
**Displacement compressors —
Acceptance tests**

Compresseurs volumétriques — Essais de réception



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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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 1217 was prepared by Technical Committee ISO/TC 118, *Compressors and pneumatic tools, machines and equipment*, Subcommittee SC 6, *Air compressors and compressed air systems*.

This fourth edition cancels and replaces the third edition (ISO 1217:1996), which has been technically revised.

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Displacement compressors — Acceptance tests

1 Scope

This International Standard specifies methods for acceptance tests regarding volume rate of flow and power requirements of displacement compressors. It also specifies methods for testing liquid-ring type compressors (see Annex A).

This International Standard specifies the operating and testing conditions which apply when a full performance test is specified.

For compressors manufactured in batches or in continuous production quantities and supplied against specified data, the tests described in Annexes B, C and D are considered equivalent alternatives.

Annex E, which is normative, applies to any electrically driven compressor manufactured in batches or in continuous production quantities and supplied against specified data having variable speed drive (e.g. variable frequency drive, direct current drive and switched reluctance), which incorporates a displacement compressor of any type driven by an electric motor.

Detailed instructions are given for a full performance test, including the measurement of volume flow rate and power requirement, the correction of measured values to specified conditions and means of comparing the corrected values with the guarantee conditions. This International Standard specifies methods for determining the value of the tolerances to be applied to the measurement of flow, power and specific power.

NOTE The tolerances to be applied to the measurement of flow, power, specific power, etc. for all acceptance tests carried out in accordance with this International Standard are agreed on by the manufacturer and the purchaser at the contractual stage or prior to the execution of the tests.

Annex F specifies standard inlet conditions for reference purposes. Annex G, which is normative, indicates the uncertainty of measurement.

This International Standard is not applicable to noise statements, which are identified in ISO 2151.

2 Normative references

The following referenced documents are indispensable for the application 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 3046-1, *Reciprocating internal combustion engines — Performance — Part 1: Declarations of power, fuel and lubricating oil consumptions, and test methods — Additional requirements for engines for general use*

ISO 5167-1, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full — Part 1: General principles and requirements*

ISO 9300, *Measurement of gas flow by means of critical flow Venturi nozzles*

IEC 60584-1, *Thermocouples — Part 1: Reference tables*

IEC 60584-2, *Thermocouples — Part 2: Tolerances*

IEC 60584-3, *Thermocouples — Part 3: Extension and compensating cables — Tolerances and identification system*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General

3.1.1

acceptance test

performance test carried out in accordance with this International Standard, i.e. ISO 1217:2009

3.1.2

aftercooling

removal of heat from a gas after the compression is completed

3.1.3

batch

two or more compressors manufactured at the same time in one operation

3.1.4

clearance volume

volume inside the compression space, which contains gas trapped at the end of the compression cycle

3.1.5

displacement compressor

machine that creates a static pressure rise by allowing successive volumes of gas to be aspirated into and exhausted out of a closed space by means of the displacement of a moving member

3.1.6

displacement of a displacement compressor

volume swept by the compressing element(s) of the compressor's first stage per unit of time

3.1.7

external coolant

medium externally supplied to the compressor to which the generated heat is finally rejected

NOTE This is usually ambient air or cooling water.

3.1.8

fuel consumption

total mass of fuel consumed by the engine per unit time while the compressor is running on test at the specified conditions of inlet and discharge pressure and speed, with all engine ancillary equipment such as alternator and water pump connected and operating normally

See Annex D.

3.1.9

ideal multi-stage compression

process by which a perfect gas is isentropically compressed and the gas inlet temperature as well as the amount of work spent are the same for each stage

3.1.10

intercooling

removal of heat from a gas between stages