

MANITOBA GAS NOTICES

**Second Edition
September 2000**

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**Manitoba
Labour
Mechanical and
Engineering Branch**



Manitoba Gas Notices

The purpose of the Manitoba Gas Notices is to provide gas and oil fitters guidance on CSA B149 Gas Installation Code requirements as they apply in Manitoba, Manitoba legislative requirements as they pertain to gas and oil burning installations, and Mechanical and Engineering Branch policy.

The Gas Notices were developed by the Manitoba Joint Committee to Review the CSA B149 Gas Installation Code, and its Gas Notice Review sub-committee.

The Manitoba Joint Committee to Review the CSA B149 Gas Installation Code is comprised of representatives from the Mechanical and Engineering Branch, Centra Gas, educational facilities and industry.

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The Manitoba Joint Committee to Review the CSA B149 Gas Installation Code thanks Joe Yule of Centra Gas for his work on the drawings, and Gwen Anderson for her work compiling the text.

△ **Revisions:** Portions of these notices that have been revised or amended since a previous edition are marked with the triangle 'delta' symbol, as is the custom in the B149.

First Edition—May 2000

Second Edition—September 2000

September 2001 addendum to Sept 2000 Manitoba Gas Notices

Manitoba Gas Notices *Addenda Note*

Revisions: Revisions or amendments made to a notices since a previous edition are marked with the triangle 'delta' symbol, as is the custom in the B149.

First Edition—May 2000

Second Edition—September 2000

First Addenda release September 2001

The Third Edition of the Manitoba Gas Notices will be released in 2005; revisions or amendments made to the Notices September 2001 and release of the Third Edition will be made by the release of Addenda pages.

This page to be added to the September 2000 edition following the preface page titled "Manitoba Gas Notices"

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Questions & Answers

Gas Notice 1

Responsibilities of a gas fitter

Rationale: To clarify gas and oil fitters' obligation under the Manitoba Gas and Oil Burner Act and Regulation to provide inspecting authorities all required documentation pertaining to gas and oil equipment installations, and to obtain inspection and approval as necessary.

Permits must be obtained prior to commencement of all alterations, additions or installations of gas piping or equipment. To comply with requirements of the Regulation with regard to permits the following shall be carried out:

1. Fees must be submitted with each application
2. Drawings in triplicate must be submitted with all applications where the total input of all units to be connected exceeds 400,000 BTU per hour

Drawings must detail:

- (A) The length and size of gas piping and gas pressure
- (B) Any piping which will be concealed
- (C) In the case of conversion burners
 - (1) Details of valve train and controls
 - (2) Location and size of supply air provisions
 - (3) Size, height and type of chimney breeching
 - (4) Draft hood or I.D. fan, etc.

It is essential that the application for permit be properly completed with particular reference to the legal address and correct name of the installation premises; the approximate date of completion; and the signature of the licensed fitter who is making the installation, alteration or addition.

Permit applications will expire if the inspection and turn-on is not completed within 90 days from the date of issue. Extensions may be granted by the Chief Inspector.

The Mechanical and Engineering Branch must be notified if there is a substitution of equipment specified on the original permit.

Under the Gas and Oil Burner Act and Regulation, a gas fitter must:

1. Make application for a permit prior to commencing installation
2. Ensure that all appliances and equipment are approved
3. Pressure-test piping and ensure that there are no leaks
4. Purge all gas lines after gas turn-on
5. Start up all equipment installed by the fitter
6. Perform a heat rise test in compliance with the manufacturers' specifications
7. Check operation of all controls

Gas Notice 1

Responsibilities of a gas fitter *Continued*

Under the Gas and Oil Burner Act and Regulation, a gas fitter must: *(continued)*

8. Make application for a permit prior to commencing installation
9. Ensure that all appliances and equipment are approved
10. Pressure-test piping and ensure that there are no leaks
11. Purge all gas lines after gas turn-on
12. Start up all equipment installed by the fitter
13. Perform a heat rise test in compliance with the manufacturers' specifications
14. Check operation of all controls
15. On conversion burners: carry out a combustion efficiency test and record the results.
16. Identify the installation with the fitter's current tag and ensure the removal of any pre-existing tags
17. Instruct the owner in the use, operation and maintenance of the equipment

Fitters' responsibility to notify the Mechanical and Engineering Branch

1. General gas-fired Installations
Prior to activation of any installation where total gas supplied exceeds 400,000 BTU per hour, the fitter must contact a Mechanical and Engineering Branch Gas Inspector to arrange for a start-up inspection appointment.
2. Boilers or pressure equipment
Prior to activation of any boiler or pressure equipment with a rating greater than 3 Boiler Horsepower in other than one- or two-family dwellings (3 Boiler Horsepower = 30 kilowatts = 126,000 BTU/H INPUT), the fitter must contact a Mechanical and Engineering Boiler Inspector to arrange for a start-up inspection appointment.

Note: Only installers holding a valid Certificate of Authorization issued by the Mechanical and Engineering Branch may apply for a gas permit to install boilers of this rating or higher.

Gas Notice 1
Responsibilities of a gas fitter
Continued

A Certificate of Authorization is issued to an installer of pressure equipment and/or piping who demonstrates an acceptable Quality Control Program. Although gas piping does not normally fall under the Certificate of Authorization program, gas fitters installing pressure equipment must be qualified to the Manitoba standard to do so, or must work under the authority of a properly qualified contractor.

Contact the Mechanical and Engineering Branch for more information on the Certificate of Authorization program and Quality Control.

△ **Fitters' responsibility to notify the Utility**

Prior to any activation, the gas fitter must notify the gas utility or propane supplier to request an inspection when:

1. Replacing an appliance or making a new installation
2. Making alterations to gas equipment or piping
3. Installing additional equipment or piping

The only exception is where a gas-fired residential appliance is installed to replace a **similar** appliance, the fitter may ignite the appliance provided that the fitter notifies the gas utility forthwith that the appliance is operating in a safe manner.

Where an additional or replacement gas-fired **commercial or industrial** appliance is installed, the fitter must notify the Mechanical and Engineering Branch and the gas utility or propane supplier and request an inspection prior to turn-on as described in the Inspection Requirements sections.

Before supplying gas, the gas utility or propane supplier will:

1. Check that the installation conforms to the current CSA B149.1, B149.2 or B149.3 and current Manitoba Gas Notices
2. Check that the appliances are approved and labeled
3. Check for leaks with a meter dial test or propane regulator test
4. Check and record gas fitters tag on each appliance

Discrepancies found during these checks may cancel gas turn-on until they have been corrected. The Mechanical and Engineering Branch will be notified of these discrepancies.

Gas Notice 2 Approval Labels

Rationale: To explain and illustrate the certification marks of Approval Agencies recognized in Manitoba.

The Manitoba Gas and Oil Burner Act requires that all gas and oil burning equipment and devices installed in Manitoba be approved.

The Manitoba Gas and Oil Burner Regulation states:

"approved" means approved and listed or labeled under the inspection service of

- (a) the Canadian Standards- Association (herein referred to as C.S.A.),
- (b) the Underwriters Laboratories of Canada Limited (herein referred to as ULC),-or-
- (c) the Canadian Gas Association, or approved by the minister;

All certification agencies accredited by the Standards Council of Canada are approved upon application to the Mechanical and Engineering Branch.

The 'Blue Flame' Certification Mark:

In 1997, CSA International acquired the organization that included both the Canadian Gas Association and the American Gas Association. CSA International was given a time-limited licence to use the familiar CGA and AGA certification seals, but will replace the existing marks with new designs that incorporate the CSA monogram.

In Canada, the new CSA certification mark for petroleum burning equipment must be used by July 1, 2002. Until then, the industry and regulators may continue to see the familiar CGA seal.

The existing CGA 'Blue Flame' seal and the new 'Blue Flame' mark that will incorporate the CSA monogram will be applied to appliances and equipment to denote compliance with all applicable gas, electrical and/or mechanical standards in Canada. A CSA mark that is not incorporated into the 'Blue Flame' design denotes compliance with electrical standards only.



Existing CGA 'Blue Flame' seal for gas and other liquid petroleum appliances certified to the applicable gas, electrical and mechanical Canadian standards, licenced for use until June 30, 2002.



Existing CGA 'Script' for **components** of gas and other liquid petroleum appliances certified to the applicable Canadian standards, licenced for use until June 30, 2002.



New 'Blue Flame' mark that incorporates the CSA monogram for gas and other liquid petroleum appliances certified to the applicable gas, electrical and mechanical Canadian standards, for mandatory use July 1, 2002

The Underwriters Laboratory and Underwriters Laboratory of Canada

Certifications include: Venting equipment for products of combustion; solid-fuel burning equipment, liquid-fuel burning equipment, and gaseous-fuel burning equipment; fuel handling equipment; Hazardous Location Equipment; mechanical equipment; ventilating and conditioning equipment for buildings; electrical and electronic equipment.



The C-UL Listed Marks show that a product is approved for use in Canada. The marks must bear the indicators 'C' or the combined 'C/ US'. UL marks that appear without indicators show **certification to United States standards and are NOT APPROVED for use in Canada**

ETL Semko (a division of Intertek Testing Services North America Incorporated) certifications include:

- Venting equipment for products of combustion; fuel-burning and handling equipment manufactured to comply with CSA, ULC or CSA standards including, where applicable, CE Code Part II requirements; electric and electronic products; Hazardous Location Equipment.

Marks from both divisions must include the indicators 'C' or 'C/US' to show approved certification in Canada. Marks that appear with no indicator, or with the 'US' indicator alone are NOT APPROVED for use in Canada.



Omni-Test Laboratories Incorporated certifications include:

- Venting equipment for products of combustion; fuel-burning and handling equipment manufactured to comply with CSA, ULC or CSA standards including, where applicable, CE Code Part II requirements.



The mark must appear with 'C' or 'C/US' indicators to approval for use in Canada. A mark that does not have an indicator or that has a 'US' indicator alone is NOT APPROVED for use in Canada

Canadian Standards Association certifications include:

- Electrical and electronic equipment; fuel burning and handling subassemblies, components and accessories manufactured to comply with CSA , ULC, or CGA standards including where applicable CE Code Part II requirements; dispensing devices for flammable liquids manufactured to comply with CSA standards and other recognized documents including the CE Code Part II requirements; containers for flammable liquids manufactured to comply with CSA standards and other recognized documents.
- **Note that a fuel burning appliance must bear the 'Blue Flame' CGA or the 'Blue Flame' CSA mark to show compliance with all gas and electrical requirements in Canada.**



The CSA mark may appear alone or with indicators. When the mark appears alone, the product is approved for use in Canada only. Marks that appear with the combined indicators 'C/US' or 'NRTL/C' show approval for use in both Canada and the United States. Products bearing marks that have only the indicators 'US' or 'NRTL' have been tested to United States' safety standards only, and are NOT APPROVED for use in Canada.

Mechanical and Engineering Branch Special Acceptance Label for Fuel Burning Equipment

Occasionally, there is a requirement to use equipment that has not been certified by an agency accredited by the Standards Council of Canada and recognized in Manitoba. For these cases, the manufacturer or installer may apply to the Mechanical and Engineering Branch for a Special Acceptance for a Gas Appliance.

A provincial Gas Inspector will inspect the equipment to determine its compliance to provincial codes and guidelines. The Gas Inspector may approve the equipment, order modifications to bring the equipment in line with provincial standards or may prohibit the equipment from use.

The Mechanical and Engineering Branch Special Acceptance Gas Equipment label:



Approval labels for Electrical products only

The Mechanical and Engineering Branch has a similar Special Acceptance program for electrical equipment.



Other Electrical Marks:

Met Laboratories

Certifications include:

- Electrical and electronic equipment; Hazardous Location Equipment.

The mark must appear with 'C' or 'C/US' indicators to approval for use in Canada. A mark that does not have an indicator or that has a 'US' indicator alone is NOT APPROVED for use in Canada



TUV Rheinland of North America Incorporated Certifications include:

- Information technology and office equipment including computers; electrical testing, measuring and laboratory equipment; audio-visual equipment and accessories.

The mark must appear with 'C' or 'C/US' indicators to approval for use in Canada. A mark that does not have an indicator or that has a 'US' indicator alone is NOT APPROVED for use in Canada



Certifications include:
Electrical and electronic products.

Entela Incorporated



The mark must appear with 'C' or 'C/US' indicators to approval for use in Canada. A mark that does not have an indicator or that has a 'US' indicator alone is NOT APPROVED for use in Canada

Gas Notice 3

Initial start-up procedure for high input equipment (Input exceeding 400,000 BTUH)

Rationale: Recommended rules for commissioning high-input equipment.

This procedure has been developed to help ensure safe start-ups of high input gas-fired equipment. Due to a large variation in the types of equipment and controls, some of the procedures as set out will not be applicable to certain burners. On some equipment other safety checks that may not be mentioned in this procedure will be required.

The commercial and industrial gas fitter responsible for the installation must be present during the initial start-up. This person will be required to demonstrate that the installation meets all relevant codes, including the testing of piping, a check of safety controls and electrical connections, safety interlocks and relief valve rating.

The fitter must ensure that all persons not directly involved in the start-up are cleared from the room in which the equipment is located, **before** start-up is attempted.

The fitter must ensure that any boiler with a rating greater than 3 Boiler Horsepower (3 Boiler Horsepower = 30 Kilowatts = 126,000 BTU/H INPUT) is not activated without prior notification and approval of the Mechanical and Engineering Branch in other than one (1) or two (2) family dwellings.

A dry-run shall be carried out with all manual valves closed to determine that all controls are in a safe operating condition before gas is supplied to the pilot or main burner. It is suggested that the dry run checks will take a minimum of four control cycles to perform and can be carried out as follows:

First Cycle

1. Check and determine the movement or position of the air dampers during the pre-purge to ensure the air flow is not less than 60% of that required for the minimum input to the unit during this period.
2. Check volume of pre-purge air to determine its conformance with code standard (at least four air changes to the combustion chamber and flue passages)
3. At the end of the pre-purge cycle, check modulating gas valve and the air damper to determine that they have returned to the low fire position.

Second Cycle

During pre-purge, simulate failure of the air flow or forced fan operation and ensure that ignition spark does not occur. Failure may be simulated by failing a

motor, closing the damper, removing the belt, removing tubing connection from air proving device, or other acceptable means.

Third Cycle

Connect a meter for measurement of scanner or detector signal. Check this reading during the ignition period to ensure it reads zero. If there is a reading, the scanner or detector may be sensing a false signal due to spark, etc.

Note: the meter must be connected according to the applicable specifications for the type and make of controls.

Fourth Cycle

Subject the scanner or detector to a simulated flame and check that:

1. The pilot is proved
2. The main gas valve opens
3. The pilot is interrupted (ignition spark ceases)
4. The trial for main flame is proven (the time between the opening of the main gas valve and the interruption of the spark)
5. The loss-of-flame signal is proven when the simulated flame is removed and the main gas valve closes
6. The manual reset valve, when used in conjunction with a firing valve that incorporates an end-switch interlock, cannot be opened with the firing valve in an open position (carried out by subjecting scanner or detector to a simulated flame)

The above procedure must be carried out separately for each burner on a multi-burner unit.

Start-up of burner or burners

1. Purging gas piping

- (A) Do not open firing valve. This valve must remain closed until piping is purged of air.
- (B) Determine a safe location and method of dispersal of purged gas.
- (C) The purge connection should be made between the manual shut-off valve on the drop and the pilot connection or main input valve.
- (D) The purge connection must be large enough to ensure an adequate purge velocity to evacuate air.
- (E) The above conditions having been fulfilled, the piping can be purged. To ensure all air is evacuated, purging must continue until gas is detected at purging tube by means of flaring or other positive method (not in the combustion chamber of the unit)

- (F) When purging is complete, the piping must be reassembled or purge connection closed off and all untested joints soap-tested under gas pressure.
- (G) During the above purge period the firing valve has been closed. After completion of (F) above, connect a manometer or pressure gauge between the main gas valve and the firing valve. The pressure reading on this instrument should be zero. A pressure reading would indicate the main gas valve is leaking or open.

2. Light-up of burner

The following are supplementary to specific manufacturer's instruction. These must, however, be carried out in conjunction with manufacturer's instructions.

- (A) Pilot turn-on
 - (i) Ensure main firing valve closed. Check that pilot burner is in the correct position to ignite the main burner.
 - (ii) Turn-on pilot gas supply and establish pilot..
 - (iii) Using a multi-meter, adjust pilot flame to attain a maximum and steady signal.
 - (iv) Terminate cycle during 'Trial for Pilot'. Ensure lockout within appropriate time limit.
 - (v) De-energize control system and adjust for a new cycle.
- (B) Gas manifold pressure check with firing valve closed:

This check is only an indication that the regulator is working when gas pressure is to be reduced from pounds (5 psi or higher) to inches at the main burner. Do not adjust regulator. The reading observed will be a lock-up pressure. This is carried out by putting the burner through a cycle and noting the reading on the manometer that was connected in 1(G) above—Purging Gas Piping.
- (C) Burner turn-on:
 - (i) Main flame turn-on procedure will vary with the type of equipment. For some types of equipment it is preferable to use the firing valve to establish main flame. For other types it may be necessary to turn on the firing valve and permit the establishment of main flame through the automatic input valve.

For example: a burner with an interrupted pilot has a period of 15 seconds to establish a main flame. It is, therefore, considered safe and practical to open the firing valve and establish main flame through the automatic valve.

A unit equipped with intermittent pilot, however, has a constant open automatic valve after the pilot is proven, thus the main burner on initial start must be established using the firing valve.

- (ii) When main flame is established, adjust air dampers to produce a stable, clean flame and make the following adjustments:
 - (1) Establish correct burner input by checking input on gas meter; manifold pressure.
 - (2) Set air adjustment for correct air/gas ratio over complete firing range; CO₂ check; excess air check; CO check.
 - (3) Check (where applicable) function of
 - Low gas pressure switches
 - Air flow proving devices
 - Low water cut-off
 - High limit control
 - operating limit control
 - all other interlocks and limit devices
 - (4) Perform minimum pilot turn-down test. The minimum pilot is considered the input at which the pilot will ignite, be sensed with a minimum signal by the flame sensing device and provide safe lighting of the main flame.

Caution must be exercised when carrying out this test to observe the size of the minimum flame and its ability to safely light the main flame.

- (5) Re-establish normal pilot adjustment.

Gas Notice 4 (A)
Preventing excessive cold air when providing air supply to commercial and industrial installations

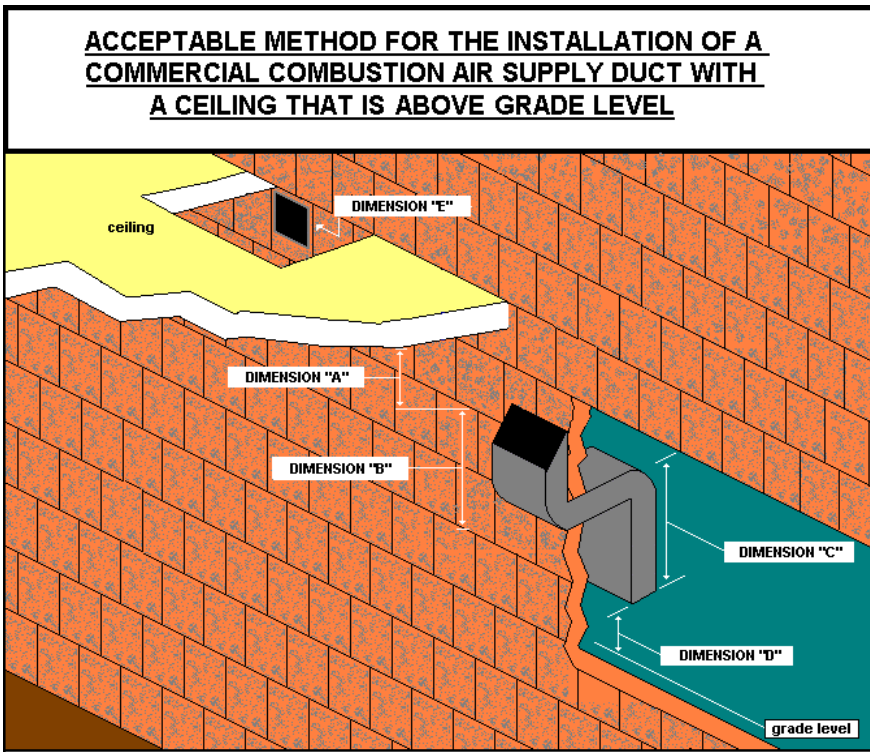
Rationale: To illustrate variations to the CSA B-149.1 air supply requirements acceptable to Manitoba inspecting authorities so that fitters in Manitoba's cold climate can design installations that provide free flow of air without delivering excessive cold air.

Methods of providing air supply to gas-fired equipment shall comply with the current CSA B-149.1. To prevent excessive cold air entering rooms where commercial/industrial gas-fired equipment is installed, the air supply inlet may be ducted in accordance with Figure 4 (A) Method 1 or Figure 4 (A) Method 2, or by a method approved by the inspecting authority.

Refer to Section 7.6 of the current CSA B-149.1.

Figure 4 (A) Method 1

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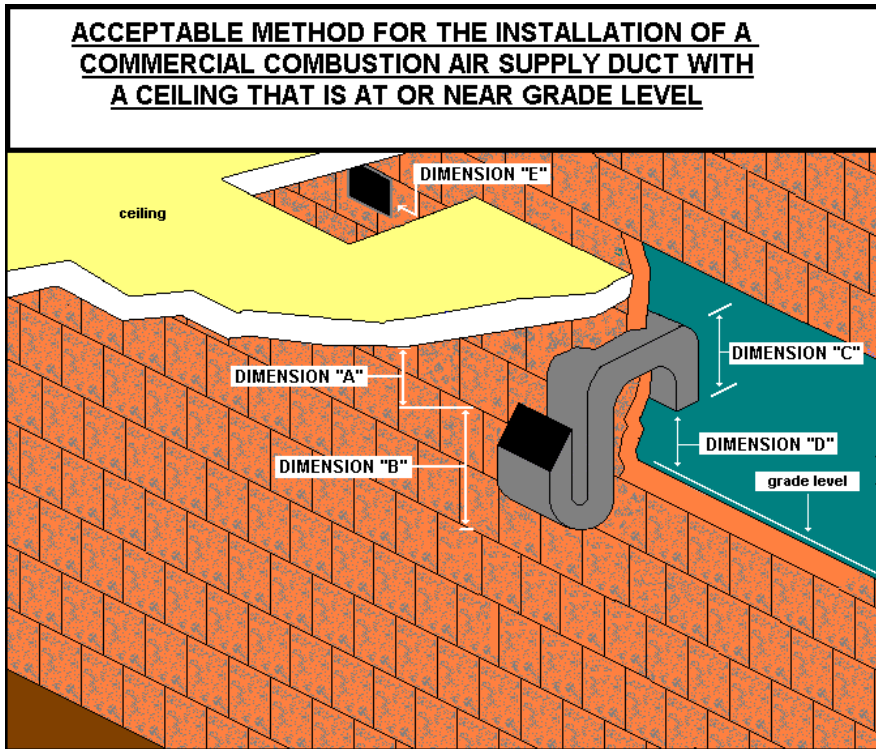


- “A” The duct termination shall in no case terminate closer than 12 inches (30 cm) from the ceiling.
- “B” & “C” The duct shall be formed in the shape of an ‘S’ with the outlet directed upward towards the ceiling. The length of the portion turned upward inside the building and also the length of the portion turned downward outside shall be equal to at least the depth of the duct.
- “D” An air supply inlet opening from the outdoors shall be located not less than 1 foot (30 cm) above the outside grade level. (current CSA B149.1 Section 7.3.6)
- “E” Ventilation air shall be installed as close to the ceiling and as far from the combustion air supply duct as is practicable.

Air supply ducts shall be sized to the current CSA B149.1

Figure 4 (A) Method 2

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- “A” The duct termination shall in no case terminate closer than 12 inches (30 cm) from the ceiling.
- “B” & “C” The duct shall be formed in the shape of an ‘S’ with the outlet directed upward towards the ceiling. The length of the portion turned upward inside the building and also the length of the portion turned downward outside shall be equal to at least the depth of the duct.
- “D” An air supply inlet opening from the outdoors shall be located not less than 1 foot (30 cm) above the outside grade level. (current CSA B149.1 Section 7.3.6)
- “E” Ventilation air shall be installed as close to the ceiling and as far from the combustion air supply duct as is practicable.

Air supply ducts shall be sized to the current CSA B149.1

Gas Notice 4 (B)

Preventing excessive cold air when providing air supply to residential installations

Rationale: To illustrate variations to the CSA B-149.1 air supply requirements acceptable to Manitoba inspecting authorities so that fitters in Manitoba's cold climate can design installations that provide free flow of air without delivering excessive cold air.

Methods of providing air supply to gas-fired equipment shall comply with the current CSA B-149.1. However, to prevent excessive cold air entering rooms where residential gas-fired equipment is installed, the air supply inlet may be ducted in accordance with Figure 4 (B), or by a method approved by the inspecting authority.

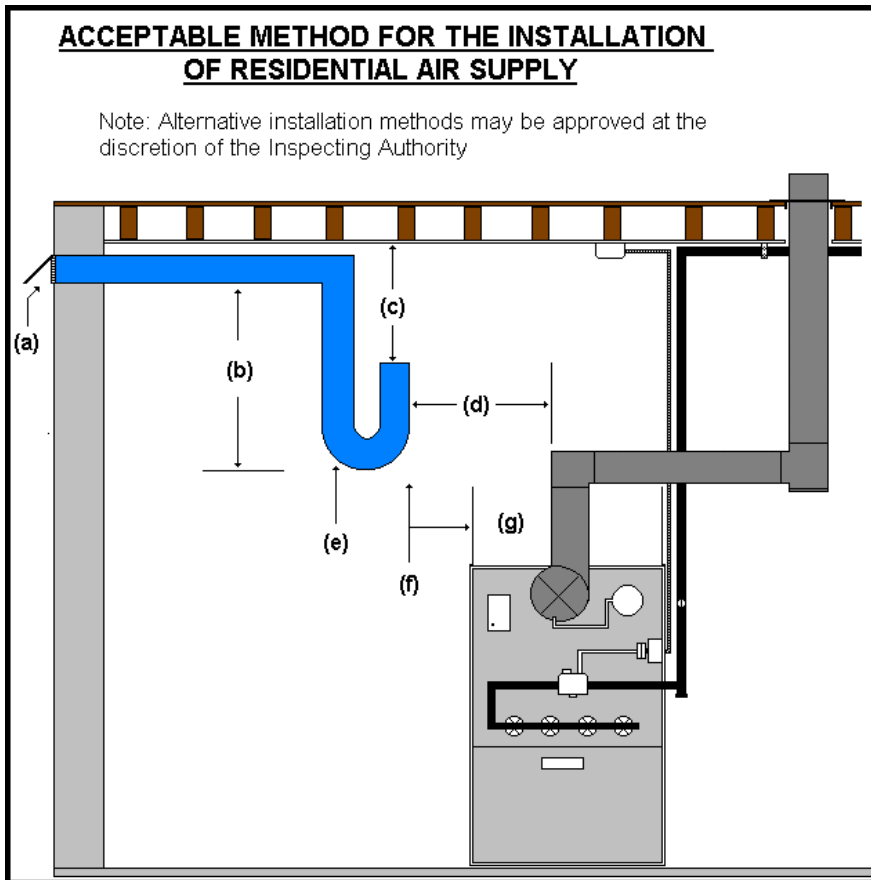
Note:

This method is intended to provide air for combustion purposes only and does not provide air that may be required by other systems in the building, such as high-volume exhaust fans and dryers. All other air requirements must be assessed and adequate provision for total building air requirements must be made.

Refer to Section 7.6 of the current CSA B-149.1.

Figure 4 (B)

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- (a) Inlet shall be protected by a device that prevents rain, snow or rodents from entering the building.
- (b) Trap shall be a minimum depth of 2 feet (60 cm).
- (c) Duct shall terminate not less than 1 foot (30 cm) from the ceiling.
- (d) Duct shall be a minimum distance of 3 feet (90 cm) from the venting.
- (e) Duct shall be insulated throughout its entire length.
- (f) Duct shall terminate within a horizontal distance of 2 feet (60 cm) from the plenum.

Gas Notice 5 (A)
Metal liners in masonry chimneys

Rationale: To explain requirements for metal liners in masonry chimneys

When gas-fired appliances with **combined inputs of 400,000 BTU per hour or less** are vented into a masonry chimney, the masonry chimney shall be lined with an approved metal liner.

EXCEPTION: Replacement storage water heaters less than 50,000 BTU per hour do not require installation of a metal liner provided the existing clay-tile or transite liner is in good condition.

All metal liners shall be provided with an accessible clean-out that allows for inspection of the liner.

Gas Notice 5 (B)

Metal liners in masonry chimneys

Rationale: To highlight the 1992 amendment to the Manitoba Gas and Oil Burner Regulation that imposes requirements for metal liners in certain masonry chimneys.

The Gas and Oil Burner Act requires that **regardless of input**, when gas burning equipment installed in day care facilities and residential buildings that house more than two families are vented into a masonry chimney, the masonry chimney shall either be lined with an approved metal liner or the owner shall ensure that mandatory chimney inspection requirements are met.

All metal liners shall be provided with an accessible clean-out that allows for inspection of the liner.

Specifically,

Under Section 47 of the Gas and Oil Burner Regulation

47(1) The owner of a building in which a day care facility is operated or of a residential building, other than a one- or two-family dwelling unit, heated by gas burning equipment vented through a masonry chimney, shall not operate or allow persons to operate the gas burning equipment unless

(a) The chimney is equipped with a metal liner that conforms with CAN/ULC-S635-M90 "Standard for Lining Systems for Existing Masonry or Factory-Built Chimneys and Vents"; or

(b) The owner ensures that the requirements of Subsections (2) to (5) of the Gas and Oil Burner Regulation are met.

47(2) Gas burning equipment referred to in Subsection (A) may be operated if the chimney is inspected annually by a chimney sweep certified by the Canadian Wood Energy Institute and the following conditions are met:

(a) The owner ensures that the requirements of Subsections (2) to (5) of the Gas and Oil Burner Regulation are met;

(b) The owner ensures that the chimney sweep removes all debris from the chimney;

(c) Where the chimney sweep informs the owner that he or she has reason to believe that any debris removed from the chimney is a result of chimney deterioration, the owner shall ensure that the chimney is swept and a scan by video camera is conducted to determine the condition of the chimney; and

(d) Where, in the opinion of the chimney sweep, the scan reveals deterioration of the chimney, the owner shall immediately take steps to repair or replace the chimney or equip the chimney with a metal liner that conforms with the requirements of Subsection (1).

47(3) An owner shall ensure that a log book is provided for a masonry chimney inspected under Subsection (2) and a record of all inspections,

maintenance and repairs is entered by the person carrying out the inspection, maintenance or repair.

47(4) An owner shall make a log book referred to in Subsection (3) available to an inspector upon request.

47(5) Where there is a dispute between an owner and a chimney sweep as to the condition of the chimney inspected under Subsection (2), the matter shall be referred to the Chief Inspector for determination and where the Chief Inspector is of the opinion that the chimney is not in satisfactory condition, the Chief Inspector shall give notice to the owner of any defects and the period of time within which the owner must correct the defects.

Gas Notice 6

Procedure for propane installations

Rationale: To inform propane suppliers and fitters of their obligations under the Manitoba Gas and Oil Burner Act to provide inspecting authorities all required documentation pertaining to propane the installation of propane installations, and to obtain inspection and approval as necessary.

Liquefied Petroleum Gas installations must conform with the requirements of the Gas and Oil Burner Act and Regulations, the current CSA B149.1, B149.2, B149.3 codes, and these notices.

Regulations under the Gas and Oil Burner Act make the propane supplier responsible, when product is supplied to a new installation, to submit a turn-on report to the Mechanical and Engineering Branch within seven days. This report must confirm that the installation, including tank location, support and piping conforms to the current CSA-B149.1, B149.2 and B149.3 codes. It must also give the name of the licensed fitter who inspected the installation for the supplier.

Permits must be obtained for each component of the installation, i.e. for all appliances and the supply vessel or 'tank set'. 'Tank set' includes the first and second stage regulators and the piping between the regulators.

The permits shall be obtained as follows:

- When the propane supplier installs both the supply vessel and the appliance(s), the supplier shall obtain one permit for the entire installation.
- When the propane supplier installs the supply vessel and a fitter not employed by the propane supplier installs the appliance(s), the propane supplier shall obtain a permit for the installation of the supply vessel and the fitter shall obtain a permit for the appliance(s).

Gas Notice 7 Construction heaters

Rationale: To explain Mechanical and Engineering's permitting requirements for construction heaters.

1. The normal season for use of construction heaters is after September 1st. All construction heaters shall be approved by a recognized certification agency or by the Mechanical and Engineering Branch.

△ A No-Charge Permit **IS** required where a construction heater **up to an including** 400,000 BTU per hour is hooked up to natural gas or propane tank.

A permit is **NOT** required for any construction heater up to and including 400,000 BTU per hour connected directly to a propane cylinder.

2. A separate permit application is required for each unit 400,000 BTU per hour **and over** and the heater must be identified by input and approval agency.
△ The owners of approved construction heaters over 400,000 BTU, have the OPTION of either:
 - a) having an "A" gas fitter draw a gas permit (applying present fee schedule) for each location that the heater is installed at, or
 - b) applying to Dept. for an annual numbered certificate (usually inspection is performed by an inspector at owners location or first install), which an "A" gas fitter would use as a permit number, when submitting a no charge permit application for each new installation of an approved construction heater over 400,000 BTU. (cost of annual approval certificate for an approved heater is based on BTU rating only ----- \$30.00 basic fee is waived) .
3. Permits can be issued to owners, rental agents, propane suppliers or installers.
4. The permit holder shall keep current records showing the location of all heaters and these records will be available to the Mechanical and Engineering Branch.

Gas Notice 8 (A)
Access to roof-top equipment

Rationale: To explain minimum design requirements for providing safe access to rooftops

Installation of, and access to, appliances installed on rooftops shall comply with the current CSA B-149.1.

Refer to Figure 8 (A).

Fixed ladders shall be designed to the current ANSI A14.3 *Safety Requirements for Fixed Ladders*.

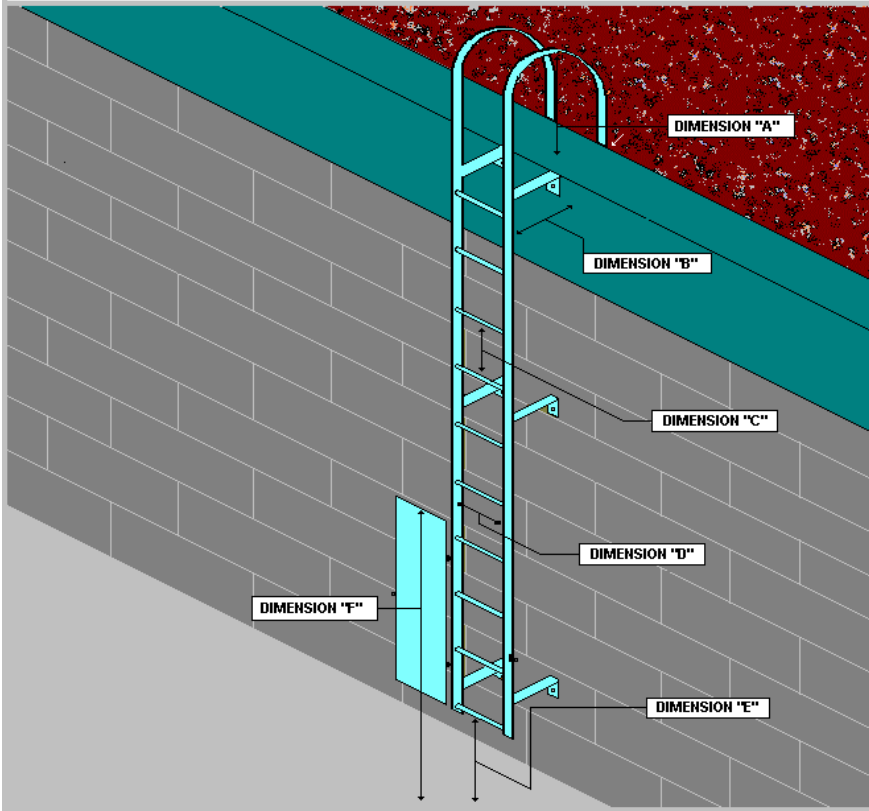
△ The surface of the parapet between the handrails of the ladder shall be covered by expanded metal decking having a minimum width 2 feet/0.6 m or other non-skid surface acceptable to the inspecting authorities.

Suitable lockable blank doors or enclosures shall be provided to prevent unauthorized access to the lower section of the ladder.

Figure 8 (A)

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**ACCEPTABLE METHOD FOR THE INSTALLATION OF
FIXED LADDERS PROVIDING ACCESS TO ROOFTOP
UNITS OVER 13 FEET AND BELOW 26 FEET IN HEIGHT.**



Refer to ANSI A14.3 *Safety Requirements for Fixed Ladders*.

"A" Maximum 3.5 feet (1.07 m)

"B" Minimum 7 inches (18 cm)

"C" Maximum 12 inches (30 cm) between centres, all rungs.

"D" Minimum 16 inches (40 cm) clear width between side rails

"E" Maximum 12 inches (30 cm)

"F" Lockable blank doors to extend high enough to prevent unauthorized access.

△ The surface of the parapet between the handrails of the ladder shall be covered by expanded metal decking having a minimum width 2 feet/0.6 m or other non-skid surface acceptable to the inspecting authorities.

△ For multi-level buildings, a fixed ladder is required to provide access to every level that is more than 13 feet above the preceding level.

Gas Notice 8 (B)
Access to Roof Top Equipment
(Fall protection on a sloped roof)

Rationale: To explain requirements for the design of fall protection systems required on rooftop installations.

A sloped roof is one where water will drain to the outside perimeter of building.

Installation of, and access to, appliances installed on rooftops shall comply with the current CSA B-149.1.

In addition to the requirements of Sections 3.14.5 and 3.14.6 of the CSA B-149.1, the Workplace Safety and Health Act (Regulation 189, Respecting the Construction Industry) requires that where there is potential for a person to fall—for instance, when an appliance is installed on a sloped roof—a guardrail or other acceptable means of fall protection shall be provided.

An acceptable example of fall protection is to provide a anti-skid walkway (for example, expanded metal deck having a minimum width 2 feet/0.6 m) and a wooden or metal guardrail consisting of a top rail at a height of between 36 to 42 inches (900 mm; 1060 mm) above the working surface with an intermediate rail midway between the top rail and bottom level. The walkway and guardrail shall provide protected access to all serviceable part of the appliance.

The anti-skid walkway should start from between the handrails of the ladder and continue to all serviceable parts of the appliance.

Refer to Figure 9 (A) for illustration of guardrail and anti-skid walkway surrounding equipment installed on a roof top.

Gas Notice 9 (A)
Acceptable Method for Installation of Roof Top Piping on a Sloped Roof

Rationale: To illustrate acceptable methods of protecting gas piping installed outdoors on a sloped roof from mechanical damage and/or stresses resulting from expansion and contraction caused by weather changes.

A sloped roof is one where water will drain to the outside perimeter of building.

Pipe support shall be provided according to Section 5.26.1 and Table 5.8.3 of the current CSA B-149.1. The method of support shall be of a design acceptable to the inspecting authority.

Refer to Figure 9 (A).

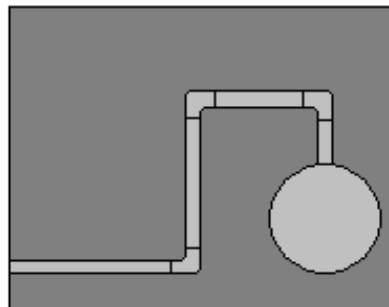
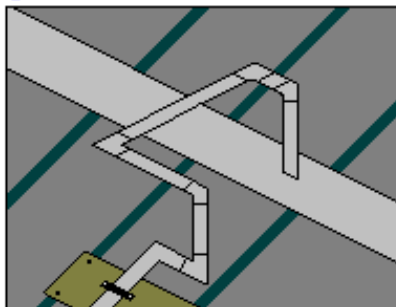
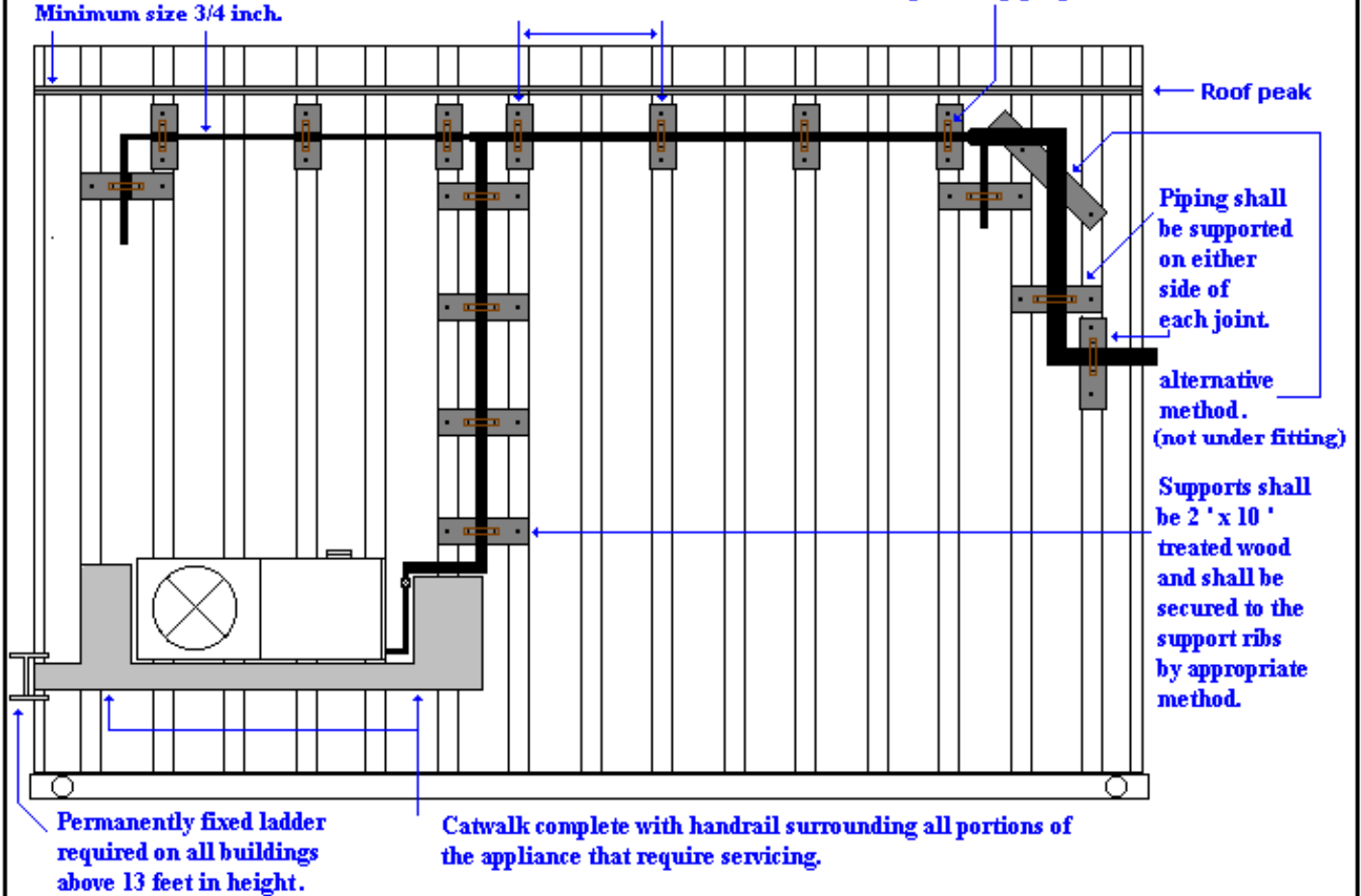
Figure 9 (A)

**ACCEPTABLE METHOD FOR INSTALLATION
OF ROOF TOP PIPING ON SLOPED ROOFS**

Piping shall be installed as close as practicable to roof peak.
Maximum distance 2 feet.
Minimum size 3/4 inch.

Supports shall be spaced as per table 5.8.3 in B 149 code.

Manufacturers hangers shall be used and are required to be one size larger than piping.



Gas Notice 9 (B)
Acceptable methods of pipe support on a flat roof

Rationale: To illustrate acceptable methods of protecting gas piping installed outdoors on a flat roof from mechanical damage and/or stresses resulting from expansion and contraction caused by weather changes.

Pipe support shall be provided according to Section 5.26.1 and Table 5.8.3 of the current CSA B-149.1. The method of support shall be of a design acceptable to the inspecting authority.

Treated wood saw cuts shall be protected by end cut treatment.

Refer to Figure 9 (B) for acceptable methods of blocking.

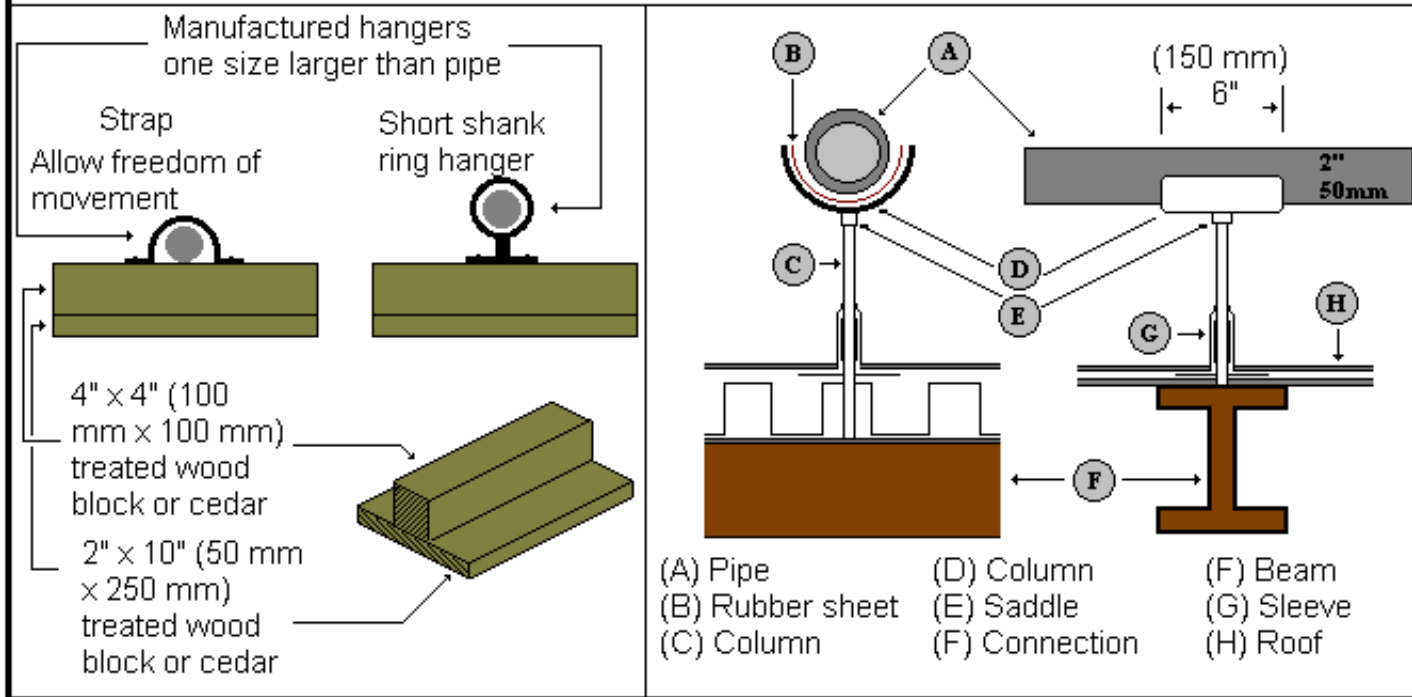
△ Styrofoam Brand® SM Insulation or equivalent product supports treated to resist ultra-violet rays are permitted in addition to the wood supports to protect roofing material from damage by wood blocking.

Figure 9 (B)

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PIPE SUPPORTS ON FLAT ROOFTOP INSTALLATIONS

△ See Figure 9 (A) for methods of supporting pipe at threaded fittings



Gas Notice 9 (C)

Regulator stations on roof-tops

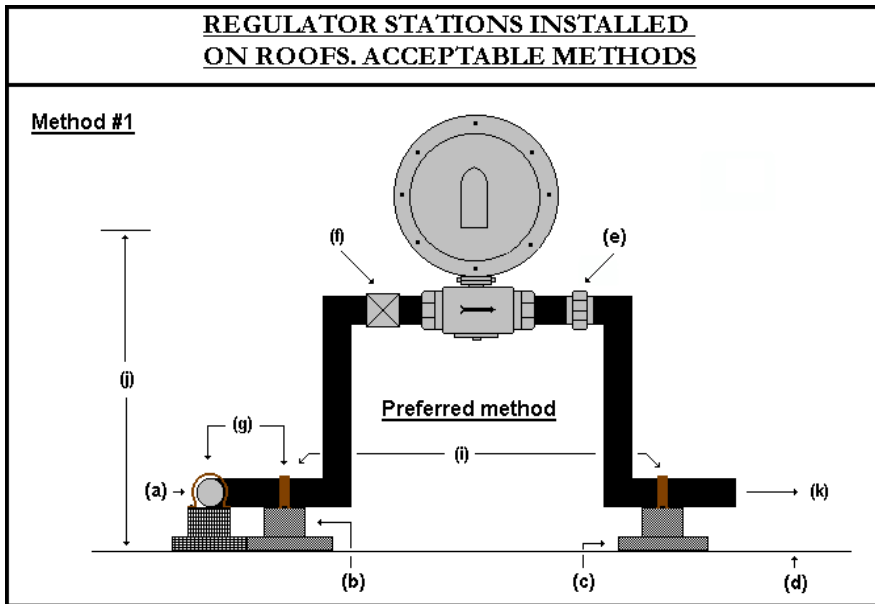
Rationale: To illustrate acceptable methods of protecting a gas regulator station installed on a rooftop from snow and moisture.

Blocking methods shown in Figure 9 (C) Method 1 and Figure 9 (C) Method 2 are for flat roofs. For proper blocking on sloped roofs refer to Figure 9 (A).

The regulator shall be installed and adequately supported to ensure the station remains in its permanent position. The selected method of support shall also ensure that the station is not affected by adverse weather conditions such as wind or snow load.

Care shall be exercised when selecting the location of the station to ensure that no freezing water can drip on to the vent termination from another source (other roof lines, eavestrough, drain pipes etc).

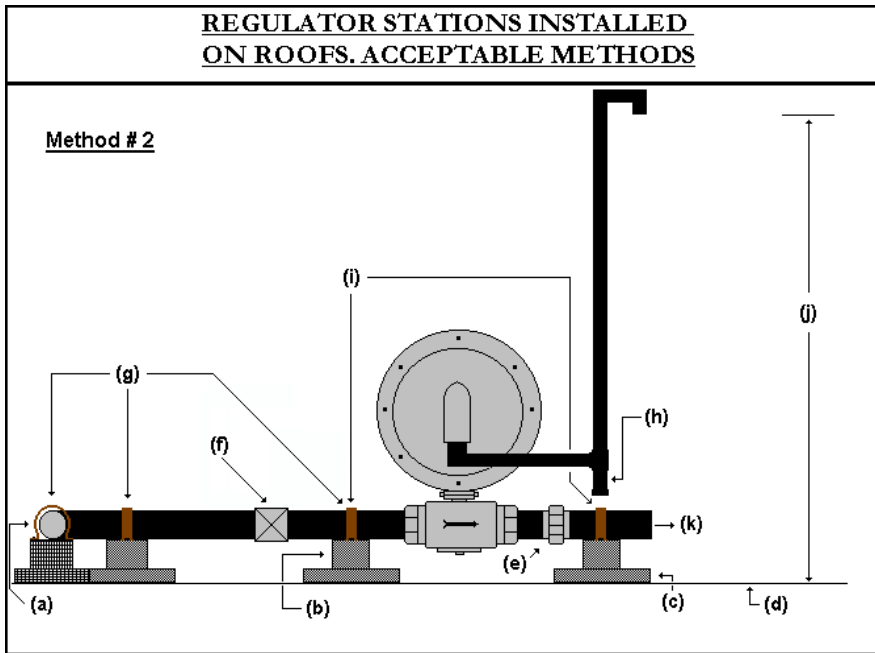
**Figure 9 (C)
Method 1**



- (a) Manufactured hangers or clamps shall be one size larger than pipe diameter
- (b) 4" X 4" treated wood block or other material acceptable to the inspecting authority
- (c) 2" X 10" treated wood block or other material acceptable to the inspecting authority
- (d) Roof line
- (e) Union
- (f) Shut-off valve
- (g) Supports shall be provided at each threaded fitting
- (i) Regulator shall be supported on either side
- (j) Regulator shall be supported to prevent accidental displacement and the vent shall terminate a minimum of 2 feet (60 cm) above the roof line or higher than expected snow level, whichever is greater
- (k) To appliance

Figure 9 (C)
Method 2

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- (a) Manufactured hangers or clamps shall be one size larger than pipe diameter
- (b) 4" X 4" treated wood block or other material acceptable to the inspecting authority
- (c) 2" X 10" treated wood block or other material acceptable to the inspecting authority
- (d) Roof line
- (e) Union
- (f) Shut-off valve
- (g) Supports shall be provided at each threaded fitting
- (h) Dirt pocket on vent line shall be 3 inch (7.5 cm) in depth.
- (i) Regulator shall be supported on either side.
- (j) Termination of vent pipe shall be fitted with a vent cap or screen. Vent shall be supported to prevent accidental displacement and shall terminate a minimum of 2 feet above the roof line or higher than expected snow level, whichever is greater.
- (k) To appliance.

Gas Notice 9 (D)
Semi-rigid tubing on roof-tops

Rationale: To illustrate acceptable methods of protecting semi-rigid gas tubing installed outdoors on a roof from mechanical damage and/or stresses resulting from expansion and contraction caused by weather changes.

Tubing laid on a rooftop shall be installed according to Section 5.26.2 and Table 5.8.3 of the current CSA B-149.1 and shall be of a design acceptable to the inspecting authority.

Use proper blocking methods depending on roof design.

Tubing installed on a sloped roof shall be run within 2 feet of the peak.

Refer to Figure 9 (D).

Figure 9 (D)

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ACCEPTABLE METHOD OF INSTALLATION FOR COPPER AND CORRUGATED STAINLESS STEEL TUBING ON ROOFTOPS

Manufactured hangers or clamps one size larger than piping

(Use "C" or "U" clamps. Do not use ring hangers)

Hangers spaced as per table 5.8.3 in B 149.1 Code

Support shall be provided for every threaded fitting



2" X 4" treated wood plank

Tubing shall lay flat on a 2" X 4" treated wood plank (On flat roofs install proper wood blocks beneath treated wood plank)

Gas Notice 10

Sizing Natural Gas, Propane and Butane Orifices

Rationale: To provide orifice sizing information that is no longer available in the CSA B-149.1

To assist the gas fitter in computing the BTU rating of gas appliances, the following orifice sizes may be used as a general guide for natural gas at the pressure indicated. Caution should be exercised in the use of the chart as variations may occur depending on the design of the orifice.

| Orifice size (Dec. or DMS) | Orifice sizing table for Natural Gas having 0.60 Specific Gravity | | | | | | | | |
|-------------------------------------|---|------|------|------|------|------|------|------|------|
| | Gas Pressure at Orifice – Inches Water Column | | | | | | | | |
| | 3 | 3.5 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 0.008 | .17 | .18 | .19 | .23 | .24 | .26 | .28 | .29 | .30 |
| 0.009 | .21 | .23 | .25 | .28 | .30 | .33 | .35 | .37 | .39 |
| 0.010 | .27 | .29 | .30 | .35 | .37 | .41 | .43 | .46 | .48 |
| 0.011 | .33 | .35 | .37 | .42 | .45 | .48 | .52 | .55 | .59 |
| 0.012 | .38 | .41 | .44 | .50 | .54 | .57 | .62 | .65 | .70 |
| 80 | .48 | .52 | .55 | .63 | .69 | .73 | .79 | .83 | .88 |
| 79 | .55 | .59 | .64 | .72 | .80 | .84 | .90 | .97 | 1.01 |
| 78 | .70 | .76 | .78 | .88 | .97 | 1.04 | 1.10 | 1.17 | 1.24 |
| 77 | .88 | .95 | .99 | 1.11 | 1.23 | 1.31 | 1.38 | 1.47 | 1.55 |
| 76 | 1.05 | 1.13 | 1.21 | 1.37 | 1.52 | 1.61 | 1.72 | 1.83 | 1.92 |
| 75 | 1.16 | 1.25 | 1.34 | 1.52 | 1.64 | 1.79 | 1.91 | 2.04 | 2.14 |
| 74 | 1.33 | 1.44 | 1.55 | 1.74 | 1.91 | 2.05 | 2.18 | 2.32 | 2.44 |
| 73 | 1.51 | 1.63 | 1.76 | 1.99 | 2.17 | 2.32 | 2.48 | 2.64 | 2.78 |
| 72 | 1.64 | 1.77 | 1.90 | 2.15 | 2.40 | 2.52 | 2.69 | 2.86 | 3.00 |
| 71 | 1.82 | 1.97 | 2.06 | 2.33 | 2.54 | 2.73 | 2.91 | 3.11 | 3.26 |
| 70 | 2.06 | 2.22 | 2.39 | 2.70 | 2.97 | 3.16 | 3.38 | 3.59 | 3.78 |
| 69 | 2.25 | 2.43 | 2.61 | 2.96 | 3.23 | 3.47 | 3.68 | 3.94 | 4.14 |
| 68 | 2.52 | 2.72 | 2.93 | 3.26 | 3.58 | 3.88 | 4.14 | 4.41 | 4.64 |
| 67 | 2.69 | 2.91 | 3.12 | 3.52 | 3.87 | 4.13 | 4.41 | 4.69 | 4.94 |
| 66 | 2.86 | 3.09 | 3.32 | 3.75 | 4.11 | 4.39 | 4.68 | 4.98 | 5.24 |
| 65 | 3.14 | 3.39 | 3.72 | 4.28 | 4.62 | 4.84 | 5.16 | 5.50 | 5.78 |
| 64 | 3.41 | 3.68 | 4.14 | 4.48 | 4.91 | 5.23 | 5.59 | 5.95 | 6.26 |
| 63 | 3.63 | 3.92 | 4.19 | 4.75 | 5.19 | 5.55 | 5.92 | 6.30 | 6.63 |
| 62 | 3.78 | 4.08 | 4.39 | 4.96 | 5.42 | 5.81 | 6.20 | 6.59 | 6.94 |
| 61 | 4.02 | 4.34 | 4.66 | 5.27 | 5.77 | 6.15 | 6.57 | 7.00 | 7.37 |
| 60 | 4.21 | 4.55 | 4.89 | 5.52 | 5.95 | 6.47 | 6.91 | 7.35 | 7.74 |

Gas Notice 10
Sizing Natural Gas, Propane and Butane Orifices
continued

| Orifice size (Dec. or DMS) | Orifice sizing table for Natural Gas having 0.60 Specific Gravity | | | | | | | | |
|-------------------------------------|---|-------|-------|-------|-------|--------|--------|--------|--------|
| | Gas Pressure at Orifice – Inches Water Column | | | | | | | | |
| | 3 | 3.5 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 59 | 4.41 | 4.76 | 5.11 | 5.78 | 6.35 | 6.78 | 7.25 | 7.71 | 8.11 |
| 58 | 4.66 | 5.03 | 5.39 | 6.10 | 6.68 | 7.13 | 7.62 | 8.11 | 8.53 |
| 57 | 4.84 | 5.23 | 5.63 | 6.36 | 6.96 | 7.44 | 7.94 | 8.46 | 8.90 |
| 56 | 5.68 | 6.13 | 6.58 | 7.35 | 8.03 | 8.73 | 9.32 | 9.92 | 10.44 |
| 55 | 7.11 | 7.68 | 8.22 | 9.30 | 10.18 | 10.85 | 11.59 | 12.34 | 12.98 |
| 54 | 7.95 | 8.59 | 9.23 | 10.45 | 11.39 | 12.25 | 13.08 | 13.93 | 14.65 |
| 53 | 9.30 | 10.04 | 10.80 | 12.20 | 13.32 | 14.29 | 15.27 | 16.25 | 17.09 |
| 52 | 10.61 | 11.46 | 12.31 | 13.86 | 15.26 | 16.34 | 17.44 | 18.57 | 19.23 |
| 51 | 11.82 | 12.77 | 13.69 | 15.47 | 16.97 | 18.16 | 19.40 | 20.64 | 21.71 |
| 50 | 12.89 | 13.92 | 14.94 | 16.86 | 18.48 | 19.77 | 21.12 | 22.48 | 23.65 |
| 49 | 14.07 | 15.20 | 16.28 | 18.37 | 20.20 | 21.60 | 23.06 | 24.56 | 25.83 |
| 48 | 15.15 | 16.36 | 17.62 | 19.88 | 21.81 | 23.31 | 24.90 | 26.51 | 27.89 |
| 47 | 16.22 | 17.52 | 18.80 | 21.27 | 23.21 | 24.93 | 26.62 | 28.34 | 29.81 |
| 46 | 17.19 | 18.57 | 19.98 | 22.57 | 24.72 | 26.43 | 28.23 | 30.05 | 31.61 |
| 45 | 17.73 | 19.15 | 20.52 | 23.10 | 25.36 | 27.18 | 29.03 | 30.90 | 32.51 |
| 44 | 19.45 | 21.01 | 22.57 | 25.57 | 27.93 | 29.87 | 31.89 | 33.96 | 35.72 |
| 43 | 20.73 | 22.39 | 24.18 | 27.29 | 29.87 | 32.02 | 34.19 | 36.41 | 38.30 |
| 42 | 23.10 | 24.95 | 26.50 | 29.50 | 32.50 | 35.24 | 37.63 | 40.07 | 42.14 |
| 41 | 24.06 | 25.98 | 28.15 | 31.69 | 34.81 | 37.17 | 39.70 | 42.27 | 44.46 |
| 40 | 25.03 | 27.03 | 29.23 | 33.09 | 36.20 | 38.79 | 41.42 | 44.10 | 46.38 |
| 39 | 26.11 | 28.20 | 30.20 | 34.05 | 37.38 | 39.97 | 42.68 | 45.44 | 47.80 |
| 38 | 27.08 | 29.25 | 31.38 | 35.46 | 38.89 | 41.58 | 44.40 | 47.27 | 49.73 |
| 37 | 28.36 | 30.63 | 32.99 | 37.07 | 40.83 | 43.62 | 46.59 | 49.60 | 52.17 |
| 36 | 29.76 | 32.14 | 34.59 | 39.11 | 42.76 | 45.77 | 48.88 | 52.04 | 54.74 |
| 35 | 32.36 | 34.95 | 36.86 | 41.68 | 45.66 | 48.78 | 52.10 | 55.46 | 58.34 |
| 34 | 32.45 | 35.05 | 37.50 | 42.44 | 46.52 | 49.75 | 53.12 | 56.55 | 59.49 |
| 33 | 33.41 | 36.08 | 38.79 | 43.83 | 48.03 | 51.46 | 54.96 | 58.62 | 61.55 |
| 32 | 35.46 | 38.30 | 40.94 | 46.52 | 50.82 | 54.26 | 57.95 | 61.70 | 64.89 |
| 31 | 37.82 | 40.85 | 43.83 | 49.52 | 54.36 | 58.01 | 61.96 | 65.97 | 69.39 |
| 30 | 43.40 | 46.87 | 50.39 | 57.05 | 62.09 | 66.72 | 71.22 | 75.86 | 79.80 |
| 29 | 48.45 | 52.33 | 56.19 | 63.61 | 69.62 | 74.45 | 79.52 | 84.66 | 89.04 |
| 28 | 51.78 | 55.92 | 59.50 | 67.00 | 73.50 | 79.50 | 84.92 | 90.39 | 95.09 |
| 27 | 54.47 | 58.83 | 63.17 | 71.55 | 78.32 | 83.59 | 89.27 | 95.04 | 99.97 |
| 26 | 56.73 | 61.27 | 65.86 | 74.57 | 81.65 | 87.24 | 93.17 | 99.19 | 104.57 |
| 25 | 58.87 | 63.58 | 68.22 | 77.14 | 84.67 | 90.36 | 96.50 | 102.74 | 108.07 |
| 24 | 60.81 | 65.67 | 70.58 | 79.83 | 87.56 | 93.47 | 99.83 | 106.28 | 111.79 |
| 23 | 62.10 | 67.07 | 72.20 | 81.65 | 89.39 | 94.55 | 100.98 | 107.49 | 113.07 |
| 22 | 64.89 | 70.08 | 75.21 | 85.10 | 93.25 | 99.60 | 106.39 | 113.24 | 119.12 |
| 21 | 66.51 | 71.83 | 77.14 | 87.35 | 95.63 | 102.29 | 109.24 | 116.29 | 122.33 |
| 20 | 68.22 | 73.68 | 79.08 | 89.49 | 97.99 | 104.75 | 111.87 | 119.10 | 125.28 |

Gas Notice 10
Sizing Natural Gas, Propane and Butane Orifices
continued

| Orifice size (Dec. or DMS) | Orifice sizing table for Natural Gas having 0.60 Specific Gravity | | | | | | | | |
|-------------------------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|
| | Gas Pressure at Orifice – Inches Water Column | | | | | | | | |
| | 3 | 3.5 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 19 | 72.20 | 77.98 | 83.69 | 94.76 | 103.89 | 110.67 | 118.55 | 125.82 | 132.36 |
| 18 | 75.53 | 81.57 | 87.56 | 97.50 | 108.52 | 116.03 | 123.92 | 131.93 | 138.78 |
| 17 | 78.54 | 84.82 | 91.10 | 103.14 | 112.81 | 120.33 | 128.52 | 136.82 | 143.91 |
| 16 | 82.19 | 88.77 | 95.40 | 107.98 | 118.18 | 126.78 | 135.39 | 144.15 | 151.63 |
| 15 | 85.20 | 92.02 | 98.84 | 111.74 | 122.48 | 131.07 | 139.98 | 149.03 | 156.77 |
| 14 | 87.10 | 94.40 | 100.78 | 114.21 | 124.44 | 133.22 | 142.28 | 151.47 | 159.33 |
| 13 | 89.92 | 97.11 | 104.32 | 118.18 | 128.93 | 138.60 | 148.02 | 157.58 | 165.76 |
| 12 | 93.90 | 101.41 | 108.52 | 123.56 | 135.37 | 143.97 | 153.75 | 163.69 | 172.13 |
| 11 | 95.94 | 103.62 | 111.31 | 126.02 | 137.52 | 147.20 | 157.20 | 167.36 | 176.03 |
| 10 | 98.30 | 106.16 | 114.21 | 129.25 | 141.82 | 151.50 | 161.81 | 172.26 | 181.13 |
| 9 | 100.99 | 109.07 | 117.11 | 132.58 | 145.05 | 154.71 | 165.23 | 175.91 | 185.03 |
| 8 | 103.89 | 112.20 | 120.65 | 136.44 | 149.33 | 160.08 | 170.96 | 182.00 | 191.44 |
| 7 | 105.93 | 114.40 | 123.01 | 139.23 | 152.56 | 163.31 | 174.38 | 185.68 | 195.30 |
| 6 | 109.15 | 117.88 | 126.78 | 142.88 | 156.83 | 167.51 | 178.88 | 190.46 | 200.36 |
| 5 | 111.08 | 119.97 | 128.93 | 145.79 | 160.08 | 170.82 | 182.48 | 194.22 | 204.30 |
| 4 | 114.75 | 123.93 | 133.22 | 150.41 | 164.36 | 176.18 | 188.16 | 200.25 | 210.71 |
| 3 | 119.25 | 128.79 | 137.52 | 156.26 | 170.78 | 182.64 | 195.08 | 207.66 | 218.44 |
| 2 | 128.48 | 138.76 | 148.61 | 168.64 | 184.79 | 197.66 | 211.05 | 224.74 | 235.58 |
| 1 | 136.35 | 147.26 | 158.25 | 179.33 | 194.63 | 209.48 | 223.65 | 238.16 | 250.54 |
| A | 145.34 | 155.48 | 165.62 | 189.28 | 206.18 | 219.70 | 236.60 | 250.12 | 263.63 |
| B | 150.36 | 160.85 | 171.33 | 195.81 | 213.29 | 227.25 | 244.76 | 258.74 | 272.73 |
| C | 155.45 | 166.30 | 177.14 | 202.44 | 220.52 | 234.98 | 253.06 | 267.51 | 281.97 |
| D | 160.63 | 171.84 | 183.04 | 209.19 | 227.87 | 242.81 | 261.48 | 276.44 | 291.38 |
| E | 165.89 | 177.47 | 189.05 | 216.05 | 235.34 | 250.77 | 270.06 | 285.49 | 300.93 |
| F | 175.43 | 187.61 | 199.78 | 227.75 | 248.70 | 265.02 | 285.40 | 301.70 | 318.02 |
| G | 180.81 | 193.43 | 206.04 | 235.49 | 256.50 | 273.33 | 294.35 | 311.18 | 327.99 |
| H | 187.81 | 200.91 | 214.01 | 244.59 | 266.42 | 283.89 | 305.74 | 323.20 | 340.67 |
| I | 196.38 | 210.08 | 223.77 | 255.75 | 278.58 | 296.85 | 319.68 | 337.95 | 356.20 |
| J | 203.66 | 217.87 | 232.08 | 265.24 | 288.92 | 307.87 | 331.55 | 350.49 | 396.44 |
| K | 209.59 | 224.22 | 238.84 | 272.95 | 297.33 | 316.82 | 341.19 | 360.69 | 380.18 |
| L | 223.23 | 240.49 | 257.75 | 290.71 | 316.68 | 337.44 | 363.40 | 384.17 | 404.92 |
| M | 231.00 | 247.12 | 263.23 | 300.83 | 327.69 | 349.18 | 376.03 | 397.52 | 419.01 |
| N | 242.09 | 258.98 | 275.06 | 315.27 | 343.42 | 365.94 | 394.09 | 416.61 | 439.13 |
| O | 265.05 | 283.54 | 302.03 | 345.18 | 376.00 | 400.66 | 431.47 | 456.13 | 480.79 |
| P | 276.92 | 296.24 | 315.56 | 360.64 | 392.84 | 418.60 | 450.80 | 476.56 | 502.32 |
| Q | 292.57 | 312.98 | 333.39 | 381.03 | 415.05 | 442.26 | 476.28 | 503.49 | 530.71 |
| R | 305.03 | 326.33 | 347.62 | 397.26 | 432.73 | 461.10 | 496.59 | 524.95 | 553.32 |
| S | 321.45 | 344.01 | 366.57 | 418.62 | 456.01 | 485.91 | 523.28 | 553.19 | 583.09 |
| T | 340.19 | 363.92 | 387.65 | 443.04 | 482.59 | 514.24 | 553.79 | 585.44 | 617.09 |
| U | 359.46 | 383.54 | 409.61 | 468.14 | 509.93 | 543.36 | 585.17 | 618.60 | 652.04 |
| V | 377.26 | 403.58 | 429.90 | 491.31 | 535.17 | 570.27 | 614.14 | 649.23 | 684.33 |
| W | 395.48 | 423.07 | 450.66 | 515.05 | 561.04 | 597.83 | 643.82 | 680.60 | 717.39 |
| X | 418.34 | 447.53 | 476.72 | 544.82 | 593.47 | 632.39 | 681.03 | 719.94 | 758.86 |
| Y | 433.23 | 463.45 | 493.67 | 564.20 | 614.58 | 654.87 | 705.25 | 745.56 | 785.86 |
| Z | 452.75 | 484.33 | 515.91 | 589.64 | 642.26 | 684.38 | 737.02 | 779.14 | 821.26 |

Gas Notice 10
Sizing Natural Gas, Propane and Butane Orifices
Continued

| Orifice sizing table for Propane and Butane Gas 11 inches Water Column (2.75 kPa) | | | | | |
|---|----------------|------------------------------------|----------|---------------|---------|
| Drill Size | | Orifice Capacity Btu/h (kW) | | | |
| Diameter | (mm) | Propane | | Butane | |
| 80 | (0.343) | 1248 | (0.3666) | 1409 | (0.413) |
| 79 | (0.358) | 1448 | (0.413) | 1635 | (0.479) |
| 78 | (0.406) | 1769 | (0.518) | 1998 | (0.585) |
| 77 | (0.457) | 2275 | (0.666) | 2570 | (0.753) |
| 76 | (0.508) | 2842 | (0.83) | 3215 | (0.94) |
| 75 | (0.533) | 3120 | (0.91) | 3544 | (1.04) |
| 74 | (0.572) | 3624 | (1.06) | 4095 | (1.2) |
| 73 | (0.61) | 4152 | (1.22) | 4690 | (1.37) |
| 72 | (0.635) | 4510 | (1.32) | 5100 | (1.49) |
| 71 | (0.66) | 4880 | (1.43) | 5508 | (1.61) |
| 70 | (0.711) | 5660 | (1.66) | 6395 | (1.9) |
| 69 | (0.743) | 6156 | (1.8) | 6950 | (2) |
| 68 | (0.787) | 6940 | (2.0) | 7834 | (2.3) |
| 67 | (0.813) | 7382 | (2.2) | 8340 | (2.4) |
| 66 | (0.838) | 7853 | (2.3) | 8865 | (2.6) |
| 65 | (0.889) | 8841 | (2.6) | 9975 | (2.9) |
| 64 | (0.914) | 9350 | (2.7) | 10570 | (3.1) |
| 63 | (0.94) | 9877 | (2.9) | 11160 | (3.3) |
| 62 | (0.965) | 10420 | (3.1) | 11780 | (3.5) |
| 61 | (0.991) | 10986 | (3.2) | 12400 | (3.6) |
| 60 | (1.02) | 11540 | (3.4) | 13030 | (3.8) |
| 59 | (1.04) | 12115 | (3.5) | 13700 | (4) |
| 58 | (1.07) | 12720 | (3.7) | 14375 | (4.2) |
| 57 | (1.09) | 13355 | (3.9) | 15080 | (4.4) |
| 56 | (1.18) | 15600 | (4.6) | 17600 | (5.2) |
| 55 | (1.32) | 19550 | (5.7) | 22120 | (6.5) |
| 54 | (1.4) | 21960 | (6.4) | 24820 | (7.3) |
| 53 | (1.51) | 25630 | (7.5) | 29000 | (8.5) |
| 52 | (1.61) | 29220 | (8.6) | 33060 | (9.7) |
| 51 | (1.7) | 32630 | (9.6) | 36840 | (10.8) |
| 50 | (1.78) | 35730 | (10.5) | 40340 | (11.8) |
| 49 | (1.85) | 38950 | (11.4) | 44100 | (12.9) |
| 48 | (1.93) | 42375 | (12.4) | 47860 | (14) |
| 47 | (1.99) | 45560 | (13.3) | 51500 | (15.1) |
| 46 | (2.06) | 48900 | (14.3) | 55250 | (16.2) |
| 45 | (2.08) | 50440 | (14.8) | 56830 | (16.6) |
| 44 | (2.18) | 55500 | (16.3) | 62650 | (18.4) |
| 43 | (2.26) | 59440 | (17.4) | 67160 | (19.8) |
| 42 | (2.37) | 64620 | (18.9) | 74160 | (21.7) |
| 41 | (2.44) | 69175 | (20.2) | 78150 | (22.9) |

Gas Notice 10
Sizing Natural Gas, Propane and Butane Orifices
Continued

| Orifice sizing table for Propane and Butane Gas 11 inches Water Column (2.75 kPa) | | | | | |
|---|----------------|------------------------------------|---------|---------------|---------|
| Drill Size | | Orifice Capacity Btu/h (kW) | | | |
| Diameter | (mm) | Propane | | Butane | |
| 40 | (2.49) | 72000 | (21.1) | 81400 | (23.8) |
| 39 | (2.53) | 74380 | (21.8) | 84000 | (24.6) |
| 38 | (2.58) | 77400 | (22.7) | 87400 | (25.6) |
| 37 | (2.64) | 81125 | (23.8) | 91640 | (26.9) |
| 36 | (2.71) | 85170 | (25) | 96150 | (28.3) |
| 35 | (2.79) | 90600 | (26.6) | 102700 | (30.1) |
| 34 | (2.82) | 92500 | (27.1) | 104500 | (31) |
| 33 | (2.87) | 96000 | (28.1) | 108300 | (31.7) |
| 32 | (2.95) | 100900 | (29.6) | 114000 | (33.4) |
| 31 | (3.05) | 108125 | (31.7) | 122130 | (35.8) |
| 1/64 | (0.397) | 1686 | (0.492) | 1897 | (0.556) |
| 1/32 | (0.794) | 7030 | (2.1) | 7935 | (2.3) |
| 3/64 | (1.19) | 15960 | (4.7) | 17970 | (5.3) |
| 1/16 | (1.59) | 28320 | (8.3) | 32000 | (9.4) |
| 5/64 | (1.98) | 45150 | (13.2) | 51000 | (14.9) |
| 3/32 | (2.38) | 65920 | (19.3) | 74500 | (21.8) |
| 7/64 | (2.78) | 89825 | (26.3) | 101500 | (29.7) |
| 1/8 | (3.18) | 117150 | (34.3) | 132400 | (38.8) |

Gas Notice 11 (A)

Copper and Corrugated Stainless Steel Tubing for Residential Use

Rationale: To explain requirements to protect copper and corrugated stainless steel tubing systems from mechanical damage.

The following shall govern the installation of semi-rigid tubing and corrugated piping systems in residential and multiple-family dwellings.

Tubing Location and Protection

1. Tubing may be run parallel, diagonal or at right angle to the floor joist. When run parallel, it shall be fastened to the centre of the vertical face. When run at right angle or diagonally to the joists or partitions, it shall be installed through drilled holes as near as practicable to the centre of the joist. The diameter of the drilled hole shall be at least one and one half times as large as the diameter of the tubing. Alternatively, tubing may be run at right angles to the joists by fastening to the underside of every second joist. Protection shall be provided by conduit, duct work, centre beams. Where tubing is run in an open area and where it is subject to mechanical damage, it shall be protected by running a 1-inch dimensional lumber fastened adjacent to one side the tubing.
2. When tubing is installed inside a partition, a steel plate shall be used to protect the tubing where it extends through the floor or top-plate or other structural member of the wall.
3. Tubing shall be protected with a plate at least 4 inches (100 mm) square of not less than 16 gauge steel when it passes through a stud, joist, plate or other structural member and where the tubing is less than 1 ¾ inches (45 mm) from the exposed edge.
4. Concealed piping or tubing shall be installed where it can be inspected and tested in its final position prior to being concealed.

Corrugated Stainless Steel Tubing

Where the current CSA B-149.1 capacity and pipe sizing tables do not provide information to size corrugated stainless steel tubing, the manufacturer's certified instructions for sizing shall be followed.

In all cases, when manufacturer's installation instructions exceed the minimum requirements stated here, manufacturer's instructions shall be followed.

Gas Notice 11 (B)

Copper and Corrugated Stainless Steel Tubing for Appliance Connections

Rationale: To explain requirements when using copper or corrugated stainless steel tubing for appliance connections.

Appliance Connections

1. When using copper or corrugated stainless steel tubing in piping systems to appliances such as furnaces, boilers and water heaters, the tubing shall be connected directly to the appliance shut-off valve on the drop, upstream of the steel dirt pocket. When this method is used, the tubing is to be attached to the appliance casing. A union shall be provided to allow the burner or control to be removed for servicing.

Refer to Figure 11 (C).

2. When using copper or corrugated stainless steel tubing in piping systems to appliances such as ranges and dryers, the appliance shall be connected to the supply tubing with an approved flexible metal connector. The transition fitting from the supply tubing to the flexible connector shall be fastened directly to the building structure. Each appliance of the above type shall have an acceptable restraining device installed in a manner that will effectively prevent undue strain on the connector when moved.
3. Appliances such as space heaters, gas fireplaces and decorative appliances may be directly connected with copper or corrugated stainless steel tubing. These appliances shall be secured to prevent dislodgment of the vent. The appliance shut-off valve shall be located per section 5.18 of the current CSA B-149.1.

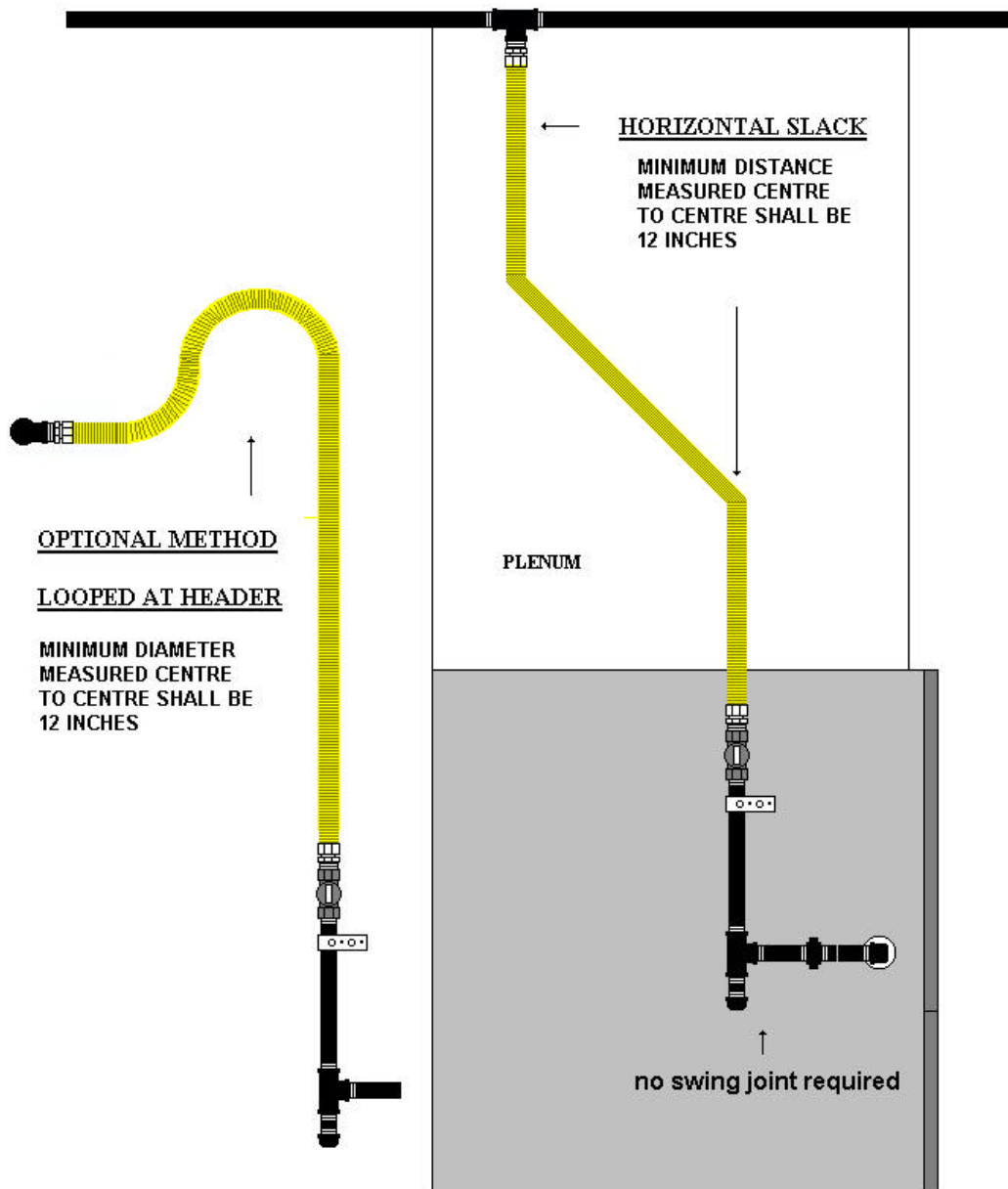
Gas Notice 11 (C)

Rationale: To illustrate how to use slack when installing semi-rigid tubing to provide adequate flexibility in the piping system.

Refer to Figure 11 (C).

Figure 11 (C)

**ACCEPTABLE METHOD OF INSTALLING SEMI-RIGID TUBING
USING HORIZONTAL SLACK WITH NO SWING JOINTS**



Gas Notice 12

Propane storage tanks on a construction site

Rationale: To explain minimum requirements for protection of a propane delivery system installed at a temporary site.

1. Permits and drawings must be submitted for approval to the Mechanical and Engineering Branch prior to installation of any propane storage tank.
2. Installation of propane storage tanks up to 2,000 gallon maximum capacity must be at least 10 feet (3.05 m) from all buildings, hoardings, driveways and excavations below grade.
3. All propane tank installations must be protected from vehicle traffic—45 gallon drums filled with sand placed 4 feet (1.2 m) apart around the complete propane installation is acceptable.
4. All supply hoses from tank installations to buildings and hoarding must be protected from damage. It is acceptable to use 2" X 4" lumber to protect hoses.
5. Any mobile propane tank used at a construction site must be adequately blocked, and the installation must be protected from physical damage by an acceptable method, such as that used to protect stationary propane tank installations.
6. Steel piping must be used where it passes through walls, floors and hoarding. Hoses **are not allowed** for these applications.
7. Gas shut-off valves are to be installed at building entrances and on all branch lines on piping manifolds supplying construction heaters.
8. The hose and any connectors used shall be approved for use by an recognized approval agency. The hose shall be sized properly for the rated input of the construction heater being supplied. The hose shall not be less than 15 feet (4.6 m) nor more than 50 feet (16 m), per the current CSA B149.1 Section 5.20.3 (c). No connections are allowed in the hose.

Gas Notice 13 (A)
Sizing a manifold downstream of gas meter

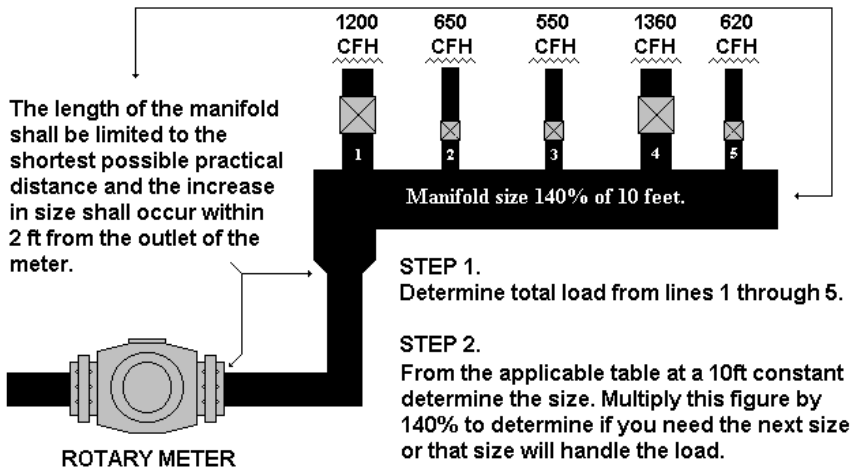
Rationale: To explain requirements for sizing pipe immediately downstream of the gas meter so that there is adequate capacity to meet the maximum demand by branch lines to all downstream appliances.

Refer to Section 5.6.2 of current CSA B-149.1

Refer to Figure 13 (A).

Figure 13 (A)

**DETERMINING MANIFOLD SIZE
DOWNSTREAM OF GAS METER.**



Example: 7 inches w.c. system using Table A1

| | | |
|--------|----------|--|
| Line 1 | 1200 CFH | Using Table A1 @ 10 ft constant |
| Line 2 | 650 CFH | |
| Line 3 | 550 CFH | The table value for 2 inch piping is 3,639 CFH |
| Line 4 | 1360 CFH | |
| Line 5 | 620 CFH | Multiply 3,639 by 140% = 5,094 CFH |

Total Load 4380 CFH A 2 inch manifold would be correctly sized for this application.

Note: For pipe sizing above 2 1/2 inch, refer to Manitoba Gas Notice 13 (B).

Gas Notice 13 (B) Sizing pipe

Rationale: To provide fitters pipe sizing and capacity tables for pipe in diameters 4 inches and over, which is no longer available in the current CSA B-149.1. Pipe sizing and capacity tables contained in the current CSA B-149.1 shall be used to calculate pipe size under 4 inch diameter

Table 1

Maximum capacity of schedule 40 pipe in **thousands of BTUH** for a starting pressure up to 7 inches Water Column with a maximum loss in pressure of 0.5 inches Water Column. Fittings are not included. (based on a 0.60 Relative Density Gas)

| Length of Pipe (feet) | Nominal Pipe Size in inches | | | |
|-----------------------|-----------------------------|-------|-------|--------|
| | 4 | 5 | 6 | 8 |
| 10 | 20913 | 37835 | 61264 | 125875 |
| 20 | 14374 | 26004 | 42107 | 86513 |
| 30 | 11543 | 20882 | 33813 | 69473 |
| 40 | 9879 | 17872 | 28940 | 59640 |
| 50 | 8756 | 15840 | 25649 | 52698 |
| 60 | 7933 | 14352 | 23240 | 47748 |
| 70 | 7298 | 13204 | 21380 | 43928 |
| 80 | 6790 | 12284 | 19890 | 40866 |
| 90 | 6371 | 11525 | 18662 | 38344 |
| 100 | 6018 | 10887 | 17628 | 36219 |
| 125 | 5333 | 9649 | 15624 | 32100 |
| 150 | 4832 | 8742 | 14156 | 29085 |
| 175 | 4446 | 8043 | 13032 | 26758 |
| 200 | 4136 | 7482 | 12116 | 24893 |
| 250 | 3666 | 6632 | 10738 | 22062 |
| 300 | 3321 | 6009 | 9729 | 19900 |
| 350 | 3056 | 5528 | 8951 | 18391 |
| 400 | 2843 | 5143 | 8327 | 17109 |
| 450 | 2667 | 4825 | 7813 | 16053 |
| 500 | 2519 | 4558 | 7380 | 15163 |
| 550 | 2393 | 4329 | 7009 | 14401 |
| 600 | 2283 | 4130 | 6687 | 13739 |
| 700 | 2100 | 3799 | 6152 | 12640 |
| 800 | 1954 | 3534 | 5723 | 11759 |
| 900 | 1833 | 3316 | 5370 | 11033 |
| 1000 | 1732 | 3133 | 5072 | 10422 |
| 1500 | 1390 | 2516 | 4073 | 8369 |
| 2000 | 1190 | 2153 | 3486 | 7163 |

Gas Notice 13 (B)
Sizing pipe
continued

Table 2

Maximum capacity of schedule 40 pipe in **thousands of BTUH** for a starting pressure from 7 inches Water Column up to 14 inches Water Column with a maximum loss in pressure of 1.0 inch Water Column. Fittings are not included. (based on a 0.60 Relative Density Gas)

| Length of Pipe (feet) | Nominal Pipe Size in inches | | | |
|-----------------------|-----------------------------|-------|-------|--------|
| | 4 | 5 | 6 | 8 |
| 10 | 30429 | 55050 | 89138 | 183145 |
| 20 | 20913 | 37835 | 61264 | 125875 |
| 30 | 16794 | 30383 | 49197 | 101082 |
| 40 | 14374 | 26004 | 42107 | 86513 |
| 50 | 12739 | 23047 | 37318 | 76675 |
| 60 | 11543 | 20882 | 33813 | 69473 |
| 70 | 10619 | 19211 | 31108 | 63914 |
| 80 | 9879 | 17872 | 28940 | 59460 |
| 90 | 9269 | 16769 | 27153 | 55789 |
| 100 | 8756 | 15840 | 25649 | 52698 |
| 125 | 7760 | 14039 | 22732 | 46705 |
| 150 | 7031 | 12720 | 20597 | 42319 |
| 175 | 6468 | 11702 | 18949 | 38933 |
| 200 | 6018 | 10887 | 17628 | 36219 |
| 250 | 5333 | 9649 | 15624 | 32100 |
| 300 | 4832 | 8742 | 14156 | 29085 |
| 350 | 4446 | 8043 | 13023 | 26758 |
| 400 | 4136 | 7482 | 12116 | 24893 |
| 450 | 3881 | 7021 | 11368 | 23357 |
| 500 | 3666 | 6632 | 10738 | 22062 |
| 550 | 3481 | 6298 | 10198 | 20954 |
| 600 | 3321 | 6009 | 9729 | 19990 |
| 700 | 3056 | 5528 | 8951 | 18391 |
| 800 | 2843 | 5143 | 8327 | 17109 |
| 900 | 2667 | 4825 | 7813 | 16053 |
| 1000 | 2519 | 4558 | 7380 | 15163 |
| 1500 | 2023 | 3660 | 5927 | 12177 |
| 2000 | 1732 | 3133 | 5072 | 10422 |

Gas Notice 13 (B)
Sizing pipe
continued

Table 3

Maximum capacity of schedule 40 pipe in **thousands of BTUH** for a starting pressure of 2 PSI with a maximum loss in pressure of 1.5 PSI. Fittings are not included. (based on a 0.60 Relative Density Gas)

| Length of Pipe (feet) | Nominal Pipe Size in inches | | | |
|-----------------------|-----------------------------|--------|--------|---------|
| | 4 | 5 | 6 | 8 |
| 10 | 238475 | 431435 | 698593 | 1435342 |
| 20 | 163903 | 296523 | 480139 | 986502 |
| 30 | 131620 | 238118 | 385569 | 792196 |
| 40 | 112649 | 203798 | 329997 | 678017 |
| 50 | 99839 | 180623 | 292470 | 600914 |
| 60 | 90461 | 163657 | 264999 | 544472 |
| 70 | 83223 | 150563 | 243796 | 500907 |
| 80 | 77423 | 140070 | 226805 | 465998 |
| 90 | 72644 | 131423 | 212804 | 437230 |
| 100 | 68619 | 124141 | 201013 | 413005 |
| 125 | 60816 | 110024 | 178154 | 366039 |
| 150 | 55103 | 99690 | 161421 | 331658 |
| 175 | 50694 | 91713 | 148505 | 305121 |
| 200 | 47161 | 85321 | 138155 | 283856 |
| 250 | 41798 | 75619 | 122444 | 251576 |
| 300 | 37872 | 68516 | 110943 | 227946 |
| 350 | 34842 | 63034 | 102067 | 209708 |
| 400 | 32414 | 58641 | 94953 | 195093 |
| 450 | 30413 | 55021 | 89091 | 183049 |
| 500 | 28728 | 51972 | 84155 | 172907 |
| 550 | 27284 | 49360 | 79926 | 164217 |
| 600 | 26029 | 47091 | 76251 | 156666 |
| 700 | 23947 | 43323 | 70150 | 144131 |
| 800 | 22278 | 40304 | 65261 | 134086 |
| 900 | 20902 | 37816 | 61232 | 125809 |
| 1000 | 19744 | 35720 | 57839 | 118838 |
| 1500 | 15855 | 28685 | 46447 | 95431 |
| 2000 | 13570 | 24550 | 39753 | 81677 |

Gas Notice 13 (B)
Sizing pipe
continued

Table 4

Maximum capacity of schedule 40 pipe in **thousands of BTUH** for a starting pressure of 5 PSI with a maximum loss in pressure of 2.5 PSI. Fittings are not included. (based on a 0.60 Relative Density Gas)

| length of Pipe (feet) | Nominal Pipe Size in inches | | | |
|-----------------------|-----------------------------|--------|---------|---------|
| | 4 | 5 | 6 | 8 |
| 10 | 375431 | 679208 | 1099795 | 2259660 |
| 20 | 258032 | 466816 | 755883 | 1553051 |
| 30 | 207209 | 374870 | 607001 | 1247155 |
| 40 | 177344 | 320840 | 519514 | 1067403 |
| 50 | 157177 | 284355 | 460436 | 946020 |
| 60 | 142413 | 257646 | 417188 | 857163 |
| 70 | 131018 | 237031 | 383808 | 788579 |
| 80 | 121887 | 220512 | 357059 | 733620 |
| 90 | 114363 | 206899 | 335017 | 688332 |
| 100 | 108027 | 195435 | 316455 | 650194 |
| 125 | 95742 | 173211 | 280468 | 576255 |
| 150 | 86749 | 156941 | 254125 | 522129 |
| 175 | 79808 | 144384 | 233791 | 480352 |
| 200 | 74246 | 134322 | 217498 | 446875 |
| 250 | 65803 | 119047 | 192764 | 396057 |
| 300 | 59622 | 107865 | 174658 | 358856 |
| 350 | 54852 | 99234 | 160683 | 330143 |
| 400 | 51029 | 92318 | 149485 | 307134 |
| 450 | 47879 | 86619 | 140257 | 288174 |
| 500 | 45226 | 81820 | 132486 | 272208 |
| 550 | 42953 | 77708 | 125828 | 258528 |
| 600 | 40978 | 74135 | 120042 | 246640 |
| 700 | 37699 | 68203 | 110437 | 226905 |
| 800 | 35072 | 63450 | 102740 | 211092 |
| 900 | 32907 | 59533 | 96398 | 198060 |
| 1000 | 31084 | 56235 | 91057 | 187087 |
| 1500 | 24961 | 45158 | 73122 | 150237 |
| 2000 | 21364 | 38650 | 62583 | 128584 |

Gas Notice 13 (B)
continued

Table 5

Maximum capacity of schedule 40 in thousands of BTUH for a starting pressure of 10 PSI with a maximum loss in pressure of 5 PSI. Fittings are not included. (based on a 0.60 Relative Density Gas)

| length of Pipe (feet) | Nominal Pipe Size in inches | | | |
|-----------------------|-----------------------------|---------|---------|---------|
| | 4 | 5 | 6 | 8 |
| 10 | 603785 | 1092332 | 1768738 | 3634082 |
| 20 | 414978 | 750754 | 1215644 | 2497684 |
| 30 | 333242 | 602882 | 976205 | 2005728 |
| 40 | 285212 | 515989 | 835505 | 1716644 |
| 50 | 252778 | 457311 | 740493 | 1521430 |
| 60 | 229053 | 414357 | 670940 | 1378526 |
| 70 | 210710 | 381203 | 617256 | 1268266 |
| 80 | 196025 | 354636 | 574238 | 1179840 |
| 90 | 183923 | 332743 | 538789 | 1107005 |
| 100 | 173733 | 314307 | 508936 | 1045670 |
| 125 | 153976 | 278565 | 451061 | 926758 |
| 150 | 139514 | 252400 | 408694 | 839710 |
| 175 | 128351 | 232205 | 375993 | 772522 |
| 200 | 119406 | 216022 | 349789 | 718683 |
| 250 | 105827 | 191456 | 310012 | 636956 |
| 300 | 95887 | 173473 | 280893 | 577128 |
| 350 | 88215 | 159593 | 258418 | 530950 |
| 400 | 82067 | 148471 | 240408 | 439947 |
| 450 | 77001 | 139305 | 225567 | 463454 |
| 500 | 72734 | 131587 | 213069 | 437776 |
| 550 | 69079 | 124974 | 202361 | 415775 |
| 600 | 65903 | 119227 | 193056 | 396567 |
| 700 | 60630 | 109687 | 177609 | 364919 |
| 800 | 56404 | 102043 | 165231 | 339487 |
| 900 | 52922 | 95744 | 155031 | 318529 |
| 1000 | 49990 | 90439 | 146441 | 300881 |
| 1500 | 40144 | 72626 | 117598 | 241618 |
| 2000 | 34358 | 62158 | 100648 | 206794 |

Gas Notice 13 (B)
continued

Table 6

Maximum capacity of schedule 40 in **thousands of BTUH** for a starting pressure of 20 PSI with a maximum loss in pressure of 10 PSI. Fittings are not included. (based on a 0.60 Relative Density Gas)

| length of Pipe (feet) | Nominal Pipe Size in inches | | | |
|-----------------------|-----------------------------|---------|---------|---------|
| | 4 | 5 | 6 | 8 |
| 10 | 1028373 | 1860471 | 3012533 | 6189605 |
| 20 | 706795 | 1278691 | 2070497 | 4254081 |
| 30 | 567581 | 1026834 | 1662682 | 3416177 |
| 40 | 485776 | 878837 | 1423041 | 2923806 |
| 50 | 430534 | 778897 | 1261215 | 2591315 |
| 60 | 390095 | 705737 | 1142752 | 2347919 |
| 70 | 358883 | 649269 | 1105317 | 2160056 |
| 80 | 333871 | 604020 | 978048 | 2009515 |
| 90 | 313260 | 566732 | 917670 | 1885462 |
| 100 | 295904 | 535332 | 866826 | 1780996 |
| 125 | 262254 | 474455 | 768252 | 1578464 |
| 150 | 237621 | 429890 | 696092 | 1430203 |
| 175 | 218608 | 395494 | 640395 | 1315768 |
| 200 | 203373 | 367930 | 595764 | 1224069 |
| 250 | 180246 | 326090 | 528015 | 1084869 |
| 300 | 163316 | 295461 | 478420 | 982970 |
| 350 | 150248 | 271820 | 440140 | 904320 |
| 400 | 139777 | 252877 | 409466 | 841295 |
| 450 | 131148 | 237266 | 384188 | 789360 |
| 500 | 123882 | 224120 | 362902 | 745625 |
| 550 | 117656 | 212856 | 344664 | 708152 |
| 600 | 112246 | 203069 | 328815 | 675590 |
| 700 | 103265 | 186821 | 302506 | 621534 |
| 800 | 96068 | 173801 | 281423 | 578218 |
| 900 | 90137 | 163071 | 264050 | 542523 |
| 1000 | 85143 | 154036 | 249420 | 512464 |
| 1500 | 68373 | 123697 | 200293 | 411526 |
| 2000 | 58519 | 105868 | 171425 | 352213 |

Gas Notice 13 (C)

Sizing pipe for 15 PSI Supply Pressure

Rationale: To provide fitters a pipe sizing and capacity table for gas with a starting pressure of 15 psi, which is no longer available in the current CSA B-149.1.

Maximum capacity of schedule 40 pipe in BTUH for a starting pressure of 15 PSI with a maximum loss in pressure of 7.5 PSI. Fittings are not included.

| Length of Pipe (feet) | Nominal Pipe Size in inches | | | | | | | |
|-----------------------|-----------------------------|----------|-----------|-----------|-----------|------------|------------|------------|
| | ½" | 1" | 2" | 3" | 4" | 5" | 6" | 8" |
| 10 | 7013751 | 27557687 | 162731947 | 457649588 | 932242483 | 1684729508 | 2725561578 | 5592613869 |
| 50 | 1662139 | 11566936 | 68304356 | 192091724 | 391295154 | 707140583 | 1144014629 | 2347417917 |
| 100 | 1143646 | 7958712 | 46997290 | 132170056 | 269233372 | 486553031 | 787147279 | 1615157340 |
| 200 | 786894 | 5476047 | 32336815 | 90940533 | 185247907 | 334776221 | 541602199 | 1111320321 |
| 300 | 632313 | 4400313 | 25984455 | 73075849 | 148857145 | 269011582 | 435207923 | 893008578 |
| 400 | 541428 | 3767833 | 22249572 | 62572271 | 127461120 | 230345124 | 372653186 | 764651731 |
| 500 | 480029 | 3340553 | 19726426 | 55476449 | 113006772 | 204223522 | 330393563 | 677938683 |
| 600 | 435068 | 3027666 | 17878786 | 50280350 | 102422201 | 185095303 | 299447860 | 614440807 |
| 700 | 400355 | 2786101 | 16452312 | 46268689 | 94250358 | 170327315 | 275556155 | 565417118 |
| 800 | 372533 | 2592484 | 15308974 | 43053289 | 87700517 | 158490576 | 256406635 | 526123980 |
| 900 | 349601 | 2432901 | 14366614 | 40403098 | 82302017 | 148734519 | 240623250 | 493737855 |
| 1000 | 330287 | 2298491 | 13572905 | 38170959 | 77755101 | 140517425 | 227329606 | 466460459 |
| 1100 | 313736 | 2183311 | 12892751 | 36258168 | 73858703 | 133475934 | 215937855 | 443085585 |
| 1200 | 299351 | 2083207 | 12301624 | 34595747 | 70472313 | 127356120 | 206037198 | 422770301 |

Gas Notice 13 (C)
Sizing pipe for 15 PSI Supply Pressure
Continued

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Maximum capacity of schedule 40 pipe in BTUH for a starting pressure of 15 PSI with a maximum loss in pressure of 7.5 PSI. Fittings are not included.

| Length of Pipe (feet) | Nominal Pipe Size in inches | | | | | | | |
|-----------------------|-----------------------------|---------|----------|----------|----------|-----------|-----------|-----------|
| | ½" | 1" | 2" | 3" | 4" | 5" | 6" | 8" |
| 1300 | 286702 | 1995178 | 11781804 | 33133860 | 67494416 | 121974526 | 197330835 | 404905607 |
| 1400 | 275467 | 1916996 | 11320129 | 31835495 | 64849619 | 117194902 | 189598342 | 389039208 |
| 1500 | 265404 | 1846967 | 10906595 | 30672519 | 62480611 | 112913679 | 182672164 | 374827296 |
| 1600 | 256324 | 1783777 | 10533447 | 29623117 | 60342955 | 109050551 | 176422381 | 362003289 |
| 1700 | 248078 | 1726389 | 10194564 | 28670081 | 58401600 | 105542174 | 170746516 | 350356910 |
| 1800 | 240546 | 1673974 | 9885049 | 27799635 | 56628480 | 102337828 | 165562513 | 339719789 |
| 1900 | 233632 | 1625860 | 9600926 | 27000598 | 55000824 | 99396362 | 160803799 | 329955326 |
| 2000 | 227256 | 1581493 | 9338933 | 26263796 | 53499942 | 96683999 | 156415727 | 320951386 |
| 2100 | 221354 | 1540415 | 9096362 | 25581617 | 52110328 | 94172716 | 152352965 | 312614953 |

Gas Notice 14

Flexible connectors

Rationale: To clarify requirements for using flexible connectors on moveable and stationary domestic appliances.

1. Flexible connectors for domestic movable appliances:

- (a) When using flexible connectors for appliances such as dryers, ranges etc. these connectors shall comply with the current CGA 6.10/ANSI Z21.24 "Metal connectors for gas appliances". The minimum length shall be 3 feet (900 mm). Maximum length 6 feet (1.8 m)
- (b) Each appliance of the above type shall have an acceptable restraining device installed in a manner that will effectively prevent undue strain on the connector when the appliance is moved.

2. Flexible connectors for domestic stationary appliances:

- (a) Flexible connectors for domestic appliances shall comply with the current CGA 6.10/ANSI Z21.24 "Metal connectors for gas appliances". The maximum allowable horizontal deflection from centre to centre is 1 1/2 inches. Refer to CSA B149.1 Section 5.21.3.
- (b) When a flexible connector is installed on a water heater the connector shall follow the contour of the appliance.
- (c) A flexible connector may not pass through the walls of a cabinet unless it is approved to do so and this approval is stated within the manufacturer's certified installation instructions.

3. CGA Brazed-end flexible connectors

All CGA **brazed-end** flexible connectors must be replaced when the appliance they serve is being replaced.

All AGA flexible connectors must be replaced immediately.

Gas Notice 15 (A)

Installation of buried steel pipe to supply residential outbuildings

Rationale: To illustrate general requirements for installation of buried steel gas piping including the requirement to obtain a permit for all installations.

1. Due to the corrosive nature of the soil, steel gas piping, tubing or fittings laid underground shall be protected against corrosion in accordance with good engineering practice and in accordance with the manufacturer's instructions.
2. Indicate clearly on the permit that the installation involves underground or concealed pipe.
3. Utility shall inspect piping and witness pressure test prior to burial or concealing.

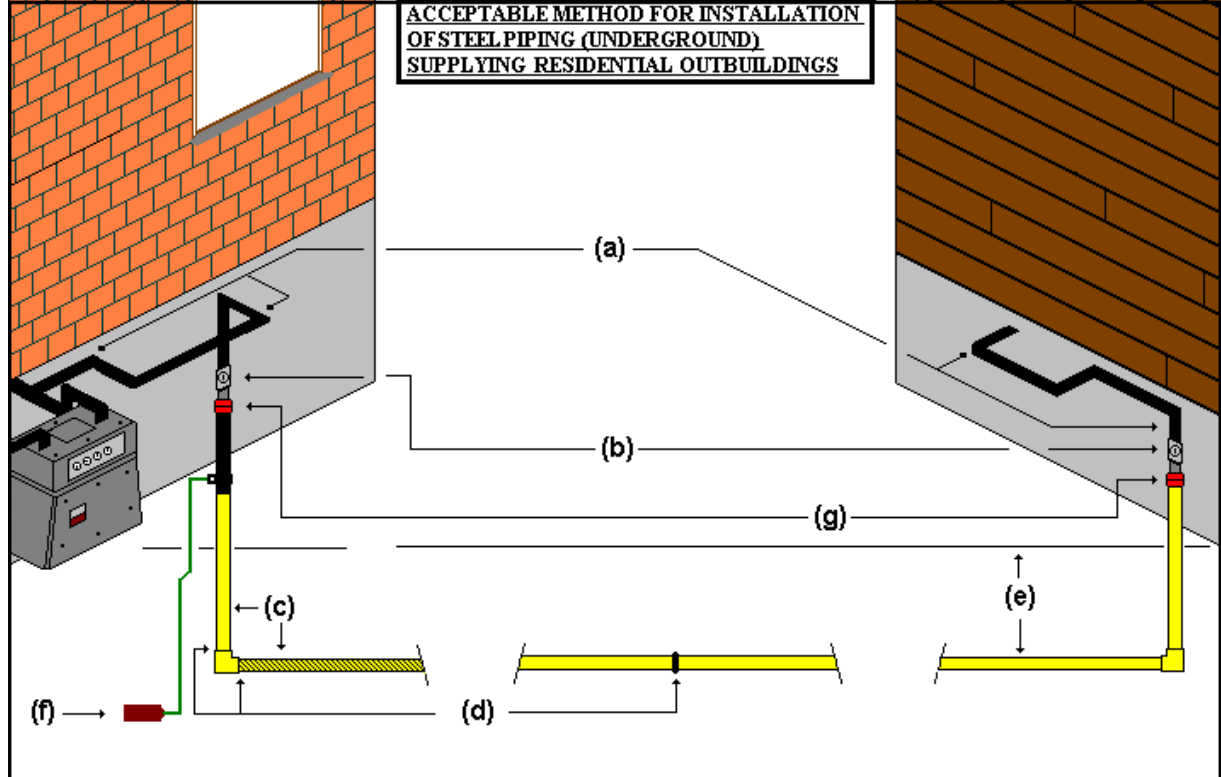
Refer to Figure 15 (A)

Legend for Figure 15 (A)

- (A) I The minimum distance of lateral run shall be 12 inches (30 cm).
 - II An offset shall be incorporated into the swing to allow for ground settling or building movement.
 - III The connection at the meter shall not interfere with the Utility meter swing.
- (B) A shut-off valve at point of exit and point of entry is required and shall be installed minimum 10 inches (25 cm) above grade.
- (C) Piping shall be factory coated or double-wrapped.
- (D) Connections shall be welded and stamped with the appropriate identification. Welding shall be done to an approved procedure and the welder shall hold an appropriate valid High Pressure Welders Licence issued by the Mechanical and Engineering Branch of Manitoba Labour.
- (E) Minimum depth 15 inches (40 cm). Trench shall be properly graded with no dips or sags. Backfill shall contain no sharp objects that can damage pipe.
- (F) Anode shall be installed minimum 12 inches (30 cm) below level of the pipe and shall be attached to the riser by stainless steel clamp(s) above grade.
- △ (G) Dielectric couplings or unions are required to isolate cathodic protection.

Note: Steel piping shall be tested and inspected prior to concealment. Pressure tests shall be conducted per B149 procedure and shall be witnessed by the Utility.

Figure 15 (A)



See 'Legend' on Gas Notice 15 (A) page

Gas Notice 15 (B)

Installation of buried copper tubing to supply residential outbuildings

Rationale: To illustrate general requirements regarding installation of buried copper tubing including the requirement to obtain a permit for all installations.

1. Permits and drawings must be submitted for approval to the Mechanical and Engineering Branch.
2. Indicate clearly on the permit that the installation involves underground or concealed pipe.

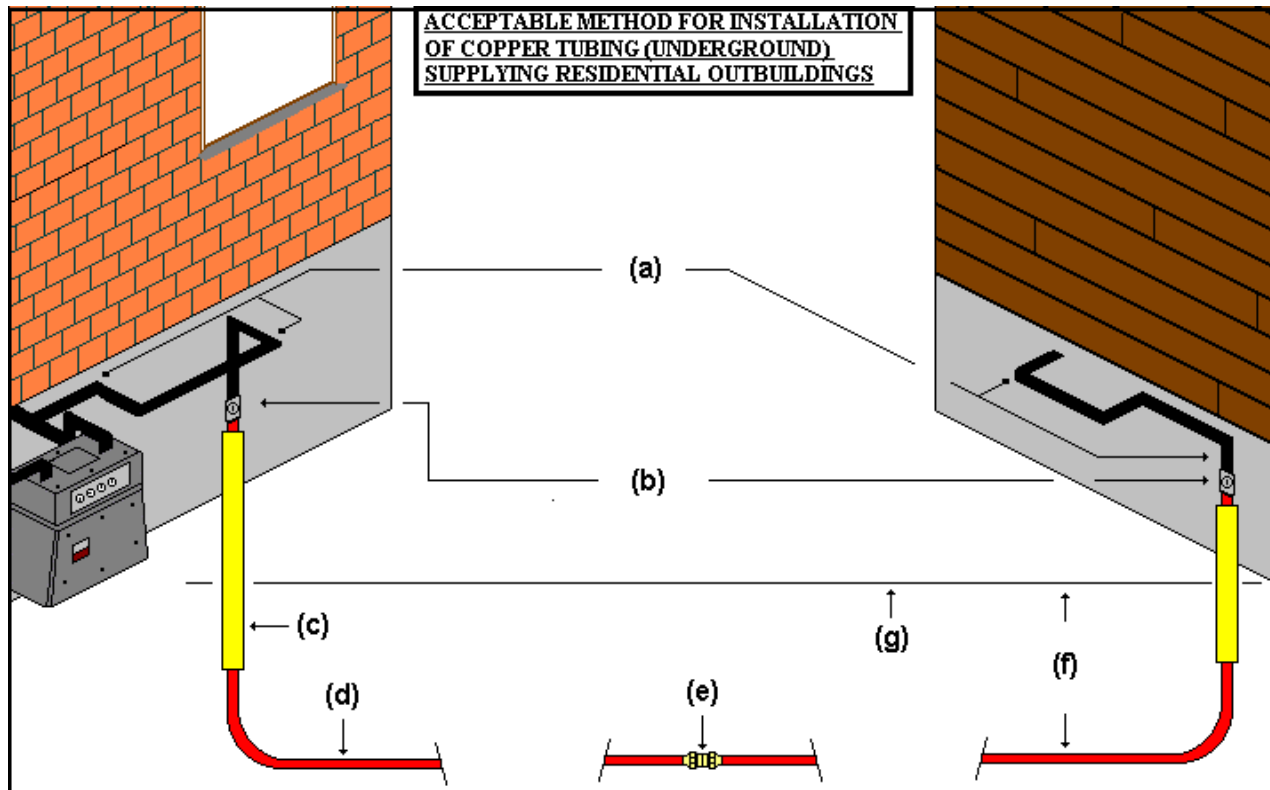
Refer to Figure 15 (B).

Legend for Figure 15 (B)

- (A) I The minimum distance of lateral run shall be 12 inches (30 cm).
 - II An offset shall be incorporated into the swing to allow for ground settling or building movement.
 - III The connection at the meter shall not interfere with the Utility meter swing.
- (B) A shut-off valve at point of exit and point of entry is required and shall be installed minimum 10 inches (25 cm) above grade.
- (C) Protective sleeve.
- (D) Type "G" or "L" externally coated with extruded polyethylene or PVC resin at time of manufacture, or Type "K".
- (E) Connections shall be approved mechanical compression fittings, or approved flared fittings or brazed. If brazed the material used shall have a melting point of at least 1000 degrees Fahrenheit and the brazer shall hold a valid High Pressure Brazers Licence issued by the Mechanical and Engineering Branch of Manitoba Labour.
- (F) Minimum depth 15 inches (40 cm). Trench shall be properly graded with no dips or sags. Backfill shall contain no sharp objects that can damage pipe.
- (G) Grade level.

Note: Tubing shall be tested and inspected prior to concealment. Pressure tests shall be conducted per B149 procedure and shall be witnessed by the Utility.

Figure 15 (B)



See 'Legend' on Gas Notice 15 (B) page.

Gas Notice 15 (C)

Installation of buried plastic pipe to supply residential outbuildings

Rationale: To illustrate general requirements regarding installation of buried plastic tubing including the requirement to obtain a permit for all installations.

1. Permits and drawings must be submitted for approval to the Mechanical and Engineering Branch.
2. Indicate clearly on the permit that the installation involves underground or concealed pipe.

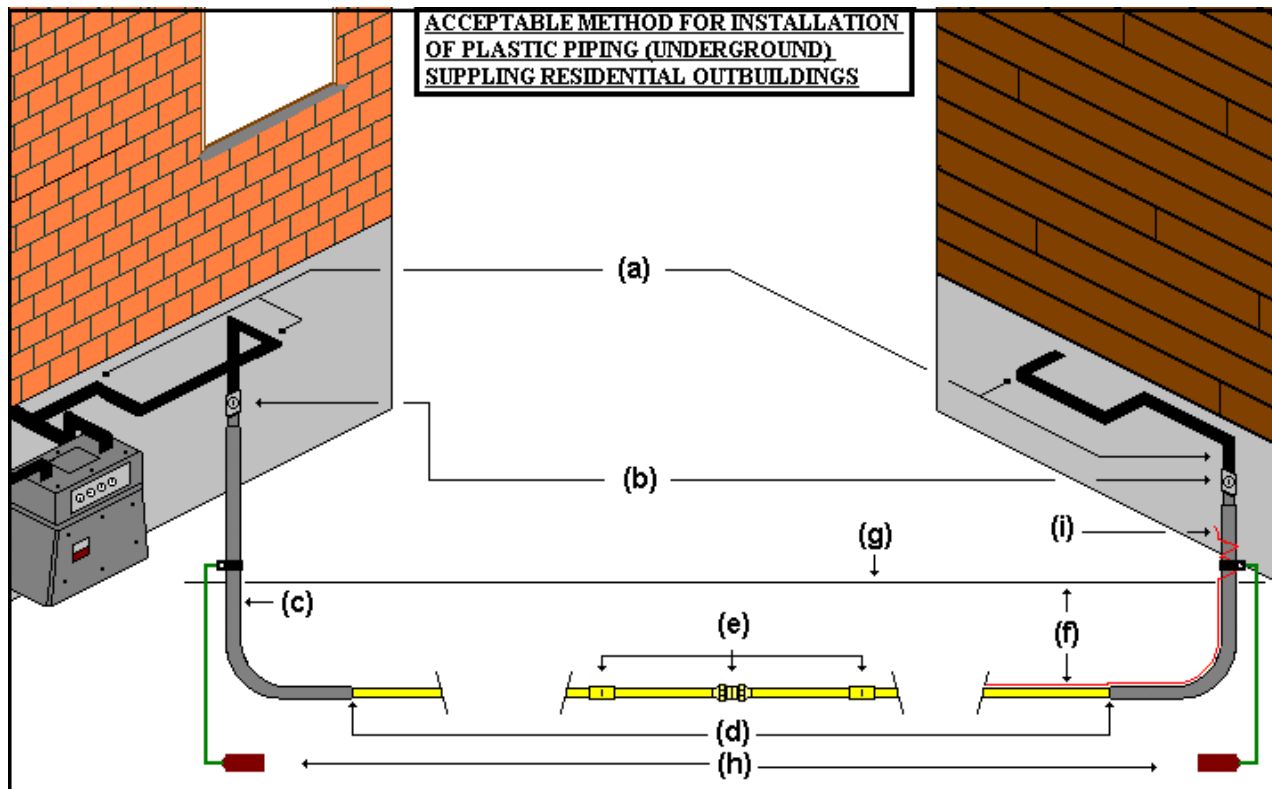
Refer to Figure 15 (C).

Legend for Figure 15 (C)

- (A) I The minimum distance of lateral run shall be 12 inches (30 cm).
 - II An offset shall be incorporated into the swing to allow for ground settling or building movement.
 - III The connection at the meter shall not interfere with the Utility meter swing.
- (B) A shut-off valve at point of exit and point of entry is required and shall be installed minimum 10 inches (25 cm) above grade. At point of exit, shut-off valve shall be identified as to what outbuilding it serves.
- (C) Anodeless risers, or steel risers with appropriate cathodic protection (anodes).
- (D) Approved transition fittings.
- (E) Connections shall be approved mechanical fittings or approved fusions. All personnel performing fusions shall be certified in the applicable procedures by the manufacturer or an organization acceptable to the inspecting authority. See Manitoba Gas Notice 21.
- (F) Minimum depth 15 inches (40 cm). Trench shall be properly graded with no dips or sags. Backfill shall contain no sharp objects that can damage pipe.
- (G) Grade level.
- (H) If steel risers are used each riser shall have cathodic protection. The anodes shall be attached to the riser above grade by means of a clamp. Anodeless risers do not require cathodic protection.
- (I) Plastic piping shall be accompanied by a tracer wire throughout its entire length which shall terminate above grade.

Note: Plastic pipe shall be tested and inspected prior to concealment. For ploughed plastic pipe, refer to Gas Notice 21. Pressure tests shall be conducted per B149 procedure and shall be witnessed by the Utility.

Figure 15 (C)



See 'Legend' on Gas Notice 15 (C) page.

Gas Notice 16

Clarification of appliance vent termination

Rationale: To highlight and explain the difference between the current CSA B-149.1 Code requirements and minimum standards acceptable to Manitoba inspecting authorities regarding appliance vent termination.

The current B149.1 allows an appliance vent to terminate directly over the centre-line of a regulator providing that the appliance vent terminates at a height of 15 feet or more above the meter/regulator assembly.

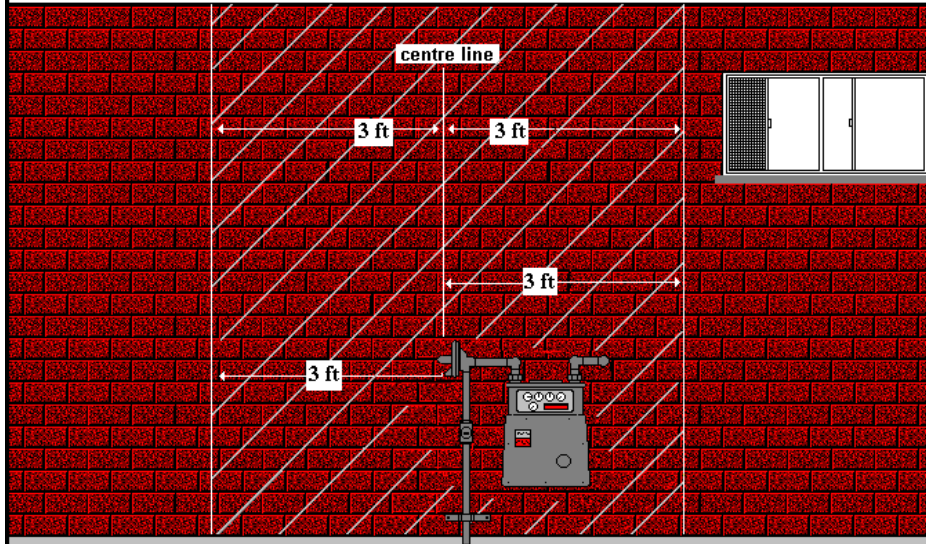
However, moisture in flue products may condense at the outlet of the vent in cold weather and there is potential for this condensation to drip down onto and interfere with a regulator installed directly below.

Therefore, in Manitoba, an appliance vent must **never** terminate within 3 feet (900 mm) horizontally of the vertical centre of the regulator vent outlet.

Refer to Figure 16.

Figure 16

RE: CLARIFICATION OF SECTION 7.14.8 (d) & (e)
OF THE CURRENT B 149 GAS CODES



Space within the confines of the shaded outlined area extends all the way to the roof line and are prohibited locations for gas vent terminations.

Gas Notice 17

Unvented agricultural heaters

Rationale: To explain minimum requirements to provide adequate air changes in buildings heated by unvented appliances.

Mechanical means of building ventilation must be interlocked with the heater to prevent the flow of gas to the burner on failure of airflow from building exhaust fan.

Rate of dedicated ventilation shall meet or exceed the appliance manufacturer's requirements as stated in the manufacturer's certified instructions.

Refer to 6.21.1 and 6.21.2 of the current CSA B149.1.

Gas Notice 18

Piping to commercial cooking equipment

Rationale: To explain general requirements for commercial cooking installations.

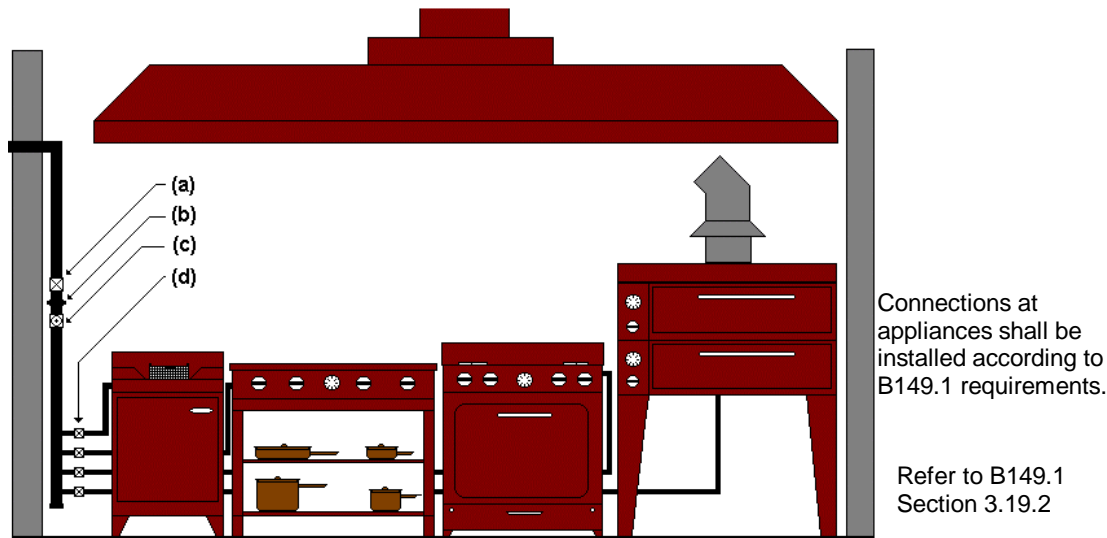
1. The in-line gas piping for commercial cooking equipment shall have **readily-accessible** shut-off valves installed for each appliance at either end of the in-line equipment.
2. The automatic fire safety valve shall be installed in a readily accessible location outside of the protected canopy area.
3. Each individual appliance shut-off valve shall be identified as to the appliance it serves.
4. Appliance shut-off valves shall not be subjected to temperatures in excess of 125 degrees Fahrenheit (50 degrees Celsius).

Refer to Figure 18.

Figure 18

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ACCEPTABLE LOCATION OF SHUT-OFF VALVES
INSTALLED WITHIN A COMMERCIAL KITCHEN



- (a) manual shut-off valve
- (b) union
- (c) automatic fire safety valve shall be installed in a readily accessible position outside the protected canopy area
- (d) readily accessible individual shut-off valve identified as to the appliance served shall not be subjected to temperatures in excess of 125 F (50 C)

Gas Notice 19

Street elbow fittings

Rationale: To clarify requirements for the removal of street elbow fittings from existing piping systems.

On replacement appliances, street elbows that are a part of the existing piping system between the appliance shut-off valve and the appliance must be replaced with acceptable fittings.

If piping prior to the shut-off valve is replaced or modified, all street elbows in the modified piping system shall be replaced with acceptable fittings.

Street elbows supplied and installed as part of an approved appliance are not part of the piping system, and therefore do not have to be changed.

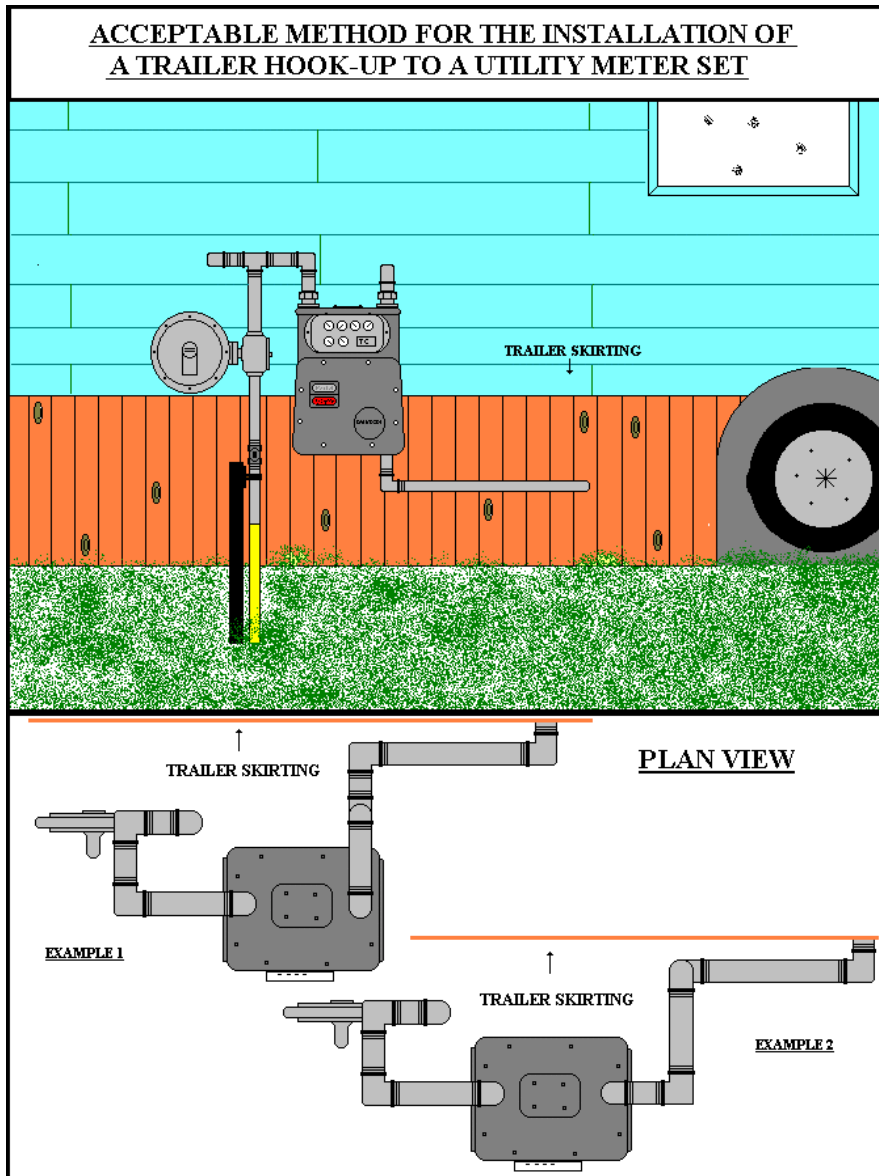
Notice 20
Piped connections to mobile homes

Rationale: Guidance for installing acceptable swing joints where there is high probability of structural shifting.

When installing a mobile home connection to a utility meter set, the swing joint required shall be a minimum 12 inches (30 cm) above grade, and minimum of a 12 inches (30 cm) lateral from the building.

Refer to current CSA B149.1 Section 5.21.7, and to Figure 20.

Figure 20



Gas Notice 21

Installing polyethylene pipe by ploughing and pushing

Rationale: Guidance for installing polyethylene pipe by ploughing and pushing.

General Requirements

1. Polyethylene pipe intended for direct burial shall have a minimum thickness of 2.3 mm or greater in accordance with the requirements of CSA Standard CAN/CSA-B137.4.
2. Pipe on which saddle fusions are to be performed shall have a minimum wall thickness of 4.2 mm or greater in accordance with the requirements of CSA Standard CAN/CSA-B137.4.
3. The specific polyethylene pipe or tubing selected for use shall be adequately resistant to the fluids and chemical atmospheres that might be encountered.
4. Polyethylene pipe shall not be installed above ground.
5. Polyethylene piping or tubing shall be accompanied by a tracer wire or an equivalent medium. An acceptable method would be to use a minimum of 14-gauge wire as a means of pipeline location. Both ends of the wire shall be attached to the polyethylene pipe above grade with a minimum of 18 inches (450 mm) of wire left above grade.
6. Polyethylene pipe installed by ploughing methods shall not be bent during installation to a radius less than the minimum recommended by the manufacturer for the particular pipe used.
7. Polyethylene pipe and fittings shall be joined by heat fusion, electro-fusion or mechanical methods. Such joining methods shall be compatible with the materials being joined. Manufacturer's instructions will be followed when performing heat fusion, electro-fusion and bonding in polyethylene piping systems. All personnel shall be certified in the applicable procedures by the manufacturer or an organization acceptable to the inspecting authority.
8. Joints in polyethylene piping systems shall be designed and installed to withstand longitudinal pullout forces caused by contraction of the pipes from external loading.
- 9A Polyethylene pipe fusion joints will not be classified as welded joints.
- 9B Pressure test requirements per Table 5.22.2 CSA B-149.1
10. If the ploughing method is used, the installer shall leave all joints and connections exposed to allow visual inspection by the inspection authority.

11. If the open trench method is used, the trench will be left open for full inspection by the utility. The inspection authority will inspect tubing, tracer wire, and depth of trench per CSA B-149.1.
12. Random inspection of the integrity of tracer wire will be performed by the inspecting authority.
13. The connecting of short pieces of polyethylene pipe to form a longer run is prohibited.
14. Cathodic protection will be installed for any metallic parts of the system as necessary. Details about cathodic protection shall be provided on the installation permit.

Installers' Responsibilities

1. Plastic piping and tubing shall be inspected before installation for defects such as cuts, scratches and gouges. Damaged cylindrical pieces shall be cut out and replaced. Inspection shall be adequate to confirm sound joints have been made. Refer to clause 5.27.1 of the current CSA B-149.1.
2. All joints and connections in plastic piping and tubing shall be visually checked for evidence of poor bonding. Where inspection reveals defective joints, they shall be cut out and replaced as per clause 5.27.2 of the CSA B-149.1.
3. Piping and tubing shall be located neither less than 15 inches (400 mm) underground nor less than 24 inches (600 mm) under a commercial driveway or parking lot, except when it rises above ground at the point of supply to either a building or an outdoor appliance. Additional depth of cover shall be required where the piping is located in areas where physical damage is likely to occur such as farm operations, per clause 5.15.4 of the CSA B-149.1.
4. The installer will be responsible for ensuring the integrity of the tracer wire
5. Polyethylene piping and tubing must be installed by a licensed gas fitter and a permit for installation of piping only is required from the Mechanical and Engineering Branch. All joints in the piping system must be done by a certified person.
6. The installer must provide drawings of the installation to the Mechanical and Engineering Branch prior to commencement of work.

Gas Notice 22

Unvented residential space heaters and unvented decorative appliances

Unvented gas-fired residential space heaters and unvented gas-fired decorative appliances shall not be used or installed in Manitoba unless certified by a recognized certifying agency.

Gas Notice 23 Venting

Rationale: To explain general requirements for venting

1. The DP column in the CSA B149.1 vent sizing tables shall be used to determine the capacity of a venting system within a building constructed in accordance with Section 7.2.1 of the current CSA B149.1.

An alternative to using the D.P. column is to provide a detailed depressurization test report that complies with the current CSA B149.1 requirements.

2. When replacement heating appliances are connecting to an existing vent, the existing vent shall not exceed the vent sizing table by more than one vent diameter size. This does not apply to a natural draft domestic water heater solely connected to an existing approved vent.
3. When the vent sizing table permits more than one diameter of pipe to be used for a vent connector or vent, the smallest permitted diameter shall be **required**.
4. All 'B' vents and approved metal liner systems shall be provided with an accessible Base T or clean-out that allows for inspection of the vent or liner. Fire places are exempt from this requirement.
5. When the Base T or clean-out of an approved vent system is installed in chimney chase that does not allow for an effective inspection of the vertical portion of the vent system and chase, access shall be provided through the chimney chase to make the Base T or clean-out readily accessible for inspection. Refer to Figure 23 (A).
6. The outdoor termination of an approved vent shall comply to manufacturer's certified instructions, except that in all cases, the vent shall be braced to prevent stress or damage to the vent systems when the vent extends 5 ft or more above the roofline. Refer to Figure 23 (B).
7. On replacement appliances where the primary appliance is required to vent into a 'B' vent, the total length of the vent connector shall be upgraded to 'B' vent. An existing single wall Base T in good condition is allowed, provided the single wall portion of the venting system is limited to a maximum 24" measured from the centre line of the Base T to the 'B' to 'C' Transition Fitting. Refer to Figure 23 (C).

On replacement appliances where the primary appliance vents into a masonry chimney and the vent connector is required to be 'B' vent, the 'C' vent portion of the venting system shall be limited to a maximum 18"

measured from the wall of the masonry chimney to the 'B' to 'C' Transition Fitting. Refer to Figure 23 (D).

Figure 23 (A)

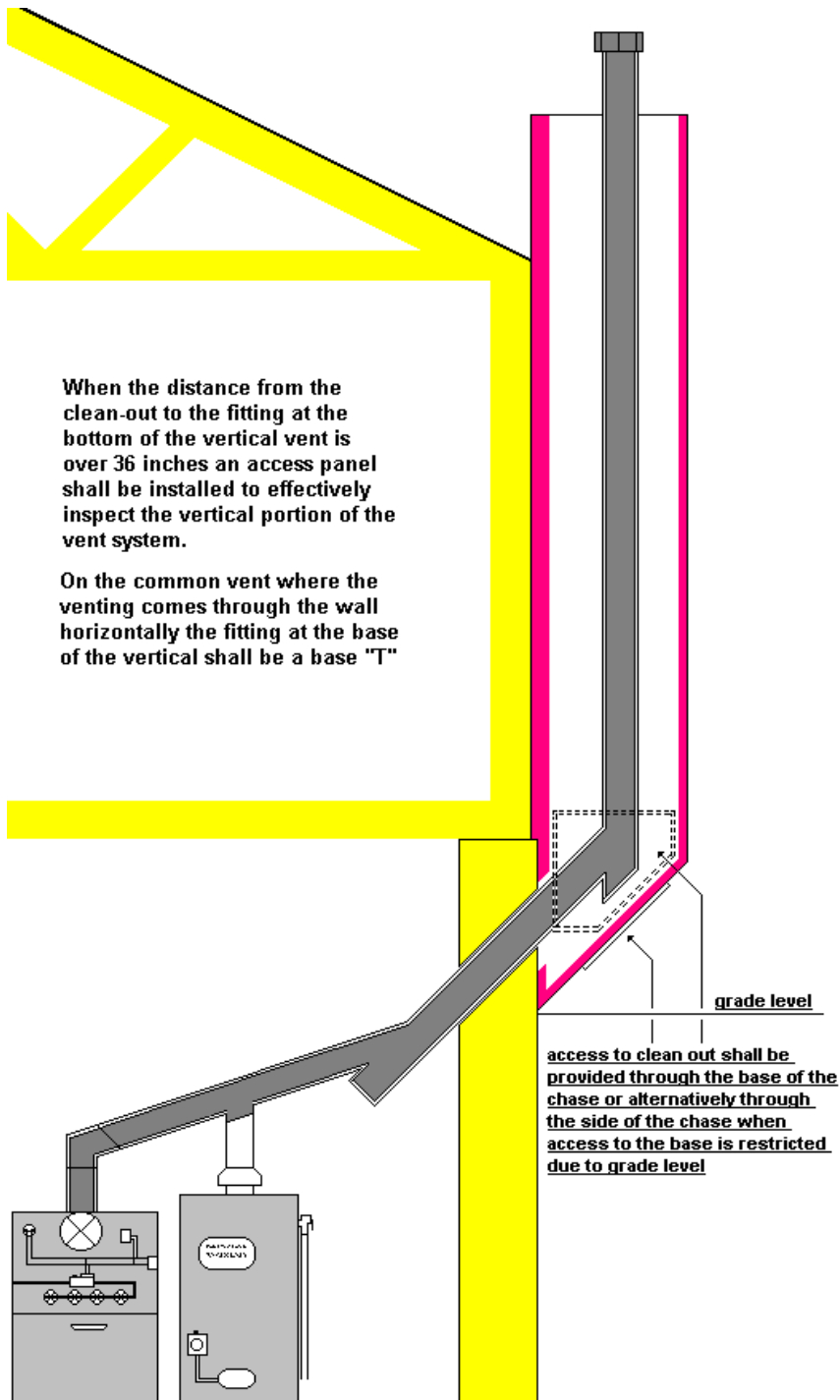
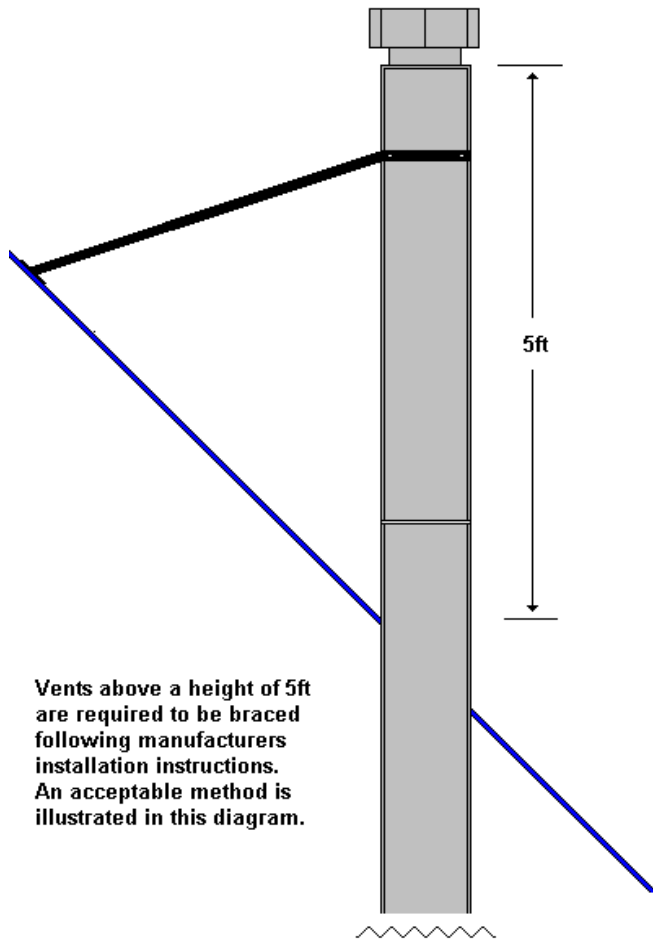


Figure 23 (B)



Vents above a height of 5ft are required to be braced following manufacturers installation instructions. An acceptable method is illustrated in this diagram.

PLAN VIEW

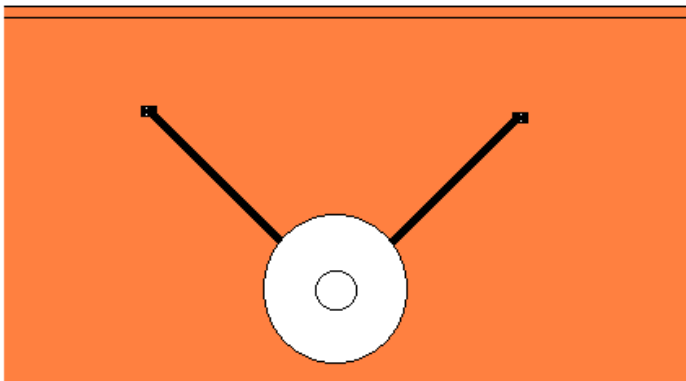


Figure 23 (C)

REPLACEMENT APPLIANCE CONNECTED
INTO AN EXISTING "B" VENT

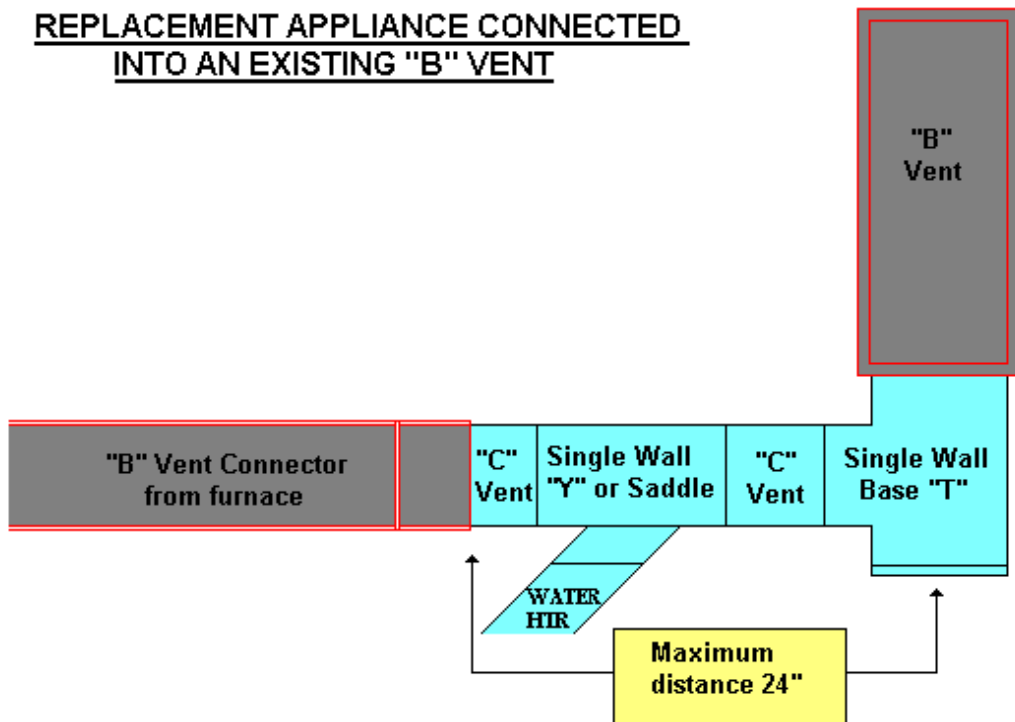
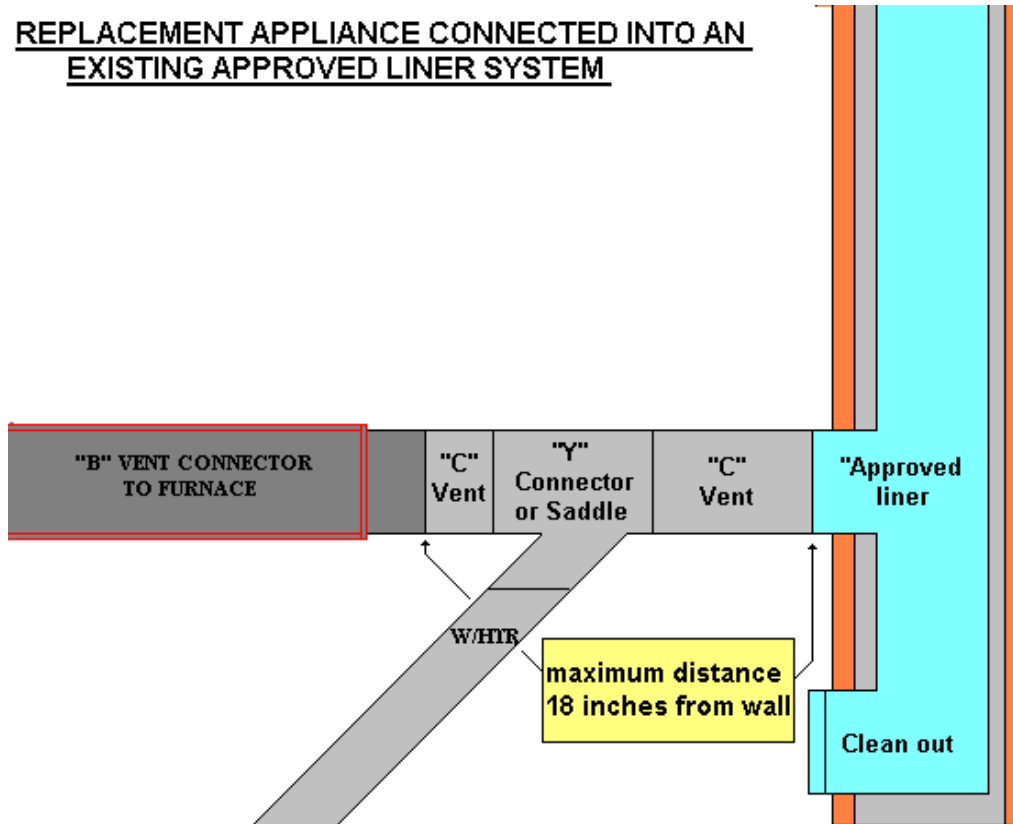


Figure 23 (D)

REPLACEMENT APPLIANCE CONNECTED INTO AN EXISTING APPROVED LINER SYSTEM



Gas Notice 24

Inspection of Heat Exchanger Failures

Rationale: To provide guidelines when inspecting a gas-fired heating appliance suspected of having a cracked heat exchanger.

When checking for cracked heat exchangers, be sure to operate furnace for a reasonable length of time (10 – 15 minutes) to allow heat exchanger to heat sufficiently.

Face Plate Cracks

1. Advise the owner of the defect if there is no flame disturbance. **(Advise only)**
2. Small cracks may be repaired to stop air flow.
3. Check for loose screws on face plates and diverted openings. Replace with the next screw size larger.

Cracks or Hairline Fractures in heat exchangers

Regardless of the apparent extent of the defect on discovery, all cracks and hairline fractures have the potential to become serious safety hazards.

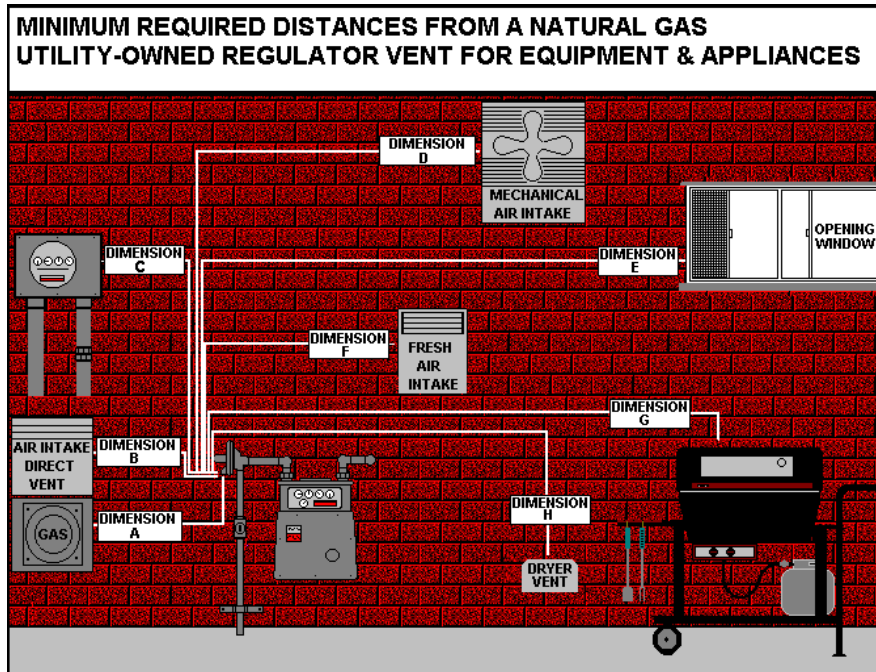
Where there is no flame disturbance or evidence of carbon monoxide

1. Advise the owner **in writing** of the crack or hairline fracture. Inform the owner of the safety hazard.
2. Advise owner that replacement is required per Section 3.21.1 current CSA B149 Gas Installation Code.
3. Notify the utility.
4. **Indicate the location of the hairline fracture directly on the appliance, or by means of a sketch left on-site.**

Where there is flame disturbance and/or evidence of carbon monoxide

1. Immediately turn off appliance. Use a safe means of disconnecting the fuel supply.
2. Advise the owner **in writing** of the failure in the heat exchanger. Inform the owner of the safety hazard.
3. Advise owner that replacement is required per Section 3.21.1 current CSA B149 Gas Installation Code.
4. Notify the utility.
5. **Indicate the location of the defect directly on the appliance, or by means of a sketch left on-site.**

Gas Notice 25 Clearances to a Natural Gas Utility Regulator



- “A” 3 feet horizontally to (90 cm) gas appliance vent. See Gas Notice 16 and Figure 16.
 - “B” 3 feet (90 cm) to air intake for direct vent appliance.
 - “C” 3 feet (90 cm) to electrical panel, meter, outlet or air conditioning.
 - “D” 10 feet (3 m) to mechanical air intake.
 - “E” 3 feet (90 cm) to building opening, opening window.
 - “F” 3 feet (90 cm) to non-mechanical fresh air intake.
 - “G” 10 feet (3 m) to bar-b-que, open flame, pool heater, source of ignition.
 - “H” 3 feet (90 cm) to moisture duct (dryer vent termination).
- Distances per Centra Gas ‘Service Vent Termination’ Centra Standard 552.53

Questions and Answers

1. What if I have to deviate from code requirements because of a specific situation in an installation?
A/ If you must deviate from code requirements, you require permission in writing from the inspecting authority before you proceed with your work. If permission is given, it applies to that situation in that installation only. You must not assume that because you have been granted permission for a deviation, you can apply that deviation in another circumstance. Refer to clause 3.2.2 in the current CSA B-149.1.
2. What are the requirements for flexible connectors in public buildings?
A/ A flexible connector shall not be used on a furnace or other gas-fired appliance installed in a public building such as a school, church, curling rink, hall etc., where the general public has access to the appliance.
3. When can I install an appliance in a **repair garage** closer to the floor than 4.5 feet (1.4 m)?
A/ When appliances are installed within an enclosure in a **repair garage** the appliance may meet the requirements for installation in a **storage garage** provided that an automatic door closing device, a door sweep and adequate sealing around the door is installed. Air supply to the appliance shall meet requirements of the code. Refer to clause 3.16.2 in the current CSA B-149.1.
4. Can I apply for special acceptance from the Mechanical and Engineering Branch for a sandpan, log lighter or gas log that is not otherwise approved?
A/ No. The equipment must be approved by a recognized approval agency. The Mechanical and Engineering Branch will no longer give special acceptance to non-approved sandpans.
5. What is the '10-foot Rule' when using copper and semi-rigid piping on fireplace installations?
A/ The last 10 feet to the fireplace may be sized as a 10-foot branch line as long as the main run had been sized properly according to the longest run.
6. How do I size a piping system that uses a combination of steel, copper and plastic pipe?
A/ Establish the total length of the longest run, even if the longest run is made up of sections consisting of more than one kind of piping material. Use the longest run in the appropriate table to size the segments of each different pipe material. For instance, if the longest run is '10 feet', use '10 feet' in the **pipe** size and capacity table for piping to size the steel/plastic segments pipe and also use '10 feet' in the **tubing** size and capacity to size the copper segments.
7. What is the minimum length of hot and cold air ducting required on a furnace in a house under construction?

A/ A furnace shall be fitted with hot and cold air plenums as per 6.13.5 (a) – (e) of the current CSA B-149.1.

8. Must free-standing fireplaces be fastened to the floor?

A/ The appliance shall be secured to prevent dislodgment of the vent. Refer to clause 5.21.6 of the current CSA B-149.1.

9. Can you use plastic pipe hangers to support copper piping?

A/ No. Refer to clause 5.8.9 in the current CSA B-149.1.

10. Are there restrictions as to where I can locate a moisture duct?

A/ Yes. A moisture duct shall be a minimum radius of three feet (900 mm) from a service regulator and from any fresh air intake. A window or a door opening is considered to be a fresh air intake.

11. Who is responsible for monitoring cathodic protection on yard piping?

A/ Monitoring cathodic protection is the customer's responsibility.

12. Can I use a potable water heater for space heating?

A/ Only if the manufacturer's certified instructions indicate that a recognized approval agency has approved the appliance to be used for either purpose. Most appliances do not have dual-use approval.

13. Are flexible connectors acceptable for use with fireplaces?

A/ Flexible connectors are allowed if they are installed as per the appliance manufacturers installation instructions.

14. Can flexible connectors used with a fireplace come through fireplace cabinet?

A/ A flexible connector may not pass through the walls of a cabinet unless it is approved to do so and this approval is stated within the manufacturer's certified installation instructions. See Gas Notice 14.

15. Can a vent connector serving a fan assist appliance without dilution air but approved for use with a 'B' type vent be constructed according to Section 7.18.3 of the current CSA B-149.1?

A/ Yes; however in all cases, when manufacturer's certified installation instructions exceed the minimum requirements stated here and in the current CSA B149.1, the manufacturer's instructions shall be followed.

16. What type of copper fittings can be used for natural gas installations?

A/ For outdoor or underground use, only approved type Forged Nut Short Standard and Forged Nut Short Type fittings shall be used.

All approved type forged and milled nut fittings may be used in indoor installations.

Questions and Answers
Continued

17. Does it matter how quick disconnect gas valves are positioned?
- △A/ Quick disconnect gas valves approved for outdoor installation for use with portable outdoor appliances must be installed so that rain and moisture cannot pool in the valve body. Valves must be installed facing downwards on a 90 to 45 degree angle.