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Transporting LNG Trucks

Overview

This document is intended to give vehicle manufacturers and aftermarket up fitter's LNG fuel system related guidelines for transporting new LNG vehicles. Heavy trucks are commonly moved from one place to another using a method called decking or piggy back where the power vehicle has a truck connected to its fifth wheel and another trucks or series of trucks may be decked or piggy backed onto those other vehicles (see photo below). Chart LNG Vehicle tanks have special considerations that need to be taken into account when transporting LNG powered trucks via this method.



Leak Test

When the LNG trucks fuel system is installed regulatory guidelines call for a leak test of the LNG fuel system before the vehicle is released from their shop and put into service. The leak test is best performed using compressed nitrogen or compressed natural gas regulated to 15 bar. LNG should only be used if the truck is to be put into regular service the following day or used as a power vehicle/transporter.

Transporting an LNG Truck

When trucks are decked/piggy backed for transport the power vehicle can be filled and run on LNG fuel to pull the decked/piggy backed trucks to their destination. However it is recommended practice that the decked trucks LNG fuel tanks are not filled until being delivered to the final point and the day prior to going into regular service. If the tank(s) are filled or have liquid fuel (LNG) in them, the angle of the decked trucks will cause liquid to cover the tubing inside the trucks tank; if the tank builds pressure up to the relief valve set point during transportation the relief may vent liquid. If this occurs, cryogenic liquid (LNG) could be sprayed out of the vent stack. This can cause an unsafe and damaging condition to any property or persons in the immediate area.

Chart recommends performing the first fill and tank conditioning/leak test the day prior to putting the truck into service. The preferred first fill method is outlined below.

This procedure is intended for use by trained technicians with experience on systems using LNG. Review all applicable safety documents before beginning this procedure.



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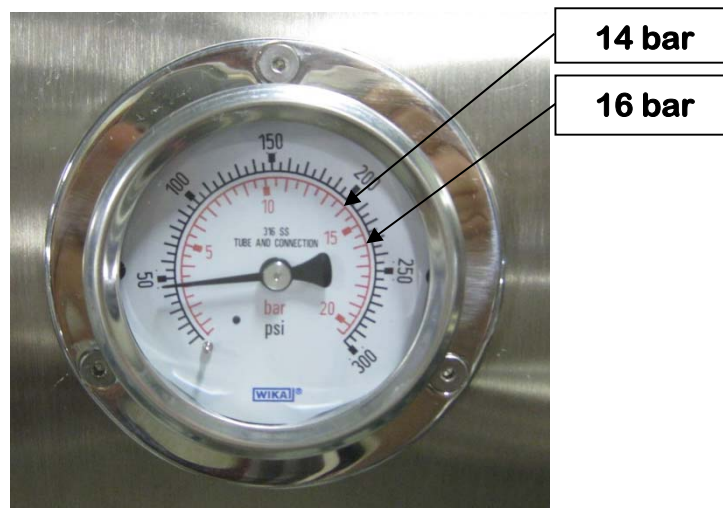
First Fill or Hot Tank Fill

An LNG tank when first installed is considered to be a hot tank. Hot tanks will build pressure rapidly during the fill as the pressure vessel cools down, on many stations this will prematurely stop the fill. The recommended first fill procedure is to put 20-40 liters of LNG into the tank. Check the plumbing for leaks. Drive the vehicle for 10–15 minutes, this will pull the pressure down to normal and cool down the tank. Recheck for leaks and fill normally. This same procedure is recommended for tanks that have been empty and out of service for more than ten days. Alternatively put 20-40 liters of LNG into the tank and fuel like a warm tank.

Transporting with LNG

In special cases a truck may be transported with LNG in the tank. A tractor, when decked, will normally put the LNG tank at about a 30 degree positive angle to horizontal. To check the tank angle, an angle gauge can be placed on top of the outer horizontal surface of the tank. At 30 degrees or less a dual tank system must have less than 170 liters. A single tank system must have less than 75 liters. When transporting trucks with LNG in the tanks a special procedure will need to be followed by the driver.

1. Prior to setting the towed trucks on the saddle or tow bar the truck must be driven to reduce the tank(s) pressure to the economizer set point (typically around 7-8 bar).
2. The truck can then be saddled or connected to the tow tractor.
3. The driver must monitor the tank pressure on each of the decked trucks tank(s) at the beginning and end of each day/shift or trip, whichever occurs first. The tank(s) will vent if tank pressure reaches approximately 16 bar (see photo below), they must not be allowed to vent during the trip.
4. The tank(s) must not exceed 14 bar at any time during the trip. Any tank that is at or above 14 bar when performing the pre or post shift/trip inspection must have the tank pressure reduced to below 13 bar by either by running the engine (if able) or manual venting.



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