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Second edition
2022-05

Packaging — Steel drums —

Part 3: Inserted flange-type closure systems

Emballages — Fûts en acier —

Partie 3: Systèmes de fermeture à collerette (filetée) sertie

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html

This document was prepared by Technical Committee ISO/TC 122, *Packaging*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 261, *Packaging*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 15750-3:2002), which has been technically revised.

The main changes are as follows:

— in 4.3, finish of the flanges, steel plugs, label rings and protection rings can now be chosen between the purchaser and the supplier;

— in Annex C, the configuration and dimensions of zinc-alloy die cast plugs were deleted due to obsolescence;

— in C.1, Figure C.1, the zinc-alloy plug is obsolete and has been replaced with the steel plug;

— in C.7, materials of washers for flanges and plugs can now be agreed between the purchaser and the supplier.

A list of all parts in the ISO 15750 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Packaging — Steel drums —

Part 3: Inserted flange-type closure systems

1 Scope

This document specifies the characteristics, dimensions and finish of the inserted flange-type closure systems used for steel drums.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*

ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges*

ISO 3573, *Hot-rolled carbon steel sheet of commercial and drawing qualities*

ISO 3574, *Cold-reduced carbon steel sheet of commercial and drawing qualities*

ISO 5002, *Hot-rolled and cold-reduced electrolytic zinc-coated carbon steel sheet of commercial and drawing qualities*

ISO 11949, *Cold-reduced tinmill products — Electrolytic tinplate*

ISO 11950, *Cold-reduced tinmill products — Electrolytic chromium/chromium oxide-coated steel*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
inserted flange-type closure
mechanical fixed steel insert with threads, closable with plugs made of steel, other metals or synthetic materials such as plastics, ensuring a leaktight closing in drums

3.2
elastomer
macromolecular material which returns rapidly to its initial dimensions and shape after substantial deformation by a weak stress and release of the stress

[SOURCE: ISO 472:2013, 2.327, modified — Note 1 to entry has been deleted.]

3.3
thermoplastics
plastics that are capable of being repeatedly softened by heating and hardened by cooling through a temperature range characteristic of the plastics and, in the softened state, of being repeatedly shaped by flow into articles by moulding, extrusion or forming

4 Dimensions, materials and finish

4.1 The nominal pitch diameter and the pitch of the thread of the closures G 2 and G 3/4 shall conform to ISO 228-1.

These closures shall fit GO gauges conforming to ISO 228-2.

4.2 The dimensions and materials of the closure systems shall be in accordance with the relevant annexes for the closure type, i.e.:

— Annex A: octagonal base closure system (type A closure);

— Annex B: serrated base closure system (type B closure);

— Annex C: octagonal (G 2)/hexagonal (G 3/4) base closure system (type C closure).

4.3 The finish of the flanges, steel plugs, label rings and protection rings shall be chosen and agreed between the purchaser and the supplier.

If for reasons of compatibility another finish of the closure system is required, the nature of the internal and external finish should be agreed upon between the purchaser and the supplier.

5 Design and construction

5.1 Flanges

The flanges shall be the mechanical inserted type and shall make a leaktight fit when inserted.

5.2 Plugs

The plugs shall be designed so that they can be inserted or removed by means of a simple tool.

The plugs shall have a wrenching insert projection welded to the bottom of the sump of the plug or have a wrenching device formed as part of the plug.

The dimensions of the wrenching insert shall be such that the plugs can be operated by a universal tool for steel and plastics plugs. Examples are shown in Annex D.

For recommended closing torques, see Annex E.

5.3 Capseals and overseals

Capseals or overseals, when fitted, shall be the manual or pneumatic crimping type and shall have provisions for customs sealing and evidence of tampering.

Capseals/overseals shall be so designed that they can be removed by means of a simple tool.

5.4 Label rings and protection rings

Label rings and/or protection rings shall be designed so that, when fitted, they can be mechanically inserted simultaneously with the flanges. Label rings shall have provisions for customs sealing.

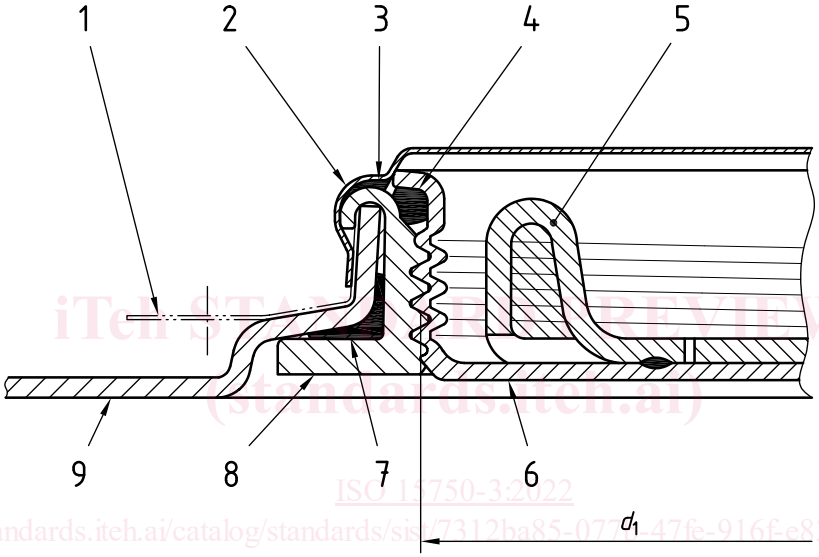
NOTE Label rings and/or protection rings can provide adequate reinforcement for the flange insertion and can protect the drum stock neck against corrosion.

Annex A
(normative)

Octagonal base closure system (type A closure)

A.1 Nomenclature for closure system

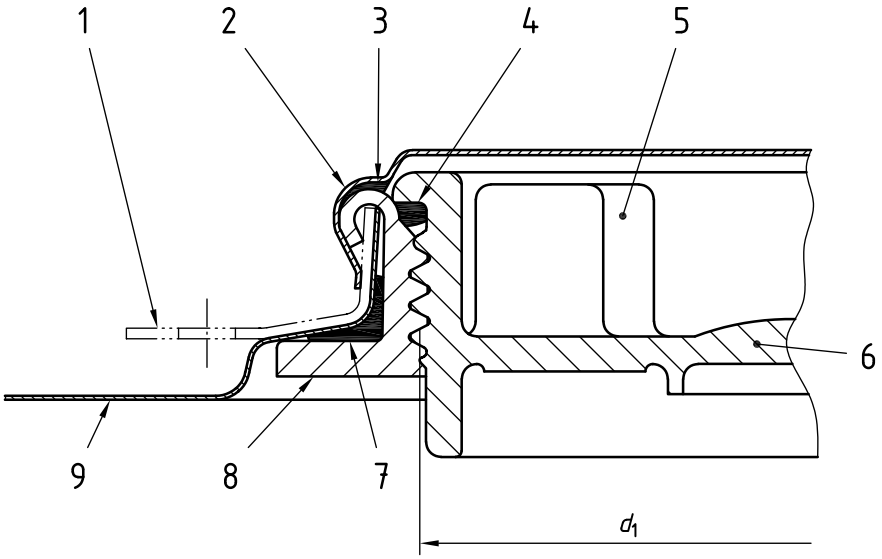
Closure components of the closure system may deviate from those shown in Figures A.1 and A.2. However, the specified dimensions shall be followed.



Key

1	optional label ring/protection ring	6	example with steel plug
2	capseal	7	elastomer flange washer
3	gasket	8	flange
4	plug washer	9	drum stock
5	wrenching insert	d_1	Nominal pitch diameter.

Figure A.1 — Assembly in medium- and heavy-gauge stock



Key

1	label ring/protection ring	6	example with plastic plug
2	capseal	7	elastomer flange washer
3	gasket	8	flange
4	plug washer	9	drum stock
5	wrenching insert	d_1	Nominal pitch diameter.

Figure A.2 — Assembly in light-gauge drum stock

A.2 Flanges and elastomer flange washer

A.2.1 Dimensions

Specific dimensions for flanges and elastomer flange washers shall be as shown in Figures A.3 and A.4 and specified in Table A.1.

Flanges and elastomer washers may deviate from those shown in the figures.

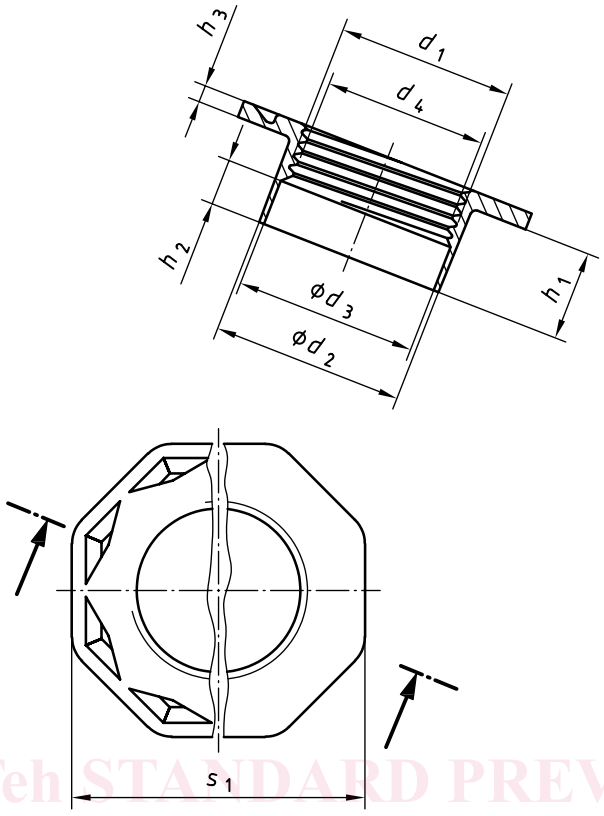


Figure A.3 — Flange

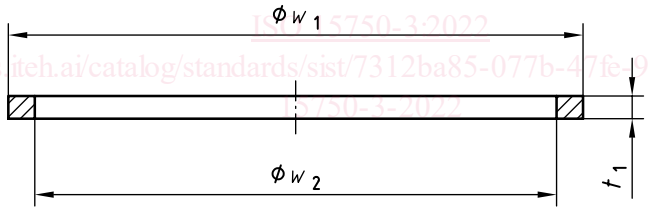


Figure A.4 — Elastomer flange washer

Table A.1 — Flanges and elastomer flange washers

Dimensions in millimetres

Thread	Nominal pitch diameter d_1	Flange dimensions							Elastomer flange washer dimensions $w_1 \times w_2 \times t_1$ ±1,0 × ± 1,0 × ± 0,5
		d_2 ±0,3	d_3 ±0,3	d_4 ±0,3	h_1 ±0,5	h_2 ±0,5	h_3 ±0,4	s_1 ±0,3	
G 3/4	[a]	29,0	27,2	24,5	12,9	7,2	2,7	43,7	32 × 27,2 × 2,6
G 2	[a]	62,4	60,4	57,1	15,8	7,9	2,8	77,9	67 × 60,5 × 2,6

[a] Conforming to ISO 228-1.

A.2.2 Materials and configuration

Flanges shall be made from either mild steel in accordance with ISO 3573 or ISO 3574, or another material suitable for its intended use.

The specific type of elastomer shall be agreed between the purchaser and the supplier.

Alternative configurations of the flange and flange washer(s) should be agreed between the purchaser and the supplier.

A.3 Label rings and protection rings

A.3.1 Dimensions

Specific dimensions for label rings and protection rings shall be as shown in Figures A.5 and A.6 and specified in Table A.2.

Label rings and protection rings may deviate from those shown in the figures.

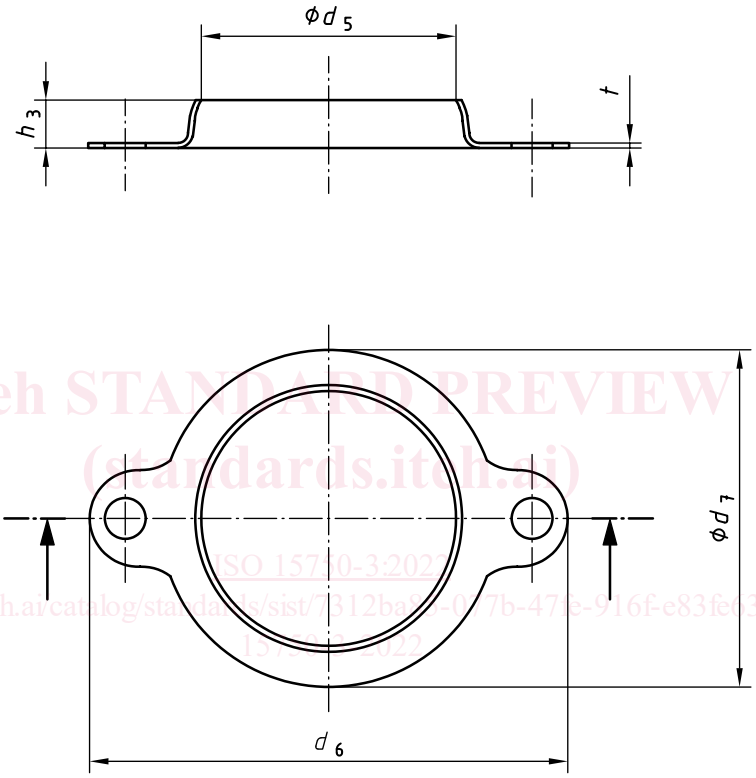


Figure A.5 — Label ring

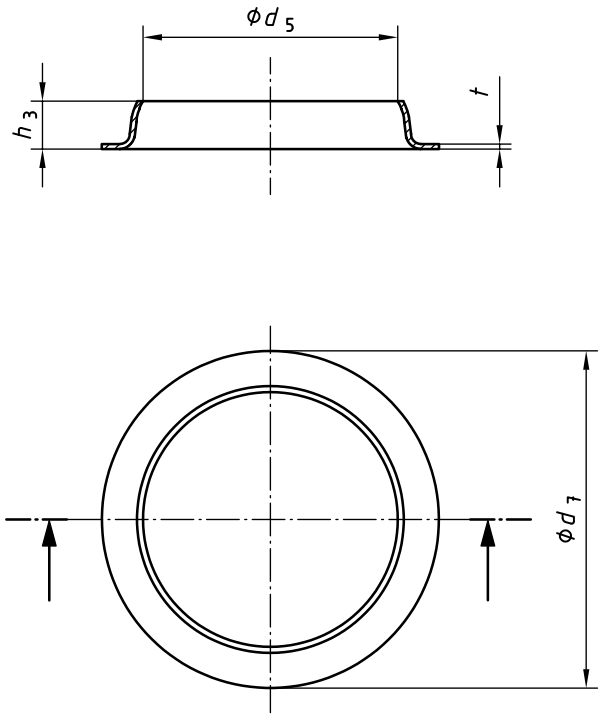


Figure A.6 — Protection ring

Table A.2 — Label rings and protection rings

Dimensions in millimetres

Thickness of end stock x	Thread	Dimensions d_5 ±0,4	 d_6 ±0,4	 d_7 ±0,4	 h_3 ±0,4	Thickness of label rings and protection rings t
Light gauge 0,5 ≤ x < 0,8	G 3/4	29,7	54,0	41,0	6,4	0,8
	G 2	62,3	98,5	74,5	8,4	
Medium gauge 0,8 ≤ x < 1,5	G 3/4	31,0	58,5	41,0	5,4	0,3[a]
	G 2	63,5	99,5	74,5	8,2	
Heavy gauge 1,5 ≤ x < 2,0	G 3/4	31,3	58,5	41,0	5,7	0,3[a]
	G 2	65,7	99,5	74,5	7,3	

[a] The use of label or protection rings is optional for medium- and heavy-gauge end stock.

A.3.2 Materials and configuration

Label and protection rings shall be made from mild steel in accordance with ISO 5002 or another material appropriate to the requirements for its intended use.

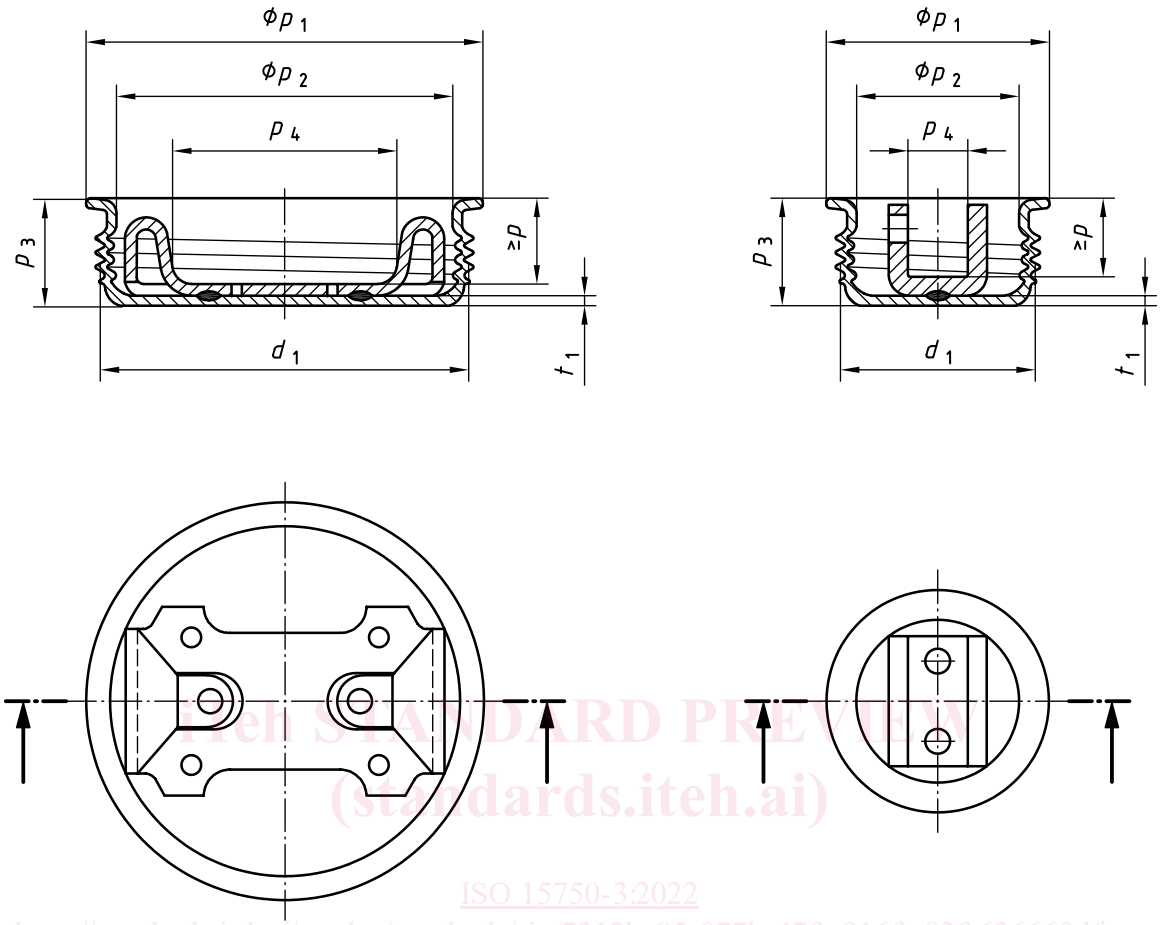
Alternative configurations of label and protection rings should be agreed between the purchaser and the supplier.

A.4 Steel plugs and elastomer or thermoplastics plug washers

A.4.1 Dimensions

Specific dimensions for steel plugs and elastomer or thermoplastics plug washers shall be as shown in Figures A.7 and A.8 and specified in Table A.3.

Steel plugs and elastomer or thermoplastics plug washers may deviate from those shown in the figures.



a) G 2 thread **b) G 3/4 thread**

Figure A.7 — Steel plug

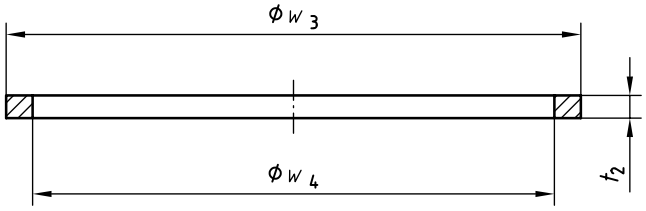


Figure A.8 — Elastomer plug washer