

DIN EN ISO 13851:2019-11 (E)

Safety of machinery - Two-hand control devices - Principles for design and selection (ISO 138 51:2019)

Contents	Page
European foreword	4
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered	5
Foreword	6
Introduction	7
1 Scope	8
2 Normative references	8
3 Terms and definitions	9
4 THCD selection and THCD types	10
4.1 Selection	10
4.2 Types of THCD	11
5 Requirements for the design of two-hand control devices	11
5.1 General	11
5.2 Use of both hands (simultaneous actuation)	11
5.3 Relationship between actuation by hand and output signal(s)	11
5.4 Cessation of the output signal	12
5.5 Prevention of accidental operation	12
5.6 Prevention of defeat	12
5.7 Re-initiation of the output signal	12
5.8 Synchronous actuation	12
6 Two hand control safety functions	13
6.1 Prevention of unexpected start-up	13
6.2 Releasing of actuators	13
6.3 Synchronous actuation	13
7 Prevention of accidental actuation and of defeat	13
7.1 Common considerations	13
7.2 Prevention of defeat using one hand	14
7.3 Prevention of defeat using the hand and elbow of the same arm	14
7.4 Prevention of defeat using the forearm(s) or elbow(s)	14
7.5 Prevention of defeat using one hand and any other part of the body	14
7.6 Measures to prevent blocking of control actuating device(s)	15
7.7 Accidental actuation	15
8 General requirements	15
8.1 Ergonomic requirements	15
8.2 Operating conditions and environmental influences	15
8.3 Enclosures	16
8.4 Selection, design and installation of control actuating devices	16
8.5 Prevention of unintended output signals by acceleration forces	16
8.6 Unintended operation of hand-held machines	16
8.7 Relocatable THCDs	17
8.8 Safety distance	17

9	Verification and validation	18
9.1	General requirements for verification and validation.....	18
9.2	Visual inspection	19
9.3	Performance test.....	19
9.4	Measurement.....	19
9.5	Prevention of defeat	19
10	Marking	19
11	Information for installation, use and maintenance	20
11.1	Information for use	20
11.2	Installation instructions.....	20
11.3	Operating instructions	21
11.4	Maintenance instructions.....	21
	Annex A (normative) Measurement test for the prevention of defeat	22
	Bibliography	28