



(Minor changes to the previous edition are indicated by ◆ placed before the relevant paragraphs)

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1. Scope

This specification details the manufacturing requirements of the Clamplock groundlock wiring harness, LU stores list No. 278/9519 manufactured to Drawing DS63096 item 6.

The item is classified as a piece of vital signalling equipment which means that it may be used to perform a critical safety function directly affecting the safe movement of trains. It has been designed to be an ultra reliable item of equipment whose mechanical and electrical integrity will be relied on throughout an extended working life.

2. References

There are no references cited in this document.

3. Abbreviations

There are no abbreviations used in this document.

4. Definitions

There are no terms used in this document which need defining.

5. Introduction

The Clamplock groundlock wiring harness is used to connect two component parts of a Clamplock point mechanism. The point mechanism mounts onto the sleepers and the rails. The wiring harness is therefore exposed to conditions which include, rain, sunlight, severe vibration forces and physical abuse arising from being trodden on by track workers while it lies on top of the ballast.

The service life of this equipment is 15 years. The shelf life is 3 years.

6. Critical Functions

The critical functions of the cable are defined to be:-

Maintenance of core to core insulation: The cable used in the design of the harness is a special purpose multi-core cable which has each insulated conductor covered with a braided screen. This design feature is included to prevent core to core short circuits.

The ability of the item to meet the critical functions listed above throughout its life depends on many factors, not all of which are immediately obvious to people not familiar with all aspects of the design, manufacture and use of the equipment. To ensure that the significance of certain of the detailed requirements is understood and complied with, a number of Critical Parameters or Settings have been designated throughout the text.

Attachment 1 to this Specification lists all the Critical Parameters or Settings [CPS], a reference to the section from which the requirement originates and provides a Criticality Rating of the importance of each CPS item.

The Criticality Rating is based on the severity of the consequence if there is a deviation of the subject parameter from the value specified. Numerical values have been assigned to various levels of the Criticality Rating (CR) according to the table below.

Criticality Rating (CR)	SAFETY RELATED CRITERIA	RELIABILITY RELATED CRITERIA
10	Life critical – sole dependence Occurrence of this deviation alone may lead to an incident causing death or injury.	
8	Life critical – shared dependence Occurrence of this deviation, together with a second deviation which is potentially latent (i.e. not self announcing), may lead to an incident causing death or injury.	
7	Life critical – contributory Occurrence of this deviation increases the probability of an event which may lead to an incident causing death or injury.	Service critical – sole dependence Occurrence of this deviation alone may lead directly to an incident causing major service delays, and indirectly to the danger of a life threatening incident through enforced use of manual rules for operating the railway.
6		Service critical – shared dependence Occurrence of this deviation, together with a second deviation which is potentially latent (i.e. not self-announcing), may lead directly to an incident causing major service delays, and indirectly to the danger of a life threatening



Criticality Rating (CR)	SAFETY RELATED CRITERIA	RELIABILITY RELATED CRITERIA
		incident through enforced use of manual rules for operating the railway.
5		Service critical – contributory Occurrence of this deviation, increases the probability of an event which may lead to major service delays, and indirectly to the danger of a life threatening incident through enforced use of manual rules for operating the railway.
1	Not life critical	Not service critical

The criticality rating provides a scale of the importance of achieving the specified parameter and therefore of the care needed in designing the process or processes that will lead to the parameter being achieved. The design of the process or processes that will lead to the parameter being met are the responsibility of the Contractor.

7. Performance parameters

7.1 Insulation resistance

The insulation resistance between cores and between each core and the screen, measured at 1000V DC, shall be at least 50 MΩ.

7.2 Continuity

Measured by the volt drop method, the resistance of each core and screen conductor shall be less than 0.1 Ω with a current of 1 Amp flowing in the circuit under test. The continuity shall be measured between the pins of the test connector used to connect the harness to the test equipment.

8. General requirements

8.1 Compliance with specification

No departures from the requirements of this Specification shall be permitted (either permanently or temporarily) without compliance with the relevant change control procedures.

Neither equivalence of process nor substitution of materials shall be recognised by the Client in receiving work performed against this specification. The Client shall have the immutable expectation that equipment manufactured to this version of the specification shall be 100% compliant with the specification herein.

8.2 Workshop environment

There are no special workshop conditions required by this Specification.

Calibrated test equipment shall be used to carry out all measurements specified.