

ISO 8100-2:2026-03 (E)

Lifts for the transport of persons and goods - Part 2: Design rules, calculations, verifications and tests of lift components

Contents

Page

| | |
|---|----------|
| Foreword..... | v |
| Introduction..... | vi |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 2 |
| 4 Design rules, calculations, verifications and tests | 2 |
| 4.1 General..... | 2 |
| 4.2 Verification of landing and car door locking devices..... | 3 |
| 4.2.1 Verifications and tests..... | 3 |
| 4.2.2 Test particular to certain types of locking devices..... | 5 |
| 4.2.3 Instructions..... | 5 |
| 4.3 Verification of safety gear..... | 5 |
| 4.3.1 General provisions..... | 5 |
| 4.3.2 Instantaneous safety gear..... | 6 |
| 4.3.3 Progressive safety gear..... | 8 |
| 4.3.4 Additional verifications..... | 10 |
| 4.3.5 Instructions..... | 10 |
| 4.4 Verification of overspeed governors..... | 10 |
| 4.4.1 General provisions..... | 10 |
| 4.4.2 Check on the characteristics of the overspeed governor..... | 10 |
| 4.4.3 Instructions..... | 11 |
| 4.5 Verification of buffers..... | 12 |
| 4.5.1 General provisions..... | 12 |
| 4.5.2 Samples subject to test..... | 12 |
| 4.5.3 Testing..... | 12 |
| 4.5.4 Instructions..... | 15 |
| 4.6 Verification of safety circuits and SIL-rated circuits..... | 16 |
| 4.6.1 General provisions..... | 16 |
| 4.6.2 Samples subject to test..... | 16 |
| 4.6.3 Tests..... | 17 |
| 4.6.4 Instructions..... | 18 |
| 4.7 Verification of ascending car overspeed protection means..... | 19 |
| 4.7.1 General provisions..... | 19 |
| 4.7.2 Statement and test sample..... | 19 |
| 4.7.3 Testing..... | 19 |
| 4.7.4 Instructions..... | 20 |
| 4.8 Verification of unintended car movement protection means..... | 20 |
| 4.8.1 General provisions..... | 20 |
| 4.8.2 Statement and test sample..... | 21 |
| 4.8.3 Testing..... | 21 |
| 4.8.4 Instructions..... | 23 |
| 4.9 Verification of rupture valve/one-way restrictor..... | 23 |
| 4.9.1 General provisions..... | 23 |
| 4.9.2 Testing..... | 24 |
| 4.9.3 Test procedure..... | 24 |
| 4.9.4 Instructions..... | 27 |
| 4.10 Guide rails calculation..... | 28 |
| 4.10.1 Range of calculation..... | 28 |
| 4.10.2 Bending..... | 28 |
| 4.10.3 Buckling..... | 30 |

| | | |
|---|---|------------|
| 4.10.4 | Combination of bending and compression/tension or buckling stresses | 31 |
| 4.10.5 | Flange bending..... | 31 |
| 4.10.6 | Deflections..... | 32 |
| 4.11 | Traction calculation | 33 |
| 4.11.1 | General | 33 |
| 4.11.2 | Evaluation of T_1 and T_2 | 34 |
| 4.11.3 | Formulae for a general case (see Figure 6)..... | 35 |
| 4.12 | Evaluation of safety factor of steel wire ropes | 38 |
| 4.12.1 | General | 38 |
| 4.12.2 | Equivalent number, N_{equiv} of pulleys..... | 39 |
| 4.12.3 | Safety factor | 40 |
| 4.13 | Verification of suspension means, compensation means and their terminations | 41 |
| 4.13.1 | Material and construction verification | 41 |
| 4.13.2 | Verification of elastomeric coated traction sheave grooves | 41 |
| 4.13.3 | Terminations of suspension means | 42 |
| 4.13.4 | Minimum breaking force (MBF)..... | 44 |
| 4.13.5 | Fatigue lifetime testing..... | 44 |
| 4.13.6 | Friction factor..... | 45 |
| 4.13.7 | Additional mechanical tests for elastomeric coated suspension means..... | 52 |
| 4.13.8 | Additional mechanical tests for CFRP elastomeric coated suspension means..... | 52 |
| 4.13.9 | Instructions | 53 |
| 4.14 | Discard criteria for suspension means and sheaves..... | 54 |
| 4.14.1 | General | 54 |
| 4.14.2 | Steel wire ropes..... | 54 |
| 4.14.3 | Elastomeric coated suspension means..... | 55 |
| 4.15 | Calculations of rams, cylinders, rigid pipes and fittings..... | 56 |
| 4.15.1 | Calculation against over pressure..... | 56 |
| 4.15.2 | Calculations of the jacks against buckling..... | 60 |
| 4.16 | Pendulum shock tests..... | 66 |
| 4.16.1 | General | 66 |
| 4.16.2 | Test rig..... | 67 |
| 4.16.3 | Tests..... | 67 |
| 4.16.4 | Assessment of the test results..... | 68 |
| 4.17 | Electrical and electronic components — Fault exclusion | 71 |
| 4.18 | Design rules for SIL-rated circuits..... | 75 |
| 4.19 | Verification of the tripping element..... | 75 |
| 4.19.1 | General provisions..... | 75 |
| 4.19.2 | Check of the characteristics of the tripping element..... | 75 |
| 4.19.3 | Instructions | 76 |
| Annex A (normative) SIL-rated circuits..... | | 77 |
| Annex B (informative) Example for calculation of guide rails..... | | 97 |
| Annex C (informative) Calculation of traction — Example..... | | 106 |
| Annex D (informative) Equivalent number of pulleys, N_{equiv} — Examples..... | | 108 |
| Bibliography..... | | 110 |