

DIN EN 15273-1:2017-10 (E)

Railway applications - Gauges - Part 1: General - Common rules for infrastructure and rolling stock (includes Amendment A1:2 016)

| Contents | | Page |
|-------------------------|---|-------------|
| European Foreword | | 6 |
| Introduction | | 7 |
| 1 | Scope | 8 |
| 2 | Normative references | 9 |
| 3 | Terms and definitions | 9 |
| 4 | Symbols and abbreviations | 18 |
| 5 | Specific considerations for determination of parameters | 33 |
| 5.1 | Geometric overthrow | 33 |
| 5.1.1 | Geometric overthrow between the vehicle body | 33 |
| 5.1.2 | Additional geometric overthrow due to the bogies | 34 |
| 5.2 | Flexibility coefficient | 35 |
| 5.3 | Dissymmetry | 35 |
| 5.4 | Clearance between the wheelsets and the track | 36 |
| 5.5 | Additional overthrow | 37 |
| 5.6 | Roll centre | 38 |
| 6 | Gauges and gauging methods | 38 |
| 6.1 | General | 38 |
| 6.1.1 | Introduction | 38 |
| 6.1.2 | Static gauge | 40 |
| 6.1.3 | Kinematic gauge | 41 |
| 6.1.4 | Dynamic gauge | 41 |
| 6.1.5 | Uniform structure gauge | 42 |
| 6.1.6 | Gauges and interoperability | 43 |
| 6.1.7 | Illustration and comparison of static and kinematic gauges in the transverse direction ... | 43 |
| 6.1.8 | Illustration of the dynamic gauge | 46 |
| 6.2 | Other gauging methods: General | 47 |
| 6.3 | Absolute gauging method | 47 |
| 6.4 | Comparative gauging method | 49 |
| 7 | Elements involved in the determination of a gauge | 49 |
| 7.1 | Introduction | 49 |
| 7.2 | General | 49 |
| 7.2.1 | In the transverse direction | 49 |
| 7.2.2 | In the vertical direction | 51 |
| 7.3 | Detailed analysis of the details to be shared between rolling stock and infrastructure depending of the method of determination of each of the gauges | 52 |
| 7.3.1 | In the transverse direction | 52 |
| 7.3.2 | In the vertical direction | 79 |
| 7.3.3 | Contact ramps | 92 |
| 7.3.4 | Rail and rail brake zone | 94 |
| 8 | Pantograph gauge | 98 |
| 8.1 | Pantograph kinematic gauge | 98 |
| 8.1.1 | General principle | 98 |

| | | |
|--|---|-----|
| 8.1.2 | Elements to be taken into account by the infrastructure | 102 |
| 8.1.3 | For the rolling stock | 103 |
| 8.2 | Pantograph dynamic gauge | 107 |
| 8.2.1 | Values taken into account by the rolling stock | 107 |
| 8.2.2 | Values taken into account by the infrastructure | 108 |
| Annex A (normative) Catalogue of gauges | | 109 |
| A.1 | Static gauges | 109 |
| A.2 | Kinematic gauges | 110 |
| A.3 | Dynamic gauges | 111 |
| A.4 | Uniform gauges | 111 |
| Annex B (normative) Reference profiles and associated rules for static gauges | | 112 |
| B.1 | Static gauges G1 and G2 | 112 |
| B.1.1 | Upper parts of static gauges G1 and G2 | 112 |
| B.1.2 | Lower parts of static gauges G1 and G2 | 115 |
| B.2 | Static gauges GA, GB and GC | 118 |
| B.2.1 | Lateral part | 118 |
| B.2.2 | Static reference profiles for the upper parts | 118 |
| B.2.3 | Associated rules | 119 |
| B.3 | Static gauge GB1 and GB2 | 123 |
| B.3.1 | Lateral part | 123 |
| B.3.2 | Static reference profiles for the upper parts | 123 |
| B.3.3 | Associated rules | 124 |
| B.4 | Static gauges OSJD | 126 |
| B.4.1 | General comment | 126 |
| B.4.2 | Static reference profiles for the upper parts | 126 |
| B.4.3 | Associated rules | 130 |
| B.4.4 | Static reference profiles for the lower parts | 131 |
| B.5 | Static gauge FIN 1 | 133 |
| B.5.1 | General comment | 133 |
| B.5.2 | Static reference profile for the upper parts | 133 |
| B.5.3 | Associated rules | 135 |
| B.5.4 | Position of the platforms | 135 |
| B.6 | Spanish static gauges GHE16, GEA16, GEB16, GEC16, GEE10 and GED10 | 136 |
| B.6.1 | Reference profiles for static gauges | 136 |
| B.6.2 | Basic rules | 143 |
| Annex C (normative) Reference profiles and associated rules for kinematic gauges | | 149 |
| C.1 | Kinematic gauges G1 and G2 | 149 |
| C.1.1 | Upper part of gauges G1 and G2 | 149 |
| C.1.2 | Gauges of the lower parts of G1, G2 | 151 |
| C.1.3 | Taking the roll into account | 157 |
| C.1.4 | Vertical geometric overthrow downwards and vertical allowance of the infrastructure ... | 157 |
| C.2 | Kinematic gauges GA, GB, and GC | 155 |
| C.2.1 | Lateral part | 155 |
| C.2.2 | Kinematic reference profiles for the upper parts | 155 |
| C.2.3 | Associated rules | 155 |
| C.3 | Kinematic gauges GB1 and GB2 | 157 |
| C.3.1 | Lateral part | 157 |
| C.3.2 | Kinematic reference profiles for the upper parts | 158 |
| C.3.3 | Associated rules | 159 |
| C.4 | Kinematic gauge GI3 | 161 |
| C.4.1 | Upper parts | 161 |
| C.4.2 | Reference profile for the lower parts | 161 |
| C.4.3 | Associated rules | 163 |
| C.5 | Kinematic gauge FR3.3 | 163 |
| C.5.1 | Lateral part | 163 |
| C.5.2 | Kinematic reference profile for upper parts | 164 |

| | | |
|---|---|------------|
| C.5.3 | Associated rules | 164 |
| C.6 | Kinematic gauges BE1, BE2 and BE3 | 166 |
| C.6.1 | Lateral part | 166 |
| C.6.2 | Kinematic reference profiles for the upper parts | 166 |
| C.6.3 | Associated rules | 168 |
| C.6.4 | Kinematic reference profiles for the lower parts | 170 |
| C.7 | Kinematic gauges NL1 and NL2 | 171 |
| C.7.1 | Reference profiles of kinematic gauges NL1 and NL2 | 171 |
| C.7.2 | Associated rules | 172 |
| C.8 | Kinematic gauges PTb, PTb+ and PTc | 173 |
| C.8.1 | Lateral part | 173 |
| C.8.2 | Associated rules | 175 |
| C.8.3 | Taking the roll into account | 176 |
| C.8.4 | Vertical geometric overthrow upwards and vertical allowance of the infrastructure | 176 |
| C.8.5 | Kinematic reference profiles for the lower parts | 177 |
| C.8.6 | Vertical geometric overthrow downwards and vertical allowance of the infrastructure | 177 |
| C.9 | Kinematic gauge DE1 | 178 |
| C.9.1 | General | 178 |
| C.9.2 | Kinematic reference profiles | 179 |
| C.9.3 | Associated rules | 179 |
| C.9.4 | Taking the roll into account | 180 |
| C.9.5 | Vertical geometric overthrow downwards and vertical allowance of the infrastructure | 180 |
| C.10 | Kinematic gauge DE2 | 181 |
| C.10.1 | General | 181 |
| C.10.2 | Kinematic reference profiles | 181 |
| C.10.3 | Associated rules | 182 |
| C.10.4 | Taking the roll into account | 183 |
| C.10.5 | Vertical geometric overthrow downwards and vertical allowance of the infrastructure | 183 |
| C.11 | Kinematic gauge DE3 | 184 |
| C.11.1 | Kinematic reference profiles | 184 |
| C.11.2 | Associated rules | 184 |
| C.12 | Spanish kinematic gauges GHE16, GEA16, GEB16, GEC16, GEC14, GEE10 and GED10 .. | 185 |
| C.12.1 | Reference profiles for kinematic gauges | 185 |
| C.12.2 | Associated rules | 195 |
| Annex D (normative) Reference profiles and associated rules for dynamic gauges | | 199 |
| D.1 | General | 199 |
| D.2 | Dynamic gauge SEa and SEc | 199 |
| D.2.1 | Dynamic reference profile SEa | 199 |
| D.2.2 | Dynamic reference profile SEc | 202 |
| D.2.3 | Associated rules | 202 |
| Annex E (normative) Uniform gauges | | 205 |
| E.1 | General information on gauges GUC, GU1, GU2 and Z-GCD | 205 |
| E.2 | Uniform gauge GU1 | 206 |
| E.2.1 | General | 206 |
| E.2.2 | Basic data | 206 |
| E.3 | Uniform gauge Z -GCD | 207 |
| E.3.1 | Uniform reference profile | 207 |
| E.3.2 | Basic data | 209 |
| Annex F (normative) Specific rules in the vertical direction | | 210 |
| F.1 | General | 210 |
| F.2 | Passing over link spans onto ferries | 210 |
| F.3 | Marshalling humps | 211 |
| F.3.1 | Convention for gauges in groups G1, G2, GA, GB, GB1, GB2, GC, FR3.3, BE1, BE2, BE3, GHE16, GEA16, GEB16, GEC16, GEC14, GEE10 AND GED10, etc | 211 |
| F.3.2 | Other agreements | 215 |

| | |
|---|------------|
| Annex G (normative) Rules relating to pantographs | 216 |
| G.1 Catalogue of standard heads | 216 |
| G.2 Reference vehicle parameters | 216 |
| G.3 Electrical insulating allowances | 217 |
| G.4 Characteristics of the collection system | 218 |
| G.5 Specific cases | 218 |
| G.5.1 Pantograph gauges linked to gauges BE1, BE2 and BE3, 3kV network | 218 |
| G.5.2 Pantograph gauges linked to gauges BE1, BE2 and BE3, 25 kV network | 219 |
| Annex H (normative) Rules relating to access steps and platform installation | 221 |
| H.1 Actual and conventional gap between step and platform: general | 221 |
| H.2 Actual and conventional gap between step and platform: position of the platforms | 223 |
| H.2.1 Actual position of the platforms | 223 |
| H.3 Conventional position of the platforms | 225 |
| H.4 Actual and conventional gap between step and platform: position of the steps | 228 |
| Annex I (informative) Widening of the vehicles according to the possibilities offered by the infrastructure | 229 |
| I.1 General | 229 |
| I.2 Possible gain on the track centre side | 229 |
| I.2.1 Basic principle | 229 |
| I.2.2 Application | 231 |
| I.3 Possible gain on the structure side | 233 |
| Annex J (normative) Application of the probability theory in conjunction with the limit values taking into account the oscillations and dissymmetry in the determination of allowance M1 | 234 |
| J.1 General | 234 |
| J.2 Reminder of some principles of the probability theory | 234 |
| J.3 Taking into account oscillations and dissymmetry in the determination of allowance M1 | 236 |
| J.3.1 General | 236 |
| J.3.2 Additional comments | 237 |
| Annex K (informative) A-deviations | 238 |
| Bibliography | 240 |