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**Cranes — Requirements for  
mechanisms —**

**Part 5:  
Bridge and gantry cranes**

*Appareils de levage à charge suspendue — Prescriptions pour les  
mécanismes*

*Partie 5: Ponts et portiques roulants*

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ISO 10972-5 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 9, *Bridge and gantry cranes*.

ISO 10972 consists of the following parts, under the general title *Cranes — Requirements for mechanisms*:

- *Part 1: General*
- *Part 3: Tower cranes*
- *Part 4: Jib cranes*
- *Part 5: Bridge and gantry cranes*

Voorbeeld  
Preview

# Cranes — Requirements for mechanisms —

## Part 5: Bridge and gantry cranes

### 1 Scope

This part of ISO 10972 establishes the particular requirements relating to mechanisms for bridge and gantry cranes, as defined in ISO 4306-1. The general requirements for mechanisms for cranes are given in ISO 10972-1.

These particular requirements concern

- a) the general layout and design of mechanisms;
- b) the selection and/or design requirements of components;
- c) the instructions for manufacturing, mounting, installation and testing.

Rules for proof of competence calculations regarding different limit states (yield strength, fatigue, wear) are excluded from this part of ISO 10972.

### 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 10245-5, *Cranes — Limiting and indicating devices — Part 5: Overhead travelling and portal bridge cranes*

ISO 10972-1, *Cranes — Requirements for mechanisms — Part 1: General*

ISO 12210-1, *Cranes — Anchoring devices for in-service and out-of-service conditions — Part 1: General*

ISO 12488-1, *Cranes — Tolerances for wheels and travel and traversing tracks — Part 1: General*

IEC 60204-32, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines*

### 3 Terms and definitions

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

## 4 Requirements

### 4.1 General design and layout

#### 4.1.1 General

The mechanisms shall meet the requirements of ISO 10972-1, as applicable.

#### 4.1.2 Load control

Requirements relating to limiting and indicating devices as provided in ISO 10245-5 shall be incorporated, as applicable.

In the case where the malfunctioning of the rated capacity limiter could cause the loss of stability of the crane, the reliability of the system shall be ensured in at least one of the following ways:

- a) by duplication of the critical components of the rated capacity limiter and systems or by a back-up limiter, or
- b) by automatic checking of the functioning of the system, or
- c) by other fail-safe devices or mechanisms, or
- d) by instructions to the user to arrange frequent regular checks of the system. The system should be checked, in particular, each time the operation of the crane is switched from constant capacity (e.g. grab use) to outreach dependant capacity (e.g. hoisting by hook and slings).

#### 4.1.3 Rope spooling control

If it is possible that a rope can incorrectly spool, a control system or other means for guarding the correct spooling of the rope onto the winding drum shall be provided.

#### 4.1.4 Overspeed control

When the closure of a back-up brake is actuated by a detected overspeed, the speed detector shall not be mounted on a shaft between that of the back-up brake and the driving motor.

#### 4.1.5 Service brakes

The service brake shall maintain its capability to stop the motion despite heating, taking into account

- a) the number of brake operations in a given period;
- b) the type of drive control;
- c) the kinetic energy of all rotating parts like those of motor, brake, coupling and gear;
- d) the kinetic energy of all moving masses (e.g. hoisted mass, structural masses);
- e) the difference of potential energy of the lowered masses during braking;
- f) dynamic load testing;
- g) interruption of power or emergency stop category 0 (see IEC 60204-32).

If the braking-force is supplied by pre-stressed springs, the braking system shall continue to be capable of stopping the motion in the case of a breakage of any spring. This requirement can be fulfilled, for example, by a spring system of the compression types (helical or plate). The springs shall be secured at their ends and guided to avoid buckling and loss of broken spring parts.

If helical springs are used, they shall be such that, in the event of a wire breakage, the spring parts shall not screw in and the brake shall retain an effective pressure.

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