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Ships and marine technology — Hydraulic oil systems — Guidance for grades of cleanliness and flushing

Navires et technologie maritime — Circuits d'huile hydrauliques — Guide relatif aux degrés de propreté et de rinçage

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Contents

Page

Foreword iv

1 Scope 1

2 Normative references 1

3 Symbols 2

4 Recommended pipe cleaning levels 2
4.1 Pipe cleaning levels during/after prefabrication 2
4.2 Surface treatment 3
4.3 Storage of prefabricated pipes and fittings 3

5 Level of cleanliness 3

6 Assembly and installation of pipe system 3

7 Blow-through/pull-through of the system 3

8 Description of coupling 4
8.1 Design phase 4
8.2 Other considerations 4

9 Leakage test 4

10 Filling with oil 5

11 Shock testing/pressure testing 5

12 Flushing of yard-installed pipe system 5
12.1 Connection 5
12.2 Special pump units 5
12.3 Flushing filters 5
12.4 Flushing oil 9
12.5 Flushing times 11
12.6 Methods for checking the cleanliness level 12
12.7 Leakage testing 13

13 Start-up of system 13

Annex A (informative) **Example of particle counting** 14

Bibliography 15

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.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 28521 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 3, *Piping and machinery*.

Ships and marine technology — Hydraulic oil systems — Guidance for grades of cleanliness and flushing

1 Scope

This International Standard specifies pipe cleaning and cleaning levels of hydraulic oil pipe systems. The cleaning of pipes and components in hydraulic oil pipe systems is essential for the trouble-free operation of hydraulic systems.

It indicates methods and equipment for the practical execution of the cleaning of specific parts of hydraulic systems with appurtenant components.

The purpose of the cleaning process is to remove installation dirt and to check that the piping and hydraulic system have been adequately cleaned.

The cleaning process of a system is considered a “washing through” process when the Reynolds number, R_e, $\leqslant$ 3 000, and a flushing process when $R_e \geqslant$ 3 000. The Reynolds number is an indicator of whether a fluid flow is considered laminar or turbulent.

This International Standard presupposes that the pipe sections of the hydraulic system have been cleaned partly by pickling and partly by mechanical cleaning. It is furthermore assumed that both dynamic and static components from system suppliers are adequately clean when delivered (see Clause 5).

The specifications given in this International Standard are supplementary to, and not a replacement for, the guidelines specified by the various manufacturers. The manufacturer's guidelines, where available, take precedence.

2 Normative references

The following referenced documents are indispensable for the application 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 3448, *Industrial liquid lubricants — ISO viscosity classification*

ISO 4406, *Hydraulic fluid power — Fluids — Method for coding the level of contamination by solid particles*

ISO 28523, *Ships and marine technology — Lubricating and hydraulic oil systems — Guidance for sampling to determine cleanliness and particle contamination*