International Standard

ISO 17579

Ships and marine technology — Design and testing requirements of pneumatic quick-closing valves

Navires et technologie maritime — Exigences de conception et d'essai des soupapes pneumatiques à fermeture rapide

First edition
2025-03

Reference number
ISO 17579:2025(en)

© ISO 2025



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025
All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Pressure and temperature **3**
5 Structure and design **3**
5.1 General 3
5.1.1 Structure 3
5.1.2 Materials 3
5.2 Design and materials of the body 4
5.2.1 Design 4
5.2.2 Materials 4
5.2.3 Manufacturing 4
5.3 Design and materials of the bonnet 4
5.3.1 Design 4
5.3.2 Materials 4
5.4 Design and materials of the disc 4
5.4.1 Design 4
5.4.2 Materials 4
5.5 Design and materials of the stem 5
5.5.1 Design 5
5.5.2 Materials 5
5.6 Stem sealing 5
5.7 Design and materials of the spring 5
5.7.1 Design 5
5.7.2 Materials 5
5.8 Design and materials of the pneumatic components 5
5.8.1 Design 5
5.8.2 Materials 5
5.9 Design and materials of the seat 6
5.9.1 Design 6
5.9.2 Bore materials 6
5.10 Design and materials of the connection 6
5.10.1 Design 6
5.10.2 Materials 6
5.11 Requirements of pneumatic components and hand wheel 6
5.12 Surface treatment 6
6 Test and inspection **6**
6.1 General 6
6.2 Material test 6
6.3 Non-destructive testing (NDT) 7
6.3.1 General 7
6.3.2 Dye penetrant testing (PT) 7
6.3.3 Retest 7
6.3.4 Submission of inspection results 7
6.4 Dimension check 7
6.5 Visual inspection 7
6.6 Operating tests 7
6.7 Pressure tests 8
6.7.1 General 8
6.7.2 Pressure tests in ambient temperature 8
6.7.3 Test procedures and methods 8

© ISO 2025 – All rights reserved

6.8 Fire-resistance test 8
7 Marking **8**
Annex A (informative) **Examples of PQCV construction** **10**
Bibliography **12**

© ISO 2025 – All rights reserved

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 3, *Piping and machinery*.

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.

© ISO 2025 – All rights reserved

Introduction

Marine pneumatic quick-closing valves are extremely important for the prevention of fires caused by flammable liquids and the overall safety programme onboard ships. According to SOLAS Chapter II-2 Regulation 4,[16] in the event of a fire, the following must be fitted with a cock or valve directly on the tank, which can be closed from a safe position outside the space concerned:

a) oil fuel pipes, which, if damaged, would allow oil to escape from a storage;

b) settling or daily service tank having a capacity of 500 l and above, situated above the double bottom.

In older ships, the valve would normally be closed manually through a long mechanical connection from the valve to the position outside the machinery space. In modern ships, this valve is usually a pneumatic quick-closing valve (PQCV), which uses compressed air and spring tension to rapidly close off the fuel or oil flow in the event of a leak downstream of the tank. The PQCV is operated by a pneumatic quick-closing control devices, the specifications of which are defined by ISO 24225.

Proper operation of pneumatic quick-closing valves is one of the most important items to be checked during port state supervision ship inspections. If the quick-closing valve operation fails, the port state will likely require the problem to be corrected before the ship can proceed. This can result in detention of the ship, with adverse effects on the ship's schedule. Therefore, it is important to develop standards specifying the design and tests for pneumatic quick-closing valves to ensure quality and performance. In addition, since the PQCV is not used on an everyday basis, but is expected to perform as designed in an emergency, proper operation should be verified regularly and periodic maintenance completed.

© ISO 2025 – All rights reserved

Ships and marine technology — Design and testing requirements of pneumatic quick-closing valves

1 Scope

This document specifies requirements for the design and tests of pneumatic driven quick-closing valves, used in ship fuel and lubricating oil systems to stop the fluid flow in the event of a leak. This document is applicable to valves of nominal diameter (DN): 15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, and 300, corresponding to nominal pipe sizes (NPS): 1/2, 3/4, 1, 1 1/4, 1 1/2, 2, 2 1/2, 3, 4, 5, 6, 8, 10, and 12.

NOTE This document is mainly intended for use by producers. Onboard ship inspection and maintenance after the delivery and installation of the valve can help ensure continued proper performance.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 4987, *Steel and iron castings — Liquid penetrant testing*

ISO 5208, *Industrial valves — Pressure testing of metallic valves*

ISO 5752, *Metal valves for use in flanged pipe systems — Face-to-face and centre-to-face dimensions*

ISO 7005-1, *Pipe flanges — Part 1: Steel flanges for industrial and general service piping systems*

ISO 7005-3, *Metallic flanges — Part 3: Copper alloy and composite flanges*

ISO 17602, *Ships and marine technology — Metal valves for use in flanged pipe — Face-to-face and centre-to-face dimensions*

ASME B16.34-2020, *Valves — Flanged, Threaded, and Welding End*

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
pneumatic quick-closing valve
PQCV
pipe closing unit driven by compressed air for the emergency stoppage of the flow of flammable or combustible liquids such as fuel or lubricating oil

© ISO 2025 – All rights reserved