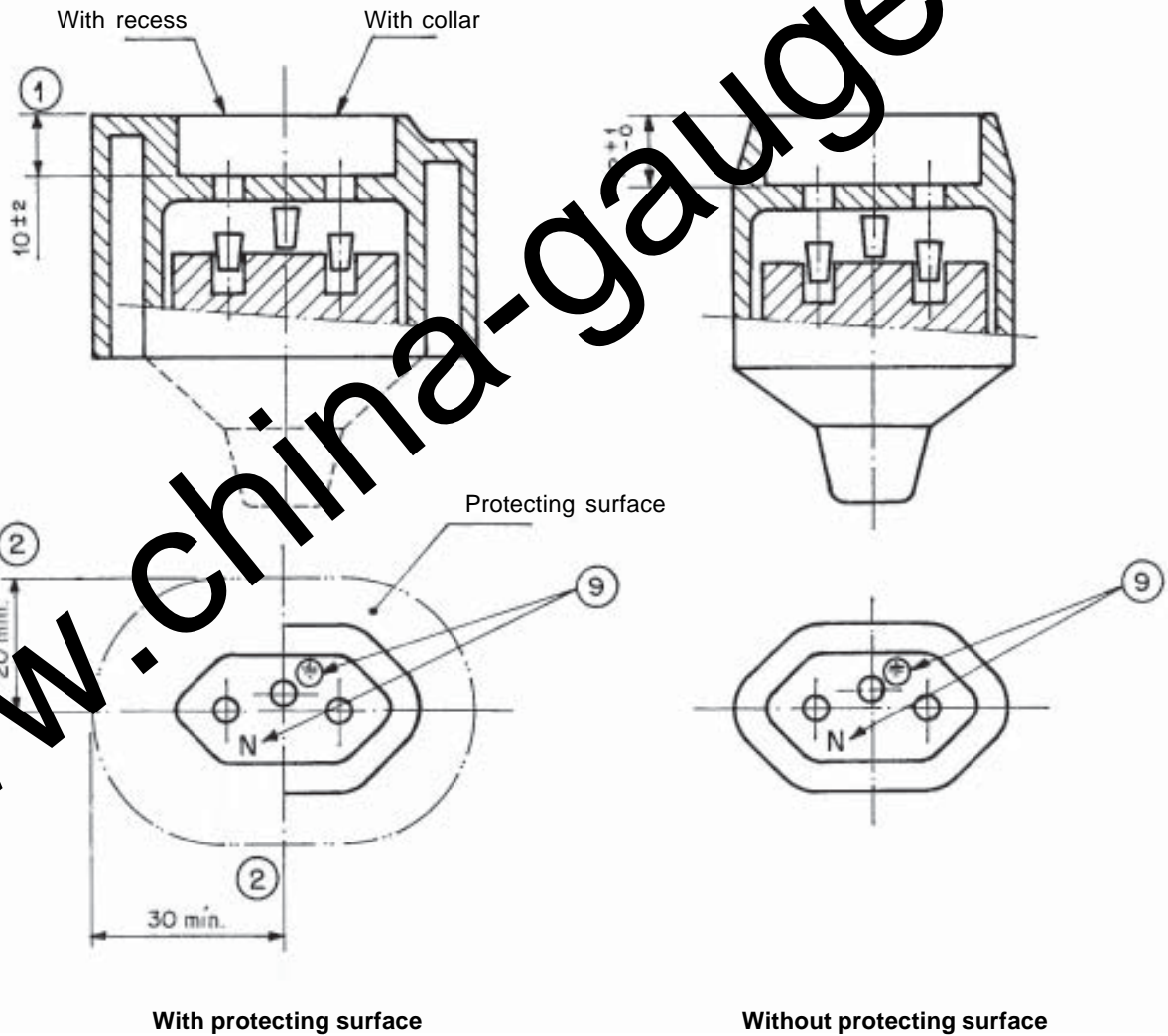


NOTES

- 1 See explanatory notes on page 9.
- 2 For the dimensions that were not indicated see figure 2.
- 3 These figures are not intended to govern the plan, except in the shown dimensions.
- 4 Several constructions can be used, such as multiple socket-outlets.

Figure 4 – Socket-outlet to semi-built-in or to put upon, two-pole, with earthing-contact - 20 A/250 Vc.a.

Dimensions in millimeters

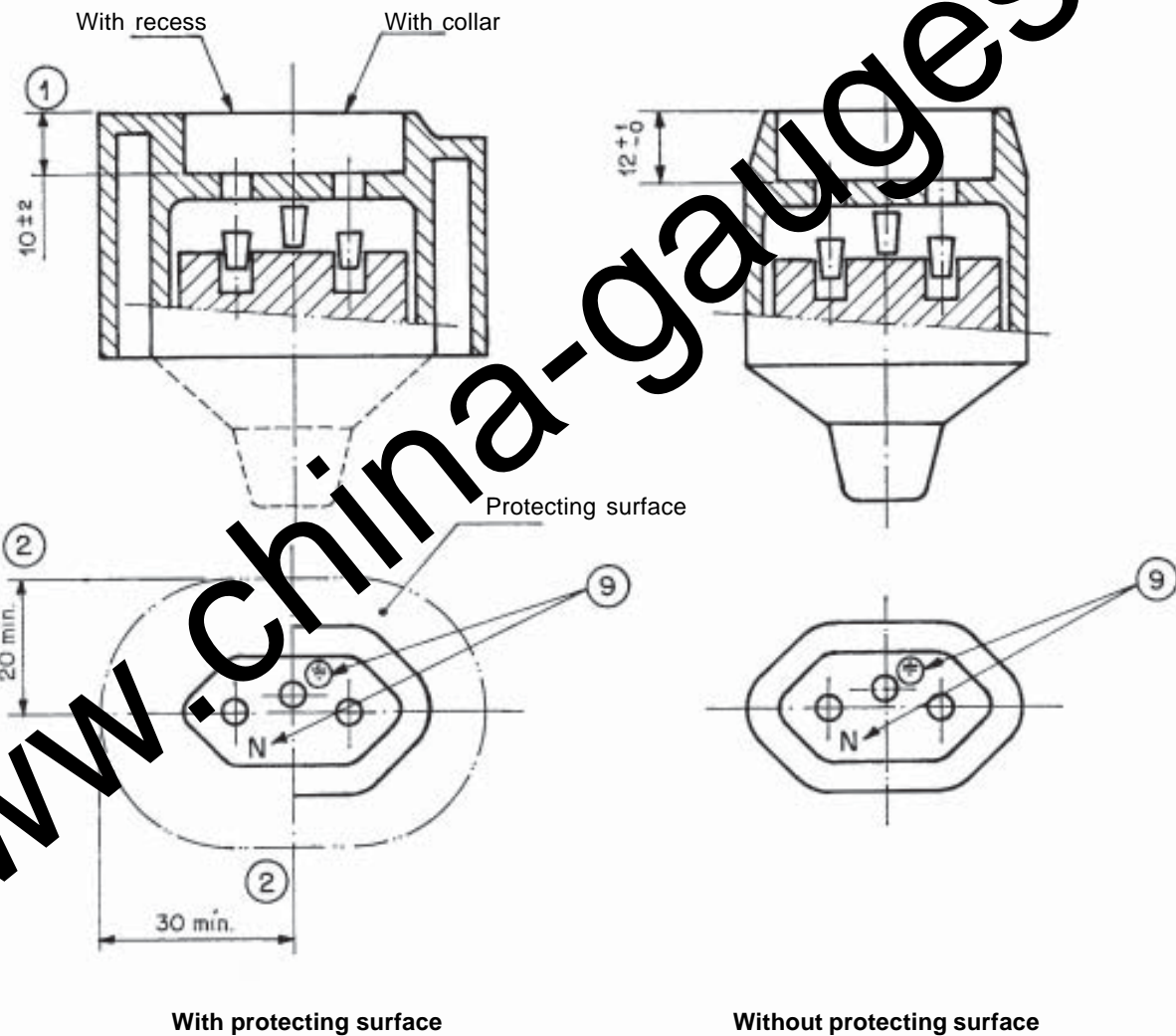


NOTES

- 1 See explanatory notes on page 9.
- 2 For the dimensions that were not indicated see figure 1.
- 3 These figures are not intended to govern the plan, except in the shown dimensions.
- 4 Several constructions can be used, such as multiple socket-outlets.

Figure 5 – Portable socket-outlet, two-pole, with earthing contact. - 10 A/250 Vc.a.

Dimensions in millimeters



NOTES

- 1 See explanatory notes on page 9.
- 2 For the dimensions that were not indicated see figure 2.
- 3 These figures are not intended to govern the plan, except in the shown dimensions.
- 4 Several constructions can be used, such as multiple socket-outlets.

Figure 6 – Portable socket-outlet, two-pole, with earthing contact. - 20 A/250 Vc.a.

Explanatory notes for figures 1, 2, 3, 4, 5 and 6

① A recess shall be provided for socket-outlets to built-in, a collar for those to put upon or for portable types, or a combination of both for the semi-built-in type.

For the semi-built-in socket-outlets, the impossibility of single-pole insertion shall be verified.

② If those dimensions were not respected, a gauge shall be used for verifying the impossibility of single-pole insertion.

Regarding the use of shutters as the only way to prevent single-pole insertion, see NBR 6147.

③ This dimension has been provided for the plate, the guide of the plug pins and for the eventual shutter mechanism. The shutters are optional.

It is not necessary to supply a proper space to the shutters in those models without this device.

④ In the limits of that thickness, the guide for the plug pins shall have at least 4 mm with the specified diameter.

⑤ Small chamfer or radius.


⑥ The points that first touch the alive contacts and the earthing-contact shall be verified.

⑦ This dimension is verified using a gauge in the most unfavorable conditions.

⑧ The contacts shall be elastic. Their shape might be different from the tubular.

An entrance in an appropriate way, with a chamfer or a radius, is necessary to prevent damage of the contact when the plug is inserted in the most unfavorable angle.

Its convenience is verified by performing all the tests specified in NBR 6147.

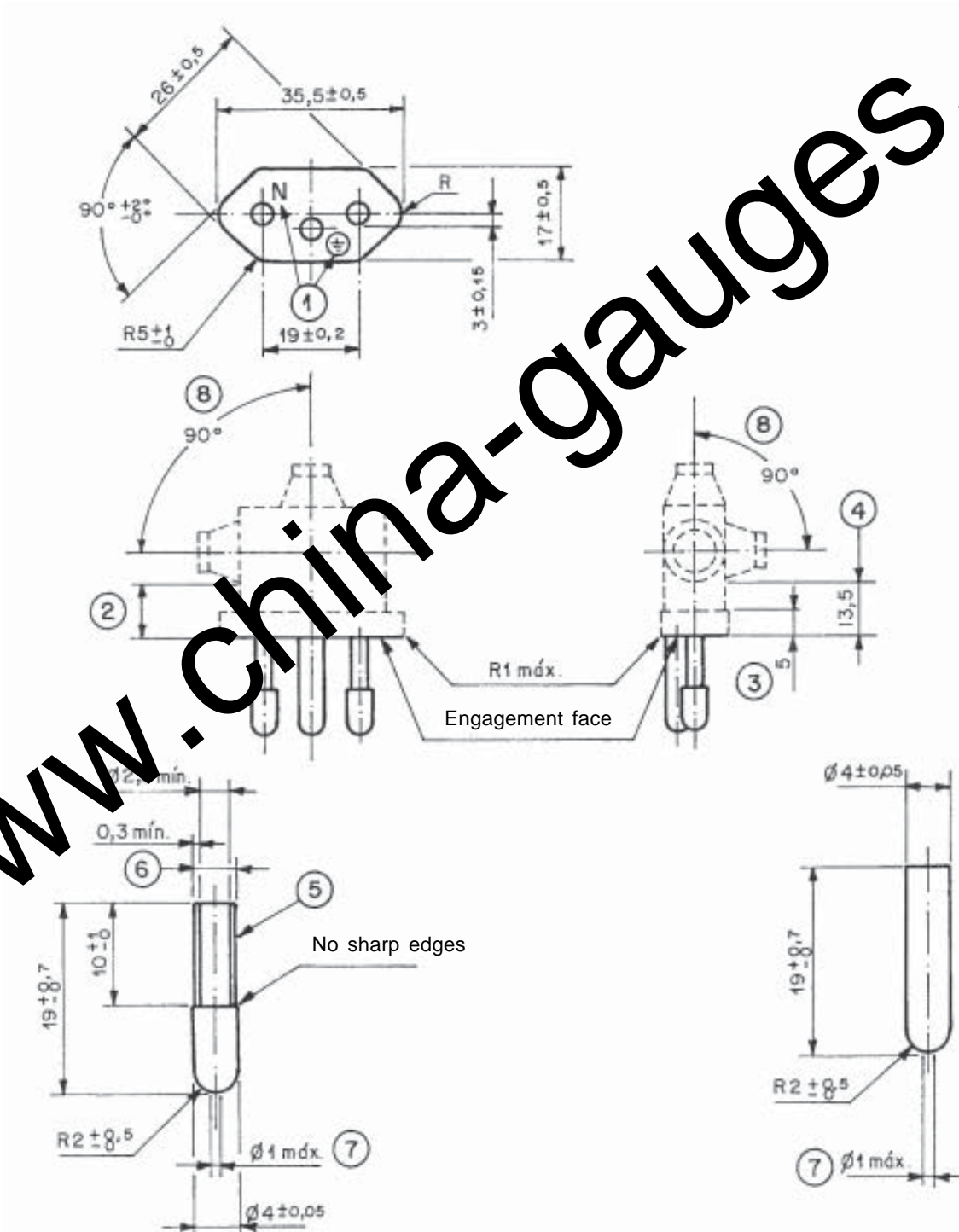
⑨ The earthing-terminal shall be identified with the symbol  (3.2.19 of NBR 11467:1991).

The identification of the other terminals is optional.

The marking shall be put close to the terminals.

It is not necessary to mark the terminals in those models that cannot be disassembled.

Dimensions in millimeters



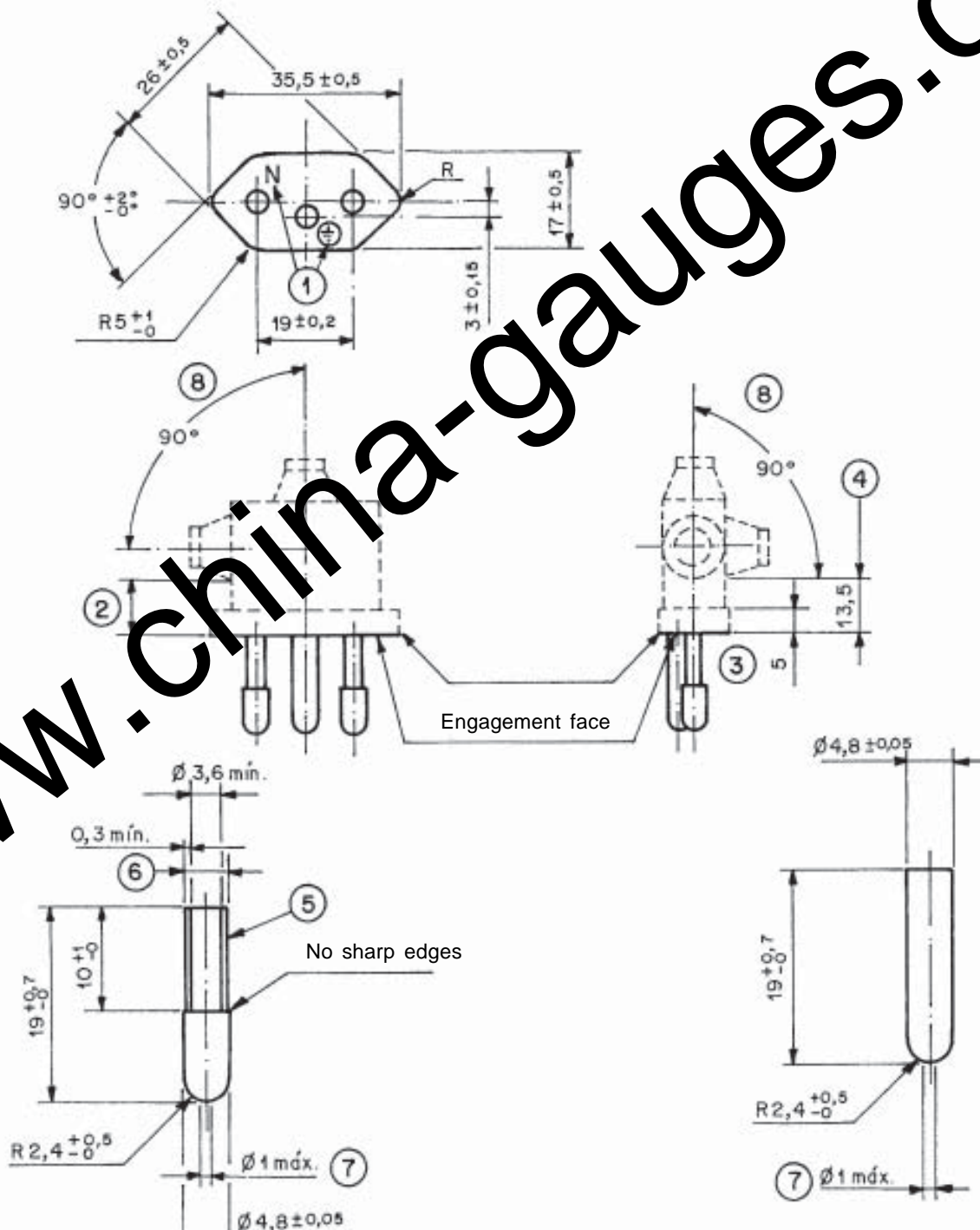
Earthing-pin and optional construction for the pin that carries current (alive)

NOTES

- 1 See explanatory notes on page 12.
- 2 These figures are not intended to govern the plan, except in the shown dimensions.
- 3 The plugs can, or cannot, be disassembled.

Figure 7 – Two-pole Plug, with earthing-pin (for class I appliances) up to 10 A/250 Vc.a.

Dimensions in millimeters




Earthing-pin and optional construction for the pin that carries current (alive)

NOTES

- 1 See explanatory notes on page 12.
- 2 These figures are not intended to govern the plan, except in the shown dimensions.
- 3 The plugs can, or cannot, be disassembled.

Figure 8 – Two-pole Plug, with earthing-pin (for class I appliances) above 10 A up to 20 A/250 Vc.a.

Explanatory notes for figures 7 and 8

- ① The earthing-terminal shall be identified with the symbol  (3.2.19 of NBR 11467:1991).

The identification of the other terminals is optional.

The marking shall be made inside the body, close to the terminals.

It is not necessary to mark the terminals in those models that cannot be disassembled.

- ② The distance between the engagement face and the cord or the exit for the cable or the eventual cord protection shall be of 14 mm, at least.

The conformity is verified by measurement.

- ③ In the limits of this dimension, the outline shall not be smaller than the outline of the engagement face.

- ④ In the limits of this dimension, the outline should not be larger than outline of the engagement face.

- ⑤ The insulating sleeves of the alive pins are optional.

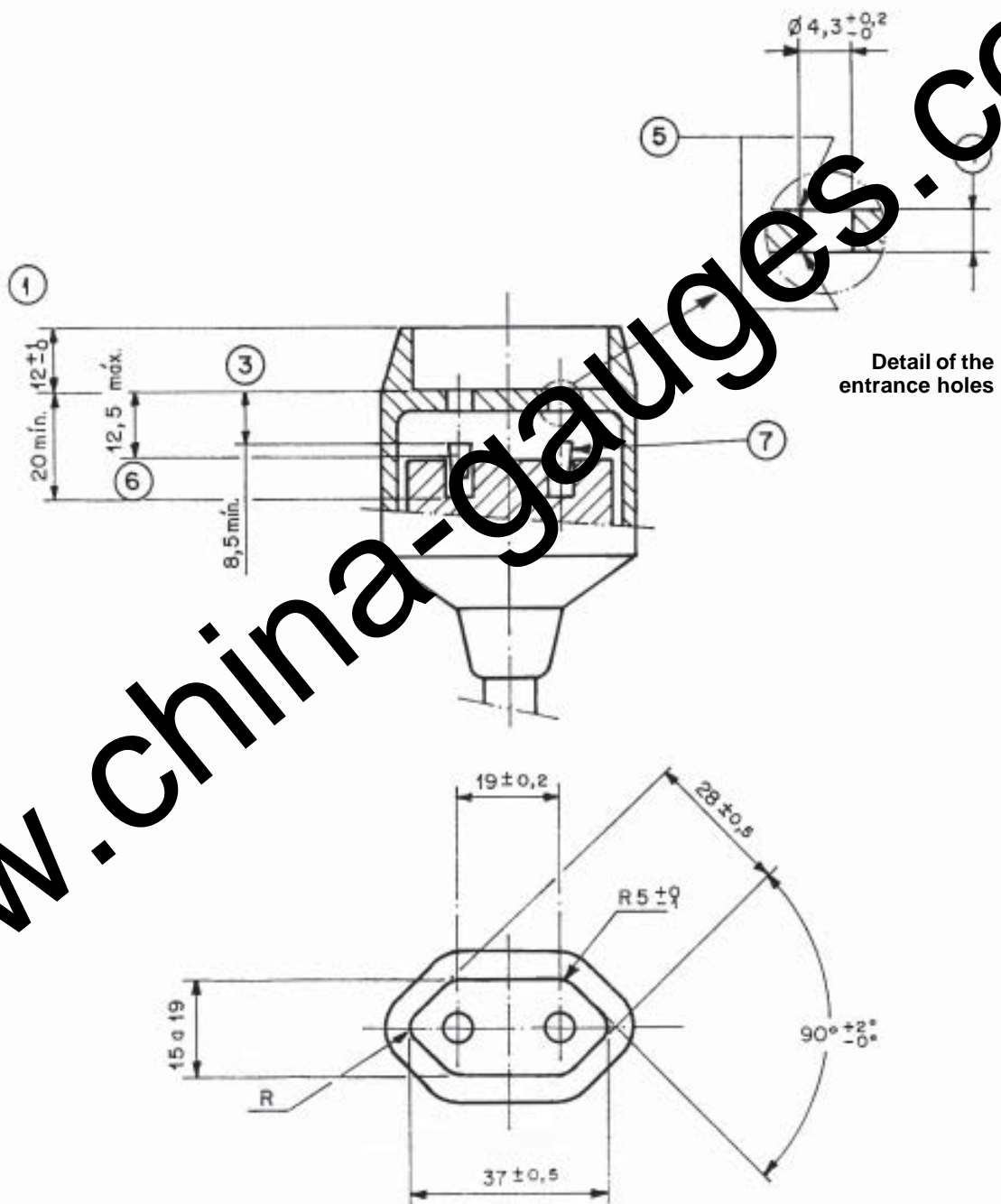
If the insulating sleeves are separated parts, they shall penetrate in the body of the plug in, at least, 3 mm measured from the engagement face.

- ⑥ The external diameter of the insulating sleeves shall not overcome the uncovered part of the pins.

- ⑦ To avoid the shutters damage, the extremities of the pins shall not present sharp edges or burrs; they shall be rounded, as shown.

- ⑧ The angle of 90° sets the maximum area which the flexible cord entrance shall be allowed.

Dimensions in millimeters

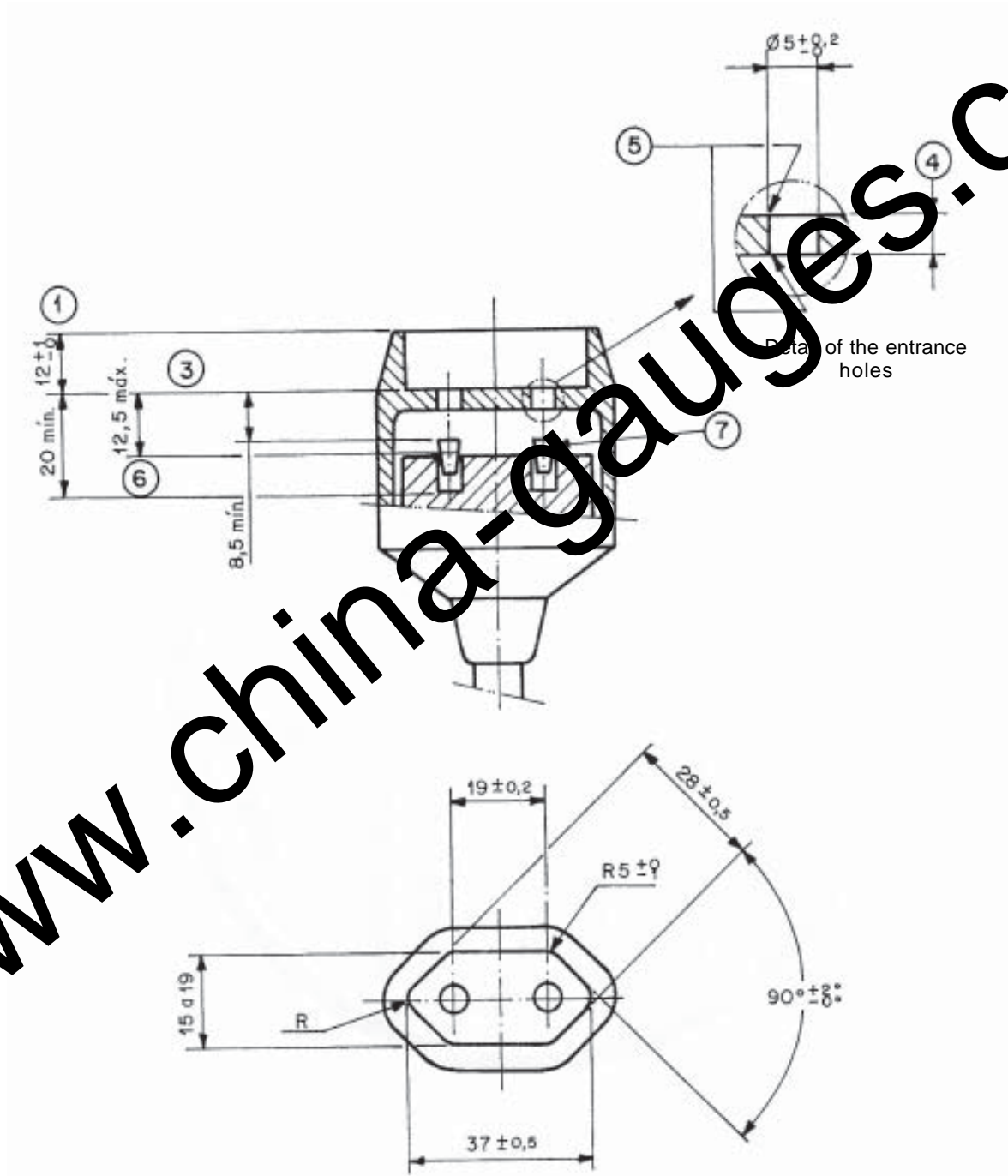


NOTES

- 1 See explanatory notes on page 17.
- 2 The socket-outlets can, or cannot, be disassembled.
- 3 These figures are not intended to govern the plan, except in the shown dimensions.
- 4 Several constructions can be used, such as multiple socket-outlets.

Figure 9 – Portable two-pole socket-outlet without earthing-contact - 10 A/250 Vc.a.

Dimensions in millimeters

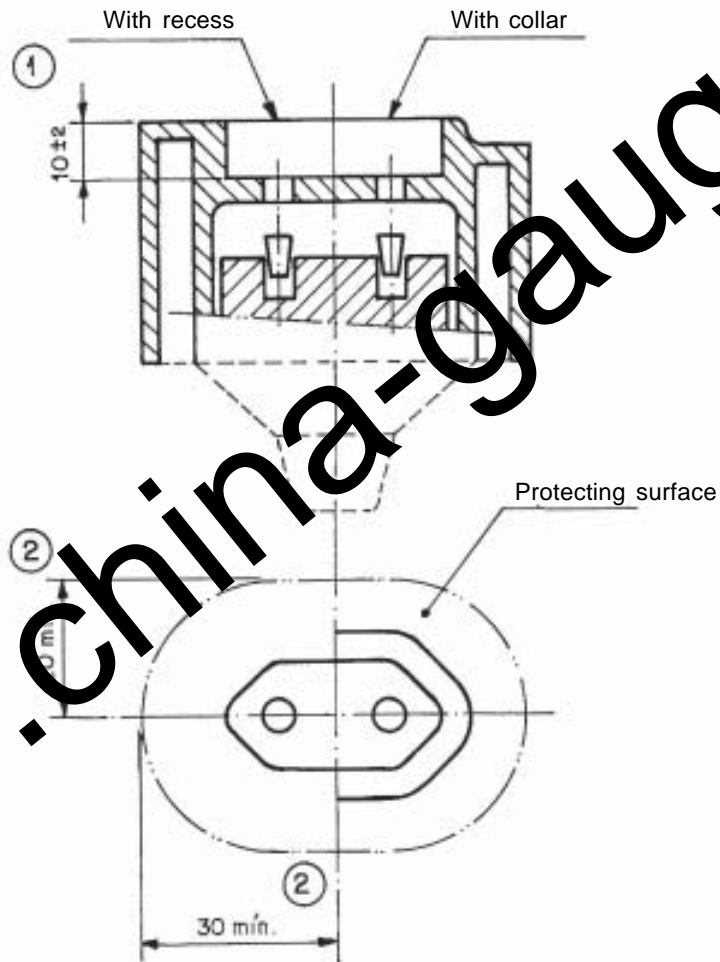


NOTES

- 1 See explanatory notes on page 17.
- 2 The socket-outlets can, or cannot, be disassembled.
- 3 These figures are not intended to govern the plan, except in the shown dimensions.
- 4 Several constructions can be used, such as multiple socket-outlets.

Figure 10 - Portable two-pole socket-outlet without earthing-contact - 20 A/250 Vc.a.

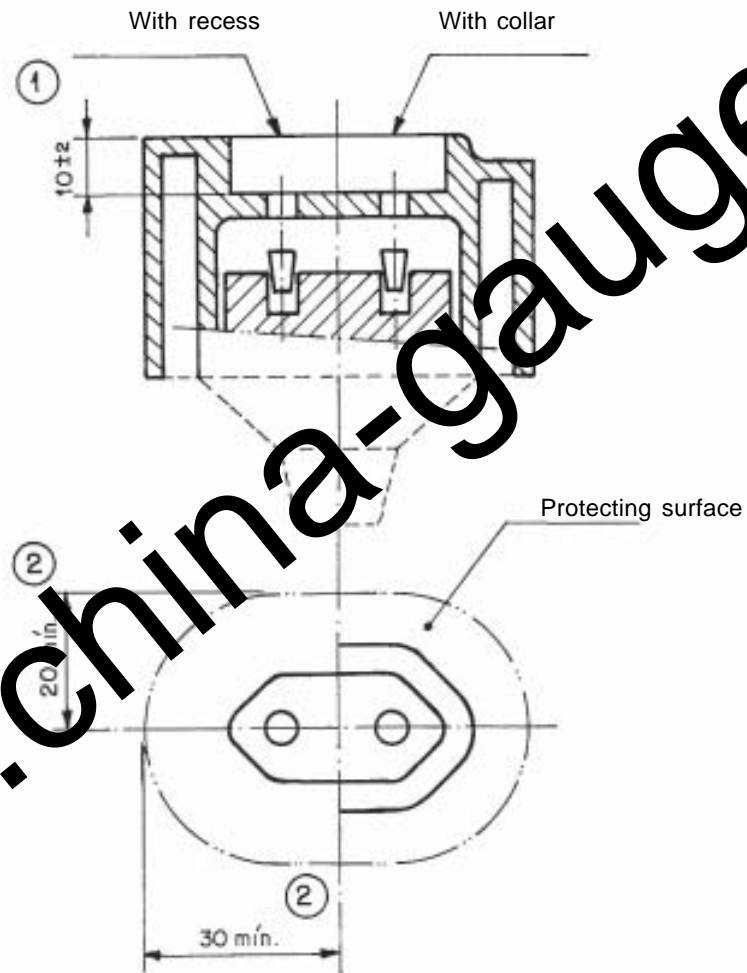
Dimensions in millimeters



NOTES

- 1 See explanatory notes on page 17.
- 2 The socket-outlets can, or cannot, be disassembled.
- 3 These figures are not intended to govern the plan, except in the shown dimensions.
- 4 Several constructions can be used, such as multiple socket-outlets.

Figure 11 - Portable two-pole socket-outlet without earthing-contact with protecting surface - 10 A/250 Vc.a.



NOTES

- 1 See explanatory notes on page 17.
- 2 For the dimensions that were not indicated, see Figure 10.
- 3 These figures are not intended to govern the plan, except in the shown dimensions.
- 4 Several constructions can be used, such as multiple socket-outlets.

Figure 12 - Portable two-pole socket-outlet without earthing-contact with protecting surface - 20 A/250 Vc.a.

Explanatory notes for figures 9, 10, 11 and 12.

These Figures are equally provided for socket-outlets which are incorporated in appliances.

① A collar shall be provided for the models without protecting surface or a recess, or a combination of a collar and a recess for the socket-outlets with protecting surface.

In cases of such combination the impossibility of single-pole insertion shall be verified.

② If those dimensions were not respected, a gauge shall be used for verifying the impossibility of single-pole insertion.

Regarding the use of shutters as the only way to prevent single-pole insertion, see NBR 6147.

③ This dimension has been provided for the plate, the guide of the plug pins and for the eventual shutter mechanism. These shutters are optional.

It is not necessary to supply a proper space to the shutters in those models without this device.

④ In the limits of that thickness, the guide for the plug pins shall have at least 1,5 mm with the specified diameter.

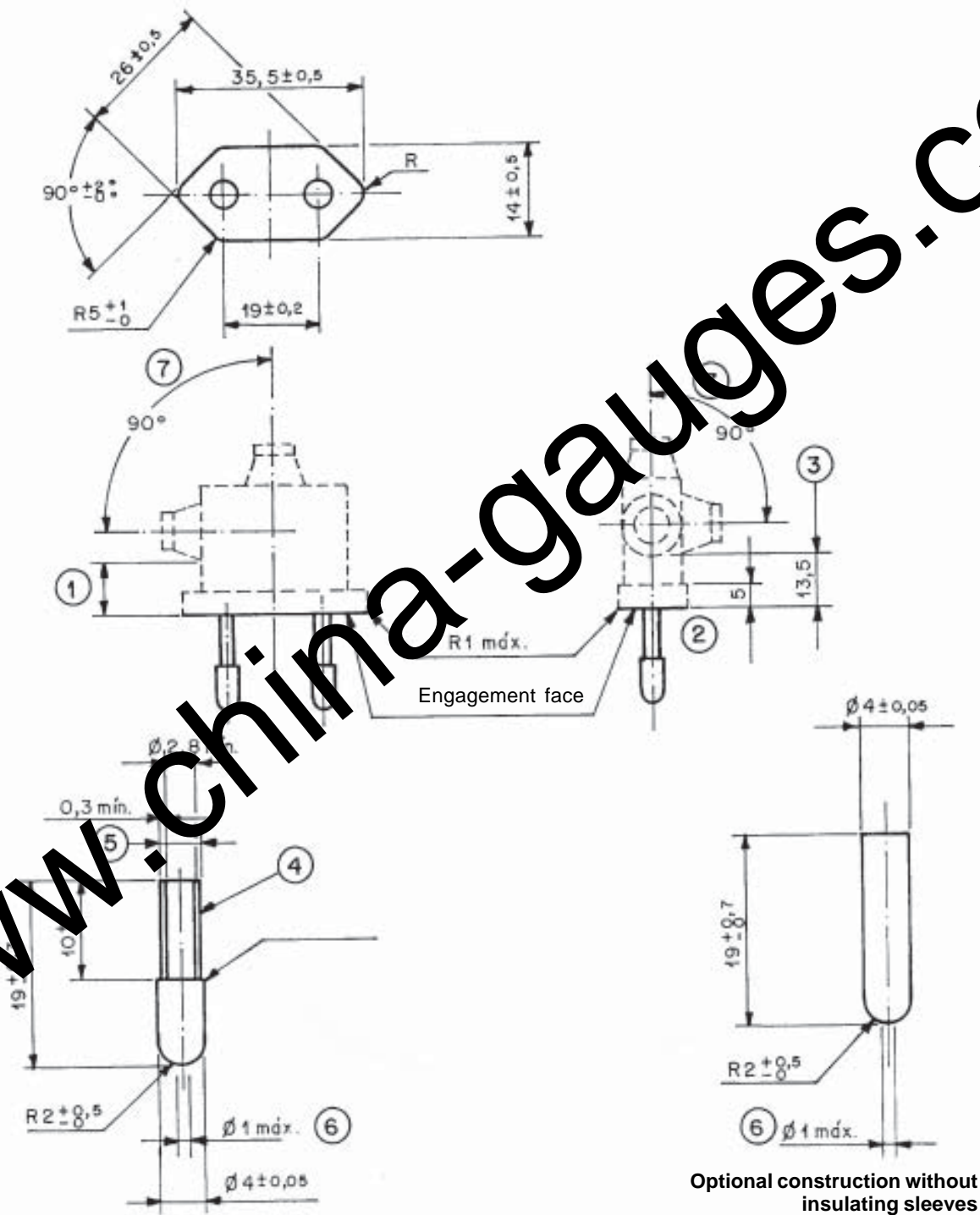
⑤ Small chamfer or radius.

⑥ The points that first contact shall be verified with a gauge.

⑦ The contacts shall be elastic. Their shape might be different from the tubular.

An entrance in an appropriate way, with a chamfer or radius, is necessary to prevent the damage of the contact when the plug is inserted in the most unfavorable angle. Its convenience is verified by performing all the tests specified in NBR 6147.

Dimensions in millimeters

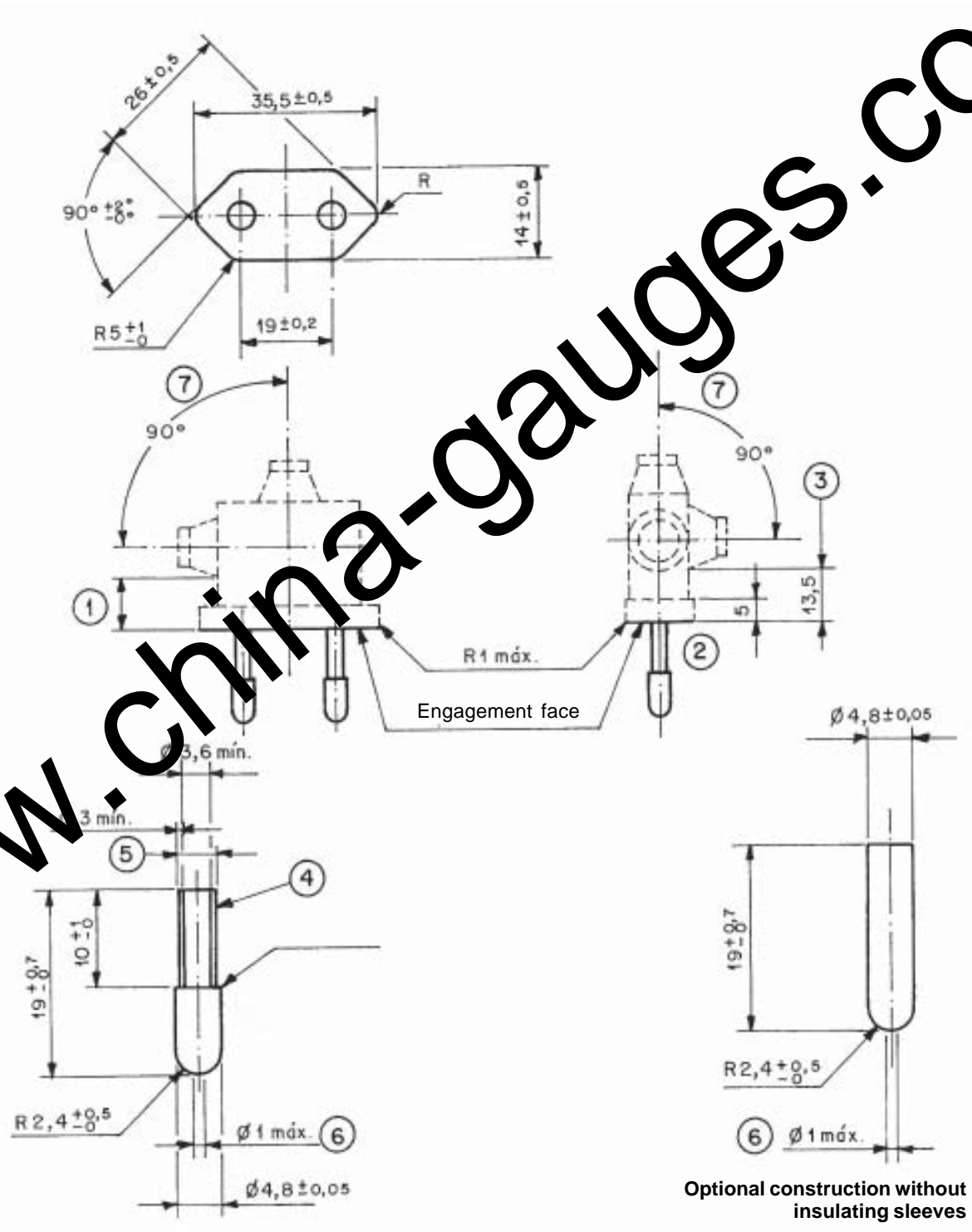


NOTES

- 1 See explanatory notes on page 20.
- 2 These figures are not intended to govern the plan, except in the shown dimensions.
- 3 This plug can, or cannot, be disassembled.

Figure 13 - Two-pole Plug without earthing-pin (for class II appliances) up to 10 A/250 V a.c.

Dimensions in millimeters



NOTES

- 1 See explanatory notes on page 20.
- 2 These figures are not intended to govern the plan, except in the shown dimensions.
- 3 This plug can, or cannot, be disassembled.

Figure 14 - Two-pole Plug without earthing-pin (for class II appliances) above 10 A up to 20 A/250 Vc.a.

Explanatory notes for figures 13 and 14

① The distance between the engagement face and the cord or the exit for the cord or the eventual protection of the cord shall be 14 mm, at least.

The conformity is verified by measurement.

② In the limits of this dimension, the outline shall not be smaller than the outline of the engagement face.

③ In the limits of that dimension, the outline shall not be larger than the outline of the engagement face.

④ The insulating sleeves of the alive pins are optional.

If the insulating sleeves are separated parts, they shall penetrate in the body of the plug in at least 3 mm measured from the engagement face.

⑤ The external diameter of the insulating sleeves shall not overcome the uncovered part of the pins.

⑥ To avoid the shutters damage, the extremities of the pins shall not present sharp edges or burrs; they shall be rounded, as shown.

⑦ The angle of 90° sets the maximum area which the flexible cord expansion shall be allowed.