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**Hand-held power tools — Impulse  
wrenches — Dimensions and tolerances  
of interface to power socket**

*Machines portatives — Clés à impulsion — Dimensions et tolérances  
de l'interface pour douille-machine*

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ISO/TS 21108 was prepared by Technical Committee ISO/TC 118, *Compressors and pneumatic tools, machines and equipment*, Subcommittee SC 3, *Pneumatic tools and machines*.

## Introduction

When power sockets for hand-held pulse wrenches are centred on the cylindrical surface of the spindle, several advantages are achieved.

Through this centred engagement

- vibrations and wobbling are reduced, in turn reducing the risk for injury and improving operator ergonomics,
- torque accuracy is increased, improving the quality of the production, and
- energy loss is reduced, saving energy.

The variety of dimensions on the spindle diameter has created a need for standardization of the interface between these pulse tools and power sockets. Because of the existence of differently designed impulse wrenches, the need for two options, A and B, for the series of values for the spindle and the internal socket diameters, has also been perceived.

This document has been published as a technical specification (see Foreword) in order to discourage the development of yet more designs, and enable the usage of each of the two series to be monitored, with the eventual aim of standardizing one of them.

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# Hand-held power tools — Impulse wrenches — Dimensions and tolerances of interface to power socket

## 1 Scope

This Technical Specification specifies the dimensions and tolerances for the interface between impulse wrenches and their power sockets: output spindle of power tool–female drive end of power socket. This interface is based on the principle of a socket centred on the cylindrical spindle. Alternative dimensions and tolerances for two options, A and B, are provided. It is applicable to both pneumatically and electrically driven impulse tools, and could also be used in other applications.

## 2 Terms and definitions

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

### 2.1

#### **female drive end**

part of a power socket at which the spindle of a power tool is attached

### 2.2

#### **male spindle end**

cylindrical and square part of the spindle of a power tool

### 2.3

#### **power socket**

part for the transmission of the torque from the spindle of a power tool to the fastener

### 2.4

#### **impulse wrench**

air-hydraulic impulse wrench

hydraulic pulse tool

impulse tool

oil pulse wrench

pulse tool

power tool with hydraulic pulse action for the installation of threaded fasteners

EXAMPLE Pulse nutsetter/nutrunner, pulse screwdriver.

### 2.5

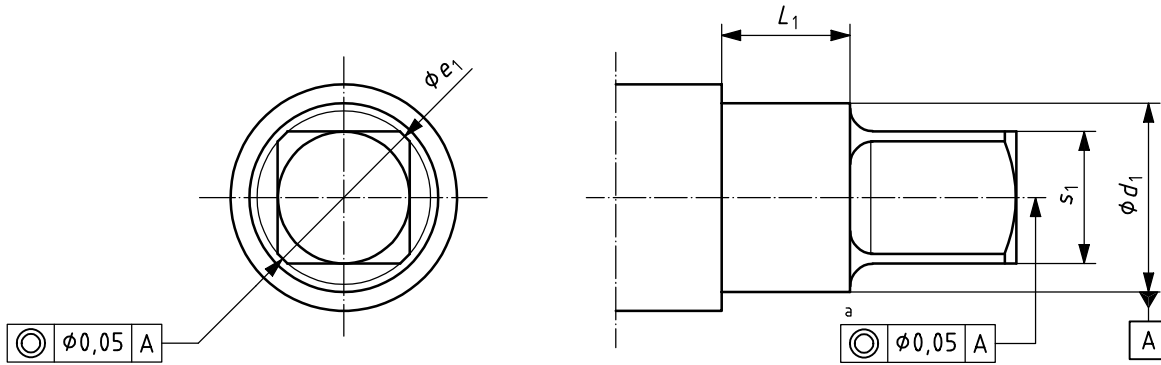
#### **spindle**

shaft of the power tool from which the torque is transmitted

### 3 Dimensions and tolerances

#### 3.1 Male spindle end

The dimensions and tolerances for the male spindle end of the impulse wrench shall be in accordance with Figure 1 and Table 1.



**Key**

- $d_1$  spindle diameter
- $e_1$  diameter across square
- $L_1$  spindle length
- $s_1$  width across flats of square
- <sup>a</sup> Refers to centre of square.

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**Figure 1 — Dimensions and tolerances — Male spindle end**  
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**Table 1 — Dimensions and tolerances — Male spindle end**

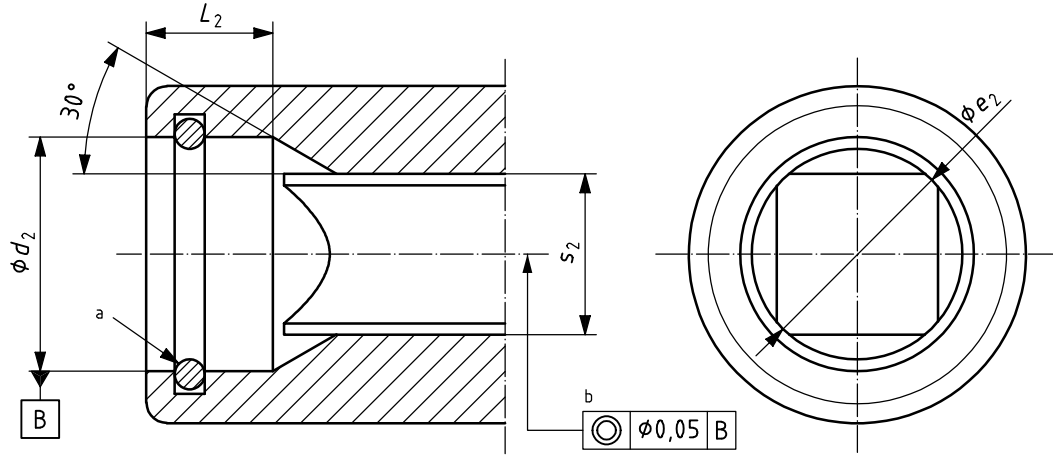
Dimensions in millimetres

Nominal square dimension	$s_1^a$		$e_1$			$d_1$ h7		$L_1$ min.
	max.	min.	<sup>a</sup> max.	Option A <sup>a</sup>	Option B	Option A	Option B	
				min.	min.			
6,3	6,35	6,29	8,4	8	8	8,4	8,4	9
10	9,53	9,47	12,7	12,2	11,8	13	12	11
12,5	12,70	12,63	16,9	16,3	15,8	18	16	11
16	15,88	15,81	21,2	20,4	19,6	22	20	11
20	19,05	18,97	25,4	24,4	24,2	25	25	11
25	25,40	25,32	34	32,4	31,8	34	33	11

<sup>a</sup> Dimension according to ISO 1174-2.

**3.2 Female drive end**

The dimensions and tolerances for the female drive end of the power socket shall be in accordance with Figure 2 and Table 2.



**Key**

- $d_2$  socket internal diameter
- $e_2$  diameter across square
- $L_2$  length of socket internal diameter
- $s_2$  width across flats of square
- a Rubber O-ring: may be used to take up the clearance to the male spindle.
- b Refers to centre of square.

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**Figure 2 — Dimensions and tolerances — Female drive end**

**Table 2 — Dimensions and tolerances — Female drive end**

Dimensions in millimetres

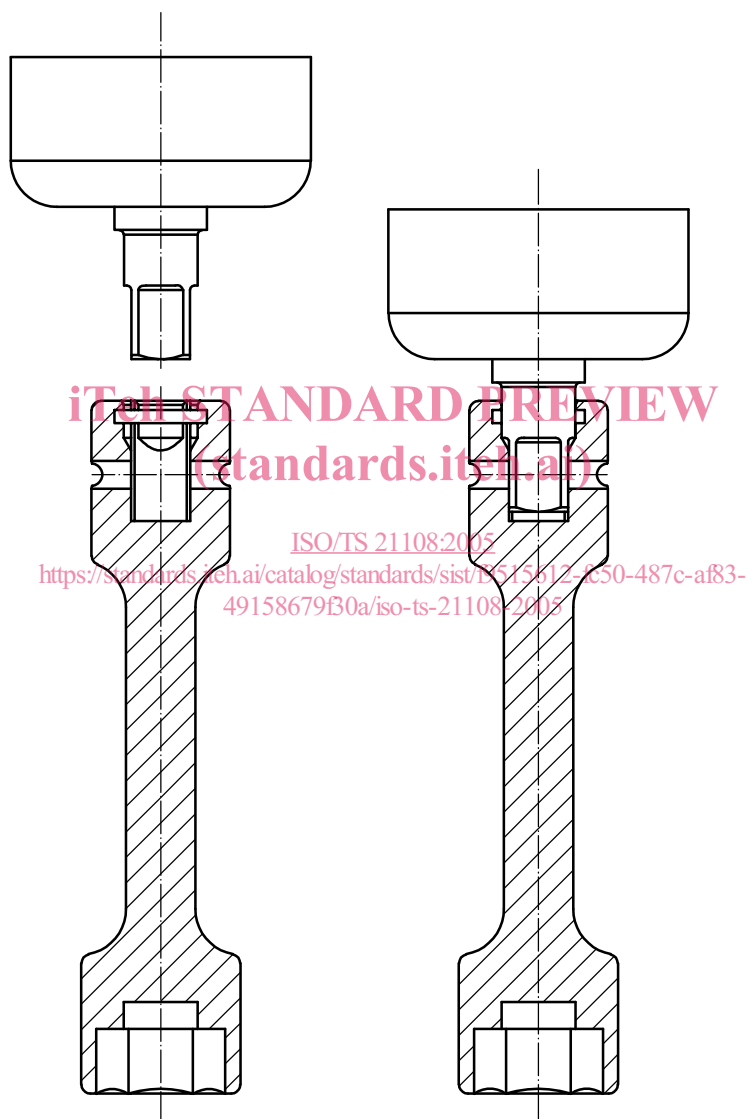
Nominal square dimension	$s_2^a$		$e_2^a$ min.	$d_2$ F8		$L_2$ 0 -0,5
	max.	min.		Option A	Option B	
6,3	6,5	6,41	8,5	8,4	8,4	8
10	9,67	9,58	12,9	13	12	10
12,5	12,87	12,76	17,1	18	16	10
16	16,04	15,93	21,4	22	20	10
20	19,24	19,11	25,6	25	25	10
25	25,59	25,46	34,3	34	33	10

<sup>a</sup> Dimension according to ISO 1174-2.

**Annex A**  
(informative)

**Application example**

An application example showing a long power socket for impulse wrenches is given by Figure A.1.



**Figure A.1 — Example of long power socket for impulse wrenches**



## Bibliography

- [1] ISO 1174-2:1996, *Assembly tools for screws and nuts — Driving squares — Part 2: Driving squares for power socket tools*
- [2] ISO 5391:2003, *Pneumatic tools and machines — Vocabulary*
- [3] EN 792-6:2000, *Hand-held non-electric power tools — Safety requirements — Part 6: Assembly power tools for threaded fasteners*

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