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American National Standard

Flexible Couplings - Potential Unbalance Classification (Metric Edition)

American National Standard

Flexible Couplings — Potential Unbalance Classification (Metric Edition)

ANSI/AGMA 9110-A11

[Metric Edition of ANSI/AGMA 9000-D11]

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ABSTRACT

This standard describes potential coupling unbalance and identifies its sources. The standard breaks down the requirements into usable groups and outlines how to calculate the potential unbalance of the coupling. Calculations are based on SI units of the metric system. The AGMA method of computing coupling potential unbalance is provided. A guide is provided for balance class selection for purchasers who have not defined the coupling balancing requirements for their system.

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Foreword

[The foreword, footnotes and annexes, if any, in this document are provided for informational purposes only and are not to be construed as a part of ANSI/AGMA Standard 9110–A11, *Flexible Couplings - Potential Unbalance Classification (Metric Edition)*.]

This standard was developed after intensive study of existing standards, literature, design practices, and manufacturing procedures for the balancing of flexible couplings. The intent of this document is to offer designers, manufacturers and users standard criteria for the unbalance classification of flexible couplings.

The information contained within this standard does not necessarily agree with some existing specifications for other rotating components and equipment. This standard is based upon the design criteria, related to the balancing of couplings, that have evolved over many years of successful industry practice.

ANSI/AGMA 9110–A11 is a hard metric adaptation of ANSI/AGMA 9000–D11, with additional information for both standard and high performance couplings in the annexes. ANSI/AGMA 9110–A11 incorporates information from the rigid rotor standard, ISO 1940–1:2003, and how to properly apply that information to flexible coupling potential unbalance.

The first draft of ANSI/AGMA 9110–A11 was made in October, 2004. It was approved by the AGMA membership in April, 2011 and approved as an American National Standard on August 10, 2011.

Suggestions for improvement of this standard will be welcome. They should be sent to the American Gear Manufacturers Association, 1001 N. Fairfax Street, 5th Floor, Alexandria, Virginia 22314.

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American National Standard -

Flexible Couplings - Potential Unbalance Classification (Metric Edition)

1 Scope

This metric standard defines classes of flexible coupling potential unbalance, one of which the user must select in order to meet the needs of their system. The classes are established using mass and speed and system sensitivity to arrive at a mass displacement value that defines the potential unbalance. The standard defines types of unbalance, provides a method of selecting balance class, identifies contributors to potential unbalance, and provides a method of determining potential coupling unbalance. The balance classes are derived from consideration of the potential unbalance of the coupling.

The balancing requirements for a flexible coupling depend upon the rotating system into which it is mounted. Each half of the coupling is mounted on a separate rotor with the whole coupling providing the connection. Each of the connected rotors is balanced independently of the coupling and the coupling is added when the rotors are installed.

This standard is used with ISO 1940-1:2003 which applies to balance quality requirements of rigid rotors. If ISO 1940-1:2003 is used for balancing coupling components and assemblies in the balancing machine, then potential unbalances are introduced after the coupling is disassembled and reassembled either in the balancing machine or the rotor system. These potential unbalances are primarily the result of:

- balancing mounting fixture inaccuracies;
- displacement of coupling components with respect to the axis of rotation of the rotor system during disassembly and reassembly of the coupling.

1.1 Application

This standard is applicable to couplings and addresses potential unbalance which could be expected of a coupling in service. This standard accounts for issues of runout and clearances in the calculation of potential unbalance and resulting balance class. It should be noted that a flexible coupling is generally an assembly of several components having diametral clearance and eccentricities between the pilot surfaces. ISO 1940-1:2003 addresses residual unbalance as measured in the balancing machine. For an example, see annex K.

1.2 Exclusions

This standard does not take into account balance standards developed by other standards organizations (e.g., American Petroleum Institute). In addition, this standard does not address the unbalance effects caused by:

- shaft runout;
- keys that protrude beyond the hub or shaft;
- unfilled keyways or keyseats;