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# International Standard



# 5621

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

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## Shipbuilding — Bilge mud boxes for machinery spaces and tunnels — General design characteristics

*Construction navale — Boîtes à vase pour compartiments machines et tunnels — Caractéristiques générales de conception*

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Descriptors : shipbuilding, mud boxes, design, characteristics, designation.

## 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.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5621 was prepared by Technical Committee ISO/TC 8, *Shipbuilding and marine structures*.

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# Shipbuilding — Bilge mud boxes for machinery spaces and tunnels — General design characteristics

## 1 Scope and field of application

**1.1** This International Standard specifies the general design characteristics of mud boxes used between pumps and bilge suction in machinery spaces and tunnels for the coarse filtration of bilge water.

**1.2** This International Standard does not specify the design dimensions nor the materials of mud boxes.

**1.3** This International Standard applies to deep sea ships and inland navigation ships.

NOTE — Users should note that while observing the requirements of this International 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.

## 2 Description

A mud box is composed of :

- a body having flanged inlet and outlet branches;
- a filter element consisting of a perforated plate which may be flat, folded or formed.

NOTE — In the remainder of this text, the filter element is designated as a strainer plate.

## 3 Definitions

**3.1 mud box nominal size (DN)** : Nominal size of its branches.

The nominal sizes (DN) and the outside diameter ( $D_e$ ) of the associated branches are as follows<sup>1)</sup> :

DN : 40 — 50 — 65 — 80 — 100 — 125 — 150 — 200 — 250

$D_e$  : 48,3 — 60,3 — 76,1 — 88,9 — 114,3 — 139,7 — 168,3 — 219,1 — 273

## 3.2 Volumes

**3.2.1 total volume ( $V_t$ )** : Total internal volume of the box body, expressed in cubic centimetres. (See figures 1 and 5.)

**3.2.2 upstream volume ( $V_u$ )** : Internal volume of the box on the side of the strainer plate where bilge water is sucked in.

This volume is calculated neglecting nozzles. It is expressed in cubic centimetres. (See figures 2 and 6.)

**3.2.3 downstream volume ( $V_d$ )** : Internal volume of the box on the side of the strainer plate connected to the pumps.

This volume is calculated neglecting nozzles. It is expressed in cubic centimetres. (See figures 3 and 7.)

**3.2.4 useful upstream volume ( $U$ )** : Part of the upstream volume receiving waste. It is expressed in cubic centimetres. (See figures 4 and 8.)

## 3.3 Types

**3.3.1 straight-through mud box (ST)** : Mud box having inlet and outlet branches on the same axis. (See figures 1 to 4.)

**3.3.2 right-angled mud box (RA)** : Mud box having inlet and outlet branches at right-angles to one another, the inlet branch being in the vertical plane and the outlet branch in the horizontal plane.

**3.4 open area coefficient of the strainer plate** : Ratio of the total open area through the apertures to the total area of the perforated plate.

**3.5 open area coefficient ( $c$ ) of the mud box** : Ratio of the total open area through the apertures of the perforated plate to the size area [ $\pi/4 \times D_e^2$ ] of the branches (see table in 4.2).

1) See note to clause 1.

## 4 Design principles

### 4.1 Body

#### 4.1.1 Internal volume

Downstream volume,  $V_d$ , shall be not less than 0,5 times the upstream volume,  $V_u$ . The design of the mud box shall give the minimum flow restriction at the outlet from the downstream volume.

**4.1.2 Useful upstream volume,  $U$ ,** in cubic centimetres, with  $D_e$  expressed in millimetres :

a) Straight-through mud boxes (type ST) :

$$U \geq 0,17 D_e^2 \text{ for DN} = 40, 50, 65$$

$$U \geq 0,20 D_e^2 \text{ for DN} > 65$$

b) Right-angled mud boxes (type RA) :

$$U \geq 0,08 D_e^2 \text{ for DN} = 40, 50, 65$$

$$U \geq 0,10 D_e^2 \text{ for DN} > 65$$

### 4.2 Perforated plate

The area of each hole shall be approximately 79 mm<sup>2</sup>.

**Table — Minimum open area coefficient,  $c$ , of the mud box**

DN	40	50	65	80	100	125	150	200	250
$c$ min.	4	3,5	3,2	2,7	2,7	2,7	2,5	2,4	2,4

## 5 Materials

Mud boxes may be manufactured from cast iron or carbon steel which shall be of not less than 3 mm thickness.

When manufactured from carbon steel, they shall be hot dipped galvanized or covered with any other efficient coating subject to agreement between supplier and purchaser. In the case of protection by hot dip galvanizing, the mass of zinc deposited on all faces shall be not less than 600 g/m<sup>2</sup>.

An alternative material of suitable thickness may be used providing it is acceptable for the environmental conditions (corrosion, etc.) and the associated materials.

## 6 Designation

Mud boxes conforming to this International Standard shall be designated, in order by

- the name : mud box;
- the number of this International Standard : ISO 5621;
- the type (see 3.3) : ST or RA;
- the nominal size (DN) (see 3.1).

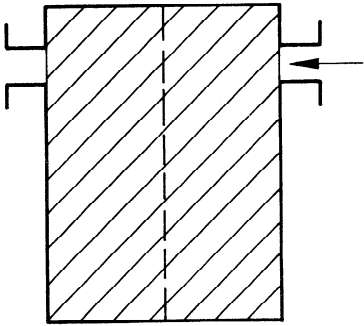
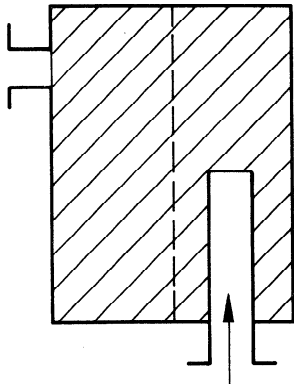
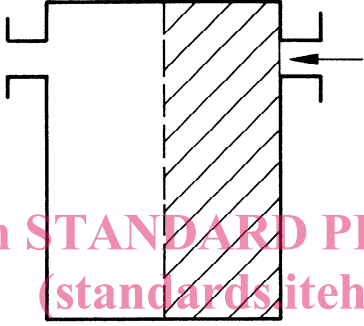
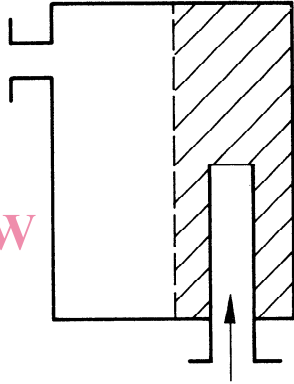
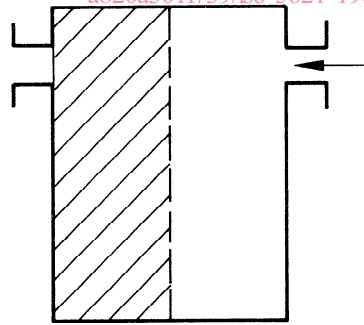
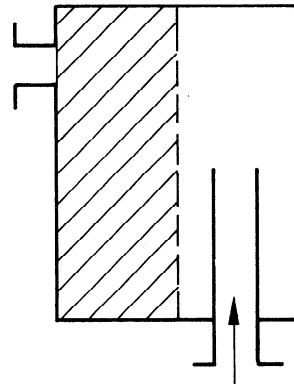
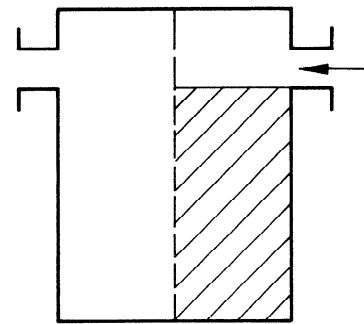
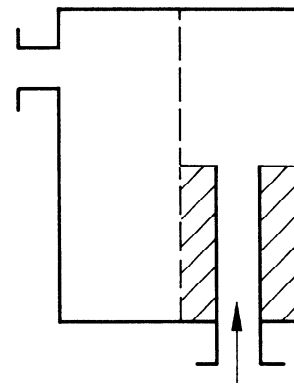
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Example :

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Right-angled mud box of nominal size (DN) 100 :

**Mud box ISO 5621-RA-100**

Type	Straight-through box (ST)	Right-angled box (RA)
Total volume ( $V_t$ )	 <p data-bbox="691 723 775 748">Figure 1</p>	 <p data-bbox="1201 723 1286 748">Figure 5</p>
Upstream volume ( $V_u$ )	 <p data-bbox="691 1167 775 1191">Figure 2</p>	 <p data-bbox="1201 1167 1286 1191">Figure 6</p>
Downstream volume ( $V_d$ )	 <p data-bbox="691 1603 775 1628">Figure 3</p>	 <p data-bbox="1201 1603 1286 1628">Figure 7</p>
Useful upstream volume ( $U$ )	 <p data-bbox="691 2040 775 2065">Figure 4</p>	 <p data-bbox="1201 2040 1286 2065">Figure 8</p>

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