INTERNATIONAL STANDARD

ISO 24043

First edition
2020-10

Marine structures — Crude oil offloading systems — Hose reels

Structures maritimes — Systèmes de déchargement de pétrole brut — Dévidoirs

Reference number
ISO 24043:2020(E)

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

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.

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 4, *Outfitting and deck machinery*.

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.

Marine structures — Crude oil offloading systems — Hose reels

1 Scope

This document specifies requirements for the design, operation and acceptance tests of hose reels for crude oil offloading systems.

It is applicable to the design, manufacture and acceptance of hose reels for crude oil offloading systems used on marine structures such as floating production storage & offloading (FPSO) and mobile platforms.

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 3828, *Shipbuilding and marine structures — Deck machinery — Vocabulary and symbols*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3828 and the following 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
rated load
maximum pulling force of the hose that the drum can withstand when the drum is wound at a *rated speed* (3.4) with a single layer of hose wrapped around

3.2
maximum sustained load
maximum pull of the first layer of hose that the drum can withstand when the reel is in a braking state

3.3
emergency release load
pull acted on the hose upon the release of the emergency rescue device, which is installed to prevent the drum from breaking due to excessive hose pull in the offloading process

3.4
rated speed
maximum retrieval speed that the reel can maintain when the hose reel is subjected to the *rated load* (3.1)

3.5
working pressure
maximum working pressure of crude oil medium in the hose reel's piping

3.6
reel capacity
capacity of the hose reel drum to store the offloading hose, indicating the total length of the offloading hose with a certain outside diameter it can store

4 Types

4.1 Basic functions

Hose reels shall have (but not be limited to) the following basic functions:

1) The reel shall have the capacity to store, retrieve and launch the hose.

2) The reel shall allow the flow of fluid medium with certain pressure during the offloading operation.

3) In case of emergency, the hose reel shall have the capacity to release the offloading hose and emergency shutdown of the flow pipe.

4.2 Material stress

4.2.1 When the hose reel is droved by the drive unit with the rated load to calculate the stress of transmission and other affected parts, the stress shall not exceed 66 % of the yield limit of the material.

4.2.2 When the reel is under the maximum sustained load, the stress of the affected parts shall not exceed 90 % of the yield limit of the material.

4.3 Design and structure

4.3.1 General requirement

The hose reel is mainly composed of a drum, a through-flow unit, frames, drive units, a brake device, an emergency release device, operating devices and auxiliary equipment.

4.3.2 Drum design

4.3.2.1 The minimum bottom diameter, *D*, of the drum (see Figure 1) shall not be less than 2 times the minimum bending radius of the selected offloading hose.

4.3.2.2 The size of the drum shall be such that the offloading hose is fully stored. The outer surface of the drum shall not have sharp edges or other protruding structures that can squeeze or damage the outer surface of the hose.

4.3.2.3 The crane neck structure connected with the first section of the offloading hose protruding from the surface of the cylinder barrel shall be provided with a safety guardrail around it to guide the hose retrieval to avoid hose damages as described in 4.3.2.2.

4.3.2.4 The reel shall be designed to store the hose in no more than two layers. When the number of layers wound is one, the last section hoses shall not be squeezed with the flange structure (see 4.3.2.5).