

DIN EN ISO 21922:2025-09 (E)

Refrigerating systems and heat pumps - Valves - Requirements, testing and marking (ISO 21922:2021 + Amd 1:2024) (includes Amendment :2024)

Contents	Page
Foreword	v
A1 Foreword to Amendment 1 A1	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 List of symbols	4
5 General requirements	6
5.1 Installation and operation	6
5.2 Components under pressure	6
5.3 Excessive mechanical stress	7
5.4 Tightness	7
5.5 Functioning of hand-operated valves	7
5.6 Functioning of actuator-operated valves	7
6 Materials	7
6.1 General	7
6.1.1 Using metallic materials	7
6.1.2 Using non-metallic materials	7
6.2 Requirements for materials to be used for pressure bearing parts	8
6.3 Compatibility of connections	8
6.4 Ductility	8
6.5 Ageing	8
6.6 Castings	8
6.7 Forged and welded components	8
6.8 Nuts, bolts and screws	8
6.9 Spindles	9
6.10 Glass materials	9
6.11 Requirements for documentation	9
6.12 Impact energy <i>KV</i> measurement on sub-sized specimens	10
7 Design	10
7.1 General	10
7.2 Maximum allowable pressure	11
7.3 Valve and valve assembly strength design	11
7.4 Bodies and bonnets	12
7.5 Nuts, bolts, screws, fasteners and seals	12
7.6 Seat tightness	12
7.6.1 General	12
7.6.2 Seat tightness: type test	13
7.7 Screwed spindles and shafts	15
7.8 Design of glands	15
7.9 Valve seats	15
7.10 Caps	15
7.11 Hand operated valves	16
7.12 Corrosion protection	17
8 Appropriate manufacturing procedures	17

9	Production testing	17
9.1	Strength pressure testing.....	17
9.2	Tightness testing.....	18
9.3	Seat sealing capacity.....	18
9.4	Caps.....	19
10	Marking and additional information	19
10.1	General.....	19
10.2	Marking.....	20
10.3	Example how to mark the allowable limits of pressure and temperature.....	20
10.4	Hand-operated regulating valves.....	20
10.5	Caps.....	20
11	Documentation	21
11.1	General.....	21
11.2	Documentation for valves.....	21
11.3	Additional documentation for valve assemblies.....	21
Annex A	(normative) Procedure for the design of a valve by calculation	22
Annex B	(normative) Experimental design method for valves	25
Annex C	(normative) Determination of the allowable pressure at the maximum operating temperature	29
Annex D	(normative) Determination of the allowable pressure at minimum operating temperature — Requirements to avoid brittle fracture	30
Annex E	(informative) Compilation of material characteristics of frequently used materials	41
Annex F	(informative) Justification of the individual methods	61
Annex G	(normative) Pressure strength verification of valve assemblies	67
Annex H	(normative) Determination of category for valves	68
Annex I	(informative) DN system	73
Annex J	(normative) Additional requirements — Sight glasses and indicators	76
Annex K	(normative) Compatibility screening test	79
Annex L	(informative) Stress corrosion cracking	83
Annex M	(normative) Method for sizing the operating element of hand-operated valves	86
Annex N	(informative) Estimating seat leakage rate knowing leakage percentage $\langle A_1 \rangle$	88
Bibliography	89