

Ref:	NR/L2/ELP/21088/17
Issue:	2
Date:	5 th December 2015
Compliance date:	1 st March 2016

NR/L2/ELP/21088

Module 17 – Series 2 Maintenance Parameters

This document is the property of Network Rail. It shall not be reproduced in whole or part nor disclosed to a third party without the written permission of Network Rail.

© Copyright 2015 Network Rail.

Uncontrolled copy once printed from its electronic source.

Published and Issued by Network Rail, 2nd Floor, One Eversholt Street, London. NW1 2DN.



Ref:	NR/L2/ELP/21088/17
Issue:	2
Date:	5 th December 2015
Compliance date:	1 st March 2016

Contents

1 Scope	3
2 Definitions	3
3 Equipment Design	4
4 Equipment Design Variations	4
5 Equipment Design Designations	5
6 Environmental Conditions	6
7 Maximum Pantograph Operational Speeds	6
8 Continuous Current Carrying Capacity	7
9 Design Staggers and Deviation	7
10 Minimum Staggers	8
11 Design Heights	8
12 Heel Settings	9
13 Track Tolerances	9
14 Maximum Dropper Spacing	10
15 Conductor Particulars	10
16 Conductor Tensions	10
17 Factor of Safety	11

Copyright Network Rail

Ref:	NR/L2/ELP/21088/17
Issue:	2
Date:	5 th December 2015
Compliance date:	1 st March 2016

1 Scope

This module of NR/L2/ELP/21088 covers:

- a) Equipment Design;
- b) Equipment Design Variations;
- c) Equipment Design Designations;
- d) Environmental Conditions;
- e) Maximum Pantograph Operational Speeds;
- f) Continuous Current Carrying Capacity;
- g) Design Staggers and Deviation;
- h) Minimum Staggers;
- i) Design Heights;
- j) Heel Settings;
- k) Track Tolerances;
- l) Maximum Dropper Spacing;
- m) Conductor Particulars;
- n) Conductor Tensions;
- o) Factor of Safety.

2 Definitions

See Glossary (NR/L2/ELP/21088/01)

Ref:	NR/L2/ELP/21088/17
Issue:	2
Date:	5 th December 2015
Compliance date:	1 st March 2016

3 Equipment Design

The Series 2 design is defined as a 25kV ac 50Hz simple catenary system for main lines and sidings.

The Series 2 system design is a development of the Mk3D OLE system, incorporating best practices from European railways. The design is adaptable for 25kV 50Hz classic and Autotransformer distribution systems with fault current levels up to and including 12kA for 0.2 seconds. The system was developed in 2010 for application on new electrification schemes for routes requiring multiple pantograph operation at line speeds of up to 100mph (160km/h). The system has been used on the North West Electrification Programme, the Edinburgh Glasgow Improvement Programme and the Rutherglen and Coatbridge Electrification.

4 Equipment Design Variations

The Series 2 design range comprises an auto-tensioned, simple OLE system. All variants are compatible with all existing electric rolling stock operating on the UK rail network. The initial design variation, Issue 5, is not an interoperable design due to the maximum deviation value exceeding the essential requirement of the Energy TSI. Issue 5 has been designed in accordance with the UK Notified National Technical Rule.

Subsequent Series 2 design variations (Revision 6.0 onwards) incorporate reduced maximum stagger values in order to achieve a maximum deviation value that is compliant with the essential requirements of the Energy TSI. As a result of UK infrastructure constraints the nominal contact wire height is aligned to Notified National Technical Rules, as defined in GL/RT 1210. The equipment design variations are detailed in table 1.

Variation	Description
S02-00	Series 2 (107) Revision 5. Original design – <i>North West Electrification Project Phase 1 and 2 only.</i>
S02-01	Series 2 (107) Revision 6.0 with CuSn contact wire and 1900m tension lengths – <i>RACE Project only</i>
S02-02	Series 2 (107) Revision 6.0 onwards

Table 1 – Equipment design variations