International Standard 4863

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Resilient shaft couplings — Information to be supplied by users and manufacturers

Accouplements élastiques pour arbre de transmission — Informations à fournir par les utilisateurs et les fabricants

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

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Resilient shaft couplings — Information to be supplied by users and manufacturers

0 Introduction

Resilient shaft couplings are generally introduced into transmission systems to provide a degree of protection from shock or to tune out vibrations. Some couplings can also accommodate misalignment. However, misalignment is considered in this International Standard only in so far as it affects operation of the couplings.

Introduction of a resilient shaft coupling into a transmission system will affect its torsional, axial, rotational and alignment characteristics. It is recommended, therefore, that the choice of a coupling for complex transmission systems be based upon a comprehensive analysis of the complete system.

1 Scope and field of application

This International Standard specifies the information to be supplied by users and manufacturers of resilient shaft couplings in order to facilitate communication and understanding between users and manufacturers. It is strongly recommended that its provisions be adhered to in all cases, unless there are good reasons for departing from them.

This International Standard does not apply to

a) rigid flange or sleeve couplings;

b) torsionally stiff couplings for alignment purposes, such as toothed or diaphragm couplings, etc.;

c) all types of slip couplings;

nor does it give dimensional requirements for either shafts or couplings.

2 Reference

ISO 2041, *Vibration and shock — Vocabulary.*

3 Definitions

For the purpose of this International Standard, the definitions given in ISO 2041 apply.

4 Information to be supplied by users

To facilitate complete understanding of the system, users shall supply the following information as applicable.

4.1 Description of machines and plant, including drawing(s), as appropriate :

a) driving machine(s);

b) driven machine(s);

c) any associated equipment;

d) gear ratios in the system;

e) polar moments of inertia of rotating components;

f) mass-elastic data (mathematical model) of the complete system, where appropriate;

g) overall dimensional limitations;

h) details of limitation of space for assembling or dismantling;

j) attitude of shafts to be connected (horizontal, vertical, inclined);

k) balancing requirements;

m) nominal axial distance between shafts and/or flanges;

n) details of shafts and/or flanges to be connected, as applicable, including limits;

p) limitations of overhung load on each shaft;

q) distance and type of adjacent support bearings;

r) limitation of axial load on the driving and driven machines.

4.2 Speed and power to be transmitted, including curves showing relationship between speed and torque, where appropriate :

a) normal intended;

b) maximum available;

c) vibratory torque, expressed as amplitudes, with details of frequency range, and whether transient or continuous;

d) acceleration and deceleration, including transient loads during starting and stopping.

4.3 Nature of duty :

a) duty cycle and required longevity (continuous, intermittent, fluctuating, reversing, etc.);

b) times available for maintenance.

4.4 Environmental data, during transportation, storage and use :

a) shock and vibration;

b) range of ambient temperatures and humidities;

c) presence of oils, solvents, corrosive liquids or vapours, sand or dust, salt water, radiation, etc.

4.5 Alignment data : expected misalignments and relative movements between coupled shafts in the following deflection modes :

a) angular (conical);

b) parallel;

c) axial.

4.5.1 Normal and maximum misalignment permissible under service conditions.

4.5.2 Normal and maximum misalignment permissible when running up to speed and stopping.

4.5.3 Effects of temperature changes.

4.6 Required coupling characteristics :

a) torsional stiffness;

b) axial stiffness;

c) rotational critical speed requirements for double-jointed couplings.

NOTES

1 Axial (longitudinal) thrust can affect the torsional rigidity of certain types of couplings.

2 The mass of unsupported, partly supported or overhung couplings can affect transverse vibration characteristics.

3 In some coupling applications, it may be desirable to carry out a comprehensive vibration analysis of the whole transmission system.

4.7 Special features, for example, emergency drive, limitation on torsional deflection, etc.

5 Information to be supplied by manufacturers

To ensure proper use of couplings, manufacturers shall supply the following information, as applicable and when available.

5.1 Principle of operation : description and typical applications of each type of coupling.

5.2 Special features, for example :

a) torque or displacement limiting devices;

b) transmission of thrust;

c) clutching or disengaging facility;

d) emergency drive.

5.3 Performance data :

a) continuous and maximum permissible speed;

b) nominal torque and maximum torque;

c) torsion angle under nominal torque;

d) torsional stiffness;

e) axial stiffness;

f) radial stiffness;

g) conical stiffness.

NOTE — It is recommended that graphs/tables be included showing coupling stiffness as a function of mean torque, temperature or vibration frequency, as appropriate.

5.3.1 Permissible continuous and maximum misalignments in the following deflection modes, including criteria or interdependence :

a) angular (conical);

b) parallel;

c) axial.

5.3.2 Permissible continuous and maximum vibratory torque.

5.3.3 Damping data.

5.4 Recommended criteria for the selection of coupling types and sizes.

5.5 Drawing or catalogue specification : an outline drawing showing the following principal features :

a) overall dimensions;

b) attachment details;

c) material of the components for special applications;

d) mass and polar moment of inertia of the input and output components, including springs, rubber components, working fluid, etc., as applicable.

5.6 Environmental data.

5.6.1 The upper and lower working temperature limits.

5.6.2 The ability of the coupling to perform satisfactorily under adverse conditions, such as salt spray, oils and fuels, corrosive vapours, other contamination, etc.

5.6.3 Transportation requirements.

5.6.4 Recommended storage conditions and shelf life of degradable components.

5.6.5 Fire resistance and toxic properties.

5.7 Other information.

5.7.1 Method of identification of types of couplings and components supplied as spares, where applicable.

5.7.2 Intended direction of rotation and unambiguous marking of the "driving" and "driven" elements.

5.7.3 Balancing data, if any.

5.7.4 Recommended method of alignment.

5.7.5 Installation and removal instructions.

5.7.6 Details of maintenance, periodic inspection and servicing requirements, including lubrication.

5.7.7 References to relevant test methods.

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