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P7403 Electrical equipment service and installation guide for road tankers

Liquip supplies the following document as a guide for installing and operating electrical equipment on road tankers. It should be used in conjunction with local legislation and standards, owner's requirements and tank manufacturer procedures.

INFORMATION PERTAINING TO WORKING ON A TANK VEHICLE

1. Prior to working on a tank vehicle it must be degassed or certified to work on. Before working in a tank compartment an appropriate device must be used to check for the presence of volatile gases.
2. Any work carried out on a tank vehicle must be done so in a non-hazardous area.
3. Before working on any electrical equipment on a tank vehicle power must be isolated either via the battery isolation switch (BIS), by disconnecting the truck battery or by disconnecting the positive of the electrical equipment.
4. Never weld on a tank vehicle unless all electronic equipment is completely disconnected electrically from both the tanker and other equipment.
5. Hazardous conditions may be present when working with high voltage devices (such as gantry monitors). Qualified technicians only should be servicing these devices.
6. Do not connect a battery charger or other pulsed power supply to the truck battery without first isolating all electrical equipment as permanent damage may result.
7. Long sleeve and pants protective clothing should be worn at all times. Clothing must be non-static generating. Any petroleum contact with skin should be washed off immediately.
8. Always follow manufacturer guidelines when working on electrical equipment. Failure to do so may void warranty or cause damage.

INFORMATION PERTAINING TO INSTALLING EQUIPMENT ON A TANK VEHICLE

1. All electrical equipment and fittings must be suitable for use on a tanker and meet all local regulations for operation.
2. Use high quality waterproof conduit and fittings to IP66 minimum for all wiring and junction boxes.
3. Use waterproof flexible compound such as Silastic in all glands and joints not available as waterproof by design.
4. Mount all equipment away from direct spray areas such as behind the tyres and out of direct sunlight. Always select the most sheltered aspect.
5. Ensure all installations adhere to appropriate guidelines.
6. Coat all terminals, cable end and joints with non-conducting grease or Vaseline after final testing. This will prevent corrosion.



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7. Prior to crimping, check wiring connections are electrically correct. When crimping make sure there is good electrical contact between the wire strands and metal section of the crimp terminal. Pull on the crimp to ensure a good connection has been made.
8. Cable ends may be crimped with ferrules for better connection. Do not solder the cable ends (fatigues and corrodes). Pre-coat with non-conductive grease for corrosion protection.
9. At any point a cable is extended or joined to a standard cable assembly, all cable screens must be connected to the chassis, refer to relevant wiring diagram. Insulate exposed screen wire using heat shrink, terminate with an eye terminal and attach to the junction box mounting screw. If the junction box is mounted to a panel not electrically connected to the chassis, the screens must still be joined together and connected to the chassis at one point, as per wiring diagram.
10. Common grounding of a system is most important. Do not rely on common chassis grounding at various points, run a full-length dedicated ground cable. Max resistance, battery ground to any ground point to be 1Ω . Refer Liquip Tech Talk #48: Electrical Bonding on Tankers. The electrical resistance between the tank and tanker chassis, prime mover chassis, or trailer undercarriage, and between the tank and the connection of the tanker pipework to the delivery hose, shall not exceed 10Ω (refer to AS2809.2).
11. Always fit as much loose cable length into junction boxes and housings as practicable to allow for future servicing.
12. Always segregate power and intrinsically safe wires in accordance with I.S wiring rules.
13. Carry out a complete wiring check for accuracy and continuity before connecting power to any device.
14. Observe international and local legal requirements. In the event of conflicting instructions seek qualified advice before proceeding.
15. Do not route communication cables past 'noisy' electrical apparatus such as solenoids and alternators.
16. Check instruction manual for recommended cable type and torque settings.
17. Use specialised, genuine tools for all electrical work.
18. Mount equipment to clean, dry, bare surfaces on a metal bracket mounted to the chassis/sub-frame. It is recommended the bracket be welded to the chassis/sub-frame to facilitate good electrical contact.
19. Ensure adequate clearance around equipment being installed. This will provide for ease in future maintenance.
20. When bolting equipment into place, the use of Teflon tape or anti-seize compound on threads is advised.
21. Fuses located in hazardous areas must be suited to that location.
22. Always allow suitable separation between intrinsically safe wiring and power from line power source.