DIN EN 15611:2011-01 (E)

Railway applications - Braking - Relay valves (includes Amendment A1:2010)

Contents

Page

Foreword 4

1 Scope 5

2 Normative references 5

3 Terms and definitions, symbols and abbreviations 5
3.1 Terms and definitions 5
3.2 Symbols 9
3.3 Abbreviations 10

4 Design and manufacture 10
4.1 General 10
4.2 Functional requirements 12
4.2.1 Minimum output pressure 12
4.2.2 Accuracy of the output pressure and changeover 13
4.2.3 Load signal characteristics 13
4.2.4 Enabling of a change of relay valve ratio during brake application of a relay valve of type B1 14
4.2.5 Prevention of a change of relay valve ratio during brake application of a relay valve of type B2 and a variable load relay valve, types C, C1, D, E 14
4.2.6 Kinked characteristic of a variable load relay valve (type E) 14
4.2.7 Interaction of a relay valve and a distributor valve 15
4.2.8 Hysteresis 16
4.2.9 Sensitivity 16
4.2.10 Flow 16
4.2.11 Leakage 16
4.2.12 Change of relay valve ratio 16
4.3 Shock and vibration 17
4.4 Environment requirements 17
4.4.1 General 17
4.4.2 Temperature 17
4.4.3 Other environmental conditions 18
4.5 Compressed air quality 19
4.6 Service life 20
4.7 Fire behaviour 20
4.8 External appearance 20
4.9 Design requirements regarding pressure stress 20
4.10 Interface 20
4.10.1 General 20
4.10.2 Mechanical 20
4.10.3 Pneumatic 20

5 Materials 21

6 Type tests 21
6.1 General 21
6.2 Individual relay valve tests 21
6.2.1 Test bench for individual relay valves 21
6.2.2 Sampling for type tests 24
6.2.3 Test temperature and air quality 24
6.2.4 Procedure for type tests 24

7 Routine test and inspection **47**

8 Type-validation **47**

9 Documentation **47**

10 Designation **48**

11 Identification and marking **48**

Annex A (informative) **In-service trial** **49**
A.1 General **49**
A.2 Test set-up and sampling **49**
A.3 Procedure **49**
A.4 Pass/fail criteria **49**

Annex B (informative) **Static vehicle and running tests** **50**
B.1 General **50**
B.2 Test recommendations **50**
B.2.1 Variable load relay valve **50**
B.2.2 Empty/load relay valve **51**

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 ..... **52**

A1 *deleted text* A1

Bibliography **58**