



PLEASE NOTE

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This document is *not* the official version of these regulations. The regulations and the amendments printed in the [Royal Gazette](#) should be consulted to determine the authoritative text of these regulations.

For more information concerning the history of these regulations, please see the [Table of Regulations](#).

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CHAPTER B-5

BOILERS AND PRESSURE VESSELS ACT

REGULATIONS

Pursuant to section 33 of the *Boilers and Pressure Vessels Act* R.S.P.E.I. 1988, Cap. B-5, Council made the following regulations:

PART I - APPLICATION

- 1.01** These regulations do not apply Application, general
- (a) to a person, other than a power engineer or operator, engaged in the commissioning or testing of a registered plant;
 - (b) ambient temperature water service pressure vessels. (EC234/85)
- 1.02** (1) The Act and these regulations apply in full to pressure vessels of 0.0425 cubic metres or less in capacity of the following types: Application, pressure vessels of limited capacity
- (a) steam jacketed sterilizers;
 - (b) autoclaves;
 - (c) steam jacketed kettles;
 - (d) air starting bottles;
 - (e) in line separators.
- (2) Pressure vessels of 0.0425 cubic metres or less in capacity of a type or class not listed in subsection (1) are subject to registration as fittings. *Idem*
- (3) Where there is a difference of opinion as to whether an item is a fitting or a pressure vessel, the question shall be referred to the Chief Inspector whose decision shall be final. (EC234/85) Resolution of questions of application

PART II - DEFINITIONS

- 2.01** In these regulations Definitions
- (a) "Act" means the *Boilers and Pressure Vessels Act* R.S.P.E.I. 1988, Cap. B-5; Act
 - (b) "ANSI" means the American National Standards Institute; ANSI
 - (c) "ASME" means the American Society of Mechanical Engineers; ASME
 - (d) "ASTM" means the American Society for Testing Materials; ASTM
 - (e) "contractor" means a person who maintains a place of business and engages in the installation of boilers, pressure vessels and pressure piping systems or any of them; contractor

CRN	(f) “CRN” means Canadian Registration Number;
CSA	(g) “CSA” means the Canadian Standards Association;
equivalent	(h) “equivalent” means equal in value or authority;
high pressure	(i) “high pressure” means pressure exceeding 103 kilopascals;
manufacturer	(j) “manufacturer” means a person responsible for the construction in whole or in part of any boiler, pressure vessel, pressure piping system or fitting;
NBBI	(k) “NBBI” means the National Board of Boiler and Pressure Vessel Inspectors;
refrigerant	(l) “refrigerant” means a substance used to produce refrigeration by its expansion or vaporization;
special inspection	(m) “special inspection” means any inspection made or service rendered other than an inspection conducted relative to the issuing of a certificate authorizing the continued use of a boiler, pressure vessel or pressure piping system;
TEMA	(n) “TEMA” means the Tubular Exchangers Manufacturers Association. (EC234/85)

PART III - GENERAL REQUIREMENTS

CODES & STANDARDS

- Adoption of codes **3.01** (1) Subject to the Act and these regulations, the following codes and standards are adopted:
- (a) CSA B-51 Code for the Construction and Inspection of Boilers and Pressure Vessels;
 - (b) CSA B-52 Mechanical Refrigeration Code;
 - (c) CSA B-139 Installation Code for Oil Burning Equipment;
 - (d) CSA B-140.0 General Requirements for Oil Burning Equipment;
 - (e) Z305.1 Non-flammable Medical Gas Piping Systems;
 - (f) CGA B-149.1 Installation Code for Natural Gas Burning Appliance and Equipment;
 - (g) CGA B-149.2 Installation Code for Propane Burning Appliance and Equipment;
 - (h) The following sections of the ASME Boiler and Pressure Vessel Code:
 - (i) Section I Power Boilers,
 - (ii) Section II Material Specifications, Parts A, B, & C,
 - (iii) Section III Nuclear Power Plant Components Division I & II,
 - (iv) Section IV Heating Boilers,
 - (v) Section V Non-destructive testing,

- (vi) Section VI Recommended Rules for Care of Heating Boilers,
- (vii) Section VII Recommended Rules for Care of Power Boilers,
- (viii) Section VIII Pressure Vessels, Division 1 and 2,
- (ix) Section IX Welding Qualifications,
- (x) Section X Fiberglass Reinforced Plastic Pressure Vessels,
- (xi) Section XI Rules for In-service Inspection of Nuclear Power Plant Components;
- (i) The following standards of ANSI:
 - (i) B31.1 Power Piping,
 - (ii) B31.2 Industrial Gas and Air Piping Systems,
 - (iii) B31.3 Chemical Plant and Petroleum Refinery Piping,
 - (iv) B31.4 Liquid Petroleum Transportation Piping Systems,
 - (v) B31.5 Refrigeration Piping,
 - (vi) Z106.1 Storage and Handling of Liquefied Petroleum Gases;
- (j) The following standard of NBBI:
 - (i) The National Board Inspection Code;
- (k) TEMA standards of Tubular Exchanger Manufacturers Association.

(2) Any addenda to the code or standards specified in subsection (1) and any interpretations, rulings, or cases issued by the ASME shall be deemed to be adopted upon publication when approved by the Advisory Board. (EC234/85) Modifications to codes

FITTINGS - OLD AND NEW INSTALLATIONS

3.02 (1) All fittings attached to any new boiler or pressure vessel or installed in any new plant shall meet the requirements of these regulations. Application

(2) All fittings on existing installations found on inspection to be unsafe, shall be replaced with fittings that meet the requirements of these regulations. (EC234/85) Idem

PART IV - QUALIFICATIONS OF BOILER INSPECTORS

4.01 A person is qualified to be appointed an inspector under the Act when he meets the qualifications as set out from time to time by the Civil Service Commission. (EC234/85) Inspectors

PART V - REGISTRATION OF DESIGNS

5.01 In this Part

- (a) “hot water tank” means a pressure vessel used to contain hot water at a pressure exceeding 103 kPa and having a diameter of Definitions
hot water tank

	more than 610 mm but does not include a hot water tank used in private residences;
hydropneumatic tank	(b) “hydropneumatic tank” means a pressure vessel having a diameter of more than 610 mm and containing both liquid and air at a pressure exceeding 103 kPa;
pressure	(c) “pressure” means a pressure in kilopascals as measured by a pressure gauge, directly connected to the equipment of which it measures the pressure;
shop inspection	(d) “shop inspection” means the inspection by an authorized inspector any boiler, pressure vessel, fitting or pressure piping system during and upon completion of fabrication;
specifications	(e) “specifications” means the completed manufacturer’s specifications form as supplied by the Chief Inspector. (EC234/85)

DRAWINGS AND SPECIFICATIONS OF DESIGNS

Drawings & specifications of designs	5.02 Drawings and specifications of designs shall be submitted in duplicate by the manufacturer to the Chief Inspector for all boilers, pressure vessels, pressure piping systems and fittings. (EC234/85)
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INFORMATION REQUIRED

Information required	<p>5.03 Drawings and specifications of boilers and pressure vessels shall include</p> <ul style="list-style-type: none"> (a) the maximum design pressure and temperature; (b) ASME specification number for all materials; (c) the method of fabrication and details of all welding and the welding procedure registration number; (d) the details of the arrangement and dimensions of all component parts; (e) the code paragraph under which the vessel is to be constructed; (f) a report of any physical tests conducted for the purpose of establishing the working pressure of the boiler or pressure vessel or any part thereof; (g) the purpose for which the boiler or pressure vessel is to be used; (h) the manufacturer and CRN of all fittings used in the manufacture of a boiler or pressure vessel; (i) the signature and seal of a professional engineer; (j) the provincial or ASME registration number for the Quality Control Program; (k) the calculations showing required material thickness if requested. (EC234/85)
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5.04 The drawings, specifications and information referred to in section 5.03 must bear the signature of the owner of the design or the person who will be the manufacturer of the boiler or pressure vessel. (EC234/85)

Signature of design
owner or
manufacturer

5.05 Drawings submitted with the application for registration shall have a blank space 100 mm 100 mm on which an official registration stamp may be placed. (EC234/85)

Space for
registration stamp

5.06 (1) Designs will be given a registration number for the province and the vessels may be manufactured in any number to such registered design if they meet the requirements of the registered design in every detail.

Registration
number

(2) Reference shall be made to the registration number when submitting Manufacturers Data Reports pertaining to each vessel. (EC234/85)

Data reports

SHOP INSPECTION

5.07 (1) All boilers and pressure vessels requiring shop inspection by the ASME Code or these regulations and built in Canada shall be subject to shop inspection by an inspector.

Shop inspection

(2) All boilers and pressure vessels requiring shop inspection by the ASME Code or these regulations and manufactured in a country other than Canada must be shop inspected by an agency approved by the Chief Inspector.

Idem

(3) The Chief Inspector may require the inspection of

- (a) a boiler or pressure vessel at any stage of its fabrication; or
- (b) a boiler or pressure vessel at any stage of its installation.

(EC234/85)

Idem

MANUFACTURERS DATA REPORT

5.08 (1) When a boiler or pressure vessel requiring shop inspection by the ASME Code or these regulations is delivered to a purchaser in the province, a Manufacturers Data Report as prescribed by the Chief Inspector bearing the signature of the authorized shop inspector, shall be forwarded to the Chief Inspector.

Manufacturers Data
Report

(2) The owner's name and location of installation, if unknown to the manufacturer, may be omitted from the Manufacturers Data Report referred to in subsection (1) and filled in subsequently by the representative of the manufacturer in the province who shall, at the time of sale, forward such data report to the Chief Inspector. (EC234/85)

Idem

DEFECTIVE DESIGNS

Defective designs **5.09** When a design which has been registered is found to be defective in any detail, the manufacturer shall be notified accordingly, and shall thereupon revise the design to meet the applicable code requirements. (EC234/85)

REJECTED DESIGNS

Rejected designs **5.10** When a design covering a boiler, pressure vessel, or piping system is not registered, a report shall be sent to the manufacturer requesting new drawings and specifications which shall conform to the requirements of the regulations. (EC234/85)

CAST IRON BOILERS

Cast iron boilers **5.11** (1) Designs covering cast iron steam and hot water boilers shall be accompanied by a proof test certificate indicating the destruction test pressure for each type or series submitted for registration.

Maximum pressure (2) The maximum allowable working pressure shall not be greater than as determined in accordance with the appropriate paragraph of section IV of the latest edition of the ASME Code. (EC234/85)

Hot water tanks **5.12** (1) A hot water tank shall be designed in accordance with section VIII of the ASME Pressure Vessel Code.

Temperature (2) The minimum design temperature shall be 93°C.

Pressure (3) The minimum design pressure shall be 690 kPa.

Idem (4) When a hot water tank is heated indirectly by means of a steam coil or pipe, the pressure of the steam used shall not exceed the design pressure of the tank. (EC234/85)

HYDROPNEUMATIC TANKS

Hydropneumatic tanks **5.13** A hydropneumatic tank shall be designed and fabricated in accordance with section VIII of the ASME Pressure Vessel Code with a minimum design pressure of 690 kPa. (EC234/85)

Cushion tanks **5.14** A cushion tank shall be designed and fabricated in accordance with section VIII of the ASME Pressure Vessel Code except that relief valves are not required. (EC234/85)

BLOW OFF

5.15 (1) Where two or more boilers are connected to a common header or tank, the blow off from each boiler with a manhole opening shall be provided with a check valve between the blow-off valve and the blow down header or tank. Blow off

(2) A cast iron pressure vessel or fitting shall not be installed on the blow off from a power boiler. Cast iron fittings

(3) The owner shall ensure that the blow-off valves are of steel construction when installed on a power boiler having a working pressure exceeding 690 kPa. Steel valves

(4) Where the effluent from any boiler is a hazard, a registered blow-off vessel or suitable device shall be installed in a manner acceptable to the Chief Inspector. Blow-off hazards

(5) Blow-off piping shall be run from the boiler to the point of discharge with the least number of directional changes possible and where directional changes are necessary, they shall be done as smoothly as possible through the use of long radius elbows, bends, laterals, etc. (EC234/85) Piping

PIPING

5.16 (1) All piping used in connection with boilers, pressure vessels and pressure plants shall meet the requirements of the ASME Code and, where the ASME Code requirements are not applicable, shall meet the requirements of the ANSI Code for pressure piping. Codes

- (2) Drawings and specifications shall include Details
- (a) flow or line diagrams showing the general arrangement of all boilers, pressure vessels, pressure piping, fittings, provisions for expansion and anchor points;
 - (b) a pipeline identification list showing the maximum pressures and temperatures at which each part of the plant will operate;
 - (c) a list of pressure relief valves;
 - (d) material specifications, size, schedule and primary service rating of all pressure pipe and fittings;
 - (e) the CRN issued by the Chief Inspector for all fittings and pressure vessels included in the drawing;
 - (f) the welding procedure registration number; and
 - (g) such other information as is necessary to survey the design and determine whether it is suitable for registration.

Signature of engineer	(3) The drawings, specifications and information shall bear the signature and seal of the professional engineer responsible for the design. (EC234/85)
Classification of pressure piping	<p>5.17 The following piping shall be considered pressure piping subject to all the requirements of these regulations:</p> <ul style="list-style-type: none"> (a) steam piping of any size or pressure over 15 PSI; (b) water piping larger than 20 mm nominal pipe size to carry hot water at more than 207 kPa; (c) piping to carry refrigerants, anhydrous ammonia, propane and similar gases; (d) air or other inert gas piping larger than 20 mm nominal pipe size and at a pressure greater than 1750 kPa; (e) oil piping larger than 20 mm nominal pipe size to carry hot oil at more than 207 kPa; (f) piping systems used for the movement of non-flammable medical gases; (g) any other piping used in connection with or as part of a boiler or pressure piping installation and classified as pressure piping by the Chief Inspector. (EC234/85)
Welding	5.18 (1) Piping shall not be welded when the metal temperature is below -20°C and when the pipe temperature is between -20°C and 0°C the area adjacent 7.5 mm to the required weld shall be heated to approximately 22°C before welding.
<i>Idem</i>	(2) Piping shall not be welded during rain, snow or high wind unless the work and the welder are protected therefrom. (EC234/85)
Radiographic examination	5.19 All pipe welds larger than 50 mm nominal pipe size to carry steam at a pressure exceeding 3500 kPa or a temperature exceeding 400°C shall, unless otherwise approved by the Chief Inspector, be examined by radiography in addition to standard testing practices. (EC234/85)
<i>Idem</i>	5.20 All pipe welds larger than 50 mm nominal pipe size to carry steam at a pressure not exceeding 3500 kPa or a temperature not exceeding 400°C shall be examined by radiography if required by an inspector. (EC234/85)
Pressure piping, welding	5.21 All pressure piping shall, if 75 mm or larger pipe size, be welded. (EC234/85)
Tack welds	5.22 When tack welds are used they shall be made by a certified welder in accordance with the registered procedure or shall be removed during the welding operation. (EC234/85)

5.23 Preheating and stress relieving shall be done in accordance with procedures, outlined in the ASME and ANSI Codes, (EC234/85) Preheating and stress relieving procedures

TESTING

5.24 Where any boiler, pressure vessel or pressure piping system is being tested or is first being put into service, the owner or person in charge of the testing procedure shall ensure that only those persons required to be in attendance for the test or initial start-up be present. (EC234/85) Testing, persons present

5.25 Before any pressure piping system is tested, the contractor shall inspect the system to make sure that the materials, construction, identification and installation thereof comply with these regulations. (EC234/85) Inspection

5.26 The contractor shall ensure that all safety precautions are observed when conducting any tests. (EC234/85) Safety precautions

5.27 When a pressure piping system which includes pressure vessels is to be tested, the test liquid temperature shall not be less than 16°C with the pressure not being applied until all the pressure parts and the test liquid are approximately at the same temperature. (EC234/85) Temperature

5.28 Pressure piping unless otherwise approved by the Chief Inspector shall be hydrostatically tested to one and one-half times the design pressure in accordance with the ANSI or ASME Codes. (EC234/85) Pressure piping, testing

5.29 An inspector may require the removal of any welding which in his opinion does not meet the requirements of these regulations. (EC234/85) Removal of unsatisfactory welding

DESIGNS NOT REQUIRED TO BE REGISTERED

5.30 The following pressure plant designs are not required to be submitted for registration unless required by the Chief Inspector but shall otherwise comply with the regulations: Designs not to be registered

- (a) power plants that do not exceed 600 kW;
- (b) heating plants that do not exceed 1800 kW;
- (c) refrigeration plants that do not exceed 60 kW;
- (d) compressed air plants that do not exceed 200 kW;
- (e) compressed air plants that are portable. (EC234/85)

REGISTRATION OF FITTINGS

5.31 (1) Drawings and specifications, together with the statutory declaration, in duplicate, of all fittings to be used on boilers, pressure vessels or pressure piping systems, shall be sent to the Chief Inspector for registration before any fitting is used. Registration of fittings

Information to be supplied	(2) The drawings and specifications shall indicate all sizes and thickness of material, also composition of all materials, tensile strength, compressive strength of all parts which are subject to compression, the pressure to which the fitting was tested by the manufacturer, at which pressure a sample fitting ruptured if tested to destruction and the maximum allowable working pressure and temperature.
Grouping	(3) Fittings shall be registered according to specific grouping as follows: <ul style="list-style-type: none"> (i) tees and elbows, etc (ii) flanges (iii) valves (except pressure relieving devices) (iv) expansion joints, flexible pipe (v) strainers, steam traps (vi) measurement devices (vii) pressure relieving devices (viii) other fittings.
Rating Sheets	(4) Rating sheets certified by NBBI shall be submitted with each type and size of safety valve to be registered. (EC234/85)

INSTRUMENTATION

Instrumentation	5.32 Instrumentation that is an integral part of a pressure system installed under these regulations shall be of a registered type and shall conform in detail to the construction and test requirements of the ANSI standards. (EC234/85)
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SAMPLE FITTINGS

Sample fittings	5.33 When the Chief Inspector considers it necessary, sample fittings shall be forwarded to him at the expense of the party registering and may be retained by him or returned at the registering party's expense. (EC234/85)
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FAULTY FITTINGS

Faulty fittings	5.34 The Chief Inspector may select any registered fittings in an agent's stock and test them and should a number of fittings made from any registered design prove to be faulty, the Chief Inspector may cancel the registration of it. (EC234/85)
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CAUSE FOR CANCELLATION

5.35 Should an inspector find that a manufacturer is supplying fittings that do not fully comply with the requirements of these regulations, the Chief Inspector may cancel the registration. (EC234/85)

Cause for
cancellation

5.36 The Chief Inspector shall allot registration numbers to designs and specifications when surveyed and registered, the province in which the design is registered being indicated by a figure following a decimal point. (EC234/85)

Allotment of
registration
numbers

5.37 (1) When a design which has been initially registered in another province is subsequently registered in this province, the original registration number including provincial identifier will be retained and an additional figure identifying this province shall be added.

Registration of
design registered in
another province

(2) Manufacturers submitting designs for registration in this province which have already been registered in another province, shall give the registration number and date of registration for the other province. (EC234/85)

Idem

IDENTIFICATION

5.38 (1) Stamping of boilers, pressure vessels or heat exchangers built in Canada shall conform in every detail with the CSA-B51 Code.

Stamping

(2) Stamping of boilers, pressure vessels or heat exchangers built outside of Canada, shall comply with the ASME Code and shall include

Stamping, foreign
registrations

- (i) the Canadian Registration Number;
- (ii) the National Board Number.

(3) Any identification stamping shall be kept free of any covering so that the stamping is freely accessible to an inspector at all times but, where this is impracticable, the identification shall also be stamped upon a permanently attached plate which shall be kept free of covering.

Accessibility of
identification stamp

(4) Upon completion of the initial inspection by an inspector, an identifying number preceded by a letter shall be applied to the vessel or boiler adjacent to the stamping. (EC234/85)

Identification upon
initial inspection

CONTRACTORS

5.39 (1) Any person fabricating a boiler, pressure vessel, pressure piping system or fitting in the province shall implement a program of quality control satisfactory to the Chief Inspector to ensure that the fabrication complies with the Act and regulations.

Quality control

Contractor's license	(2) Every person who undertakes to install, make alterations or repairs to a pressure system or any part thereof, shall be the holder of a valid and subsisting contractor's license, but this subsection does not prevent operating personnel from performing routine maintenance or minor repairs to a plant.
Determination of routine maintenance	(3) Where a question arises as to what constitutes routine maintenance or minor repairs, the Chief Inspector's decision shall rule, subject to appeal to the Advisory Board.
Application	(4) The application for a contractor's license shall be made on the form supplied by the Chief Inspector and returned to him with the prescribed fee.
Requirements	(5) A contractor's license may be granted when <ul style="list-style-type: none"> (a) the applicant furnishes proof of the implementation of a program of quality control satisfactory to the Chief Inspector and provides the following information: <ul style="list-style-type: none"> (i) name and complete address of the company, (ii) statement of authority and responsibility, (iii) the scope of work, (iv) name of person responsible for repair design and methods of NDE, PWHT, etc., to be used, (v) the method whereby there is assurance that only acceptable material, including welding material, is used for repairs, (vi) method of informing the inspector of the repair, the work while in progress and final inspection of the completed repair, (vii) the records system maintained relative to purchase orders and delivery slips for all materials including welding materials; (b) an applicant has furnished proof that he holds a valid technical qualification certificate as issued by an acceptable certifying agency or uses employees holding such certificates in the discipline concerned; (c) prescribed fees have been paid.
Suspension	(6) The Chief Inspector may suspend any license for a period not in excess of 30 days or he may refer the question to the Advisory Board for consideration and recommendation.
Revocation	(7) Upon the recommendation of the Advisory Board, the Chief Inspector may, for cause, revoke or cancel any license or suspend any license for a period not in excess of 30 days.
Reinstatement	(8) The Chief Inspector may, upon the recommendation of the Advisory Board, reinstate any person who has had his license revoked or cancelled by issuing another license in its stead.

(9) The following shall be deemed to be cause for suspension, revocation or cancellation of a license:

Cause

- (a) any violation by the contractor or his employee or by a person working directly under his supervision of any provisions of the Act;
- (b) the making of false statements with respect to any matter within the scope of the Act;
- (c) incompetency;
- (d) dereliction of duty;
- (e) improper or fraudulent use of a license;
- (f) poor performance of work and laxity in complying with regulations governing such work or in rectifying faults or defects in work. (EC234/85)

PERMITS

5.40 (1) Before a person commences to install or alter a pressure plant, he shall

Requirement for permit for installation of pressure plant

- (a) make written application for a permit on the form supplied by the Chief Inspector giving a description of the work to be done and particulars of the machinery and components to be used;
- (b) obtain a permit to do the work showing full details of the ownership and the purpose for which the premises are to be used and such other details as may be required by the Chief Inspector; and
- (c) pay the prescribed fee.

(2) A permit shall not be issued unless the Department has approved all necessary drawings.

Approval of drawings

(3) The contractor shall provide the name of the tradesman who will do the work.

Tradesman

(4) A permit is not required if the work is performed by persons holding valid technical qualification certificates for

Where permit not required

- (a) replacement of valves, controls, safety or relief devices with approved components of a similar type; or
- (b) maintenance or overhaul of pressure system components.

(5) When a contractor completes the work pursuant to a permit, he shall notify the inspector who,

Approval by inspector

- (a) if he is satisfied that work pursuant to the permit has been completed satisfactorily, shall complete and endorse the inspection form; or
- (b) if he is not satisfied, shall issue a notice stating the alterations, additions or repairs necessary for the satisfactory completion of the work.

FEES

Fees

5.41 Every person who makes an application to the Chief Inspector for the registration of the design of a boiler, pressure vessel, pressure piping system or fitting shall pay the appropriate fee as follows:

Cast iron boilers.....	\$300
Steel boilers.....	300
Pressure vessels.....	300
Heat exchangers.....	300

Where no survey of a design has been conducted for registration of a boiler, pressure vessel, pressure piping system or fitting, a filing fee of \$50 shall be paid by the applicant for the issuance of a Canadian Registration Number.

POWER PLANT PIPING

(a) not greater than 3,600 kW.....	\$ 85
(b) greater than 3,600 kW but not greater than 12,000 kW.....	130
(c) greater than 12,000 kW but not greater than 24,000 kW.....	165
(d) greater than 24,000 kW.....	240

HEATING PLANT PIPING

(a) not greater than 2,400 kW.....	\$ 75
(b) greater than 2,400 kW but not greater than 4,800 kW.....	80
(c) greater than 4,800 kW but not greater than 7,200 kW.....	90
(d) greater than 7,200 kW but not greater than 10,000 kW.....	100
(e) greater than 10,000 kW but not greater than 15,000 kW.....	110
(f) greater than 15,000 kW.....	120

REFINERIES, PETROCHEMICAL AND OTHER SIMILAR PIPING SYSTEMS

On registration of the design of a pressure piping system used in a refinery, petrochemical, medical gas, or other similar application, the fee is \$85 per hour with a minimum fee of \$170.

ADDITIONS TO OR ALTERATIONS OF A PRESSURE PIPING SYSTEM

The fee for design registration of additions to or alterations of a pressure piping system is \$85.

REGISTRATION OF FITTINGS

The manufacturer shall pay the following fees for the survey and registration of design drawings and Statutory Declaration Forms for fittings:

(a) single fitting.....	\$165
(b) a range of fittings in a single category.....	300
(c) catalogues and brochures.....	300
(d) filing fee.....	50

AMENDMENT TO DESIGNS

For registration of an amendment to a registered design,

(a) the standard fee is.....	\$ 85
(b) where calculations are involved, the fee is.....	170

Design changes involving shell thickness, diameter, working pressure, or tensile strength of material constitute a new design and the appropriate fees for registration of new designs shall be paid.

SHOP INSPECTIONS

The following fees are payable by the manufacturer for shop inspection of boilers, pressure vessels and pressure piping systems during their fabrication, alteration or repair and by contractors for shop inspection of new installations and alterations made to existing installations:

- (a) \$85 per hour during normal working hours;
- (b) \$125 per hour during other hours - minimum \$250.

CONTRACTOR'S LICENSE AND PERMIT

The fee for a contractor's license is \$125 per year payable on or before the expiry date of the license, subject to the qualification that where a contractor is licensed for the first time after July 1 in any year the fee is \$100.
The fee for a permit is \$25.

SPECIAL INSPECTIONS AND WELDER CERTIFICATION

Where, at the request of a manufacturer or contractor, a special inspection is conducted or a special service rendered or the certification test of a welder is conducted, the fee is \$85 per hour during normal working hours.

ADDITIONAL FEES

Where an inspection involves calculations respecting flanges and openings pursuant to the ASME Code, an additional fee of \$85 per hour for the calculation.

TRANSPORTATION

In addition to inspection fees, the transportation expenses of an inspector at the prevailing government rates are payable by the person for whom the services of the inspector are provided.

STAMPING

For stamping a boiler or pressure vessel with the markings and identification required by these regulations the fee is \$85 per hour.

(EC347/98; 635/04)

PART VI - SUPPLEMENTARY CONSTRUCTION INSTALLATION REQUIREMENTS

WATER COLUMN PIPING

6.01 (1) Connecting pipes shall be as short as practicable but where it is found necessary that they exceed 4500 mm approval shall be obtained from the Chief Inspector. Length of pipe

(2) Connecting pipes shall be conveniently arranged with crosses having suitable plugs for clean-out purposes. Connecting pipes

(3) A waste pipe and blow-off valve with a diameter of at least half the diameter of the connecting pipe, but not less than 20 mm, shall be fitted at the bottom of the column. (EC234/85) Waste pipes

LIGHTING FOR WATER COLUMN

Lighting **6.02** Safe and effective means, including adequate lighting, shall be provided to permit the water level in the gauge to be distinctly seen at all times. (EC234/85)

WATER GAUGES

Water gauges **6.03** Water gauges shall be provided with approved gauge fittings equipped with shut-off valves and having packing glands designed to prevent the possibility of the packing obstructing the opening in the glass or otherwise interfering with its free action. Where considered necessary by the inspector, tubular water gauges shall be encased within a suitable guard to provide protection in case of an accident. (EC234/85)

REMOTE INDICATORS

Remote indicators **6.04** Water gauges of the remote indicator type shall be of registered design and, where used, shall be in addition to standard equipment. (EC234/85)

LOW WATER CUT-OFF

Cut-off device **6.05** (1) Every steam boiler, both power and heating, which is not under continuous attendance by a certified operator shall, when automatically fired, be equipped with a registered low water cut-off device, designed to shut off the fuel feed and air supply in the event of low water and installed in such a manner that it cannot be rendered inoperative by the manipulation of any manual control or regulating apparatus. The low water cut-off device shall be housed in either the water column or a separate chamber which shall be provided with a blow-off pipe and valve not less than 20 mm in diameter. The arrangement shall be such that when the column or chamber is blown down, the water level in it will be lowered sufficiently to actuate the low water cut-off.

Idem (2) Every automatically fired hot water heating boiler, when installed in a forced circulation system and not under continuous attendance by a certified operator, shall be equipped with a registered low water cut-off device, installed in such a manner that it can be tested under operational conditions. (EC234/85)

ADDITIONAL REQUIREMENTS

Additional requirements **6.06** In a steam boiler, where a combination device incorporating the low water cut-off and a feed water supply control switch is used, the boiler

shall also be equipped with a registered separate low water fuel cut-off device and with a separate water connection to the boiler. (EC234/85)

MARKER FOR WATER LEVEL

6.07 (1) Every steam heating boiler, with the exception of a vertical boiler, shall at the time of manufacture be provided with a permanently attached marker indicating the lowest permissible water level. The marker shall be located in a prominent position and so designed that it will not be covered. The marker shall be located three inches above the highest point of any heating surface in the boiler. Minimum water levels

(2) The lowest visible part of the water gauge glass shall in no case be lower than the marker. (EC234/85) Water gauge glass

FEED WATER SUPPLY

6.08 Boilers whose working pressure is 103 kPa or less may have a single means of water feed. Boilers whose working pressure exceeds 103 kPa shall have feed water sources as required by section 1 of the ASME Code. Where two means of feeding are required, this does not necessitate two separate connections to the boiler. (EC234/85) Feed water supply

HOT WATER BOILERS

6.09 In relation to hot water boilers the regulations in this Part which are not applicable to hot water boilers may be ignored but where doubt exists, a ruling shall be obtained from the Chief Inspector. (EC234/85) Hot water boilers

ACCESS OPENINGS

6.10 All power boilers and heating boilers shall be provided with manholes, handholes and wash out openings as specified in the ASME Code. (EC234/85) Access openings

SAFETY VALVES

6.11 (1) All safety valves used on boilers and pressure vessels shall be rated valves, tested and listed in accordance with the requirements of the ASME Code. They shall be properly stamped with the rated capacity and the registration number. Manufacturers shall specify on the drawings or specifications submitted for registration, the number and capacity of the safety valves which shall be used for steam or hot water boilers irrespective of whether or not they supply the valves. Safety valves, requirements

- Capacity (2) The safety valve capacity for each boiler shall be such that the safety valve or valves will discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than six per cent above the highest pressure at which any valve is set and in no case more than six per cent above the maximum allowable working pressure.
- Settings (3) One or more safety valves on every boiler shall be set at or below the maximum allowable working pressure. The remaining valves may be set within a range of three per cent above the maximum allowable working pressure but the range of setting of all the saturated steam valves on a boiler shall not exceed ten per cent of the highest pressure to which any saturated steam valve is set.
- Capacity checks (4) Safety valve capacity may be checked in any of the three following ways and if found sufficient, additional capacity need not be provided:
(a) by making an accumulation test i.e. by shutting off all other steam discharge outlets from the boiler and forcing the fires to the maximum. The safety valves provided are to be sufficient to prevent an excessive pressure beyond six per cent above the highest pressure at which any valve is set and not more than six per cent above the maximum allowable working pressure;
(b) by measuring the maximum amount of fuel that can be burned and computing the corresponding evaporative capacity upon the basis of the heating value of the fuel as specified in paragraphs A-12 to A-17 inclusive, of section 1, ASME Power Boiler Code; or
(c) by determining the maximum evaporative capacity by measuring feed water with the sum of safety valve capacities to be equal to or greater than the maximum evaporative capacity of the boiler. (Note: Not to be used on high temperature hot water boilers.)
- Additional valves (5) When additional safety valve capacity is required any valves added shall conform to the requirements of the ASME Code.
- Placements (6) No valve of any description shall be placed between the safety valve and the boiler nor on the discharge pipe between the safety valve and atmosphere. (EC234/85)
- Stop valves **6.12** (1) Every main or auxiliary steam outlet from a boiler (except at safety valve connections) shall be fitted with a stop valve immediately at the boiler in addition to any other stop valves which may be required on main or branch lines. When two or more boilers carrying over 690 kPa are connected to a common header, the connection from each boiler having a manhole opening shall be fitted with two stop valves having an ample free-blow drain between them. (EC234/85)

(2) The discharge of the drain shall be visible to the operator while manipulating the valve. The stop valve shall consist preferably of one automatic non-return valve (nearest to the boiler) and a second valve of the outside screw and yoke type. (EC234/85) *Idem*

PRESSURE REDUCING VALVES

6.13 Where steam systems of different design pressure are connected, a reducing valve shall be fitted and a by-pass provided to allow the servicing of the reducing valve. On the low pressure side, and within close proximity of the reducing valve, there shall be installed a safety valve of ample capacity and a pressure gauge. (EC234/85) *Reducing & safety valves*

FEED VALVES

6.14 The feed pipe of a steam boiler operated at more than 103 kPa maximum allowable working pressure shall be provided with a check valve near the boiler and a globe valve between the check valve and the boiler. When two or more boilers are fed from a common source, there shall also be a globe valve on the branch to each boiler between the check valve and source of supply. The inlet side of a globe valve used on a feed line shall be under the disc of the valve. (EC234/85) *Check & globe valves*

FEED WATER

6.15 Feed water or make up shall not be discharged directly into any part of a boiler exposed to the direct radiant heat from the fire. Feed water shall not be introduced through the openings or connections used for the relief valve, the water column or the water gauge glass. (EC234/85) *Feed water*

HEATERS

6.16 Where the heating medium is returned to the boiler, only the indirect type system shall be considered as acceptable when heating oil or other liquid harmful to boiler operations is used. (EC234/85) *Heaters*

BOILER ROOM DOORS

6.17 Where the aggregate boiler capacity exceeds 2400 kW there shall be at least one exit door from the boiler room leading as directly as possible to the outside of the building, and such doors shall readily open outwards. (EC234/85) *Boiler room exit doors*

PLATFORMS AND WALKWAYS

Platforms &
walkways

6.18 Platforms, walkways, ladders and stairways of substantial fire resistant construction equipped with suitable handrails and toe plates shall be installed to give access to and egress from all important parts of boilers and auxiliary equipment. (EC234/85)

UPTAKE DAMPERS

Uptake dampers
prohibited

6.19 (1) In oil or gas fired heating boilers, manually operated uptake dampers shall not be installed.

Openings in uptake
dampers

(2) Power boilers, oil, gas or pulverized coal fired, shall have a minimum opening in the uptake damper of not less than five per cent of the damper area. The opening, however, shall be adequate to vent the furnace properly at all times and shall meet the approval of the Chief Inspector. (EC234/85)

PART VII - INSPECTION AND TESTING

Requirements

7.01 Every boiler, pressure vessel and piping system shall meet the requirements of this Part. (EC234/85)

VISUAL INSPECTION

Visual inspection

7.02 Visual inspection of boilers, pressure vessels and piping shall include but is not limited to the following:

- (a) inspection for corroded areas, dents, defects in welds, defects in valves and gaskets and leakage that might indicate weakness;
 - (b) ensuring that devices for holding manhole covers and hand-hole covers are secure and the covers are leakproof;
 - (c) testing and ensuring that the safety valve operates within the design range;
 - (d) ensuring that all emergency, safety devices and valves are free from corrosion, distortion or any other damage that would prevent their normal operation;
 - (e) ensuring that bolts or nuts on any flanged connection or blank flange are not missing or loose; and
 - (f) that the required markings are on the item for identification.
- (EC234/85)

HYDROSTATIC OR PNEUMATIC TESTING

Testing

7.03 The hydrostatic or pneumatic testing of boilers, pressure vessels or pressure piping shall be carried out in accordance with the following procedures:

- (a) while the test is being carried out, all closures shall be in place and all relief valves clamped or removed and safety and relief valves shall be returned to their operative condition immediately after the tests are completed;
- (b) all valves, pipe, fittings and other accessories attached to the item shall be proven tight at not less than the 1.5 times the design pressure;
- (c) when pneumatic testing is performed, suitable safeguards shall be provided to protect employees and other persons should a failure occur;
- (d) during the pneumatic test, the entire surface of all joints under pressure must be coated with a solution of soap and water or other suitable material for the purpose of foaming or bubbling to indicate the presence of leaks;
- (e) for hydrostatic testing, the pressure component shall be completely filled with water or a liquid having a viscosity similar to water and pressure shall be gauged at the top of the pressure component and applied in accordance with these regulations;
- (f) a pressure component has passed the hydrostatic or pneumatic test if it has retained the applicable test pressure for at least thirty minutes without leakage, undue distortion, excessive permanent expansion or evidence of impending failure. (EC234/85)

PREPARATION

7.04 The owner or operator of a boiler or pressure vessel shall

Inspection
preparation

- (a) furnish the labour and material necessary for an inspection;
- (b) fill the boiler or pressure vessel with water if requested by an inspector;
- (c) remove any jacket or covering if requested by an inspector;
- (d) drill holes in any location designated by an inspector;
- (e) arrange for non-destructive testing as required by an inspector;
- (f) bring to the attention of an inspector any defect which he knows or believes to exist; and
- (g) open the boiler or pressure vessel, including the furnace and other parts to be inspected, remove the manhole and hand-hole covers and have it thoroughly cleaned. (EC234/85)

PRECAUTIONS

7.05 (1) Before entering a boiler or pressure vessel, an inspector shall see that the valves on all pipes connected to the boiler or pressure vessel are closed.

Closing of valves

- Steam (2) The owner shall station a man to guard against steam or hot water entering the boiler.
- Leaking stop valves (3) When the stop valve between the steam header and the boiler is leaking, the boiler shall be blanked off before applying the hydrostatic test.
- Safeguards (4) Proper safeguards shall be implemented throughout the entire plant where, in an inspector's opinion, such are required. (EC234/85)

CERTIFICATE OF INSPECTION

- Certificate of inspection **7.06** A certificate of inspection shall be issued by an inspector, authorizing the operation or use of a boiler, pressure vessel or pressure plant from the date of the certificate. (EC234/85)

DELAYED INSPECTION

- Delayed inspection **7.07** Where an inspector has arranged with the owner or person in charge to make an inspection and the boiler, pressure vessel or pressure plant is not ready through the fault of the owner or person in charge and the inspector has to return again to carry out the inspection, the additional expenses shall be paid by the owner. (EC234/85)

CONDEMNATION

- Condemnation of unsafe boilers **7.08** (1) An inspector shall condemn as unfit for use every boiler or pressure vessel that, in his opinion after inspection, is unsafe and beyond repair and shall notify the Chief Inspector that he has condemned it.
- Fee payable (2) The owner shall pay for the inspection the appropriate fees.
- Notice (3) An inspector shall notify the owner or person in charge that the boiler or pressure vessel has been condemned and the use thereof is prohibited.
- Stamping (4) An inspector shall stamp upon the boiler or pressure vessel the letters "XXX" together with his initials and the date of condemnation. (EC234/85)

NON-INSPECTION - OUT OF SERVICE

- Out of service **7.09** When the owner or user declares that a boiler or pressure vessel will not be put into service and that there is consequently no need to carry out a periodic inspection, an inspector shall seal the vessel so as to render it unusable. Before being brought into use again, the vessel shall be

unsealed and inspected by an inspector after a written request to this effect has been sent to the Chief Inspector. (EC234/85)

DEFECT

7.10 Where a defect is discovered in a boiler or pressure vessel, an inspector shall notify the owner by letter of the defect and shall require the defective boiler or pressure vessel to be repaired in accordance with the relevant code. (EC234/85) Defective

CANCELLATION OF CERTIFICATE

7.11 An inspector may cancel a certificate of inspection pertaining to a boiler or pressure vessel if the owner fails to comply with an order given by an inspector under section 20 of the Act within the time specified by an inspector or, where no time has been specified, within reasonable time. (EC234/85) Cancellation

PROVISIONS FOR INSPECTION

7.12 (1) Sufficient clearance shall be provided Clearances

- (a) at the sides and back of a boiler to permit inspection and cleaning;
- (b) above the boiler to permit the proper location of the necessary fittings and piping;
- (c) at the front of the boiler to permit tube renewal, cleaning of fires or maintenance of fuel burning apparatus;
- (d) for adequate access to inspection openings;
- (e) for inspection of all parts of the boiler heating surface both internally and externally.

(2) An inspector may require the owner or operator to remove any casing, cover plates, attachments or other obstructions which in his opinion would hinder a proper inspection. (EC234/85) Removal of casings, etc.

PRESSURE VESSEL INSTALLATION

7.13 (1) No pressure vessel shall be buried or covered in such a manner as to prevent adequate external or internal inspection. (See Appendix "A" CSA-B51 M1981) Coverings

(2) Pressure vessels shall be installed with installation clearances as provided in Paragraph 5.3.4 CSA-B-51-M1981. (EC234/85) Clearances

7.14 Where, in the opinion of the Chief Inspector, the workmanship, age, material condition or installation of any boiler or pressure vessel is in Factor of safety increased

question the Chief Inspector may increase the factor of safety. (EC234/85)

Pressure altered **7.15** Whenever the authorized maximum pressure is altered by an inspector, he shall stamp upon the boiler or pressure vessel the newly authorized maximum pressure together with his initials and the date of stamping. (EC234/85)

PRESSURE PIPING

Pressure piping inspection **7.16** All pressure piping and connections shall be carefully examined by an inspector at each inspection and an inspector may submit any pressure piping to a hydrostatic test of twice the working pressure of the boilers or pressure vessels to which it is connected. (EC234/85)

Tests of used equipment **7.17** (1) Used equipment shall not be placed into service until accepted by an inspector and the following tests are satisfactorily completed:
(a) visual inspection;
(b) non-destructive testing as may be required to confirm the thickness of material, the condition of the welds and the soundness of the base metal;
(c) pressure testing to 1.5 times the maximum allowable working pressure as determined by an inspector.

Stamping (2) An inspector shall, on acceptance of the second hand unit, stamp upon the boiler or pressure vessel, the following:
(a) the file number assigned by the Chief Inspector, prefixed by a letter;
(b) the maximum allowable working pressure as computed by the inspector;
(c) the initials of the inspector who accepted the used vessel; and
(d) the date of stamping.

Refusal of inspection (3) An inspector shall refuse to inspect a second hand pressure vessel which is painted or covered over with any metal or coating that inhibits his ability to examine it and determine its condition. (EC234/85)

VALIDITY OF INSPECTION

Validity of inspection **7.18** No person making inspections in the province on behalf of a boiler insurance company or an owner shall reset pressure gauges, interfere with safety valves or classify a boiler, pressure vessel or plant as being in a safe or good condition that has been otherwise classified by an inspector without first obtaining permission in writing from the Chief Inspector. (EC234/85)

SAFETY VALVES

7.19 (1) Subject to subsection (2), every boiler, pressure vessel or pressure plant shall have at least one safety valve of adequate capacity set to relieve at or below its maximum allowable pressure.

Safety valves,
setting

(2) Where more than one boiler or pressure vessel is connected in a plant for use at a common operating pressure, they shall be protected by one or more safety valves of adequate capacity set to relieve at or below the maximum allowable pressure of the weakest boiler or pressure vessel in the plant.

Connected boilers

(3) While a boiler, pressure vessel or plant is in operation or use, no person shall, without permission of an inspector, alter, interfere with or render inoperative any safety device that is attached to the boiler, pressure vessel, or plant. (EC234/85)

Interference with
safety devices

SETTING AND SEALING SAFETY VALVES

7.20 Any person setting or sealing safety valves or relief valves shall obtain prior approval on submission of the safety valve repair procedure to the Chief Inspector. (EC234/85)

Setting & sealing
safety valves

ANCHORING PRESSURE SYSTEMS

7.21 An owner or contractor shall ensure that all boilers, pressure vessels or pressure piping systems are securely anchored so that there will be no displacement of the vessel or piping when pressure is released through a safety valve, rupture disc, vent or other means. (EC234/85)

Systems securely
anchored

7.22 A detailed work procedure of modifications or repairs to a boiler, pressure vessel or piping system, shall be submitted to the Chief Inspector by the licensed contractor employed by the owner prior to the commencement of such modifications or repairs. (EC234/85)

Modifications
procedure
submitted

NON-DESTRUCTIVE TESTING

7.23 (1) Any person performing non-destructive testing on a boiler, pressure vessel or piping system shall obtain prior approval on submission of a quality verification program to the Chief Inspector.

Approval of tests

(2) An inspector may request from an owner or person in charge of a boiler, pressure vessel or pressure piping system, a radiographic, ultrasonic, magnetic particle, or any other method of non-destructive examination to be performed during the construction or service life of the boiler, pressure vessel or pressure piping system.

Examination may
be requested

Report (3) Where a non-destructive examination referred to in subsection (2) has been completed or any other type of inspection of a boiler or pressure vessel has been performed by the owner or his representative a report of the non-destructive examination or inspection shall be provided to an inspector. (EC234/85)

BOILER ROOM ACCESS

Contact person to be posted **7.24** (1) Where the premises in which a boiler or pressure vessel is located are locked, the owner shall place a card conspicuously located at the entrance to the premises giving directions regarding the name, address, day and night telephone numbers of the person to contact for obtaining access to the boiler or pressure vessel.

Keys (2) Where the boiler room of any building of public occupancy is kept locked, the owner shall ensure that a key to the boiler room is kept on the premises and that such key is readily available to the inspector in case of emergency. (EC234/85)

INSPECTION LAMPS

Inspection lamps **7.25** (1) Inspection lamps for the purpose of internal inspection of boilers and pressure vessels shall be of 12 volts or less with current supplied from transformers or batteries.

Idem (2) When portable lamps are used
 (a) only CSA approved, properly guarded extension cords for extra hard usage with waterproof fittings shall be used;
 (b) all connections shall be made exterior to the boiler or pressure vessel; and
 (c) sockets, lamp cords and fittings shall be properly guarded. (EC234/85)

PURGING OF PRESSURE VESSELS

Purging of gas **7.26** Where there is a possibility of explosive or toxic gases being present in an area to be entered by an inspector, the owner or person in charge shall ensure that the area is free of gas and remains free of gas for the duration of the inspection. (EC234/85)

FIRE EXTINGUISHER

Fire extinguisher **7.27** The owner or person in charge of a pressure vessel less than 610 mm diameter which is used for fire extinguishing purposes shall ensure that it is maintained and will function properly. (EC234/85)

EXEMPT PRESSURE VESSELS

7.28 The Chief Inspector may exempt from inspection a compressor or pressure vessel used in the generation or distribution of electricity in a place in which no person normally works and where the compressor is controlled automatically and each pressure vessel is protected by adequate safety valve capacity. (EC234/85)

Exempt from
inspection

PERIODIC INSPECTION FEES

7.29 The following fees for periodic inspection are payable:

Periodic fees

(a) Cast iron heating boilers.....	\$ 50
(b) Heating boiler (steel)	
(i) not greater than 800 kW.....	\$ 50
(ii) greater than 800 kW but not greater than 1,800 kW.....	75
(iii) greater than 1,800 kW but not greater than 5,000 kW.....	125
(iv) greater than 5,000 kW but not greater than 12,000 kW.....	175
(v) greater than 12,000 kW but not greater than 36,000 kW.....	215
(vi) greater than 36,000 kW.....	215
plus \$1.00 per 1,000 kW or part thereof to a maximum fee of	600
(c) Power boilers	
(i) not greater than 600 kW.....	\$ 50
(ii) greater than 600 kW but not greater than 1,800 kW.....	85
(iii) greater than 1,800 kW but not greater than 5,000 kW.....	135
(iv) greater than 5,000 kW but not greater than 12,000 kW.....	185
(v) greater than 12,000 kW but not greater than 36,000 kW.....	210
(vi) greater than 36,000 kW but not greater than 75,000 kW.....	275
(vii) greater than 75,000 kW.....	275
plus \$1.00 per 1,000 kW or part thereof to a maximum fee of.....	600
(d) For pressure vessels and heat exchangers, the following fees shall apply to the first 3 m of overall length, beyond which an additional fee of \$10 for each 3 m or part thereof shall be applied:	
(i) not greater than 600 mm diameter.....	\$ 35
(ii) greater than 600 mm but not greater than 750 mm diameter.....	50
(iii) greater than 750 mm but not greater than 1,250 mm diameter.....	60
(iv) greater than 1,250 mm but not greater than 1,750 mm diameter.....	85
(v) greater than 1,750 mm but not greater than 2,500 mm diameter.....	110
(vi) greater than 2,500 mm but not greater than 3,000 mm diameter.....	125
(vii) greater than 3,000 mm diameter.....	150

(EC347/98; 635/04)

VARIOUS INSPECTION FEES

7.30 The fee for

Fees, various

- | | |
|---|---------------|
| (a) calibrating a pressure gauge is..... | \$85 per hour |
| (b) witnessing the setting
and sealing of a safety valve is..... | \$85 per hour |
| (c) a duplicate of a certificate of inspection is | \$30 |
| (d) a duplicate of an inspection report is..... | \$30 |
| (e) reinspection | |

- (i) where the order of the inspector
has been carried outNo charge
- (ii) where the order of the inspector
has not been carried out within the specified time..... \$200
(EC234/85; 130/92; 666/95; 347/98; 635/04)

PART VIII - WELDING OF PRESSURE SYSTEMS

DEFINITIONS

Definitions	8.01
pressure welder	(a) "pressure welder" means a person holding a valid pressure welder's certificate issued by the Chief Inspector;
pressure welding	(b) "pressure welding" means welding on any boiler, pressure vessel or pressure plant under the Act;
symbol	(c) "symbol" means letters or figures or a combination of them issued to a certified pressure welder for stamping his work;
welding procedure	(d) "welding procedure" means a procedure outlining in detail the manner in which any welding is to be performed and registered by the Chief Inspector;
welding tests	(e) "welding tests" means tests pertaining to procedure qualification and welder certification. (EC234/85)

APPLICATION AND SCOPE

Application of Part	8.02 (1) This Part applies to all welding pertaining to the construction, fabrication, alteration or repair of any boiler, pressure vessel or pressure plant which is subject to the Act and all such welding shall conform strictly with the requirements of these regulations.
Construction by welding	(2) A power boiler, heating boiler or pressure vessel which is subject to the Act shall not be constructed by welding unless its design has been registered by the Minister in accordance with the registration requirements of the CSA B51 Code and applicable provincial regulations. (EC234/85)

RESPONSIBILITY OF MANUFACTURERS

Requirement for test	8.03 (1) Every manufacturer, contractor, welding shop operator or other person who welds or employs any person to do welding upon a pressure system is responsible for the quality of that welding and before that welding is done he shall
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- (a) conduct or cause to be conducted a welding procedure qualification test in accordance with the ASME Code to ensure that the procedure to be used will produce sound and ductile welds;
- (b) submit to the Chief Inspector for registration the welding procedure and test results;
- (c) arrange with the Chief Inspector for certification tests or obtain approval on an equivalent certification test which has met the requirements of the ASME Code and has been witnessed by an inspector or other person authorized by the Chief Inspector;
- (d) ascertain in the case of new construction that the design of the boiler or pressure vessel has been registered and allotted a registration number and in the case of repair work or the welding of piping, that all requirements of sections 8.20 to 8.31 are complied with.

(2) The manufacturer, contractor, installer, welding shop operator or other person who employs any person to do welding on any boiler, pressure vessel or pressure piping shall ensure that all such welding is stamped in accordance with section 8.07. (EC234/85) Welding must be stamped

WELDER'S CERTIFICATION TESTS

8.04 (1) An applicant for a welder's certification test shall Qualifications of applicant

- (a) show proof that he has acquired a journeyman's certificate issued by the Minister; or
- (b) show proof that he has been previously certified as a pressure welder.

(2) The certification test for a welder's certificate of proficiency for ferrous and non-ferrous materials shall be as determined by the Chief Inspector. (EC234/85) Test

PREPARATION OF TEST

8.05 (1) The base material, the filler metal and the technique shall comply with the procedure specification. The dimensions of the test material and the length of the weld shall be sufficient to provide the required test specimens. Materials

(2) A minimum nominal diameter of 127 mm and a wall thickness of 9.5 mm is recommended for pipe used as base material, although larger diameter pipe may be used and will satisfy the procedure requirements for all sizes. A smaller size pipe may be used, such as job-size pipe, but in such cases the procedure shall be qualified for that thickness only. Pipe

Stamping	(3) Every test shall be witnessed by an inspector who shall stamp each coupon to denote the test position. All stamping shall be done upon the face side and a punch mark shall be stamped on the ground edge of each coupon to denote the center of the weld.
Test specimens	(4) Test specimens shall be welded from one side only and metal or non-combustible backing strip shall not be used, except when required in special cases. (EC234/85)
Purpose of tests	8.06 (1) The welding tests are intended to determine the ability of welders and welding operators to make sound welds.
Termination	(2) The certification test may be terminated at any stage of the testing procedure whenever it becomes apparent to the inspector conducting the tests that the welder or welding operator does not have the required skill to produce satisfactory results.
Records	(3) Each manufacturer shall maintain a record of the procedures, including the essential variables under which welders are examined, and the results of the examinations.
Re-examination	(4) Where a welder fails a certification test in one position only, he may undergo a retest in that position consisting of two separate welds, both of which must pass the test. Failing this retest, he may undergo a further certification test after having had additional training or experience satisfactory to the Chief Inspector.
<i>Idem</i>	(5) Where a welder fails a certification test in more than one position, he shall be required to have additional training or experience before being eligible to undergo a further certification test.
Grinding	(6) Weld test specimens are to be machine or flame cut to coupons 38 mm wide and all excess weld material, including backing strip, if used, must be ground off by the welder. Coupons shall not be ground so as to reduce their thickness at the weld below the thickness of the parent metal.
Guided bend tests	(7) Guided bend tests which show any cracks, openings or other defects on either side and exceeding 3 mm measured in any direction, shall be considered as having failed, except cracks occurring on the corners of the specimen shall not be considered unless there is definite evidence that they result from slag inclusion or other internal defects.
Special materials qualifications	(8) A welder must hold a valid certificate (P-1) (F-3) or (P-1) (F-4), issued under these regulations before he can be considered for testing in a special material or process.

(9) The Chief Inspector may waive the requirement for a fillet weld test for a welder who has successfully passed the tests required for a groove weld. Waiver of certain requirements

(10) A welder's certificate shall show the process, positions, thickness of plate material and symbol under which the holder of the certificate may weld. Certificate

(11) A welder's certificate is valid for a period of twelve months from the date of issue or for a longer period if approved by the Chief Inspector provided that a retest may be required at any time if a welder is suspected of losing his proficiency. Duration

(12) Where a contractor can produce satisfactory radiographic evidence of the continued ability of a welder to do approved welding, the annual retest may be waived at the discretion of the Chief Inspector. Waiver of annual test

(13) When an employer requests a transfer of a certificate, he shall return it to the Chief Inspector giving the procedure number of the work he is about to assign to the welder and if the Chief Inspector is satisfied that the procedure is similar, he may without further test and on payment of the fee, issue to the welder a new certificate which shall bear the same expiry date as the original certificate. (EC234/85) Transfer of certificate

STAMPING OF WORK

8.07 (1) Every welder certified under these regulations to weld any boiler, pressure vessel or pressure piping shall be assigned a symbol and the welder shall stamp all work performed by him with the assigned symbol as required by the ASME Code or as prescribed by the Chief Inspector. Stamping identification symbol

(2) Every welder shall stamp his work so that the symbol will be readily visible to an inspector. *Idem*

(3) The certificate of any welder shall be cancelled who Misuse of symbol

- (a) fails to stamp his work with the symbol assigned him;
- (b) stamps work not performed by him;
- (c) allows another person to use his assigned symbol;
- (d) consistently does unacceptable welding. (EC234/85)

WELDING OF PRESSURE PIPING

8.08 (1) The welding of pressure piping including tack welding shall be in accordance with the requirements of the ANSI Code for pressure piping and shall be done by a welder holding a valid certificate. Pressure piping

Certification (2) A person shall not weld pressure piping unless he is certified and registered for welding in all positions, but a lesser certification may be approved for piping being welded in other than a fixed position during fabrication.

Testing (3) All pressure piping welds, unless otherwise approved by an inspector, shall be tested in accordance with the ANSI Code. (EC234/85)

WELDED JOINTS AND REPAIRS TO BE LEFT EXPOSED

Inspection before covering **8.09** Except with the permission of an inspector, welded joints or repairs on a power or heating boiler or on a pressure vessel or high or low pressure piping shall not be covered by insulation or any other manner until after inspection. (EC234/85)

INSPECTION

Inspection **8.10** (1) An inspector may inspect or reinspect any pressure system which has been fabricated, altered or repaired by welding and may subject it to such hydrostatic or other tests as in his opinion are necessary.

Unsatisfactory welding (2) The inspector may refuse to issue a certificate authorizing the operation of a boiler, pressure vessel or pressure piping or cancel a certificate of inspection already issued, where it is found that the fabrication or repair by welding has been made in an improper manner or by a welder not certified or registered in accordance with this Part. (EC234/85)

REPAIRS TO BOILERS AND PRESSURE VESSELS

Requirements for repairs **8.11** (1) No welded repair shall be made upon any boiler or pressure vessel unless

- (a) the welder is the holder of a valid pressure welder's certificate signed by an inspector;
- (b) permission is first obtained for the repair from the inspector; and
- (c) the repair is witnessed by an inspector,

 and upon completion of the repair, it shall be stamped by the welder with his authorized symbol if required by the inspector.

Application of ASME Code (2) No welded repair shall be made upon any boiler or pressure vessel or any part thereof where such welding is required by the ASME Code to be stress relieved and radiographed, except in accordance with a registered repair procedure and under conditions that meet all ASME Code requirements.

(3) No welded repair shall be made on any boiler or pressure vessel by other than the electric arc process and under no circumstances shall any welding be done on any boiler or pressure vessel which is under pressure. (EC234/85)

Electric arc process

RULES FOR WELDING

8.12 (1) The repairs that may be made under these regulations are limited to steels having known weldable quality and are further limited to carbon steels having a carbon content of not more than 0.35 per cent and low alloy steels having a carbon content of not more than 0.25 per cent.

Quality of material

(2) The welding of high alloy material and non-ferrous material shall be done in accordance with the requirements of the ASME Code. (EC234/85)

Idem

8.13 A welder shall not make repairs in materials or in plate thickness not covered in the certification test and indicated on his certificate of proficiency. (EC234/85)

Prohibition

8.14 Groove welds shall completely penetrate the thickness of the material being welded. If possible, welding shall be applied from both sides of the plate, or a backing strip or ring may be used to ensure complete penetration. Manually applied welds shall have a convex surface on both sides if applied on both sides of the plates being joined, or on one side if welding is applied from one side only. Valleys and undercutting at edges of welded joints shall not be permitted. The reinforcement may be chipped, ground or machined off flush with the base metal if so desired, after the welding has been completed. (EC234/85)

Groove welds

8.15 In repairing carbon or low alloy steels, when required by these regulations and considered necessary by an inspector, thermal stress-relieving shall be applied to the completed work in accordance with the requirements of the applicable ASME Code section. Thermal stress-relieving of austenitic steels should not be attempted except in accordance with the recommendations of the manufacturer of the materials or the requirements of the ASME Code. In lieu of thermal stress-relieving of carbon steels, peening or other methods acceptable to an inspector may be employed. (EC234/85)

Thermal stress-relieving

8.16 In making a repair to a weld that has failed in service, the defective weld shall be removed by chipping, grinding or gouging until sound metal is reached on all sides. The resulting groove shall be filled as required by the applicable welding procedure. (EC234/85)

Repair of defective welds

PERMISSIBLE WELDED REPAIRS

CRACKS

- Repair of cracks **8.17** Before making repairs, care should be taken to investigate the cause of cracks. Where circumstances indicate that welding the crack is likely to result in recurrence, consideration should be given to cutting out the cracked area and installing a patch. Cracks in unstayed shells, drums or headers of boilers or pressure vessels may be repaired by welding provided the cracks do not extend between riveted holes in a longitudinal seam or parallel to the longitudinal riveted seam within 20 mm measured from the nearest caulking edge. The total length of any one such crack shall not exceed 45 mm. Cracks of greater length may be welded, provided the complete repair is radiographed and stress-relieved in compliance with section 8.15. (EC234/85)
- Unstayed surfaces **8.18** Cracks of any length in unstayed surfaces may be welded provided the welds are thermally stress-relieved in accordance with section 8.15. Welds applied from one side only shall be subject to the approval of an inspector. Field repair of cracks at the knuckle or turn of the furnace flange opening is prohibited unless specifically approved by the Chief Inspector. (EC234/85)
- Stayed areas **8.19** Cracks of any length in stayed areas may be repaired by fusion welding except that multiple or star cracks radiating from a rivet or stay bolt hole shall not be welded. (EC234/85)

CORRODED SURFACES AND SEAL WELDING

- Corroded areas **8.20** Corroded areas in stayed surfaces may be built up by fusion welding provided the remaining plate has an average thickness of not less than fifty percentum of the original thickness and provided further that the areas so affected are not sufficiently extensive to impair the safety of the object. (EC234/85)
- Idem* **8.21** Corroded areas around manhole or handhole openings in either stayed or unstayed plates, may be built up by fusion welding provided the average loss of thickness does not exceed fifty percentum of the original plate thickness and provided further that the area to be so repaired does not exceed more than 23 mm from the edge of the hole. (EC234/85)
- Idem* **8.22** Corroded areas in unstayed shells, drums or headers may be built up by fusion welding provided that, in the judgment of an inspector, the strength of the structure has not been impaired. (EC234/85)

8.23 Edges of butt straps or plate laps and nozzles or of connections attached by riveting may be restored to original dimensions by welding. Seal welding shall not be used except with the approval of an inspector and in no case where cracks are present in riveted areas. (EC234/85)

Seal welding

8.24 The ends of tubes in fire-tube boilers may be seal welded provided they have not been reduced more than ten per cent in thickness and the requirements of Paragraph PFT-12.2 of the ASME Power Boiler Code are satisfied. (EC234/85)

Idem

RE-ENDING AND PIECING TUBES

8.25 Re-ending or piecing tubes or pipes in either fire-tube or water-tube boilers is permitted provided the thickness of the tube or pipe has not been reduced by more than ten per cent from that required by the ASME Code for the pressure to be carried. In all cases, the requirements of Paragraph PW-27 and PW-28 of the ASME Power Boiler Code shall be met. (EC234/85)

Re-ending &
piecing tubes

PATCHES

8.26 The material used for patches shall be of the same general quality and have at least the minimum physical properties of the plate to be patched. The thickness of any patch shall be at least equal to but not more than 3 mm greater than the plate being patched. (EC234/85)

Material

8.27 Flush or butt-welded patches in unstayed shells, drums or headers shall be radiographed and stress-relieved to the requirements of the ASME Power Boiler Code and shall be subject to approval by an inspector. Subject to compliance with this requirement, no limit is placed on dimensions or location of such patches nor on the thickness of the material. When the longest dimension of a patch does not exceed sixteen times the plate thickness or a maximum of 200 mm, radiography and stress-relieving are not required. (EC234/85)

Radiography of
flush or butt-welded
patches

8.28 Flush or butt-welded patches of new sections may be applied to stayed plates without limitation of size or plate thickness. (EC234/85)

New sections

8.29 Lapped and fillet-welded patches may be applied to stayed plates provided they are not exposed to radiant heat. Lapped and fillet-welded patches may be applied on the pressure side of the sheet in unstayed areas provided the maximum diameter of the opening so repaired does not exceed sixteen times the thickness of the plate but in no case larger than 200 mm in diameter. (EC234/85)

Lapped and fillet-
welded patches

STAYS

- Welded-in stays **8.30** Threaded stays may be replaced by welded-in stays provided that, in the judgment of an inspector, the plate adjacent to the staybolt has not been materially weakened by deterioration or wasted away. All requirements of the applicable section of the ASME Code governing welded-in stays shall be met except that stress-relieving other than thermal may be used as provided in section 8.15. (EC234/85)
- Repair **8.31** Methods or repair meeting the requirements of the National Board Inspection Code will be acceptable. (EC234/85)

FEES

- Fees **8.32** (1) The manufacturer or contractor shall pay a fee according to the following scale for procedure registration and welder certification:
 (a) for the survey and registration of a welding procedure \$60
 (b) for transfer of a welder's certificate \$50
 (c) for a single procedure qualification test..... \$85 per hour
 (d) for a welder's all position certification test in one procedure \$85 per hour
 (e) for the certification test or retest of a welder on one position..... \$85 per hour
- Materials (2) The employer of a welder shall supply the necessary material for the qualification or certification tests. (EC234/85; 130/92; 347/98; 635/04)

CLASS "B" WELDER'S CERTIFICATE

- Class B welders **8.33** (1) Notwithstanding the welder's certification tests required in section 8.03, the testing of welders by an inspector for welded structures and vessels not subject to the requirements of the Act and these regulations may be arranged with the Chief Inspector.
- Qualifications (2) In order to qualify for such welding tests the candidate must be over the age of sixteen and have successfully completed the journeyman's examination as approved by the Minister. (EC234/85)
- Standards **8.34** (1) A Class B welder's test may be as determined by the Chief Inspector and the standards adopted for such test shall be CSA W59 and CSA W47-1. The contractor or engineering agency shall prepare and supply all testing materials.
- Certificate (2) A Class B welder's certificate shall permit the holder to weld on structures or vessels not subject to the Act and regulations and shall be subject to the limitations listed on the certificate.

(3) A Class B welder's certificate shall be valid for a period of one year from the date of the welding test unless sooner cancelled by the Chief Inspector and may be renewed from time to time by successful completion of a retest. (EC234/85)

Duration of certificate

TESTS FOR CLASS "B" WELDER'S CERTIFICATE

8.35 (1) The test shall be witnessed by an inspector who shall stamp each coupon to denote the test position and number of the test coupon. All stamping shall be done upon the face side and a punch mark shall be stamped on the finished edge of each coupon to denote the centre of the weld.

Stamping

(2) Test specimens shall be welded from one side only and metal or non-combustible backing strips shall not be used.

Test specimens

(3) Weld test specimens are to be machine or flame cut to coupons one and one-half inches wide and all excess weld material must be ground off by the welder. Coupons shall not be ground so as to reduce their thickness at the weld below the thickness of the parent metal.

Grinding

(4) The test coupons shall be subjected to the necessary tests as determined by the Chief Inspector.

Testing

(5) When a candidate fails a certification test in two positions only, he may undergo an immediate retest in these positions. Failing this retest he shall undergo a complete test in all positions after having additional training or experience satisfactory to the Chief Inspector.

Retesting

(6) In any case where a candidate fails a certification test in more than two positions, he shall be required to have additional training or experience satisfactory to the Chief Inspector.

Idem

(7) A candidate for a Class "B" welder's certification test shall complete an application form which shall be signed by his employer.

Form

(8) Test welds using the arc welding process on materials up to and including 9.5 mm shall qualify a Class "B" welder for materials from 1.5 mm to twice the thickness of material used in the test. (EC234/85)

Authority of certificate

PART IX - REGULATIONS RESPECTING PROPANE NATURAL AND MANUFACTURED GAS

DEFINITIONS

9.01 In this Part

Definitions

(a) "Board" means the Advisory Board appointed under the Act;

Board

CGA commercial occupancy	(b) "CGA" means the Canadian Gas Association;
	(c) "commercial occupancy" means that portion of a building used for the transaction of business, the rendering of professional services, the supplying of food, drink or other bodily needs and comforts, manufacturing purposes or the performance of work or labour including among others - bake shops, fur storage, laboratories, markets, office buildings, professional buildings, restaurants, stores and similar occupancies;
domestic	(d) "domestic" means private dwellings, apartment buildings of not more than four apartments;
fuel burning equipment	(e) "fuel burning equipment" means any appliance or equipment utilized for the purpose of converting gas into energy.
gas	(f) "gas" means natural gas, manufactured gas, or any material which is composed predominately of any of the following hydrocarbons, or mixtures thereof; propane, propylene, butanes and butylenes;
portable cylinder	(g) "portable cylinder" means a cylinder having a capacity not exceeding 20 kilograms of propane by mass;
public assembly occupancy	(h) "public assembly occupancy" means that portion of the premises in which persons congregate for civic, political, educational, religious, social or recreational purposes including among others - armories, assembly rooms, auditoriums, ballrooms, bus terminals, broadcasting studios, churches, colleges, court houses, dance halls, department stores, exhibition halls, fraternity halls, libraries, lodge rooms, mortuary chapels, museums, passenger depots, schools, ice rinks, theaters and similar occupancies. (EC234/85; 571/91)

GENERAL REQUIREMENTS

General requirements	9.02 This Part applies to the manufacture, storage, transportation, handling, installation, testing, inspecting and maintenance of fuel burning equipment and gas piping systems. (EC234/85; 571/91)
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STANDARDS

Standards	9.03 Except as otherwise provided in these regulations, the standards governing the design, fabrication, installation, testing and inspection of gas piping systems, appliances and fittings shall be those set forth in the latest edition of the following referenced publications and any subsequent amendment, addenda or additions thereto when such publications are approved by the Board:
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- (a) CGA B149.1 Installation Code for Natural Gas Burning Appliances and Equipment;
- (b) CGA B149.2 Installation Code for Propane Gas Burning Appliances and Equipment;
- (c) CGA B149.3 Code for Field Approval of Fuel Related Components on Appliances and Equipment.
- (d) CGA B105 Installation Code for Digester Gas Systems.
- (e) N.T.T.C. No. 14 National Tank Truck Carriers, Inc.;
- (f) C.S.A. Standard Z184 Gas Pipeline Systems.
- (g) CGA B149.5 Installation Code for Propane Fuel Systems & Tanks in Highway Vehicles. (EC234/85; 571/91; 347/98)

9.04 Where these regulations are at variance with the requirements of referenced standards, the requirements of these regulations shall govern. (EC234/85) Conflicts

9.05 The Board may formulate rules in cases where rules have not been provided by these regulations or when special circumstances render desirable alteration to or modification of these regulations. (EC234/85) Rules

9.06 Piping used for gas shall meet the requirements of the applicable ANSI Standard. (EC234/85) Piping

9.07 The Chief Inspector may accept fuel burning equipment which has been tested and listed by a nationally recognized testing laboratory. Such laboratory shall be accredited by the Standards Council of Canada as a certification organization for the testing of fuel burning equipment. (EC571/91) Fuel burning equipment

PERMITS

9.08 (1) Installation permits shall be obtained before any work commences or alterations or additions are made to Installation permits

- (a) gas installations in buildings designated for public assembly or commercial occupancy;
- (b) domestic installations exceeding 211,000 kilojoules; and
- (c) all installations for which the submission of design drawings are required by section 9.21.

(2) Installation permits shall not be issued without evidence of the installers certification. (EC234/85; 347/98) *Idem*

PLANT LICENSES

9.09 A person, firm or corporation storing or distributing gas, installing or servicing gas systems, installing or servicing gas equipment or operating a propane dispensing unit for filling portable cylinders shall Plant licenses

apply to the Chief Inspector for a license for each place of business and, upon receipt of the prescribed fee, the Chief Inspector shall issue a license to approved applicants in accordance with section 9.10. (EC234/85; 571/91; 37/95)

Types of licenses	<p>9.10 Plant licenses shall be issued as follows:</p> <p>(a) Class A, authorizing the holder to establish a filling plant or distribution plant where portable cylinders, vehicle fuel tanks, transport tanks or other approved containers may be filled and to make gas installations, repair and service gas appliances and participate in any operation authorized by a Class B or Class C license;</p> <p>(b) Class B, authorizing the holder to establish a gas distribution plant for the distribution of gas by means of cylinders, portable tanks or other approved manner to agents or persons, make gas installations, repair and service gas appliances and participate in any operation authorized by a Class C license;</p> <p>(c) Class C, authorizing the holder to establish a plant for distribution of gas by means of cylinders;</p> <p>(d) Class D, authorizing the holder to establish a gas dispensing unit for the purpose of filling portable cylinders and motor vehicle fuel tanks; and</p> <p>(e) revoked by EC347/98. (EC234/85; 571/91; 347/98)</p>
Determination of appropriate class	<p>9.11 (1) Licenses provided for in section 9 shall be issued by order of the Chief Inspector and where it is not certain which class of license is required, the Chief Inspector shall decide the class necessary to comply with these regulations.</p>
Cancellation, etc.	<p>(2) Licenses may be withheld, cancelled or suspended for a violation of any part of the Act or regulations.</p>
Production of license	<p>(3) A license shall be produced on demand of an inspector and the non-production of the license is <i>prima facie</i> evidence that the person concerned has no license. (EC234/85)</p>
Capacity of containers	<p>9.12 A person shall not distribute gas in containers greater than two point five kilograms capacity or install gas equipment without first having obtained a license as required under these regulations. (EC234/85)</p>
Training	<p>9.13 The operator of a licensed plant shall establish and maintain an approved training program for the purpose of training employees prior to examination for certification. (EC234/85)</p>
Operator to ensure personnel are certified	<p>9.14 The operator of a licensed plant shall ensure that personnel carrying out the functions permitted by such license hold the necessary certification. (EC234/85)</p>

CERTIFICATION OF PERSONNEL

9.15 (1) A person who

- (a) installs, repairs, services or verifies gas burning appliances or equipment;
- (b) operates a truck transporting gas;
- (c) operates a gas filling plant; or
- (d) installs, repairs or services a gas system except as indicated in 9.16 (b.2)

Certificates
required for certain
functions

shall hold a subsisting certificate authorizing him to perform such functions.

(2) Certificates are renewable on or before the date of expiry indicated on the certificate. (EC234/85; 37/95)

Renewal

9.16 Certificates shall be issued in the following categories:

Types of certificates

(a) "Industrial Gas Fitter", authorizing the installation of gas piping systems in commercial and industrial installations but not including the installation of cylinders or tanks or the connecting of the system to the gas supply or appliances.

Industrial Gas Fitter

(b) "Domestic Gas Fitter", authorizing the installation, alteration, purging, activation, service, repair or removal of installations in private dwellings and apartment buildings of not more than four apartments, mobile homes and recreational vehicles;

Domestic Gas Fitter

(b.2) revoked by EC618/85;

Domestic (Owner)
Gas Fitter
Commercial Gas
Fitter

(c) "Commercial Gas Fitter", authorizing the installation, alteration, purging, activation, service, repair or removal of installations to a maximum heating value of 527500 kilojoules per hour and to perform any operation authorized under clause (b);

(d) "Gas Installer", authorizing the installation, alteration, purging, activation, service, repair or removal of any gas appliances, equipment, systems, cylinders and tanks as well as all operations authorized in clauses (a), (b) and (c);

Gas Installer

(e) "Gas Verifier", authorizing the verification of installations completed by personnel certified in accordance with clauses (a), (b) and (c) and subject to audit by an inspector;

Gas Verifier

(f) "Gas Mechanic", authorizing the installation, alteration, purging, activation, repair, service or removal of carburetion equipment for internal combustion engines;

Gas Mechanic

Bulk Plant Operator 1	(g) "Bulk Plant Operator 1", authorizing the filling of containers (maximum 60 kilograms water capacity) and the operation of the transfer equipment in a filling plant;
Bulk Plant Operator 2	(h) "Bulk Plant Operator 2", authorizing the loading and unloading of tank cars, cargo-liners and tank trucks into or from a filling plant, the filling of containers and the maintenance and operation of the transfer equipment in a filling plant;
Tank Truck Operator	(i) "Tank Truck Operator", authorizing the operation of a tank truck transporting gas;
Cargo Liner Operator	(j) "Cargo Liner Operator", authorizing the operation of a cargo liner transporting gas;
Dispenser Unit Operator	(k) "Dispenser Unit Operator", authorizing the operation of a gas dispensing unit or service station to fill small portable cylinders up to and including 20 kilograms of propane and to fill propane fuel tanks permanently attached to a motor vehicle.
Cylinder Delivery	(l) "Cylinder Delivery" authorizing the delivery of portable cylinders and the connection of such cylinders to a gas system;
Cylinder Rental	(m) "Cylinder Rental" authorizing the delivery and installation of portable cylinders not greater than 100 lbs. capacity to approved gas fired rental equipment.
Gas Maintenance	(n) "Gas Maintenance" authorizing the holder to service or repair control systems and operating components on gas-fired appliances. (EC234/85; 618/85; 715/89; 117/97)
Examiners	9.17 The Chief Inspector may designate a person to examine candidates for gas certificates. (EC234/85)
Cancellation, etc.	9.18 The chief Inspector may suspend or cancel a certificate and the provision of section 5.39 relating to licenses apply with the necessary changes. (EC234/85)

QUALIFICATION OF CANDIDATES

Age and administrative requirements	9.19 (1) A candidate for a certificate shall <ul style="list-style-type: none"> (a) except in the case of a dispenser unit operator be at least 18 years of age; and (b) complete and file with the Chief Inspector the prescribed application form; and (c) successfully complete the examination. (n) for a Gas Maintenance Certificate,
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- (i) have at least three months experience assisting in the service or repair of control systems and operating components on gas-fired appliances,
 - (ii) have successfully completed a course approved and supplied by the manufacturer of the equipment.
- (2) A candidate for an examination shall
- (a) for an Industrial Gas Fitters Certificate,
 - (i) have at least six months experience assisting in the installation of gas piping systems under the supervision of a higher class certificate holder, and
 - (ii) be the holder of a certificate of trades qualification in the plumbing or pipefitting trade;
 - (b) for a Domestic Gas Fitters Certificate, have at least three months experience assisting in the installation and servicing of domestic gas appliances in private dwellings, mobile homes and recreational vehicles under the supervision of a higher class certificate holder;
 - (c) for a Commercial Gas Fitters Certificate,
 - (i) have at least six months experience assisting in the installation of commercial gas piping systems under the supervision of a person holding a higher class certificate, and
 - (ii) be the holder of a Domestic Gas Fitters Certificate;
 - (d) for a Gas Installers Certificate,
 - (i) have at least six months experience installing commercial gas systems, and
 - (ii) be the holder of a Commercial Gas Fitters Certificate for at least one year;
 - (e) for a Gas Verifiers Certificate, have held a Gas Installers Certificate for at least six months;
 - (f) for a Gas Mechanics Certificate,
 - (i) have at least six months experience assisting in the installation of gas carburetion equipment under the supervision of a person holding a higher class certificate, and
 - (ii) be the holder of a Motor Vehicle Repairer Certificate;
 - (g) for Bulk Plant Operator 1 Certificate, have at least three months experience assisting in the operation of a bulk plant under the supervision of a person who holds a higher class certificate;
 - (h) for a Bulk Plant Operator 2 Certificate,
 - (i) have at least six months experience in the operation of a bulk plant under the supervision of a Bulk Plant Operator 2 Certificate, and
 - (ii) be the holder of a Bulk Plant Operator I Certificate;
 - (i) for a Tank Truck Operators Certificate,

Technical and
experience
requirements

- (i) have at least thirty days experience assisting in the operation of a tank truck under the direct supervision of a person holding a valid Tank Truck Operators Certificate, and
- (ii) have the appropriate class of drivers license;
- (j) for a Cargo Liner Operators Certificate,
 - (i) have at least six months experience in the handling of tractor trailers, one month of which shall be on a propane cargo liner under the direct supervision of a person holding a valid Cargo Liner Operators Certificate, and
 - (ii) have the appropriate class of driver's license;
- (k) for a Dispenser Unit Operators Certificate,
 - (i) have at least forty hours experience in the storage and transfer of propane, and
 - (ii) complete an approved course as provided by the propane company;
- (l) for a Cylinder Delivery Certificate, have completed an approved course in all aspects of cylinder transportation, cylinder installation, and cylinder storage;
- (m) for a Cylinder Rental Certificate, be employed by an accredited rental firm and have been provided with approved training by a local gas distributor. (EC234/85; 618/85; 715/89; 117/97)

Renewal

- 9.20** A certificate may be renewed by the Chief Inspector without written examination when the holder thereof
- (a) makes application in the prescribed form;
 - (b) has been employed in that certificate level during the previous year; and
 - (c) pays the prescribed fee. (EC234/85)

PLANS AND SPECIFICATIONS

Registration of
plans and
specifications

- 9.21** (1) Plans and specifications of the design, in duplicate, shall be submitted to the Chief Inspector for registration before any work commences or alterations or additions are made to
- (a) digester gas systems;
 - (b) filling plants;
 - (c) dispensing units;
 - (d) revoked by EC715/89;
 - (e) all gas installations having a total heating value of 422,000 kilojoules and over;
 - (f) all additions and alterations to existing systems that would cause the system total heating value to exceed 422,000 kilojoules.

Details

- (2) Drawings and specifications shall include

- (a) piping layout for each floor, including vertical runs servicing all floors;
- (b) calculation of pipe size to prove adequate supply of gas to all appliances, if requested;
- (c) details showing location of gas piping supports, detail of piping supports and protection of piping and tank;
- (d) number and location of cylinders or tanks;
- (e) schedule of fittings and valves showing registration as required by Part VI;
- (f) the manufacturer, listing agency, the file number and thermal rating of appliances included in the system;
- (g) a statement that the installation is to be made by personnel holding the proper certificate as required by these regulations; and
- (h) the signature and seal of a professional engineer. (EC234/85; 15/89; 37/95)

SPECIAL REQUIREMENTS

- 9.22** Filling plants including dispensing units shall be equipped with an automatic shut-off device to stop the flow of propane into cylinders. (EC234/85) Automatic shut-off
- 9.23** (1) A gas supplier holding a Class A or D license shall not fill cylinders unless he is satisfied that the cylinder is in good physical condition and that the cylinder will be transported in a safe and acceptable manner. Condition of cylinders
- (2) All other gas suppliers shall ensure that cylinders will be transported in a safe and acceptable manner. (EC234/85; 571/91) Transport
- 9.24** A pressure vessel shall not be used for the storage or distribution of gas unless it has been fabricated and stamped in accordance with the requirements of the ASME Code, Section VIII, except that cylinders up to and including 454 kilograms water capacity may be fabricated and stamped in accordance with the requirements of the Canadian Transport Commission or the United States Department of Transport. (EC234/85) Pressure vessel
- 9.25** (1) Gas systems shall be inspected and tested prior to filling with gas by a person authorized under subsection 3(2) of the Act. Gas systems
- (2) Upon completion of all gas systems the contractor shall provide a certificate of compliance to the owner. (EC37/95) Certificate of compliance
- 9.26** (1) A gas container shall be equipped with a safety relief device which has been tested and listed by a testing laboratory acceptable to the Chief Inspector. Containers

Testing	(2) Safety relief devices shall be tested for set pressure and relieving capacity and stamped accordingly. (EC234/85)
Inspection, tank trucks, etc.	9.27 A tank truck or cargo liner used in the distribution of propane shall be inspected periodically. (EC234/85)
Inspection, pressure vessels	9.28 A pressure vessel of more than 454 kilograms water capacity used for the storage or distribution of propane shall be inspected periodically. (EC234/85)
Inspection, usability	9.29 Pressure vessels that show corrosion, dents, bulges or other damage shall not be filled with gas and shall be reported to the Chief Inspector for determination of their usability. (EC234/85)
Certificate	9.30 Pressure vessels of more than 454 kilograms water capacity shall not be used for the storage or distribution of gas unless the owner or agent is in possession of a valid certificate of inspection. (EC715/89)
Completion of installation	9.31 A gas distributor shall be responsible for determining whether an installation is completed in accordance with these regulations before filling any installation with gas. (EC234/85)
Welding	9.32 Welding of pressure vessels, piping or equipment used with gas shall not be carried out without the authorization of the Chief Inspector and any such welding shall be carried out by welders certified under these regulations. (EC234/85)

FEES

Fees	<p>9.33 The following fees are payable</p> <p>(a) license and certificate fees:</p> <p style="padding-left: 20px;">(i) for any class of plant license\$0.003 per litre of storage (Minimum charge of \$25)</p> <p style="padding-left: 20px;">(ii) for an examination for a certificate under section 9.15 \$20</p> <p style="padding-left: 20px;">(iii) for renewal of a certificate for each 12-month period..... \$20</p> <p style="padding-left: 20px;">(iv) for issue of a duplicate \$20</p> <p>(b) permit fees:</p> <p style="padding-left: 20px;">(i) for the initial review and issuance of an installation permit under section 9.08,</p> <p style="padding-left: 40px;">(A) for the first 211,000 kilojoules \$50 plus</p> <p style="padding-left: 40px;">(B) for each increment of 211,000 kilojoules or a fraction thereof \$20 to a maximum of \$500</p> <p style="padding-left: 40px;">(C) installation of or alteration to filling plants \$125</p> <p style="padding-left: 40px;">(D) installation of or alteration to dispensing unit \$85</p>
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- (E) installation of or alteration to digester gas systems\$85
plus \$85 per hour for design review
 - (c) inspection fees:
 - (i) for an inspection of a pressure vessel used in liquified petroleum gas service having a capacity greater than 454 kilograms of water the fees as set out in clause 7.29(d) apply
 - (ii) for inspection of new installations and alterations to existing systems meeting the requirements of sections 9.08 and 9.25 \$85 per hour
 - (iii) for inspection of new installations and alterations to existing systems that did not meet the requirements of section 9.08 or 9.25 at the time of activation\$220
 - (iv) for inspections defined as special inspections under clause 2.01(m)..... \$85 per hour
 - (d) reinspections:
 - (i) where the order of the inspector has been carried out No charge
 - (ii) where the order of the inspector has not been carried out within the specified time.....\$200
- (EC234/85; 715/89; 130/92; 37/95; 347/98; 635/04)

PART X - MEDICAL GAS SYSTEMS

APPLICATION

- 10.01** This Part applies Application
- (a) to the construction, testing, operation and maintenance of non-flammable medical gas piping systems where these systems are used for the purpose of health care in any facility; and
 - (b) to piping systems for the following medical gases:
 - (i) oxygen,
 - (ii) nitrous oxide,
 - (iii) medical air,
 - (iv) medical vacuum or suction,
 - (v) nitrogen,
 - (vi) carbon dioxide,
 - (vii) helium, and
 - (viii) any mixture of the foregoing. (EC234/85)
- 10.02** In this Part: Definitions
- (a) “bulk carrier” means any vessel used to transport medical gas whether in liquid or gaseous state from any source of supply to any medical facility; bulk carrier

C.S.A.	(b) “C.S.A.” means Canadian Standards Association;
design	(c) “design” means the drawings and specifications, specimens, or models submitted to the Chief Inspector;
inspection	(d) “inspection” means the actual inspection of medical gas systems to ensure that the requirements of these regulations and adopted standards are met;
installer	(e) “installer” means the person or company certified by the Chief Inspector to install medical gas systems totally or in part;
pressure test	(f) “pressure test” means tests carried out, on installations to ensure complete joint tightness;
testing agency	(g) “testing agency” means the company or agency certified by the Chief Inspector to test and certify that a medical gas installation, prior to commissioning, meets all requirements of these regulations;
welder	(h) “welder” means a person certified under the Act to perform the actual welding process under a welding procedure;
welding procedure	(i) “welding procedure” means the complete specifications of a process and techniques employed in the welding or brazing of metals. (EC234/85)

STANDARDS

Standards	<p>10.03 (1) Except as otherwise provided in these regulations, the standards governing the design, fabrication, installation, storage, handling, testing and inspection of medical gas piping systems shall be those set forth in the latest edition of the following referenced publications and any subsequent amendment, addenda or additions thereto when such publications are approved by the Board:</p> <p>(a) CSA Standard Z305.1 Medical Gas Piping System for Non-Flammable Medical Gases; and</p> <p>(b) NFPA No. 50, Bulk Oxygen Systems at consumer sites.</p>
Conflict	(2) Where these regulations are at variance with the requirements of referenced standards, the requirements of these regulations shall govern.
Special cases	(3) The Board shall have power to formulate rules in cases where rules have not been provided by these regulations or when special circumstances render desirable alteration to or modification of these regulations. (EC234/85)

DESIGN REGISTRATION

10.04 (1) Registration shall be obtained prior to starting the installation of any new medical gas systems or the extension or alteration to an existing installation. Registration

(2) The design shall be submitted in duplicate to the Chief Inspector and shall include the following: Details

- (a) a piping layout for each floor, including the vertical runs servicing all floors and any mains to the medical gas supply system;
- (b) a calculation of the pipe sizes to prove adequate supply of medical gas to all areas;
- (c) details of the erection, showing location of anchor points, expansion provisions if required, types of hangers, hanger spacings, type of galvanic action insulation, identification and detail of protection for medical gas piping in work areas;
- (d) a schedule of fittings showing that the fittings are in compliance with these regulations;
- (e) a statement that the brazing procedure to be used has been approved and registered with the Chief Inspector and the registration number of the procedure;
- (f) the signature and seal of the professional engineer responsible for the design.

(3) After installation and prior to commissioning of any medical gas piping a set of "as built" drawings shall be submitted to the Chief Inspector for filing and future reference. (EC234/85) Drawings

MEDICAL GAS CONTRACTOR

10.05 New installations, extensions, alterations, routine maintenance or repairs to medical gas systems shall only be performed by contractors licensed as medical gas contractors. (EC234/85) Installations, repairs, etc. performed by licensed contractors

CERTIFICATE OF MEDICAL GAS INSTALLERS

10.06 Any person who installs, repairs or services a medical gas system shall hold a subsisting certificate authorizing him to perform such functions. (EC234/85) Certified installer

QUALIFICATION OF CANDIDATES

10.07 A candidate for a medical gas installer certificate shall Qualified candidate

- (a) complete and file the appropriate application form with the Chief Inspector;

- (b) be the holder of certificate of trades qualification in the plumbing or pipe-fitting trade or have equivalent experience in servicing medical gas systems;
- (c) successfully pass a written examination based on the CSA Z305.1 Medical Gas Code; and
- (d) successfully pass a brazers test for a brazers certificate of proficiency in accordance with a registered procedure. (EC234/85)

IDENTIFICATION

Coverings	10.08 A medical gas pipe line shall neither be painted nor covered for any reason. (EC234/85)
Identification, pipe lines	10.09 All medical gas pipe lines shall be identified in accordance with CSA Z305.1 Non-Flammable Medical Gas Systems. (EC234/85)
Identification piping, fittings, etc.	10.10 During installation, on a daily basis all piping, fittings, manifolds and terminal equipment shall be identified to ensure that identification is maintained during installation. (EC234/85)
Labelling	10.11 Continuous vertical identification labelling shall be installed on all medical gas piping concealed in walls. (EC234/85)
Banding	10.12 Permanent banding of stainless steel or plastic and removable only by extirpation shall be installed to securely fasten all pipe identification labels (excluding piping referred to in section 11.11). (EC234/85)
Inspection of concealed pipes	10.13 Where medical gas pipe lines are to be concealed in walls or ceilings, these walls and ceilings shall remain open until the inspection and certification of the pipe lines. (EC234/85)

SUPPORTS

Insulation	10.14 Where medical gas pipelines come in contact with any dissimilar metals, the piping shall be suitably insulated to prevent any galvanic action from taking place. (EC234/85)
Gang hangers	10.15 Medical gas piping may be supported on gang hangers with other piping if <ul style="list-style-type: none"> (a) the gang hanger has sufficient structural strength; (b) the medical gas piping has a minimum of 4" clearance between adjacent piping and provisions are made to maintain the 4" clearance. (EC234/85)

INSPECTION

10.16 After the installation of the medical gas system is completed, or any phase of the installation is completed, the inspector shall, by inspection, satisfy himself that all the provision of these regulations and adopted codes have been carried out. (EC234/85)

PRESSURE TEST

10.17 After the inspection required by section 10.16 has been completed, the system shall be subjected to a pressure test and when the total installation is completed, a pressure test of the entire system shall be performed. (EC234/85)

10.18 After the cross-connection tests have been completed, purity tests and concentration tests shall be carried out to determine a nominal concentration as required by adopted standards. (EC234/85)

10.19 The medical gas system shall be certified prior to commissioning to ensure that

- (a) all zone valves required by adopted codes have been installed and that they operate as intended;
- (b) the back-up source of medical gas is in place and that the control devices for connecting them to the piping systems are functioning properly;
- (c) all alarm systems have been properly set and are operating correctly;
- (d) the system complies with the cross-connection, concentration and purity test requirements as set down by adopted codes. (EC234/85)

10.20 (1) The certification required by clauses 10.19 (a), (b) and (c) shall be carried out by an inspector.

(2) The certification required by clause 10.19 (d) shall be carried out by a person authorized by the Chief Inspector. (EC234/85)

REGULAR INSPECTIONS AND MAINTENANCE

10.21 The inspector shall carry out the following inspections as considered necessary:

- (a) safety and warning devices -
 - (i) outlets - inspected for function, wear and mechanical performance and be subjected to a leak test,
 - (ii) stop valves - tested for external leakage,
 - (iii) alarms - tested to determine that all are functioning satisfactory,

- (iv) regulators - observe that line pressure is normal,
- (v) relief valves - relieving pressure shall be determined and compared with the requirements of the standard;
- (b) source of supply - the source of gas supply shall be checked to determine that there is a smooth transfer
 - (i) from primary to a secondary supply,
 - (ii) from a secondary supply to a reserve supply,
 - (iii) from a primary supply to a reserve supply;
- (c) the following components of a manifold system shall be inspected:
 - (i) regulators,
 - (ii) check valves on cylinder extension leads,
 - (iii) cylinder extension leads,
 - (iv) manifold hand valves;
- (d) air compressors and vacuum pump systems -
 - (i) check automatic alternating controls for proper function,
 - (ii) check the pressure or vacuum switch for correct lag pump operation,
 - (iii) check frequency of start and duration of run period and compare with previous records. (EC234/85)

Manufacturer's instructions

10.22 In addition to the requirements of section 10.19, the manufacturer's instructions relating to the operation and maintenance of all medical gas equipment shall be followed. (EC234/85)

Inspection fee

10.23 The fee for the inspection of a medical gas piping system is \$85 per hour. (EC234/85; 130/92; 347/98; 635/04)

PART XI - REFRIGERATION

Application

11.01 This Part applies to the design, construction and installation of a refrigeration system installed after the date these regulations come into force and to the operation, repair and inspection of both new and existing systems. (EC234/85)

MULTIPLE SYSTEMS

Multiple systems

11.02 Independent refrigeration units of 6 kW or less will be exempt from calculation as to plant capacity, but where two or more such units are connected in the same system, their total capacity shall be taken. (EC234/85)

DEFINITIONS

Definitions

11.03 In this Part

- (a) “brazed joint” means a gas-tight joint obtained by the joining of metal parts with alloys which melt at temperatures higher than 427°C but less than the melting temperature of the joined parts; brazed joint
- (b) “contractor” means a person who maintains a place of business for the installation or repair of refrigeration systems and related equipment and who holds a valid contractors license issued under these regulations; contractor
- (c) “entrance” means a confined passageway immediately adjacent to the door through which people enter a building; entrance
- (d) “hallway” means a corridor for the passage of people; hallway
- (e) “humanly occupied space” means a space normally frequented or occupied by people but not including machinery rooms and walk-in coolers used primarily for refrigerated storage; humanly occupied space
- (f) “lobby” means a waiting room or large hallway serving as a waiting room; lobby
- (g) “manufacturer” means the company or organization which evidences its responsibility by affixing its name or nationally registered trade mark or trade name to the refrigeration equipment concerned; manufacturer
- (h) “mechanical joint” means a gas-tight joint obtained by the joining of metal parts through a postive-holding mechanical construction; mechanical joint
- (i) “exit” means a confined passageway adjacent to the door through which people leave a building; exit
- (j) “refrigeration system” means a combination of interconnected refrigeration containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat; refrigeration system
- (k) “welded joint” means a gas-tight joint obtained by the joining of metal parts in the plastic or molten state. (EC234/85) welded joint

CERTIFICATION OF REFRIGERATION INSTALLERS

11.04 Any person who installs, repairs or services a refrigeration system shall have successfully completed the examination as prescribed by the Provincial Apprenticeship Advisory Board for a refrigeration mechanics certificate. (EC234/85) Certification of refrigeration

INSTALLATION REQUIREMENTS

MACHINERY

- Supports **11.05** (1) Where condensing units or compressor units are supported other than from the floor or are installed one above the other within the same floor area, the supports shall be of non-combustible construction.
- Guards (2) All moving machinery shall be provided with adequate guards.
- Servicing (3) Condensing units or compressor units shall be readily accessible for servicing and inspection with adequate space provided.
- Lighting (4) The owner shall provide adequate lighting. (EC234/85)

WATER CONNECTIONS

- Connections **11.06** (1) No connection shall be made with the public water supply which is inconsistent with the regulations of the authority having jurisdiction.
- Discharge (2) Discharge water lines from condensers or other equipment shall not be directly connected to the waste or sewer system in such a manner as to permit siphoning of the waste water into the water supply lines. The waste or discharge from such equipment shall be over and above the rim of a properly trapped and vented plumbing fixture. (EC234/85)

ELECTRIC WIRING

- Electrical devices,
Safety Code **11.07** The installation of all electrical equipment and wiring shall be done in compliance with Part I of the Safety Code for electrical devices published by the Canadian Standards Association under the title C.S.A. Standard C22 and its supplements or amendments thereto. (EC234/85)

MACHINERY ROOM REQUIREMENTS

- Doors **11.08** (1) Each refrigeration machinery room shall be provided with a tight-fitted door or doors and have no partitions or openings that will permit passage of escaping refrigerant to other parts of the building.
- Ventilation (2) Each refrigerating machinery room shall be provided with means of ventilation to the outer air. The ventilation shall consist of windows or doors opening to the outer air of the size as required by CSA B52 or a mechanical means capable of removing the air from the room in accordance with CSA B52. The amount of ventilation for refrigerant removal purposes shall be determined by the refrigerant content of the largest system in the machinery room.

(3) The following standards apply:

Standards

- (a) mechanical ventilation when used shall consist of one or more power driven exhaust fans which shall be capable of removing from the machinery room the amount of air specified in CSA B52;
- (b) the inlet to the fan or fans or air duct system shall be located near the refrigeration equipment;
- (c) the outlet from the fan or fans or air duct connections shall terminate outside of the building in an approved manner;
- (d) when air ducts are used either on the inlet or discharge side of the fan or fans, they shall have an area not less than that specified in CSA B52;
- (e) provision shall be made for the inlet of air to replace that being exhausted;
- (f) motor controls to operate the mechanical ventilating system shall be capable of being switched on or off from outside and inside the machinery room.

(4) Class T machinery rooms shall conform to the requirements of CSA B52 and in addition when located in basements or sub-basements shall have mechanical ventilation operating continuously. (EC234/85)

Class T

11.09 The American Society of Heating, Refrigeration and Air Conditioning Engineers handbook may be used as a guide for the design and installation of air duct systems or air conditioning equipment for human comfort using mechanical refrigeration. (EC234/85)

Handbook

11.10 No person shall perform any welding or brazing on a refrigerant containing part unless he is the holder of a valid welders or brazers certificate. (EC234/85)

Welding

PIPING

11.11 Refrigerant piping, valves, fittings and related parts used in the construction and installation of refrigeration systems shall conform to the ANSI B31.5 refrigeration piping standard. (EC234/85)

Application of
ANSI standard

11.12 The following limitations apply to pipe and tubing:

Limitations

- (a) refrigerant liquid lines of 40 millimeters pipe size or less and used for Group 2 and 3 refrigerants shall be not less than schedule 80 wall thickness carbon-steel pipe. Not less than schedule 40 wall thickness carbon-steel pipe may be used for Group I refrigerant-liquid line sizes 50 millimeters up to and including 152 millimeters and Group 1, Group 2 and Group 3 refrigerant-vapour lines 152 millimeters and less;

(b) butt welded carbon-steel pipe shall not be used for refrigerant-liquid lines, cast iron pipe and fittings shall not be used for refrigerant lines;

(c) standard size copper and red brass (not less than 80 percent copper) pipe and tubing may be used and shall conform to CSA Standard HC.7.5 seamless copper and brass pipes;

(d) sweat joints on copper tubing used in refrigeration systems containing Group 1, Group 2 or Group 3 refrigerants shall be brazed joints. Soldered joints shall not be used in refrigeration systems;

(e) joints and all refrigerant-containing parts of a refrigerating system located in an air duct of an air conditioning system carrying conditioning air to and from a humanly occupied space shall be constructed to withstand a temperature of 427 C without leakage. (EC234/85)

Covering joints **11.13** Refrigerant pipe joints erected on the premises shall remain exposed to view for visual inspection. (EC234/85)

STOP VALVES

Stop valves **11.14** All systems containing more than 23 kg of Group 1 refrigerant or 3 kg of Group 2 or 3 refrigerants other than systems utilizing non-positive displacement compressors shall have stop valves installed as follows:

- (i) each inlet of each compressor, compressor unit or condensing unit;
- (ii) each discharge outlet of each compressor, compressor unit or condensing unit and liquid-receiver. (EC234/85)

Idem **11.15** A system containing 45 kg or more of a refrigerant, other than systems utilizing non-positive displacement compressors, shall have stop valves, in addition to those required by section 11.14, on each inlet of each liquid receiver, except that none shall be required on the inlet of a receiver in a condensing unit nor on the inlet of a receiver which is an internal part of a condenser. (EC234/85)

Mounting **11.16** Stop valves used with soft annealed copper tubing or hard drawn copper tubing 22 mm standard size or smaller shall be securely mounted, independent of tubing fastenings or supports. (EC234/85)

Labelling **11.17** Stop valves shall be suitably labelled if it is not obvious what they control. Numbers may be used to label the valves, provided a key to the numbers is located near the valves. (EC234/85)

PIPING

11.18 Refrigerant piping crossing an open space which affords passageway in any building shall not be less than 2300 mm above the floor, unless against the ceiling of such space. (EC234/85) Location of piping

11.19 Free passageways shall not be obstructed by refrigerant piping. Refrigerant piping shall not be placed in any elevator, dumbwaiter or other shaft containing a moving object or in any shaft which has openings to living quarters or to main exit hallways. Refrigerant piping shall not be placed in public hallways, lobbies or stairways except that such refrigerant piping may pass along a public hallway if there are no joints in the section in the public hallway and provided non-ferrous tubing or 25 mm nominal diameter and smaller be contained in a rigid metal pipe. (EC234/85) Passageways and public areas

11.20 All piping and tubing shall be securely supported by means of metal hangers, brackets, straps, clamps, pedestals or other means acceptable to the inspector, to relieve joints of harmful strains and vibrations. The supports shall be used for no other purpose. Hangers for piping or tubing above 50 mm nominal diameter shall be not less than 80 mm² cross section. (EC234/85) Supports

IDENTIFICATION OF PIPING

11.21 Where an inspector deems it is in the interest of safety, he may order that piping be identified by color in compliance with the code of identification of piping systems published by the Canadian Standards Association. (EC234/85) Identification by colour

DESIGN AND FABRICATION OF PRESSURE VESSELS

11.22 (1) The design, construction, testing and stamping of every pressure vessel shall conform to all the requirements of Part V. Applicable requirements

(2) Design drawings and specifications for pressure vessels and pertinent safety devices shall be submitted to the Chief Inspector for registration before fabrication. Registration

(3) A manufacturer's data report shall be submitted to the Chief Inspector covering each vessel fabricated according to a registered design. (EC234/85) Manufacturer's data report

11.23 All parts of a refrigeration system shall be designed, constructed and assembled to be capable of withstanding a test pressure not less than 1.25 times the safety valve setting. (EC234/85) Test pressure

Suitable material	11.24 All material used in the construction and installation of refrigeration systems shall be suitable for conveying the refrigerant used. (EC234/85)
Pressure limiting devices	11.25 (1) Pressure limiting devices shall be provided on all systems containing more than 9 kg of refrigerant and, operating above atmospheric pressure.
Connection	(2) Pressure limiting devices shall be connected with no intervening stop valves between the pressure imposing element and the stop valve on the discharge side. (EC234/85)
Gauge glasses	11.26 Liquid level gauge glasses shall have automatic closing shut-off valves and such glasses shall be protected against breakage. (EC234/85)
Identification marks	11.27 Each condensing unit, compressor or compressor unit sold separately for field assembly in a refrigeration system shall carry a nameplate marked with the manufacturer's name, or trade mark, identification number and the name of the refrigerant for which it is designed. (EC234/85)
Pressure gauge dials	11.28 The dial of a pressure gauge when the gauge is permanently installed on the high side of a refrigeration system shall be graduated up to approximately double the operating pressure, but in no case less than 1.25 times the design pressure. (EC234/85)

PRESSURE VESSELS

Design to be registered	11.29 Refrigerant containing pressure vessels exceeding 150 mm inside diameter or internal volume of .0425 m ³ except those having a maximum allowable internal or external working pressure 103 kPa or less, shall have the design registered as a pressure vessel and have manufacturer's data report submitted by the manufacturer. (EC234/85)
Registration as fittings	11.30 Refrigerant containing pressure vessels not exceeding an inside diameter of 150 mm or an internal volume of .04525 m ³ shall be registered as fittings. (EC234/85)
Relief device, pressure vessels	11.31 All pressure vessels irrespective of size or pressure shall be equipped with a pressure actuated relief device. (EC234/85)
Relief device, refrigeration system	11.32 All refrigeration systems shall be equipped with a direct pressure actuated relief device. (EC234/85)

TESTING

11.33 (1) Fusion welded pressure vessels shall be tested in accordance with paragraph UG-99, of Section VIII of the ASME Boiler and Pressure Vessel Code.

Fusion welded
pressure vessels

(2) Vessels for use in services which cannot tolerate the presence of a testing liquid and which cannot be readily dried, and the parts of which have been previously tested by hydrostatic pressure, may be given a pneumatic test as described in paragraph UG-100, of Section VIII of the ASME Boiler and Pressure Vessel Code. (EC234/85)

Pneumatic test,
pressure vessels

11.34 (1) Every part of a refrigeration system, except control mechanisms, shall be subjected to a pneumatic pressure test of not less than 1.25 times the design pressure or at such higher pressure as requested by the Chief Inspector.

Pneumatic test,
refrigeration system

(2) The means used to build up the test pressure shall have either a pressure limiting device or a pressure reducing device and a gauge on the outlet side. (EC234/85)

Test pressure
limitation

GENERAL REQUIREMENTS FOR RELIEF DEVICES

11.35 (1) Piping to and from all safety relieving devices shall not be less than the corresponding connection on the relief device. The discharge from more than one relief device may be run into a common header, the area of which shall be not less than the sum of the areas of the pipes connected thereto.

Relief devices,
piping

(2) The length of the discharge piping permitted to be installed on the outlet of a relief valve, or rupture member shall be as determined by CSA Standard B52 Mechanical Refrigeration Code.

Length of piping

(3) The discharge of pressure relief devices on all systems containing Group 2 or Group 3 refrigerant shall be to the outside of the building in an approved manner.

Discharge

(4) Where the total Group 1 refrigerant storage capacity exceed 45 kg in any one room, the discharge from all relief devices shall be to the outside of the building in an approved manner.

Idem

(5) Pressure relief devices may discharge into the low side of the system provided the pressure relief devices are of a type not appreciably affected by back pressures and provided the low side of the system is equipped with pressure relief devices.

Idem

(6) The relief devices on the low side of the system shall have sufficient capacity to protect the pressure vessels that are relieved into

Capacity

the low side of the system or to protect all pressure vessels on the low side of the system whichever relieving capacity is the larger. (EC234/85)

Use of ammonia

11.36 Where ammonia is used, the discharge may be into a tank of water which shall be used for no other purpose except ammonia absorption and shall conform to the following requirements;

- (a) at least one gallon of fresh water shall be provided for each pound of ammonia in the system;
- (b) the water used shall be prevented from freezing without the use of salt or chemicals;
- (c) the tank shall be substantially constructed of not less than one-eighth inch steel;
- (d) the tank shall have a hinged cover or if of the enclosed type shall have a vent hole at the top;
- (e) all pipe connections shall be through the top of the tank only. The discharge pipe from the pressure relief valves shall discharge the ammonia in the center of the tank near the bottom. (EC234/85)

RELIEF DEVICES FOR PRESSURE VESSELS

Capacity

11.37 Each pressure vessel containing liquid refrigerant and which may be shut off by valves from all other parts of a refrigeration system, shall be protected by a pressure relief device having sufficient capacity to prevent the pressure in the pressure vessel from rising more than 10 per cent above the setting of the pressure relief device. (EC234/85)

Parallel relief valves

11.38 (1) Pressure vessels having an internal gross volume of 0.28 m³ or over shall be provided with paralleled relief valves. Each relief valve shall have sufficient capacity to prevent the pressure in the pressure vessel from rising more than 10 percent above the setting of the pressure relief valve.

Single relief device

(2) A single relief device may be used on pressure vessels having less than 0.28m³ internal gross volume. (EC234/85)

EMERGENCY DISCHARGE

Emergency discharge lines

11.39 An emergency discharge line meeting the requirements of CSA Standard B52 is required for

- (a) a vessel containing 182 kilograms or more of Group 1 or 91 kilograms or more of Group 2 refrigerant;
- (b) each vessel in a machinery room where the total refrigerant charge in the room is 182 kilograms or more of Group 1 or 91 kilograms or more of Group 2 refrigerant. (EC234/85)

11.40 (1) Systems containing more than 45 kg of refrigerant shall be provided with metal signs having letters not less than 13 mm in height designating the main shut-off valves to each vessel, main steam or electrical control and remote control switch. There shall be signs, as specified above with the name of the refrigerant and the letters HP or LP, as applicable, on all exposed pressure piping in each room other than the machinery room.

Information signs

(2) When the kind of refrigerant is changed there shall be a new sign of the same type as specified in clause (a) indicating clearly that a substitution has been made. (EC234/85)

Change of refrigerant

REFRIGERANTS

11.41 (1) When refrigerant is added to a system, it shall be charged into the low pressure side of the system. Any point on the downstream side of the main liquid-line stop valve shall be considered as part of the low pressure side when operating with said valve in the closed position. No service container shall be left connected to a system except while charging or withdrawing refrigerant.

Addition and withdrawal of refrigerant

(2) Refrigerants withdrawn from a refrigerating system shall be carefully weighed each time they are used for this purpose and the containers shall not be filled in excess of the permissible filling weight of such containers for such refrigerants as are described in the pertinent regulations of the Canadian Transport Commission.

Weighing of withdrawn refrigerant

(3) The quantity of refrigerant which may be stored in a machinery room apart from the normal content of the system, shall not exceed 20 per cent of the content of the system or 135 kg, whichever is the lesser. In any case, refrigerants so stored shall be in approved storage containers. (EC234/85)

Storage

11.42 Substitution of the kind of refrigerant in a system shall not be made without the permission of the Chief Inspector, the user and the manufacturer of the original equipment and due observance of safety requirements including:

Substitution of refrigerant

- (a) the effects of the substituted refrigerant on materials in the system;
- (b) the possibility of overloading the liquid receiver, which should not be more than 80 per cent full of liquid;
- (c) the liability of exceeding motor horsepower, design working pressure or any other element that would violate any of the provisions of these regulations;
- (d) the proper size of refrigerant controls;
- (e) the effect of the operation and setting of safety devices;

(f) the possible hazards created by mixture of the original and the substituted refrigerant. (EC234/85)

GAS HELMETS AND MASKS

Owner to provide protective equipment	11.43 (1) It shall be the responsibility of the owner of the premises to provide and maintain gas helmets, masks and personal protective equipment in accordance with the requirements of CSA B52.
Approved equipment	(2) Only complete helmets or masks marked as approved by the competent authority and suitable for the refrigerants employed shall be used, and they shall be kept in a suitable cabinet located immediately outside the machinery room or in some other approved accessible location.
Removal of canisters	(3) Canisters or cartridges of helmets or masks shall be removed immediately after having been used or the seal broken, and if unused, the canister shall be renewed not later than the expiry date noted on the canister labels. (EC234/85)

OPERATION OF REFRIGERATION PLANT

Operation	11.44 No person shall operate a refrigeration plant unless the owner is the holder of a certificate of inspection issued under the Act, except where a contractor is testing the plant following its installation or repair. (EC234/85)
Safety precautions	<p>11.45 Any enclosed space with means for the entry of personnel, that is maintained at temperatures detrimental to health by means of a refrigerating system shall be equipped with a door that can be readily opened from the inside and at least one of the following protective measures:</p> <ul style="list-style-type: none"> (a) a suitable alarm system that can be operated from within the refrigerated room; (b) an axe attached by a breakable chain to an accessible interior surface of the refrigerated room. <p>NOTE: An alarm alone will not be considered an adequate form of protection unless there are personnel available to respond to the alarm at all times. (EC234/85)</p>
Exits	11.46 Where it is deemed necessary by the Chief Inspector, two exits shall be provided for each machinery room. (EC234/85)
Notice of emergency precautions	11.47 It is the responsibility of the person in charge of a refrigeration system containing more than 25 kg of refrigerant to place a card conspicuously as near as practicable to the refrigerant compressor giving

directions for the operation of the system, including precautions to be observed in case of a breakdown or leak, as follows:

- (a) instructions for shutting down the system in case of emergency;
- (b) the name and day and night telephone numbers for obtaining service;
- (c) notification to the department in case of emergency. (EC234/85)

11.48 (1) Each self-contained system shall be provided with an easily legible metal name plate permanently attached and easily accessible, indicating thereon the name and address of the manufacturer or installer, the kind and total number of kilograms of refrigerant contained in the system and the test pressure applied. Information plates

(2) Each refrigerant-condensing unit and compressor shall carry a name plate marked with the manufacturer's name and address, model number, name of refrigerant used, and the maximum working pressure. Idem

(3) Marking of pressure vessels shall be in accordance with CSA B51 Code for the Construction and Inspection of Boiler and Pressure Vessels. (EC234/85) Markings

11.49 Pressure gauges shall be checked for accuracy prior to test and immediately after every occasion of unusually high pressure, equal to full scale reading either by comparison with master gauges or setting the pointer as determined by a dead-weight pressure gauge tester. (EC234/85) Pressure gauge tests

FILING OF DRAWINGS

11.50 Before the construction of a refrigeration plant exceeding a capacity of 60 kW, the contractor shall submit drawings and specifications in duplicate to the Chief Inspector for registration. (EC234/85) Drawings specifications to be filed

11.51 Each drawing shall indicate among other things: Details

- (a) type and occupancy;
- (b) machinery room - construction details;
- (c) position of equipment;
- (d) size, material and type of piping;
- (e) compressors - manufacturer, number of cylinders, diameter and stroke, displacement, R.P.M. setting of relief valves and kilowatt rating of prime mover;
- (f) refrigerant type, group number, weight of charge in system;
- (g) pressure vessels - size and Canadian registration number;
- (h) existing machinery

(i) safety devices - size and number of safety valves, relief valves and rupture disks, relieving pressure and manufacturer's name. (EC234/85)

Self-contained
system

11.52 The manufacturer of a self-contained or unit system shall submit drawings and specifications in duplicate to the Chief Inspector for registration. (EC234/85)

Return of drawings

11.53 One set of drawings bearing the registration stamp will be returned to the contractor. (EC234/85)

PART XII -

GENERAL

APPEALS

Appeals

12.01 Any person who is aggrieved by a decision or action of an inspector or the Advisory Board may within 30 days thereof appeal to the Minister who shall upon notice to all interested parties hear the appeal and approve, disapprove or vary the decision appealed against. (EC234/85)

Transitional
Provisions

12.02 The Chief Inspector may for a period of after the coming into force of these regulations exempt persons who do not meet the qualifications for certification under Part IX. (EC234/85)