
**Inland navigation vessels — Manually-
and power-operated coupling devices
for rope connections of pushing
units and coupled vessels — Safety
requirements and main dimensions**

*Bateaux de navigation intérieure — Treuils d'accouplement
manoeuvrés à la main ou motorisés pour les liaisons de câbles des
convois poussés et les formations à couple — Exigences de sécurité et
dimensions principales*

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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 8, *Ships and marine technology*, Subcommittee SC 7, *Inland navigation vessels*.

This fourth edition cancels and replaces the third edition (ISO 6218:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the limitation of the rope speed has been deleted (former Clause 4.3);
- the minimum drum diameter has been changed to be 12 times the maximum rope diameter;
- “wire rope” has been replaced with “rope”, because the use of wire- or textile-ropes is not relevant in this document;
- editorial corrections have been made and the figures have been improved.

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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Inland navigation vessels — Manually- and power-operated coupling devices for rope connections of pushing units and coupled vessels — Safety requirements and main dimensions

1 Scope

This document specifies dimensions and safety requirements for manually operated and power-operated coupling devices used for assembling inland navigation vessels as push tows or for coupling vessels alongside by means of rope connections. The coupling device secures the stable positioning of the coupled vessels.

Safety requirements to protect operators from accidents during the creation, operation, and separation of the rope connections of push tows and vessels coupled alongside are specified in this document.

It also gives rules for designation and testing.

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 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications* ISO 6218:2019
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ISO 3730, *Shipbuilding and marine structures — Mooring winches*

ISO 4014, *Hexagon head bolts — Product grades A and B*

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

manually operated coupling device

device in which a rope is tightened by turning a hand wheel

3.2

power-operated coupling device

device in which a rope is tightened by a power-driven equipment

3.3

tensioning device

ratchet spanner

tool used to increase the tension of the taut rope

**3.4
straining force**

force applied to the rope when either a specific tangential force is applied to the hand wheel, or when a specific force by a power-operated mechanism is applied to the gear

**3.5
minimum breaking load**

load at which the rope will break at the earliest

4 Safety requirements

4.1 General

4.1.1 Components

Manually operated coupling devices consist of a handwheel, a gear, a rope drum with rope fastening, a footbrake, an arresting device, and a winch plate, see [Figure 1](#).

Manually operated coupling devices may have the following additional components (not illustrated in [Figure 1](#)):

- a tensioning device;
- a change gear.

Power-operated coupling devices consist of a power unit (e.g. electric motor, hydraulic power pack) with controls and gearing, a rope drum with rope fastening, an arresting device, and a winch plate, see [Figure 2](#).

Electrical drives and control equipment shall meet the requirements in ISO 3730.

Accessory components for manually operated and power-operated coupling devices are the following (see [Figures 1](#) and [2](#)):

- a foundation;
- a guide track for the rope.

4.1.2 General requirements

The coupling device shall be constructed such that even under the most severe expected conditions, resulting, for example, from the size of the coupled vessels, the actuating power, the meteorological conditions, the wave height, etc., there is no danger to crew members, for example from breaking ropes, or crushing or shearing parts. The strength requirements according to ISO 3730 shall be fulfilled.

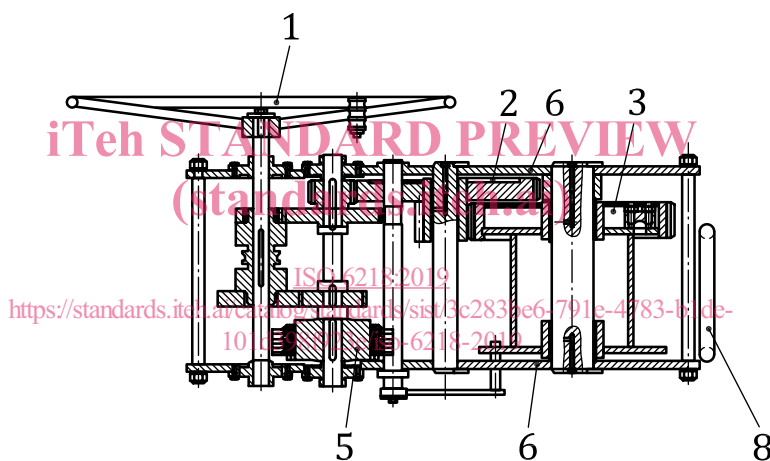
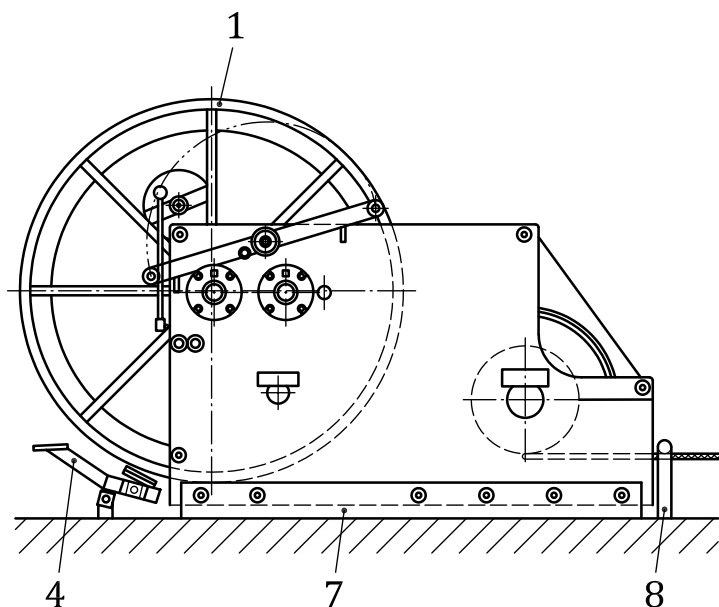
Combined coupling devices shall comply with the requirements for both manually- and power- operated coupling devices.

4.2 Limitation of the actuating power for power-operated coupling devices

The motor shall be equipped with a control device to the effect that the actuating power is limited to the maximum allowed power.

The motor power shall reduce automatically when the actual straining force has reached the intended straining force given in [Table 1](#) so that the straining force cannot be exceeded by more than 10 %.

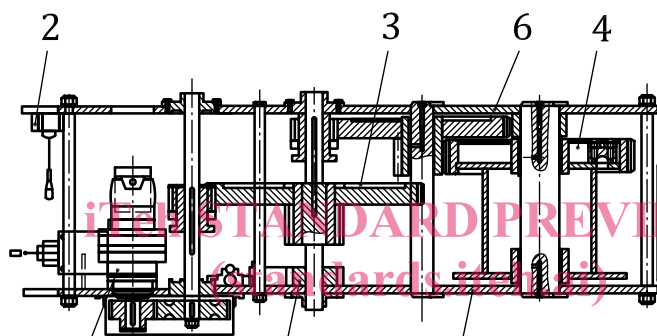
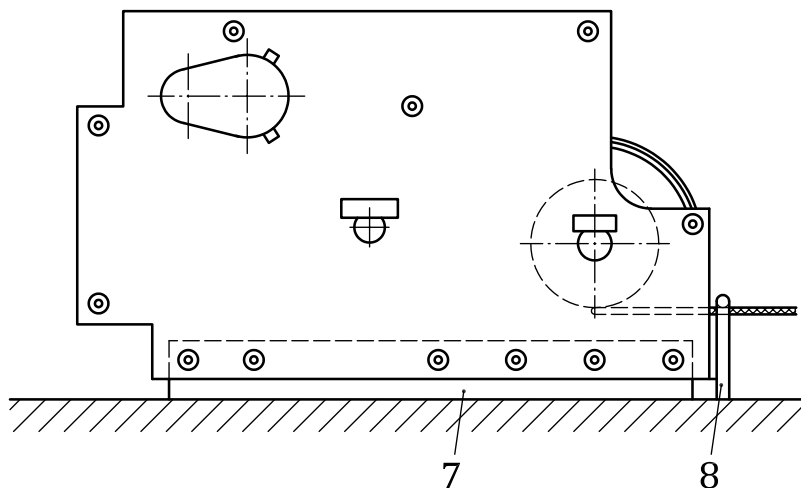
The loading test is specified in [A.3.3 a](#)).



Key

- 1 handwheel
 - 2 gear
 - 3 rope drum with rope fastening
 - 4 footbrake (only shown in side view)
 - 5 arresting device
 - 6 winch plate
- Accessory parts:
- 7 foundation
 - 8 guide track

Figure 1 — Components of manually operated coupling device — Example: M - R - 25



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Key

- 1 power unit (e.g. electric motor, hydraulic motor)
- 2 controls
- 3 gear
- 4 rope drum with rope fastening
- 5 arresting device
- 6 winch plate

Accessory parts:

- 7 foundation
- 8 guide track

Figure 2 — Components of power-operated coupling device — Example: P - R - 25

4.3 Strength requirements

All parts of the coupling devices shall be designed and secured to withstand the minimum breaking load of the rope according to [Table 1](#).

The loading test is specified in [A.3.2 c](#)) (manually operated coupling devices) and [A.3.3 c](#)) (power-operated).

5 Models

5.1 Operation

A distinction is made between

- manually operated (M), or
- power-operated (P), or
- combined (M/P)

coupling devices.

5.2 Position of handwheel/motor

A distinction is made between

- a left hand model (L) coupling device, with the hand wheel or the power-operated equipment and the drum on the left hand side of the gearing, and
- a right-hand model (R) coupling device, with the hand wheel or the power-operated equipment and the drum on the right hand side of the gearing,

when looking in the direction in which the rope is paid out. See [Figure 3](#).



Key

- 1 rope
- 2 handwheel/power-operated equipment
- 3 direction of view

Figure 3 — Models of coupling devices based on the position of the handwheel/motor

5.3 With or without tensioning device

For manually operated coupling devices, a further distinction is made between

- without tensioning device (Type NT), and
- with tensioning device (Type T).