



UL 558

STANDARD FOR SAFETY

Industrial Trucks, Internal Combustion Engine-Powered



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UL Standard for Safety for Industrial Trucks, Internal Combustion Engine-Powered, UL 558

Tenth Edition, Dated January 10, 2012

Summary of Topics

These revisions to ANSI/UL 558 include:

Addition of natural gas requirements

Additional wire types

Use of biofuels

Use of corrosion resistant material on muffler / DPF

Editorial corrections

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated October 12, 2012, February 15, 2013, and March 1, 2013.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

The following table lists the future effective dates with the corresponding reference.

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Future Effective Date	Reference
May 17, 2013	Paragraph(s) 8.1, 8.2, 8.3, and 8.5
January 10, 2015	Paragraph(s) 11.1.3, 27.3, 31.4.1, and 31.4.2
April 30, 2015	Paragraph(s) 11.1.1, 11.1.3.1, 11.1.5, 11.1.6, 17.1.1, 17.1.2, 17.2.1, 17.3.2, 17.3.3, 17.4.4, 17.6.1, 17.6.2.1, 25.1.3, 26.1.1; Sections 11.2, 11.2A, 11.3, 11.3A, 11.5, 11.6, 11.7, 11.8, 16, 17.7; and Figure 43.1

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January 10, 2012

This ANSI/UL Standard for Safety consists of the Tenth Edition including revisions through April 30, 2013.

The most recent designation of ANSI/UL 558 as an American National Standard (ANSI) occurred on April 30, 2013. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

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INTRODUCTION

1 Scope

1.1 These requirements cover the fire safety aspects of industrial trucks with internal-combustion engines, such as tractors, platform-lift trucks, fork-lift trucks, and other specialized vehicles for industrial use. These requirements do not cover other possible safety aspects of such equipment.

1.2 These requirements do not cover farm or road vehicles or automotive vehicles for highway use.

1.3 The Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations, NFPA 505, identifies internal combustion engine powered industrial trucks as follows:

Types G, D, LP, CN, G/CN, and G/LP – A unit powered by gasoline (G), diesel (D), LP-gas (LP), compressed natural gas (CN), either gasoline or compressed natural gas (G/CN), or either gasoline or liquefied petroleum gas (G/LP), that has minimum acceptable safeguards against inherent fire hazards.

Types GS, DS, LPS, CNS, GS/CNS, and GS/LPS – A unit powered by gasoline (GS), diesel (DS), LP-gas (LPS), compressed natural gas (CNS), either gasoline or compressed natural gas (GS/CNS), or either gasoline or liquefied petroleum gas (GS/LPS) that, in addition to meeting all the requirements for Types G, D, LP, CN, G/CN, and G/LP, is provided with additional safeguards to the exhaust, fuel and electric systems.

Type DY – A diesel-powered unit that has all the safeguards of Type DS units and, in addition, any electric equipment is completely enclosed and equipped with temperature limitation features.

Revised 1.3 effective April 30, 2015

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

2.2 A component need not comply with a specific requirement that:

- a) Involves a feature or characteristic not needed in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

2.3 A component shall be used in accordance with its recognized rating established for the intended conditions of use.

2.4 Specific components are recognized as being incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits and shall be used only under those specific conditions for which they have been recognized.

3 Units of Measurement

3.1 If a value for measurement is followed by a value in other units in parentheses, the first stated value is the requirement.

4 Undated References

4.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

5 Terminology

5.1 In the following text, the term truck is used to mean an industrial combustion engine-powered industrial truck. The type or types of truck(s) to which a specific requirement applies is identified by the heading under which the requirement is located and by specific references in the text to the applicable requirements.

6 Reference Standards

6.1 The reference standard that applies to power-operated industrial trucks is the Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance and Operations, NFPA 505, which relates to a classification of industrial trucks as to areas of use, maintenance, and operation.

7 Samples

7.1 Unless otherwise expressly stated herein, the performance of an industrial truck shall be satisfied by the testing of a representative model or a new vehicle.

CONSTRUCTION

TYPES G, D, LP, AND CN

8 Electrical Systems

8.1 All wiring shall comply with one of the following, as applicable to the intended use which include, but not limited to, temperature, voltage, and current ratings for the wire:

- a) The Standard for Appliance Wiring Material, UL 758;
- b) The Standard for Thermoplastic-Insulated Wires and Cables, UL 83;
- c) The Standard for Flexible Cords and Cables, UL 62;
- d) The Standard for Low Voltage Primary Cable, SAE J1128
- e) Outline for Battery Leads, UL 2726;

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- f) The Standard for Low Voltage Battery Cable, SAE J1127;
- g) Outline for Welding Cable, UL 1276;
- h) The Standard for Electrical Cables for Boats, UL 1426;
- i) The Standard for Machine-Tool Wires and Cables, UL 1063; or
- j) The Standard for Fixture Wire, UL 66.

Revised 8.1 effective May 17, 2013

8.2 The wiring of a truck shall be rated for the particular application with respect to the temperature and voltage, exposure to oil or grease, and other conditions of service to which the wiring is subjected.

8.2 effective May 17, 2013

8.3 Wiring shall be protected against mechanical damage by:

- a) Enclosing it in the body of the truck; or when mounted on masts, booms, lifts or similar parts, the wiring shall be installed so as to reduce the likelihood of mechanical damage and kinking;
- b) Enclosing it in metal raceway, such as armored cable, rigid metal conduit, or electrical metallic and nonmetallic tubing, flexible nonmetallic conduit or nonmetallic insulated tubing; or
- c) Other suitable method in which the wiring is protected sufficiently against mechanical damage.

8.3 effective May 17, 2013

8.4 Wiring and cables shall be installed with means for maintaining clearance from moving parts, hot engine parts, exhaust systems and fuel systems, and shall not be supported on surfaces that are subjected to accumulation of oil or grease as a result of servicing.

8.5 Wiring and cables shall not be located such to allow exposure to drippage of fuel, oil, or grease, and shall not be supported on oil- or grease-retaining surfaces.

8.5 effective May 17, 2013

8.6 If an audible electrical warning device is employed, its coil and other electrical parts shall be enclosed in metal or an equivalent material. Among the factors that are to be taken into consideration when judging the equivalency of a nonmetallic enclosure are:

- a) The mechanical strength,
- b) Resistance to impact,
- c) Moisture-absorptive properties,
- d) Flammability, and
- f) Resistance to distortion at temperatures to which the material is subjected under conditions of normal or abnormal usage.

8.7 Each lighting-device, warning-device, or other auxiliary circuits shall be protected by a fuse or a circuit breaker of the size necessary to reduce the likelihood of overheating of the smallest conductor in the circuit. A fuse conforming with the Standard for Electric Fuses, ANSI/SAE J554, the applicable parts of the UL 248 series of standards, the Standard for Automotive Glass Tube Fuses, UL 275 or the Outline of Investigation for Automotive Blade Type Fuses, UL 275A shall be considered acceptable. A circuit breaker conforming to the Standard for Circuit Breakers, ANSI/SAE J553 or the Standard for Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures, UL 489, shall be considered acceptable.

8.7 revised April 30, 2013

8.8 Electrical components located near foot-operated controls shall be located or protected so as to prevent damage to these components from the operator's feet during operation of the controls.

9 Exhaust Systems

9.1 The exhaust system beyond the manifold shall be supported at least 3 inches (76.2 mm) clear of flammable materials, excluding flexible mountings, and at least 2 inches (50.8 mm) clear of fuel- and electrical-system parts and shall not subject to drippage of fuel, oil, or grease. See also Temperature Tests, Section 23.

Exception: Lesser clearances shall be allowed when the maximum temperatures obtained during the Temperature Test, Section 23, do not exceed the established rating of the component.

9.2 The exhaust system shall conform with the test requirements of the Exhaust System Test, Section 25.

9.3 A muffler and/or catalytic converter shall be provided on each truck.

10 Fuel Systems – Gasoline and Diesel

10.1 Tanks and pumps

10.1.1 A fuel tank shall be constructed of painted mild steel having a minimum thickness of 0.032 inch (0.81 mm) or material equivalent in strength, rigidity, and resistance to fire and corrosion. The joints shall be welded, brazed, soldered, or bonded. If soldered or bonded, the joints shall be of a construction that will retain the heads if the solder or bonding melts. Fittings and fill pipe, if soldered or bonded, shall be mechanically secured to the tank in addition to soldering or bonding.

10.1.2 A fuel tank shall not be located directly over the engine. If a tank is within or contiguous to the engine compartment, the tank or fill arrangement, or both, shall be isolated from the electrical and exhaust systems by a separate enclosure or by baffles. The tank location and the facilities for filling shall be such that spillage or leakage will drain to the ground and not into the engine compartment or onto electrical- or exhaust-system parts.

10.1.3 A fuel tank and fill fitting shall be so located as to minimize the possibility of damage to the tank or its fittings.

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10.1.4 A shut-off valve shall be provided in an accessible location near the tank on gravity-feed systems or on systems where the fuel in the tank is subject to discharge by siphon action if the fuel line breaks.

10.2 Fuel lines, tubing, and fittings

10.2.1 Metallic fuel lines, except those used in a high-pressure injection system, shall be of seamless annealed copper or steel tubing. Flexible tubing, hose, or a vibration loop shall be used where necessary to absorb vibration. Flexible tubing or hose shall be of the length necessary to span between the fixed and moving parts.

10.2.2 Nonmetallic fuel tubing or hoses shall be provided with appropriate traceability to validate conformance with the Standard for Nonmetallic Fuel System Tubing with One or More Layers, SAE J2260 or the Standard for Fuel and Oil Hoses, SAE J30.

10.2.3 Fuel system assemblies (eg. each fuel line and fitting configuration) shall be provided with appropriate traceability to validate conformance with the Standard for Fuel System Tubing Assemblies, SAE J2045.

Exception: Fuel system assembly (e.g. each fuel line and fitting configuration) shall not pull off fittings or fail when subjected to a 20 pound-force (89 N) axial pull test applied over a 1 minute period. The test shall be conducted at ambient conditions of $21 \pm 5^{\circ}\text{C}$ ($70 \pm 9^{\circ}\text{F}$) with tubing or hose wetted with fuel. Hose shall also be subjected to 70 hours at 100°C (212°F) aging and 48 hours of 0.125 inch amplitude vibration at 17 HZ before the pull test.

10.2.3 revised April 30, 2013

10.2.4 Fuel system assemblies that utilize quick connect fittings shall conform and be provided with appropriate traceability to validate conformance with the Standard for Quick Connect Coupling Specification For Liquid Fuel and Vapor/Emissions Systems, SAE J2044.

Exception: Fuel system assembly (e.g. each fuel line and fitting configuration) shall not pull off fittings or fail when subjected to a 20 pound-force (89 N) axial pull test applied over a 1 minute period. The test shall be conducted at ambient conditions of $21 \pm 5^{\circ}\text{C}$ ($70 \pm 9^{\circ}\text{F}$) with tubing or hose wetted with fuel. Hose shall also be subjected to 70 hours at 100°C (212°F) aging and 48 hours of 0.125 inch amplitude vibration at 17 HZ before the pull test.

10.2.4 revised April 30, 2013

10.2.5 A body or fitting provided with tapered threads shall be threaded in accordance with the Standard for Pipe Threads, General Purpose, (Inch), ANSI/ASME B1.20.1.

10.2.5 revised April 30, 2013

10.2.6 A fuel filter shall conform with the requirements in 31.3. When the fuel confining parts are constructed of nonmetallic material, the assembly shall also conform with the requirements in 10.3.

10.2.6 revised April 30, 2013

10.2.7 Fuel lines shall be supported to minimize chafing and to maintain at least a 2 inch (50.8 mm) clearance from exhaust- and electrical-system parts.

Exception: If it can be demonstrated that the fuel lines and wiring are sufficiently supported to prevent the clearance from being reduced to less than 1/2 inch (12.7 mm), the clearance between fuel lines and electrical-system parts may be reduced.

10.2.7 revised April 30, 2013

10.2.8 Fuel feed lines, valves, and fittings shall be located so that any leakage will not run off or drip on electrical- or exhaust-system parts.

10.2.8 revised April 30, 2013

10.3 Nonmetallic parts

10.3.1 A nonmetallic part in contact with non-ethanol blended gasoline or diesel fuel shall not show excessive volume change or loss of weight, when considered on the basis of its intended function, following immersion for 70 hours at a temperature of $23 \pm 2^{\circ}\text{C}$ ($73.4 \pm 3.6^{\circ}\text{F}$) in the test liquid specified in Table 10.1.

Exception No. 1: This requirement does not apply to fuel lines that conform with 10.2.3.

Exception No. 2: This requirement does not apply to fuel system assemblies that conform with 10.2.4.

Exception No. 3: This requirement does not apply to quick connect fittings that conform with 10.2.5.

Exception No. 4: This requirement does not apply to gasketing and seals that have been investigated to the Standard for Gaskets and Seals, UL 157.

10.3.1 revised April 30, 2013

Table 10.1
Test liquids for nonmetallic materials

Liquid in contact with part	Test liquid
Gasoline	A and C Reference Fuels (ASTM D471)
Diesel Oil	IRM 903 Oil

10.3.2 A change in volume of not more than 25 percent swelling or 5 percent shrinkage, and a weight loss (extraction) of not more than 10 percent is considered as indicating compliance with 10.3.1.

10.3.3 A nonmetallic part in contact with ethanol blended gasoline or biodiesel fuel (B5 to B20) shall be evaluated in accordance with the Standard for Gaskets and Seals, UL 157, modified as follows:

a) Volume Change and Extraction Test except for the following modifications:

- 1) The test duration shall be 1000 hours;
- 2) The applicable test fluids shall be as described in Supplement SC; and
- 3) For all materials, the average volume change shall not exceed 40% swell (increase in volume) or 1% shrinkage (decrease in volume). In addition, the weight loss shall not exceed 10%.

b) Compression Set Test except for the following modifications:

- 1) The test duration shall be 1000 hours.
- 2) The samples shall be immersed, at room temperature, in the test fluids (see item iii) while compressed for the entire test duration. No oven conditioning is required.
- 3) The applicable test fluids shall be as described in Supplement SC.

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4) The recovery period shall consist of removing the sample from the compression device and immersing it in the applicable test fluid for 30 minutes at room temperature. The sample shall not be allowed to dry out due to exposure to air. The 30-minute immersion should use the same fluid as the test fluid for each sample.

5) For all materials, the average compressions set is calculated and shall not exceed 35%.

Exception: This requirement does not apply to composite gasket materials as defined in accordance with the Standard for Gaskets and Seals, UL 157.

10.3.3 added April 30, 2013

10.4 Corrosion resistance

10.4.1 If corrosion of a ferrous part will interfere with the proper functioning of a part, the part shall be provided with a corrosion-resistant protective coating.

10.4.2 A part made of drawn brass or machined from brass rod shall be capable of withstanding, without cracking, the 10 Day Moist Ammonia Air Stress Cracking Test, Section 34.

10.5 Carburetors and backfire preventers

10.5.1 An updraft carburetor, if used, shall be located so that overflow of gasoline due to excess choking will flow to ground and not contact electrical parts and exhaust system, or collect in an engine compartment. Nonmetallic drain hose, if used, shall be provided with appropriate traceability to validate conformance with the Standard for Fuel and Oil Hoses, SAE J30.

10.5.2 A downdraft carburetor, if used, having an external float bowl vent opening, shall have a vent overflow tube to direct fuel away from the engine in case of fuel overflow.

10.5.3 A backfire deflector shall be provided on each combustion air intake and, whether separate or a part of an air cleaner, shall conform with the requirements in General, Section 39. If the backfire deflector enclosure is constructed of nonmetallic material, the material shall have a flammability rating of no less than V-1.

Exception: The material complies with the 20 mm (3/4 inch) flame test in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.

10.5.4 Nonmetallic hose employed for the connection of a carburetor air inlet to a backfire deflector air outlet shall be constructed so that its inner surface is of a flame retardant material. When the non-metallic hose is located so as to allow fuel to collect in the air intake hose, due to flooding of the carburetor, the inner hose material shall also meet the test requirements specified in 10.3.2, inclusive.

10.5.5 Components located within the engine compartment or forming a part of the engine compartment shall be constructed of metal, or if nonmetallic, shall be separated from the engine compartment by complete baffles or be of a flame retardant material. This requirement is not intended to apply to hydraulic hoses, water hoses, fuel hoses, wiring, battery, pulley belts or other small components.

11 Fuel Systems – LP & CN-Gas

11.1 General

11.1.1 Each vehicle shall have the complete fuel system installed at the factory.

Exception: Vehicles equipped to use a removable LP fuel container are permitted to be shipped without the fuel container if a metal nameplate that identifies the correct fuel container assembly to be used is attached adjacent to the container-mounting hardware, see 11.2A.1.5.

Revised 11.1.1 effective April 30, 2015

11.1.2 A valve and its connections on a container shall be protected to reduce the likelihood of damage from unintentional contact with stationary objects or from loose objects thrown up from the road. A valve shall be protected to reduce the likelihood of damage from collision, overturning, or the like. A part of the vehicle is permitted to be used to provide such protection to a valve and its fittings.

11.1.3 Each applicable LP-Gas component, excluding fuel lines, hoses, and tanks, shall comply with the requirements in the Outline for LP-Gas Automotive Accessories, UL 1337.

11.1.3 effective January 10, 2015

11.1.3.1 Each applicable CN-Gas component shall comply with the requirements in the Fuel System Components for Natural Gas Powered Vehicles, CSA NGV3.1.

Added 11.1.3.1 effective April 30, 2015

11.1.4 A fuel-system component shall be fastened to the vehicle to reduce the likelihood of loosening due to vibration.

11.1.5 If a removable LP fuel container is used, means shall be provided in the fuel system to reduce the likelihood of escape of fuel when the container is changed.

Revised 11.1.5 effective April 30, 2015

11.1.6 Fuel lines shall not be routed within the drivers compartment.

Added 11.1.6 effective April 30, 2015

11.2 Fuel containers

Relocated to 11.2A.1 effective April 30, 2015

11.2A LP Gas

11.2A effective April 30, 2015

11.2A.1 Fuel containers

11.2 relocated as 11.2A.1 effective April 30, 2015

11.2A.1.1 When a vehicle incorporates a non-removable ASME fuel container, the container shall have a maximum allowable working pressure (MAWP) of 312 psig (2.15 MPa). It shall be marked with the ASME "U" symbol and the design working pressure.

11.2A.1.2 When a vehicle incorporates a non-removable DOT fuel container, the container shall be constructed, tested, and marked for a minimum service pressure of 240 psig (1.7 MPa). It shall bear the marking DOT-4B240, DOT-4BA240, DOT-4BW240, or DOT-4E240. A DOT fuel container assembly shall comply with the requirements in the Outline of Investigation for LP-Gas Cylinder Assemblies, UL 2003.

11.2A.1.3 A removable fuel container shall be constructed to engage a substantial positioning pin or an equivalent means to provide for intended positioning of the container when reinstalled so that the cylinder remains within in the plan view of the truck.

11.2A.1.4 A removable-type container shall have the protection means for the fittings permanently attached to the container.

11.2A.1.5 Vehicles equipped to use a removable fuel container are permitted to be shipped without the fuel container if a nameplate that identifies the following is attached adjacent to the container-mounting hardware:

- a) Tank capacity (weight),
- b) Type of mounting (horizontal or vertical),
- c) Disconnect coupling (thread type), or
- d) Type of withdrawal (liquid or gas).

11.2A.1.6 A fuel container shall be installed at not less than the minimum road clearance of the vehicle in the area of the fuel container. This minimum clearance is to be measured to the bottom of the container or to the lowest fitting.

11.2A.1.7 LP fuel container, if non-removable, and mounting assembly shall be secured in place on the vehicle so as to comply with the requirements in the Container Load Test, Section 26.

11.2A.2 Fuel lines and fittings

11.3 revised and relocated as 11.2A.2 effective April 30, 2015

11.2A.2.1 Piping from a fuel container to the first-stage regulator shall be iron, steel (black or galvanized), brass, or copper pipe; seamless copper or steel tubing; flexible LP-Gas hose; or other equivalent piping means.

11.2A.2.2 Steel tubing shall have a minimum wall thickness of 0.049 inch (1.25 mm) and shall have a corrosion resistant exterior coating such as paint. Copper tubing shall have a minimum wall thickness of 0.032 inch (0.81 mm) and shall be annealed. Aluminum piping or tubing shall not be used.

11.2A.2.3 A length of flexible hose of a type designated for use with LP-Gas shall be employed between a removable container and any fixed fuel-system parts, and between any high-pressure parts on the frame and parts that are mounted on the engine. Flexible hose longer than 60 inches (1.5 m) shall have stainless steel wire braid reinforcement. Flexible hose and hose assemblies shall comply with the requirements in the Standard for LP-Gas Hose, UL 21 and the Standard for Pigtails and Flexible Hose Connectors for LP-Gas, UL 569.

11.2A.2.4 A tubing fitting or other fuel line fitting, including a pipe threaded fitting, shall be of a type designated for use with LP-Gas.

11.2A.2.5 A cast fitting shall not be employed for either piping or tubing.

11.2A.2.6 A fuel line shall be supported to reduce the likelihood of chafing and to maintain at least a 2-inch (50.8-mm) clearance from exhaust- and electrical-system parts.

11.2A.2.7 Flexible hose passing through sheet metal shall be installed to reduce the likelihood of hose abrasion, such as by use of clamps and grommets.

11.2A.2.8 A pipe-threaded fuel-system fitting, including a container fitting, shall be assembled using a pipe-joint sealing compound intended for use with LP-Gas. A fuel-system connection, including the container with any associated valve and fitting, shall be tested for leaks with a soap-and-water or equivalent solution while the system is under LP-Gas pressure.

11.2A.2.9 The fuel container and associated valves and fittings are permitted to be tested separately using air pressure.

11.2A.3 Vaporizers

11.5 relocated as 11.2A.3 effective April 30, 2015

11.2A.3.1 Each vaporizer shall have a valve or plug located at or near the lowest portion of the section occupied by the water or other heating medium to permit substantially complete draining of the vaporizer. A vehicle cooling-system drain or water hose that completely drains the vaporizer is considered to comply with the intent of the requirement.

11.2A.3.2 Each vaporizer shall be marked with the design working pressure in psi (MPa).

11.2A.3.3 Engine exhaust gases shall not be used as a direct means of heat supply for the vaporization of fuel unless the materials used for parts of the vaporizer in contact with the exhaust gases are resistant to the corrosive action of the exhaust gases and the vaporizer system is constructed to prevent excessive pressure.

11.2A.3.4 A vaporizer shall not be equipped with a fusible plug. A vaporizer shall comply with the requirements in the Outline for LP-Gas Automotive Accessories, UL 1337.

11.2A.4 Safety-control and -relief devices

11.6 revised and relocated as 11.2A.4 effective April 30, 2015

11.2A.4.1 An automatic shut-off valve and all relief type valves shall be provided in the fuel system at some point ahead of the inlet of the first-stage regulator, constructed to prevent flow of fuel when the ignition is off and the engine not running or if the engine is to stop. This device shall permit the back flow of fuel from the vaporizer in the event of a pressure build-up in the vaporizer. Automatic shut-off valves shall comply with the requirements in the Outline for LP-Gas Automotive Accessories, UL 1337.

11.3 Fuel lines and fittings

Revised and relocated to 11.2A.2 effective April 30, 2015

11.3A CN Gas

Added 11.3A effective April 30, 2015

11.3A.1 Fuel containers

11.3A.1.1 A fuel container shall comply with the standard for Compressed Natural Gas Fuel Container Integrity, Federal Motor Vehicle Safety Standard 304 and the standard for Compressed Natural Gas Vehicle Fuel Containers, ANSI NGV 2.

11.3A.1.2 CN fuel container and mounting assembly shall be secured in place on the vehicle so as to comply with the requirements in the Container Load Test, Section 26.

11.3A.1.3 The CN container shall be protected from damage from road hazards, loading and unloading cargo, direct sunlight, and exhaust heat.

11.3A.1.4 The CN container shall be positioned to prevent contact with truck components such as frame members, body panels, brake lines and so forth that can lead to container fretting or abrasion over time.