4.03: continued

(c) Cross connections of fill piping between two supply tanks shall not exceed 660-gallon (2,500-L.) aggregate capacity.
(d) An auxiliary tank shall be filled by a pump transferring the oil through continuous piping from the supply tank.
(e) An auxiliary tank shall be located at a level above the top of the supply tank from which it is filled.
(f) An auxiliary tank shall be provided with an overflow pipe draining to the supply tank and extending into the top of the supply tank not more than one inch (25 mm). This requirement does not apply to an auxiliary tank specifically listed for use without an overflow pipe.
(g) An overflow pipe from an auxiliary tank and a return line from a burner or pump shall have no valves or obstructions.

(11) Oil Gauging.
(a) All storage tanks in which a constant level of oil is not maintained by an automatic pump shall be equipped with a method of determining oil level. On cross connected tanks provided with a single fill and single vent, the gauge shall be installed on the tank vented to the outside.
(b) Test wells shall not be installed inside buildings. For outside service they shall be equipped with a tight metal cover designed to discourage tampering.
(c) Gaging devices such as liquid level indicators or signals shall be designed and installed so that oil or vapor will not be discharged into a building from the fuel supply system. Inside tanks provided with fill and vent pipes used for No. 1 or No. 2 fuel oil shall be provided with a device to indicate either visually or audibly at the fill point when the oil in the tank has reached a predetermined safe level.
(d) No tank used in connection with any oil burner shall be equipped with a glass gage or any gage which, when broken, will permit the escape of oil from the tank.

4.04: Oil Burners, Light Fuel Oil Type

(1) Oil Supply and Return Lines.
(a) All oil supply and return lines between the oil supply tank and the oil burner shall be standard cast iron, steel or brass pipe, or copper tubing, with standard steel, malleable iron, cast iron, brass or copper fittings. Exception: Tanks and piping subject to the provisions of 527 CMR 9.00: *Tanks and Containers*.
(b) Listed flexible hose shall be permitted to be used to reduce the effects of jarring and vibration or where rigid connections are impractical, and shall be installed in full compliance with its listing.
(c) All threaded joints and connections shall be made tight with suitable lubricant or pipe compound. Teflon tape shall not be used. Unions requiring gaskets or packings, right or left couplings, and sweat fittings employing solder having a melting point of less than 500°F (260°C) shall not be used in oil lines. Compression type fittings shall not be used.
Exception: Mechanical connections on tubing of the flare type or gaugeable, two ferrule, swage type fittings are acceptable.
(d) Piping used in the installation of oil burners and appliances other than conversion range oil burners shall be not smaller than ⅜-inch iron pipe size or ⅜-OD tubing except that ¼-inch pipe or 5/16-OD tubing may be used in the suction line of systems where the top of the tank is below the level of the oil pump. Copper tubing shall have 0.035-inch nominal and 0.032-inch minimum wall thicknesses.
(e) Oil supply and return lines shall be rigidly secured in place and protected from injury and shall be protected against corrosion. All new oil supply and return lines in direct contact with concrete or earth shall be enclosed with a continuous non-metallic sleeve that extends out of the concrete or earth a minimum of four inches on each end.

On existing installations, whenever a burner, boiler, furnace or tank is replaced, the oil supply and return line shall either be replaced and enclosed with a continuous sleeve as for new installations or a listed oil safety valve shall be installed at the tank end of the oil supply line in accordance with the manufacturer's instructions. All return lines shall be enclosed with a continuous sleeve.

4.04: continued

An oil safety valve and continuous non-metallic sleeve is not required when the burner is located above the oil supply tank and the entire oil supply line is connected to, and above the top of the tank.

(f) Effective July 1, 2010, all oil supply and return lines not enclosed with a continuous non-metallic sleeve or equipped with a listed oil safety valve, shall either be replaced and enclosed with a continuous sleeve as for new installations or shall have a listed oil safety valve installed at the tank end of the oil supply line in accordance with the manufacturer's instructions.

Nothing in 527 CMR 4.00 shall prohibit overhead installation of oil supply and return lines or cross connection of oil supply lines from multiple tanks.

(g) Oil supply lines and return lines to tanks exposed to freezing temperatures shall be connected to the top of the tank. 527 CMR 4.04(1)(g) shall not apply to gravity feed oil burners using #1 fuel oil, range oil or kerosene.

(h) Oil supply lines shall be properly reamed; joints and connections shall be made oil tight; and in no case shall any joint or connection be concealed with a wall, partition or floor.

(i) Proper allowance shall be made for expansion, contraction, jarring and vibration. Pipe lines, other than tubing connected to underground tanks, shall be provided with double swing joints or flexible connectors, or otherwise arranged to permit the tanks to settle without impairing the tightness of the pipe connections.

(j) Piping systems shall be maintained liquid tight. A piping system that has leaks shall be emptied of liquid and repaired.

(k) The oil supply line to a burner shall be provided with a listed filter assembly. 527 CMR 4.04(1)(j) shall not apply to gravity feed oil burners.

(2) Oil Pumps and Valves.

(a) Where oil is supplied to a burner requiring gravity feed and a constant level valve is not incorporated in the burner assembly or in an auxiliary tank used in connection with an automatic pump, an approved constant level valve shall be installed in the oil feed line as close to the burner as practicable, to insure uniform delivery of oil to the burner.

Unless the constant level valve is equipped with an anti-flooding device it shall be provided with a vent line carried to a point higher than the top of the supply tank and terminated with a return bend.

(b) An oil pump not a part of a burner shall be a positive displacement type that automatically shuts off the oil supply when stopped.

(c) An automatic pump not, an integral part of a burner shall be a listed type installed in full compliance with its listing.

(d) A readily accessible manual shutoff valve as described in 527 CMR 4.04(2)(i) shall be installed at each point where required to properly control the flow of fuel in normal operation and where required to avoid oil spillage during servicing. The valve shall be installed to close against the supply.

(e) Where a shutoff is installed in the discharge line of an oil pump not an integral part of a burner, a pressure relief valve shall be connected into the discharge line between the pump and the shutoff valve and arranged to return surplus oil to the supply tank or to bypass it around the pump, unless the pump includes an internal bypass.

(f) Any fuel oil line incorporating a heater shall be provided with a relief valve arranged to discharge to the return line when any valve, pump, or other device may prevent the release of excessive pressure because of the expansion of the oil when heated.

(g) Where oil is supplied to a burner requiring uniform flow by gravity feed and a constant level valve is not incorporated in the burner assembly or the oil is not supplied by an automatic pump, a constant level valve shall be installed in the supply line at the gravity tank or as close thereto as practicable, to ensure uniform delivery of oil to the burner.

The vent opening of such constant level valve shall be connected by piping or tubing to the outside of the building, unless the constant level valve is provided with an anti-flooding device. Vent piping or tubing of constant level valves shall not be connected to tanks or tank vents.

(h) Provision shall be made for adequate ventilation of enclosures, such as vaults or pits, where pumps and accessories are installed prior to entering for inspection or repair.

(i) Readily accessible hand-operated, fusible, springloaded valves of an approved automatic type shall be installed in the oil supply line, one near each burner and one close to each supply tank so as to automatically stop the flow of oil in case of fire.