

# Inserted flange type closure systems for steel drums with a total capacity of 17 l to 230 l

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British Standard

ICS 55.140

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- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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## Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 38, an inside back cover and a back cover.

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|          |      |          |

English version

## Inserted flange type closure systems for steel drums with a total capacity of 17 l to 230 l

Système de fermeture à colerette (filetée) sertie pour fûts en acier d'une capacité totale de 17 l à 230 l

Verschlusssysteme mit eingesetztem Flansch für Stahlfässer mit einem Gesamtvolumen von 17 l bis 230 l

This European Standard was approved by CEN on 27 April 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 261, Packaging, the Secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2000, and conflicting national standards shall be withdrawn at the latest by November 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This standard is one of a series of standards on steel drums with a capacity of 17 l to 230 l and closures for steel drums.

Efficient packaging is of great importance for the distribution and the protection of goods. Insufficient or inappropriate packaging can lead to damage or wastage of the contents of the package.

## 1 Scope

This European Standard specifies the characteristics and dimensions of inserted flange type closure systems used for steel drums with a total capacity of 17 l - 230 l.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

|                |                                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------|
| ISO 228-1:1994 | Pipe threads where pressure-tight joints are not made on the threads - Part 1:Dimensions, tolerances and designation. |
| ISO 3573:1999  | Hot-rolled carbon steel sheet of commercial and drawing qualities.                                                    |
| ISO 3574:1999  | Cold-reduced carbon steel sheet of commercial and drawing qualities.                                                  |
| ISO 5002:1999  | Hot-rolled and cold-reduced electrolytic zinc-coated carbon steel sheet of commercial and drawing qualities.          |
| ISO 11949:1995 | Cold-reduced electrolytic tinplate                                                                                    |
| ISO 11950:1995 | Cold-reduced electrolytic chromium/chromium oxide-coated steel                                                        |

## 3 Terms and definitions

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

### 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 of an industrial packaging such as a tight head steel drum

NOTE The octagonal base closure (type C1) is described in annexes A to J. The serrated base closure (type C2) is described in annexes K to S.

## 4 Dimensions

The dimensions of the octagonal base closure (type C1) shall be as given in annexes B to H. The dimensions of the serrated base closure (type C2) shall be as given in annexes L, M, and N to S.

The nominal pitch diameter and the pitch of the thread of the closures G2 and G3/4 shall be in accordance with ISO 228-1:1994.

## 5 Materials

The materials of the various components of the closure shall be as given in annexes B to F and annexes L, M, N and O.

## 6 Design and construction

NOTE The nature of the internal and external surface finish should be agreed between the purchaser and the supplier. If not specified, the finish should be galvanized.

**6.1** Flanges shall be of a mechanical inserted type and shall make a leak tight fit when inserted. The flange base shall have either an octagonal base (type C1) or a serrated base (type C2).

**6.2** Plugs shall be designed so that they can be inserted and 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.

Dimensions of the wrenching insert shall be such that the plugs can be operated by a universal tool for steel and plastics plugs, e.g. as indicated in annexes I and R.

NOTE For recommended closing torques see annexes J and S.

**6.3** Capseals/overseals shall be of a crimping type which can be fitted with a gasket for sealing and shall have provisions for customs sealing and evidence of tampering.

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

**6.4** Label rings and/or protection rings shall be designed so that 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.

## 7 Designation

Closure components manufactured in accordance with EN 12928 shall be designated:  
Octagonal base inserted flange (type C1) closures for steel drums:

EN 12928 G2 and G3/4 flanges;  
EN 12928 G2 and G3/4 plugs;  
EN 12928 G2 and G3/4 capseals;  
EN 12928 G2 and G3/4 label rings;  
EN 12928 G2 and G3/4 protection rings;

Serrated base inserted flange (type C2) closures for steel drums:

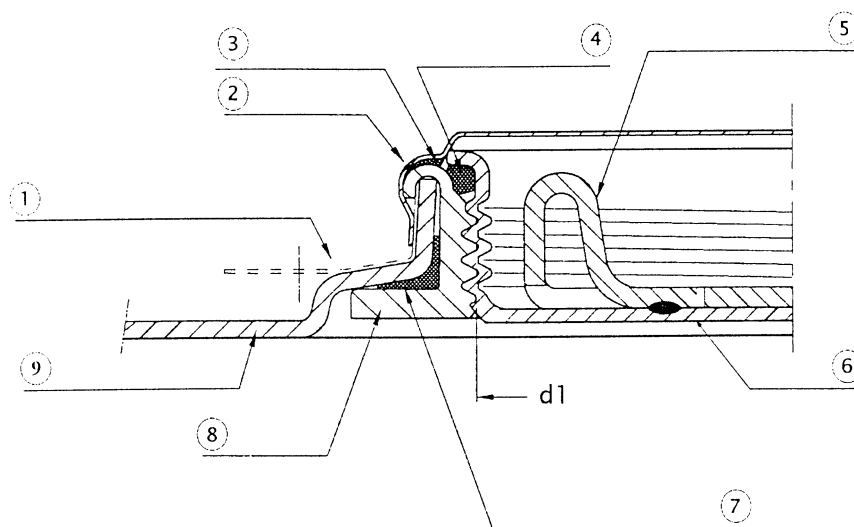
EN 12928 G2 and G3/4 flanges;  
EN 12928 G2 and G3/4 plugs;  
EN 12928 G2 and G3/4 overseals.

## Annex A (normative)

### Octagonal base (type C1) — Nomenclature for closure system

The nomenclature for the closure system shall be as shown in Figures A.1 and A.2.

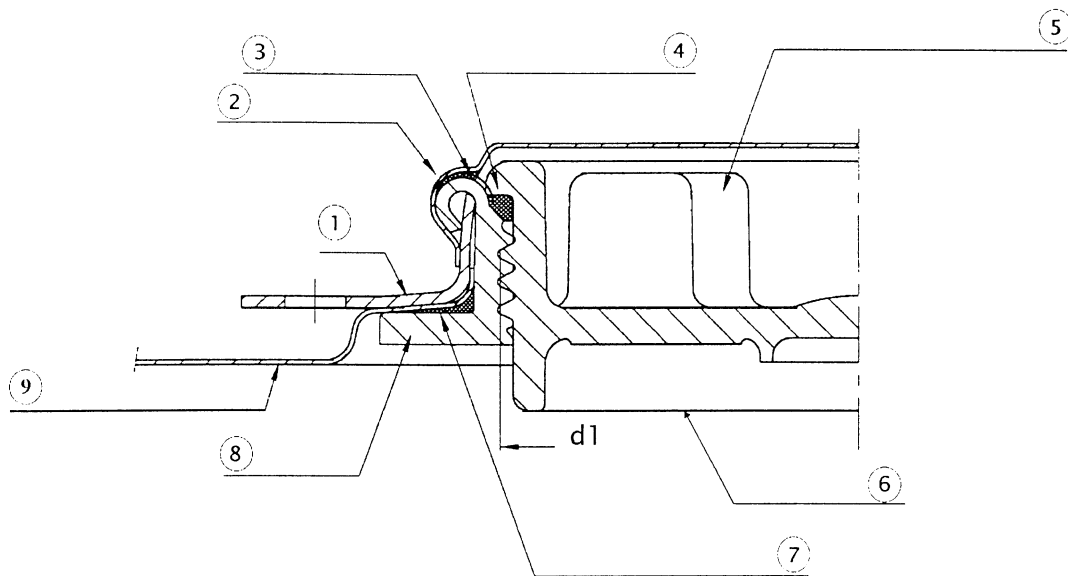
Where closure components of the octagonal base closure system deviate from those illustrated in the figures shown hereafter, the specified dimensions shall be maintained.



#### Key

|       |                                     |
|-------|-------------------------------------|
| $d_1$ | pitch diameter                      |
| ①     | optional label ring/protection ring |
| ②     | capsel                              |
| ③     | gasket                              |
| ④     | plug washer                         |
| ⑤     | wrenching insert                    |
| ⑥     | steel plug                          |
| ⑦     | flange washer                       |
| ⑧     | flange                              |
| ⑨     | drum stock                          |

**Figure A.1 — Assembly cross section in medium and heavy gauge drum stock**



### Key

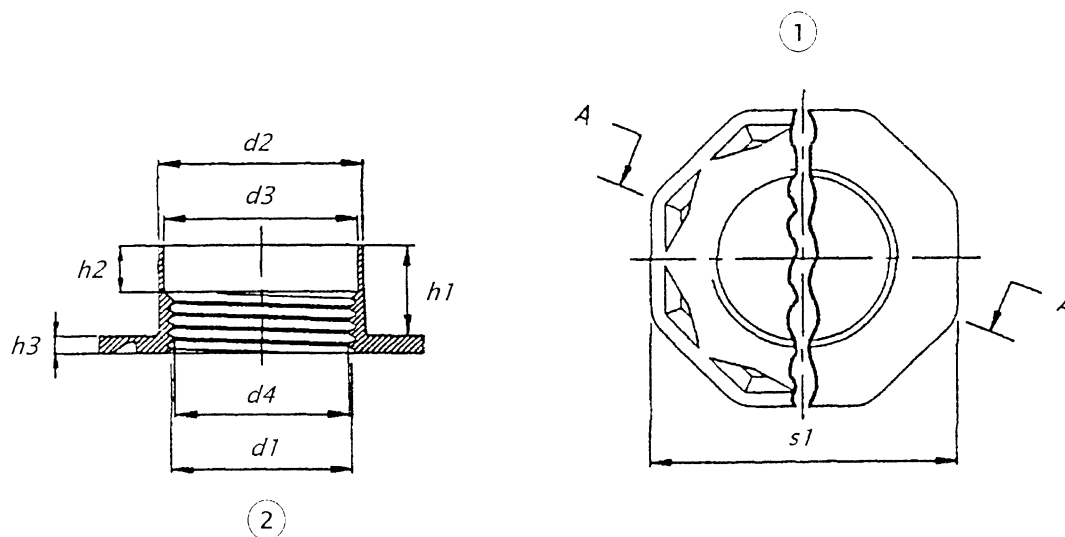
|       |                            |
|-------|----------------------------|
| $d_1$ | pitch diameter             |
| ①     | label ring/protection ring |
| ②     | capseal                    |
| ③     | gasket                     |
| ④     | washer                     |
| ⑤     | wrenching part             |
| ⑥     | plastics plug              |
| ⑦     | washer                     |
| ⑧     | flange                     |
| ⑨     | drum stock                 |

**Figure A.2 — Assembly cross section in light gauge drum stock**

## Annex B (normative)

### Octagonal base (type C1) — Flange and flange washer

The flange and flange washer shall be as shown in Figures B.1 and B.2 and as specified in Table B.1.



#### Key

- ① Bottom view
- ② Section A — A

Figure B.1 — Flange

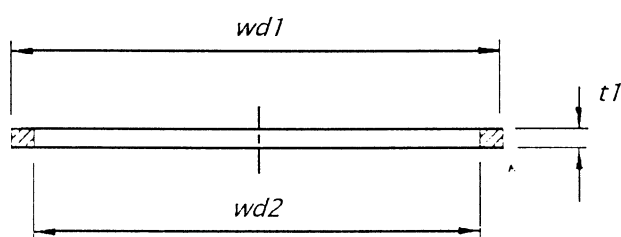


Figure B.2 — Flange washer

**Table B.1 — Flange and flange washer**

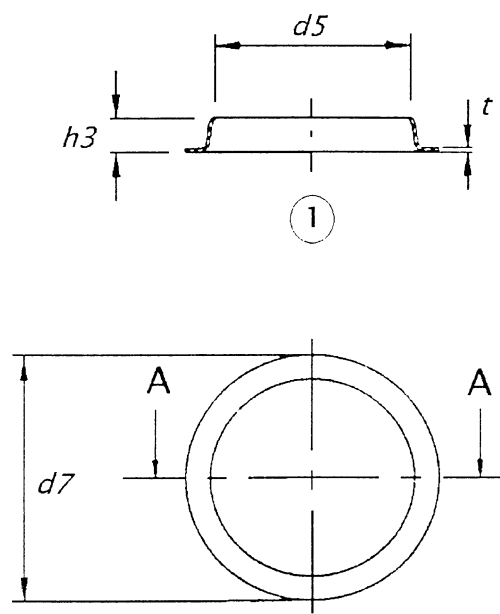
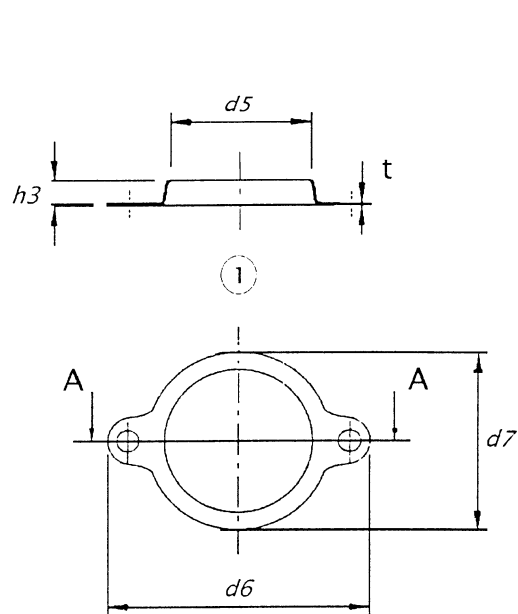
Dimensions in mm

| Pitch and pitch diameter ( $d_1$ ) in accordance with ISO 228-1:1994                                                                                                                                                                                                                                                                                                                             | $d_2$     | $d_3$     | $d_4$     | $h_1$     | $h_2$     | $h_3$     | $s_1$     | Flange washer dimensions<br>$wd_1 \times wd_2 \times t_1$ |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------------------------------------------------------|
| Tolerances                                                                                                                                                                                                                                                                                                                                                                                       | $\pm 0,3$ | $\pm 0,3$ | $\pm 0,3$ | $\pm 0,5$ | $\pm 0,5$ | $\pm 0,4$ | $\pm 0,3$ | $\pm 1 \times \pm 1 \times \pm 0,5$                       |
| G3/4                                                                                                                                                                                                                                                                                                                                                                                             | 29,0      | 27,2      | 24,5      | 12,9      | 7,2       | 2,7       | 43,7      | $32 \times 27,2 \times 2,6$                               |
| G2                                                                                                                                                                                                                                                                                                                                                                                               | 62,4      | 60,4      | 57,1      | 15,8      | 7,9       | 2,8       | 77,9      | $67 \times 60,5 \times 2,6$                               |
| <p>Flanges shall either be made from steel in accordance with ISO 3573:1999 or ISO 3574:1999 or from another suitable material appropriate to the physical and chemical requirements. Flange washers shall be made from elastomer or thermoplastics.</p> <p>NOTE The specific type of elastomer or thermoplastics and/or configuration may be agreed between the supplier and the purchaser.</p> |           |           |           |           |           |           |           |                                                           |

## Annex C (normative)

### Octagonal base (type C1) — Label ring and protection ring

The label ring and the protection ring shall be as shown in Figures C.1 and C.2 and as specified in Table C.1.



#### Key

- ① Section A — A

Figure C.1 — Label ring

Figure C.2 — Protection ring