



**International  
Standard**

**ISO 17104**

**Rotary tools for threaded  
fasteners — Impulse and impulsing  
tools — Performance test method**

*Outils rotatifs pour fixations filetées — Outils à impulsion —  
Méthode d'essai des caractéristiques de fonctionnement*

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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms, definitions and symbols</b> .....	<b>1</b>
<b>4 Method for measurement of performance</b> .....	<b>5</b>
4.1 General rules for performance tests.....	5
4.1.1 Measurements.....	5
4.1.2 Ambient conditions.....	5
4.1.3 Test installation.....	6
4.1.4 Test tool.....	6
4.1.5 Test tool condition.....	6
4.1.6 Power media.....	6
4.2 Test fixtures.....	8
4.2.1 General.....	8
4.2.2 Test joint.....	9
4.2.3 Measuring devices.....	12
4.3 Test method.....	13
4.3.1 Overview of test procedure.....	13
4.3.2 Determination of torque factor, $K$ .....	14
4.3.3 Calculation of mean torque factor, $\bar{K}$ .....	16
4.3.4 Reconfirmation of mean torque factor, $\bar{K}$ .....	17
4.3.5 Performance test.....	17
<b>5 Comparison with built-in torque measurement systems</b> .....	<b>18</b>
<b>6 Evaluation of test results</b> .....	<b>18</b>
6.1 Correlated torque scatter.....	18
6.2 Correlated torque scatter over a defined range of torque adjustment.....	19
<b>7 Presentation of test results</b> .....	<b>19</b>
7.1 Test report.....	19
<b>Annex A (informative) Explanation and justification of the method</b> .....	<b>21</b>
<b>Annex B (informative) Explanation of electric impinging tools</b> .....	<b>25</b>
<b>Annex C (informative) Non-normative use of the methods defined in this document</b> .....	<b>26</b>
<b>Annex D (informative) Examples of test report and worksheet for tool performance test</b> .....	<b>28</b>
<b>Annex E (informative) Non-normative use of the methods defined in this document</b> .....	<b>32</b>
<b>Bibliography</b> .....	<b>37</b>

## 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 document 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)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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 118, *Compressors and pneumatic tools, machines and equipment*, Subcommittee SC 3, *Pneumatic tools and machines*.

This first edition of ISO 17104 cancels and replaces the first edition of ISO/TS 17104:2006, which has been technically revised and upgraded to an International Standard.

The main changes are as follows:

- Title and Scope have been modified to reflect changes in the tool types that have become available since 2006.
- Starting point of the joint rate measurement is taken from 50 % of the target rather than 10 %.
- Several requirements are explained more in detail to increase user understanding and tool test consistency.
- The opportunity for users to test performance at a preferred test torque level is added as an informative annex.
- New annexes have been added to educate users in the background to the requirements.

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 is intended to

- enable the manufacturers of power tools to offer their products under standardized technical specifications, and
- give users of threaded fasteners a method for evaluating and specifying the performance of power assembly tools.

This document is a fundamental test procedure, with no attempt to set acceptance criteria. Any minimum performance requirements are the responsibility of the user to meet the demands of the particular application for which the tool is intended for use.

Unlike the previous Technical Specification, this document is applicable to tightening tools of any power source within its scope. However, the test does require that the tool under test is capable of being set to a specific shut-off point.

Additional statements have been introduced to point out the differences between correlated torque derived from clamp force and inbuilt indication or control systems that now exist in a number of tools.

[Annex A](#) explains the basis for the use of clamp force rather than torque for testing the performance of fastener assembly tools that apply torque in a discontinuous method.

[Annex B](#) explains the principle of electric impulsing tools which operate in a different way to hydraulic impulse tools.

[Annex C](#) includes preferred torque values that may be used for testing.

[Annex D](#) gives an example format for the test report.

[Annex E](#) provides background to the testing performed during the creation of this document.

This document includes some changes to the specifications for the test joints and for the test method. These changes reflect the practical experience gained through the use of the previous version of the document and are intended to improve the reproducibility of the test method.

Testing of the tools within the scope of this document present a number of challenges. New equipment and methods are being developed and the subcommittee members responsible for its publication believe that this document is a step closer to understanding the true performance of impulse and impulsing tools. Further development will continue, and the experiences of users are welcomed by the subcommittee.

Results obtained using this document may differ from results obtained using the previous technical specification.

Some of the changes in this document have been guided by the work of the VDI/VDE Committee Gesellschaft Mess- und Automatisierungstechnik and are used with their permission.



# Rotary tools for threaded fasteners — Impulse and impulsing tools — Performance test method

## 1 Scope

This document specifies a laboratory performance test method for hydraulic impulse and electric impulsing tools for installing threaded fasteners in a laboratory environment, and for power assembly tools (referred throughout the document as “tools”) for installing threaded fasteners. It gives instructions on the procedure, performance parameters to test and how to evaluate and present the test data.

It also provides a method for the measurement of torque repeatability (scatter)

- over a range of torque rates as specified in this document, and
- over a range of torque adjustment as defined by the manufacturer.

It gives instructions on equipment parameters, what to test for and how to evaluate and present the test data.

It is applicable to tools

- of any power source, such as pneumatic or electric, including battery-powered,
- which apply torque in discontinuous increments, and
- within the torque range 0,5 N·m to 800 N·m. Outside this range, it is acceptable to modify the test method providing that the modification is documented in the test report.

It is not applicable to

- impact wrenches, and
- ratchet wrenches or wrenches with ratcheting clutches.

The relationship between torque measurements and clamp force-based tests is commented on in [Annex A](#).

The use of tools using discontinuous operation of the motor to provide torque impulses is discussed in [Annex B](#).

It requires manufacturers to perform tests over their defined torque range of the tool; however, it allows users to perform single point tests in order to minimize the number of test joints necessary for a wide range of test torque levels. A list of preferred test torque levels is provided in [Annex C](#).

## 2 Normative references

No normative references are referred to in this document.

## 3 Terms, definitions and symbols

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

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

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