

S1 Requirements for Loading Conditions, Loading Manuals and Loading Instruments

(1971)
(Rev.1
1981)
(Rev.2
1983)
(Rev.3
1995)
(Rev.4
1997)
(Rev.5
June
2001)
(Rev.6
July
2004)
(Rev.7
May
2010)

IACS considers that this Requirement satisfies Regulation 10(1) of the International Convention on Load Lines, 1966.

S1.1 General

S1.1.1 Application

These requirements* apply to all classed sea-going ships of 65m in length and above which are contracted for construction on or after 1st July 1998, and contain minimum requirements for loading guidance information.

For CSR Bulk Carriers and Oil Tankers, these requirements apply in addition to those of the Common Structural Rules.

S1.1.2 Definitions

Loading Manual:

A Loading Manual is a document which describes:

- the loading conditions on which the design of the ship has been based, including permissible limits of still water bending moment and shear force
- the results of the calculations of still water bending moments, shear forces and where applicable, limitations due to torsional and lateral loads
- the allowable local loading for the structure (hatch covers, decks, double bottom, etc.)

Notes

- * For ships which were contracted for construction before 1st July 1998, the relevant prior revisions of this Unified Requirement as well as Members' reservations to those revisions of this Unified Requirement apply. Certain additional requirements of Unified Requirement S1A also apply to bulk carriers, ore carriers and combination carriers (see UR Z11), of 150m length and above.
- * The "contracted for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to IACS Procedural Requirement (PR) No. 29.

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Loading Instrument

A loading instrument is an instrument, which is either analogue or digital, by means of which it can be easily and quickly ascertained that, at specified read-out points, the still water bending moments, shear forces, and the still water torsional moments and lateral loads, where applicable, in any load or ballast condition will not exceed the specified permissible values.

An operational manual is always to be provided for the loading instrument.

Single point loading instruments are not acceptable.

Category I Ships

- Ships with large deck openings where combined stresses due to vertical and horizontal hull girder bending and torsional and lateral loads have to be considered;
- Ships liable to carry non-homogeneous loadings, where the cargo and/or ballast may be unevenly distributed. Ships less than 120 metres in length, when their design takes into account uneven distribution of cargo or ballast, belong to Category II;
- Chemical tankers and gas carriers.

Category II Ships

- Ships with arrangement giving small possibilities for variation in the distribution of cargo and ballast, and ships on regular and fixed trading pattern where the Loading Manual gives sufficient guidance, and in addition the exception given under Category I.

S1.1.3 Annual and Special Survey

At each Annual and Special Survey, it is to be checked that the approved loading guidance information is available on board.

The loading instrument is to be checked for accuracy at regular intervals by the ship's Master by applying test loading conditions.

At each Special Survey this checking is to be done in the presence of the Surveyor.

S1.2 Loading Conditions, Loading Manuals and Loading Instruments**S1.2.1 General**

An approved loading manual is to be supplied for all ships except those of Category II with length less than 90m in which the deadweight does not exceed 30% of the displacement at the summer loadline draft.

In addition, an approved loading instrument is to be supplied for all ships of Category I of 100m in length and above.

S1.2.2 Conditions of Approval of Loading Manuals

The approved Loading Manual is to be based on the final data of the ship. The Manual is to include the design loading and ballast conditions upon which the approval of the hull scantlings is based.

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Annex 1 contains, as guidance only, a list of the loading conditions which normally should be included in the Loading Manual.

In case of modifications resulting in changes to the main data of the ship, a new approved Loading Manual is to be issued.

The Loading Manual must be prepared in a language understood by the users. If this language is not English, a translation into English is to be included.

S1.2.3 Condition of Approval of Loading Instruments

The loading instrument is subject to approval, which is to include:

- verification of type approval, if any
- verification that the final data of the ship has been used
- acceptance of number and position of read-out points
- acceptance of relevant limits for all read-out points
- checking of proper installation and operation of the instrument on board, in accordance with agreed test conditions, and that a copy of the operation manual is available.

Recommendations on the approval of Loading instruments are given in the IACS document "Recommendations on loading instruments".

In case of modifications implying changes in the main data of the ship, the loading instrument is to be modified accordingly and approved.

The operation manual and the instrument output must be prepared in a language understood by the users. If this language is not English, a translation into English is to be included.

The operation of the loading instrument is to be verified upon installation. It is to be checked that the agreed test conditions and the operation manual for the instrument is available on board.

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(cont)**ANNEX 1 TO REQUIREMENT S1****GUIDANCE ON CONDITIONS**

1. The Loading Manual should contain the design loading and ballast conditions, subdivided into departure and arrival conditions, and ballast exchange at sea conditions, where applicable, upon which the approval of the hull scantlings is based.

2. In particular the following loading conditions should be included:

2.1 Cargo Ships, Container Ships, Roll-on/Roll-off and Refrigerated Carriers, Ore Carriers and Bulk Carriers:

- Homogeneous loading conditions at maximum draught
- Ballast conditions
- Special loading conditions, e.g. container or light load conditions at less than the maximum draught, heavy cargo, empty holds or non-homogeneous cargo conditions deck cargo conditions, etc., where applicable
- Short voyage or harbour conditions, where applicable
- Docking condition afloat
- Loading and unloading transitory conditions, where applicable

2.2 Oil Tankers:

- Homogeneous loading conditions (excluding dry and clean ballast tanks) and ballast or part-loaded conditions for both departure and arrival
- Any specified non-uniform distribution of loading
- Mid-voyage conditions relating to tank cleaning or other operations where these differ significantly from the ballast conditions
- Docking condition afloat
- Loading and unloading transitory conditions

2.3 Chemical Tankers:

- Conditions as specified for oil tankers
- Conditions for high density or heated cargo and segregated cargo where these are included in the approved cargo list

2.4 Liquefied Gas Carriers:

- Homogeneous loading conditions for all approved cargoes for both arrival and departure
- Ballast conditions for both arrival and departure
- Cargo condition where one or more tanks are empty or partially filled or where more than one type of cargo having significantly different densities is carried, for both arrival and departure
- Harbour condition for which an increased vapour pressure has been approved
- Docking condition afloat

2.5 Combination Carriers:

- Conditions as specified in 2.1 and 2.2, above.

~~Annex 2 is deleted~~

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