INTERNATIONAL STANDARD

ISO 5483

Second edition
2003-02-15

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

Navires et technologie maritime — Équipement de vidange des réservoirs d'huile et d'eau

Reference number
ISO 5483:2003(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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 5483 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 3, *Piping and machinery*.

This second edition cancels and replaces the first edition (ISO 5483:1977), which has been technically revised.

Introduction

Throughout this International Standard, the minimum essential criteria are identified by the use of the key word “shall”. Recommended criteria are identified by the use of the key word “should”, and while not mandatory are considered to be of primary importance in providing serviceable, economical and practical designs. Deviations from the recommended criteria should occur only after careful consideration, extensive testing and thorough service evaluation have shown alternative methods to be satisfactory.

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

1 Scope

This International Standard specifies dimensions and materials for welding rings and drain screws 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 standard covers facilities for both instances.

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 68, *ISO general purpose screw threads — Basic profile*

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

ISO 683-13, *Heat-treatable steels, alloy steels and free-cutting steels — Part 13: Wrought stainless steels*

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 — Medium quality*

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

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

3 Designation

For the purposes of this International Standard, two types of drain facilities are covered:

Type A, which is universally applicable, especially where flush mounting with the outer surface of hull-plating at any plate thickness is required, and

Type B, which is usable in all other instances where the above-mentioned requirement is not applicable.

NOTE Both Type A and Type B arrangements are identified by the following two categories of drain plugs:

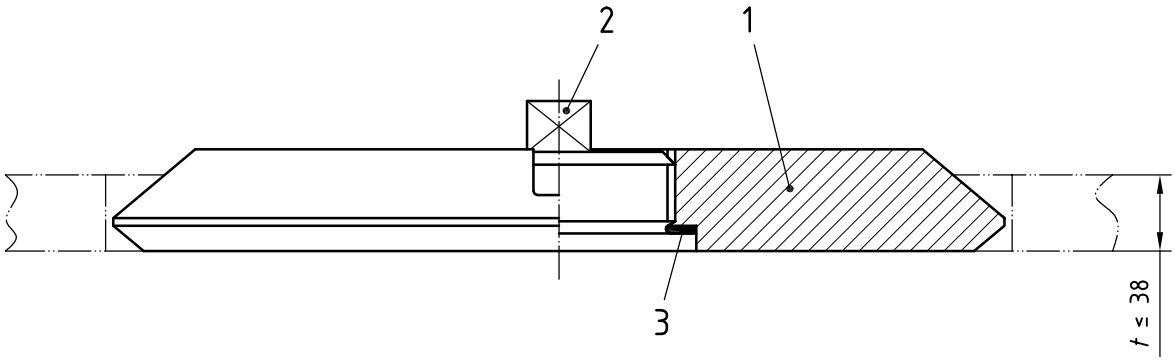
— square wrench connection for water tanks, and

— hexagonal wrench connection for oil tanks.

4 General assembly arrangement

4.1 Assembly

For Type A, refer to Figure 1 and Table 1. For Type B, refer to Figure 2 and Table 2.

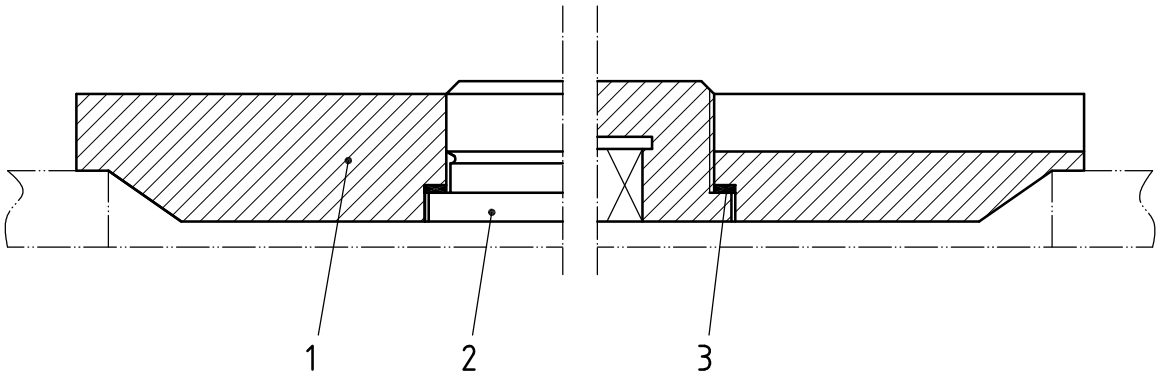


NOTE The extreme left and right sections represent hull plating.

Figure 1 — General arrangement for Type A

Table 1 — Parts list for Type A

Part No.	Part name	Size
1	Welding ring	162 mm
		350 mm
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

Part No.	Part name	Size
1	Welding ring	8 mm
		15 mm
		22 mm
2	Drain screw	M42 × 2
		M72 × 3
3	Gasket	

4.2 Threads

For both types, the threads shall be in 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 may be used on the thread surfaces.

4.3 Materials

The welding ring, drain screw and gasket materials should be as given in Table 3. Other materials shall be of equivalent quality and in all respects suitable for the intended purpose.

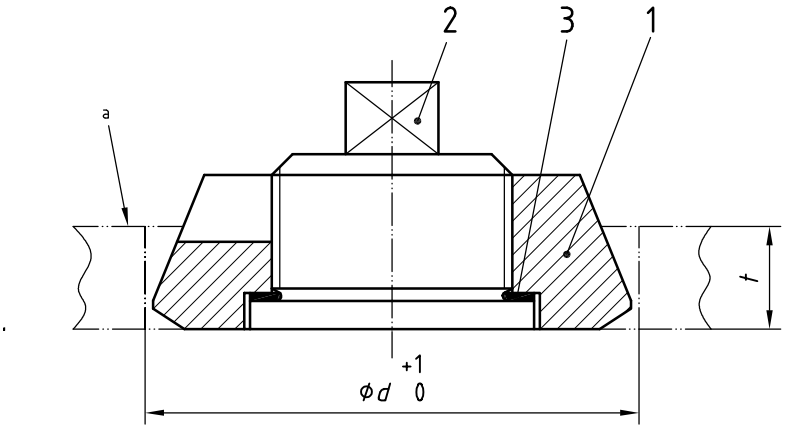
Table 3 — Material list for both types

Component	Material	Designation
Welding ring	Steel. To be of similar quality as surrounding tank bottom steel plating	Shipbuilding steel
Drain screw	Stainless steel	ISO 683-13 Austenitic steel Type 20A
	Copper-aluminium alloy	
Gasket	Hackle flax	
	Lead compound, soft hemp packing or equivalent	

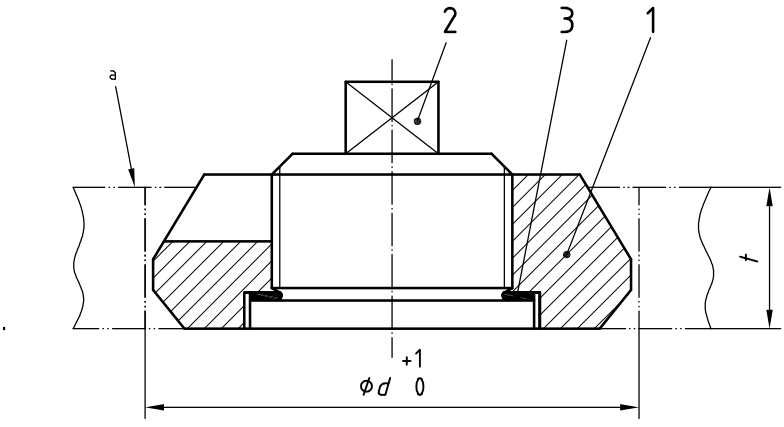
5 Mounting

5.1 Type A

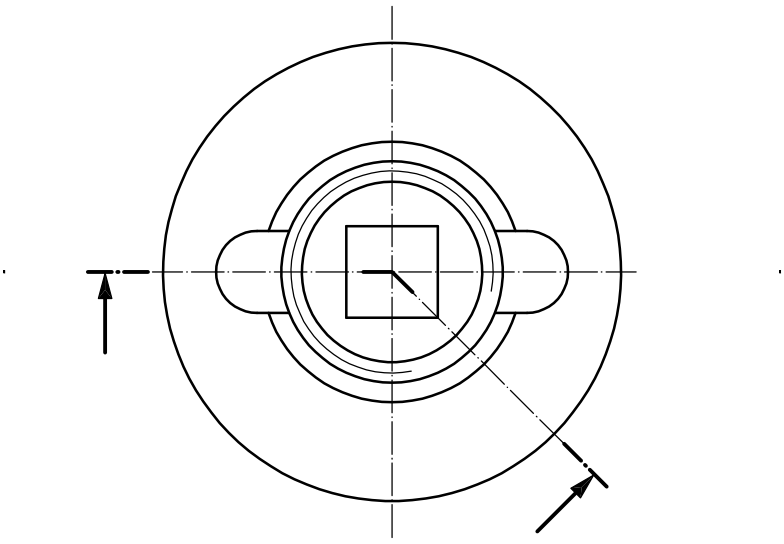
For Type A mountings, see Figures 1, 3, 4 and Table 4. For parts identification, see Table 1.



a) Type A.1 mounting (see Table 4)



b) Type A.2 mounting (see Table 4)



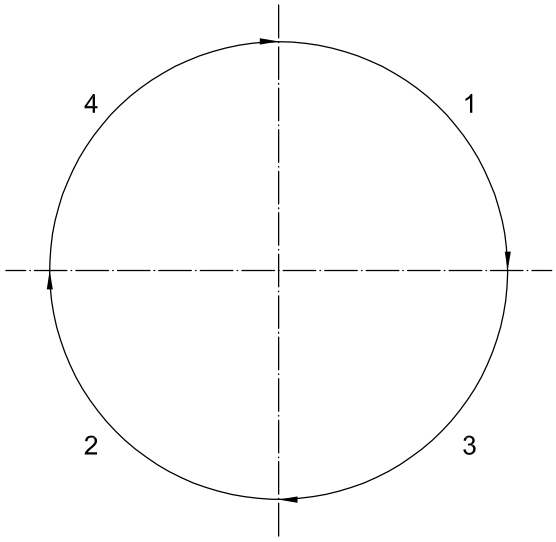
a Inner side of bottom plate

Figure 3 — Type A mounting (see Table 1 for parts identification)

Table 4 — Main dimensions for Type A assembly

Dimensions in millimetres

Size	Type	d	t
162	A-1	165	$\leqslant$ 27,5
350	A-2	353	$\geqslant$ 27,5 $\leqslant$ 38
NOTE For detailed dimensions, see Figure 8 and Table 6.			



NOTE 1 Ensure that alternate sections of the circumference are welded in sequence as shown to avoid heat deformation. Weld the 90° shown as “1”, skip 90°, then weld section “2.” Skip 180° and weld section “3.” Skip 90° and weld section “4,” the last section.

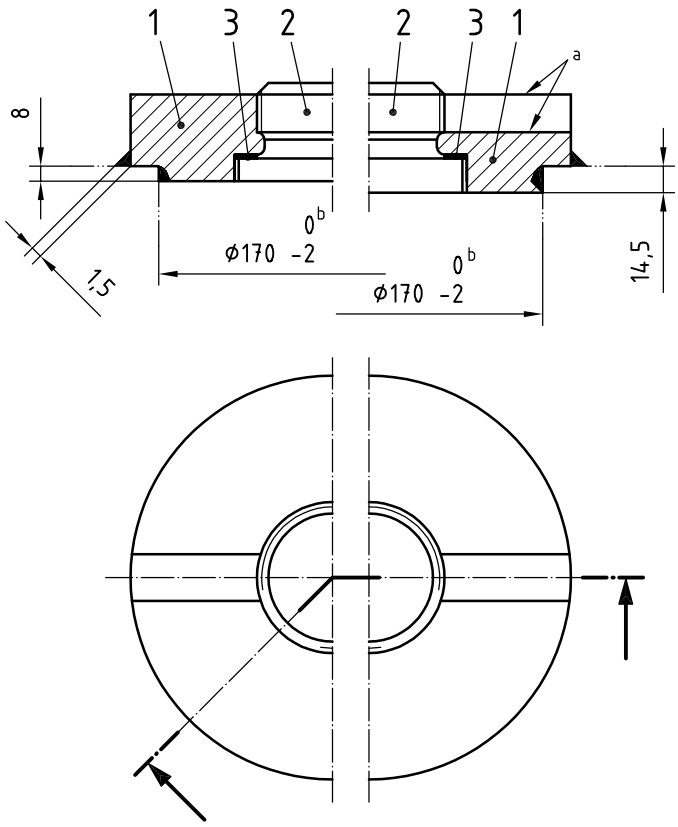
NOTE 2 Completed welding to be examined for cracks, see 5.3.

Figure 4 — Welding sequence

5.2 Type B

For Type B mountings, see Figures 2, 5, 6, 7 and 9, and Table 5.

Dimensions in millimetres



a Section A-A R3 max

b Hole in the bottom plating.

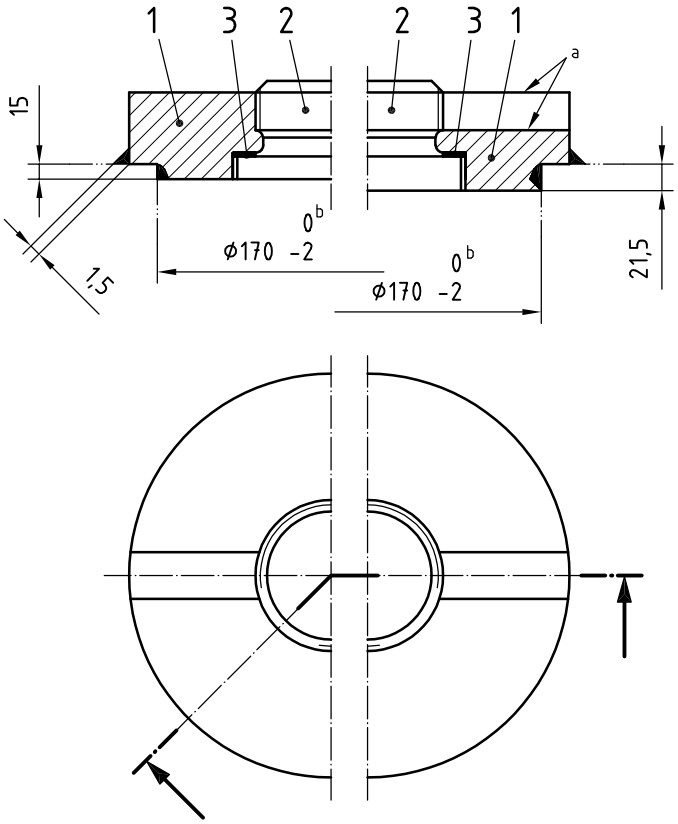
Figure 5 — For plate thickness 8 mm up to 14,5 mm (see Table 2 for description of 1 to 3)

Table 5 — Main dimensions for Type B assembly

Dimensions in millimetres

Size	Type	h_2	d_1
35	B-1	35	M 42 × 2
40	B-2	40	M 72 × 3
NOTE For dimensions references, see Figure 9 and Table 7.			

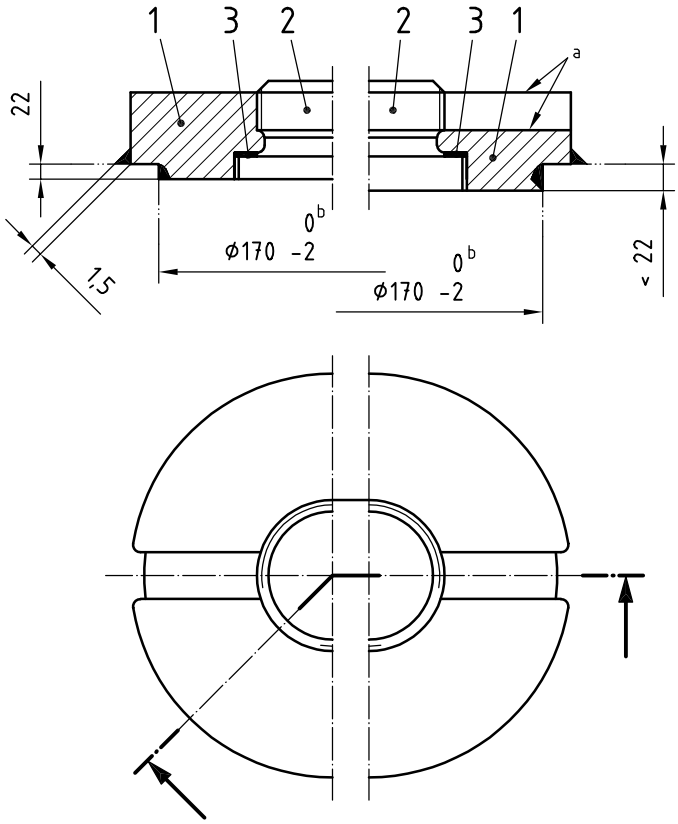
Dimensions in millimetres



NOTE For other dimensions and details, see Figures 5 and 9.

Figure 6 — For plate thickness 15 mm to 21,5 mm

Dimensions in millimetres



NOTE For other dimensions and details, see Figures 5 and 9.

Figure 7 — For plate thickness 22 mm and beyond

5.3 General for Types A and B

For welding, compliance with the rules of classification societies shall be observed. See Figure 4.

6 Parts production

6.1 Welding ring — Type A

Details of Type A welding rings are given in Figure 8 and Table 6.

The drain screw and welding ring shall conform to the details of Figures 8 and 10.

Dimensions in millimetres

No sharp edges

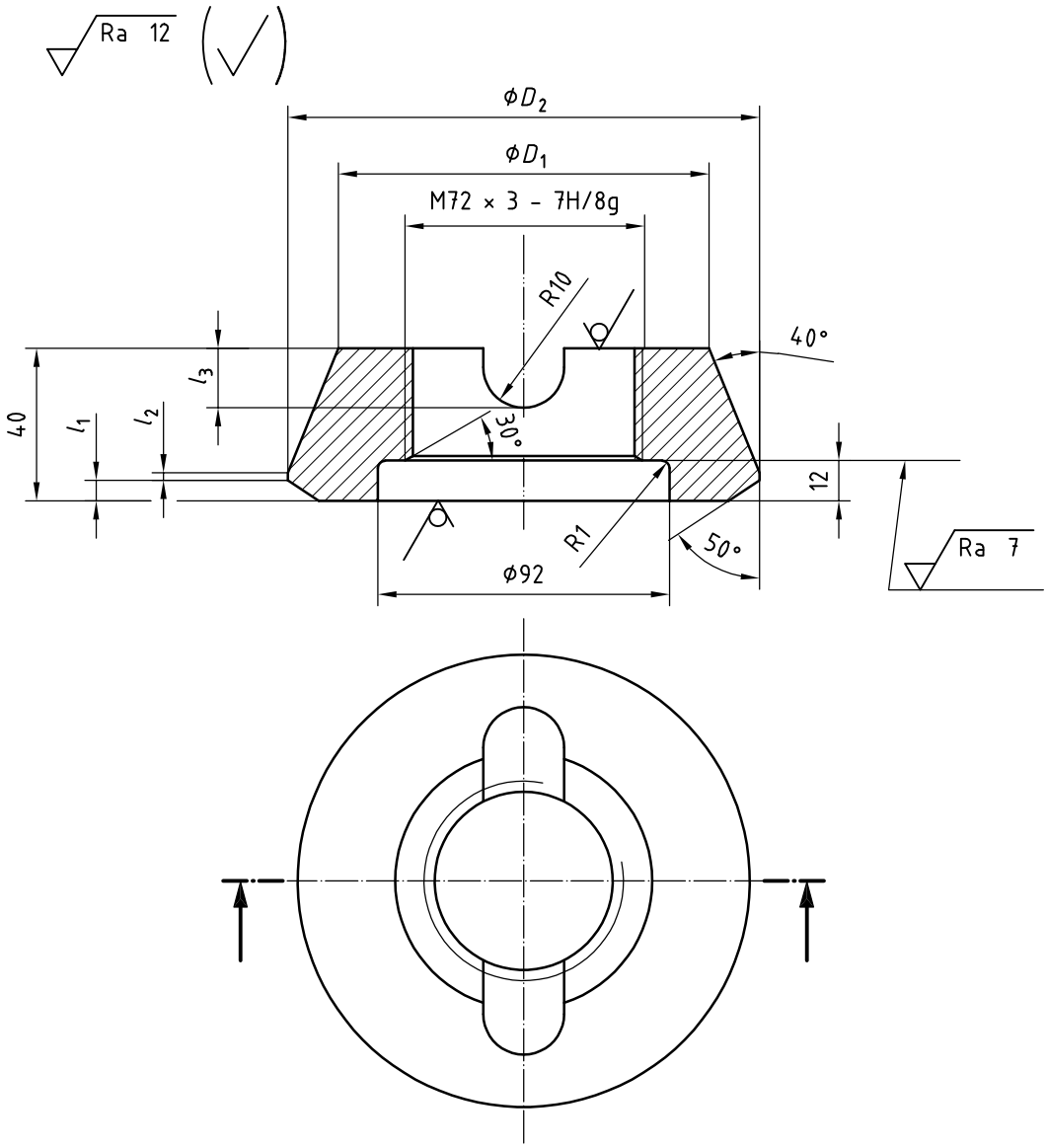


Figure 8 — Type A welding ring (see Table 6 for main dimensions)

Table 6 — Designations for welding rings in Type A drain facilities for water tanks

Dimensions in millimetres

Type	l_1	l_2	l_3	D_1	D_2	**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 may be utilized, see ISO 965-1 and ISO 965-2.						

7H in Figure 8 represent 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.

8g in Figure 8 represents the allowable tolerance of the bolt major diameter, which is $^{-0,038}_{-0,488}$ mm, and the tolerance of the bolt pitch diameter, which is $^{-0,038}_{-0,318}$ mm.

Tolerances: ISO 2768-1, designation m.

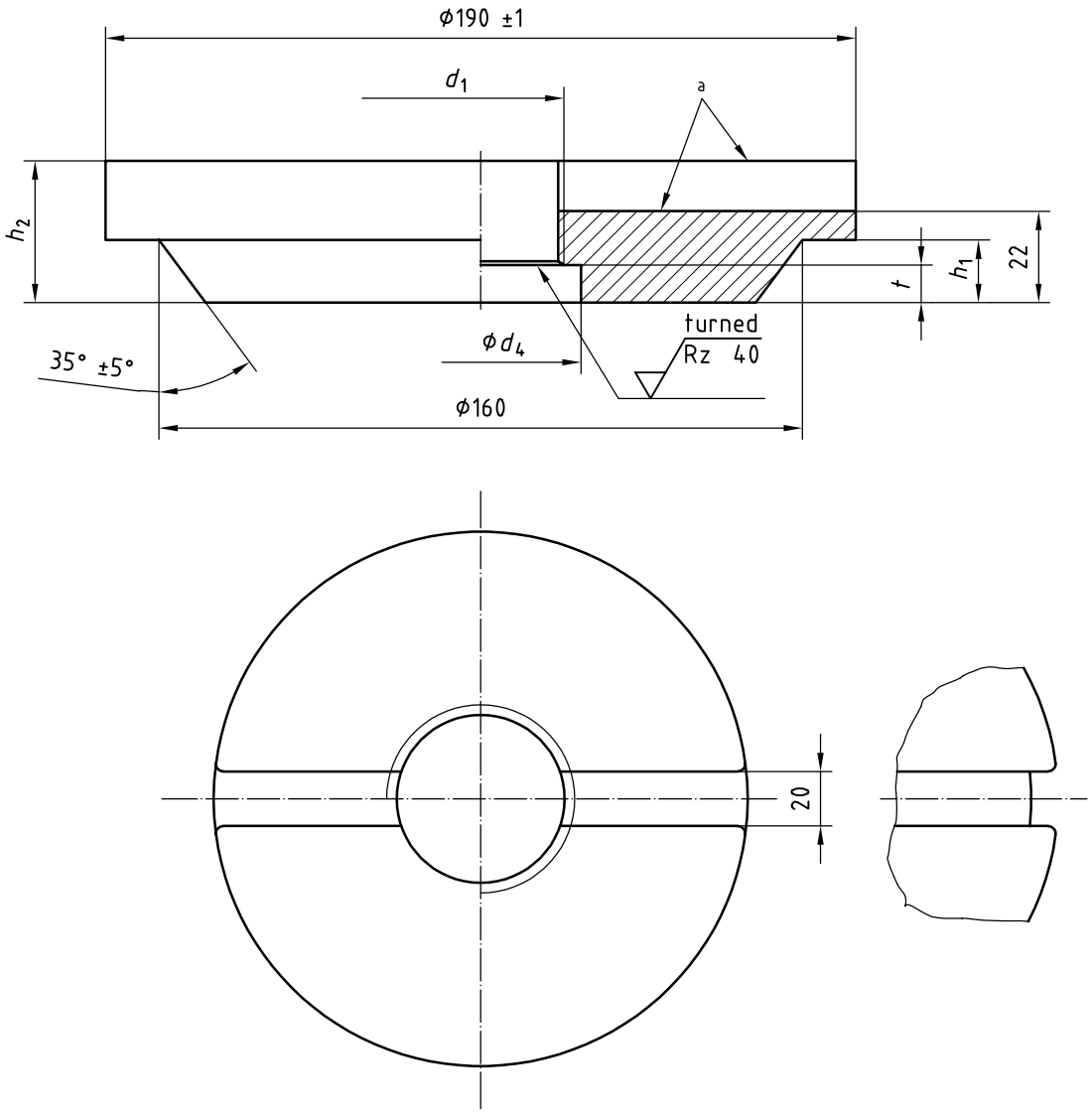
Description: Designation - ISO No. - Type - D_2

EXAMPLE Welding ring - ISO 5483 - A 2.2 - 350

6.2 Welding ring — Type B

For details of Type B welding rings, see Figure 9 and Table 7.

Dimensions in millimetres



Slit for h_1 = 22 mm

[a] R3 max.

Figure 9 — Type B welding ring cross-section and overhead view

Table 7 — Dimensions for Type B welding rings

Dimensions in millimetres

Thread d_1	h_1	Female thread [a]		d_4	h_2	t	Mass kg
		Major diameter	Minor diameter				
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.

Description: Designation - ISO No. - Thread (d_1) - h_1

EXAMPLE Welding ring - ISO 5483 - M42 × 2 - 15.

7 Drain screws

7.1 For water tanks — Type A

For details of drain screws for water tanks of Type A, see Figure 10.

Dimensions in millimetres

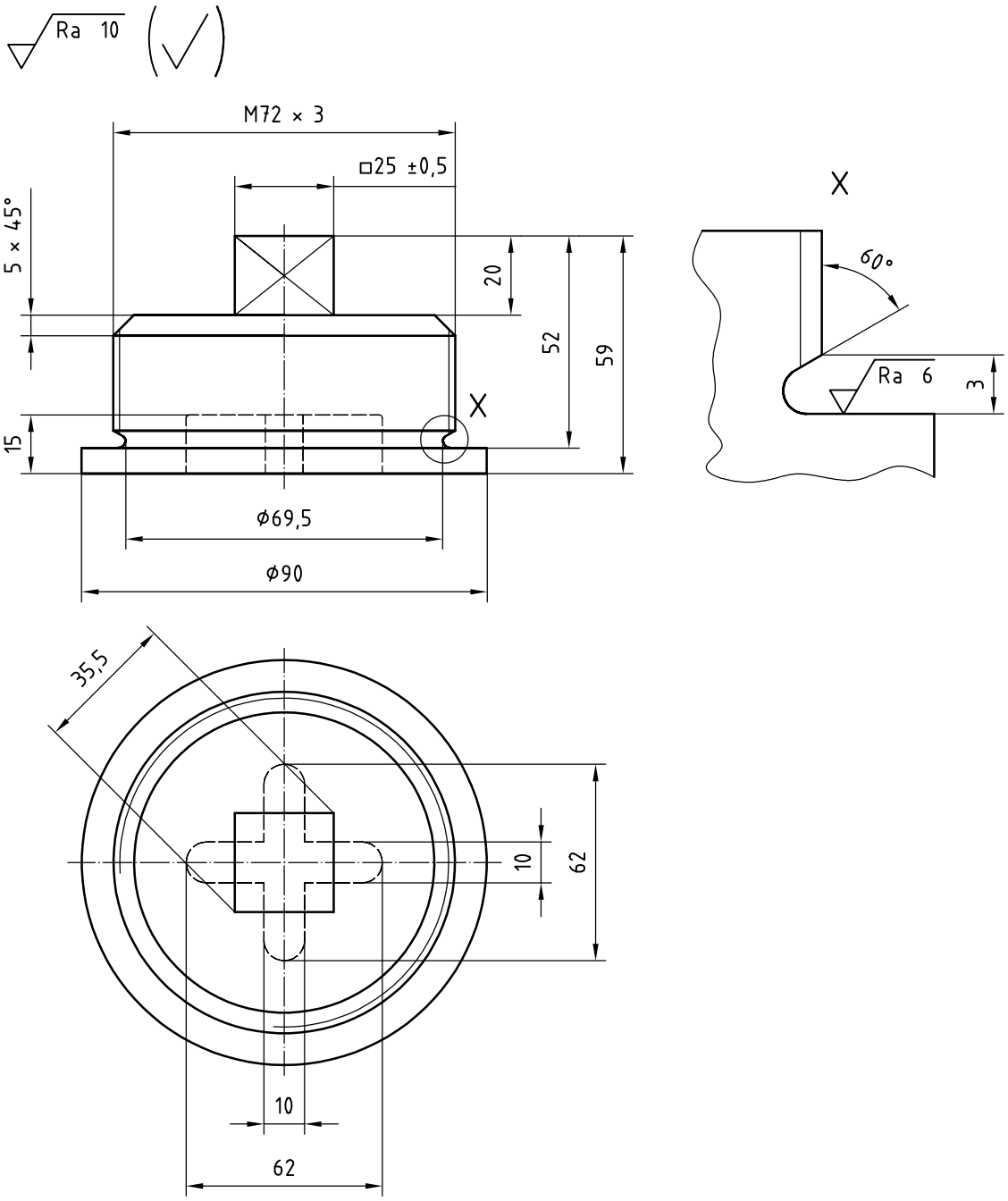


Figure 10 — Drain screws (see also Figure 8)

NOTE For Type A - M72 × 3 may be utilized, see ISO 965-1 and ISO 965-2.

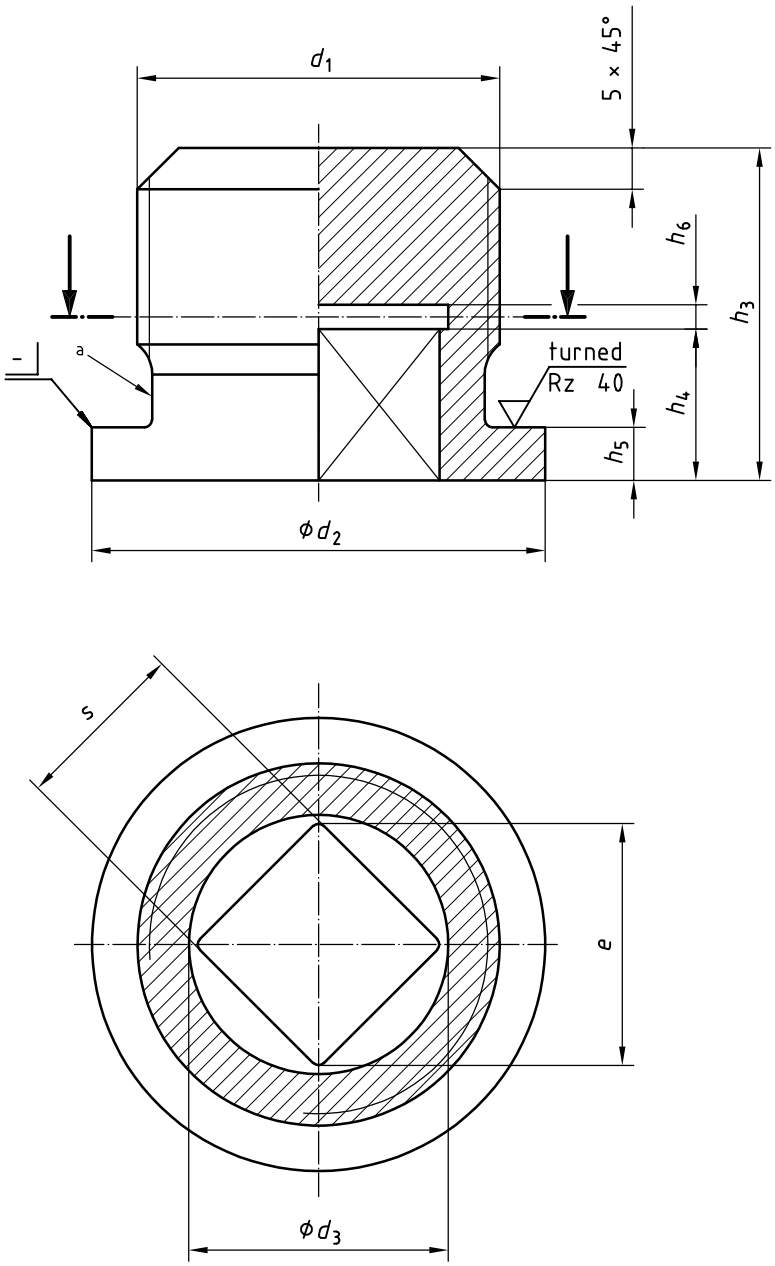
Description: Designation - ISO No. - Type - W - Thread

EXAMPLE Screw - ISO 5483 - A - W - M72 × 3.

7.2 For water tanks — Type B

For details of drain screws for water tanks of Type B, see Figure 11 and Table 8.

Dimensions in millimetres



a Thread undercut ISO

Figure 11 — Drain screws for water tanks, Type B

Designation of a screw (D) with thread d_1 = M42 × 2:

Description: Designation - ISO No. - Type - W - Thread.

EXAMPLE Plug - ISO 5483 - B - W - M42 × 2.

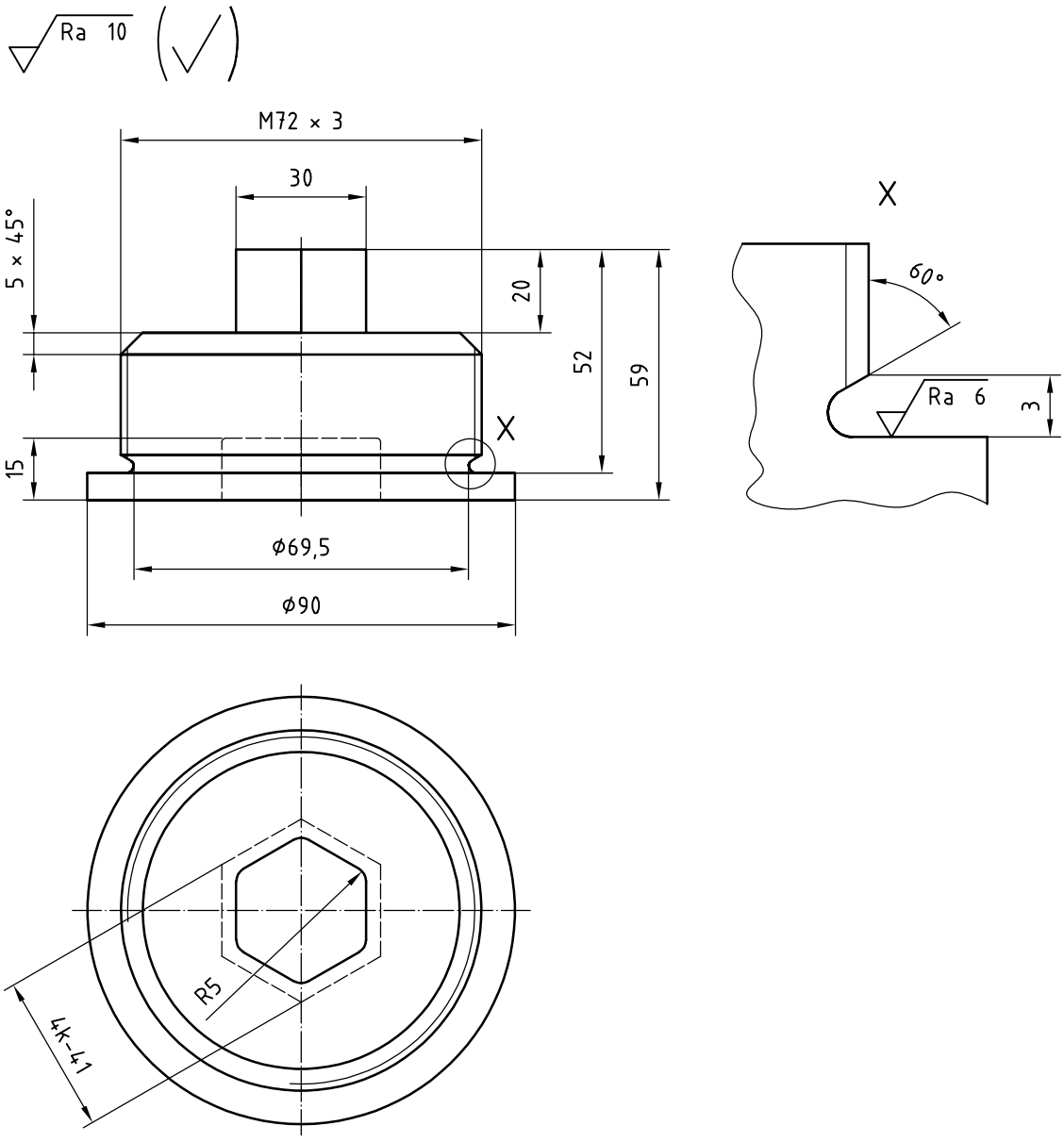
Table 8 — Details for Type B drain plugs in water tanks

Thread d_1	d_2	d_3	e	h_3	h_4	h_5	h_6	s		Mass
								D12	H11	kg
M42 × 2	55	32	30,6	40	20	7	6	26	—	0,55
M72 × 3	90	38	36,6	45	25	10	5	—	32	1,25

7.3 For oil tanks — Type A

For details of drain screws for oil tanks of Type A, see Figure 12.

Dimensions in millimetres



NOTE 4k – 41 and 6k – 30 are Width Across Flats (WAF).

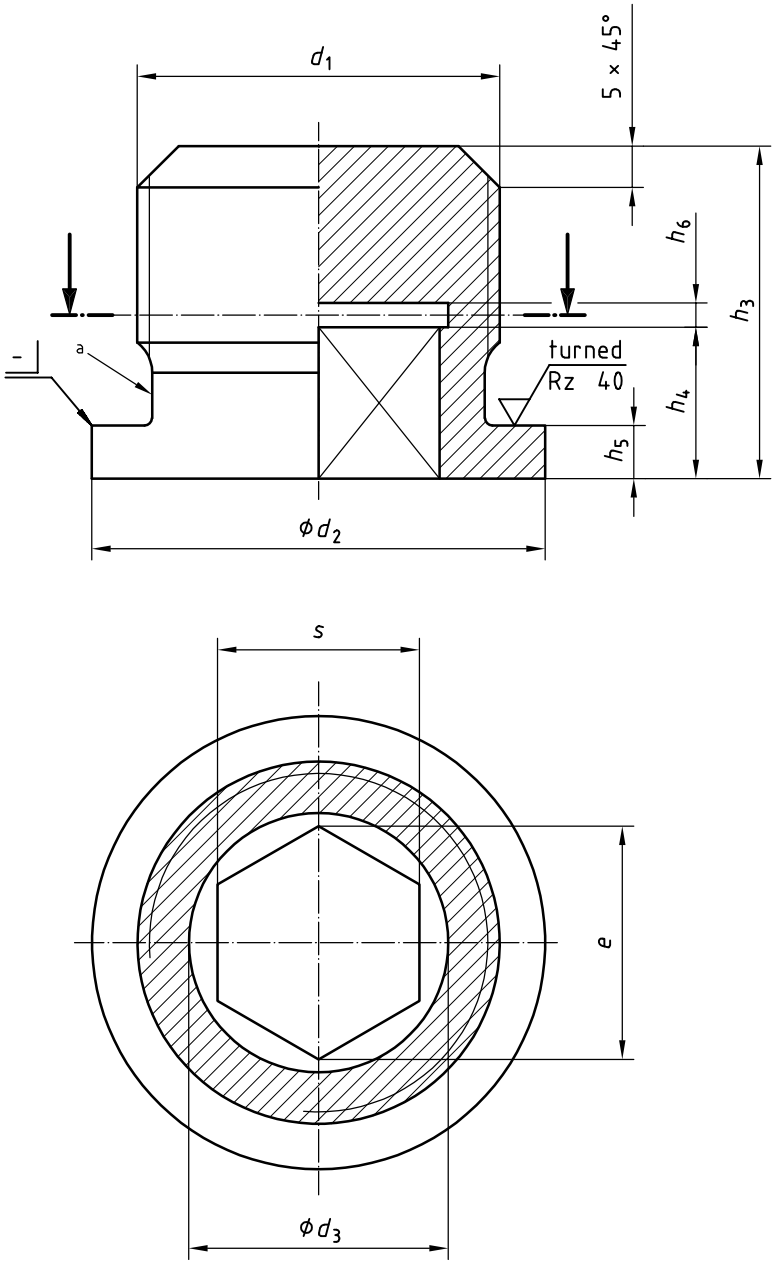
Figure 12 — Drain screw

Description: Designation - ISO No. - Type - Thread

EXAMPLE Screw - ISO 5483 - A - M72 × 3.

7.4 For oil tanks — Type B

For details of the drain screw for oil tanks of Type B, see Figure 13 and Table 9.



a Thread undercut ISO
b Rounded

Figure 13 — Drain screw

Table 9 — Details for Type B drain plugs in oil tanks

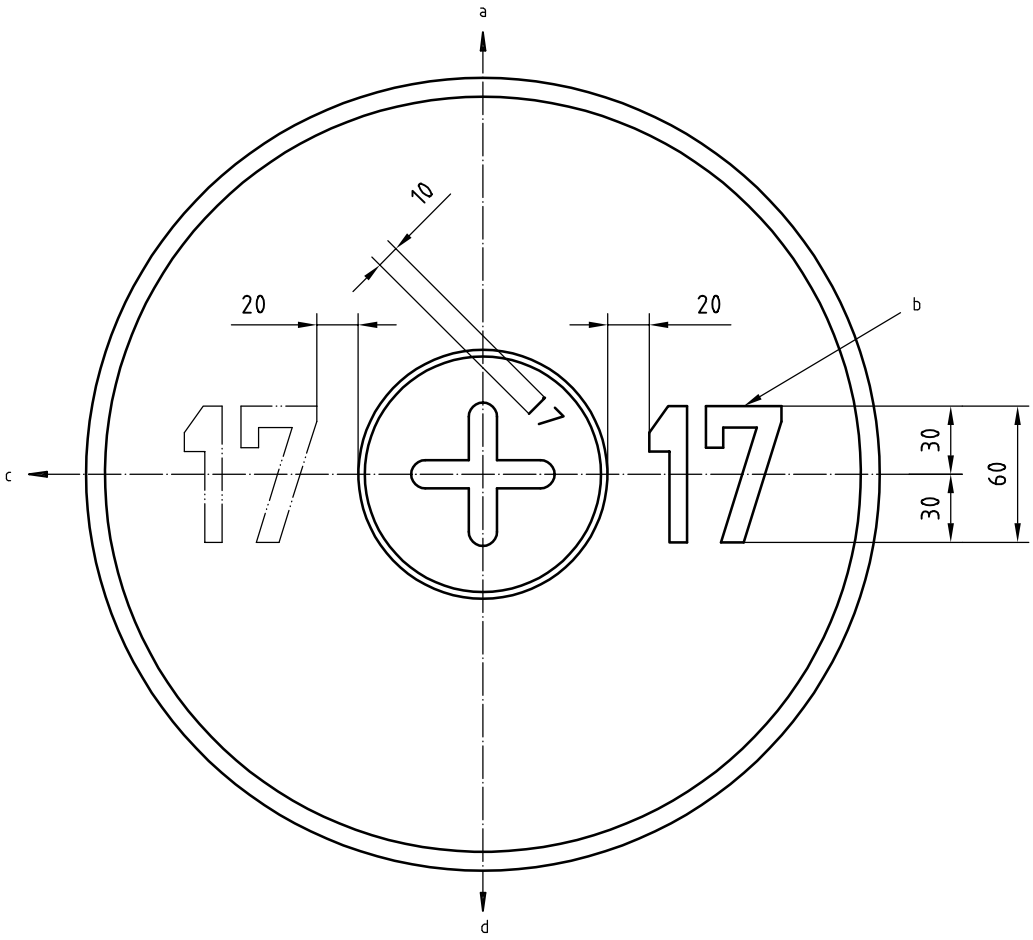
Thread d_1	d_2	d_3	e	h_3	h_4	h_5	h_6	s		**Mass**
								D12	**H11**	kg
M42 × 2	55	32	30,6	40	20	7	6	26	—	0,55
M72 × 3	90	38	36,6	45	25	10	5	—	32	1,25

Designation of a screw (D) with thread d_1 = M42 × 2:
Description: Designation - ISO No. - Type – Thread
EXAMPLE Screw - ISO 5483 - B - M42 × 2.

8 Marking and location

The location for the drain facility is to be shown on the ship's docking plan, tank plan, or on the arrangement plan of drain facilities. See Figure 14.

Allocated numbers shall be in consecutive order, commencing from aft.



a Looking towards ship's side

b Marking of welding plate

c Forward

d Looking towards centreline

NOTE Number 17 above is marked on the welding plate and is also the number of the drain screw.

Figure 14 — Markings

ICS 47.020.30

Price based on 16 pages