



SLOVENSKI STANDARD SIST ISO 15086-1:2002

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Hydraulic fluid power -- Determination of the fluid-borne noise characteristics of components and systems -- Part 1: Introduction

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Transmissions hydrauliques -- Évaluation des caractéristiques du bruit liquidien des composants et systèmes -- Partie 1: Introduction

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ICS:

17.140.20	Emisija hrupa naprav in opreme	Noise emitted by machines and equipment
23.100.01	Fluid power systems in general	Fluid power systems in general

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en

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Hydraulic fluid power — Determination of fluid-borne noise characteristics of components and systems —

Part 1: Introduction

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*Transmissions hydrauliques — Évaluation des caractéristiques du bruit
liquidien des composants et systèmes —*

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ISO 15086-1:2001(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 part of ISO 15086 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15086-1 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 8, *Product testing*.

ISO 15086 consists of the following parts, under the general title *Hydraulic fluid power — Determination of fluid-borne noise characteristics of components and systems*:

— *Part 1: Introduction*

— *Part 2: Measurement of the speed of sound in a fluid in a pipe*

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Introduction

The airborne noise emitted by hydraulically actuated equipment is the result of simultaneous acoustic radiation from all mechanical structures comprising the machine. The contribution from individual components generally forms only a small part of the total acoustic energy radiated. Acoustic intensity measurement techniques have demonstrated that the pulsating energy in the hydraulic fluid (fluid-borne noise) is the dominant contributor to machine noise. In order to develop quieter hydraulic machines it is therefore necessary to reduce this hydro-acoustic energy.

Various approaches have been developed to describe the generation and transmission of fluid-borne noise in hydraulic systems. Of these, the transfer matrix approach has the merit of providing a good description of the physical behaviour as well as providing an appropriate basis for the measurement of component characteristics.

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Hydraulic fluid power — Determination of fluid-borne noise characteristics of components and systems —

Part 1: Introduction

1 Scope

This part of ISO 15086 provides a general introduction to transfer matrix theory, which allows the determination of the fluid-borne noise characteristics of components and systems. It also provides guidance on practical aspects of fluid-borne noise characterization.

This part of ISO 15086 is applicable to all types of hydraulic fluid power circuits operating under steady-state conditions for fluid-borne noise over an appropriate range of frequencies.

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2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 15086. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 15086 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 5598, *Fluid power systems and components — Vocabulary*

3 Terms and definitions

For the purposes of this part of ISO 15086, the terms and definitions given in ISO 5598 and the following apply.

3.1

flow ripple

fluctuating component of flow rate in a hydraulic fluid, caused by interaction with a flow ripple source within the system

3.2

pressure ripple

fluctuating component of pressure in a hydraulic fluid, caused by interaction with a flow ripple source within the system

3.3

hydraulic noise generator

hydraulic component generating flow ripple and consequently pressure ripple in a circuit, or hydraulic component generating pressure ripple and consequently flow ripple in the circuit