

DIN EN 848-3:2010-04 (E)

Safety of woodworking machines - One side moulding machines with rotating tools - Part 3: Numerically controlled (NC) boring and routing machines (includes Amendment A2:2009)

Contents		Page
Foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	9
3.1	General	9
3.2	Definitions	9
4	List of significant hazards	17
5	Safety requirements and/or measures	20
5.1	General	20
5.2	Controls	21
5.2.1	Safety and reliability of control systems	21
5.2.2	Position of controls	22
5.2.3	Starting	23
5.2.4	Normal stopping	23
5.2.5	Emergency stop	24
5.2.6	Operational stop	25
5.2.7	Mode selection switch	25
5.2.8	Speed monitoring and control	27
5.2.9	Interlocking of guards, protective devices, movements and functions	29
5.2.10	Failure of the power supply	29
5.2.11	Failure of the control circuits	30
5.3	Protection against mechanical hazards	30
5.3.1	Stability	30
5.3.2	Risk of break-up during operation	30
5.3.3	Tool holder	30
5.3.4	Braking tool spindle	31
5.3.5	Devices to minimise the risk of ejection	32
5.3.6	Workpiece supports and guides	32
5.3.7	Prevention of access to moving parts and devices to minimise the effect of ejection	32
5.3.8	Clamping device	43
5.4	Protection against non mechanical hazards	45
5.4.1	Fire	45
5.4.2	Noise	45
5.4.3	Emission of chips and dust	46
5.4.4	Electricity	46
5.4.5	Ergonomics and handling	47
5.4.6	Lighting	47
5.4.7	Pneumatics	47
5.4.8	Hydraulics	47
5.4.9	Static electricity	48
5.4.10	Electromagnetic compatibility	48
5.4.11	Lasers	48

5.4.12	Unintended movements	48
5.4.13	Supply disconnecting devices	48
5.4.14	Maintenance	49
6	Information for use	49
6.1	Warning devices	49
6.2	Marking	49
6.3	Instruction handbook	50
Annex A (informative) Use of well tried components		55
Annex B (normative) Operating conditions for noise measurement		56
B.1	General	56
B.2	Operating conditions for routing units of NC routing machines and NC combined boring/routing machines	56
B.2.1	General	56
B.2.2	Noise measurements	57
B.2.3	General data sheet	59
B.3	Operating conditions for boring units of NC boring machines and NC combined boring/routing machines	61
B.3.1	General	61
B.3.2	Noise measurements	62
B.3.3	General data sheet	64
Annex C (normative) Curtains on NC routing and NC combined boring and routing machines - Impact test method		67
C.1	General	67
C.2	Test method	67
C.2.1	Preliminary remarks	67
C.2.2	Testing equipment	67
C.2.3	Test procedure	68
C.3	Results	71
C.4	Assessment	71
C.5	Test report	71
Annex D (informative) #Example of a test equipment for impact test\$		72
Annex E (normative) Braking tests		73
E.1	Conditions for brake tests	73
E.2	Tests	73
E.2.1	Un-braked run-down time	73
E.2.2	Braked run-down time	73
Annex F (normative) Use of electronic components		75
F.1	General	75
F.2	SRECS	75
F.2.1	Components, hardware	75
F.2.2	Safety related software	76
F.2.3	Validation	76
Annex G (normative) #Rigid guards on NC routing machines - Impact test method		78
G.1	General	78
G.2	Test method	78
G.2.1	Preliminary remarks	78
G.2.2	Testing equipment	78
G.2.3	Test procedure	79
G.3	Results	79

G.4	Assessment	80
G.5	Test report\$	80
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC		
		81
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC"		
		84
Bibliography		88