

INTERNATIONAL STANDARD

ISO
5483

Third edition
2023-08

Ships and marine technology — Drain facilities from oil and water tanks

STANDARDSISO.COM : Click to view the full PDF of ISO 5483:2023



Reference number
ISO 5483:2023(E)

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

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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 document 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).

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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 8, *Ships and marine technology*, Subcommittee SC 3, *Piping and machinery*.

This third edition cancels and replaces the second edition (ISO 5483:2003), which has been technically revised.

The main changes are as follows:

- the normative references have been updated;
- [Clause 3](#) has been added;
- in [Clause 4](#), Type C and Type D for jack-up platform have been added;
- in [Clause 5](#), the general arrangement and parts list for Type C and Type D have been added;
- in [Clause 6](#), mounting and main dimensions for Type C and Type D assembly have been added;
- [Figure 6](#) has been moved to [6.5](#);
- in [Clause 7](#), designations for welding rings in Type C and Type D have been added;
- in [Clause 8](#), details for Type C and Type D drain screws in water tanks and oil tanks have been added;
- in [Clause 9](#), marking has been updated and added for Type D;
- in [Clause 10](#), opening methods for drain facilities have been added;
- [Annex A](#) has been added.

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.

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Ships and marine technology — Drain facilities from oil and water tanks

1 Scope

This document specifies the dimensions and materials for welding rings and drain screws of drain facilities situated at the bottom of oil and water tanks.

Oil and water tanks occur as:

- built-in tanks, as an integrated part of the hull structure; and
- detachable tanks, located in appropriate rooms and compartments.

This document covers facilities for both instances.

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 68-1, *ISO general purpose screw threads — Basic profile—Part 1: Metric screw threads*

ISO 261, *ISO general purpose metric screw threads — General plan*

ISO 965-1, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

ISO 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

ISO 965-3, *ISO general purpose metric screw threads — Tolerances — Part 3: Limit deviations for screw threads*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 16143-1, *Stainless steels for general purposes — Part 1: Corrosion-resistant flat products*

3 Terms and definitions

No terms and definitions are listed in this document.

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/>

4 Designation

For the purposes of this document, four types of drain facilities are covered:

- Type A, which is universally applicable, especially where flush mounting with the outer surface of hull plating at plate thickness is less than 38 mm;

- Type B and Type C, which are usable in other instances where the Type A is not applicable;
- Type D, which is used in jackup platforms where flush mounting with the outer surface of hull plating.

NOTE Type A, B, C and D arrangements are identified by the following two categories of drain screws:

- square wrench connection for water tanks, and
- hexagonal wrench connection for oil tanks.

5 General assembly arrangement

5.1 Assembly

For Type A, refer to [Figure 1](#) and [Table 1](#). For Type B, refer to [Figure 2](#) and [Table 2](#). For Type C, refer to [Figure 3](#) and [Table 3](#).

For Type D, refer to [Figure 4](#) and [Table 4](#).

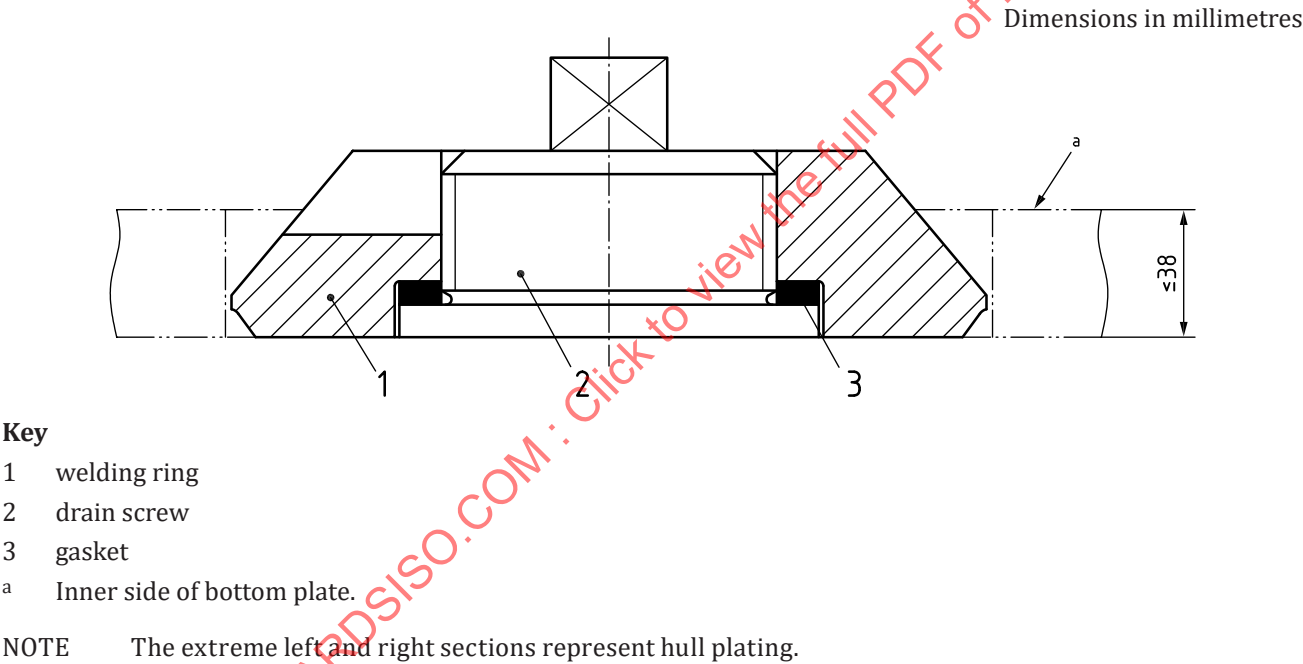
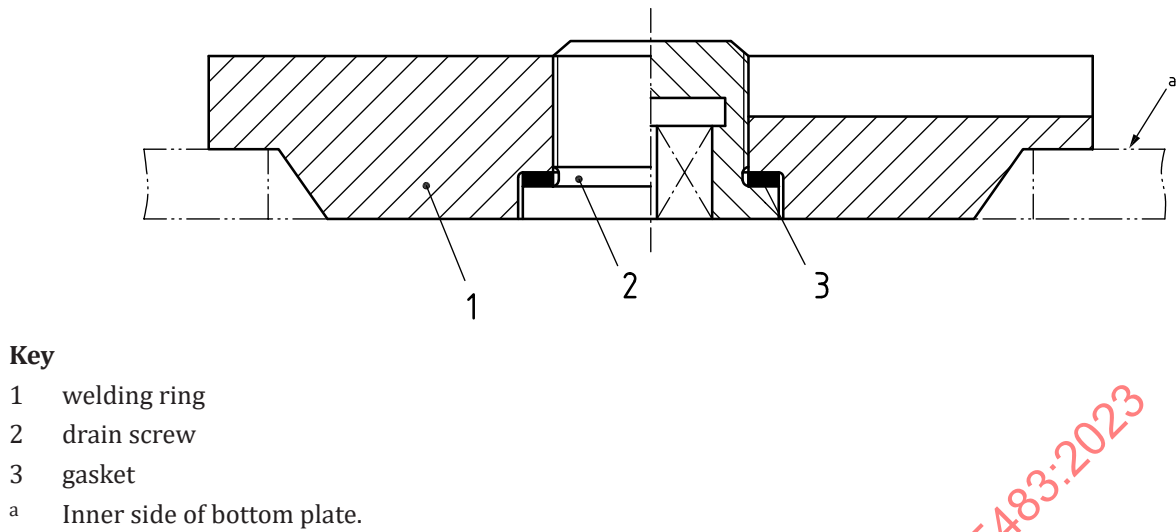


Figure 1 — General arrangement for Type A

Table 1 — Parts list for Type A

Dimensions in millimetres

Part no.	Part name	Size
1	Welding ring	162
		350
2	Drain screw	M42 × 2
		M72 × 3
3	Gasket	—

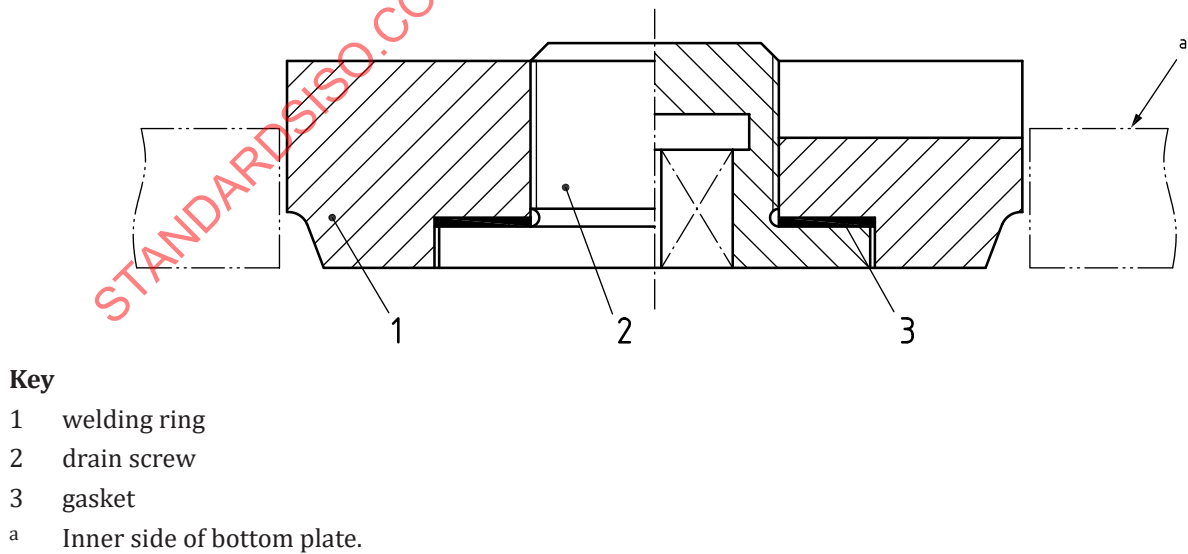


NOTE The extreme left and right sections represent hull plating.

Figure 2 — General arrangement for Type B

Table 2 — Parts list for Type B

Dimensions in millimetres		
Part no.	Part name	Size
1	Welding ring	8
		15
		22
2	Drain screw	M42 × 2
		M72 × 3
3	Gasket	—



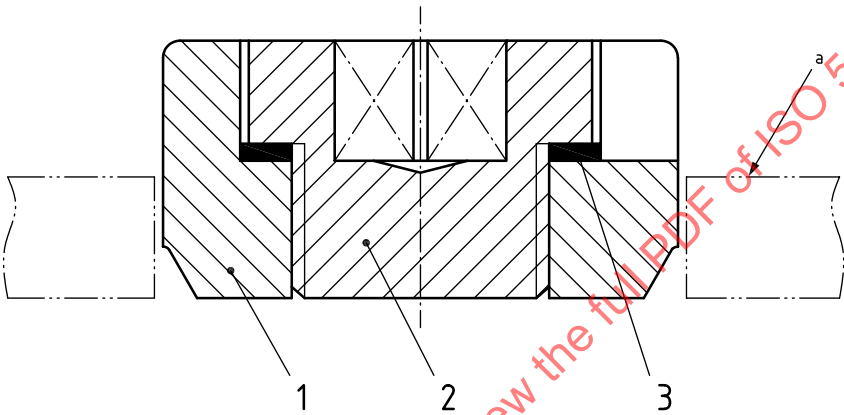
NOTE The extreme left and right sections represent hull plating.

Figure 3 — General arrangement for Type C

Table 3 — Parts list for Type C

Dimensions in millimetres

Part no.	Part name	Size
1	Welding ring	35
		45
		55
2	Drain screw	M42 × 2
		M52 × 2
		M62 × 2
		M72 × 3
3	Gasket	—



Key

- 1 welding ring
- 2 drain screw
- 3 gasket
- a Inner side of bottom plate.

NOTE The extreme left and right sections represent hull plating.

Figure 4 — General arrangement for Type D

Table 4 — Parts list for Type D

Dimensions in millimetres

Part No.	Part name	Size
1	Welding ring	35
		45
		55
2	Drain screw	M42 × 2
		M52 × 2
		M62 × 2
		M72 × 3
3	Gasket	—

5.2 Threads

For all types, the threads shall be accordance with ISO 68-1, ISO 261 and ISO 965-1, ISO 965-2 and ISO 965-3.

NOTE A non-toxic anti-seize compound grease can be used on the thread surfaces.

5.3 Materials

The welding ring, drain screw and gasket materials shall be as given in [Table 5](#). Other materials shall be of equivalent quality and in all respects suitable for the intended purpose.

Table 5 — Material list for all types

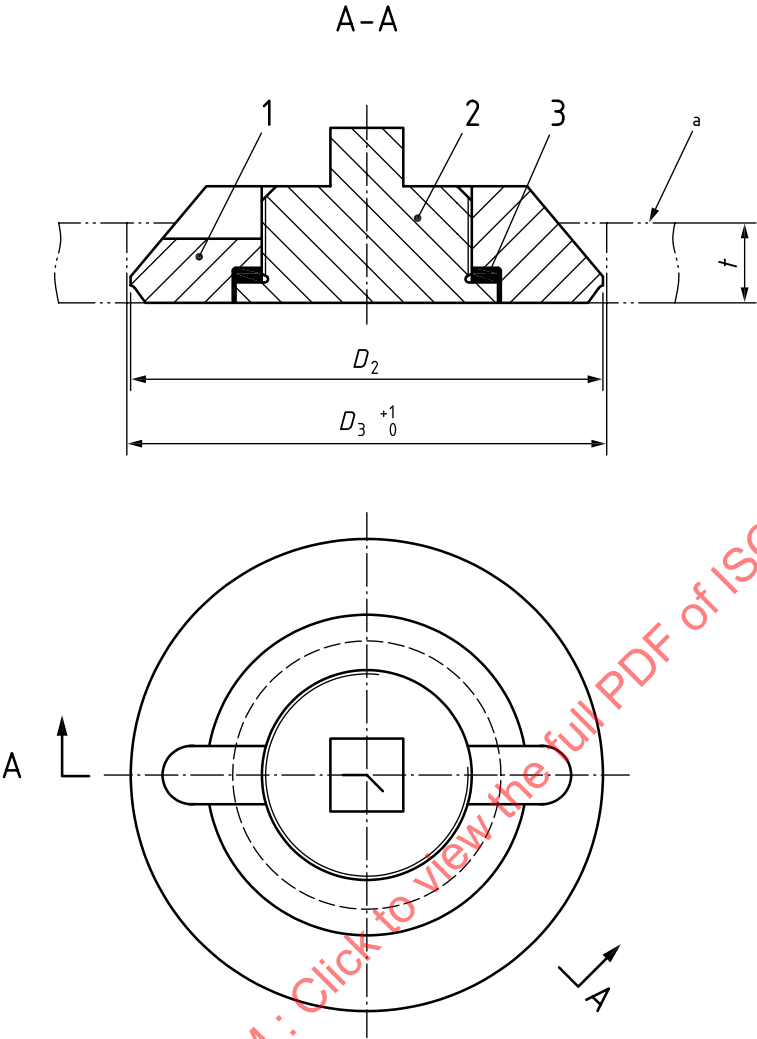
Component	Material	Designation
Welding ring	Steel shall be of similar quality as surrounding tank bottom steel plating.	Shipbuilding steel
Drain screw	Stainless steel	ISO 16143-1
	Copper-aluminium alloy	—
Gasket	Polytetrafluoroethylene (PTFE)	—
	Chloroprene rubber	Ballast tanks and fresh water tanks
	Lead	Oil tanks
	Red copper	—

6 Mounting

6.1 Type A

For Type A mountings, see [Figure 5](#) and [Table 6](#).

Dimensions in millimetres



- Key**
- 1 welding ring
 - 2 drain screw
 - 3 gasket
 - a Inner side of bottom plate.

Figure 5 — Type A mounting

Table 6 — Main dimensions for Type A assembly

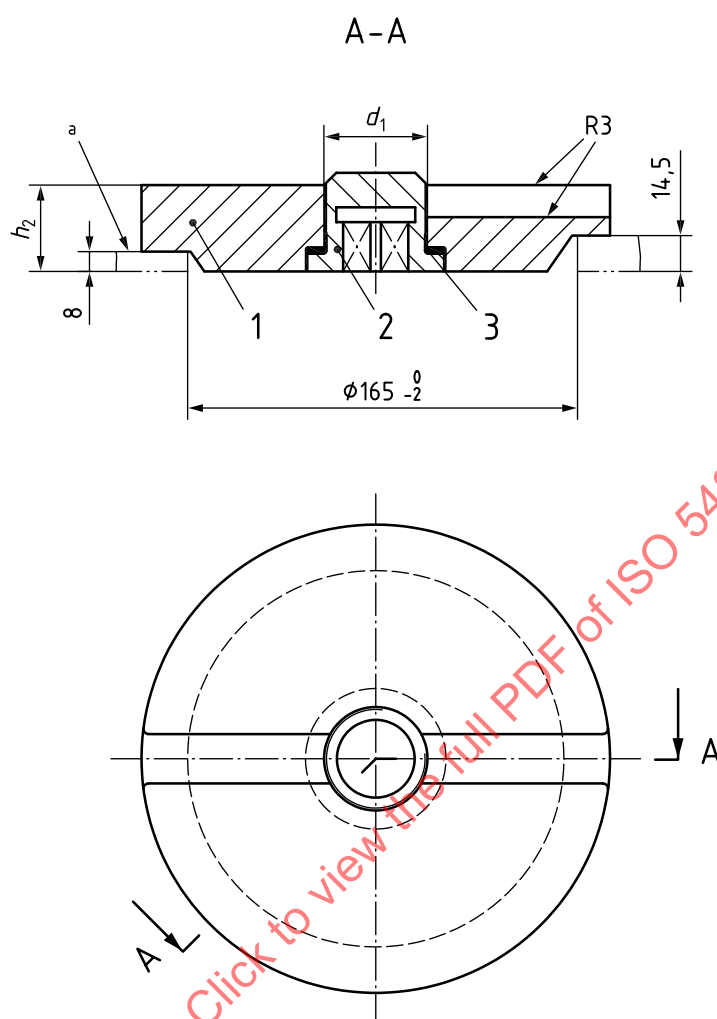
Dimensions in millimetres

Size D_2	Type	Hole size of hull plate D_3	Thickness of hull plate t
162	A-1	165	$t \leq 27,5$
350	A-2	353	$27,5 < t \leq 38$

6.2 Type B

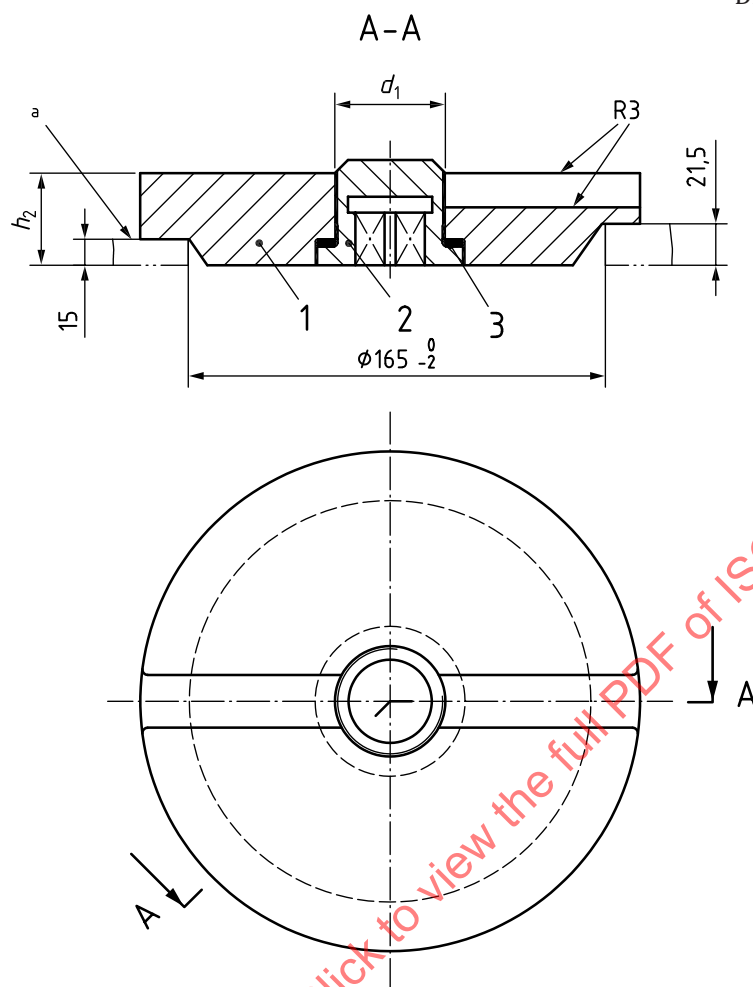
For Type B mountings, see [Figures 6, 7 and 8](#) and [Table 7](#).

Dimensions in millimetres

**Key**

- 1 welding ring
- 2 drain screw
- 3 gasket
- R3 dimension of the fillet, 3 mm
- ^a Inner side of bottom plate.

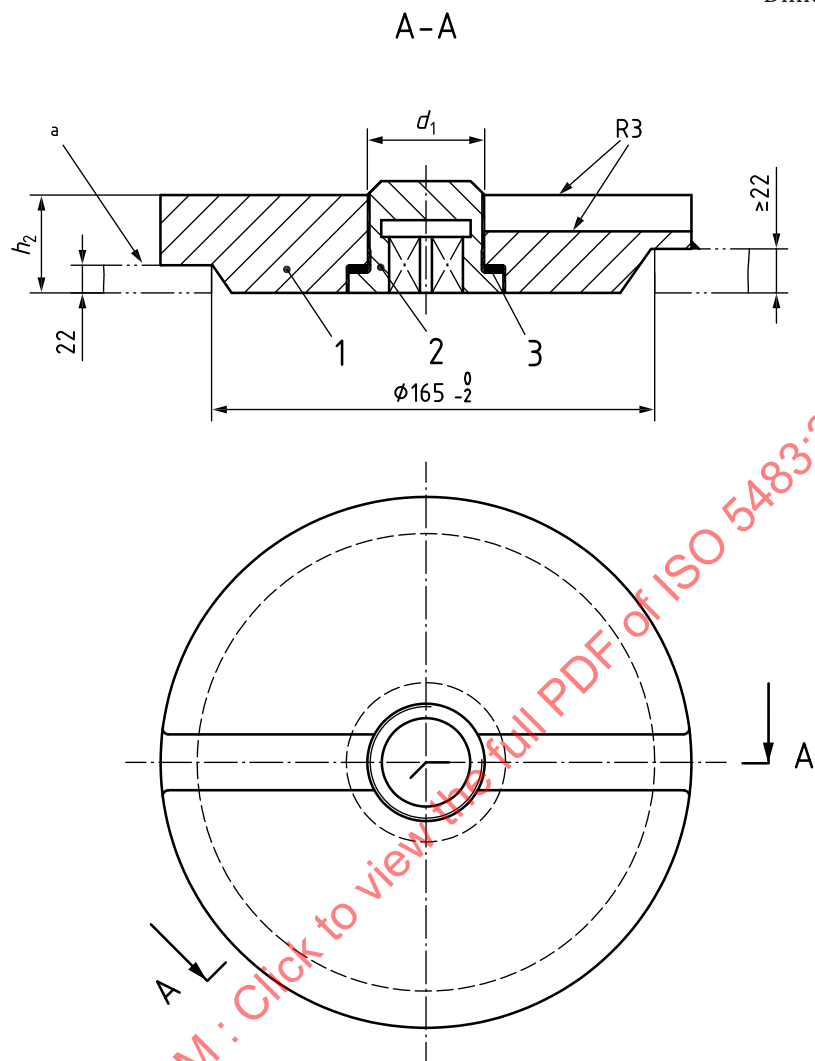
Figure 6 — Type B for plate thickness of 8 mm to 14,5 mm

**Key**

- 1 welding ring
- 2 drain screw
- 3 gasket
- R3 dimension of the fillet, 3 mm
- a Inner side of bottom plate.

Figure 7 — Type B for plate thickness of 15 mm to 21,5 mm

Dimensions in millimetres



- Key**
- 1 welding ring
 - 2 drain screw
 - 3 gasket
 - R3 dimension of the fillet, 3 mm
 - a Inner side of bottom plate.

Figure 8 — Type B for plate thickness 22 mm and beyond

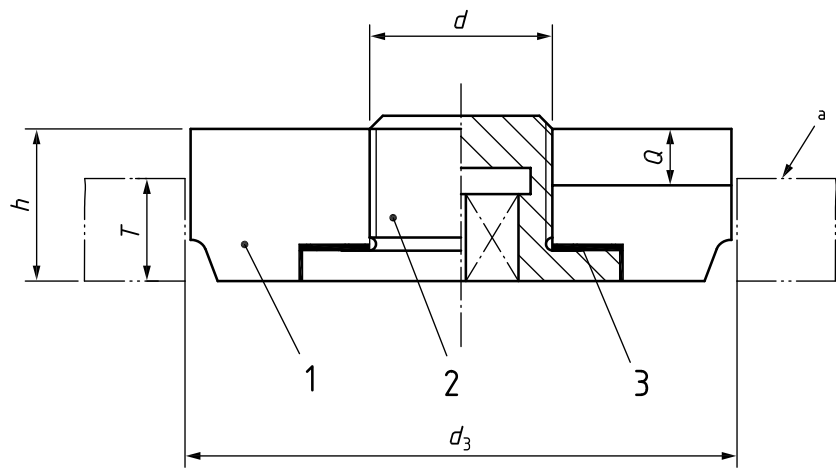
Table 7 — Main dimensions for Type B assembly

Dimensions in millimetres

Size h_2	Type	Height of welding ring h_2	Thread d_1
35	B-1	35	M42 × 2
40	B-2	40	M72 × 3

6.3 Type C

For Type C mountings, see [Figure 9](#) and [Table 8](#).



- Key**
- 1 welding ring
 - 2 drain screw
 - 3 gasket
 - Q depth of flume
 - T thickness of hull plate
 - a Inner side of bottom plate.

Figure 9 — Type C mounting

Table 8 — Main dimensions for Type C assembly

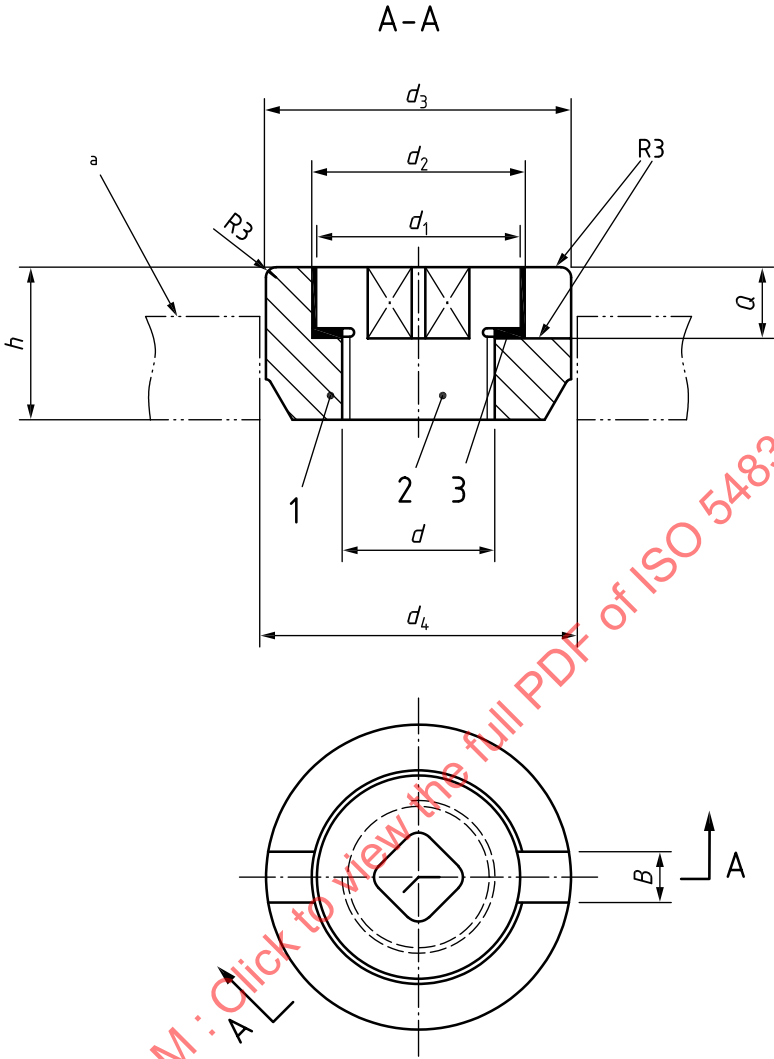
Dimensions in millimetres

Size d_3	Type	Height of welding ring h	Thread d
130	C-1	35	M42 × 2
		45	
		55	
130	C-2	35	M52 × 2
		45	
		55	
170	C-3	35	M62 × 2
		45	
		55	
170	C-4	35	M72 × 3
		45	
		55	

6.4 Type D

For Type D mountings, see [Figure 10](#) and [Table 9](#).

Dimensions in millimetres



- Key**
- 1 welding ring
 - 2 drain screw
 - 3 gasket
 - B width of flange
 - a Inner side of bottom plate.

Figure 10 — Type D Mounting

Table 9 — Main dimensions for Type D assembly

Dimensions in millimetres

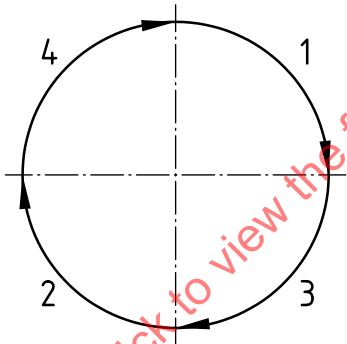
Size d_4	Type	Height of welding ring h	Thread d
120	D-1	35	M42 × 2
		45	
		55	

Table 9 (continued)

Size d_4	Type	Height of welding ring h	Thread d
120	D-2	35	M52 × 2
		45	
		55	
130	D-3	35	M62 × 2
		45	
		55	
140	D-4	35	M72 × 3
		45	
		55	

6.5 General for all types

All types of welding as shown in [Figure 11](#) shall comply with the rules of classification societies.



- Key
- 1 section 1
 - 2 section 2
 - 3 section 3
 - 4 section 4

Figure 11 — Welding sequence

Ensure that alternate sections of the circumference are welded in sequence as shown to avoid heat deformation. Weld the 90° shown as section 1 in [Figure 11](#), skip 90°, then weld section 2. Skip 180° and weld section 3. Skip 90° and weld section 4, the last section.

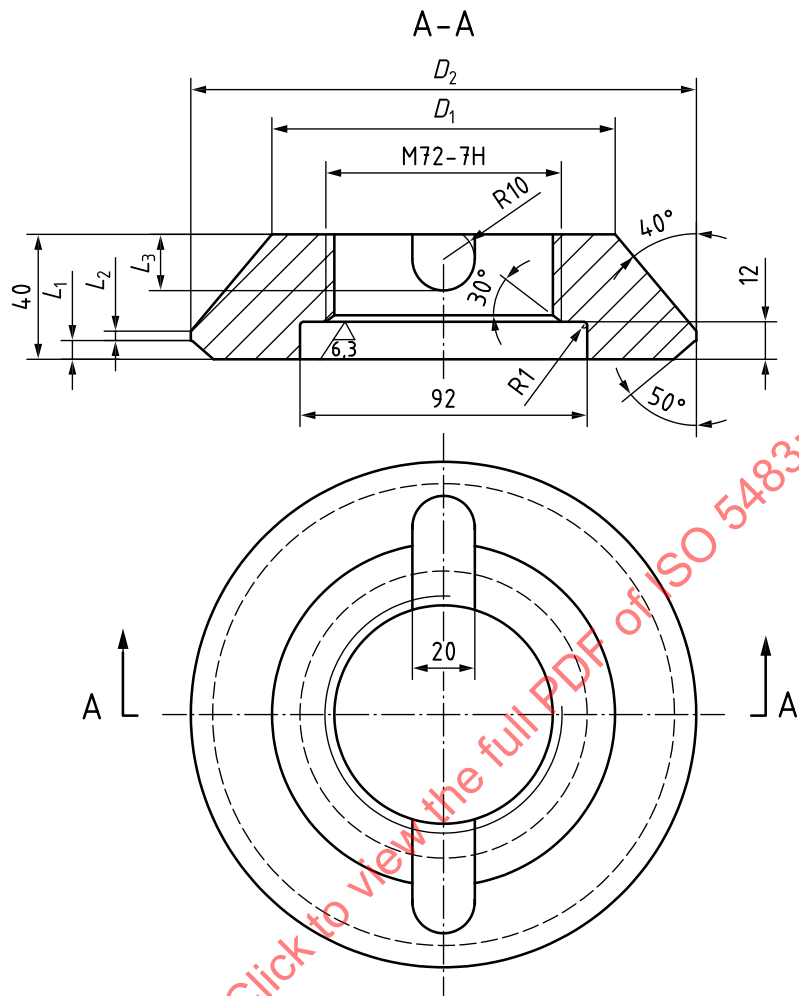
The completed welding shall be examined for cracks.

7 Welding ring

7.1 Welding ring — Type A

Details of Type A welding rings are given in [Figure 12](#) and [Table 10](#).

Dimensions in millimetres



Key
R1 dimension of the fillet, 1 mm

Figure 12 — Type A welding ring

Table 10 — Designations for welding rings in Type A

Type	Height of outer hypotenuse of welding ring L_1 mm	Flange height of welding ring L_2 mm	Depth of flume L_3 mm	Diameter of inner surface of welding ring D_1 mm	Diameter of welding ring D_2 mm	Mass kg
A-1.1	6	3	18	110	162	8,2
A-1.2	10	10	12	128		
A-2.1	6	3	18	298	350	16,8
A-2.2	10	10	12	315		
NOTE For Type A, an M42 × 2 thread can be utilized. See ISO 965-1 and ISO 965-2.						

7H in Figure 12 represents the allowable tolerance of the nut minor diameter, which is $^{+0,475}_0$ mm, and the tolerance of the nut pitch diameter, which is $^{+0,3}_0$ mm.
Tolerance shall be in accordance with ISO 2768-1, designation m (medium).

The description shall consist of:

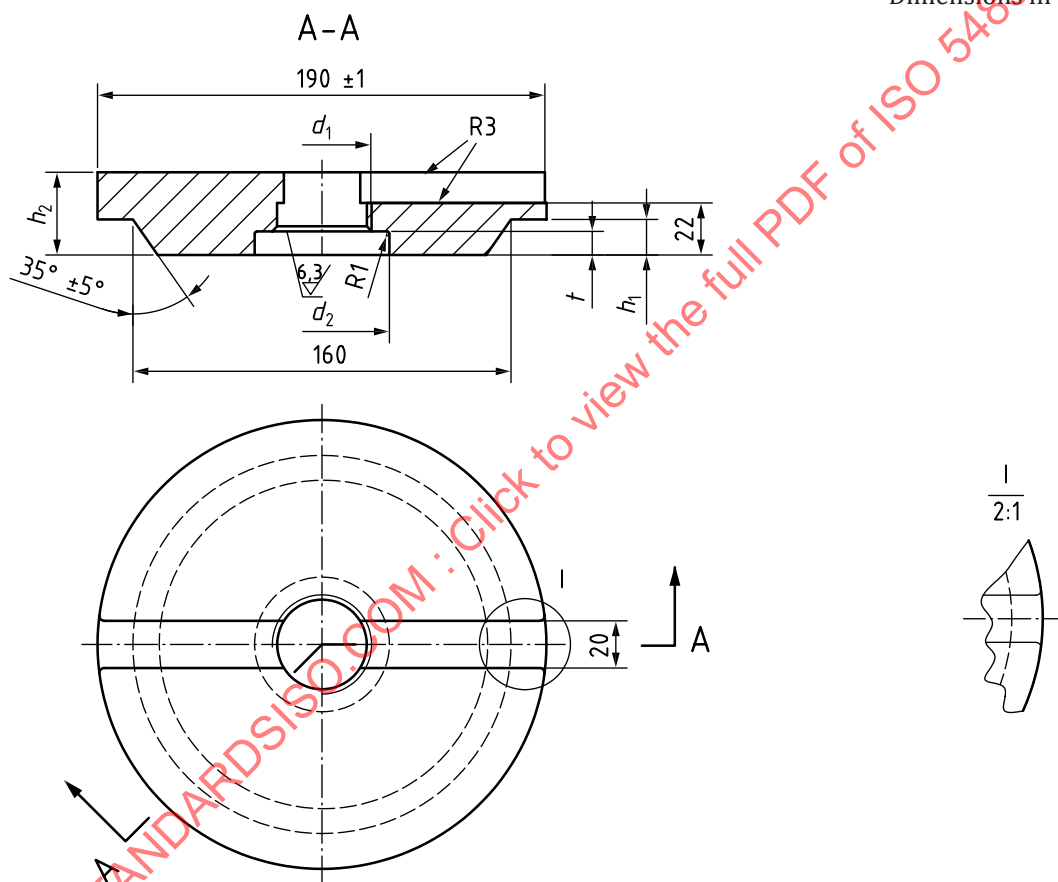
- a) the designation;
- b) the number of this document;
- c) the type;
- d) D_2 .

EXAMPLE Welding ring-ISO 5483-A-2.2-350.

7.2 Welding ring — Type B

Details of Type B welding rings are given in [Figure 13](#) and [Table 11](#).

Dimensions in millimetres



NOTE Slit for $h_1 = 22$ mm

Figure 13 — Type B welding ring

Table 11 — Designations for welding rings in Type B

Thread d_1	Shoulder height of welding ring h_1 mm	Internal thread ^a		Diameter of drain screw cap hole d_2 mm	Height of welding ring h_2 mm	Depth of drain screw cap hole t mm	Mass kg
		Major di- ameter mm	Minor diameter mm				
M42 × 2	8	41,201	40,335	57	35	10	6,9
	15						6,6
	22						6,5
M72 × 3	8	70,551	69,252	92	40	13	7,0
	15						6,8
	22						6,6
^a These diameters are 0,5 mm bigger than stated in ISO 965-2.							

The description shall consist of:

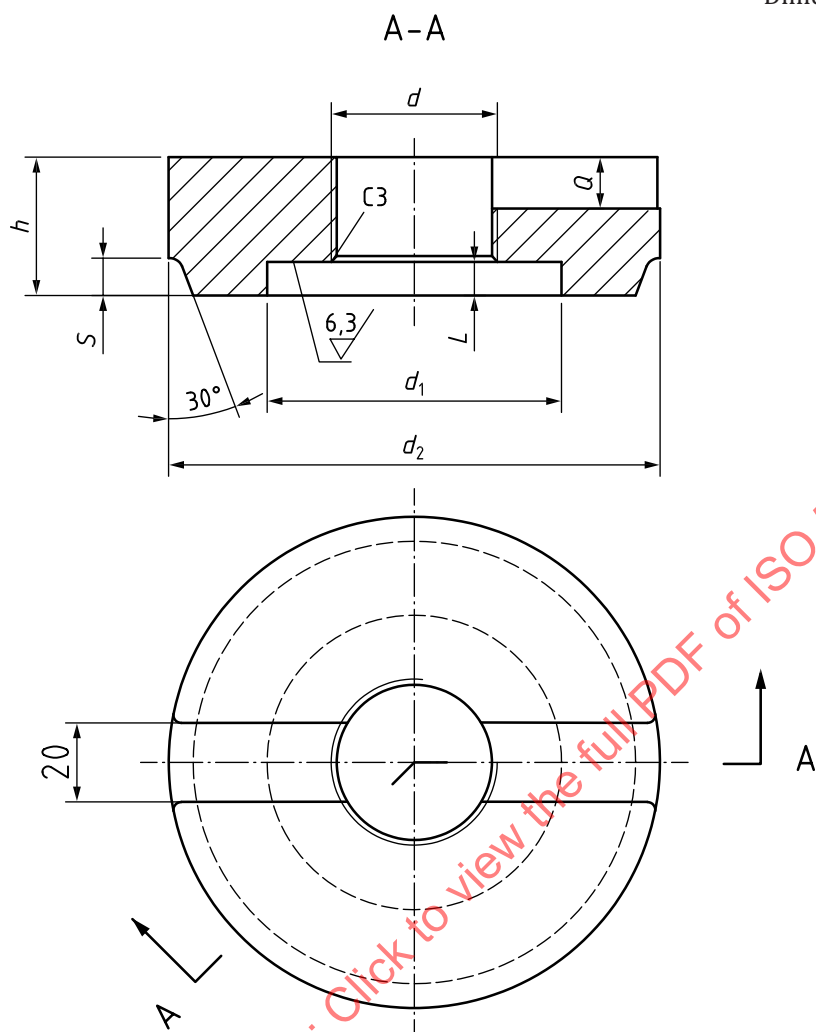
- a) the designation;
- b) the number of this document;
- c) thread (d_1);
- d) h_1 .

EXAMPLE Welding ring—ISO 5483—M42×2—15

7.3 Welding ring — Type C

Details of Type C welding rings are given in [Figure 14](#) and [Table 12](#).

Dimensions in millimetres



Key

C3 dimension of the chamfer, 3 mm

Figure 14 — Type C welding ring

Table 12 — Designations for welding rings in Type C

Thread d mm	Height of welding ring h mm	Diameter of drain screw cap hole d_1 mm	Diameter of welding ring d_2 mm	Depth of drain screw cap hole L mm	Depth of flume Q mm	Depth of welding feet S mm	Thickness of hull plate mm	Mass kg
M42 × 2	35	67	128	10	17	8	9~22	3,43
	45				23	13	22~32	4,27
	55					18	32~42	5,11
M52 × 2	35	77	128		17	8	9~22	3,43
	45				23	13	22~32	4,27
	55					18	32~42	5,11
M62 × 2	35	87	128		17	8	9~22	3,43
	45				23	13	22~32	4,27
	55					18	32~42	5,11
M72 × 3	35	97	168	13	17	8	9~22	5,95
	45				23	13	22~32	7,47
	55					18	32~42	8,97

The description shall consist of:

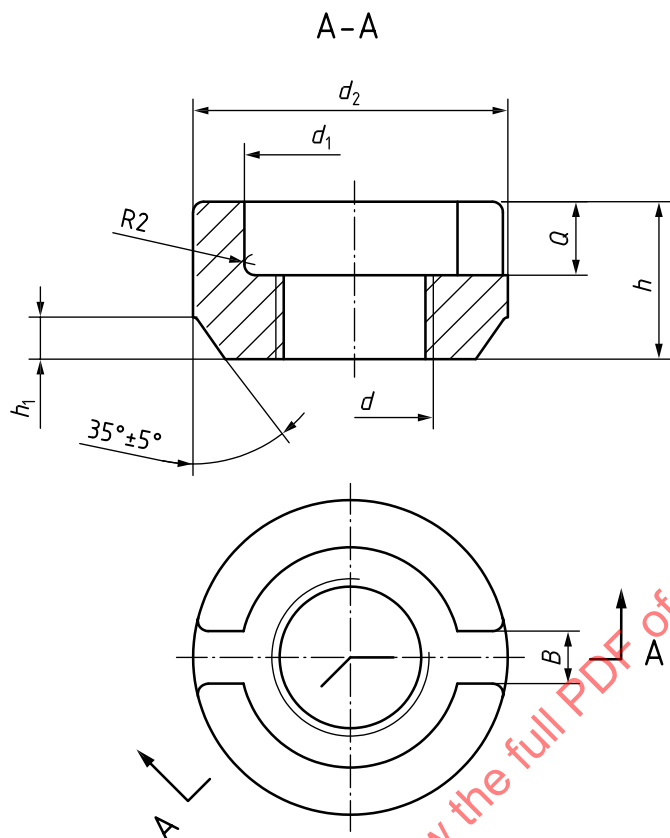
- the designation;
- the number of this document;
- thread (d);
- h .

EXAMPLE Welding ring-ISO 5483-M42×2-35

7.4 Welding ring — Type D

Details of Type D welding rings are given in [Figure 15](#) and [Table 13](#).

Dimensions in millimetres



Key
R2 dimension of the fillet, 2 mm

Figure 15 — Type D welding ring

Table 13 — Designations for welding rings in Type D

Thread d mm	Height of welding ring h mm	Depth of welding feet h_1 mm	Diameter of drain screw cap hole d_1 mm	Diameter of welding ring d_2 mm	Width of flume B mm	Depth of flume Q mm	Thick- ness of plate hull mm	Mass kg
M42 × 2	35	6	55	118	16	17	6~16	2,37
	45	8					16~26	2,94
	55	10				23	26~36	3,50
M52 × 2	35	6	64	118	16	17	6~16	2,17
	45	8					16~26	2,68
	55	10				23	26~36	3,17
M62 × 2	35	6	74	128	20	17	6~16	2,39
	45	8					16~26	2,95
	55	10				23	26~36	3,49
M72 × 3	35	6	92	138	20	17	6~16	2,51
	45	8					16~26	3,06
	55	10				23	26~36	3,57

The description shall consist of:

- a) the designation;
- b) the number of this document;
- c) thread (d);
- d) h .

EXAMPLE Welding ring—ISO 5483—M42×2—35

8 Drain Screws

8.1 For water tanks — Type A

Details of drain screws for water tanks of Type A are given in [Figure 16](#).

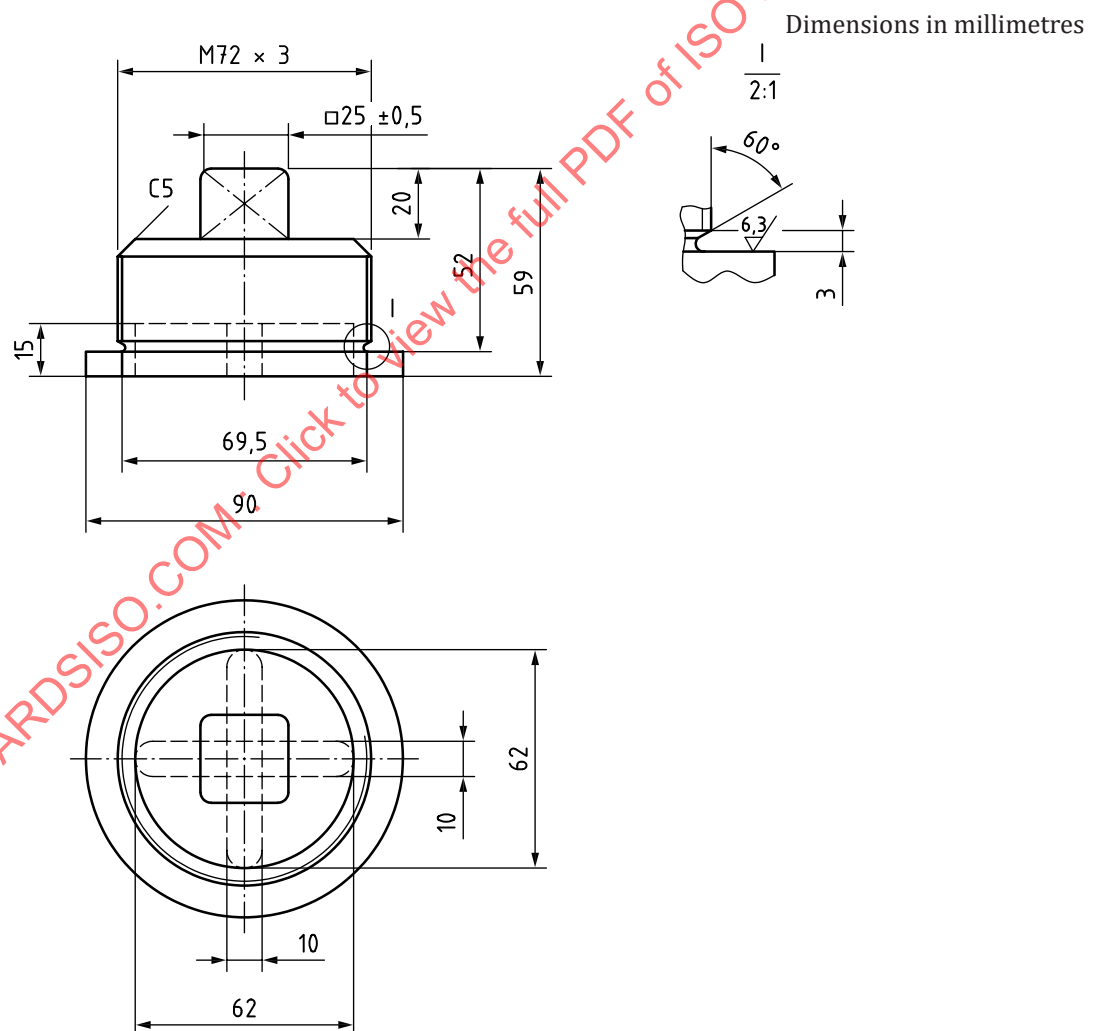


Figure 16 — Drain screws for water tanks of Type A

NOTE For Type A-M42X2 can be utilized, see ISO 965-1 and ISO 965-2.

The description shall consist of:

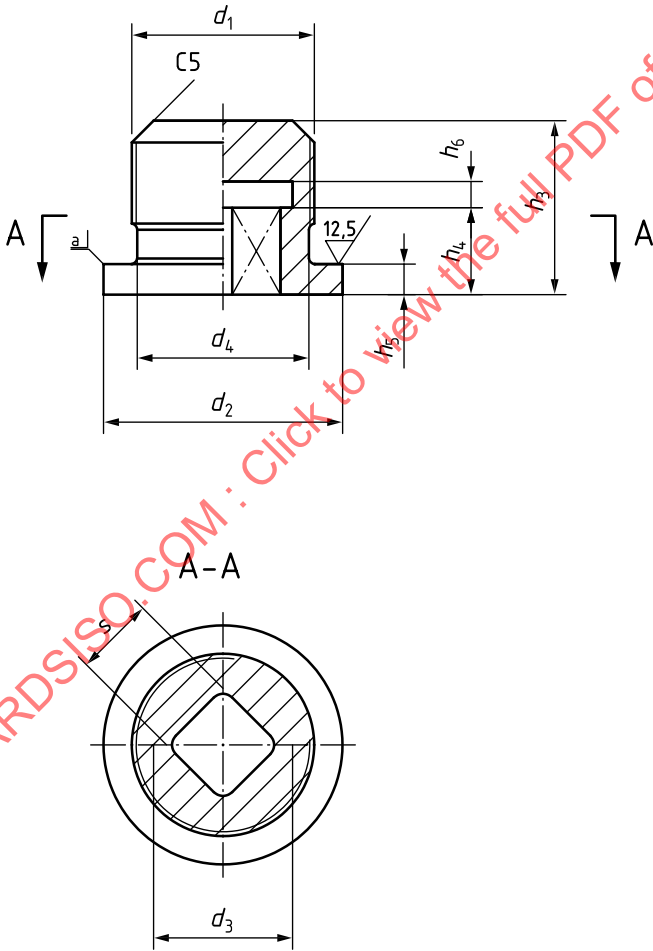
- a) the designation;
- b) the number of this document;
- c) type;
- d) W;
- e) thread.

EXAMPLE Screw-ISO 5483-A-W-M72×3

8.2 For water tanks — Type B

Details of drain screws for water tanks of Type B are given in [Figure 17](#) and [Table 14](#).

Dimensions in millimetres



Key

- C5 dimension of the chamfer, 5 mm
- a Thread undercut ISO.

Figure 17 — Drain screws for water tanks of Type B

Table 14 — Details for Type B drain screws in water tanks

Thread d_1	Diameter of drain screw cap d_2 mm	Stud end diameter d_3 mm	Diameter of drain screw d_4 mm	Height of drain screw h_3 mm	Hole depth of wrench h_4 mm	Height of drain screw cap h_5 mm	Process- ing size of wrench hole h_6 mm	Width of wrench hole s mm		Mass kg
								D12	H11	
M42 × 2	55	32	39,5	40	20	7	6	26	-	0,55
M72 × 3	90	38	68,5	45	25	10	5	-	32	1,25

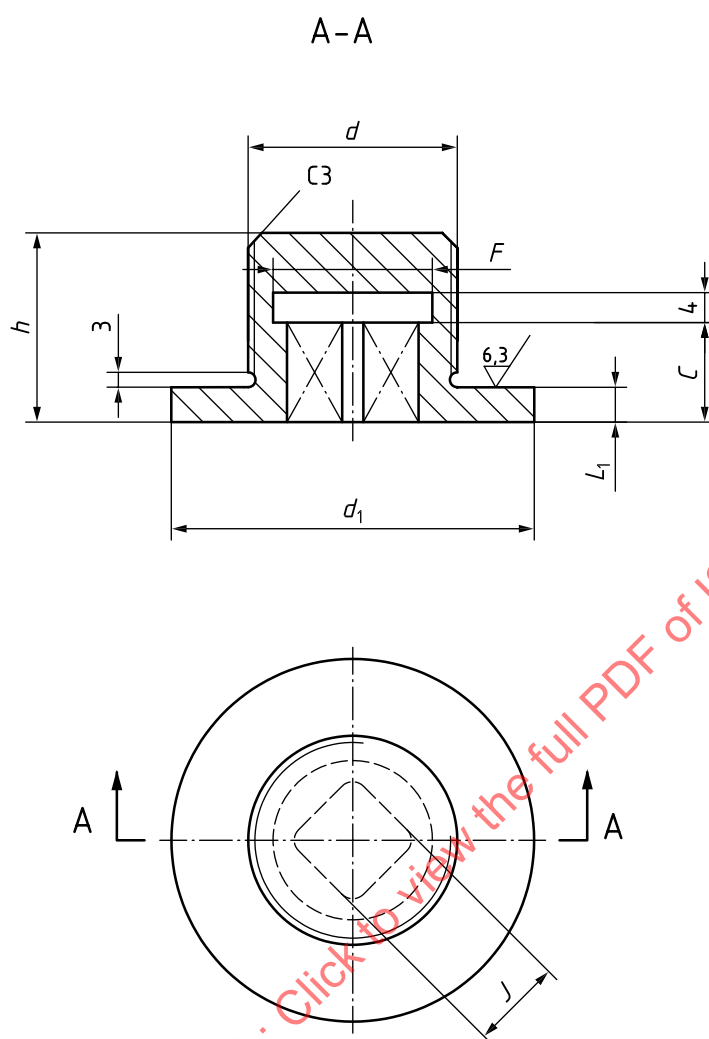
The description shall consist of:

- a) the designation;
- b) the number of this document;
- c) type;
- d) W;
- e) thread (d_1).

EXAMPLE Screw-ISO 5483-B-W-M42×2.

8.3 For water tanks — Type C

Details of drain screws for water tanks of Type C are given in [Figure 18](#) and [Table 15](#).

**Key**

C3 dimension of the chamfer, 3 mm

Figure 18 — Drain screws for water tanks of Type C

Table 15 — Details for Type C drain screws in water tanks

Thread d mm	Diameter of drain screw cap d_1 mm	Hole depth of wrench C mm	Width of wrench hole J mm	Height of drain screw cap L_1 mm	Process- ing size of wrench hole F mm	Height of drain screw h mm	Mass kg
M42 × 2	65	15	21	7	28	35	0,41
		20				45	0,60
						55	0,72
M52 × 2	75	15				35	0,64
		20				45	0,84
						55	1,10
M62 × 2	85	12				35	1,01
		20				45	1,23
						55	1,58
M72 × 3	95	15	27	10	38	35	1,36
		20				45	1,98
						55	2,42

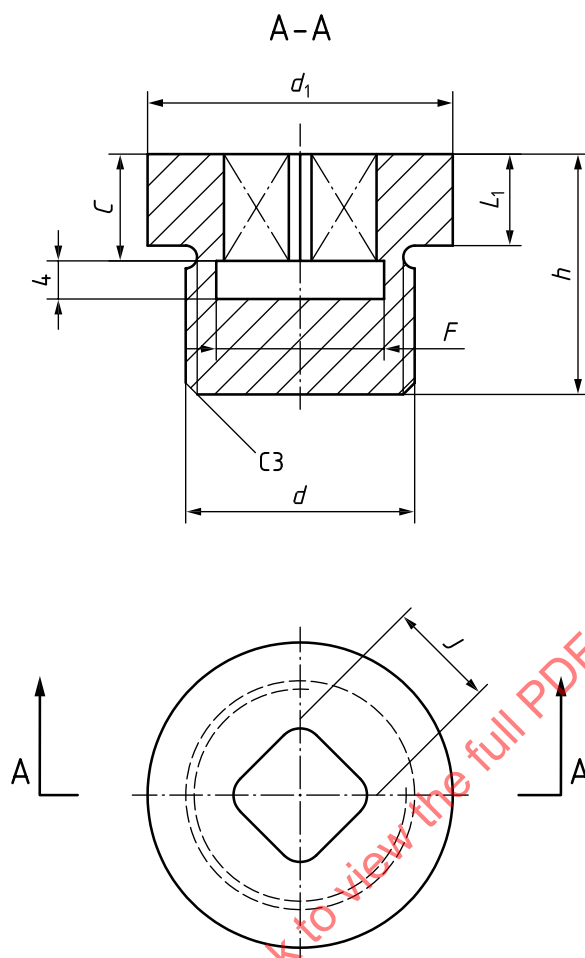
The description shall consist of:

- a) the designation;
- b) the number of this document;
- c) type;
- d) W;
- e) thread (d).

EXAMPLE Screw-ISO 5483-C-W-M42×2.

8.4 For water tanks — Type D

Details of drain screws for water tanks of Type D are given in [Figure 19](#) and [Table 16](#).

**Key**

C3 dimension of the chamfer, 3 mm

Figure 19 — Drain screws for water tanks of Type D

Table 16 — Details for Type D drain screws in water tanks

Thread d mm	Diameter of drain screw cap d_1 mm	Width of wrench hole J mm	Process- ing size of wrench hole F mm	Hole depth of wrench C mm	Height of drain screw cap L_1 mm	Height of drain screw h mm	Mass kg
M42 × 2	52	21	28	15	14	35	0,40
				20	20	45	0,55
						55	0,71
M52 × 2	62	21	28	15	14	35	0,62
				20	20	45	0,84
						55	1,08
M62 × 2	72	21	28	12	14	35	0,90
				20	20	45	1,19
						55	1,51
M72 × 3	92	27	38	15	14	35	1,33
				20	20	45	1,82
						55	2,34

The description shall consist of:

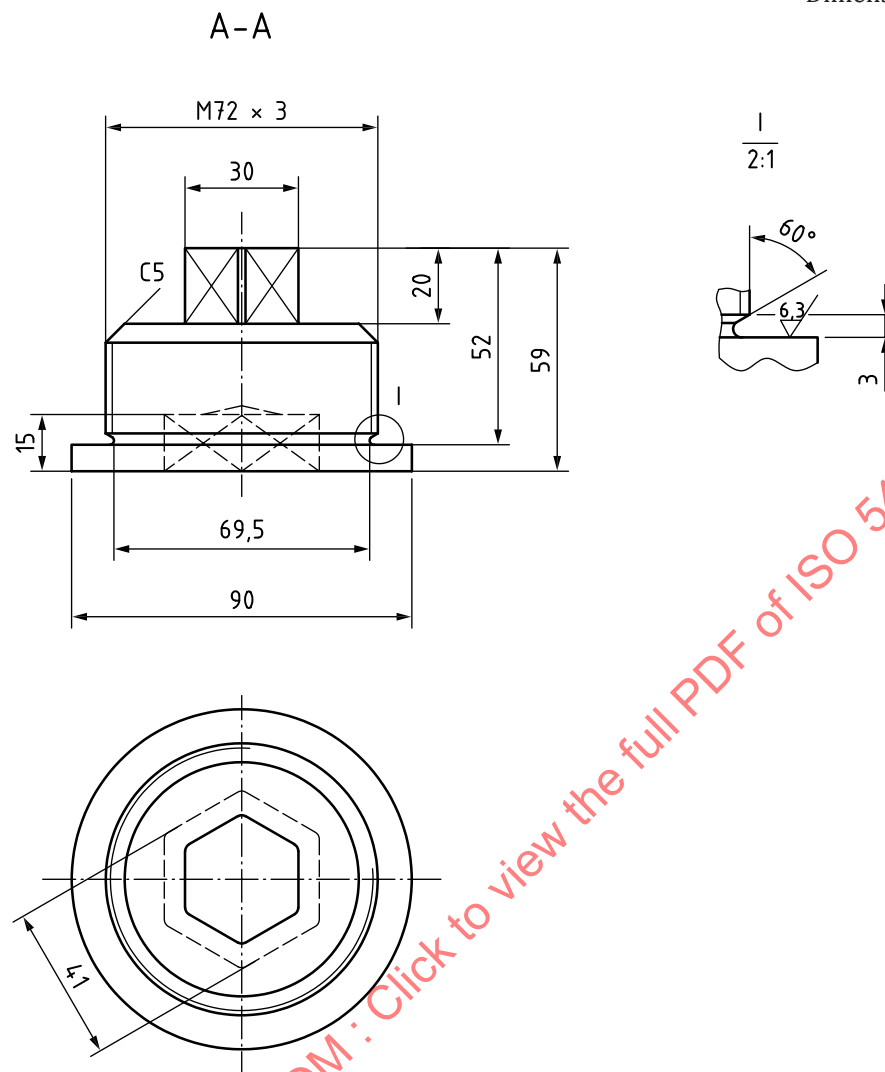
- a) the designation;
- b) the number of this document;
- c) type;
- d) W;
- e) thread (d).

EXAMPLE Screw-ISO 5483-D-W-M42×2.

8.5 For oil tanks — Type A

Details of drain screws for oil tanks of Type A are given in [Figure 20](#).

Dimensions in millimetres

**Key**

C5 dimension of the chamfer, 5 mm

Figure 20 — Drain screws for oil tanks of Type A

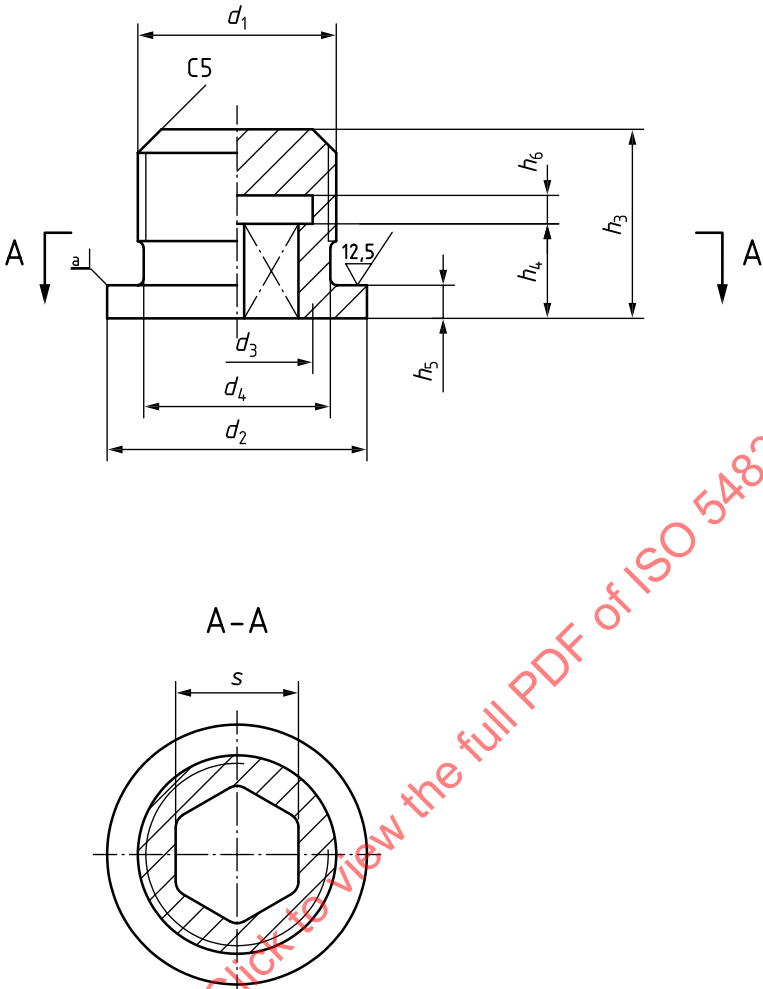
The description shall consist of:

- a) the designation;
- b) the number of this document;
- c) type;
- d) 0;
- e) thread.

EXAMPLE Screw-ISO 5483-A-0-M72×3.

8.6 For oil tanks — Type BDetails of drain screws for oil tanks of Type B are given in [Figure 21](#) and [Table 17](#).

Dimensions in millimetres



Key

- C5 dimension of the chamfer, 5 mm
- a Thread undercut ISO.

Figure 21 — Drain screws for oil tanks of Type B

Table 17 — Details for Type B drain screws in oil tanks

Thread d_1 mm	Diameter of drain screw cap d_2 mm	Stud end diameter d_3 mm	Diameter of drain screw d_4 mm	Height of drain screw h_3 mm	Hole depth of wrench h_4 mm	Height of drain screw cap h_5 mm	Process- ing size of wrench hole h_6 mm	Width of wrench hole s mm		Mass kg
								D12	H11	
M42 × 2	55	32	39,5	40	20	7	6	26	-	0,55
M72 × 3	90	38	68,5	45	25	10	5	-	32	1,25

The description shall consist of:

- a) the designation;
- b) the number of this document;
- c) type;

d) 0;

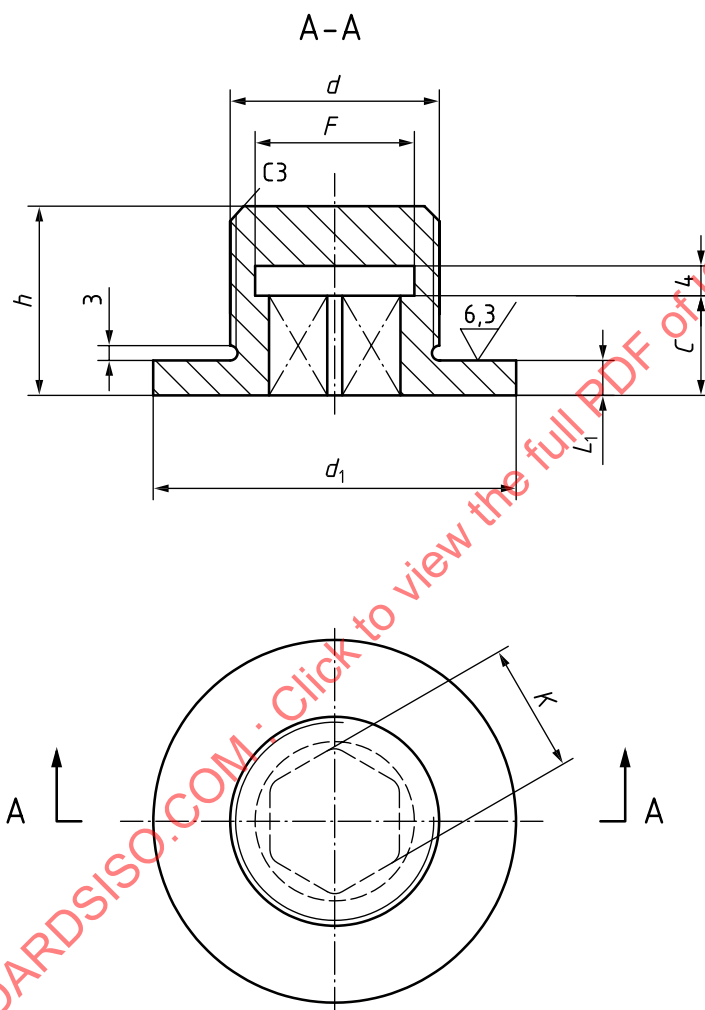
e) thread (d_1).

EXAMPLE Screw-ISO 5483-B-O-M42×2.

8.7 For oil tanks — Type C

Details of drain screws for oil tanks of Type C are given in [Figure 22](#) and [Table 18](#).

Dimensions in millimetres



Key

C3 dimension of the chamfer, 3 mm

Figure 22 — Drain screws for oil tanks of Type C

Table 18 — Details for Type C drain screws in oil tanks

Thread d mm	Diameter of drain screw cap d_1 mm	Hole depth of wrench C mm	Width of wrench hole K mm	Height of drain screw cap L_1 mm	Process- ing size of wrench hole F mm	Height of drain screw h mm	Mass kg
M42 × 2	65	15	23	7	28	35	0,41
		20				45	0,60
						55	0,72
M52 × 2	75	15				35	0,64
		20				45	0,84
						55	1,10
M62 × 2	85	12				35	1,01
		20				45	1,23
						55	1,58
M72 × 3	95	15	32	10	38	35	1,36
		20				45	1,98
						55	2,42

The description shall consist of:

- the designation;
- the number of this document;
- type;
- 0;
- thread (d).

EXAMPLE Screw-ISO 5483-C-0-M42×2.

8.8 For oil tanks — Type D

Details of drain screws for oil tanks of Type D are given in [Figure 23](#) and [Table 19](#).