

## **BSI Standards Publication**

## **Internal combustion engines** — **Piston pins**

Part 2: Inspection measuring principles



BS ISO 18669-2:2020 BRITISH STANDARD

#### National foreword

This British Standard is the UK implementation of ISO 18669-2:2020. It supersedes BS ISO 18669-2:2004, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/14/-/10, RIC engines - Cylinders, pistons and rings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2020 Published by BSI Standards Limited 2020

ISBN 978 0 580 98124 1

ICS 43.060.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2020.

Amendments/corrigenda issued since publication

Date Text affected

BS ISO 18669-2:2020

# INTERNATIONAL STANDARD

ISO 18669-2

Second edition 2020-04-24

# Internal combustion engines — Piston pins —

Part 2: **Inspection measuring principles** 

Moteurs à combustion interne — Axes de pistons — Partie 2: Principes de mesure pour le contrôle



## BS ISO 18669-2:2020 **ISO 18669-2:2020(E)**



#### COPYRIGHT PROTECTED DOCUMENT

© ISO 2020, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office Ch. de Blandonnet 8 • CP 401 CH-1214 Vernier, Geneva, Switzerland Tel. +41 22 749 01 11 Fax +41 22 749 09 47 copyright@iso.org www.iso.org

Contents Foreword				Page	
				iv	
1	Scop	e		1	
2	Norr	Normative references		1	
3	Terms and definitions		2		
4	Measuring principles		4		
	4.1 General measuring conditions				
	4.2	Characteristics and measuring principles			
	1.2	4.2.1	Outside diameter, $d_1$		
		4.2.2	Cylindricity of the outside diameter $(d_1)$		
		4.2.3	Circularity of the outside diameter $(d_1)$		
		4.2.4	Circumferential waviness		
		4.2.5	Edge drop-off, b, c		
		4.2.6	Inside diameter, $d_2$ , $d_4$		
		4.2.7	Concentricity of inside diameter (ID) relative to outside diameter (OD)	6	
		4.2.8	Length, $l_1$		
		4.2.9	Gauge length, l <sub>5</sub>		
		4.2.10	Runout of the end faces, s		
		4.2.11	End face concavity, $h_1$ , and end face step, $h_2$		
		4.2.12	End face diameter, $d_6$		
		4.2.13	Outside-edge profile		
		4.2.14	Inside chamfer, $t_1$		
		4.2.15	Tapered bore diameter, d <sub>3</sub>		
		4.2.16	Tapered bore angle, α		
		4.2.17	Runout tapered bore, e	9	
		4.2.18	Roughness	9	
		4.2.19	Carburised and nitrided case depth		
		4.2.20	Core hardness	10	
		4.2.21	Peripheral surface hardness	10	
		4.2.22	Volume change	10	
		4.2.23	Material defects	11	
		4.2.24	Residual magnetism	12	
		4.2.25	Visual defects	12	
		4.2.26	Grinder burn	13	
		4.2.27	Streaks on bore surface	13	
Bibl	liogranl	ıv		14	

#### 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 <a href="www.iso.org/directives">www.iso.org/directives</a>).

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 <a href="https://www.iso.org/patents">www.iso.org/patents</a>).

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 <a href="https://www.iso.org/iso/foreword.html">www.iso.org/iso/foreword.html</a>.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 34, *Propulsion, powertrain and powertrain fluids*.

This second edition cancels and replaces the first edition (ISO 18669-2:2004), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the scope has been defined more in detail; and
- references have been updated.

A list of all parts in the ISO 18669 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 <a href="https://www.iso.org/members.html">www.iso.org/members.html</a>.

### Internal combustion engines — Piston pins —

#### Part 2:

### **Inspection measuring principles**

#### 1 Scope

This document defines the measuring principles used for measuring piston pins; it applies to piston pins with a nominal outer diameter from 8 mm up to and including 100 mm, for reciprocating internal combustion engines for road vehicles and other applications.

In certain applications, except road vehicles, and provided that mutual agreement is made between the purchaser and the manufacturer, this document can be used with suitable modifications.

#### 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 1302, Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation

ISO 18203, Steel — Determination of the thickness of surface-hardened layers

ISO~4287, Geometrical~Product~Specifications~(GPS) -- Surface~texture:~Profile~method~-- Terms,~definitions~and~surface~texture~parameters

ISO 4288, Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture

ISO 9934 (all parts), Non-destructive testing — Magnetic particle testing

ISO 6506 (all parts), Metallic materials — Brinell hardness test

ISO 6507 (all parts), Metallic materials — Vickers hardness test

ISO 6508 (all parts), Metallic materials — Rockwell hardness test

ISO 8015, Geometrical product specifications (GPS) — Fundamentals — Concepts, principles and rules

ISO 14104:2017, Gears — Surface temper etch inspection after grinding, chemical method

ISO 14253 (all parts), Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment

ISO 15548 (all parts), Non-destructive testing — Equipment for eddy current examination

ISO 16810, Non-destructive testing — Ultrasonic testing — General principles

ISO 18265, Metallic materials — Conversion of hardness values

ISO 18669-1:2013, Internal combustion engines — Piston pins — Part 1: General specifications