
**Agricultural irrigation equipment —
Irrigation valves —**

**Part 1:
General requirements**

*Matériel agricole d'irrigation — Vannes d'irrigation —
Partie 1: Exigences générales*

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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 (www.iso.org/directives).

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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 9635-1:2006), 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 1: General requirements

1 Scope

This part of ISO 9635 specifies construction and performance requirements and test methods for 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 irrigation valves of 8 mm 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 4633, *Rubber seals — Joint rings for water supply, drainage and sewerage pipelines — Specification for materials*

ISO 5209, *General purpose industrial valves — Marking*

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

ISO 6708:1995, *Pipework components — Definition and selection of DN (nominal size)*

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

ISO 7005-2, *Metallic flanges — Part 2: Cast iron flanges*

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

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

ISO 9635-2:2014, *Agricultural irrigation equipment — Irrigation valves — Part 2: Isolating valves*

ISO 9635-5:2014, *Agricultural irrigation equipment — Irrigation valves — Part 5: Control valves*

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

ISO 9911:2006, *Agricultural irrigation equipment — Manually operated small plastics valves*

ISO 9080, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation*

EN 681-1, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 1: Vulcanized rubber*

EN 12627, *Industrial valves — Butt welding ends for steel valves*

EN 12982, *Industrial valves — End-to-end and centre-to-end dimensions for butt welding end valves*

3 Terms and definitions

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

3.1

maximum operating torque

MOT

fixed upper limit for the torque which, when applied at the shaft, operates the valve and ensures compliance with the required leakage rate

3.2

minimum strength torque

mST

fixed lower limit for the torque which, when applied at the shaft, with the obturator either totally open or totally closed, causes no alteration to the functional capability of the valve

3.3

shaft

component of an obturator on which the actuating thread is formed and by which control of the closing component is effected

3.4

type test

test to prove that the design of a valve meets the general and specific performance requirements of the valve

3.5

operating mechanism

mechanism which translates the motion of the operating device to the motion of the obturator

[SOURCE: EN 736-2]

3.6

operating device

manual or power-operated device used to operate the non-pressurized valve

[SOURCE: EN 736-2]

3.7

operating element

component of the operating device by which the mechanical power is introduced

[SOURCE: EN 736-2]

3.8

nominal diameter

DN

parameter used for reference purposes to indicate the size of a valve abbreviated to DN and usually followed by a dimensionless round number which is loosely related to the effective dimensions of the bore or external diameter of the end connections of the valve

Note 1 to entry: It is expressed in millimetres.

Note 2 to entry: Adapted from ISO 6708:1995, definition 2.1.

3.9

nominal pressure

PN

parameter, used for reference purposes in describing a valve, abbreviated to PN and usually followed by a dimensionless round number which is loosely related to the maximum allowable working pressure of the valve

Note 1 to entry: PN is expressed in bars.

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

Note 3 to entry: Adapted from ISO 7268:1983/Amd, 1:1984.

3.10

allowable operating pressure

AOP

maximum hydrostatic pressure that a valve is capable of withstanding in continuous service

[SOURCE: EN 805]

3.11

maximum allowable pressure

MAP

maximum pressure occurring from time to time, including average surge pressures, that a valve is capable of withstanding in service

[SOURCE: EN 805]

3.12

allowable site test pressure

ASTP

maximum hydrostatic pressure that a newly-installed valve is capable of withstanding for a relatively short duration, in order to ensure integrity and tightness of the pipeline

[SOURCE: EN 805]

3.13

obturator

moving member in a valve that operates to close the valve and, where applicable, contains a washer or similar sealing device

4 Design requirements

4.1 Materials

4.1.1 Components and coating materials

Select components and coating materials from those conforming to the relevant standards, where standards exist. Ensure that they meet the requirements of [4.9](#), [4.10](#), and [4.11](#), either alone or in combination with coating materials.

4.1.2 Elastomers

Ensure that elastomers comply with ISO 4633 or EN 681-1 and [4.10](#) of this part of ISO 9635.

4.2 DN

Select DN values from the preferred values given in ISO 6708, with an upper limit of DN 2 000. Confirm with the manufacturer whether a DN value is from the DN/ID series or from the DN/OD series.

4.3 Pressures

Valves intended for irrigation systems come under the nominal pressure (PN) designation and shall be designed in such a way that their characteristic pressures, allowable operating pressure, maximum allowable pressure, and allowable site test pressure are as set out in [Table 1](#) for the corresponding PN (see also [4.4](#)).