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CSA B139 Series:19
National Standard of Canada

Installation code for oil-burning equipment

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CSA B139 Series:19, Installation code for oil-burning equipment

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Preface

This is the tenth edition of CSA B139, *Installation code for oil-burning equipment*. It supersedes the previous editions published in 2015, 2009, 2004, 2000, 1991, 1976, 1971, 1962, and 1957.

The major changes to this edition include

- addition of annual visual inspection of fuel oil tank, tubing, piping and fuel oil filters for leakage (CSA B139.1.0 and CSA B139.2);
- clarification that the external parts of the body of a fuel-containing device, component, or accessory installed in an oil line has a melting point of not less than 538 °C (CSA B139.1.0);
- a new requirement where an external pressure relief valve is installed at an oil pump discharge and downstream of a check valve:
  - the ullage space of the main tank to which the pressure-relief valve is piped is at least the volume of piping between the check valve and the automatic valve; and
  - the supply line into the auxiliary supply tank is equipped with a means of anti-siphon where a drop tube is installed (CSA B139.1.0);
- the requirements for loop systems have been clarified to apply to elevated installations only (CSA B139.1.0);
- a new requirement limiting the acceptance of tanks conforming to API 650 to field erected tanks with capacities that exceed 175 000 L (CSA B139.1.0);
- a new requirement applying to auxiliary tanks operating in a continuous overflow condition (CSA B139.1.0);
- a new requirement limiting installation storage and supply tanks within tank protection levels II, III, IVA or IVB in buildings of non-combustible construction in conformance with Division B, Part 3 of the *National Building Code of Canada* (CSA B139.1.0);
- a clarification that vent pipes where the opening faces downward without a vent cap is not considered sufficient to prevent the ingress of foreign objects and blockage by ice build-up (CSA B139.1.0);
- new requirements have been added for fill pipes or vent pipes recessed into the façade of a building (CSA B139.1.0);
- new requirements have been added for through-the wall venting for appliances installed under CSA B139.1.0 (CSA B139.1.0);
- new requirements to remove an aboveground or underground tank system that has not been used for more than 3 years (CSA B139.1.0);
- new requirements have been added for diesel engines driving fire pumps (CSA B139.1.1);
- a new requirement has been added, limiting the operating temperature for an indoor engine supply tank to exceed 38 °C (CSA B139.1.1);
- a clarification that engine service rooms require a non-combustible, liquid-tight sill, or ramp to a height corresponding to 10% of the volume of the largest tank in the room, and at least 150 mm (6 in) high (CSA B139.1.1);
- new requirements have been added for through-the-wall venting of engine exhausts (CSA B139.1.1);
- a new requirement has been added, prohibiting outdoor installation of oil return lines (CSA B139.2); and
- new requirements for through-the-wall venting for condensing appliances (CSA B139.2).

This Code was prepared by the Technical Committee on Installation of Oil Burning Equipment, under the jurisdiction of the Fuels and Appliances Strategic Steering Committee, and has been formally approved by the Technical Committee.

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   b) *provide an explanation of circumstances surrounding the actual field condition; and*
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   Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are available on the* Current Standards Activities *page at* ***standardsactivities.csa.ca****.*
5) *This Code is subject to review within five years from the date of publication. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to* ***inquiries@csagroup.org*** *and include "Proposal for change" in the subject line:*
   a) *Standard designation (number);*
   b) *relevant clause, table, and/or figure number;*
   c) *wording of the proposed change; and*
   d) *rationale for the change.*

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CSA B139.1.0:19

General requirements for large installations

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CSA B139.1.0:19
General requirements for large installations

0 Introduction

CSA B139 Series, *Installation code for oil-burning equipment,* is arranged in four parts:

a) CSA B139.1.0 covers general requirements for large installations.
b) CSA B139.1.1 covers general requirements for stationary oil-burning engine installations.
c) CSA B139.1.2 covers general requirements for special oil-burning equipment installations.
d) CSA B139.2 covers general requirements for residential and small commercial building installations.

See Figure 1 for Code part applicability guidance as related to type of installations.

1 Scope

1.1

This Code specifies minimum requirements for the installation of large oil-burning equipment.

Note: *The intent of this Code is to apply to multi-unit residential, commercial, institutional, and industrial buildings in accordance with the provincial building code or, in the absence of such regulation, the* National Building Code of Canada*.*

1.2

This Code applies to the installation of appliances, equipment, components, and accessories where oil is used for fuel purposes in applications that include

a) space heating;
b) service water heating;
c) power generation; and
d) process application.

1.3

This Code provides minimum requirements for installing or altering all stationary and portable oil-burning equipment, including

a) furnaces;
b) process furnaces;
c) boilers;
d) water heaters;
e) vehicle heaters;
f) construction heaters; and
g) stationary internal combustion engines when used for shaft-power applications for buildings.

Note: *For installation of internal combustion engines for emergency power applications, see also CSA C282 and CSA Z32. Both these Standards refer to CSA B139 Series for installation of accessories such as fuel tanks and piping.*

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General requirements for stationary engines

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CSA B139.1.1:19
General requirements for stationary engines

0 Introduction

This Code concerns the installation of stationary engines and associated ancillary equipment installed in multi-unit residential, commercial, industrial, and institutional buildings.

1 Scope

1.1

This Code specifies minimum requirements for the installation of oil-fuelled stationary engines used for

a) the generation of electrical power for buildings;
b) the generation of electrical power in accordance with CSA C282;
c) the generation of electrical power in accordance with CSA Z32; and
d) directly connected shaft power for building equipment, industrial equipment, and emergency equipment.

Note: *Examples of "building equipment" include air compressors and refrigeration equipment; "industrial equipment" includes pumps, compressors, hoisting equipment; and "emergency equipment" includes fire pumps. This Note does not impose limits on types of driven equipment.*

1.2

The requirements of CSA B139.1.0 apply in addition to this Code. Where a conflict or inconsistency exists between CSA B139.1.0 and this Code, the requirements of this Code shall take precedence.

1.3

In this Code, "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Code; "should" is used to express a recommendation or that which is advised but not required; and "may" is used to express an option or that which is permissible within the limits of the Code.

Notes accompanying Clauses do not include requirements or alternative requirements; the purpose of a note accompanying a Clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

1.4

The values given in SI units are the units of record for the purposes of this Code. The values given in parentheses are for information and comparison only.

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CSA B139.1.2:19

General requirements for special installations

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CSA B139.1.2:19
General requirements for special installations

0 Introduction

CSA B139.1.2 concerns the installation of special installations, including used-oil-burning appliances, field installation of burners, construction heaters and temporary supply tanks. Special requirements for the installation of central oil distribution systems and vehicle heaters are also included.

1 Scope

1.1

This Code applies to the installation of appliances, equipment, components, and accessories where oil is used for fuel purposes in

a) used-oil-burning appliances;
b) central oil distribution systems;
c) construction heaters and fuel systems; and
d) vehicle heaters.

1.2

This Code provides minimum requirements for the field installation of burners and their combustion control systems.

1.3

The requirements of CSA B139.1.0 apply in addition to this Code. Where a conflict or inconsistency exists between CSA B139.1.0 and this Code, the requirements of this Code shall take precedence.

1.4

In this Code, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Code; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Code.

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CSA B139.2:19

Installation code for oil-burning equipment for residential and small commercial buildings

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CSA B139.2:19
Installation code for oil-burning equipment for residential and small commercial buildings

0 Introduction

CSA B139.2 concerns the installation of low-capacity boilers, furnaces, air heaters, domestic water heaters, and similar residential-type appliances, including the associated ancillary equipment, installed in residential and small commercial buildings. Users should note that the design of fuel systems anticipated in this Code might not be subject to provincial legislation requiring sealing of the design and provision of construction review services by an engineer.

Where the installation does not meet the restrictions and limitations imposed by this Code, the installation is to be installed in accordance with CSA B139.1.0.

1 Scope

1.1

This Code applies to the installation of appliances, equipment, components, and accessories where oil is used for fuel purposes in applications that include

a) space heating;
b) service water heating; and
c) small process application

1.2

This Code applies to the installation of appliances and associated equipment where

a) the building is a residential or commercial building as defined by the *National Building Code of Canada*, does not exceed 3 storeys in building height, and does not exceed 600 m² (6458 ft²) in building area;
b) the individual or total appliance fuel input rating does not exceed 9.5 L/h (2.5 GPH);
c) the maximum fuel input rate to all appliances connected to a common chimney does not exceed 205 kW (700 kBtu/h);
d) supply tanks do not exceed an individual capacity of 2500 L (550 gal), nor do they exceed a total capacity of 5000 L (1100 gal) for each premises; and
e) no fuel pumps other than appliance integrally mounted fuel pumps are used.

Note: *The intent of this Code is to apply to residential buildings and small commercial buildings in accordance with the provincial building code or, in the absence of such regulations, in accordance with Part 9 of the* National Building Code of Canada.

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1.3

This Code provides minimum requirements for installing or altering all stationary and portable oil-burning equipment, including

a) furnaces;
b) boilers; and
c) water heaters.

1.4

This Code provides minimum requirements for installing or altering ancillary equipment, including

a) piping and tubing;
b) control devices;
c) venting systems;
d) accessories;
e) heat distribution systems that affect the proper operation of the oil-burning equipment; and
f) aboveground supply tanks that have a maximum individual capacity of 2500 L (550 gal) and a maximum total capacity of 5000 L (1100 gal).

Note: *Underground fuel oil tank installations of any size and aboveground installations over 2500 L (550 gal) are covered by CSA B139.1.0, CSA B139.1.1, and CSA B139.1.2.*

1.5

This Code provides requirements for the maintenance of the most commonly used types of oil-burning equipment.

1.6

This Code provides recommended precautions for filling tanks (see Annex I of CSA B139.1.0).

1.7

This Code does not apply to

a) process equipment installed in refineries;
b) appliances installed in park model trailers, recreational vehicles, and marine craft;
c) portable devices such as lamps, blowtorches, melting pots, and weed burners; or
d) installations supplying oil-fuelled stationary engines.

Note: *For reference, the terms "park model trailers" and "recreational vehicles" are as defined in CAN/CSA-Z241 Series and CSA Z240 RV Series.*

1.8

In this Code, "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Code; "should" is used to express a recommendation or that which is advised but not required; and "may" is used to express an option or that which is permissible within the limits of the Code.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

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