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(2) For the purpose of this code, each circuit shall be considered as a separate direct refrigerating system.

*Note:* General information on refrigerants. Every fire department should be acquainted with the location of refrigerating systems and with the refrigerants contained therein so that they may prepare themselves against the hazards presented. As indicated in this code, there may be fire and explosion hazards as well as danger from breathing gas. Escape of gas may be caused by a fire to which a fire department has been called, or it may be the result of a mechanical failure. In either case the fire department may need gas masks, and if so, needs to be trained in their use. A heavy concentration of gas will require the use of an oxygen helmet.

It is recommended that an approved mask or helmet be worn by employees or service men, when practical, when major repairs or adjustments are being made to refrigerating equipment.

**GENERAL REQUIREMENTS**

**Ind 45.04 When effective.** (1) **NEW AND OLD SYSTEMS.** (a) These orders shall apply to all refrigerating systems installed on or after the effective date of this code and to parts replaced or added to systems already in service on or after the same date.

(b) Systems installed prior to the effective date of this code and which do not comply with the requirements of the refrigerating plant code effective June 26, 1918 shall be made to comply with the orders of this code with the exception of section Ind 45.10 (1).

(2) **KIND OF REFRIGERANT.** (a) Each refrigerating system shall be provided with a legible metal sign indicating thereon the kind of refrigerant in use. The sign shall be permanently attached to the compressor, or at the liquid receiver or charging valve. If either of the above are not within sight of each other then another sign shall be attached to the system in each of the above locations.

(3) **MACHINE IDENTIFYING NUMBER.** Each refrigerating machine shall be permanently marked with an identifying number.

(4) **REGISTRATION AND DECLARATION.** New and used remote systems exceeding one and one-half tons capacity or unit systems exceeding three tons capacity shall not be installed until a registration form, indicating that the system will be installed to meet the requirements of this code, has been filed with the industrial commission by the owner or by the installing contractor in behalf of the owner, and a declaration to that effect has been conspicuously posted on the premises.

*Note:* Table 3 in the appendix may be used to determine the approximate capacity in tons for displacement, and forms for registration and declaration may be obtained from the industrial commission.

**Ind 45.05 Materials.** No materials shall be used in the construction and installation of refrigerating systems that will deteriorate due to the chemical action of the refrigerant or the oil, or the combination of these. Renewals or replacements of materials or appliances shall be in accordance with the requirements set forth in this code.

**Ind 45.06 Supports.** All refrigerant-containing parts and piping shall be securely supported by means of metal hangers, brackets, straps, clamps, or pedestals, in such manner as to relieve joints or piping of harmful strains and vibration.

**Ind 45.07 Maintenance.** All refrigerating systems shall be maintained in safe condition. If any part of a refrigerating system, or any

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pipng in connection with such system, becomes dangerous through corrosion or any other cause, it shall be replaced or satisfactorily repaired.

**Ind 45.08 Test medium.** No oxygen or any flammable gases or liquids or flammable mixtures of them shall be used within a refrigerating system for testing purposes.

**Ind 45.09 Gauges.** Liquid level gauge glasses, except those of the bulls' eye type or indirect level indicator, shall have automatic closing shut-off devices and all glasses shall be protected against injury by sturdy metal guards.

**Ind 45.10 Pressure vessels.** (1) **CONSTRUCTION, INSPECTION AND STAMPING.** Refrigerant-containing vessels shall be constructed, inspected and stamped in accordance with the requirements contained in the current Wisconsin boiler and unfired pressure vessel code.

(2) **VOLUME OF SHELL AND TUBE VESSEL.** The net volume of a shell and tube vessel shall be considered as one-half of the gross volume of the vessel. If no liquid receiver is used, the condenser safety valve size shall be based on the gross volume of the vessel.

(3) **PRESSURE RELIEF VALVE.** Each pressure vessel exceeding 5 cubic feet net capacity shall be protected at all times by a pressure relief valve, the diameter of which shall be in accordance with table 4 in the appendix of this code.

(4) **ADDITIONAL RELIEF VALVE AREA.** When the required pressure relief valve area exceeds that provided by a 2 inch diameter valve, then an additional pressure relief valve or valves shall be installed to secure the required area.

(5) **PRESSURE ACTUATED RELIEF DEVICES.** All pressure relief devices for refrigerant-containing vessels shall be directly pressure actuated.

(6) **RELIEF VALVE SETTING.** All pressure relief valves for refrigerant-containing vessels shall be set to function at a pressure not to exceed the maximum allowable working pressure of the vessel.

(7) **RELIEF VALVE MARKING.** Each pressure relief valve shall be legibly marked to designate its setting in pounds per square inch and with the name of the manufacturer.

(8) **DUAL RELIEF VALVES.** No stop valve shall be located between a pressure relief device or pressure limiting device and the part of the system protected thereby, unless two devices of the required size are used and so arranged that only one can be shut off at any one time.

(9) **RELIEF VALVE DISCHARGE.** The discharge from such pressure relief valves shall be by unobstructed continuous piping to the outside atmosphere not less than 12 feet above the ground and not closer than 20 feet to any fire escape, doorway, ventilator or other opening. The pipe shall be provided with a diffuser and so positioned that water cannot enter the line.

(10) **ACCUMULATOR SAFETY VALVES.** The discharge from safety valves attached to low pressure accumulators may be connected into the suction line on the machine side of the stop valve or outdoors as provided in paragraph 9 of this order.