
**Agricultural irrigation equipment —
Irrigation valves —**

**Part 2:
Isolating valves**

*Matériel agricole d'irrigation — Vannes d'irrigation —
Partie 2: Vannes d'isolation*

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Published in Switzerland

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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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 18, *Irrigation and drainage equipment and systems*.

This second edition cancels and replaces the first edition (ISO 9635-2:2006), which has been technically revised.

ISO 9635 consists of the following parts, under the general title *Agricultural irrigation equipment — Irrigation valves*:

- *Part 1: General requirements*
- *Part 2: Isolating valves*
- *Part 3: Check valves*
- *Part 4: Air valves*
- *Part 5: Control valves*

Agricultural irrigation equipment — Irrigation valves —

Part 2: Isolating valves

1 Scope

This part of ISO 9635 specifies construction and performance requirements and test methods for isolating valves, intended for operation in irrigation systems with water at temperatures not exceeding 60 °C, which can contain fertilizers and other chemicals of the types and concentrations used in agriculture.

It is applicable to isolating irrigation valves of DN 8 in diameter or greater, designed to operate in the fully open and fully closed positions, but which can also operate for extended time periods in any intermediate position.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9635-1:2014, *Agricultural irrigation equipment — Irrigation valves — Part 1: General requirements*

ISO 9644, *Agricultural irrigation equipment — Pressure losses in irrigation valves — Test method*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9635-1:2014 and the following apply.

3.1

clear way valve

valve designed to have an unobstructed flow path which allows the passage of a theoretical sphere with a diameter which is not less than the inside diameter of the body end port

[SOURCE: EN 736-3]

3.2

flow coefficient

K_V

proportionality factor equal to the flow rate, in cubic metres per hour, of water at a temperature between 5 °C to 50 °C, passing through the valve and causing a loss of static head of 1 bar

Note 1 to entry: $Q = K_V \sqrt{\Delta p}$, where Q is the flow rate in cubic metres per hour (m³/h), and Δp is the pressure drop across the valve, in bar or kilopond/kilogram-force per square centimetre (kp/cm², kgf/cm²).

Note 2 to entry: 1 bar = 0,1 MPa = 105 Pa; 1 MPa = 1 N/mm².

Note 3 to entry: Adapted from EN 736-3.

3.3

full bore valve

valve with a seat diameter of not less than 90 % of the internal diameter of the body end port

[SOURCE: EN 736-3]

3.4

isolating valve

valve intended for use only in the fully closed or fully open position

[SOURCE: EN 736-1]

4 Design requirements

Isolating valves shall be designed in accordance with the requirements given in Clause 4 of ISO 9635-1:2014.

5 Performance requirements

5.1 General

Perform all tests on the valve as it was delivered to the test facility.

5.2 Mechanical strength

5.2.1 Resistance to internal pressure of shell and all pressure-containing components

Carry out testing in accordance with ISO 9635-1:2014, 5.2.1. Test results shall comply with the requirements of ISO 9635-1:2014, 5.2.1.

5.2.2 Resistance of obturator to differential pressure

Carry out testing in accordance with ISO 9635-1:2014, 5.2.2. Test results shall comply with the requirements of ISO 9635-1:2014, 5.2.2.

Except for valves to be used for a single flow direction, perform the test successively in each flow direction.

5.2.3 Resistance of valve to bending

Carry out testing in accordance with ISO 9635-1:2014, 5.2.3, applying a bending moment, M , during the test appropriate to the DN value of the valve in accordance with [Table 1](#). Test results shall comply with the requirements of ISO 9635-1:2014, 5.2.3.

Table 1 — Bending moments

DN	Bending moment M N · m
8	610
10	615
20	640
25	670
NOTE For plastic-bodied valves, the applied bending moment should be equal to the bending moment exerted by a 6 m long plastic tube of the same diameter (DN).	

Table 1 (continued)

DN	Bending moment M N · m
32	730
40	825
50	1 050
65	1 400
80	1 500
100	2 200
125	3 200
150	4 800
200	7 200
250	11 000
300	15 000
350	19 000
400	24 000
450	28 000
500	33 000

NOTE For plastic-bodied valves, the applied bending moment should be equal to the bending moment exerted by a 6 m long plastic tube of the same diameter (DN).

5.2.4 Resistance of valves to operating loads

Test results shall comply with the requirements of ISO 9635-1:2014, 5.2.4.

In order to verify this requirement, test the valve in accordance with [Annex A](#), with the application of a closing torque and an opening torque equal to the minimum strength torque (mST), following which it shall satisfy the requirements of the operating tests in accordance with [5.3.3](#), and the seat tightness tests in accordance with [5.3.2.1](#) and [5.3.2.2](#).

The minimum strength torque shall be equal to twice the maximum operating torque given in [5.3.3](#). In testing gate valves as specified in [5.3.3 c](#)), apply a minimum strength torque (mST) as set out in [Annex A](#) equal to 5 × the maximum operating torque (MOT). In the case of valves as specified in [5.3.3 d](#)), the test is applicable only when there is an additional manual operating element.

5.3 Watertightness and airtightness

5.3.1 Watertightness and airtightness of shell and all pressure-containing components

5.3.1.1 Internal pressure

Conduct testing in accordance with ISO 9635-1:2014, 5.3.1.1.

Test results shall comply with the requirements of ISO 9635-1:2014, 5.3.1.1.

5.3.1.2 External pressure

Conduct testing in accordance with ISO 9635-1:2014, 5.3.1.2.

Test results shall comply with the requirements of ISO 9635-1:2014, 5.3.1.2.