

## **Mounted Tank, Trailer, Semi Trailer and Ancillary**

### **11. External Fire Extinguisher (2.5)**

2.5.3 Where two fire extinguishers are fitted to any tank wagon, one is to be  
Located on the left hand side of the road tank wagon, with the other on the  
Right hand side of the vehicle towards the front of the vehicle.

If it is not practicable to locate the latter extinguisher towards the front of the vehicle, it  
Is to be located in a position that is still readily accessible by the driver.

Note: For purpose of this clause, an additional towed tank trailer, each additional B-Train  
tank and similar combination is treated as being an individual vehicle and thus requires an  
additional complement of extinguishers.

2.5.4 The fire extinguishing medium shall be compatible with the substance being  
Transported.

**Table 2.1 – Type and Number of Fire Extinguishers**

<i>Application</i>	<i>Minimum Requirement</i>
In every vehicle cab	One 30B extinguisher
A road tank vehicle which exceeds 2,000 litres capacity and which carries Class 3.1 A-D Flammable cargo	2 x 30B or 1 x 60B extinguisher

Note. The quick release of a fire extinguisher is deemed to be removal and ready for use  
within 10 seconds of commencing the release of the extinguisher from the vehicle.

### **12. Test Overfill Protection System (Scully compatible) for Correct Operation**

*It is recommended that tank wagons are equipped with over fill protection.  
For those tank wagons that load at the gantries of the major oil companies,  
Industry compatible over fill protection is required to be fitted.*

*It is recommended that those vehicles which have over fill protection fitted  
Also have the system interconnected with the vents of the tanks to ensure that  
the vents are open, thereby preventing the tank from becoming over  
Pressurised during the filling operation*

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- Check the Overfill system with a compatible overfill tester, carryout a Wet and Dry test by placing a cup of water under the probe.  
Note: ensure best practice is used for Aviation tankers
- Check the Overfill plug for wear
- Check the overfill plug dust cap is installed and secure
- Check the Overfill pressure switch is operating when the Master Air valve is applied
- Check when the Master Air valve is released that one of the Overfill compartment circuits is broken (generally Pin 8 on the tester)
- Check the Overfill wiring and conduit for signs of damage or fatigue
- Check the Overfill probe is secure in the holder

### 13. Tank Fittings - Manholes, Vents, Valves (3.4)

3.4.1 Every opening to the liquid space of a tank shall be provided with an effective means of closure in accordance with one of the requirements of this Clause 3.4 as appropriate.

3.4.2 **Manholes** — Each compartment shall be accessible through a manhole and fitted with a closure capable of passing the tank pressure test.

3.4.3 **Valves** — Each liquid discharge opening shall be provided with an internal shut-off valve and an external shut-off valve, suitable for service at the piping design pressure.

3.4.3.1 The internal shut off valve shall comply with the following requirements:

i The valve seat shall be located inside the tank or within the tank flange or its companion flange. The remainder of the valve may be either inside or outside the tank shell, provided that in the event of accidental damage to any associated external fittings the safe functioning of the internal valve is not impaired.

ii An internal shut-off valve which is bottom-operated shall incorporate, in addition to the normal means of closure, an automatic heat-actuated closing device which will become effective at a temperature arranged to respond to a fire in the vicinity of the tank outlets i.e. it is to actuate at a temperature not more than 80% of the auto-ignition temperature of the liquid being carried. (Nylon or plastic pneumatic line to the internal shut off valve shall be deemed to meet this requirement.)

iii A tank designed for bottom loading shall incorporate an effective liquid flow deflector above the internal shut-off valve, and a provision to minimise the possibility that foreign objects within the tank might prevent the closure of the valve. Any such protective device shall be designed to avoid the spraying of liquid during filling.

iv. The valve shall be capable of being manually closed from a position remote from the delivery hose connection.

3.4.3.2 The external shut-off valve shall be a quick-shut type suitable for the hazardous substances and pressures involved be fitted in a readily accessible position and fitted with a cap. External delivery pipes and valves shall in all cases be protected from damage.

3.4.4 **Vents** — Each tank compartment shall be provided with normal venting in accordance with Clause 3.4.5 and emergency venting in accordance with Clause 3.4.6 to relieve vapour in order to avoid building up an excessive pressure. The vents shall be suitable for the substance being carried. The vents and their installation shall comply with the following requirements:

3.4.4.1 Each vent shall be marked with the manufacturer's name, model identification, discharge capacity and related pressure.

3.4.4.2 The discharge capacity of each model and type of vent shall be determined before use.

3.4.4.3 Vents shall be designed and installed to prevent leakage of liquid past the vent in the event of surge or vehicle overturn.

3.4.4.4 The exit of a vent except an emergency vent shall be covered with wire gauze of 500 micro-metres nominal aperture.

3.4.4.5 Each vent shall communicate with the vapour space.

3.4.4.6 Shut-off valves shall not be installed between the tank opening and the vent.

3.4.4.7 Vents shall be mounted, shielded, or drained, so as to prevent the accumulation of water in such a manner that freezing could impair the operation of the vent.

3.4.5 **Normal Venting** — The normal venting provision shall consist of a pressure vent and a vacuum vent, generally in accordance with the following requirements:

3.4.5.1 The clear area through any pressure or vacuum vent shall be not less than 280 mm<sup>2</sup>. The pressure opening setting shall not exceed 17 kPa and the vacuum vent opening setting shall not be less than 7 kPa vacuum.

3.4.5.2 When tilted to any angle exceeding 90° from the vertical, the pressure vent shall open at a minimum of 30 kPa or shall lock shut.

3.4.6 **Emergency Venting** — The emergency venting provision for protection against fire exposure which may be incorporated into the vent valve shall comprise a pressure vent which complies with the following requirements:

3.4.6.1 The emergency vent shall start to open at a pressure no higher than 30 kPa and be fully open at 45 kPa.

3.4.6.2 The total emergency venting capacity of each tank compartment shall be not less than that specified in Table 3.3. Flow rating pressure shall be the

“vent fully open” value of 45 kPa.

**3.4.7 Loading and Unloading Protection** — Unless provision is made to fill through the hatch, all tanks shall be loaded or unloaded with the hatch covers closed and shall be provided with sufficient liquid-venting capacity to discharge the whole of the liquid delivery rate of the pump, and with sufficient air inflow capacity to match the liquid withdrawal rate. The pressure and vacuum limits of 45 kPa and 7 kPa (negative) shall not be exceeded.

**3.4.8 Filling Provisions.** The provisions for filling the tank shall comply with the following requirements:

3.4.8.1 The fill tube of a top-filled tank shall terminate not more than 50 mm or less than 35 mm from the bottom of the tank, and shall be stayed.

3.4.8.2 The fill tube shall be connected to the vapour space of the tank by a pressure equalizing hole not less than 3 mm diameter or the equivalent in area, and which shall be fitted with gauze as required by Clause 3.4.9(a).

3.4.8.3 The vent shall be shrouded to redirect liquid down the fill pipe. The bottom end of the tube shall be cut square and the flow of liquid from the pipe shall be directed away from any objects which might cause the liquid to spray.

**3.4.9 Dip Stick** — A dip indicating system shall be installed and shall comply with the following requirements:

3.4.9.1 A dip stick which measures by contacting the bottom of the tank shall be provided with a tubular dip tube. A pressure equalizing hole shall connect the upper end of the dip tube with the upper tank space. The hole shall be covered by an anti-flash gauze of 500 micro-metres nominal aperture.

3.4.9.2 A durable striker pad of a thickness not less than that of the tank shell or 5 mm, whichever is the greater, and of the same material as the shell shall be welded to the tank bottom below the dip opening.

3.4.9.3 The dip tube shall terminate not more than 50 mm from the bottom of the tank and shall be stayed.

### **14. Tank Vents - Pressure / Leak Tested Bi-Annually (last 2 years)**

- Check the Vapour Vents, Pressure Vacuum, Rollover Valves and Emergency relief hatches have been tested in accordance to the manufacture specifications.
- Unless otherwise specified this must be carried out at a Maximum of 2 yearly intervals.

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- Check that the emergency hatch bridge and latch operate freely
- Check the bolt that passes through the hatch and the bridge is free to move
- Check the condition of the Emergency Hatch seal
- Check the Pressure Vacuum vent is secure and all components are in place
- With the Hatch open check that the Vapour Vents are closed with the Air Master valve off
- With the Air Master Valve open check the Vapour Vent opens fully, and that the seal and/ or O ring if fitted to the poppet.
- Check for sign of leaks around the main Man way hatch
- Check the bolts in the neck band on the main are secure and free from corrosion.
- Ensure the tank top is closed and sealed off when above checks are complete

### 15. Overfill Probe Height Check - Annual.

**Note: The Oil Industry Minimum Ullage requirement for a compartment is 230 litres or 3% of SFL which ever is greater.**

*Note - Overfill probes must be setup and recorded when the Tank Wagon is manufactured. Overfill probes must also be re-set after any repairs/maintenance has occurred which may have altered the overfill probes or whenever compartment sizes have been altered.*

Records of current probe height settings must be kept and made available for all tank wagons loading at NZ Oil Industry Terminals. Details must be recorded using the NZ Oil Industry “**Overfill Probe Setting Form**” (refer Form attachment below).



Overfill Probe Setting  
form NZ Oil Industry \

- Using the tank wagons “Overfill Probe Setting Form” data as a reference point, check (measure) that the Overfill Probe heights match the documented probe height settings and also verify that the probe ullage/settings comply with the minimum ullage requirement of 230 litres or 3% of SFL, whichever is greater.
- Record compliance on the Safe Load Pass check sheet item # 15.
- If for any reason the correct Overfill probe heights cannot be established/, it will be necessary to carry out the “Tank wagon overfill protection probe procedure”.

*Note: some manufacturers have introduced tag plates on the valance with the probe heights recorded on them*

### 16. Product Identification Tumblers at Faucet Outlets

- Check the condition and the legibility of the tumbler decals
- Check the operation of the tumbler, ensure it rotates freely and locks into position.

### 17. Compartment SFL Capacity ID's at faucet

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- Check each compartment ID tag is secure and legible. The tag must display the compartment number and the Safe Fill level.

*Note: some tank wagons show the volume for Diesel and Motor Spirit separately*

### **18. Correct HAZCHEM & Class 3 Placarding – Positioned /Displayed / Legible**

- The tank wagon shall be marked on the rear and both sides with a flammable liquid Diamond, minimum dimensions 400mm x 400mm and the product Hazchems 600mm x 400mm.

The label is to incorporate the words “No Sources of Ignition within 8 metres”.

Note: The requirements in relation to placarding as required by the Land Transport Rule Dangerous Goods 2005 Rule 45001/1 and the 2010 amendments 45001/2.

- Check the condition of the Placarding, ensure the colours are not faded and that information is legible.

### **19. Electrical Wiring (2.4 > 2.4.10) Insulation & Mechanical Protection**

The electrical wiring of tank wagons that convey substances with 3.1A, 3.1B or 3.1C hazard classifications shall comply with the following requirements and shall be suitable for the electrical loads.

2.4.1 The nominal voltage shall not exceed 48 volts.

2.4.2 The size of conductors shall be large enough to avoid overheating and shall be insulated. All circuits shall be protected by fuses or automatic circuit breakers, except for the following:

- From the battery to the cold start and stopping systems of the engine; and
- From the battery to the alternator; and
- From the alternator to the fuse or circuit breaker box; and
- From the battery to the starter motor; and
- From the battery to the power control housing of the endurance braking system (if fitted), if this system is electrical or electromagnetic; and
- From the battery to the electrical lifting mechanism for lifting the bogie axle.

2.4.3 The electrical installation beyond the rear of the driver’s cab shall be Designed, constructed and protected such that it cannot provoke any ignition Or short-circuit under normal conditions of use of the vehicle and that these Risks can be minimised in the event of an impact or deformation.

2.4.4 The battery shall be secured in front of the fire resistant shield. If this is not Practicable, it may be carried in a metal box or secured in a metal frame as Close to the cab as possible. The battery terminals shall, by means of an Effective acid resisting insulation cover, be held securely in place, be prevented from accidental shorting.

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2.4.5 The generator/alternator, switches and fuses shall be carried in front of the Fire resistant shield. Other electrical components may be fitted outside the Cab provided the components are rated for the hazardous atmosphere zones they may operate in. There may be other equipment necessary for the control/propulsion of the vehicle other than that used for the delivery of the substance and which may not be suitable for the hazardous atmosphere zone they operate in. This equipment is acceptable provided that it is isolated by the battery master switch when the hazardous atmosphere zones are present.

2.4.6. A battery master switch shall be provided to enable a means of isolating the electrical supply e.g. by means of a double pole switch. This shall be provided in a readily accessible position as close to the battery as is practicable, (it should be adjacent to the battery and preferably no further than 600 mm from it) and shall be clearly labelled as to its position. If a single pole switch is used it shall be placed in the supply lead and not in the earth lead.

2.4.6.1. This battery master switch must be able to be manually operated externally and deactivated from inside the vehicle cab in a position readily accessible to the driver. It shall be distinctively marked and protected against inadvertent operation by the driver.

2.4.6.2. The battery master switch shall be suitable for use in the hazardous atmosphere zone which it is required to operate in i.e. it shall;

- be EEx or suitable equivalent, and
- have a temperature rating T4, T5 or T6
- be suitable for equipment group II B or II C

2.4.6.3. The battery master switch shall be suitable for the environment that it is required to operate in i.e. it shall have a casing with protection degree IP65. The cable connections to the switch shall also be suitable for the operating environment. It is recommended that they have a protection degree IP54. However if they are contained in a housing (which may be the battery box) or switches with protection degree IP54 are not available, it is sufficient to protect their connections against short circuits (e.g. with a secure rubber cap).

2.4.6.4. The electrical supply may be maintained to certain vehicle accessories (e.g. operation recorder, computer, radios, clocks,) which cannot be shut off, provided the instrumentation is within the cab and each device is protected by a circuit breaker or fuse. Other electrical components may be fitted outside the cab provided the components are rated for the hazardous atmosphere zone they may operate in.

2.4.7. The original equipment manufacturer wiring (cab chassis) is to be in sound condition and must prevent the ingress of vapours, thus removing the potential for them to be a source of ignition. This does not obviate the requirement for the original equipment manufacturer wiring that is in a hazardous atmosphere zone classified as Zone 1 to meet the requirements of that zonal classification (as qualified by the Notes in clause 2.4.10).

2.4.8 Electrical wiring added to the original vehicle wiring shall be insulated from the chassis. The wiring shall be supported and protected from mechanical injury, chafing and exposure to contact with oil, grease, or petroleum substances, and shall be so located as to avoid damage to insulation from

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heat. Wiring outside and to the rear of the cab or on a trailer must be carried in conduit or double sheathed cable.

2.4.9 Junction boxes are to be at least IP65 rated.

2.4.10 Any electrical equipment that may be required to be active during hazardous substance transfer and that is located within a hazardous atmosphere zone shall be suitable for such an area. The hazardous atmosphere zones are deemed to exist during hazardous substance transfer and for 5 minutes thereafter.

The hazardous atmosphere zone shall be determined in accordance with the area classifications of AS/NZS 2430.3.3 Classification of hazardous areas Part 3.3 Examples of area classification – Flammable liquids or AS/NZS 60079.10.1:2009.

*In circumstances where tank wagons are to be used for top loading, particular consideration is required to be given to establish the hazardous atmosphere zones.*

**Note:** Isolation of the vehicle in accordance with 2.4.6 above is deemed to meet the hazardous atmosphere zones.

## 20. External Leaks – Tanker/ Tanks / Fittings

- Visually check there is not signs of cracking or fatigue on the tank barrel or gussets
- Check the tank foot valves and run off tubes for leaks
- Tank wagons with pumping systems, Check all Pressure and Suction lines, hard pipe and flexible lines for leaks or fatigue.

## 21. Equipment Security - tank mounts / hoses etc

- Check that all tank mounts are secure and that the mounting springs are not loose
- Check Hose trays and drain valves
- Check Tools boxes, Barrier boxes, Road cone holders are secure
- Check Road cones are clean and acceptable for use

## 22. Faucet Outlet Cone & Tolerance Test

- Check the opening operation action of the outlet faucet, the action should be smooth with no jamming through the opening and closing motion
- With the faucet open visually check the poppet O ring is in position and is in good condition
- Check the handle return spring is in position and in good condition
- Visually check for any damage or wear on the nose cone
- Check the tolerance with the approved API tolerance gauges
- Check the faucet sight glasses for cracking and leakage



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- If the nose cone is within the tolerance, rotate if required. This is to ensure even wear of the nose cone
- If the nose cone is worn beyond the API tolerance replace the nose cone or faucet.
- Check the faucet dust cap fits securely on the faucet and a safety chain is attached.

### **23. Tanker ID / Specification Plate displayed L/H Side**

5.1.2 Marking must be permanently attached to each tank or tank sub-frame that specifies:

- 5.1.2.1 The recommended operating pressure for each part of the tank and fittings that are intended to operate at different pressures, and
- 5.1.2.2 The maximum gross filling level of each tank compartment, and
- 5.1.2.3 The maximum density of any liquids to be carried, and
- 5.1.2.4 The material used to construct the tank, and
- 5.1.2.5 The date of manufacture, and
- 5.1.2.6 The manufacturer of the tank, and
- 5.1.2.7 The serial number of the tank, and
- 5.1.2.8 Any limitations on substances that can be transported e.g. Diesel only trailers

5.1.3 This plate shall be affixed in a place readily accessible for inspection, preferably on the true left hand side near the front of the tank. The information shall be stamped, embossed, or applied by suitable means, into the material of the plate in characters at least 5 mm high. The plate shall not be painted so as to obscure the marking thereon. The tank serial number shall also be stamped on a substantial part of the tank structure.

### **24. Emergency Spill Kit Provided & Secure**

Check the Spill kit contents are complete with:

- 10 x spill pads
- 1 x spill sock
- 1 x drain mat
- 1 x disposal bag
- 1 x Plug and Dyke
- 1x Pair of Gloves
- Ensure the Spill kit lid is sealed
- Check the holder is secure to the tank wagon and the Spill kit is secure in the holder
- It is recommended that the Spill kit barrel is rotated in the bracket to prevent premature wear.

### **25. Tank Top Equipment Secure / Sealed**

- Check the Master dip stick is secure
- Check the Hand rail system is secure and functioning
- Check the tank top water runoff tubes are clean and free from debris.

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- Check all Dip/ Fill Cam lock caps are sealing and are secure with no signs of leaks

### 26. Vapour Recovery & Brake Interlock System Correct / Operational

#### Vapour recovery

*It is recommended the units have positive air to the plunger valve on the VR outlet. This is to ensure the Air Master Valve is not required to be activated before the Vapour Recovery Hose is connected ensuring the interlock system is still active when the hand brake is applied.*

*This also assists the Drivers on checking the function of the interlock when carrying out their Pre checks.*

- Check for wear on the Outlet Camlock Flange. The Outlets wear at the 6 o'clock and 9 o'clock point. If there is wear, rotate the Camlock one bolt hole.
- Check the Poppet O Ring is in position and is sealing.

***Care should be taken as there maybe product in the line.***

- Check the Pneumatic Valve is not seized and operates freely.
- Check the operation of the Interlock with a VR hose end or VR test coupler

**Liquip System** - With the Brakes applied, check the Interlock Valve activates the Brakes when the VR Cap is removed.

Release the hand brake and Test by attempting to move the tank wagon - the tanker should not move

**Treloar System** - With the Brakes applied, check the Interlock Valve activates the when the plunger valve is pressed.

Release the hand brake and Test by attempting to move the tank wagon - the tanker should not move

***Re apply the Hand brake after tests***

#### Faucet Barrier

- Check the barrier hinge points for wear and movement
- Check the functioning of the barrier locking device
- Check the plunger or roller valve for damage or wear
- With the Air Master valve on - raise the barrier- listen to hear the interlock valve active
- Release the hand brake and attempt to move the tank wagon- the tanker should not move

***Re apply the Hand brake after tests***

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The **Handbrake System** will need to be recycled to reset the system after these tests are carried out.

NOTE: The Interlock System is only activated when the Hand Brake or Trailer Brake is applied.