DIN EN 15624:2011-01 (E)

Railway applications - Braking - Empty-loaded changeover devices (includes Amendment A1:2010)

Contents

Page

Foreword 4

1 Scope 5

2 Normative references 5

3 Terms, definitions and symbols 5
3.1 Terms and definitions 5

4 Design and manufacture 6
4.1 General 6
4.2 Functional requirements 7
4.2.1 General 7
4.2.2 Automatic empty-loaded changeover device 7
4.2.3 Pneumatic device characteristics 8
4.2.4 Automatic hydraulic to pneumatic converter 9
4.2.5 Automatic elastomeric to pneumatic converter 9
4.2.6 Components for operation of the manual empty-loaded changeover device 9
4.3 Vibrations and shock 10
4.4 Environment 10
4.4.1 General 10
4.4.2 Temperature 10
4.4.3 Other environmental conditions 10
4.5 Compressed air quality 12
4.6 Service life 12
4.7 Fire behaviour 12
4.8 External appearance 13
4.9 Design requirements regarding pressure stress 13
4.10 Leakage 13
4.11 Interfaces 13
4.11.1 Mechanical 13
4.11.2 Pneumatic 13

5 Materials 13

6 Type tests 14
6.1 General 14
6.2 Individual automatic empty-loaded changeover device type tests 14
6.2.1 Test bench for individual automatic empty-loaded changeover device type tests 14
6.2.2 Sampling for type tests 15
6.2.3 Test requirements 15
6.2.4 Check of physical and geometrical characteristics 16
6.2.5 Leakage 16
6.2.6 Changeover operation – empty to loaded 17
6.2.7 Changeover operation – loaded to empty 17
6.2.8 Response time – empty to loaded 18
6.2.9 Response time – loaded to empty 19
6.2.10 Shock and vibration tests 19
6.2.11 Operation at extreme temperatures 20

7 Routine test and inspection 21

8 Type validation 21

9 Manual empty-loaded changeover device installation validation 21
9.1 Equivalent handle movement 21
9.2 Changeover plate alignment 21

10 Documentation **21**

11 Designation **22**

12 Identification and marking **22**
12.1 Identification plate **22**
12.2 Changeover plate for the manual empty-loaded changeover device **22**

Annex A (informative) **Assessment of an empty-loaded changeover device when fitted to a vehicle** **24**
A.1 Vehicle assessment – Testing set up **24**
A.2 Design acceptance testing set up **24**
A.3 Single vehicle static testing **24**
A.3.1 Vehicle requirements **24**
A.3.2 Test procedures **24**
A.4 Running tests **25**
A.4.1 General **25**
A.4.2 Pneumatic empty-loaded changeover device – Air consumption **25**
A.4.3 Pneumatic empty-loaded changeover device – Output signal variation **26**

Annex B (informative) **Examples of manual empty-loaded changeover device handles and changeover plates** **27**

Annex C (informative) **Test bench diagram** **29**

Annex ZA (informative) **A1 Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (Recast) A1** **30**

Bibliography **32**