

Fuel Safety Bulletin

2009-06

CHANGES

This document addresses some changes to the newest version of the *CSA B139 Installation Code for Oil-Burning Equipment*. It also addresses a few questions which we have received regarding these code changes.

Please also see our online Fuel Safety Bulletins at;
<http://www.gov.ns.ca/lwd/fuelsafety/fuelbulletins.asp>

The Fuel Safety Regulations are also available online at;
<http://www.gov.ns.ca/just/regulations/regs/fsfuelsf.htm>

CSA B139-09 Code

The following are some changes made to the *CSA B139-09 Installation Code for Oil-Burning Equipment*. This code is officially adopted into law in Nova Scotia by the *Fuel Safety Regulations*. The changes come into effect in Nova Scotia on January 1, 2010.

NOTE: This is by no means a comprehensive listing of changes and the technician is responsible for acquainting himself fully with the new edition of the code.

CSA B139-09 - SCOPE

Preface

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

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;**
- (c) power generation;**
- and (d) process application.**

1.2

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) internal combustion engines when used for power applications in buildings. Note: For installation of internal combustion engines for emergency power applications, see also CAN/CSA-C282 and CSA Z32. Both these Standards refer to CSA B139 for installation of accessories such as fuel tanks and piping.**

1.3

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

- (a) piping and tubing systems supplying fuel oil-burning equipment;**
 - (b) pumps;**
 - (c) control devices;**
 - (d) venting systems;**
 - (e) accessories;**
 - (f) heat distribution systems that affect the proper operation of the oil-burning equipment;**
 - (g) central oil distribution systems; and**
 - (h) above-ground storage tanks that have a maximum individual capacity of 2500 L (550 gal) and a maximum aggregate capacity of 5000 L (1100 gal).**
- Note: Underground fuel oil tank installations of any size and above-ground**

installations over 2500 L (550 gal) are covered by the National Fire Code of Canada (NFCC) and the CCME Environmental Code. Storage tank installations might also be governed by requirements of the authority having jurisdiction.

1.4

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

1.5

This Code provides recommended precautions for filling tanks (see Annex G).

1.6

This Code does not apply to

- (a) process equipment installed in refineries;**
- (b) appliances installed in mobile housing, recreational vehicles, and marine craft;**
- (c) portable devices such as lamps, blowtorches, melting pots, and weed burners; or**
- (d) integral fuel tanks on internal combustion engines.**

Note: For installation of oil-burning equipment in mobile housing and recreational vehicles, see CAN/CSA-Z240 MH Series.

1.7

In CSA Standards, "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; "should" is used to express a recommendation or that which is advised but not required; "may" is used to express an option or that which is permissible within the limits of the standard; and "can" is used to express possibility or capability. 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 (nonmandatory) to define their application.

1.8

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

You may notice that some of the codes are written slightly different than the book to enable you to better understand them.

NOTE: Some code reference numbers have changed:

- 1) Section 3 is now definitions which was housed under 2.2.
- 2) Section 4 in the /04 code is now section 5, 6 is 7 etc.

4.1.4 - is a new clause that states that appliances (furnaces/ boilers/water heaters) shall be installed on a firm, level, **NON-COMBUSTIBLE** floor or support except where it is approved (CSA,ULC,etc.) for installation on a combustible floor or is installed using a manufacturers certified base.

Note: It has often been the practice to have a metal liquid tight pan made and to install an appliance on brick or blocks inside the pan when installing on a combustible floor. This is no longer an accepted practice, as the code states that it must be a **manufacturers certified** base.

4.11.3 – is a new clause that refers to pre-heated fuels (bunker-c oil)

VENTING:

5.2.5.11 is a new clause that states when an oil- fired appliance is vented via the same chimney as a gas-fired appliance, the gas appliance must be installed – through a separate flue opening **above** the oil into the flue (double base tee on a prefabricated chimney or separate flue opening in a brick chimney) or into a **shop fabricated** branch fitting (Y-branch). In a dwelling the branch fitting must be within 30” of the chimney flue or as close as possible in any other type of building.

TANKS:

7.4.6 – has changed to combine the /04 - **6.4.6 & 6.4.7**

7.4.10 – is a new code that states unless otherwise protected by its location, the tank and anything attached to it must be protected from possible vehicular movement, in accordance with good engineering practices.

Note: Although protection from vehicular movement has been in previous code book editions, it was included in an *annex* and as such, was not a mandatory requirement. Good engineering practices means the protection must be capable of stopping a moving vehicle and prevent possible damage to the tank or anything attached to it. (oil lines etc.)

7.5.5 –This is a very important new clause and refers to tanks installed outdoors. It states that any steel outdoor single tanks of 550 gals. or less, or any combination of connected outside STEEL tanks up to 1100 gals. capacity, shall have secondary containment. **All outside steel residential tanks will have to be double bottom with interstitial monitoring (signal device to indicate tank bottom failure), be double wall tanks, or be installed in an approved secondary container designed for outdoor use.** (IE covered tank tub)

Note: Although not clearly stated in the code, a combination of two 200 gal tanks, which would be less than 550 gals., or any combination of outside tanks up to 1100 gals will require secondary containment. Any tanks installed before Jan. /2010 will be under the /04 code. This clause also refers to nonmetallic tanks being approved for this purpose.

7.5.7 – Outside tanks shall be located and maintained so that the temperature of the oil will not exceed 100 degrees F. **Note:** Although this clause has been in effect for inside tanks, it is new for outside storage and as noted, could be relevant for tanks with a direct southern exposure and dark color paint. Consider a cover to avoid direct sunlight and always paint with a light reflective color.

7.8.3 – Fill pipes shall be installed to drain towards the tank ¼” to the foot and be without sags or traps in which liquid can collect. **This clause is new for fill pipes** but has been used for vent pipes for some time.

7.8.12 – New clause for tanks supplying “generators” that states if they have an electrically powered overflow protection device, it must be provided with continuous power.

7.8.13 – New clause that states when a fuel transfer pump is used to fill a **used-oil** supply tank, automatic overflow protection shall be provided.

7.9.1.1 - This clause looks new, but is a re-write of two previous clauses so nothing has changed here from the old code. Tanks over 10 gal capacity must be vented in accordance with clause **9.3** (piping and tubing) and cannot exceed 13 ½ ft in height. (A 13 ½ ft. vent pipe full of oil would exceed the allowable pressure at the tank outlet or bottom)

7.9.1.2 – This code has had (C) removed from it and moved elsewhere.

7.9.1.3 – New clause stating if a tank is not certified under ULC - S602 (aboveground steel tanks) or ULC ORD-C80.1 (aboveground non-metallic tanks) the tanks must be vented in accordance with manufacturer’s instructions.

7.9.1.10 – Codes on venting two or more supply tanks have been removed and must now conform to **7.6** and **7.7** as shown in Figure 10 A & B and 11 pg.90 – 92.

VENTING of AUXILIARY SUPPLY TANKS:

7.9.2.2 – 7.9.2.4 – and 7.9.2.5. Are new clauses for venting overhead auxiliary tanks (day-tanks) used on some booster pump systems. (Commercial/Industrial applications normally)

Fuel tanks for engines:

7.9.3 – New clause states that if a tank (over 10 gal) is supplying an engine and is in the same trailer, shed, or building, the fill and vent pipes must terminate outdoors.

FUEL CONTAINING DEVICES:

9.1.3 – This new clause refers specifically to the installation of a fuel oil de-aerator.

Must be installed to manufacturer's instructions

A fusible link shut-off valve must be installed just upstream of the device and have a melting point lower than the de-aerator's.

The de-aerator must be designed to prevent any foam or liquid from escaping through its vent.

Oil temperature must be kept below 100 F.

Must be installed indoors

Fuel supply must be filtered

9.3.1.5— New clause has been expanded to include piping and tubing protection from damage such as foot and vehicle traffic, grass cutting and snow damage.

9.3.1.9 – New clause that states tubing or piping that passes through an exterior wall must be watertight and sleeved (run through plastic pipe) or double wrapped with a waterproof wrap.

9.3.1.10 – Same as 9.3.1.9 (above) but refers to **interior** masonry or concrete walls.

9.3.1.11 – New clause says that materials used to sleeve copper tube must protect the tube from damage and galvanic action. (be non-conductive)

9.3.1.12 – New clause states that piping (threaded pipe) must have at least 1" of unthreaded pipe extended through a finished ceiling or finished wall and at least 2" through a floor. (threaded part of pipe must be at least 1" or 2" from the surface)

9.3.1.13 – New clause that states any piping installed in an area with a corrosive atmosphere must be protected from the corrosive atmosphere (painted, wrapped or coated).

VALVES:

(pressure relief valves)

9.4.2.3 – New clause states that a means to relieve pressure shall be installed between any two automatic shut-off devices.

Field Installation of Burners:

This was under section **9** in the /04 code and is section **10** in the new code and states: Site installation of burners, other than those certified for the unit, shall be acceptable to the authority having jurisdiction. Please refer to Fuel Safety Bulletin 2008-06 on our website.

Annex H:- Is new and refers to tanks for engines (mostly generators or sprinkler pumps).

An annex is not a mandatory part of the code but may be adopted by the authority having jurisdiction who for us is the Fuel Safety Section of the Nova Scotia Dept. of Labour and Workforce Development .

Q&A'S REGARDING TANK INSTALLATION & B139-09

The following is a list of possible questions and answers that may arise in reference to the TANK section of the new B139-9, accompanied by comprehensive answers that OST's may find helpful while in the field. Also included are a number of other questions surrounding proper tank installation in general.

*****If clarification is needed on any of the code changes in B139-09, please contact the authority having jurisdiction in your area. (In Nova Scotia, this is the NS Department of Labour & Workforce Development—Fuel Safety Section).***

Q - Can I install a steel tank outdoors?

A— As of January 1, 2010, any single-wall steel tank installed outdoors must have a secondary containment designed for outdoor use (IE tank tub) or be a double-bottom with interstitial monitoring. This requirement does not apply to non-metallic tanks.

Q- Must I install a double wall steel tank indoors?

A— NO. This requirement is only for tanks installed outdoors.

Q – What about existing outdoor steel tank installations?

A— If the tank was installed prior to January 1, 2010, it has to be installed to the code of the day that it was installed.

IE: installation date was May 2007 and must comply with B139-04.

Q –How long can a home/business owner keep an existing steel tank?

A— All equipment shall be maintained at least once per year. Tanks shall be visually inspected and replaced if necessary. Tanks in unconditioned spaces and outdoors shall be tested for water and pumped if necessary. (15.2.1—15.2.3)

Q –In the past, insurance companies have stated outdoor steel tanks are good for 15 years. Does this still hold?

A— Insurance companies set internal company policies for oil tank installations. Homeowners should check with their individual agents for their specific policy details. A tank still must be inspected by an OST on an annual basis. If a tank is deemed unfit, the age is irrelevant.

Q – When a new tank is being installed, does it have to be filled?

A– The authorized installer has to test the tank and connections for leaks. They can pressure test for a minimum of 10 minutes or hydrostatic test during the first fill. It is the installers responsibility to test the new installation. (7.12.2)

Q – Can old product be transferred into a new steel tank?

A- The transfer of contaminated oil can significantly shorten the life span of a new steel tank and may affect tank warranty. There are various methods to reduce the likelihood of contamination during product transfer, but the only sure thing is no product transfer. The Installation and Environmental Management Guide for above-ground domestic oil tanks in Nova Scotia states transfer should be avoided and recommends only new fuel be introduced into the new tank after replacement. (7.12.4)

Q – Indoor or outdoor installations; which is preferred?

A- Indoor installations are always preferred by the industry. The house offers protection from the environment and from vandalism. As well, small leaks can be detected sooner, less condensation takes place, and fuel atomizes better at room temperature.

Q – Should a home/business owner be able to detect an oil odour from an oil tank that's installed indoors?

A– Absolutely not. Fuel has offensive aromatics that should alert you to a problem. If an odour is detected, there must be (1) a leak in the fill and vent piping or (2) a leak in the tank itself or (3) a leak in the line/filter from tank to burner or (4) a leak involving the fuel pump. Property owners need not 'get used' to the smell of heating oil.

Q – If an oil tank is located inside a garage, does it need to have posts installed to protect it from vehicular movement?

A– YES. The new code states that unless the tank is protected by its' location, the tank and anything attached to the tank (piping, oil lines etc) must be protected from vehicular movement/traffic. If an automobile can hit the tank, it needs protection. (7.5.6) (7.4.10)

Q – When replacing an existing outside oil tank that is currently located on the property line, can the new tank be installed in the same location?

A– No. There are no 'grandfather rules' that allow for new installations on the property line. Code requirements state the tank must be at least 5' from the property line. (7.5.4)

Q – When installing a new tank indoors, do the fill and vent pipes need to be replaced?

A– Fill and vent pipes are part of the tank storage system and must meet the code of the day. Today’s code states Fill pipes shall be steel (black iron) or galvanized (zinc Coated black iron), however, no cast 90’s are allowed. The fill and vent must drain 1/4” per foot, and the vent cap must be screened. The likelihood of existing fill and vent pipes meeting all code requirements today, is very slim. It’s better to count on replacement.(7.8.12)

Q - What is the right way to pipe together two fuel tanks?

A– Figure 10a, 10b and 11 in the new B139-09 show the only acceptable configuration to pipe-out multiple tanks. The main concerns are overfills and pressurization of the vessels. Failure to install tanks according to these methods could lead to product spills.

Q – Does a top connected fuel line require a de-aerator?

A– When fuel oil is subjected to a vacuum, air in the oil will be extracted and cause problems not only with the pump, but also after drip and carbon deposits.

I would like to take this opportunity to thank the Technical Committee of the Canadian Oil Heat Association-Atlantic, for their assistance in developing this handout. Their invaluable contribution to the oil heat industry is acknowledged and greatly appreciated. If there are any further questions, comments or concerns regarding the Fuel Safety Regulations, or the CSA B139 Code, please do not hesitate to contact me.

Respectfully

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