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Utgåva 1

Stållinor – Bestämning av rotationsegenskaper (ISO 21669:2005, IDT)

Steel wire ropes – Determination of rotational properties (ISO 21669:2005, IDT)

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The International Standard ISO 21669:2005 has the status of a Swedish Standard. This document contains the official English version of ISO 21669:2005.

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 21669 was prepared by Technical Committee ISO/TC 105, *Steel wire ropes*.

Introduction

This International Standard is intended to provide rope manufacturers, suppliers and independent testing bodies with a standard method of test for determining the rotational properties of steel wire rope.

While the test method specified in this International Standard has essentially been developed to assist in deciding whether a swivel can be used with a crane hoist rope, it may also be used for other crane rope duties and other steel wire rope applications where the machinery/equipment designer or user requires to know the rotational properties as part of the rope selection process.

Steel wire ropes — Determination of rotational properties

1 Scope

This International Standard specifies a method for determining the rotational properties of steel wire rope.

General guidance on the use of a swivel is given in Annex A.

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 17893, *Steel wire ropes — Vocabulary, designation and classification*

3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 17893 apply.

4 Test piece

The test piece shall be representative of the rope as a whole, be free from defects and shall be independent of the rope used to lift the load.

The free length of rope between end terminations shall be at least $100 \times d$, where d is the nominal diameter of the rope, in millimetres.

End terminations shall be of the following types:

— swaged socket,

— resin- or metal-filled socket,

— wedge socket or ferrule-secured eye with thimble.

NOTE As ropes of a given construction having similar design parameters are expected to have similar rotational properties throughout the size range, the rope manufacturer may carry out type testing on a representative size.

5 Test machine

The test equipment shall have the required capacity to lift the test load.

The test piece shall be prevented from rotating at its upper end during the test. See Figure 1 for a typical test arrangement when a hook is used.

A pointer shall be attached to the lower end of the load or the test piece to facilitate measuring of the rotation of the rope. Graduations on the measuring scale shall be no greater than 45°.

The test load shall be capable of being attached to the lower end of the test piece and its mass shall be equivalent to at least 20 % of the minimum breaking force, F_{min}, of the rope being tested.

When the mass of the test load is greater than 20 % of the minimum breaking force of the rope being tested, the measured rotation shall not be adjusted to take account of the greater load.

6 Test method

Measure the free length of rope under test.

Attach the load to be lifted to the lower end of the rope to be tested and establish the datum point for the pointer.

Raise the load from the ground level while ensuring clearance exists between the load and the ground.

Care should be taken to avoid any rotational momentum of the load as it is being raised until the load has reached equilibrium position.

During raising of the load, observe the number of complete turns the pointer makes as well as measuring the angular deflection from the datum point.

Record the total angular deflection of the pointer.

7 Rotational property

The rotational property shall be determined from the amount of rotation observed in the test and the measured length of the test piece.

The amount of rotation observed in the test shall be converted into a value for a rope length 1 000d.

When the measured free length of the test piece is not equivalent to 1 000d, the observed rotation (turns) shall be adjusted in direct proportion to the change in length between the two. As an example, if the observed rotation is 1 turn with a test piece having a free length of 250d, then the resulting rotational value is 4 turns per 1 000d.

The rotational property shall be expressed as the number of turns (of rotation) per unit length of 1 000d, where 1 turn is equal to 360°.