INTERNATIONAL STANDARD

ISO 22986

First edition
2007-04-15

Cranes — Stiffness — Bridge and gantry cranes

Appareils de levage à charge suspendue — Rigidité — Ponts et portiques roulants

Reference number
ISO 22986:2007(E)

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

Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 22986 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 9, *Bridge and gantry cranes*.

Cranes — Stiffness — Bridge and gantry cranes

1 Scope

This International Standard gives recommendations and requirements for the stiffness properties of the structures for bridge and gantry cranes in terms of deflections and natural frequencies.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4306-1, *Cranes — Vocabulary — Part 1: General*

ISO 4306-5, *Cranes — Vocabulary — Part 5: Bridge and gantry cranes*

3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 4306-1 and ISO 4306-5 apply.

4 Requirements

4.1 General

The effect of flexibility is demonstrated as elastic deformations under load and as vibrations induced by motion or force transients.

Excessive flexibility of structures and mechanical components of cranes can affect their safe use; therefore, elastic deformations and vibrations should be limited so that they do not cause dangerous situations, nor prevent the crane from being used in the intended manner.

The requirements concerning the elastic deformations and vibrations depend upon the configuration of the crane and stem from the required accuracy of load handling, type and performance of the control system and location of the control station. However, the increased stiffness means increased investment costs and possibly larger space requirements, which may not be worthwhile in all applications. Furthermore, possibilities to eliminate flexibility depend very much on the type and configuration of the crane. Therefore, no exact limits are given for the deflections or the vibrations.

4.2 Basic requirements for elastic deformation

The elastic deformations of the crane structure shall not

a) cause collision of the crane or crab/trolley with other surrounding objects and structures,

b) prevent the crab/trolley from moving and braking with the designed drive/braking system with any load not exceeding the dynamic test load,