

# DIN EN 474-12:2010-05 (E)

## Earth-moving machinery - Safety - Part 12: Requirements for cable excavators (includes Amendment A1:2008)

---

<b>Contents</b>	<b>Page</b>
Foreword .....	4
Introduction .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions, symbols and abbreviated terms .....	7
4 List of additional significant hazards .....	7
5 Safety requirements and/or measures .....	7
5.1 General .....	7
5.2 Access .....	7
5.3 Operator's station .....	8
5.3.1 General .....	8
5.3.2 Roll-over protective structures (ROPS) .....	8
5.3.3 Operator's protective guard .....	8
5.3.4 Operator's seat, vibrations .....	8
5.4 Operator's controls and indicators .....	8
5.4.1 Controls for driving and steering .....	8
5.4.2 Warning indicator .....	8
5.5 Steering .....	8
5.6 Swing brakes .....	8
5.7 Lift system .....	9
5.7.1 Force controlled operation (lifting, lowering) .....	9
5.7.2 Free fall operation .....	9
5.7.3 Switch-over .....	9
5.7.4 Boom .....	9
5.7.5 Ropes .....	9
5.7.6 Rope drum, rope pulley .....	10
5.8 Limiting devices .....	10
5.8.1 Load moment limiting device .....	10
5.8.2 Lift limiting switch .....	10
5.8.3 Limit switch for the boom hoist system .....	10
5.9 Calculation of the lift capacity .....	10
5.9.1 Calculation method .....	10
5.9.2 Rated lift capacity table in object handling application .....	11
5.10 Requirements of safety related parts of the control system .....	11
5.11 Stability .....	11
5.11.1 General .....	11
5.11.2 Stability in different applications .....	11
5.11.3 Dragline bucket .....	11
5.11.4 Grab and front shovel .....	12
5.11.5 Object handling application .....	12
5.12 Cable excavator with electrical power source .....	12
6 Verification of safety requirements/measures .....	12
7 Information for use .....	12

7.1	Operation manual .....	12
B.3.1	Swing drive system .....	16
B.3.2	Swing service brake .....	16
B.3.3	Swing parking brake .....	17
B.4	Conditions for testing the swing service brake .....	17
B.5	Test report .....	17
Annex C (informative) Illustrations .....		18
C.1	Standard applications .....	18
C.1.1	Crawler type cable excavator with lifting equipment .....	18
C.1.2	Crawler type cable excavator with dragline equipment .....	19
C.1.3	Crawler type cable excavator with grab equipment .....	19
C.2	Special applications .....	20
C.2.1	Crawler type cable excavator with hole drilling equipment (casing oscillator) .....	20
C.2.2	Crawler type cable excavator with piling equipment (hydraulic or diesel hammer) .....	21
C.2.3	Crawler type excavator with wall cutter equipment (diaphragm wall grab) .....	21
C.3	Wheel type cable excavator in transport position for road travelling .....	22
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC .....		23
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC .....		24
Bibliography .....		25
Figures Figure B.1 -- Swing service brake .....		16
Figure C.1.1 -- Crawler type cable excavator with lifting system .....		18
Figure C.1.2 -- Crawler type cable excavator with dragline equipment .....		19
Figure C.1.3 -- Crawler type cable excavator with grab equipment .....		19
Figure C.2.1 -- Crawler type excavator with hole drilling equipment (casing oscillator) .....		20
Figure C.2.2 -- Crawler type cable excavator with piling equipment (hydraulic or diesel hammer) ....		21
Figure C.2.3 -- Crawler type excavator with wall cutter equipment (diaphragm wall grab) .....		21
Figure C.3 -- Wheel type cable excavator in transport position for road travelling .....		22
Tables Table 1 -- Safety factors of ropes .....		9
Table A.1 -- List of additional significant hazards .....		14
Annex A (normative) List of additional significant hazards - Cable excavators .....		14
Annex B (normative) Requirements for cable excavator swing brakes .....		15
B.1	General .....	15
B.2	Terms and definitions .....	15
B.3	Minimum performance .....	16