
**Ships and marine technology —
Guidelines for the design and
manufacture of the hub cap with fins
for a fixed-pitch marine propeller**

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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).

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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 8, *Ship design*.

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.

Introduction

A hub cap with fins is an energy-saving device installed behind a propeller instead of a propeller hub cap. It rotates together with the propeller to increase the propulsion efficiency of the ship by decreasing the energy losses caused by hub vortex. To save energy and reduce underwater noise, propeller hub caps with fins are installed on a wide variety of ships.

Ships and marine technology — Guidelines for the design and manufacture of the hub cap with fins for a fixed-pitch marine propeller

1 Scope

This document provides general guidelines for design and manufacture of a hub vortex energy-saving device for a fixed-pitch marine propeller. This document can also apply to the design and manufacture of hub vortex energy-saving device for other types of marine propellers.

According to the specific geometrical shape of the propeller and other specifications, it is suggested that hub cap with fins is used in merchant ships.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

3.1

hub cap with fins

HCWF

device mounted behind a propeller that replaces the propeller hub cap which rotates with the propeller

Note 1 to entry: The device saves energy by reducing the energy losses of propeller hub vortices. [Figure 1](#) shows the sketch of a propeller and a HCWF geometry.

3.2

axial distance between propeller disc and hub cap with fins

L

axial distance from propeller disc to *hub cap with fins (HCWF)* ([3.1](#)) disc

Note 1 to entry: [Figure 1](#) illustrates the axial distance between propeller and HCWF.

3.3

circumferential phase angle

ψ

angle between propeller generator line and hub cap with fins generator line

Note 1 to entry: [Figure 1](#) shows the circumferential phase angle.