DIN EN 15566:2022-10 (E)

Railway applications - Railway Rolling stock - Draw gear and screw coupling

Contents

Page

European foreword 6

Introduction 8

1 Scope 9

2 Normative references 9

3 Terms and definitions 11

4 Requirements for all types of draw gear and screw coupling 13
4.1 Classification and designation 13
4.2 Interface dimension for freight wagons 14
4.3 Lifetime 15

5 Draw gear 15
5.1 Draw gear components 15
5.2 Draw hook and drawbar - Requirements 16

6 Screw coupling 17
6.1 General requirements 17
6.2 Screw coupling - Requirements 19

7 Elastic device 20
7.1 Characteristics of the elastic device 20
7.2 Elastic device - Requirements 20

Annex A (normative) Dynamic test (fatigue test) procedure 21

A.1 Background 21
A.2 Performance of the test 21
A.2.1 Conditioning 21
A.2.2 Dynamic test (fatigue test) 21
A.2.3 Non-destructive tests 23
A.2.4 Determination of residual strength 23
A.2.5 Macrographic and Micrographic tests 24
A.3 Criteria of acceptance 24
A.4 Test report 24

Annex B (normative) Draw hook -- dimensions 25

Annex C (normative) Draw gear -- Interface dimension 26

Annex D (normative) Screw coupling components - dimensions 28

Annex E (normative) Draw hook and drawbar - Requirements 30

E.1 Physical characteristics 30
E.1.1 Appearance 30
E.1.2 Integrity 30
E.1.3 Material examination 30
E.2 Geometrical characteristics 31

E.3 Mechanical characteristics 31
E.3.1 General 31
E.3.2 Tensile test on test piece 31
E.3.3 Resilience 31
E.3.4 Hardness 31
E.3.5 Tensile test on draw hook and drawbar 32
E.4 Marking 32
E.5 Manufacture 32
E.5.1 General on drawbars 32
E.5.2 General on draw hooks 32
E.5.3 Machining 32
E.5.4 Heat treatment 33
E.5.5 Rectification of defects 33
E.6 Acceptance 33
E.6.1 General 33
E.6.2 Inspection of the draw hooks 35
E.6.3 Inspection of drawbars 38
E.6.4 Conclusion of the inspections 39
E.7 Delivery 39
E.7.1 Protection against corrosion 39
E.7.2 Packaging 39

Annex F (normative) Screw coupling and components parts -- Requirements 40

F.1 Materials 40
F.2 Physical characteristics 40
F.2.1 Appearance 40
F.2.2 Soundness 40
F.2.3 Additional requirements for screw coupling 41
F.3 Geometrical characteristics 41
F.3.1 General 41
F.3.2 Dimensions limited either by two unmachined or rough machined surfaces or by one unmachined or rough machined surface 42
F.3.3 Dimensions limited by two machined surfaces 42
F.4 Mechanical characteristics 42
F.4.1 Heat treatment 42
F.4.2 Hardness 42
F.4.3 Resilience 43
F.4.4 Requirements for screw coupling 43
F.4.5 Requirement for handle and trunnion 45
F.5 Marking 45
F.6 Manufacture 45
F.6.1 Preparation of the materials 45
F.6.2 Manufacture of the component parts 45
F.7 Acceptance 48
F.7.1 General 48
F.7.2 Inspection of the manufacture 48
F.8 Inspection of the materials, component parts and screw couplings 48
F.8.1 Materials submission for acceptance 48
F.8.2 Grouping into batches 49
F.8.3 Nature and proportion of the tests 49
F.8.4 Sampling and preparation of the samples and test pieces 50
F.8.5 Carrying out of the checks and tests 54
F.9 Completion of inspections 56
F.10 Delivery 56
F.10.1 Protection against oxidation 56
F.10.2 Packing 56

Annex G (normative) Elastic device -- Requirements 57

G.1 Rubber elastomer or other elastomer elastic device 57
G.1.1 General 57

G.1.2 Metal inserts requirements 57
G.1.3 Elastomer requirements 57
G.1.4 Static test 59
G.1.5 Endurance test 60
G.1.6 Bonding 62
G.1.7 Inspection and tests 62
G.1.8 Markings 64
G.2 Friction spring/ Ring spring 64
G.2.1 Manufacturer's marks 64
G.2.2 Flexibility test 64
G.2.3 Endurance test 65

Annex H (normative) Marking 66

H.1 Marking of the draw hook 66
H.2 Marking of the screw coupling 66
H.3 Draw gear 67
H.4 Drawbar 67
H.5 Summary of markings 68

Annex I (informative) Microscopic examination of steel materials using standard diagrams to assess the content of non-metallic inclusions 69

I.1 General 69
I.1.1 Degree of purity 69
I.1.2 Standard diagram plate No. 1 69
I.2 Preparation of specimens 69
I.3 Structure and use of standard diagram plate No. 1 69
I.3.1 Use of diagram plate No. 1 69
I.3.2 Rating a single inclusion 70
I.3.3 Rating of very small inclusions 70
I.4 Test procedure 70
I.4.1 Magnification 70
I.4.2 Selection of inclusions 70
I.5 Evaluation 71
I.5.1 General 71
I.5.2 Method of evaluation 71
I.5.3 Calculation procedure for evaluation using method K 71
I.6 Example 74

Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive (EU) 2016/797 aimed to be covered 75

Bibliography 77