ISO 16230-1:2015-09 (E)

Agricultural machinery and tractors - Safety of higher voltage electrical and electronic components and systems - P art 1: General requirements

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 2

4 General requirements 4
4.1 Standards 4
4.2 Component selection 4

5 Protection of persons against electric shock 4
5.1 General 4
5.2 Protection against direct contact 4
5.2.1 Protection measures 4
5.2.2 Enclosure requirements 5
5.3 Connectors 5
5.4 Protection against indirect contact 5
5.4.1 IT system 5
5.4.2 General 5
5.5 Protection by potential equalization (equipotential bonding) 6
5.5.1 Potential equalization for components 6
5.5.2 Potential equalization for sockets 6
5.6 Isolation resistance requirements 6
5.6.1 Electric power train consisting of separate DC or AC buses 6
5.6.2 Electric power train consisting of combined DC- and AC-buses 6
5.6.3 Insulation monitoring 7
5.7 Parasitic coupling 7
5.7.1 Protective measures -- Parasitic coupling 7
5.8 Test procedure for the protection against electric shock 7

6 Additional requirements for electrical sockets connecting to implements or attachments
7 6.1 Mated connection -- General 7
6.2 Connect/Disconnect 7
6.3 Protection of electrical equipment 8
6.3.1 Short-circuits and overloads 8
6.3.2 Heat generating components 8

7 Conductors and cables used in higher voltage distribution -- General requirements 8
7.1 Identification Colours 8
7.2 Identification of conductors for multicore cable 8
7.3 Creepage and clearance distances 8
7.4 Cable and wire insulation 8
7.5 Cross-sectional area 8
7.6 Multicore cables 9
7.7 Wiring that flexes 9
7.8 Flame retardancy 9
7.9 Protection of cables 9

7.9.1 Outer covering 9
7.9.2 General requirements -- Protection 9

8 Wiring practices -- General 9
8.1 Fastening and clamping 9
8.2 Routing 10

9 System requirements 10
9.1 Power on/power off procedure 10
9.1.1 Active state 10

9.1.2 Deactivated state 10
9.1.3 System state indication 10
9.2 Fault modes (indication) 10

10 Marking and symbols 10

11 Information for use 11

12 Service literature 11
12.1 General 11
12.2 Reduction of electrical hazards while servicing 11
12.2.1 Description of effects of electricity on the human body 11
12.2.2 Statements regarding risk reduction 11
12.3 Special procedures 12
12.3.1 Machine identification 12
12.3.2 First responder information 12

13 Technical documentation 12
13.1 General 12
13.2 Information to be provided 12
13.3 Overview diagrams and function diagrams 13
13.4 Circuit diagrams 13
13.5 Parts list 13

Annex A (informative) List of hazards 14

Bibliography 15