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Sound system equipment – Electroacoustical transducers – Dynamic measurement of suspension parts

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SOUND SYSTEM EQUIPMENT – Electroacoustical transducers – Dynamic measurement of suspension parts

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IEC-PAS 62459 has been processed by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
100/999/NP	100/1059/RVN

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INTRODUCTION

A ready-to-use loudspeaker is the result of international division of labour. An important role is played by the suspension parts which must have reproducible behaviour for the manufacturing of equipment. This document gives a measurement method and parameters for the quality-assurance applications by suspension-part manufacturers and loudspeaker manufacturers.

The lowest resonance frequency of an electroacoustical transducer (for example, a loudspeaker) depends on the mechanical stiffness and the mass of the moving components. These elements include the mass of the diaphragm or cone, the mass of the voice coil, the mass of the air load, the stiffness of the spider and the stiffness of the surround and, if applicable, the stiffness of the air in the loudspeaker enclosure. Whereas the moving mass may be assumed as constant, the stiffness depends on the instantaneous voice coil position x, humidity, temperature and reversible and non-reversible changes versus time. The break-in effect of a new spider and natural ageing are examples of non-reversible processes. A reversible process is the reduction of the stiffness, $K(x = 0)$, at the rest position, $x = 0$, after performing a large excursion and the restoration of the original stiffness at $K(x = 0)$ after a few seconds. Closely related is the creep effect and the dependency of the stiffness, $K(f)$, on the frequency of a sinusoidal stimulus. The visco-elastic behaviour causes a discrepancy between the stiffness measured statically and dynamically. The results of a dynamic measurement technique are more relevant for the final application of suspension parts at audio frequencies.