

SLOVENSKI STANDARD

SIST EN 12645:2014

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Nadomešča:
SIST EN 12645:2001

Merilniki tlaka v pnevmatikah - Naprave za nadzor tlaka in/ali napihovanje/izpuščanje pnevmatik motornih vozil - Meroslovje, zahteve in preskušanje

Tyre pressure measuring instruments - Devices for inspection of pressure and/or inflation / deflation of tyres for motor vehicles - Metrology, requirements and testing

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Reifendruckmessgeräte - Geräte zum Prüfen des Druckes und/oder zum Füllen / Entleeren von Reifen an Kraftfahrzeugen - Messtechnik, Anforderungen und Prüfungen

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Instruments de mesure de la pression des pneumatiques - Dispositifs de contrôle de la pression et/ou de gonflage / dégonflage des pneumatiques des véhicules motorisés - Métrologie, exigences et essais

Ta slovenski standard je istoveten z: EN 12645:2014

ICS:

17.100	Merjenje sile, teže in tlaka	Measurement of force, weight and pressure
43.180	Diagnostična, vzdrževalna in preskusna oprema	Diagnostic, maintenance and test equipment
83.160.10	Pnevmatike za cestna vozila	Road vehicle tyres

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EUROPEAN STANDARD

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Tyre pressure measuring instruments - Devices for inspection of pressure and/or inflation / deflation of tyres for motor vehicles - Metrology, requirements and testing

Instruments de mesure de la pression des pneumatiques -
Dispositifs de contrôle de la pression et/ou de gonflage /
dégonflage des pneumatiques des véhicules motorisés -
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und/oder zum Füllen / Entleeren von Reifen an
Kraftfahrzeugen - Messtechnik, Anforderungen und
Prüfungen

This European Standard was approved by CEN on 31 August 2013.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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EN 12645:2014 (E)**Foreword**

This document (EN 12645:2014) has been prepared by Technical Committee CEN/TC 301 "Road vehicles", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2015, and conflicting national standards shall be withdrawn at the latest by February 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12645:1998, and additionally to the tyre pressure mechanical measuring instruments, introduces new clauses for the electronic devices (requirements, test methods) and for the metrological control (during type approval, initial and subsequent verification, and in-service control).

This document has been prepared under a mandate (M/457) given to CEN by the European Commission and the European Free Trade Association.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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1 Scope

This European Standard defines metrological and technical requirements and tests of tyre pressure measuring instruments.

Tyre pressure measuring instruments (often referred to as Tyre Pressure Gauges, [TPG]) are for the inspection of pressure and/or inspection of inflation/deflation of tyres of motor vehicles.

It establishes in the context of motor vehicles tyres, the minimum characteristics of the chain of measurement of tyre pressure measuring instruments intended to inspect or adjust the pressure of tyres inflated by air or nitrogen.

These devices, classified in different categories, are hereinafter referred to by generic term, “tyre pressure measuring instruments”.

This chain of measurement consists of all the elements between the tyre valve and the display device (connector, hose, control device, measurement components, reservoir, preset device etc.).

They indicate the pressure difference (p_e) between the air or the nitrogen in the tyre and the atmosphere.

The field of application established above can be extended to other applications where no specific standard exists.

Because of the influence of tyre pressure on road safety and energy efficiency, periodical verification of tyre pressure measuring instruments is strongly recommended.

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2 Normative references

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The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 837-1, *Pressure gauges - Part 1: Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing*

EN 837-3, *Pressure gauges - Part 3: Diaphragm and capsule pressure gauges - Dimensions, metrology, requirements and testing*

EN 60068-2-1, *Environmental testing - Part 2-1: Tests - Test A: Cold*

EN 60068-2-2, *Environmental testing - Part 2-2: Tests - Test B: Dry heat*

EN 60068-2-11, *Environmental testing - Part 2: Tests - Test Ka: Salt mist*

EN 60068-2-30, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

EN 60068-2-32, *Basic environmental testing procedures — Part 2: Tests — Test Ed: Free fall (IEC 60068-2-32)*

EN 60068-2-47, *Environmental testing - Part 2-47: Tests - Mounting of specimens for vibration, impact and similar dynamic tests*

EN 60068-2-64, *Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance*

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EN 60068-3-8, *Environmental testing - Part 3-8: Supporting documentation and guidance - Selecting amongst vibration tests*

EN 60529, *Degrees of protection provided by enclosures (IP Code)*

EN 60654-2, *Operating conditions for industrial-process measurement and control equipment - Part 2: Power*

EN 61000-4-1, *Electromagnetic compatibility (EMC) - Part 4-1: Testing and measurement techniques - Overview of IEC 61000-4 series*

EN 61000-4-2, *Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test*

EN 61000-4-3, *Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test*

EN 61000-4-4, *Electromagnetic compatibility (EMC) — Part 4-4: Testing and measurement techniques — Electrical fast transient/burst immunity test (IEC 61000-4-4)*

EN 61000-4-5, *Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test*

EN 61000-4-6, *Electromagnetic compatibility (EMC) — Part 4-6: Testing and measurement techniques — Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-6)*

EN 61000-4-11, *Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests*

EN 61000-4-17, *Electromagnetic compatibility (EMC) - Part 4-17: Testing and measurement techniques - Ripple on d.c. input power port immunity test*

EN 61000-4-29, *Electromagnetic compatibility (EMC) - Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests*

ISO 7637-2, *Road vehicles — Electrical disturbances from conduction and coupling — Part 2: Electrical transient conduction along supply lines only*

ISO 16750-1, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 1: General*

ISO 16750-2, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 2: Electrical loads*

3 Terms and definitions

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

3.1

air

gases used to inflate tyres of vehicles

EXAMPLE Air or nitrogen.

3.2**tyre pressure measuring instrument**

instrument measuring the tyre pressure comprising all the elements from the tyre valve connector up to and including the display device

Note 1 to entry: Often referred to as TPG (Tyre Pressure Gauge).

Note 2 to entry: The elements may include tyre valve connector, hose, control device, measurement components, display device, software, reservoir, etc.

3.3**gauge pressure (p_g)**

pressure difference between an absolute pressure and the absolute pressure of the atmosphere

Note 1 to entry: The tyre pressure is the pressure difference between the air in the tyre and the atmosphere and therefore a gauge pressure

3.4**category**

subdivision of possible configurations of the measuring instrument

Note 1 to entry: For the purpose of selecting the correct test method, the parts in the measuring chain are defined to be fixed, portable or hand-held. The control device is not relevant in defining the category.

3.5**preset device**

device which permits the selection of the (target) pressure and which automatically stops inflation/deflation process when the target pressure is reached

3.6**electronic tyre pressure measuring instrument**

tyre pressure measuring instrument with one or more electronic parts in the chain of measurement

3.7**mechanical tyre pressure measuring instrument**

tyre pressure measuring instrument without electronic parts in the chain of measurement

3.8**index**

means to indicate the tyre pressure value (for example: a pointer with scale or a cursor with scale)

3.9**indication**

display of the tyre pressure value

Note 1 to entry: For example a digital display or an index with scale.

Note 2 to entry: Normally a scale is arc shaped.

Note 3 to entry: The display may be an index with scale on a screen.

3.10**MPE**

acronym often used for "Maximum Permissible Error"

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4 Categories

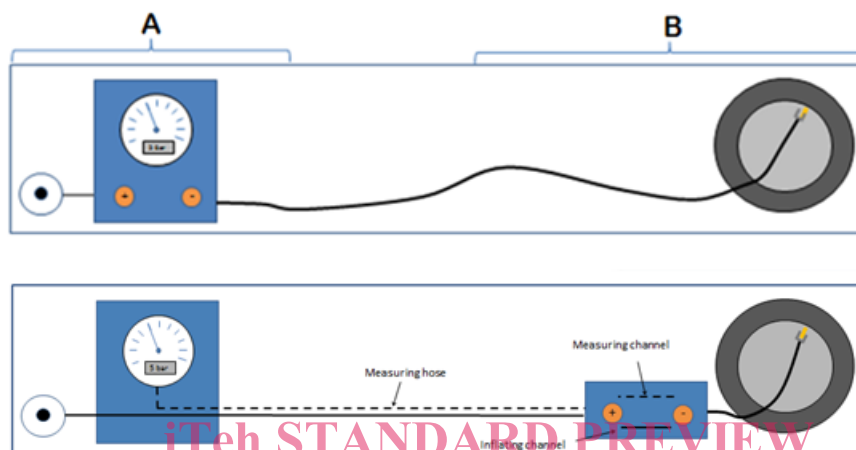
For the purposes of this document, the following categories apply.

4.1

category 1 - Fixed device

tyre pressure measuring instrument where the measuring components and the displaying device are fixed

Note 1 to entry: They are generally connected to a source of air and are equipped with a control device. See Figure 1.



Key

A fixed components

B portable components

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Figure 1 — Fixed device

EXAMPLE Wall fixing inflation devices.

4.2

category 2 - Portable device

tyre pressure measuring instrument where the measuring components and the displaying device are portable

Note 1 to entry: They are generally connected to the control device and a reservoir under limited pressure or an integrated compressor or a source of air. See Figure 2.

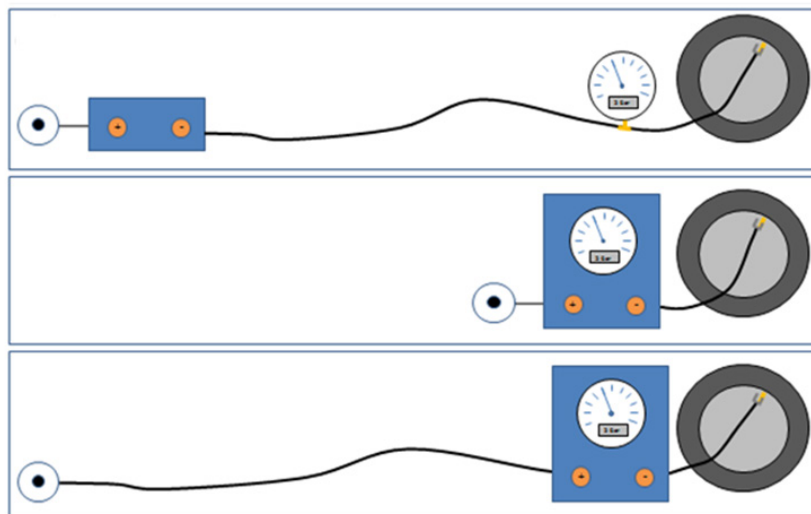


Figure 2 — Portable device

EXAMPLE Inflation terminal.

4.3

category 3 - Handheld device

tyre pressure measuring instrument where the measuring components and the displaying device are handheld

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Note 1 to entry: They can be connected to the control device or grouped together with the control device. See Figure 3.

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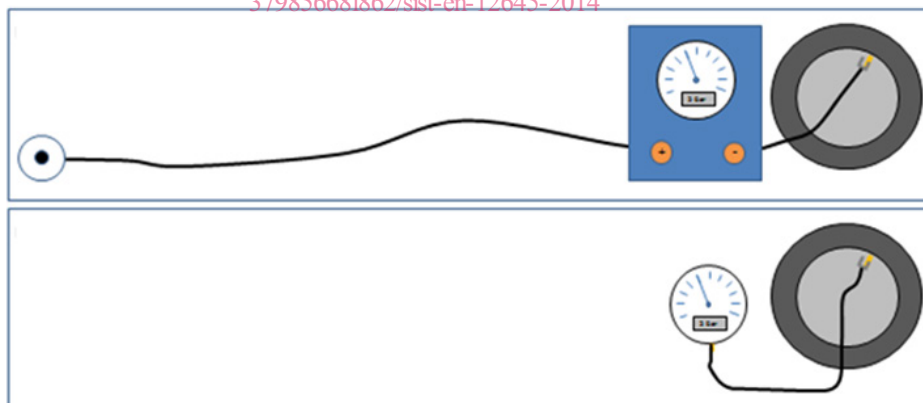


Figure 3 — Hand-held device

EXAMPLE Inflation gun, pressure inspector.

5 Metrological requirements

5.1 Maximum permissible errors

The maximum permissible errors positive or negative given in the tables below are defined as absolute values according to the measured pressure, expressed in kPa or bar.

Table 1 — Maximum permissible errors \pm in kPa

Measured pressure in kPa	Maximum permissible errors (MPE) \pm in kPa		
	Ambient temperature (t_{amb}) in °C for tyre pressure measuring instruments		
	below 15 °C	from 15 °C to 25 °C	above 25 °C
≤ 400	$0,5 * (15 - t_{amb}) + 8$	8	$0,5 * (t_{amb} - 25) + 8$
> 400 to $\leq 1\ 000$	$0,5 * (15 - t_{amb}) + 16$	16	$0,5 * (t_{amb} - 25) + 16$
$> 1\ 000$	$0,5 * (15 - t_{amb}) + 25$	25	$0,5 * (t_{amb} - 25) + 25$

Table 2 — Maximum permissible errors \pm in bar

Measured pressure in bar	Maximum permissible errors (MPE) \pm in bar		
	Ambient temperature (t_{amb}) in °C for tyre pressure measuring instruments		
	below 15 °C	from 15 °C to 25 °C	above 25 °C
≤ 4	$0,005 * (15 - t_{amb}) + 0,08$	0,08	$0,005 * (t_{amb} - 25) + 0,08$
> 4 to ≤ 10	$0,005 * (15 - t_{amb}) + 0,16$	0,16	$0,005 * (t_{amb} - 25) + 0,16$
> 10	$0,005 * (15 - t_{amb}) + 0,25$	0,25	$0,005 * (t_{amb} - 25) + 0,25$

A graphical representation of these two tables is provided in Annex B.

5.2 Hysteresis error

Hysteresis error of tyre pressure measuring instruments shall not exceed the absolute value of the maximum permissible error, given in 5.1 in the column "from 15 °C to 25 °C".

5.3 Zero

5.3.1 Return of the instrument's indication to zero

If the instrument indicates zero, the 'real' indication shall be within MPE or the instrument shall not indicate values below the minimum value of measured pressure.

At atmospheric pressure, the index shall stop at the zero mark or at a predetermined mark clearly differentiated from the scale intervals, within the limits of the maximum permissible error.

5.3.2 Zero setting

An instrument may be equipped with an automatic or semi-automatic zero-setting device. The semi-automatic zero-setting device has to check being at the atmospheric pressure before setting to zero. Manual zero-setting is not allowed except by switching OFF and ON.

NOTE Manual means the operator can influence the result.