First edition
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# Mechanical vibration — Rotor balancing —

## Part 32: Shaft and fitment key convention

*Vibrations mécaniques — Équilibrage des rotors —*

*Partie 32: Convention relative aux clavettes d'arbres et aux éléments rapportés*

Reference number
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## 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 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 21940-32 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 2, *Measurement and evaluation of mechanical vibration and shock as applied to machines, vehicles and structures*.

This first edition of ISO 21940-32 cancels and replaces ISO 8821:1989, of which it constitutes an editorial revision. The main change is deletion of statements relating to the implementation date, transition period and key convention usage in the past.

ISO 21940 consists of the following parts, under the general title *Mechanical vibration — Rotor balancing*:

— *Part 1: Introduction* [1)]

— *Part 2: Vocabulary* [2)]

— *Part 11: Procedures and tolerances for rotors with rigid behaviour* [3)]

— *Part 12: Procedures and tolerances for rotors with flexible behaviour* [4)]

— *Part 13: Criteria and safeguards for the* in-situ *balancing of medium and large rotors* [5)]

— *Part 14: Procedures for assessing balance errors* [6)]

1) Revision of ISO 19499:2007, *Mechanical vibration — Balancing — Guidance on the use and application of balancing standards*

2) Revision of ISO 1925:2001, *Mechanical vibration — Balancing — Vocabulary*

3) Revision of ISO 1940-1:2003, *Mechanical vibration — Balance quality requirements for rotors in a constant (rigid) state — Part 1: Specification and verification of balance tolerances*

4) Revision of ISO 11342:1998, *Mechanical vibration — Methods and criteria for the mechanical balancing of flexible rotors*

5) Revision of ISO 20806:2009, *Mechanical vibration — Criteria and safeguards for the* in-situ *balancing of medium and large rotors*

6) Revision of ISO 1940-2:1997, *Mechanical vibration — Balance quality requirements of rigid rotors — Part 2: Balance errors*

 

— *Part 21: Description and evaluation of balancing machines* [7]

— *Part 23: Enclosures and other protective measures for balancing machines* [8]

— *Part 31: Susceptibility and sensitivity of machines to unbalance* [9]

— *Part 32: Shaft and fitment key convention* [10]

7) Revision of ISO 2953:1999, *Mechanical vibration — Balancing machines — Description and evaluation*

8) Revision of ISO 7475:2002, *Mechanical vibration — Balancing machines — Enclosures and other protective measures for the measuring station*

9) Revision of ISO 10814:1996, *Mechanical vibration — Susceptibility and sensitivity of machines to unbalance*

10) Revision of ISO 8821:1989, *Mechanical vibration — Balancing — Shaft and fitment key convention*

## Introduction

It is often impossible or economically unreasonable to balance rotors with fitments after they have been assembled; the rotor components which also may originate from different suppliers are therefore balanced separately. An appropriate balance tolerance is applied to each component so that, when shaft and fitment(s) are coupled together, the rotor assembly meets the required balance tolerance and/or vibration limit. For coupling the fitment(s) to the shaft, different methods are applied, a very common one uses keys. If, however, a different key convention has been used when balancing the shaft than that one used for balancing the fitment(s), it is quite likely that the rotor assembly has a balance error influencing its residual unbalance.

There are three methods, or key conventions, for balancing shafts and fitments coupled together with keys:

— full-key convention;

— half-key convention;

— no-key convention.

This part of ISO 21940 unifies the key conventions used throughout the world and gives instructions on a marking of components balanced in accordance with the key convention applied. When consistently used, it results in compatibility of shafts and fitments so that they can be balanced by different suppliers and, after being assembled, the balance tolerance and/or vibration limit for the rotor assembly is met.