INTERNATIONAL STANDARD

ISO 6218

Second edition
2005-04-15

Inland navigation vessels — Manually operated coupling devices for push tows — Safety requirements and main dimensions

Bateaux de navigation intérieure — Treuils d'accouplement manœuvrés à la main pour les convois poussés — Prescriptions de sécurité et dimensions principales

Reference number
ISO 6218:2005(E)

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Foreword

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ISO 6218 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 7, *Inland navigation vessels*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Throughout the text of this document, read "...this European Standard..." to mean "...this International Standard...".

This second edition cancels and replaces the first edition (ISO 6218:1981), which has been technically revised.

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Foreword

This document (EN ISO 6218:2005) has been prepared by Technical Committee CEN/TC 15 “Inland navigation vessels”, the secretariat of which is held by DIN in cooperation with Technical Committee ISO/TC 8 "Ships and marine technology".

This European Standard EN ISO 6218 including the amendment shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

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

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1 Scope

This standard specifies dimensions and safety requirements for manually operated coupling devices (securing devices) used for assembling inland navigation vessels as a push tow or vessels coupled alongside by means of wire rope connections.

It also gives rules for designation and testing.

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.

EN ISO 4014, *Hexagon head bolts – Product grades A and B (ISO 4014:1999)*.

ISO 1035-3, *Hot-rolled steel bars – Part 3: Dimensions of flat bars.*

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

3 Terms and definitions

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

3.1
manually operated coupling device
securing device in which a wire rope is coupled by turning a handwheel

3.2
coupling load
tensile load applied to the wire rope when a specific tangential load is applied to the handwheel
.

4 Safety requirements

4.1 General

All parts of the coupling devices shall be constructed so that their function is not impaired by vibration, tilt of the vessel or effects of the weather.

4.2 Strength requirements

All parts of the coupling devices shall be designed and secured so that they withstand the minimum breaking load of the wire rope according to Table 1.

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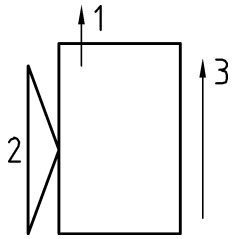
5 Models

5.1 Left-hand model (L)

A left-hand model is a winch which has the handwheel and the drum on the left side of the gearing when looking in the direction in which the wire rope is paid out; see Figure 1.

5.2 Right-hand model (R)

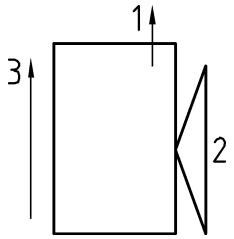
A right-hand model is a winch which has the handwheel and the drum on the right side of the gearing when looking in the direction in which the wire rope is paid out; see Figure 2.



Key

1 Wire rope
2 Handwheel
3 Direction of view

Figure 1 — Left-hand model (L)



Key

1 Wire rope
2 Handwheel
3 Directiuon of view

Figure 2 — Right-hand model (R)

5.3 With or without foundation

5.3.1 Type A

With foundation (two flat steel bars and fastening bolts)

5.3.2 Type B

Without foundation or fastening bolts

6 Design

6.1 Rope drum

6.1.1 Drum capacity

Rope drums shall be dimensioned and constructed so that the ropes are prevented from running off at the side, e.g. by means of flanges that project above the top layer of the rope by at least 1,5 times the rope diameter.

6.1.2 Drum diameter

The drum diameter shall be not less than 12 times the maximum rope diameter.

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6.1.3 Rope fastening

Wire ropes shall be fastened to the rope drum without kinking so that they do not slip off when being paid out.

6.2 Handwheel

6.2.1 Clearance

The clearance between the handwheel and the deck shall be at least 75 mm and the clearance between the winch plate and the outer surface of the handwheel shall not exceed 200 mm, see Figure 3.

6.2.2 Construction

The handwheel shall be constructed so that when the coupling device is released there is no risk of jamming with rapid rotation of the handwheel as a result of the wire rope being paid out.

The handwheel shall be constructed so that it is not possible to reach through with the arm or step in with the foot.

The clearance between the collars and the inner lining shall be at least 60 mm and shall not exceed 75 mm.

6.2.3 Handhold

Handwheels may be provided with a handhold. It shall be countersunk and shall not project beyond the outer plane of the handwheel. It shall be fitted with a rotatable grip.

6.3 Arresting device

Coupling devices shall be equipped with a reliable arresting device. It shall be designed, constructed and arranged so that it may be released without hazard by a person with simultaneous operation of the handwheel and foot brake. Arresting devices shall be designed so that they engage automatically when correctly operated.

6.4 Pawls and ratchets

Pawls and ratchets shall not be made of cast iron.

6.5 Protective device

Drawing-in points of gearwheels shall be provided with a protective device. It shall not be possible to remove this protective device without the use of a tool.

6.6 Foot brakes

Coupling devices shall be equipped with a foot brake that prevents the rope from being paid out under load when the arresting device is released. The foot brake shall operate smoothly and steplessly.

It shall be capable of holding a load of 1,5 times the coupling load as given in Table 1.

6.7 Gears

Coupling devices shall be equipped with gears with which it is possible to apply the coupling load to the rope as specified in Table 1. The tangential tensile load to be applied to the handwheel is 500 N.

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7 Dimensions

7.1 General

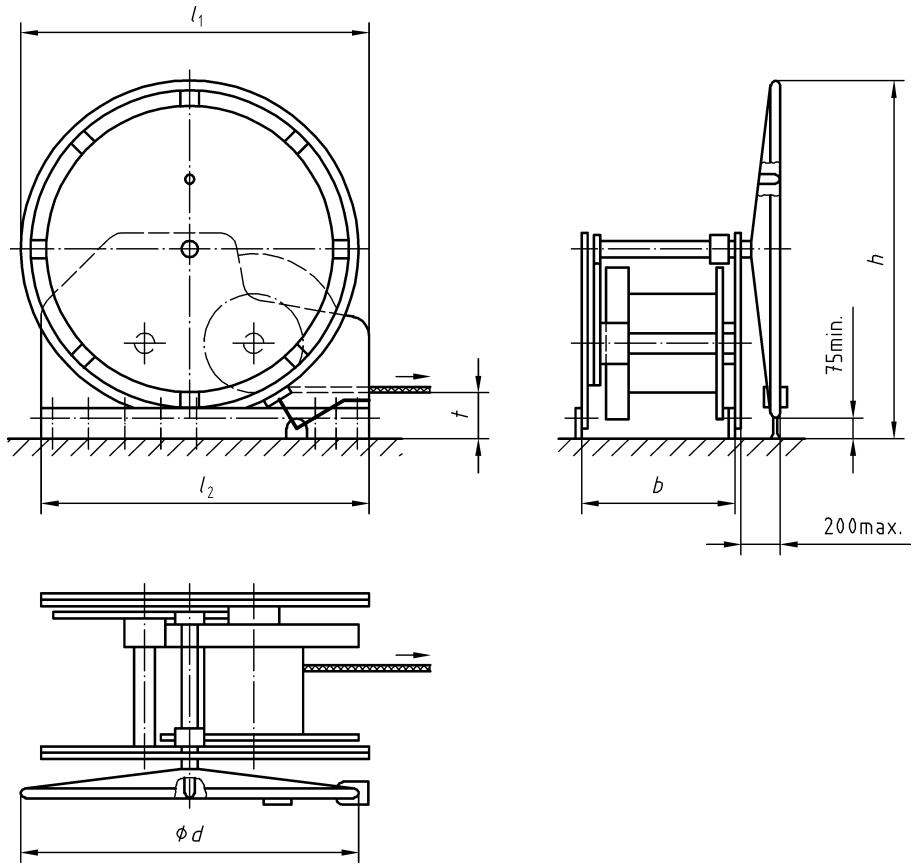
For general tolerances: ISO 2768–c (ISO 2768-1) shall apply.

Coupling devices are not expected to conform to the design illustrated here; compliance is required only in the case of the dimensions specified.

7.2 Main dimensions of the coupling device

The characteristic values and the main dimensions are shown in Figure 3 and Table 1.

Dimensions in millimetres



Key

b width (distance from the outside of one winch plate/flat bar to the inside of the other winch plate/flat bar)
Ø d diameter of the handwheel;
h overall height;
l_1 overall length;
l_2 connecting length of the winch plate/flat bar to the deck;
t distance from the wire rope to the deck.

.

Figure 3 — Coupling device (the drawing shows a right-hand model with partially braced handwheel without the protective device)

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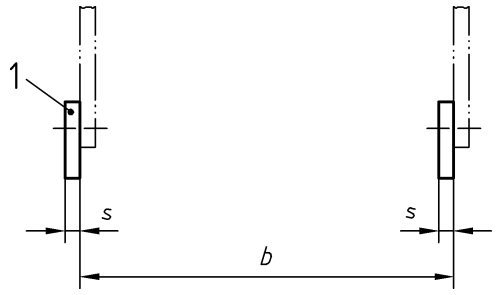
Table 1 – Main dimensions and characteristic values

Dimensions in millimetres

Nominal size	Coupling load [a]	Main dimensions						Minimum breaking load of wire rope
	kN	b	d max.	h max.	l_1 max.	l_2	t max.	kN
10	18	247	[b]	[b]	[b]	535	175	100
25	40	374	825	900	850	800	120	250
40	45	492	1 175	1 250	1 250	1 000	150	400
60	65	492	1 300	1 350	1 300	1 200	180	600

[a] Nominal coupling load corresponds to the minimum breaking load of the rope in *t*
[b] As selected by the manufacturer

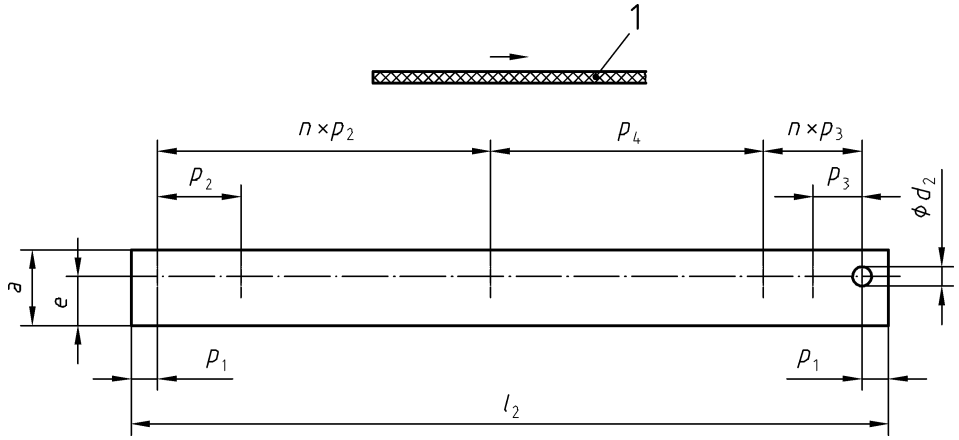
7.3 Dimensions of the foundation



Key

1 Flat bar

Figure 4 – Location of the foundation bars



Key

1 Direction of rope

Figure 5 — Foundation bar

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Table 2 – Foundation dimensions

Dimensions in millimetres

Nominal size	b	Flat bar								Fastening bolts	
		Flat bar $a \times s$	l_2	e	p_1	$n^a \times p_2$	$n^a \times p_3$	p_4	Ø d_2	Number per bar	Thread
10	247	75 × 12	535	50	35	1 × 75	1 × 75	315	22	4	M 20
25	374	75 × 15	800	50	30	1 × 100	3 × 120	280	22	6	M 20
40	492	100 × 20	1 000	65	35	4 × 110	2 × 65	360	26	8	M 24
60	492	100 × 20	1 200	65	35	4 × 145	2 × 75	400	26	8	M 24

[a] n = number of pitches

8 Material

8.1 Material of the flat bars of the foundation

Steel with minimum tensile strength of 360 N/mm^2, e.g. in accordance with ISO 1035-3.

8.2 Material of fastening bolts

The fastening bolts shall be in accordance at least with EN ISO 4014.

9 Manufacturer's certification and operating instructions

9.1 Manufacturer's certification

The manufacturer shall certify that the coupling device is designed and constructed in accordance with this standard and that an individual test or type test has been carried out in accordance with the requirements of Annex A.

9.2 Operating instructions

The manufacturer shall supply operating instructions containing at least:

— assembly specifications, particularly for the foot brake;

— information on maintenance;

— operating instructions;

— specific safety information;

— technical data;.

— information on parts subject to wear (e.g. requirements for the wire rope).

The operating instructions shall be supplied in the language of the user or the purchaser.

10 Designation

Designation of a coupling device conforming to this standard, left-hand model (L), with foundation (A), of nominal size (25):

Coupling device ISO 6218 – L – A – 25

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11 Marking

The coupling devices shall be clearly and permanently marked with the following information:

— designation in accordance with clause 10;
— name of manufacturer or supplier;
— year of manufacture;
— serial number;
— coupling load;
— highest permissible wire rope diameter;
— highest permissible minimum breaking load of the wire rope.

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Annex A
(normative)

Type testing

A.1 Selection of samples

For series manufactured coupling devices, the testing is in the form of a type test.

One coupling device shall be selected at random per series of coupling devices up to a maximum of 50.

The type test may be carried out by the manufacturer.

A.2 Visual examination

Prior to the loading test, a visual examination and check shall be carried out of the relevant calculations and material proofs for compliance with this standard.

A.3 Loading test

The test shall not result in any permanent deformation of the coupling device.
During the test, the loads to be measured shall be held for at least 5 min.:

a) the coupling load of the wire rope as specified in Table 1 shall be attained with a tangential load on the handwheel of 500;

b) the braking effect of the foot brake shall be at least 1,5 times the coupling load of the wire rope as specified in Table 1;

c) the coupling device shall be loaded with 2,5 times the minimum breaking load of the wire rope as specified in Table 1.

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