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Refrigerating systems and heat pumps — Valves — Requirements, testing and marking

AMENDMENT 1

Systèmes de réfrigération et pompes à chaleur — Robinetterie — Exigences, essais et marquage

AMENDEMENT 1

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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

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This document was prepared by Technical Committee ISO/TC 86, *Refrigeration and air-conditioning*, Subcommittee SC 1, *Safety and environmental requirements for refrigerating systems,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 182, *Refrigerating systems, safety and environmental requirements,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Refrigerating systems and heat pumps — Valves — Requirements, testing and marking

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Table 1

Replace the K_{VS}, *L and* Q_M rows with the following rows:

K_{VS}	Flow coefficient of the valve	m^3/h
L	Leakage percentage	%
Q_m	Valve leakage mass flow rate measured with air	kg/h

Replace the Q_V row with the following two rows:

Q_{V1}	Valve leakage volume flow rate measured upstream with air	m^3/h
Q_{V2}	Valve leakage volume flow rate measured downstream with air	m^3/h

7.6

Replace the entire subclause 7.6 with the following:

7.6 Seat tightness

7.6.1 General

Subclause 7.6 applies to components where internal seat tightness is a design feature. The seat tightness shall be classified according to Table 3.

The maximum leakage percentage, L, is calculated as described in 7.6.2. The maximum values of L for a given seat tightness class are listed in Table 3.

Table 3 — Type test requirements for seat tightness

Seat tightness class	Maximum leakage percentage, L[a]	Maximum leakage volume flow rate, Q_{V2}, measured downstream[a]
A	—	Zero bubbles or equivalent measured during one minute[b]
B	—	Zero bubbles or equivalent measured during one minute
C	0,002 %	—[c]
D	0,01 %	—[c]
E	0,025 %	—[c]
F	0,05 %	—[c]
G	0,1 %	—[c]
H	—	—[d]

[a] For type test the manufacturer shall measure the leakage at ambient temperature covering the whole differential pressure range. For manual valves, see Table 4 for suggested upper limits to the maximum differential pressure.

[b] For safety valves the manufacturer shall measure the leakage up to 0,9 × set pressure of the valve.

[c] The maximum downstream leakage volume flow rate corresponding to the maximum leakage percentage can be calculated using Formula (3) in 7.6.2.

[d] For seat tightness class H, testing shall be conducted to verify the seat tightness specified in the technical documentation.

The required seat tightness class depends on the intended application of the valve:

a) Valves leading to the atmosphere permanently shall be seat tightness class A.

b) Valves leading to the atmosphere during service shall be seat tightness class A or B.

c) For other valves, seat tightness classes with lower requirements are allowed.

NOTE 1 Components with several valve seats, can have several seat tightness classes.

NOTE 2 Safety valves are examples of valves where seat tightness class A is required, while most stop valves will require seat tightness classes A or B.

For manually closed valves, when testing the seat tightness, the seat shall be closed before the test applying the prescribed closing force.

For valves of the double seating type such as many gate, plug, and ball valves, the test pressure shall be applied successively to each end of the closed valve and tightness to the opposite end checked.

As alternate methods for valves with independent double seating (such as double disc or split wedge gate valves), at the option of the manufacturer, the pressure may be applied inside the bonnet (or body) of the closed valve and each seat checked for tightness at the valve ports, or the pressure may be applied to the valve ports and the sum of seat leakage measured at the bonnet (or body). These alternate methods may be used at the option of the manufacturer for valves with single discs (such as solid or flexible wedge gate valves) provided a supplementary closure member test across the disc is performed.

For other valve types, the test pressure shall be applied across the closure member in the direction producing the most adverse seating condition. For example, a globe valve shall be tested with pressure under the disc. A check valve, or other valve type designed, sold, and marked as a one-way valve, requires a closure test only in the appropriate direction. A stop check valve requires both tests.

7.6.2 Seat tightness: type test

The leakage percentage L is specified for the flow directions for which the valve is designed to shut off the flow.

The manufacturer shall measure the leakage covering the whole differential pressure range for which the valve is designed using gas (for instance air or nitrogen). The leakage percentage L shall not exceed the limits given in Table 3 for type test.

For seat tightness class H the leakage percentage, L, shall be specified in the technical documentation.