ISO 13535:2000-12 (E)

Petroleum and natural gas industries - Drilling and production equipment - Hoisting equipment

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 2

3 Terms, definitions and abbreviated terms 3
3.1 Terms and definitions 3
3.2 Abbreviated terms 5

4 Design 5
4.1 General 5
4.2 Design conditions 5
4.3 Strength analysis 5
4.4 Size class 7
4.5 Contact surface radii 7
4.6 Rating 7
4.7 Design safety factor 7
4.8 Shear strength 8
4.9 Specific equipment 8
4.10 Design documentation 8

5 Design verification test 8
5.1 General 8
5.2 Sampling of test units 8
5.3 Test procedures 8
5.4 Determination of load rating 9
5.5 Alternative design verification test procedure and rating 9
5.6 Design verification test apparatus 10
5.7 Design changes 10
5.8 Records 10

6 Materials requirements 10
6.1 General 10
6.2 Written specifications 10
6.3 Mechanical properties 11
6.4 Material qualification 11
6.5 Manufacture 12
6.6 Chemical composition 12

7 Welding requirements 15
7.1 General 15
7.2 Welding qualifications 15
7.3 Written documentation 15
7.4 Control of consumables 15
7.5 Weld properties 15
7.6 Post-weld heat-treatment 16
7.7 Fabrication welds 16
7.8 Repair welds 16

8 Quality control 17
8.1 General 17
8.2 Quality control personnel qualifications 17
8.3 Measuring and test equipment 17
8.4 Quality control for specific equipment and components 17
8.5 Dimensional verification 22
8.6 Proof load test 22
8.7 Hydrostatic testing 23
8.8 Functional testing 23

9 Equipment 24
9.1 General 24
9.2 Hoisting sheaves 24
9.3 Travelling blocks 25
9.4 Block-to-hook adapters 26
9.5 Connectors, link-adapters and drill-pipe elevator-adapters 26
9.6 Drilling hooks 26
9.7 Elevator links 26
9.8 Elevators 26
9.9 Rotary swivels 29
9.10 Power swivels 36
9.11 Power subs 36
9.12 Wireline anchors 37
9.13 Drill-string motion compensators 37
9.14 Pressure vessels and piping 37
9.15 Anti-friction bearings 37
9.16 Safety clamps when capable of being used as hoisting equipment 37

10 Marking 38
10.1 Product marking 38
10.2 Rating marking 38
10.3 Composite equipment marking 38
10.4 Component traceability 38
10.5 Serialization 38
10.6 Marking method 38

11 Documentation 38
11.1 General 38
11.2 Documentation to be kept by the manufacturer 39
11.3 Documentation to be delivered with the equipment 39

Annex A (normative) Supplementary requirements 41

A.1 General 41
A.2 SR 1 Proof load test 41
A.3 SR 2 Low temperature test 41
A.4 SR 3 Data book 41
A.5 SR 4 Additional volumetric examination of castings 42
A.6 SR 5 Volumetric examination of wrought material 42

Annex B (normative) Guide dollies 43

B.1 General 43
B.2 Principal loading conditions and corresponding safety factors 43
B.3 Loads and load combinations 43
B.4 Fatigue considerations 44
B.5 Special safety precautions 44

Annex C (informative) Guidance for qualification of heat-treatment equipment 45

C.1 Temperature tolerance 45

C.2 Furnace calibration 45
C.3 Instruments 46

Bibliography 47