

No. 137 Recommendation for protection of socket outlets for road freight units

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1. Introduction

It is assumed that the most likely electrical causes of fire in road freight units are due to failures in electric connections in plug and sockets arrangements and electric cable terminations, and earth faults in the electrical installations on the road freight units themselves.

The quality of the electrical installations on the road freight unit is the liability of the unit's owner and driver, while the quality of the vessels electrical installation is the liability of the ship owner. For the extension cable between the vessel and the road freight unit, the responsibility will depend on which party has the responsibility for providing the cable. The quality of such extension cables may vary, since they are used for temporary connections without mechanical protection, and subject to wear and tear through frequent handling by non-trained or unskilled staff.

Since the road freight unit is insulated from the vessel's hull by rubber tyres, the earth connection provided via the extension cable is of vital importance for protection against dangerous touch voltages, and for the correct functioning of any earth fault monitoring and protection devices installed as part of the ship's distribution system.

2. Recommendations

2.1 Generally, ships employ an IT earth system as part of the electrical distribution system. With this type of system, in the event of a road freight unit developing a single earth fault when connected to the ships electrical distribution system, the power supply will not be disconnected. However, if there is a second earth fault in the electrical system, the fault current will cause the circuit protection to operate and isolate the power to the faulty circuit. To provide an enhanced circuit protection scheme, the use of a residual current device RCD will ensure the disconnection of the faulty circuit before the earth fault develops into full grounding of a distribution phase. It is therefore recommended that RCD protection is installed for all outgoing distribution circuits to road freight units. Additionally, in order to ensure a guaranteed reaction of the RCD protection upon the first insulation fault, it is recommended to install a designated distribution transformer for the road freight units with a secondary grounded distribution system.

2.2 It is further recommended that all connections between road freight units and the vessel's distribution system (plugging in of extension cables) is performed by a competent crewmember. It could be a condition for connection to any of the ship's socket outlets that the ship's crew verify the earth connection between the road freight unit and the vessel by checking the loop between the ship's hull and the body of the road freight unit. At least upon suspicion of poor quality of the extension cord, or the road freight unit's electrical installation, the protective earthing connection between the road freight unit's chassis should be verified by applying a conductive test between the road freight unit's chassis and the vessels hull by e.g. a simple buzzer.

2.3 It is recommended that extension cables are provided and handled by the ship, thereby ensuring that such extension cables are well maintained and handled and thus lowering the risk for faulty connections.

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