

Recommended Safety Instructions for LP-Gas Winter Switch Protection Devices
Revised 2025 (6 Pages)

A. Purpose

1. This Manual Part recommends instructions for LP-Gas systems servicing winter switch protection devices such as hot air blower snow melters and switch heaters. The term "switch heater" will be used herein. It sets forth general requirements representing recommended practice.
2. These instructions are predicated on a standard vapor withdrawal application using American Society of Mechanical Engineers (ASME) storage containers (or "tanks"), and it must be recognized that generalized procedures cannot anticipate all situations. Accordingly, in some cases, deviation from these instructions may be necessary to determine safe conditions.

B. General Safety Instructions

1. In the interest of safety, all persons handling LP-Gases shall be trained in proper handling and operating procedures.
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3. Personnel shall wear all required PPE during all fuel transfer operations.
4. Smoking or providing any source of ignition shall not be permitted in the area where work is being done on or near tanks, piping, tubing, or equipment which contains or has contained LP-Gases.
5. Before attempting to open any joints in gas supply piping or equipment, personnel shall first ensure that the system is free of pressure.

C. LP-Gas Storage Systems

1. LP-Gas storage systems shall be designed, constructed, installed, and operated conforming to NFPA 58: Liquefied Petroleum Gas Code, issued by the National Fire Protection Association (NFPA), and shall conform to individual railroad or purchaser instructions and any Federal, State, Local requirements.
2. The normal minimum distance to the nearest point of a tank shell from any railway track (gauge side of the nearest rail) should not be less than 20 ft (6.1 m).

3. The minimum distance to the nearest point of a tank shell from railway buildings, such as shelters to house switch heater assemblies, railway tool houses, or railway communications and signal bungalows, should not be less than 10 ft (3.0 m).
4. Storage tank and its supports should be given a careful inspection at the time of installation and at the start of each winter operating season. Section F. LP-Gas Switch Heaters Storage Tank and Fuel Supply Systems Annual Safety Inspection Checklist may be used as an annual inspection checklist to determine if a tank is suitable for continued service.
5. Storage tank and its supports shall also be given an inspection at the time of each refilling. Storage tanks and any supports that show evidence of damage, deterioration or incorrect installation shall not be filled.
6. Total storage capacity should not normally exceed 2,000 U.S. gallons (7,571 L) of water capacity.
7. In heavily populated or congested areas, storage tanks should be enclosed within a suitable protective fence.
8. The area within 25 ft (7.6 m) of a tank should be kept free of debris and combustible materials, other than railway ties that are in place on the track. Grass and weeds within 10 ft (3.0 m) of a tank should be kept cut to a height not exceeding 6 in (152.4 mm).
9. Tanks should be kept properly painted.
10. Tank vapor service valve should be kept tightly closed, and protective valve cover (or "dome") should be kept locked when switch heaters are NOT in regular use.
11. Tanks shall be labeled "FLAMMABLE" and either "LP-GAS," "LPG," "PROPANE" or "BUTANE," and the label shall conform to American National Standards Institute (ANSI) standard Z535.4-2011 Product Safety Signs and Labels.
12. Tank valves and gauges should be given a careful inspection at the time of installation and at the start of each winter operating season to ensure that they are gastight and operational. All valve accessories such as rain caps, handwheels, etc. shall be properly installed and secured against improper operation.
13. Outdoor pressure regulators shall be designed, installed, or protected so their operation shall not be affected by the elements. Outdoor regulator

vent opening shall be pointed downward, or installed under a protective cover.

14. Outdoor pressure regulators should be inspected periodically by qualified personnel. Pressure regulators that show evidence of corrosion shall be replaced promptly.

Outdoor pressure regulators shall be inspected periodically for internal corrosion. Pressure regulators that show evidence of corrosion shall be replaced promptly.

(NOTE : To inspect for internal corrosion, it is necessary to close the service shut-off valve and remove the regulator adjusting screw and main spring assemblies. Look into the spring casing with a flashlight. If there is any evidence of corrosion, the regulator should be replaced. After inspection, regulator operating pressure should be reset and the switch heater checked for proper operation.)

10. Pressure regulators should be date tagged when installed and replaced at 15-year intervals.
15. Safety relief valves shall be given a careful inspection at the start of each winter operating season. Safety relief valves that show evidence of corrosion, damage, plugging of orifices or channels, and leakage shall be replaced promptly.

WARNING: Eye protection shall be used when examining relief valves under pressure.

16. Pressure relief valves and pressure regulators should be replaced as needed or as recommended by the supplier.

D. Gas Piping Systems

1. Aboveground portions of gas supply piping such as vertical risers at storage tank and at switch heaters should be protected by suitable guard rails against damage from moving vehicles and other traffic.
2. Gas pipelines running parallel to a railway track should not be closer than 10 ft (3.0 m) to the gauge side of the nearest rail of that track.
3. Underground pipelines within 20 ft (6.1 m) of the gauge side of the nearest rail of any track should be laid not less than 3 ft (1 m) below ground.

4. Gas piping systems shall be tested and proven free of leaks at not less than the normal working pressure at the time of installation and at the start of each winter operating season. A match, candle, flame, or other source of ignition shall not be used to check for leaks.

E. Switch Heaters

1. Switch heaters should be installed in accordance with the manufacturer's recommendations, and, in the case of listed or approved equipment, it should be installed in accordance with the listing or approval.
2. Switch heater apparatus installed outside of track and above ground shall be located outside AREMA Manual for Railway Engineering, Chapter 28-Clearances, or as instructed by the railroad or purchaser.
3. Switch heater should be given a careful inspection at the time of installation and at the start of each winter operating season to ensure the apparatus is in proper condition for service. All mounting hardware should be checked to confirm that it is secured according to the manufacturer's instructions. Switch heaters that do not operate properly shall be promptly repaired or removed from service.
4. Gas burners should be adjusted to their proper input in accordance with the manufacturer's instructions at the time of installation.
5. Switch heaters should be operated for at least 15 minutes at the start of each winter operating season. The system should be tested to ensure that it is operating properly according to the manufacturer's specifications.
6. Switch heater gas combustion equipment, including burners, combustion chambers, pilots, etc., should be kept clean and should be examined at regular intervals to ensure good condition.
7. When automatic flame safeguards are used, a complete shutdown and restart should be made at the start of each winter operating season to check the components for proper operation. Test in accordance with the manufacturer's recommendations.
8. Accessory safeguard equipment, such as high-temperature limit switches, air flow switches, etc., should be operated at the start of each winter operating season to ensure proper functioning. Test in accordance with the manufacturer's recommendations.

9. Switch heaters should be inspected for proper alignment and operation periodically during the winter operating season, and necessary repairs and replacements shall be made promptly or removed from service.

F. LP-Gas Switch Heaters Storage Tank and Fuel Supply Systems Annual Safety Inspection Checklist

This checklist is designed as a guide to aid in determining that a LP-Gas storage facility is properly installed and in a safe condition for continuing use. It does not replace any federal, state, or local requirements for storage tank inspections.

- Check that the tank area is free of debris and combustible materials. Check that grass and weed growth is controlled.
- Check that tanks are located outside AREMA or other applicable track clearances.
- Check that the metal data plate (design specification markings) is clear and legible and that the plate is securely attached to the tank.
- Check that the pressure rating of the tank is suitable for the type of LP-Gas used.
- Check that tank product and hazard identification markings are clear and legible.
- Check that the paint coating is smooth and clean, rust-free, with no chipping or flaking.
- Check that the protective valve cover (or "dome") is properly attached and capable of being locked.
- Check the tank for fire damage. Look for signs of charred or bubbled paint, heavy sooting, or bulging.
- Check that the tank shell and heads are smooth and free of defects, dings, dents, cuts, or other damage that can weaken the tank.
- Check that welds or seams are rust-free and are not cracked or broken.
- Check that tank supports ("feet" or saddles) are properly attached to the container body. Tank supports should be properly painted.
- Check that tank is seated flat, level, and secured to its foundation. Check that foundation is not sinking or settling.

- Foundation should be able to secure the tank in the event of flooding or other environmental events.
- Check that tank valves, pressure regulator, and gauges are gastight and operational. Check that all valve accessories (rain caps, handwheels, etc.) are properly installed.
- Check that pressure regulator vents are free from any obstruction and, in the case of outdoor pressure regulators, pointing downward or are equipped with protective "drip lips."
- Check safety relief valve for corrosion, damage, plugging of orifices or channels, and leakage. Safety relief valves shall be replaced if there is any doubt regarding the suitability of the device for service.

WARNING: Eye protection shall be used when examining relief valves under pressure.

- Check hoses for cuts, exposed fabric, soft spots, bulges, and similar defects. Also, check for slippage at couplings. Hose subjected to unusual abuse, such as kinking or flattening, shall be immediately removed from service.
- Check that aboveground portions of gas supply pipelines are free of defects, dents, dings, cuts, or other damage that can weaken the pipeline.
- Check that guard posts are properly installed and capable of protecting vertical pipeline risers at the switch heater.