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# International Standard



# 5480

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Shipbuilding — Guardrails for cargo ships

*Construction navale — Garde-corps pour navire de charge*

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**Descriptors :** shipbuilding, ships, cargo transportation, protection against fall, parapets, specifications, stanchions, design, dimensions.

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 5480 was developed by Technical Committee ISO/TC 8, *Shipbuilding*, and was circulated to the member bodies in June 1978.

It has been approved by the member bodies of the following countries :

Australia	India	Poland
Austria	Ireland	Romania
Belgium	Italy	Spain
Brazil	Japan	Sweden
Bulgaria	Korea, Dem. p. Rep. of	Turkey
Czechoslovakia	Korea, Rep. of	United Kingdom
Finland	Mexico	USSR
France	Netherlands	Yugoslavia
Germany, F. R.	Norway	

No member body expressed disapproval of the document.

# Shipbuilding — Guardrails for cargo ships

## 0 Introduction

This International Standard specifies requirements for marine guardrails and stanchions for cargo ships to comply with the regulations of the International Convention on Loadlines 1966, Annex I, Chapter II, Regulation 25, Paragraphs 2 and 3.

NOTE — Users of this International Standard should note that while observing the requirements of the standard, they should at the same time ensure compliance with such statutory requirements, rules and regulations as may be applicable to the individual ship concerned.

## 1 Scope and field of application

This International Standard specifies dimensions, materials, quality of manufacture and finish for guardrails and stanchions which are fitted on exposed freeboard and superstructure decks of cargo ships to prevent personnel falling overboard or to lower decks. It does not concern guardrails which are fitted near compasses.

## 2 References

ISO 31, Part 3 : *Quantities and units of mechanics.*

ISO 65, *Steel tubes suitable for screwing in accordance with International Standard ISO 7.*

ISO/R 887, *Washers for hexagon bolts and nuts — Metric series.*

ISO 898/1, *Mechanical properties of fasteners, Part 1 : Bolts, screws and studs.*

ISO 1461, *Metallic coatings — Hot dip galvanized coatings on fabricated ferrous products — Requirements.*

## 3 Definitions

For the purposes of this International Standard, the following definitions shall apply :

**3.1 guardrail** : A construction comprising stanchions, rails, top rails and stays (see figures 1 and 4).

**3.2 stanchion** : The principal vertical structural member of a guardrail system.

**3.3 rails and top rails** : Rails are the horizontal members between stanchions, the top rail being the uppermost rail in a series of rails.

**3.4 stay** : A secondary structural support attached to stanchions and deck.

## 4 Materials

The materials for the manufacture of individual components shall be as shown in the table.

TABLE — Components and materials of guardrails

Item No.	Component	Material	ISO No.	Remarks
1	Stanchions	Mild steel		Weldable
2	Stays	Mild steel		Weldable
3	Top rails, tube	Steel	65	Weldable
	Top rails, wooden	Teak	—	Or other suitable hardwood
4	Rails	Steel		Weldable
5	Washers	Brass or steel	R 887	
6	Nuts	Brass or steel	—	
7	Bolts	Steel	898	
8	Screws	Brass or steel	—	Wood screws

## 5 Design, construction and installation

### 5.1 Principal dimensions

**5.1.1** The height of the top rails shall be at least 1 000 mm. This dimension shall be measured from the top of the top rail to the deck at a point vertically below the inner edge of the top rail, or, if the deck has a waterway, to the top of the deck plank or covering next to the waterway (see figures 1 and 2).

**5.1.2** The opening below the lowest course of rails shall be a maximum of 230 mm, measured from the underside of the rail to the deck or flat bar side plate where fitted (see figures 1 and 2).

**5.1.3** The opening between the upper courses shall be a maximum of 380 mm (see figure 1).

**5.1.4** The maximum distance between stanchions shall be 1 500 mm (see figure 4).

### 5.2 Stanchions

**5.2.1** Stanchions for guardrails shall be of 60 mm × 15 mm steel flat bar or of flat bar having a section modulus (ISO 31) at least equal to that of 60 mm × 15 mm flat bar.

### 5.3 Rails

**5.3.1** Steel top rails shall be of 42,4 mm outside diameter tubes, with a wall thickness of at least 2,6 mm or tubes having an equivalent section modulus, and be welded to stanchions.

**5.3.2** Where wooden top rails are required, they shall be 125 × 60 mm made from first quality teak and free from defects such as waness, splits and checks. Other hardwoods

may be used provided that they are at least as suitable in all respects.

**5.3.3** Lower rails shall be of 20 mm diameter solid round bar. As an alternative, tube of 26,9 mm outside diameter with a wall thickness of at least 2,3 mm or tubes having an equivalent section modulus may be used. The rails shall be welded to the inside edge of stanchions or passed through holes in the stanchions and welded in position.

### 5.4 Stays

**5.4.1** Stays shall be of 60 mm × 15 mm flat bar or of flat bar having a section modulus at least equal to that of 60 mm × 15 mm flat bar.

**5.4.2** A stay is not needed on every stanchion and shall be fitted depending on length of guardrail and shipboard conditions.

**5.4.3** The stay shall be welded to stanchions at about mid-height and under an angle of approximately 30°.

### 5.5 Fairlead positions

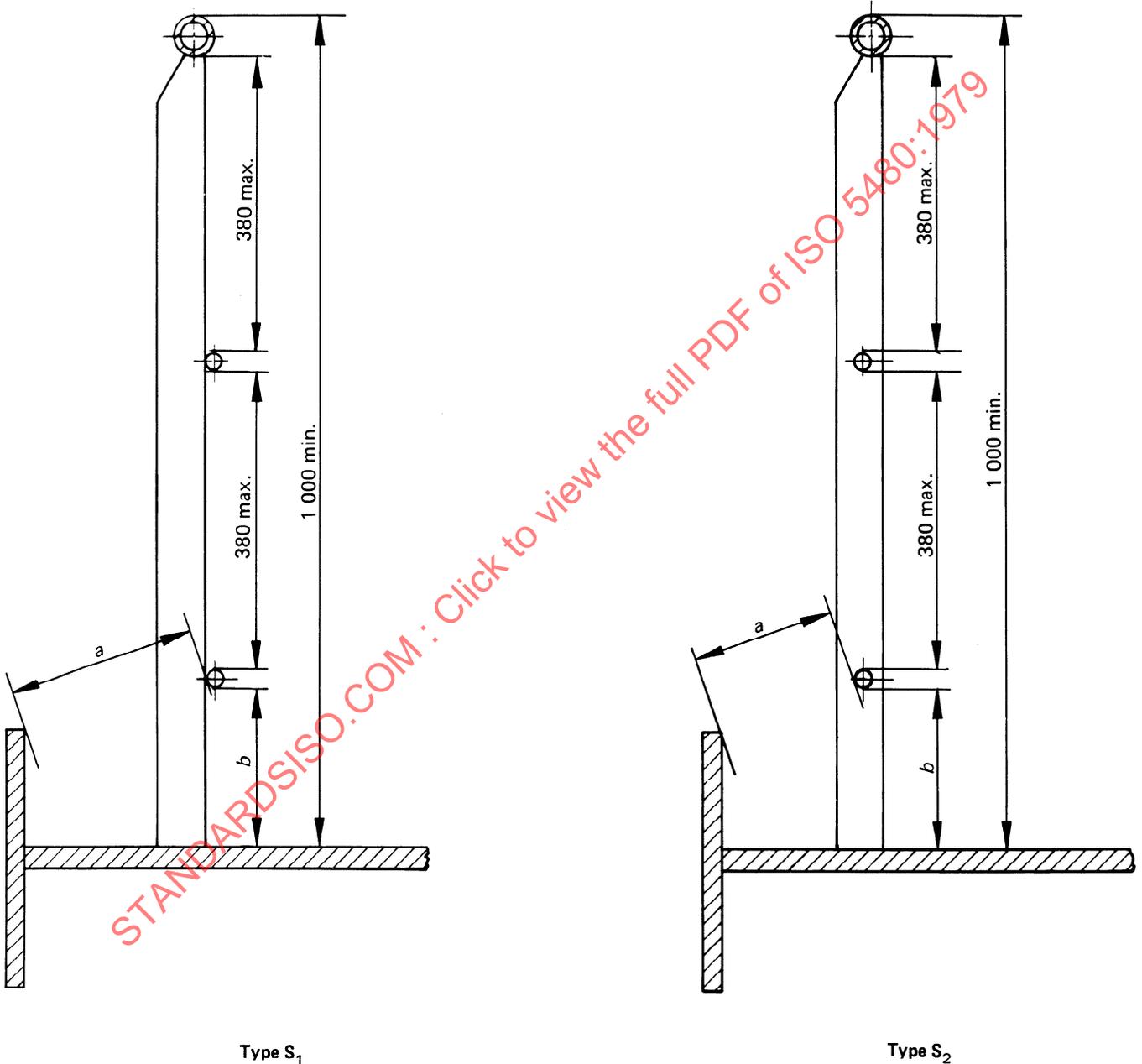
Typical arrangements of guardrails at fairlead positions are shown in figure 4 for guidance.

## 6 Quality of manufacture and finish

**6.1** Guardrails and stanchions shall be free from defects and imperfections liable to cause injury to persons using them.

**6.2** The rails, stanchions and stays shall be given protective finishes appropriate to their material and to their shipboard location. If galvanizing is applied it shall be carried out in accordance with ISO 1461.

Dimensions in millimetres



Type S<sub>1</sub>

Type S<sub>2</sub>

NOTE — The opening  $a$  or  $b$  below the lowest course of the guardrail shall not exceed 230 mm.

Figure 1 — Details of rails and stanchions types S<sub>1</sub> and S<sub>2</sub>

Dimensions in millimetres

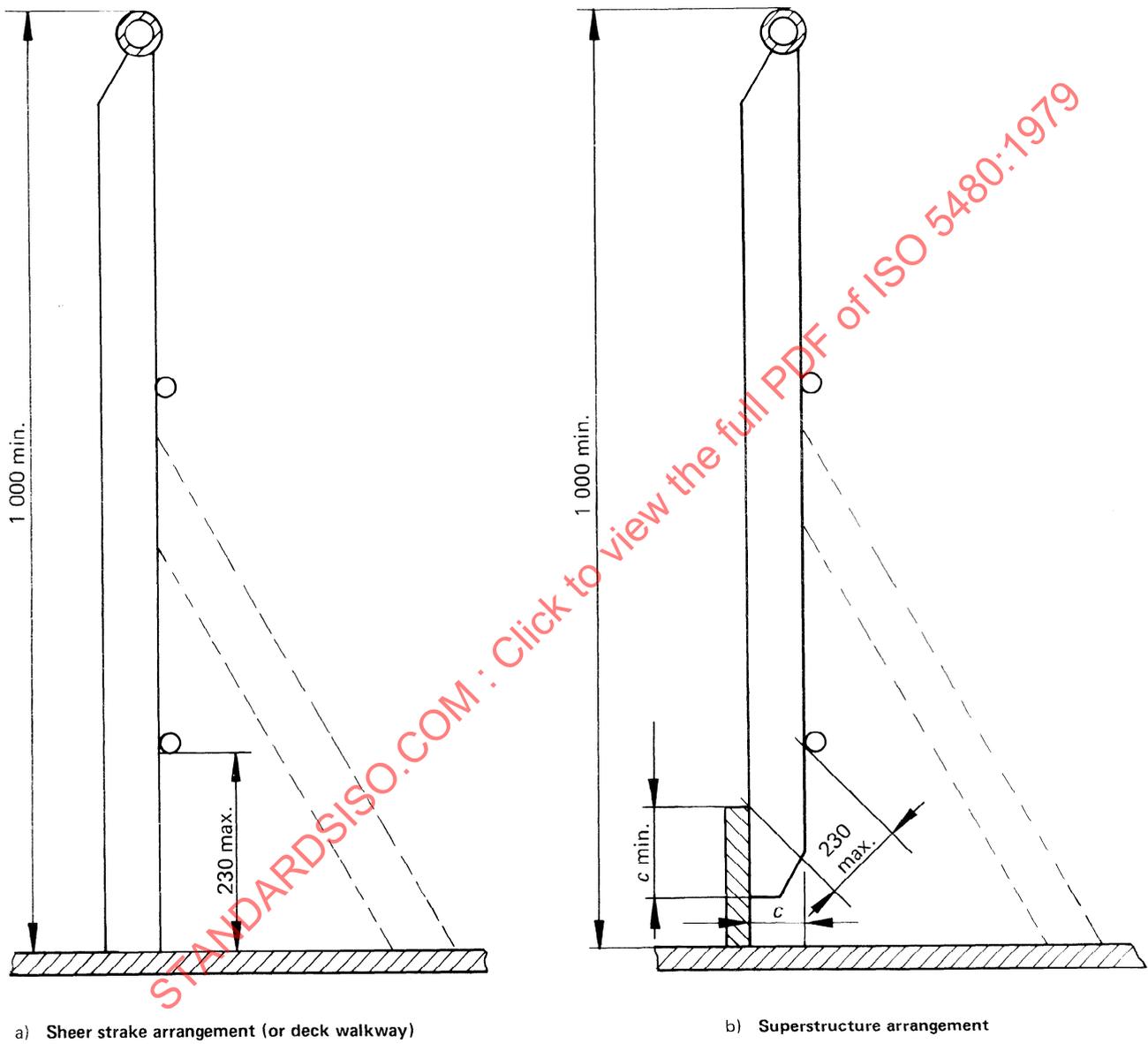


Figure 2 — Typical stanchion arrangements