
Industrial valves — Design validation- testing of valves

*Robinetterie industrielle - Essais de validation de la conception des
appareils de robinetterie*



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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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 153, *Valves*.

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

The scope of this document is currently limited to ball and butterfly valves.

The objective of this document is to outline the requirements and methods for evaluating the performance of metallic industrial valves with respect to seat performance and operating torque capability. Fugitive emission performance was omitted, as it is covered by ISO 15848-1. The number of cycles (205) is consistent with the number in C01 of ISO 15848-1:2015. It serves to test the accuracy and dependability of the measurements and capabilities of a valve as published by the manufacturer in the valve's technical documentation.

Type validation is the most reliable method to validate a range of valve products, covering many aspects, such as its design, material selection and manufacturing processes. It will also serve as a guide for valve selection, allowing customers to compare different valve types, designs and brands.

Several major customers already require type tests, each having their own requirements and specifications. Introducing a defined International Standard will reduce manufacturer's costs by decreasing the number of qualifications, as well as decreasing end-user total cost-of-ownership, by eliminating the possibility of unintentional design flaws.

This validation will improve performance and safety in the plants by enabling any customer to specify durable type-tested industrial valves.

Industrial valves — Design validation-testing of valves

1 Scope

This document specifies requirements and acceptance criteria for type testing, in compliance with design conditions, of metallic butterfly and ball valves used for isolating services for all industrial applications, and serves to validate the product design over 205 cycles.

This document excludes testing for safety devices, control valves, thermoplastics valves, and valves for water supply for human consumption and sewage (e.g. the EN 1074 series).

This document defines the procedure for extending the qualification of the tested valve to untested sizes and pressure designations of the same product range.

The purpose of this type test is to validate the seat performance within manufacturer given pressure/temperature rating, provided by the manufacturer's technical documentation of the product. This type test verifies torque requirements and the maximum allowable stem torque (MAST), as given in the manufacturer's technical documentation. This type test validates the durability of seat performance and operating torque through mechanical and thermal cycles.

2 Normative references

The following documents are referred to in the text in such a way that some or all 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 5208, *Industrial valves — Pressure testing of metallic valves*

ISO 15848-1, *Industrial valves — Measurement, test and qualification procedures for fugitive emissions — Part 1: Classification system and qualification procedures for type testing of valves*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5208 and ISO 15848-1 and the following apply.

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

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

3.1

asymmetric sealed valve

valve with an internal construction, which does not have a plane of symmetry perpendicular to the axis of the body ends

Note 1 to entry: This is a valve where both seat and sealing elements are not identical.

3.2

bidirectional valve

valve designed for blocking the flow in both downstream and upstream directions