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AMENDMENT 1
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Refrigerating systems and heat pumps — Safety and environmental requirements —

Part 2: Design, construction, testing, marking and documentation

AMENDMENT 1

Systèmes frigorifiques et pompes à chaleur — Exigences de sécurité et d'environnement —

Partie 2: Conception, construction, essais, marquage et documentation

AMENDEMENT 1

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Foreword

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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*.

A list of all parts in the ISO 5149 series can be found on the ISO website.

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Refrigerating systems and heat pumps — Safety and environmental requirements —

Part 2:
Design, construction, testing, marking and documentation

AMENDMENT 1

Clause 2

Correct the title of ISO 817 as follows:

ISO 817, *Refrigerants — Designation and safety classification*

Correct the date of ISO 7010:2011 as follows:

ISO 7010:2019

Clause 3

Add the following after the first sentence:

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/

4.1

Replace entire subclause with the following:

Refrigerating appliances or systems constructed according to product standards such as IEC 60335-2-24 or IEC 60335-2-89 are presumed to be in conformity with this document.

IEC 60335-2-40 requires appliances to conform to the requirements of this document with regard to mechanical strength. In all other respects, appliances constructed according to IEC 60335-2-40 are presumed to be in conformity with this document.

Components and piping shall comply with the related standards or requirements as indicated in Table 1. Components not included in Table 1 shall conform to relevant national standards or codes. For components not listed in Table 1 and not covered by national standards or codes, the requirements of 4.2 to 4.5 shall apply.

The same requirements as class 2 shall be applied to class 2L, unless specific provisions are given in this document.

Table 1 — Components and piping requirements

Component and piping	Requirements
Fired heat exchangers	see 4.2 to 4.5
Heat exchangers: — pipe coil without air (tube in tube) — multi-tubular (shell and tubes)	see 4.2 to 4.5
Plate heat exchangers	see 4.2 to 4.5
Headers and coils with air as secondary fluid	see 4.2 to 4.5
Receiver/accumulator/economizer	see 4.2 to 4.5
Oil separator	see 4.2 to 4.5
Drier	see 4.2 to 4.5
Filter	see 4.2 to 4.5
Muffler	see 4.2 to 4.5
Hermetic positive displacement compressor	see IEC 60335–2-34 or IEC 60204–1
Semi-hermetic positive displacement compressor	see IEC 60335–2-34 or IEC 60204–1
Open positive displacement compressor	see Clause 4.2 to 4.5
Non-positive displacement compressor	see IEC 60204–1
Pump	see IEC 60204–1 combined with 4.4.3 and 4.5.1
Piping	see 4.2 to 4.5
Piping joints	see 4.2 to 4.5
Permanent joints	see 4.2 to 4.5
Detachable joints	see 4.2 to 4.5
Flexible piping	see ISO 13971
Safety switching devices for limiting the pressure	see 4.2 to 4.5
Control pressure switch	see 4.2 to 4.5
Safety valve	see ISO 4126-1 combined with 4.4.3
Bursting disc	see ISO 4126-2 combined with 4.4.3
Fusible plug	see 4.5.3
Valve	see 4.2 to 4.5
Isolating valves	see 4.2 to 4.5
Hand-operated valves	see 4.2 to 4.5
Capped valves	see 4.2 to 4.5
Liquid level indicators	see 4.2 to 4.5
Gauges	see 4.2 to 4.5
Soldering materials	see 4.3.9
Brazing materials	see 4.3.10
Welding materials	see 4.3

If the component contains electrical components and if the component standard does not cover electrical safety, then the component shall fulfil the electrical requirements of IEC 60335-2-40, IEC 60335-2-24, IEC 60335-2-89 or IEC 60204-1, as relevant.

4.4.1

In the last paragraph, replace "compatible component standard" with the following:

> relevant component standard

4.4.3

Replace entire subclause with the following:

> The tightness test shall be performed according to the type approval procedure as specified in ISO 14903.
>
> Components not covered by the scope of ISO 14903 shall be tested with detection equipment with a sensitivity of 3 g/yr of refrigerant or better, under a pressure of at least 0,25 × *PS*. Acceptance criteria is that no leak shall be detected.
>
> The manufacturer of the assembly may agree with the component manufacturer to execute some or all component tightness tests on the assembly (see 5.3).
>
> Tightness test shall be conducted only after the component has passed a strength-pressure test or has been verified by a type test.
>
> For environmental and safety reasons, nitrogen, helium, and carbon dioxide are preferred test media. Tracers may be added to the test gases. Air and gas mixtures should be avoided as certain mixtures can be dangerous. Air can be used if the hazard of ignition is eliminated and the safety of the workers is ensured. Oxygen shall not be used for tightness tests.
>
> After testing, care shall be taken to ensure that the test medium is relieved safely.

4.5.1

Replace entire subclause with the following:

> Components shall be marked with the following items, unless the component standard is established and requires more specific marking items:
>
> a) the name or logo of manufacturer;
>
> b) the type designation;
>
> c) the serial number or batch number, if one exists;
>
> d) the year of manufacture, for components of nominal size greater than DN25;
>
> e) the design pressure or maximum allowable pressure;
>
> f) the applicable refrigerant (where appropriate);
>
> g) the capacity of main function (where appropriate).
>
> Components assembled in a factory do not need to be marked if agreed upon by the manufacturer and the purchaser. Small components on which such markings are impractical do not need to be marked, but the attached documentation shall indicate the information specified from a) to g).

5.2.3.7

Replace entire subclause with the following:

The connection of piping directly to the indoor unit may be made with permanent or non-permanent joints. All other joints in the piping in the occupied space shall be made with permanent joints.

5.2.9.2

Replace entire subclause with the following:

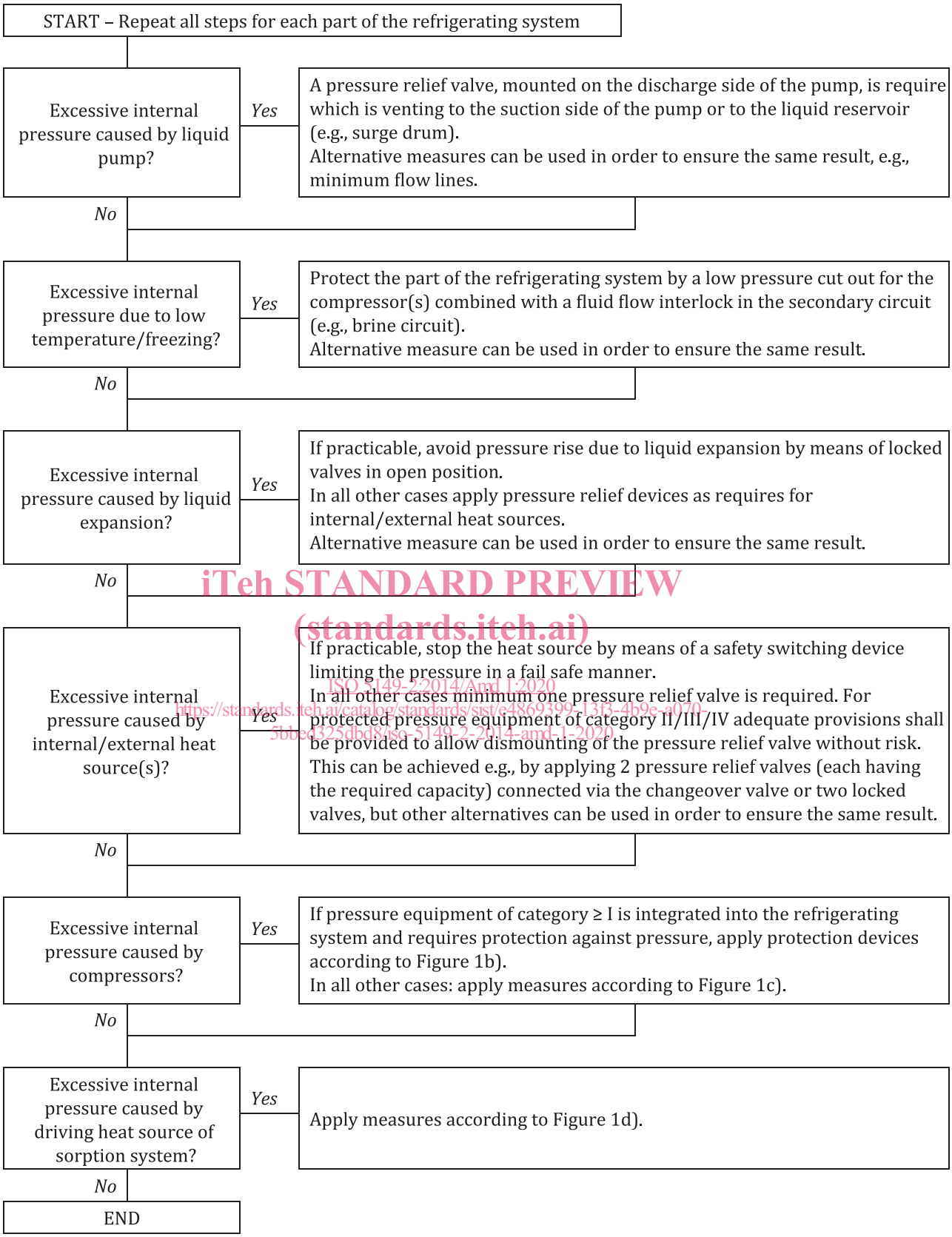
For each refrigerating system, protection devices shall be provided according to the flowcharts as indicated in Figures 1 a), b), c), and d).

Figures 1 a), b), c), and d) shall be considered in relation to one another in order to determine the protective devices.

The categories included in the figures can be determined by applying Annex C.

Examples of the arrangement of pressure relief devices in refrigerating systems are given in Annex E.

Replace Figure 1 a), b), c) and d) with the following:



a) Protection of the refrigerating system against excessive pressure