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**Vacuum technology — Standard  
methods for measuring vacuum-pump  
performance —**

**Part 2:  
Positive displacement vacuum pumps**

*Technique du vide — Méthodes normalisées pour mesurer les  
performances des pompes à vide —*

*Partie 2: Pompes à vide volumétriques*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 112, *Vacuum technology*.

This second edition cancels and replaces the first edition (ISO 21360-2:2012), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— Note added to [3.2](#) and [3.3](#). The test report should contain the ambient conditions.

— In [A.1.5](#), the formula has been corrected to  $p_a = \frac{\varphi_{\text{H}_2\text{O}}}{100} p_s(T_1)$ .

A list of all parts in the ISO 21360 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

This document specifies methods for measuring the performance data of positive-displacement vacuum pumps. This document complements ISO 21360-1, which provides a general description of the measurement of performance data of vacuum pumps.

The methods described here are well known from existing national and International Standards. The aim in drafting this document was to collect together suitable methods for the measurement of performance data of positive-displacement vacuum pumps. This document takes precedence in the event of a conflict with ISO 21360-1.



# Vacuum technology — Standard methods for measuring vacuum-pump performance —

## Part 2:

## Positive displacement vacuum pumps

### 1 Scope

This document specifies methods for measuring the volume flow rate, base pressure, water vapour tolerance, power consumption, and the lowest start-up temperature of positive displacement vacuum pumps, which discharge gas against atmospheric pressure and with a usual base pressure <10 kPa.

In this document, it is necessary to use the determinations of volume flow rate and base pressure specified in ISO 21360-1.

This document also applies to the testing of other types of pumps which can discharge gas against atmospheric pressure, e.g. drag pumps.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21360-1:2020, *Vacuum technology — Standard methods for measuring vacuum-pump performance — Part 1: General description*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21360-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1

##### gas ballast

gas or air inlet into the swept volume of the pump

#### 3.2

##### water vapour tolerance

$p_{\text{H}_2\text{O}}$

maximum water vapour pressure which can be conveyed by the pump without condensation in the pump

Note 1 to entry: If there is no problem of water vapour condensation, e.g. when an oil and water separation unit is included, maximum water vapour pressure is acceptable.

Note 2 to entry: The test report should contain the ambient conditions.