DIN EN 12999:2021-11 (E)

Cranes - Loader cranes

Contents

Page

European foreword 4

Introduction 5

1 Scope 6

2 Normative references 6

3 Terms, definitions, illustration of parts and abbreviated terms 8
3.1 Terms and definitions 8
3.2 Illustration of parts 13
3.3 Abbreviated terms 15

4 List of significant hazards 15

5 Safety requirements and/or protective/risk reduction measures 18
5.1 General 18
5.2 Structural calculation 18
5.3 Stress analysis 24
5.4 Mechanical arrangements 25
5.5 Hydraulic system 27
5.6 Limiting and indicating devices 29
5.7 Controls 34
5.8 Control stations 35
5.9 Electrical systems 38
5.10 Installation 38

6 Verification of the safety requirements and/or protective/risk reduction measures 40
6.1 General 40
6.2 Testing and test procedures 44
6.3 Noise emission measurement 50

7 Information for use 50
7.1 General 50
7.2 Instructions 50
7.3 Marking 53

Annex A (informative) Examples of configurations and mountings 62

Annex B (informative) Stress history parameter s and stress history classes S 69

Annex C (informative) Explanatory notes 73

Annex D (informative) Examples of dangerous movements 75

Annex E (normative) Symbols for working and setting-up functions 77

Annex F (informative) Control system - Preferred vertical layout for controls operated from the ground 79

Annex G (informative) Control system - Horizontal layout order 81

Annex H (informative) Control levers for high seats and remote controls 84

Annex I (normative) Cabins fitted on vehicle mounted loader cranes up to a net lifting moment of 250 kNm 87

Annex J (informative) Examples of raised control stations 90

Annex K (normative) Raised control stations - Measures regarding handrails and handholds, ladders and steps 93

Annex L (informative) Installation of a loader crane on a vehicle 96

Annex M (informative) Selection of a suitable set of crane standards for a given application 102

Annex ZA (informative) Relationship between this European Standard and the essential requirements of EU Directive 2006/42/EC aimed to be covered 104

Bibliography 107