

Second edition
2012-12-15

**Cranes — Design principles for loads
and load combinations —**

**Part 1:
General**

Appareils de levage à charge suspendue — Principes de calcul des charges et des combinaisons de charge —

Partie 1: Généralités



Reference number
ISO 8686-1:2012(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2012

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	2
5 General	2
5.1 General principles	2
5.2 Methods of proof of competence calculations	3
5.3 Assessment of loads	3
5.4 Categories of loads	4
6 Loads and applicable factors	4
6.1 Regular loads	4
6.2 Occasional loads	9
6.3 Exceptional loads	10
6.4 Miscellaneous loads	13
7 Principles of choice of load combinations	13
7.1 Basic considerations	13
7.2 Load combinations during erection, dismantling and transport	17
7.3 Application of Table 3	17
7.4 Partial safety factors for the proof of rigid body stability	20
Annex A (normative) Application of allowable stress method and limit state method of design	21
Annex B (informative) General guidance on application of dynamic factors ϕ	26
Annex C (informative) Example of model for estimating value of dynamic factor ϕ_4 for cranes travelling on rails	27
Annex D (informative) Example of determination of loads caused by acceleration	31
Annex E (informative) Example of method for analysing loads due to skewing	40
Annex F (informative) Illustration of types of hoist drives	46
Bibliography	49