AS 2625.4—2003
ISO 10816-3:1995

Australian Standard™

Mechanical vibration—Evaluation of machine vibration by measurements on non-rotating parts

Part 4: Industrial machines with nominal power above 15 kW and nominal speeds between 120 r/min and 15 000 r/min when measured *in situ*

Standards Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee AV-009, Mechanical Vibration and Shock Application to supersede AS 2625.4—1986, *Rotating and reciprocating machinery—Mechanical vibration* Part 4: *Measurement and evaluation of vibration severity of small rotating machines* which has been technically revised

The objective of this Standard is to provide designers, manufacturers, operators and maintainers of rotating and reciprocating machinery with specific guidelines for assessing the severity of vibration measured on non-rotating parts when measurements are made in situ.

This Standard is identical with and has been reproduced from ISO 10816-3:1995, *Mechanical vibration—Evaluation of machine vibration by measurements on non-rotating parts,* Part 3: *Industrial machines with nominal power above 15 kW and nominal speeds between 120 r/min and 15 000 r/min when measured in situ.*

ISO 10816 consists of the following parts:

Part 1: General guidelines

Part 2: Large land-based steam turbine generator sets in excess of 50 MW

Part 3: Industrial machines with nominal power above 15 kW and nominal speeds between 120 r/min and 15000 r/min when measured in situ

Part 4: Gas turbine driven sets excluding aircraft derivatives

Part 5: Machine sets in hydraulic power generating and pumping plants

In addition to Part 3, Part 1 has also been reproduced as an Australian Standard as Part 1 in the AS 2625 series.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text, ‘this part of ISO 10816’ should read ‘this Australian Standard’.

(c) A full point substitutes for a comma when referring to decimal marker.

Reference to ISO 10816-1 should be replaced by reference to AS 2625.1 *Mechanical vibration—Evaluation of machine vibration by measurements on non-rotating parts*, Part 1: *General guidelines*.

CONTENTS

INTRODUCTION

ISO 10816-1 is the basic document which describes the general requirements for evaluating the vibration of various machine types when the vibration measurements are made on non-rotating parts. This part of ISO 10816 provides specific guidance for assessing the severity of vibration measured on bearings, bearing pedestals, or housings of industrial machines when measurements are made *in situ*.

Two criteria are provided for assessing the machine vibration. One criterion considers the magnitude of the observed vibration; the second considers changes in the magnitude. It must be recognized, however, that these criteria do not form the only basis for judging the severity of vibration. For some machine types, it is also common to judge the vibration based on measurements taken on the rotating shafts. Shaft vibration measurement requirements and criteria are addressed in separate documents, ISO 7919-1 and ISO 7919-3.

AUSTRALIAN STANDARD

Mechanical vibration—Evaluation of machine vibration by measurement on non-rotating parts

Part 4:
Industrial machines with nominal power above 15 kW and nominal speeds between 120 r/min and 15 000 r/min when measured *in situ*

1 Scope

The vibration criteria provided in this part of ISO 10816 apply to machine sets with, for instance, steam turbine or electrical drives, having a power above 15 kW and operating speeds between 120 r/min and 15 000 r/min.

The machine sets covered by this part of ISO 10816 include:

— steam turbines with power up to 50 MW;

— steam turbine sets with power greater than 50 MW and speeds below 1 500 r/min or above 3 600 r/min (not included in ISO 10816-2);

— rotary compressors;

— industrial gas turbines with power up to 3 MW;

— pumps of centrifugal, mixed flow or axial flow type;

— generators, except when used in hydraulic power generating and pumping plants;

— electrical motors of any type;

— blowers or fans.

NOTE However, it should be noted that the vibration criteria presented in this part of ISO 10816 are generally only applicable to fans with power ratings greater than 300 kW or other fans with a reasonably rigid structure/frame which are not flexibly supported. As and when circumstances permit, recommendations for other types of fans, including those which are flexibly supported or with lightweight sheet metal construction, will be prepared. Until such time, classifications may be agreed between the manufacturer and customer, using results of previous operational experience; see also ISO 14694.

The following are excluded from this part of ISO 10816:

— land-based steam turbine generator sets with power greater than 50 MW and speeds of 1 500 r/min, 1 800 r/min, 3 000 r/min, or 3 600 r/min (see ISO 10816-2);

— gas turbine machines with power greater than 3 MW (see ISO 10816-4);

— machine sets in hydraulic power generating and pumping plants (see ISO 10816-5);