

385-1029

**Recommended Good Practice for the Construction
and Operation of**

Automobile Gasoline Tank Trucks

**Prepared by Committee on Flammable Liquids
Adopted by National Fire Protection Association**

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PRICE: Ten Cents

NATIONAL FIRE PROTECTION ASSOCIATION
International
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National Fire Protection Association INTERNATIONAL

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The National Fire Protection Association was organized in 1895 to promote the science and improve the methods of fire protection and prevention, to obtain and circulate information on these subjects and to secure the cooperation of its members in establishing proper safeguards against loss of life and property by fire. Its membership includes over a hundred national and regional societies and associations and more than four thousand individuals, corporations, and organizations.

This pamphlet is one of a large number of publications on fire safety issued by the Association. The standard regulations, prepared by the technical committees of the National Fire Protection Association and adopted in the conventions of the Association, are intended to prescribe reasonable measures for minimizing fire losses. All interests concerned have opportunity through the National Fire Protection Association to participate in the development of the standards and to secure impartial consideration of matters affecting them.

Membership in the National Fire Protection Association is open to any Society, Corporation, Firm or Individual interested in the protection of life or property against loss by fire. All the valuable engineering and popular literature issued by the Association is sent, as issued, to every member. The Association is the clearing house for all the authoritative information on fire protection and prevention and members are privileged to submit to it their individual problems for solution. The Association is always glad to send samples of its publications to prospective members.

Recommended Good Practice for the Construction and Operation of Automobile Gasoline Tank Trucks.

1. CONSTRUCTION FEATURES.

11. Material, Capacity and Gauge.

Tanks shall be constructed throughout of open hearth steel or blue annealed steel, of a thickness and gauge in accordance with the provisions of the following table:

<i>Capacity (gallons)</i>	<i>Minimum Thickness of Material</i>
Up to 500 gallons	14 gauge U. S. Std.)
500 to 1000 "	12 " " "
1000 to 3000 "	10 " " "

Heads shall be bilged or corrugated, or as an alternative shall be 2 gauges heavier.

A tolerance of 10 per cent shall be allowed for individual tank capacities.

NOTE: Material other than that specified above may be used in thickness which will give strength equivalent to that specified above for steel, provided that the material has recognized and established properties as evidenced by specifications of American Society for Testing Materials, the Federal Specifications Board, or similar body.

12. Joints.

Shell and head joints shall be welded, riveted and welded, brazed or riveted and brazed, riveted and caulked, or made tight by some equally satisfactory process.

13. Test.

Each compartment of the completed tank shall be tested and proven tight at 5 pounds minimum air pressure.

14. Bulkheads.

Bulkheads may be single or double, but where liquids of different classes are carried double bulkheads shall be provided.

15. Fill Openings and Manholes.

Fill openings shall be 4 inches minimum diameter and when such openings are threaded, standard pipe-threads shall be used.

Manholes, if provided shall be not less than 9 $\frac{1}{4}$ " x 14" or if circular they shall be 14 inches in diameter, employing 4 threads to the inch where threaded.

16. Tank Outlets.

Tank outlets shall be substantially made and attached, to prevent breakage at this point and to permit complete drainage.

2. PROTECTION FEATURES.

21. Compartments in Tank.

Tanks up to and including 600 gallons capacity may be of single compartment type; those in excess of this capacity shall be sub-divided into compartments, none of which shall exceed 600 gallons capacity.

NOTE: This requirement should not be construed as prohibiting the use of single compartment tanks of capacity in excess of the above limitations for freight or bulk hauls between cities, provided tanks of such capacity are not used for distribution purposes within city limits.

22. Vents.

Each tank compartment shall be provided with a $\frac{3}{4}$ -inch vacuum and pressure operating vent, and in addition thereto venting facilities of such size and capacity as will safely relieve such internal pressures as may be created by exposure fires.

23. Valves and Faucet Connections.

All draw-off valves or faucets shall have discharge end threaded or otherwise so designed as to permit of tight connection with hose extending to fill-pipe.

24. Protection Against Collision.

Every tank truck shall be provided with properly attached rear steel bumpers. The rear bumpers or chassis extension shall be so arranged as to adequately protect the draw-off valve or faucets in case of collision.

25. Emergency and Discharge Control.

Each compartment of a gravity discharge truck tank shall be (provided) equipped with a reliable and efficient shut-off valve located inside the shell of the tank in the compartment outlet, and except during delivery operations such valve shall be automatically kept closed, or shall be so interlocked with delivery operation that it will be mechanically closed when said delivery operations are completed.

The operating mechanism for such valves shall be provided with a secondary control, remote from the tank filling parts and discharge faucets for use in event of accidents or fire during delivery operations, and such control mechanism shall be provided with a fusible point which will cause valves to close automatically in case of fire.

In every case there shall be provided between the shut-off valve seat and discharge faucet, a shear section which will break under strain and leave the shut-off valve seat intact.

26. Can Boxes.

Can or bucket boxes shall be so constructed or lined as to prevent sparking.

27. Smoking Prohibited.

Smoking by truck drivers or their helpers shall not be permitted while driving their trucks on the road, while making deliveries or during filling of truck tanks, or while making any repairs to trucks either on or off oil company property.

28. Extinguishers Required.

Each truck or trailer shall be provided with at least one hand fire extinguisher of a type suitable for extinguishing gasoline fires.

3. SAFEGUARDS FOR AUTOMOBILE HAZARDS.

31. Tank Truck Fuel Systems.

(a) **FUEL TANK.** The main fuel tank shall not be placed over or adjacent to the engine. It shall be constructed and mounted in such a manner as to present no unusual hazards. Tanks shall be arranged to vent during filling operations and to permit draining without removal from the mounting.

(b) **FUEL FEED SYSTEM** shall be constructed and located so as to minimize fire hazard. When necessary a pressure release device shall be provided.

(c) **FUEL LINE** shall be of proper material, having all connections made with suitable fittings, shall be equipped with shut-off valve, and shall be supported to prevent chafing and vibration.

(d) **CARBURETOR** shall be so constructed and installed that the fire hazards involved by its use shall be reduced to a minimum. Direct drainage of overflow gasoline shall be provided for.

(e) **CONSTRUCTION AND INSTALLATION.** All parts of the fuel feed system shall be constructed and installed in a workmanlike manner.

32. Electrical Equipment and Lighting.

(a) **HIGH AND LOW TENSION WIRING.** The high and low tension wiring shall be provided with suitable insulation and shall have sufficient current-carrying capacity and mechanical strength.

(b) **SPLICES.** Splices in wiring, if necessary, shall be made, protected and supported in a workmanlike manner.

(c) **CONNECTIONS.** Wiring connections shall be made with suitable fittings or terminals.

(d) **PROTECTION OF WIRING.** The wiring shall be supported and protected from mechanical injury, chafing and exposure to or contact with oil, grease or gasoline, and shall be so located as to avoid damage to insulation from heat.

(e) **FUSES.** Suitable fuses or other automatic overload protective devices shall be installed in all low-tension circuits except the ignition and starting motor circuits. When a generator is used, an ammeter should be installed.

(f) **CONSTRUCTION AND INSTALLATION.** All electrical units shall be constructed and installed in a workmanlike manner.

(g) **LIGHTING.** Electric lighting only shall be used for tail lights. Where gas headlights are used they shall be extinguished during loading and unloading operations. Gas headlights or gas lanterns shall be provided with reliable means for mechanical ignition. The use of oil lanterns and matches shall be prohibited.

(h) The preferred location of the tail lamp is at the extreme rear end of the tank at the upper left-hand corner.

(i) It is recommended that the voltage of starting and lighting systems be 6 or 12 volts.

33. Exhaust Systems.

(a) The exhaust system, including muffler and exhaust line, shall have ample clearance from the fuel system and combustible materials, and shall not be exposed to accumulations of grease, oil or gasoline.

(b) The exhaust system, including all units, shall be constructed and installed in a workmanlike manner. Muffler cut-out shall not be used.

4. LOADING AND UNLOADING OPERATIONS.

41. Liquid Expansion.

In order to provide for expansion of the liquid, no tank or tank compartment shall be filled in excess of 99 $\frac{3}{4}$ per cent of its capacity.

42. Shut Down of Motor During Loading and Unloading Operations.

During loading or unloading operations, motors of tank trucks shall be shut down. All means should be taken to insure the strict enforcement of this requirement.

NOTE. Special cases require the pumping of tank truck contents to the container. Where such conditions obtain, the requirement of Section 42 shall not be construed as prohibiting the use of a power operated pump for such purpose, the power being obtained from the automobile motor. Where such conditions exist the motor of the tank truck should be stopped during the period necessary for the making of loading or unloading connection and stopped again when such connection is broken.

5. GROUNDING.

51. Metallic Connection.

Tank, chassis, axles and springs shall be metallically connected.

52. Drag Chains.

Tank trucks shall be equipped with drag chains long enough to reach the ground in order to drain off such static charges as may be generated by splashing of the contents or other causes. See Figure "A". Spare links for this drag chain should be carried in the tool box and the driver held responsible for keeping the chain in working order.

53. Filling Pipe.

During the filling operation electrical contact shall be maintained between the fill pipe and the tank truck. The use of a drag chain is not intended to replace any of the present precautions used in filling tanks. As shown in Figure "B", the truck tank filling pipe should be electrically connected to the tank truck by a bond wire attached to a metallic part of the tank from which all paint has been removed at the point of application. This bond should be made before removing covers of gauge or fill openings. When a funnel is used it should be provided with a metal bail, and spring straps on the side to ensure metallic contact with the filling pipe and truck tank. See figures "B" and "C".

6. TRAILERS AND SEMI-TRAILERS.

61. The foregoing provisions shall also apply to the construction and operation of trailers and semi-trailers with the exception of paragraphs 31 and 33.

62. All trailers shall be firmly and securely attached to the vehicle drawing same by means of suitable draw-bars, supplemented by safety chains.

63. Every trailer shall be equipped with a reliable system of brakes with reliable provisions for operation from the driver's seat of the vehicle drawing same.

64. Each trailer shall be provided with side lights and a tail light.

65. All four and six wheel trailers shall be of the fifth wheel type.

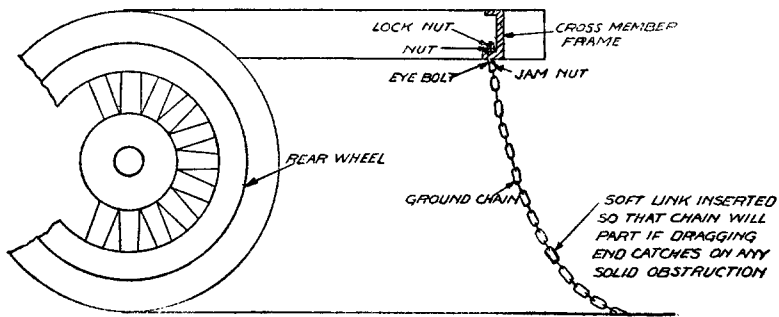


FIGURE "A"

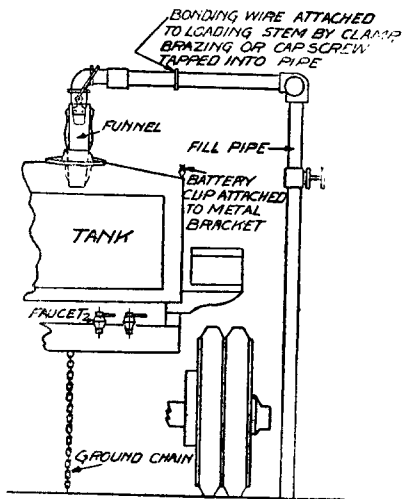


FIGURE "B"

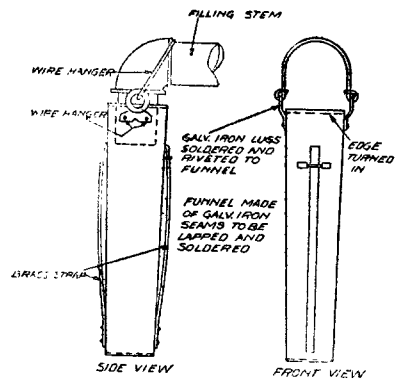


FIGURE "C"
DETAIL OF FUNNEL