

ISO 14990-2:2016-11 (E)

Earth-moving machinery - Electrical safety of machines utilizing electric drives and related components and systems - Part 2: Particular requirements for externally-powered machines

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms, definitions and abbreviated terms	1
4	General requirements	2
4.1	General	2
4.2	Special conditions	2
4.3	Supplies	2
4.3.1	AC supplies	2
4.3.2	DC supplies	2
5	Protection against electric shock hazards	3
5.1	General	3
5.2	Guidance for type of neutral earthing system	3
6	Protection against electrical fire hazards	4
7	Protection against thermal hazards	4
8	Protection against mechanical hazards	4
9	Protection against abnormal operation hazards	5
9.1	General	5
9.2	Supply conductors	5
9.3	Socket outlets	5
9.4	Protection against supply interruption or voltage reduction and subsequent restoration. 5 9.5 Phase sequence protection	5
9.6	Protection against overvoltages due to lightning and to switching surges	5
10	Electric power source	6
10.1	Incoming supply conductor terminations	6
10.2	Terminal for connection to the external protective earthing system	6
10.3	Protection against unauthorized, inadvertent and/or mistaken connection	7
11	Wiring	7
11.1	Flexible cables	7
11.2	Conductor wires, conductor bars, and slip-ring assemblies -- Clearances	7
11.3	Connections and routing -- Conductor and cable runs	8
11.4	Connection to moving elements of the EMM	8
12	Electric motors	9
12.1	Criteria for motor selection or design	9

13	Non-motor loads	9
14	Controls	9
14.1	Control circuit supply	9
15	Manuals and documentation	10
15.1	Information to be provided	10
15.2	Installation documents	10
16	Marking	11
16.1	Marking of equipment	11
17	Tests	11
	Annex A (informative) Enquiry form for electrical equipment of externally-powered machines	12
	Bibliography	15