

Submittal Manual: Sub Base Tank



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Thank you for considering Tramont

Warning

This tank has been pressure tested from 3 to 5 psi for weld integrity. However, it has not been designed as a pressure vessel.

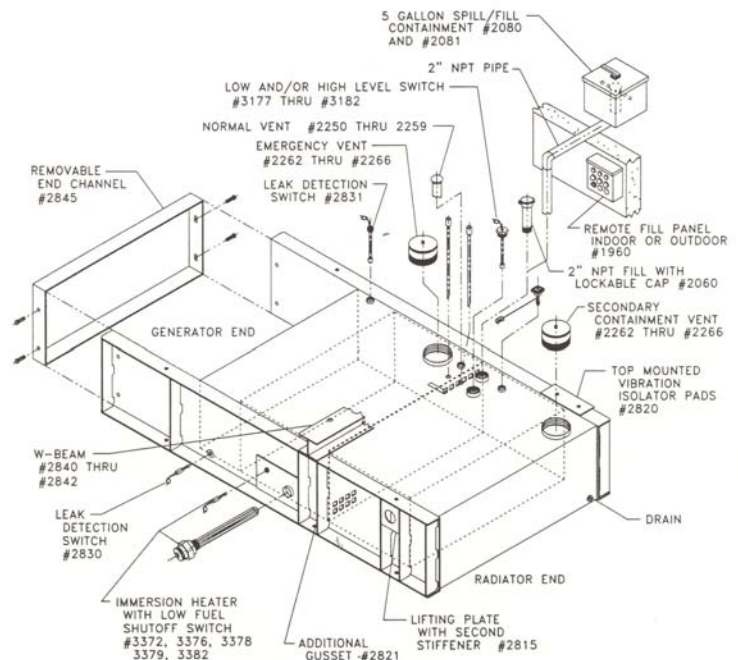
This tank must be vented atmospherically through a minimum of a 2" NPT atmospheric vent pipe. Additional emergency venting requirements also may have to be met. All emergency vent fittings are supplied.

If tank is filled by a fuel transfer pump:

1. Tank must have the "overflow" fitting plumbed in a continuous downward path to the main tank without downsizing. During an overflow condition, any upward plumbing will result in an undesirable fuel pressure situation. This may result in a DIESEL FUEL SPILL.
2. All normal and emergency vents must be at least 6" above any piping containing fuel. **IMPORTANT:** On initial start-up, purposely but cautiously overflow the tank to insure the overflow line or overflow system works properly.
3. If a continuous downward path is not possible, a reverse pumping system, or reverse pumping tank is required. Consult factory for specification and sizing.

Optional Accessories

Tramont offers a wide selection of sub base systems accessories. The diagram below highlights some of the most widely used options.



Sub Base Tank Venting

The following venting specifications apply to all Tramont sub base tanks.

Normal venting: Normal venting is sized in accordance with The American Petroleum Institute Standard No. 2000, Venting Atmospheric and Low Pressure Storage Tanks not less than 2" nominal inside diameter.

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Emergency Venting: The exclusive low profile emergency vent, developed by Tramont, is sized to accommodate the total capacity of both normal and emergency vent, and is not less than that derived from NFPA 30, Table 2-8, based on wetted surface area of the tank (calculated based on 100% of primary tank). A powder coated pressure relief vent cap is furnished for the primary and secondary (if applicable) portion of the tank. The vent is spring-press operated. Opening pressure is 0.5 psig; full opening pressure is 2.5 psig. Limits stamp marked on top of each vent. Emergency relief vent sized to accommodate total venting capacity of both normal and emergency vents.

Standard Ancillary Equipment

The following ancillary equipment is standard on all Tramont sub base tanks:

Fittings: ½" NPT fuel supply, 2" NPT fuel fill, ½" NPT fuel return, 2" NPT for normal vent, 2" – 6" NPT emergency vent, level gauge, 3/8" NPT drain (plugged), 2" NPT for low level option (plugged), ½" NPT for leak detection option (plugged).

Electrical Stub-up Area: Provides space for gen-set electrical connections.

Baffle: Separates cold engine supply fuel from hot returning fuel.

Fuel Level Gauge: A direct reading, UL Listed, magnetic fuel level gauge with hermetically sealed vacuum tested dial to prevent fogging.

Optional Equipment

Tramont also offers the TSS-Series, day tank sub bases for full pumping applications. The TSS options includes Tramont's exclusive System 2000PLUS™

Electronic Control Module for full annunciation and control. Please refer to the Tramont Day Tank and Accessories Product Guide for additional electrical and mechanical options.

NFPA Codes

Tramont products are designed and built to comply with Underwriters Laboratories® and National Fire Protection Agency Specifications in relation to tank venting, capacities and location.

There may also be local codes that require your compliance; if so, these will take precedence. The enclosed are applicable excerpts from the National Fire Protection Association. Sources are NFPA 110, 2002 Edition; NFPA 37, 2002 Edition; NFPA 30, 2003 Edition.

4.2.5.1 Normal Venting for Tanks

4.2.5.1.1 Atmospheric Storage tanks shall be adequately vented to prevent the development of vacuum or pressure that can distort the roof of a cone roof tank or that exceeds the design pressure of other atmospheric tanks when filling or emptying the tank because of atmospheric temperature changes.

4.2.5.1.2 Normal vents shall be sized in accordance with either API Standard No. 2000, Venting Atmospheric and Low-Pressure Storage Tanks, or another accepted standard. Alternatively, the normal vent shall be at least as large as the largest filling or withdrawal connection but in no case shall it be less than 32mm (1.25 in.) nominal inside diameter.

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NFPA Codes *continued*

4.2.5.2 Emergency Relief Venting for Fire Exposure for Aboveground Tanks

4.2.5.2.1 Every aboveground storage tank shall have emergency relief venting in the form of construction or a device or devices that will relieve excessive internal pressure caused by an exposure fire. This requirement shall also apply to each

compartment of a compartmented tank, the interstitial space (annulus) of a secondary containment-type tank, and the enclosed space of tanks of closed-top dike construction. This requirement shall also apply to spaces or enclosed volumes, such as those intended for insulation, membranes, or weather shields, that can contain liquid because of a leak from the primary vessel and can inhibit venting during fire exposure. The insulation, membrane, or weather shield shall not interfere with emergency venting.

4.2.5.2.9 Each commercial tank venting device shall have stamped on it the start-to-open pressure, the pressure at which the valve reaches the full open position, and the flow capacity at the latter pressure. If the start-to-open pressure is less than a gauge pressure of 17 kPa (2.5 psig) and the pressure at the full open position is greater than a gauge pressure of 17 kPa (2.5 psig), the flow capacity at a gauge pressure of 17 kPa (2.5 psig) shall also be stamped on the venting device. The flow capacity shall be expressed in cubic feet per hour of air at 60°F (15.6°C) and 1 bar (14.7 psig or 760 mm Hg).

5.7.1 Vent Piping for Aboveground Tanks

5.7.1.2 Manifolding of vent piping shall be avoided except where required for special purposes such as vapor recovery, vapor conservation, or air pollution control. Where vent piping is manifolded, pipe sizes shall be capable of discharging, within the pressure limitations of the system, the vapors they are required to handle when all manifolded tanks are subject to the same fire exposure.

6.3.2 Fuel Tanks Inside Structures

6.3.2.2* Fuel tanks not in a room by themselves shall not exceed 2500L (660 gal.) Fuel tanks larger than 2500 L (660 gal) capacity shall be enclosed in a room in accordance with 6.3.5 or 6.3.6. Not more than one such 2500 L (660 gal) capacity tank, or two or more of these tanks with an aggregate capacity of not more than 2500 L (660 gal), shall be connected to the engine.

Exception: Fuel tanks of any size shall be permitted within engine rooms or mechanical spaces, provided the engine or mechanical room is designed using recognized engineering practices with suitable fire detection, fire suppression, and containment means to prevent the spread of fire beyond the room origin.

6.3.2.4 Fuel tanks within structures shall be provided with spill containment consisting of either a wall, a curb, or a dike having a capacity at least equal to that of the largest surrounded tank.

Exception: A spill containment system of lesser capacity equipped with an overflow or drainage system that is adequate in size and location to convey any spillage of fuel to a tank (inside or outside) or to a safe area outside the structure.

6.5 Fuel Flow Control

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NFPA Codes *continued*

6.5.2 Alarms, float-controlled valves, or mechanical or remote-reading-level gauges or protected sight glass gauges shall be installed to aid personnel in properly operating the fuel system.

6.5.3 Stationary-powered fuel pumps supplying fuel tanks shall have “stop” controls sensitive to a tank’s high liquid level.

6.5.4 Fuel tanks supplied by pumps shall be provided with all of the following:

- (1) An overflow line
- (2) A high-level alarm
- (3) A high-level automatic shutoff

6.5.4.1 The overflow line shall be continuous piping, without valves or traps, to the source tank or collection system.

6.5.4.2 The capacity of the overflow line shall exceed the delivery capacity of the supply lines to the fuel tank.

5.7 Vent Piping

5.7 Vent piping shall be installed in accordance with NFPA 30, Flammable and Combustible Liquids Code Section 5.7.

7.9 Fuel Systems

7.9.4 Day tanks on diesel systems shall be installed below the engine fuel return elevation.

7.9.4.1 The return line to the day tank shall be below the fuel return elevation.

7.9.4.2 Gravity fuel oil return lines between the day tank and the main supply tank shall be sized to handle the potential fuel flow and shall be free of traps so that fuel can flow freely to the main tank.

7.9.5 Integral tanks of the following capacities shall be permitted inside or on roofs of structures, or as approved by the authority having jurisdiction:

- (1) Maximum of 2498 L (660 gal) diesel fuel

7.9.12 Listed generator sub-base secondary containment fuel tanks of 2498 L (660 gal) capacity and below shall be permitted to be installed outdoors or indoors without diking or remote impounding.

Annex A- Explanatory Material

A.3.2.2 The phrase “authority having jurisdiction,” or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

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NFPA Codes *continued*

A.5.5.3 Consideration should be given to sizing tanks in order to meet minimum fuel supplier delivery requirements, particularly for small tanks. Consideration also should be given to oversizing tanks, because many fuels have a shelf life and deteriorate with age. Where large tanks are required, it is recommended that fuels be periodically pumped out and used in other services and replaced with fresh fuel. Prudent disaster management could require much larger on-site temporary or permanent fuel storage.

Tramont builds UL listed day and sub base tanks that offer a design that allows them to be installed in accordance with National Fire Protection Association (NFPA) standards as listed within the previous code referenced articles. In spite of these national guidelines, the authority having jurisdiction may be a local or state agency which may require adherence to standards above and beyond NFPA. Some of the local and state standards are listed below. Please let your Tramont sales engineer know at the time of quotation if you have an application where the final destination is known, as they are well versed in offering products that meet local codes. For additional information on these requirements or others not listed, feel free to contact Tramont directly.

- California (seismic requirements)
- Los Angeles Fire Department Approval
- Orange County Fire Department
- Santa Clara County (Northern California)
- San Francisco Fire Department (SFFD) Code
- City of Chicago
- Wisconsin Code

- Michigan Department of Environmental Protection
- New York City Code
- Suffolk County New York
- Nassau County New York
- Florida Department of Environmental Protection
- Florida Department of Environmental Resources Management (DERM for Dade & Broward Counties)
- American Health Care Administrators (AHCA)