INTERNATIONAL STANDARD

ISO 20848-3

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Packaging — Plastics drums —

Part 3: Plug/bung closure systems for plastics drums with a nominal capacity of 113,6 l to 220 l

Emballages — Fûts en matière plastique —

Partie 3: Systèmes de fermeture à bondes pour fûts en matière plastique d'une capacité nominale de 113,6 l à 220 l

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 20848-3 was prepared by Technical Committee ISO/TC 122, *Packaging*.

ISO 20848 consists of the following parts, under the general title *Packaging — Plastics drums*:

— *Part 1: Removable head (open head) drums with a nominal capacity of 113,6 l to 220 l*

— *Part 2: Non-removable head (tight head) drums with a nominal capacity of 208,2 l and 220 l*

— *Part 3: Plug/bung closure systems for plastics drums with a nominal capacity of 113,6 l to 220 l*

Introduction

Throughout the world, a large number of plastics drum types with different dimensions and characteristics are being used. The differences in types of closures may result in differences in filling and handling.

ISO 20848 specifies the characteristics and dimensions of closures for plastics drums which are of importance for the worldwide safe handling and transport of substances and for the continued reuse of the drums during their life cycle. Detailed performance requirements and the related test methods are not included as they depend upon the specific application.

Where the drums are intended to be used for the transport of dangerous goods, attention is drawn to the regulatory requirements which govern the transport of those goods in the countries concerned, including capseals/overseals fitted in accordance with the certificate. Depending upon the mode of transport, this means meeting the requirements of:

— **UN** (United Nations) — *Recommendations on the Transport of Dangerous Goods*,

— **ICAO** (International Civil Aviation Organization) — *Technical Instructions for the Safe Transport of Dangerous Goods by Air*,

— **IMO** (International Maritime Organization) — *International Maritime Dangerous Goods (IMDG) Code*.

This involves the certification and marking of the drums according to the regulations.

Packaging — Plastics drums —

Part 3: Plug/bung closure systems for plastics drums with a nominal capacity of 113,6 l to 220 l

1 Scope

This part of ISO 20848 specifies the characteristics and dimensions of plug/bung closure systems for internally threaded openings in plastics drums of nominal capacity 113,6 l to 220 l.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
plug/bung closure system
BCS
system of one or more components which enables an internally threaded container to be filled or emptied and then secured to provide a leakproof seal for subsequent transport or storage

NOTE See Figures A.1 to G.2.

3.2
plug/bung
device, provided with an external thread, which closes an opening in a drum

3.3
plug/bung housing
neck
that part of the container designed to receive the plug/bung

3.4
gasket
washer
component which, under compression, facilitates a leakproof seal between the plug/bung and plug/bung housing

3.5
gasket sealing faces
those areas of the plug/bung or plug/bung housing designed to be in contact with the gasket and make the seal

3.6
capseal/overseal
cap or fitting attached to the plug/bung housing which incorporates a facility for providing tamper evidence and provides protection against the ingress of foreign matter into the closure

4 Requirements

4.1 Dimensions

The dimensions and tolerances of the closure systems shall conform to the appropriate annexes of this part of ISO 20848 as given in Table 1.

Measurements shall be conducted at ambient conditions but shall not be made within 48 h of manufacture.

For plug/bung housings, diameter measurements shall be the mean of at least two readings orientated at 90° to each other.

Table 1 — Annexes of this part of ISO 20848 specifying dimensions and tolerances for different plug/bung closure system (BCS) types

BCS type	Applicable annex
BCS 70 × 6	A
BCS 56 × 4	B
BCS 38 × 6	C
BCS 24 × 4	D
BCS G2 × 5	E
BCS G2 × 11,5	F
BCS G3/4 × 14	G

4.2 Gaskets

Gaskets shall be positioned correctly on the plug/bung.

4.3 Closure torque

A recommended closure torque, including tolerance, shall be specified. In addition, the appropriate tooling for closing shall be specified.

4.4 Material identification symbol

All the plastics components of the closure systems, excluding gaskets, shall be permanently marked with the relevant material identification symbol, i.e. the symbol identifying the material from which the component is made as shown in Annex H.

4.5 Materials

The plug/bung and gasket, where used, shall be manufactured from materials appropriate to the physical and chemical requirements of their intended use.

4.6 Thread

The thread shall be as specified in Figures A.1 to G.2.

4.7 Plug/bung

The plug/bung shall be designed so that it can be inserted or removed by means of a simple tool.

4.8 Vented plug/bung

For ease of identification when fitted in drums, a vented plug/bung and capseal/overseal shall be coloured yellow.

A vented plug/bung used for drums intended to contain dangerous goods should be in accordance with the applicable regulations.

A plastic plug should be fitted with a capseal/overseal of such a design as to ensure venting is not impeded.

4.9 Finish

The nature of the internal and external finish of the plug/bung and gasket shall be appropriate to the physical and chemical requirements of their intended use.

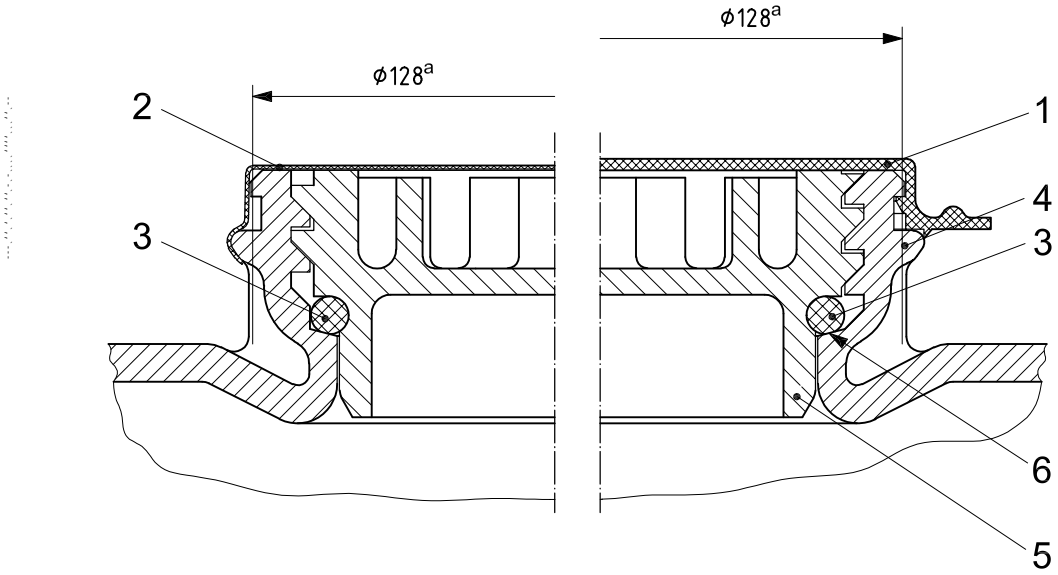
NOTE The nature of the internal and external finish should be agreed between the purchaser and the supplier.

Annex A
(normative)

Plug/bung closure system BCS 70 × 6

A.1 Nomenclature for closure system

Dimensions in millimetres



Key

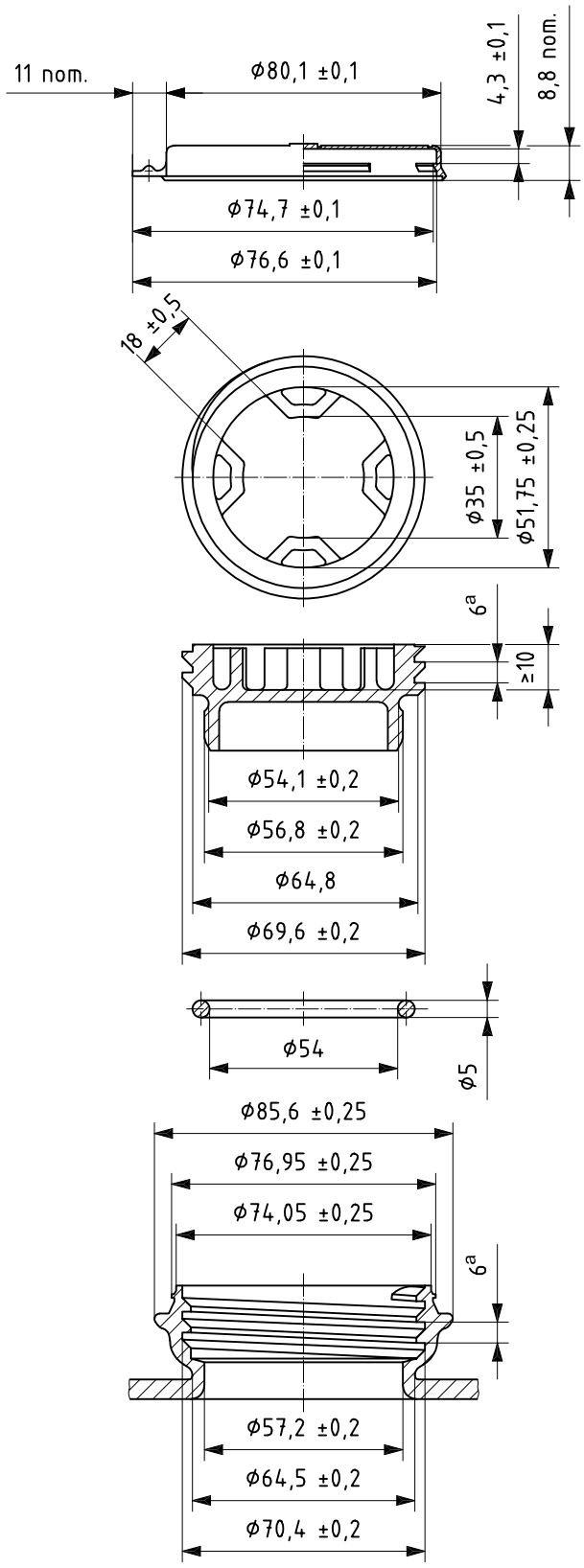
1 plastics capseal
2 metal/plastics capseal
3 gasket
4 plug/bung housing
5 plug/bung
6 gasket sealing faces

a Minimum clearance for crimping tool.

Figure A.1 — Plug/bung closure system BCS 70 × 6 — general view

A.2 Dimensions for closure system

Dimensions in millimetres



[a] Pitch.

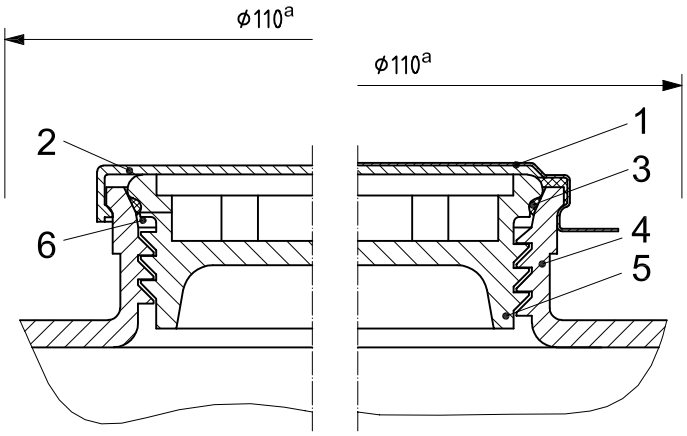
Figure A.2 — Plug/bung closure system BCS 70 × 6 — plastics capseal

Annex B
(normative)

Plug/bung closure system BCS 56 × 4

B.1 Nomenclature for closure system

Dimensions in millimetres



Key

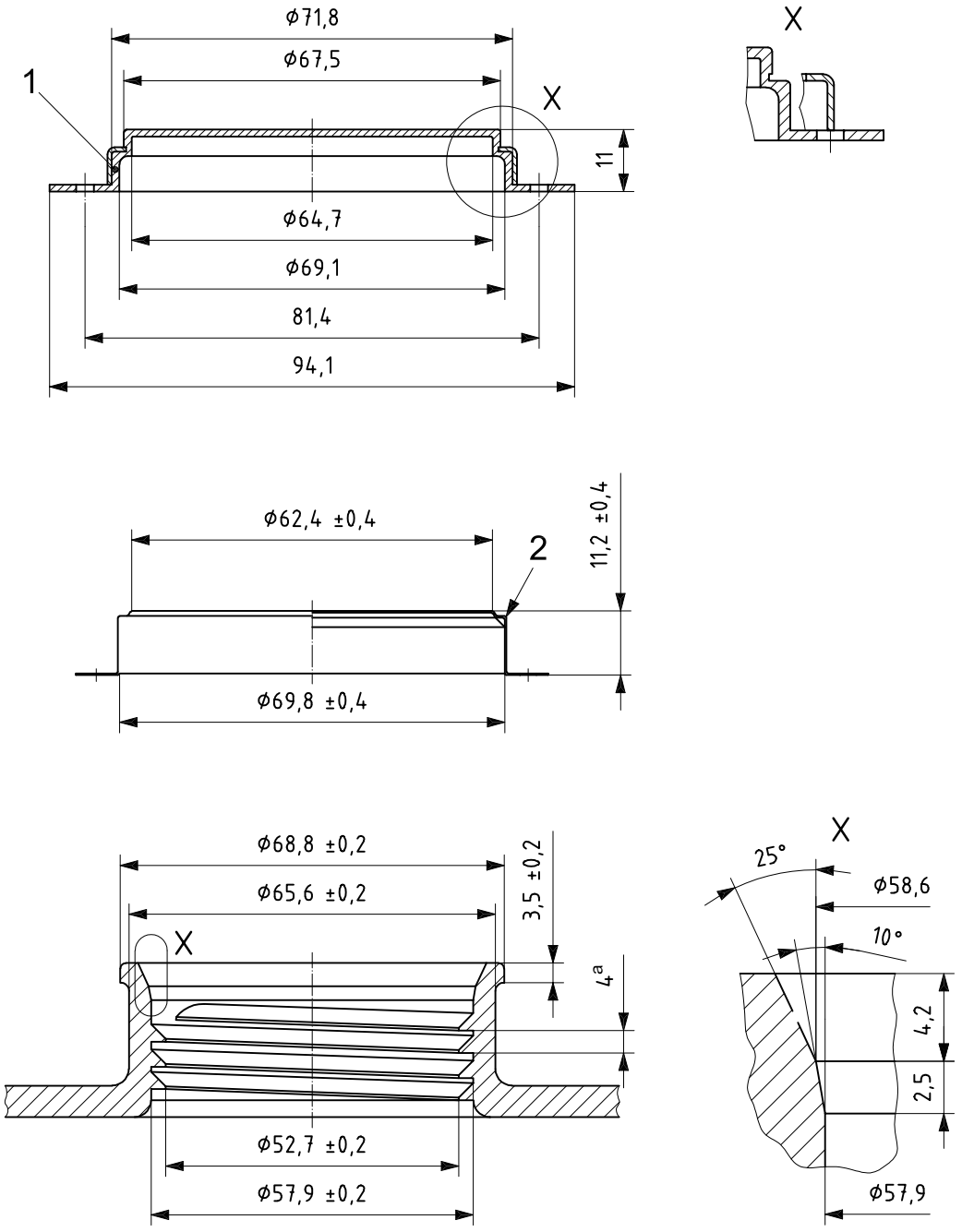
1 metal capseal
2 plastics capseal
3 gasket
4 plug/bung housing
5 plug/bung
6 gasket sealing faces

a Minimum clearance for crimping tool.

Figure B.1 — Plug/bung closure system BCS 56 × 4 — general view

B.2 Dimensions for closure system

Dimensions in millimetres



Key

1 metal/plastics capseal

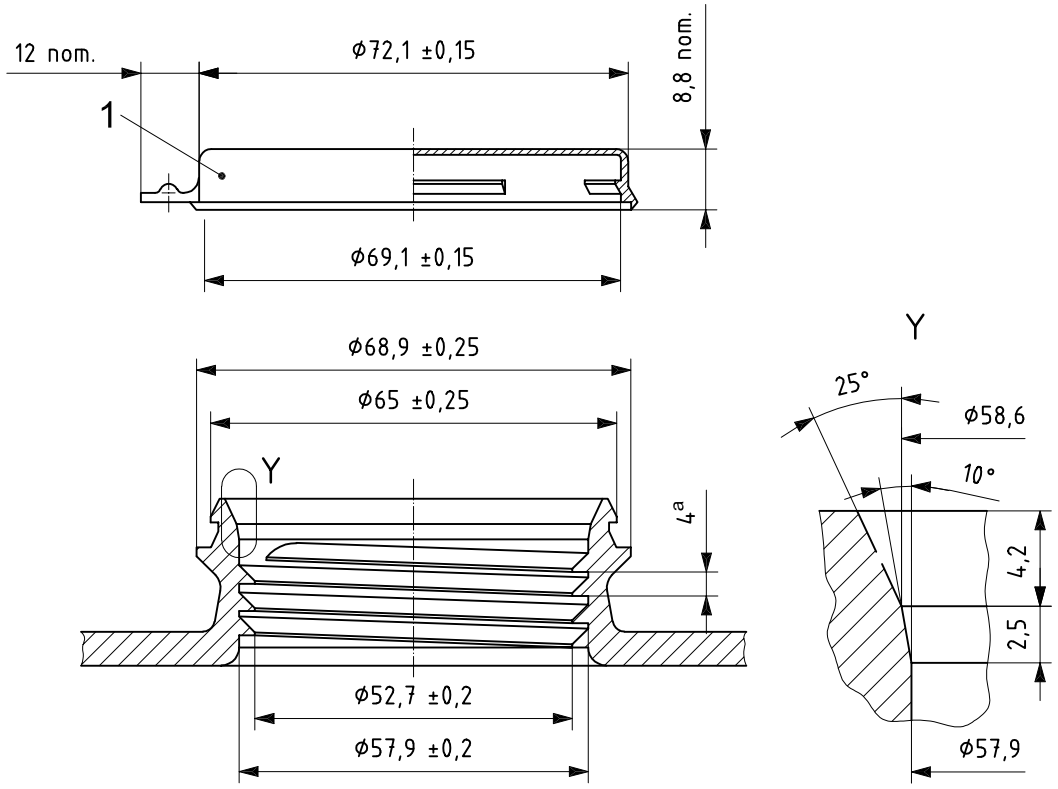
2 metal capseal

X proposal for sealing geometry

[a] Pitch.

Figure B.2 — Plug/bung closure system BCS 56 × 4 — metal capseal and metal/plastics capseal

Dimensions in millimetres



Key

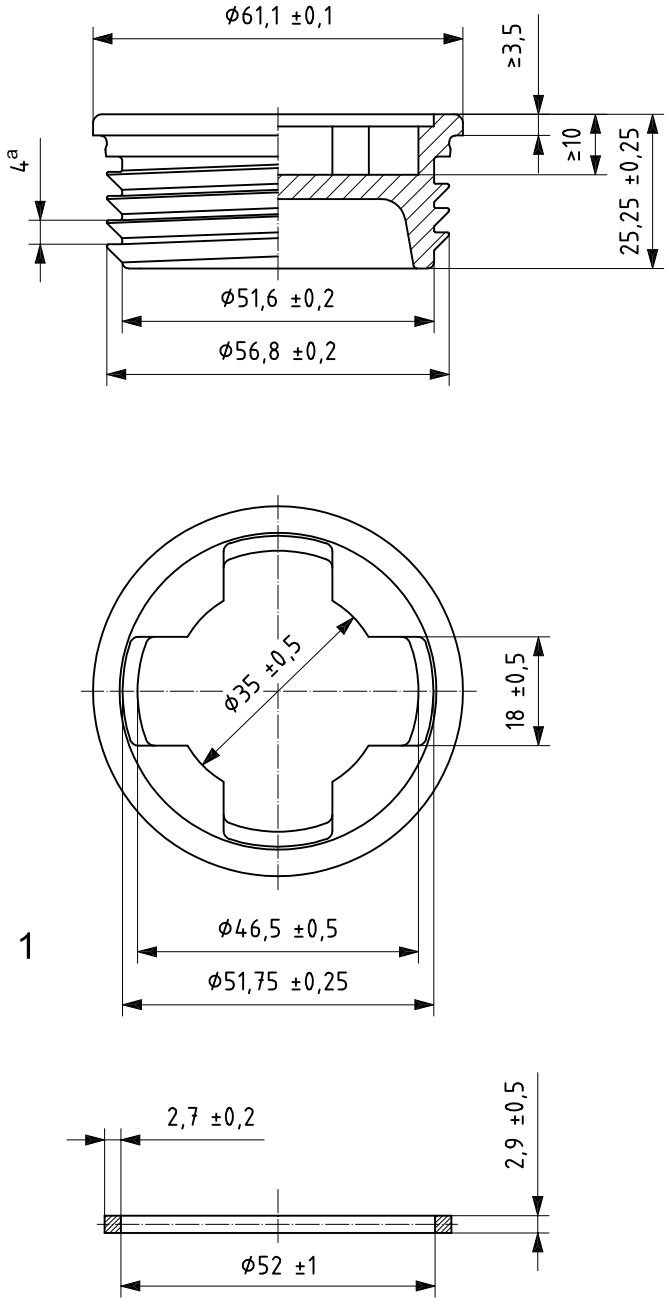
1 plastics capseal

Y proposal for sealing geometry

[a] Pitch.

Figure B.3 — Plug/bung closure system BCS 56 × 4 — plastics capseals

Dimensions in millimetres



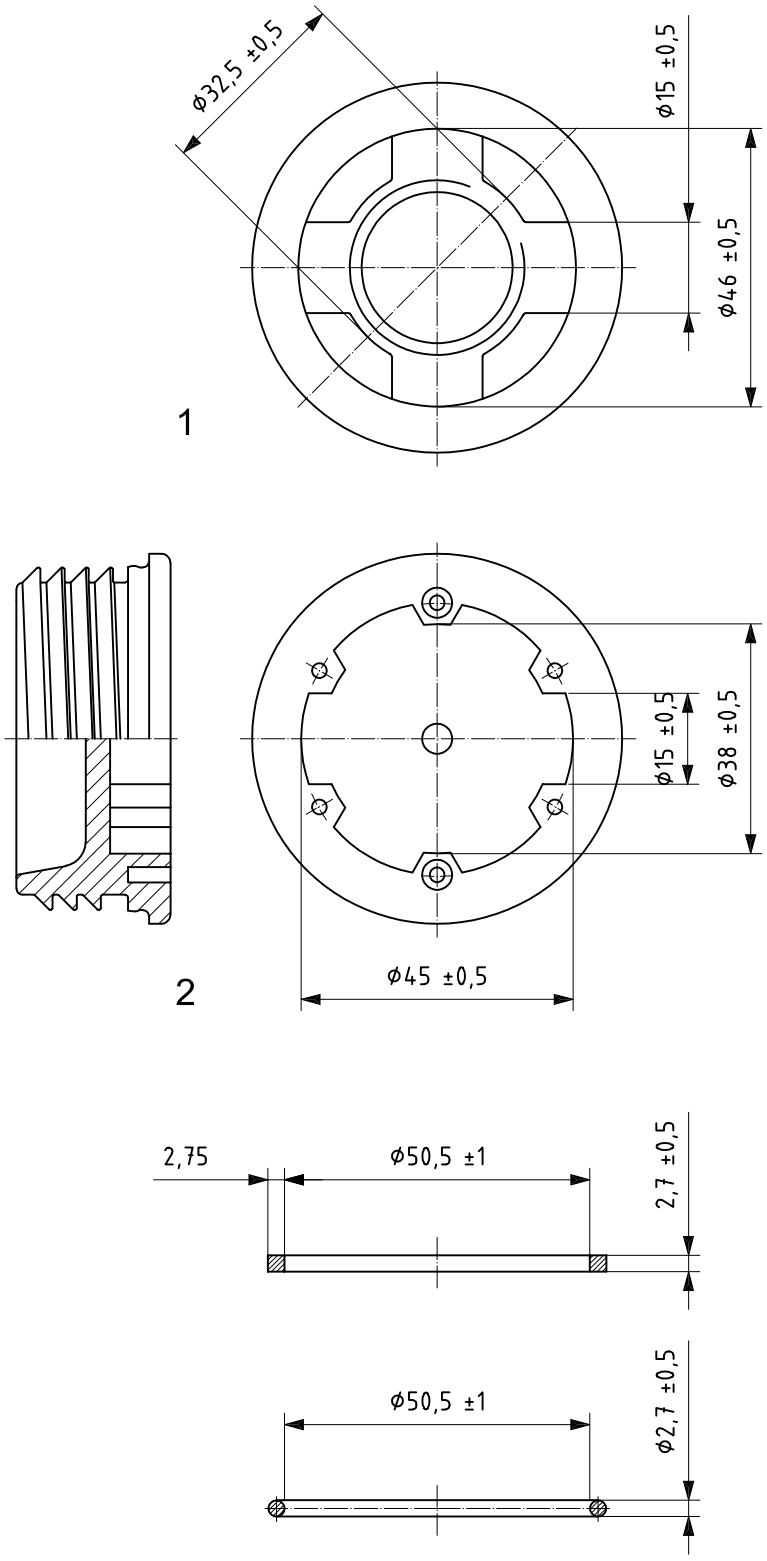
Key

1 plug/bung type 4 NU

[a] Pitch.

Figure B.4 — Plug/bung closure system BCS 56 × 4 — plug/bung type 4 NU

Dimensions in millimetres



Key

1 plug/bung type 4N with G3/4 through hole

2 plug/bung type 6N

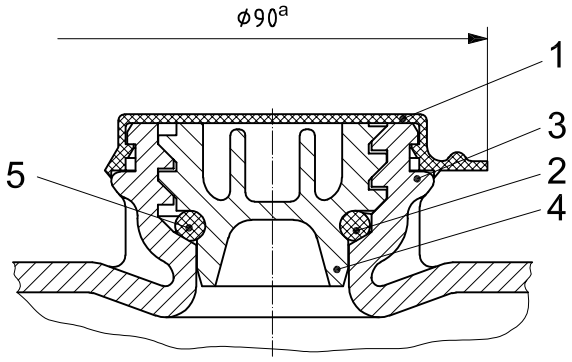
Figure B.5 — Plug/bung closure system BCS 56 × 4 — plug/bung type 4N with G3/4 threaded recess and plug/bung type 6N

Annex C
(normative)

Plug/bung closure system BCS 38 × 6

C.1 Nomenclature for closure system

Dimensions in millimetres



Key

1 plastics capseal
2 gasket
3 plug/bung housing
4 plug/bung
5 gasket sealing faces

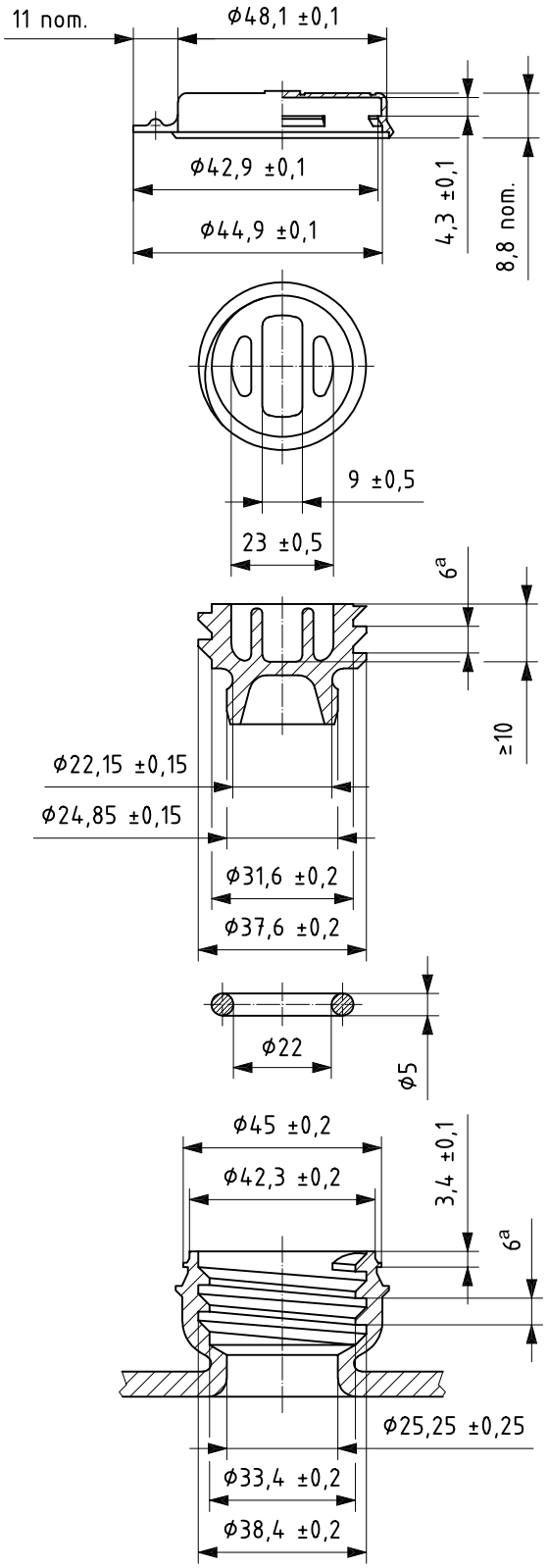
[a] Minimum clearance for crimping tool.

Figure C.1 — Plug/bung closure system BCS 38 × 6 — general view

11

C.2 Dimensions for closure system

Dimensions in millimetres



a Pitch.

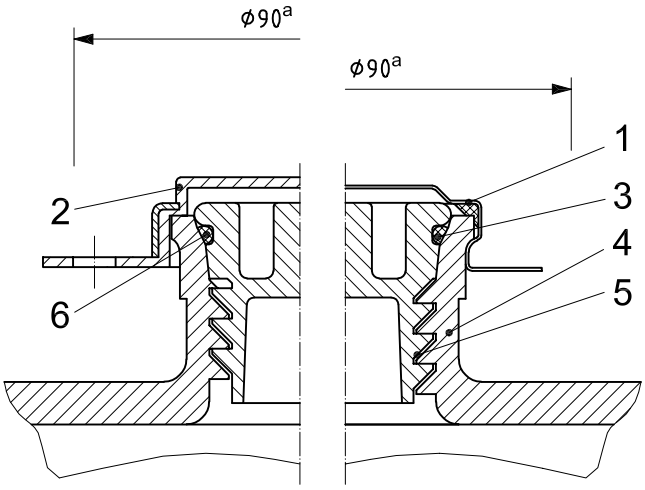
Figure C.2 — Plug/bung closure system BCS 38 × 6 — plastics capseal

Annex D
(normative)

Plug/bung closure system BCS 24 × 4

D.1 Nomenclature for closure system

Dimensions in millimetres



Key

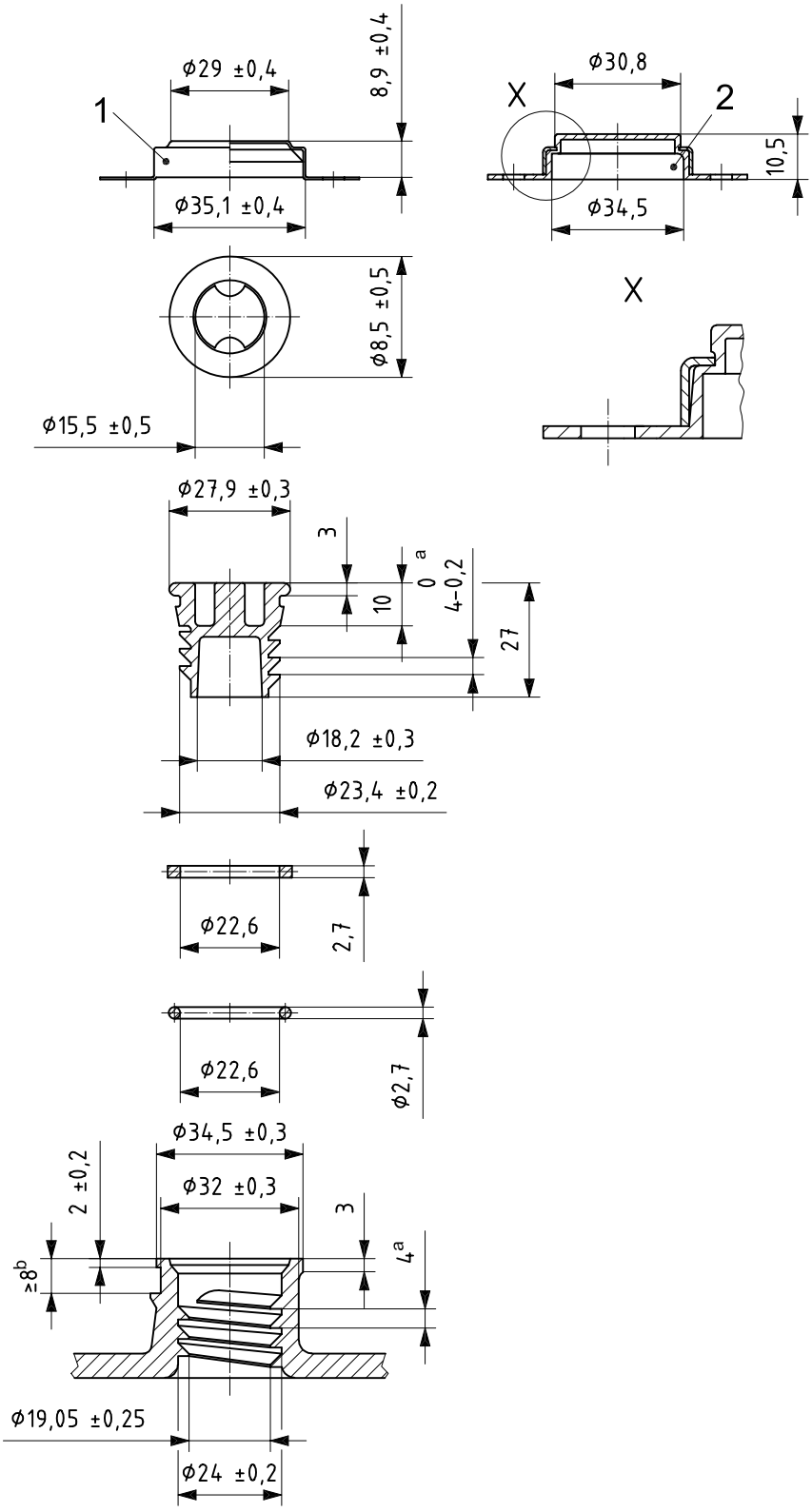
1 metal capseal
2 metal/plastics capseal
3 gasket
4 plug/bung housing
5 plug/bung
6 gasket sealing faces

[a] Minimum clearance for crimping tool.

Figure D.1 — Plug/bung closure system BCS 24 × 4 — general view

D.2 Dimensions for closure system

Dimensions in millimetres



Key

1 metal capseal
2 metal/plastics capseal
X proposal for sealing geometry
a Pitch.
b Minimum for capseal crimp.

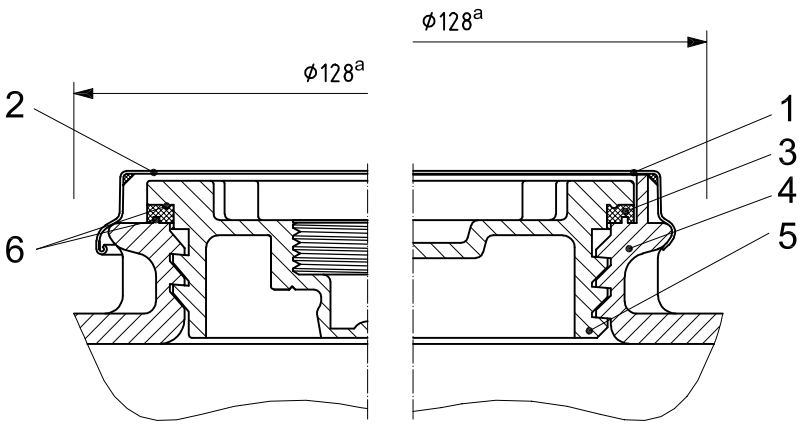
Figure D.2 — Plug/bung closure system BCS 24 × 4 — metal capseal and metal/plastics capseal

Annex E
(normative)

Plug/bung closure system BCS G2 × 5

E.1 Nomenclature for closure system

Dimensions in millimetres



NOTE Two types are illustrated.

Key

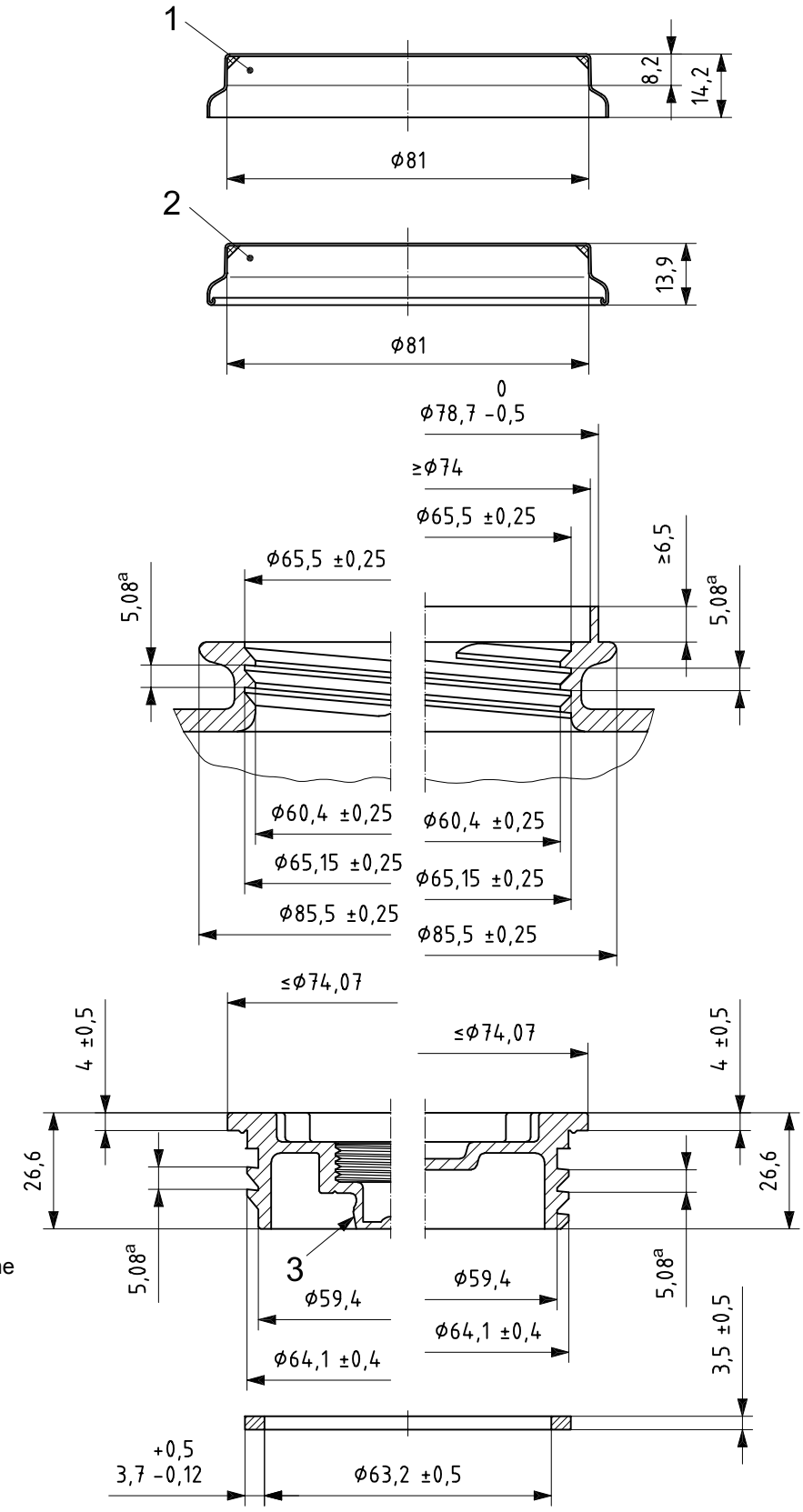
1 metal capseal
2 metal/plastics capseal
3 gasket
4 plug/bung housing
5 plug/bung
6 gasket sealing faces

[a] Minimum clearance for crimping tool.

Figure E.1 — Plug/bung closure system BCS G2 × 5

E.2 Dimensions for closure system

Dimensions in millimetres



NOTE 1 Two types are illustrated.

NOTE 2 Any combination of the above types is acceptable.

Key

1 plastics capseal

2 metal/plastics capseal

3 thread G3/4 according to ISO 228-1:2000

[a] Pitch.

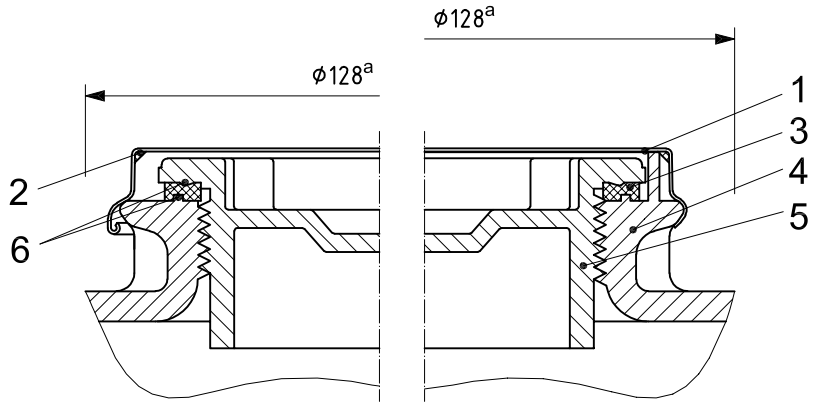
Figure E.2 — Plug/bung closure system BCS G2 × 5

Annex F
(normative)

Plug/bung closure system BCS G2 × 11,5

F.1 Nomenclature for closure system

Dimensions in millimetres



NOTE Two types are illustrated.

Key

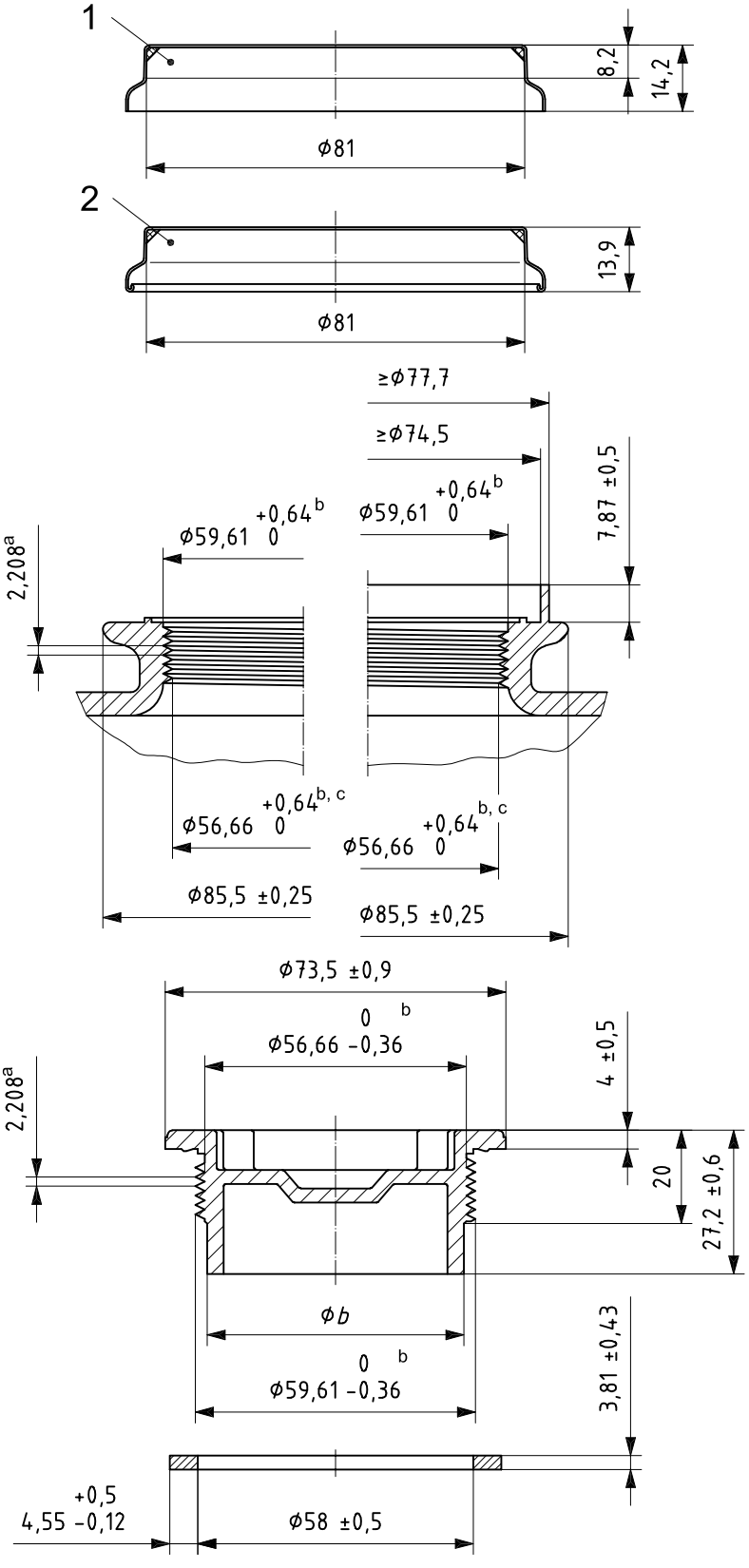
1 metal capseal
2 metal/plastics capseal
3 gasket
4 plug/bung housing
5 plug/bung
6 gasket sealing faces

[a] Minimum clearance for crimping tool.

Figure F.1 — Plug/bung closure system BCS G2 × 11,5

F.2 Dimensions for closure system

Dimensions in millimetres



NOTE 1 Two types are illustrated.

NOTE 2 Any combination of the above types is acceptable.

Key

1 metal capseal

2 metal/plastics capseal

a Pitch.

b Nominal pipe size diameter only according to ISO 228-1:2000, other dimensions according to ANSI B1.20.1.

c Maximum ovality = 0,9 mm.

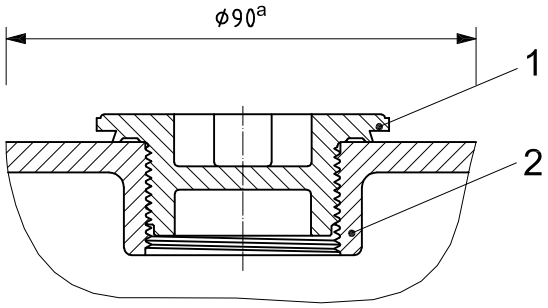
Figure F.2 — Plug/bung closure system BCS G2 × 11,5

Annex G
(normative)

Plug/bung closure system BCS G3/4 × 14

G.1 Nomenclature for closure system

Dimensions in millimetres



Key

1 plug/bung

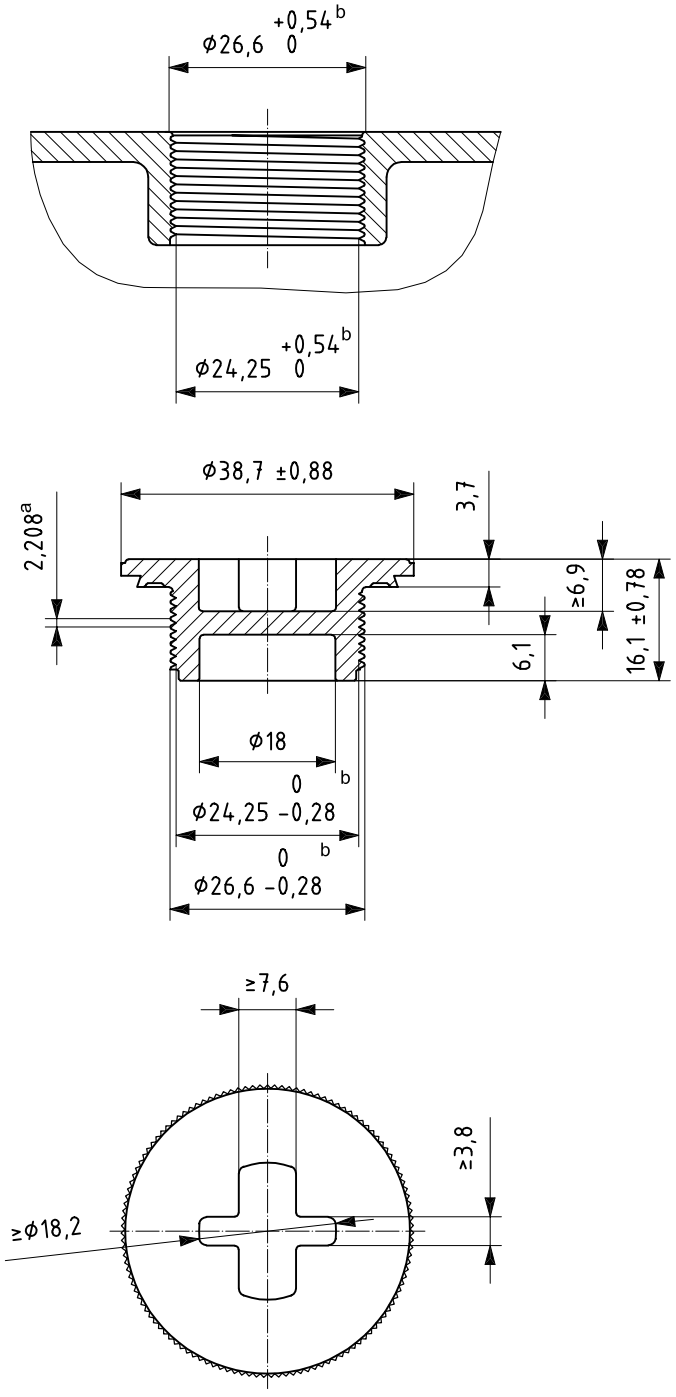
2 plug/bung housing

[a] Minimum clearance for crimping tool.

Figure G.1 — Plug/bung closure system BCS G3/4 × 14 — general view

G.2 Dimensions for closure system

Dimensions in millimetres



a Pitch.

b Nominal pipe size diameter only according to ISO 228-1:2000, other dimensions according to ANSI B16.5.

Figure G.2 — Plug/bung closure system BCS G3/4 × 14

Annex H
(normative)

International material code symbols

Figure H.1 — Polyethylene terephthalate (PET)

Figure H.2 — Polyethylene, high density (PE-HD)

Figure H.3 — Vinyl (polyvinyl chloride or PVC)

Figure H.4 — Polyethylene, low density (PE-LD)

Figure H.5 — Polypropylene (PP)

Figure H.6 — Polystyrene (PS)

Figure H.7 — Other

Bibliography

[1] ISO 16104, *Packaging — Transport packaging for dangerous goods — Test methods*

[2] *National Pipe Straight Thread Standard*

[3] ANSI B1.20.1, *Pipe threads, general purpose (inch)*

[4] ANSI B16.5, *Pipe flanges & flanged fittings*

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