
Merila tlaka - 3. del: Merila tlaka z membrano in mehovi - Mere, meroslovje, zahteve in preskušanje

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

Druckmessgeräte - Teil 3: Druckmessgeräte mit Platten- und Kapselfedern - Masse, Messtechnik, Anforderungen und Prüfung

Manometres - Partie 3: Manometres a membrane et manometres a capsule - Dimensions, métrologie, prescriptions et essais

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Ta slovenski standard je istoveten z: EN 837-3:1996

ICS:

17.100	Merjenje sile, teže in tlaka	Measurement of force, weight and pressure
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SIST EN 837-3:1997

en

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EUROPEAN STANDARD

EN 837-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1996

ICS 17.100

Descriptors: Metrology, measuring instruments, pressure measurements, manometers, indicating instruments, dimensions, fidelity, measuring scales, specifications, metrological inspection, tests, packing, designation

English version

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

Manomètres - Partie 3: Manomètres à membrane et
manomètres à capsule - Dimensions, métrologie,
prescriptions et essais

Druckmeßgeräte - Teil 3: Druckmeßgeräte mit
Platten- und Kapselfedern - Maße, Meßtechnik,
Anforderungen und Prüfung

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 141 "Pressure gauges - Thermometers - Means of measuring and/or recording temperature during the distribution of refrigerated frozen and quick-frozen products", 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 June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.

This European Standard is a part of the series of the following standards:

- EN 837-1 Pressure gauges - Part 1: Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing;
- EN 837-2 Pressure gauges - Part 2: Selection and installation recommendations for pressure gauges;
- EN 837-3 Pressure gauges - Part 3: Diaphragm and capsule pressure gauges - Dimensions, metrology, requirements and testing.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies requirements for diaphragm and capsule (designated by D and C respectively, see clause 12) indicating pressure gauges, vacuum gauges and combined vacuum and pressure gauges (compound gauges), from 50 to 250 nominal size with ranges up to 25 bar for the measurement of gauge pressure.

A reading of zero bar is atmospheric pressure. 1 bar = 10^5 Pa.

Gauges specified have circular dials with concentric scales for industrial use.

The standard includes methods of test for performance to be applied at type approval and production piece tests.

The standard applies to gauges suitable for industrial use with common industrial fluids. It does not apply to pressure gauges for oxygen or acetylene use nor gauges with electrical contacts.

Pressure gauges for welding, cutting and associated processes are not included in this standard, but are specified in EN 562.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ANSI/ASME B1.20.1

Pipe threads, general purpose (inch)

EN 472 : 1994

Pressure gauges – Vocabulary

EN 562 : 1994

Gas welding equipment – Pressure gauges used for welding, cutting and allied processes

EN 60529 : 1991

Degrees of protection provided by enclosures

EN 60068-2-6 : 1995

Electrical engineering; basic environmental testing procedures – Part 2: Tests - Test Fc and guidance: Vibration (sinusoidal)

EN 60068-2-27 : 1993

Electrical engineering; basic environmental testing procedures – Part 2: Tests - Test Ea and guidance: Shock

ISO 228-1 : 1994

Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation

ISO 1302 : 1992

Technical drawings – Methods of indicating surface texture on drawings

EN 22768-1 : 1993

General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerance indications

ISO 2859-1 : 1989

Sampling procedures for inspection by attributes – Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection

ISO 7000 : 1989

Motor vehicles; Graphic symbols – Principles, synopsis

ISO 10102 : 1990

Assembly tools for screws and nuts – Double-headed open-ended engineers' wrenches

3 Definitions

For the purpose of this European Standard the definitions given in EN 472 apply.

4 Nominal sizes

Nominal sizes of gauges are as follows: 50, 63, 80, 100, 150, 160 and 250.

See table 2 for dimensions.

5 Pressure ranges

The bar is the preferred unit of pressure, with millibar being used for ranges of 600 mbar or less.

a) Pressure ranges in bar

0 to 0,6	0 to 2,5	0 to 10
0 to 1	0 to 4	0 to 16
0 to 1,6	0 to 6	0 to 25

b) Vacuum ranges in bar

(Vacuum gauges have anti-clockwise pointer travel with increasing vacuum.)

-0,6 to 0 -1 to 0

c) Combined pressure and vacuum ranges in bar

-1 to +0,6	-1 to +3	-1 to +9	-1 to +24
-1 to +1,5	-1 to +5	-1 to +15	

Ranges in millibars are acceptable providing the span is in line with 5 d).

d) Pressure ranges in millibars

0 to 1	0 to 4	0 to 16	0 to 60	0 to 250
0 to 1,6	0 to 6	0 to 25	0 to 100	0 to 400
0 to 2,5	0 to 10	0 to 40	0 to 160	0 to 600

e) Vacuum ranges in millibar

Vacuum gauges have anti-clockwise pointer travel with increasing vacuum.

-1 to 0	-4 to 0	-16 to 0	-60 to 0	-250 to 0
-1,6 to 0	-6 to 0	-25 to 0	-100 to 0	-400 to 0
-2,5 to 0	-10 to 0	-40 to 0	-160 to 0	-600 to 0

The SI-units Pascal (Pa) and Kilopascal (kPa) and Megapascal (MPa) should follow the millibar and bar series from 0 to 100 Pa up to 1000 Pa, then change to 0 to 1,6 kPa up to a 1000 kPa then change to 0 to 1,6 MPa and 2,5 MPa.

6 Accuracy classes

The accuracy class stating the limits of permissible error is expressed as a percentage of the span.

The following accuracy classes are defined: 0,6; 1; 1,6; 2,5 and 4 (see table 1).

For gauges with a pointer stop, the accuracy class will cover 10 to 100 % of the range. For gauges with a free zero, the accuracy class will cover 0 to 100 % of the range and zero shall be used as an accuracy check point.

Table 1: Nominal size compared to the accuracy class

Nominal size	Accuracy class				
	0,6	1	1,6	2,5	4
50			x	x	x
63		x	x	x	x
80		x	x	x	x
100	x	x	x	x	x
150 and 160	x	x	x	x	x
250	x	x	x		

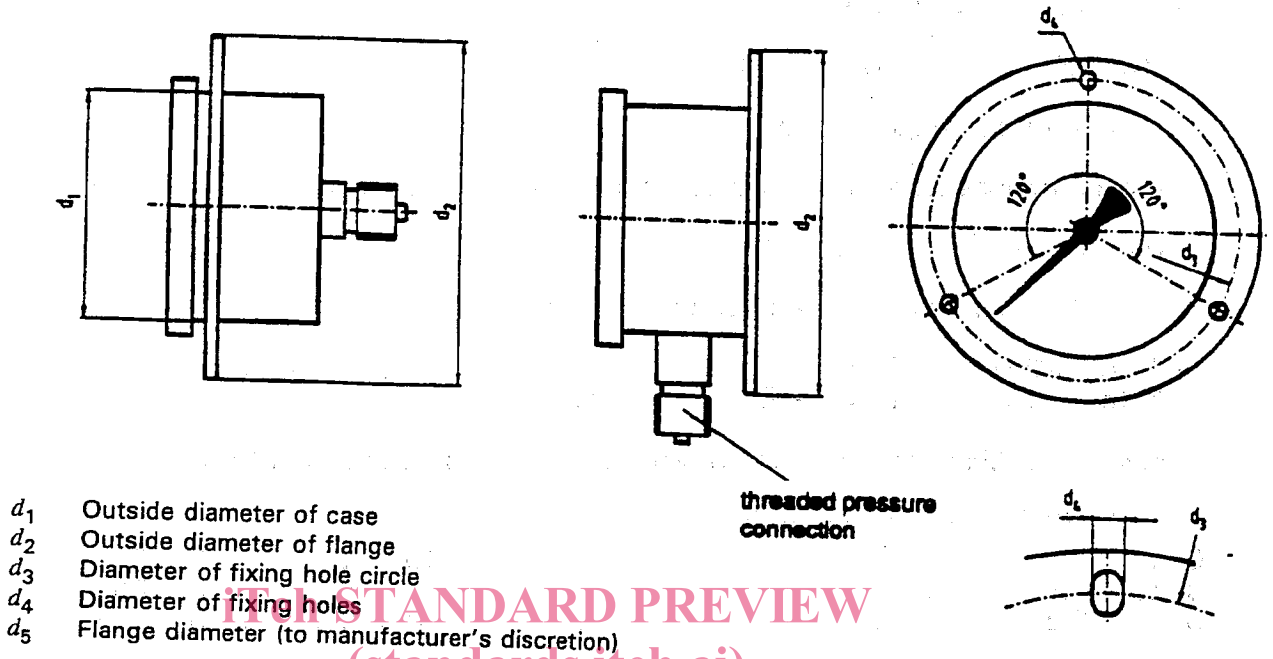
7 Dimensions

7.1 General tolerances

General tolerances:EN 22768-1

7.2 Cases and flanges

The user will have to determine the dimensions for panel cut-out according to the manufacturer's data.



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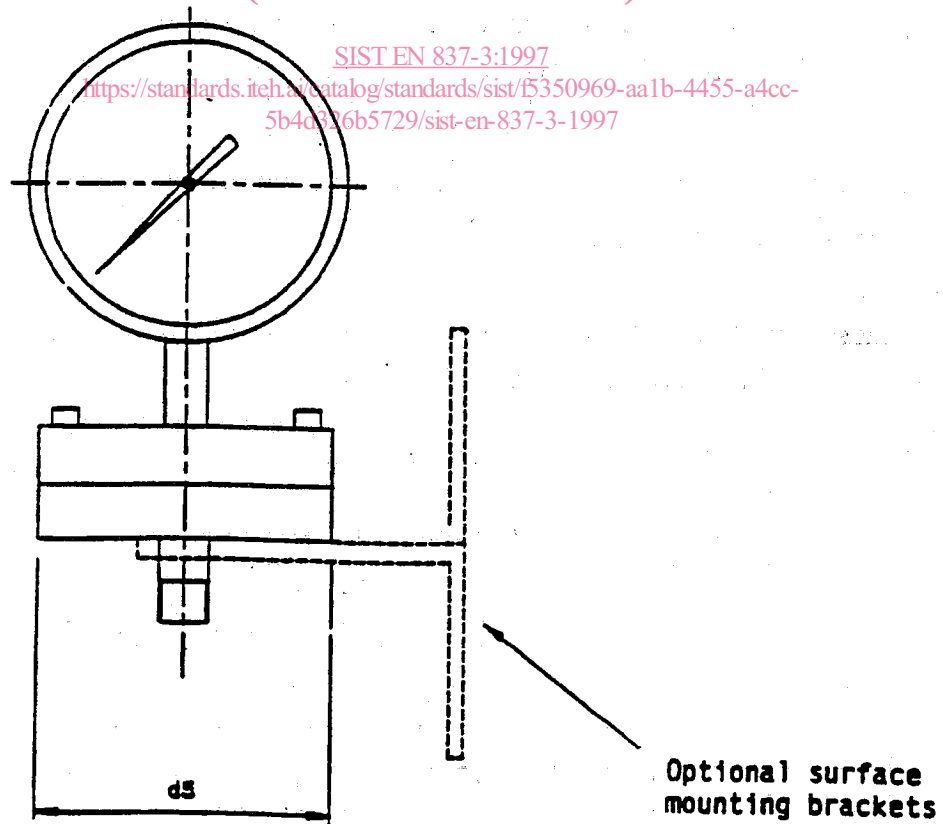


Figure 1

Table 2: Dimensions

<i>Nominal size</i>	d_1 min. (in mm)	d_2 max. (in mm)	d_3 (in mm)	d_4 (in mm)
50	48	71	60	3,6
63	61	86	75	3,6
80	78	110	95	5
100	97	134	118	6
150	147	186	168	6
160	157	196	178	6
250	245	290	276	7

NOTE: d_4 elongated holes can be accepted to ensure interchangeability with previous

7.3 Pressure connection

The positions of the connections can be selected from table 9 "Types of mounting and connection position". For thread forms and sizes, see table 3.

Table 3: Thread forms and sizes

Parallel pipe threads	Taper pipe threads
G 1/8 B	1/8 – 27 NPT EXT
G 1/4 B	1/4 – 18 NPT EXT
G 3/8 B	
G 1/2 B	1/2 – 14 NPT EXT

NOTE: G 3/8 B is not preferred.

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7.3.1 Screw threads

Parallel pipe threads (G) according to ISO 228-1

Taper pipe threads (NPT) according to ANSI/ASME B1.20.1

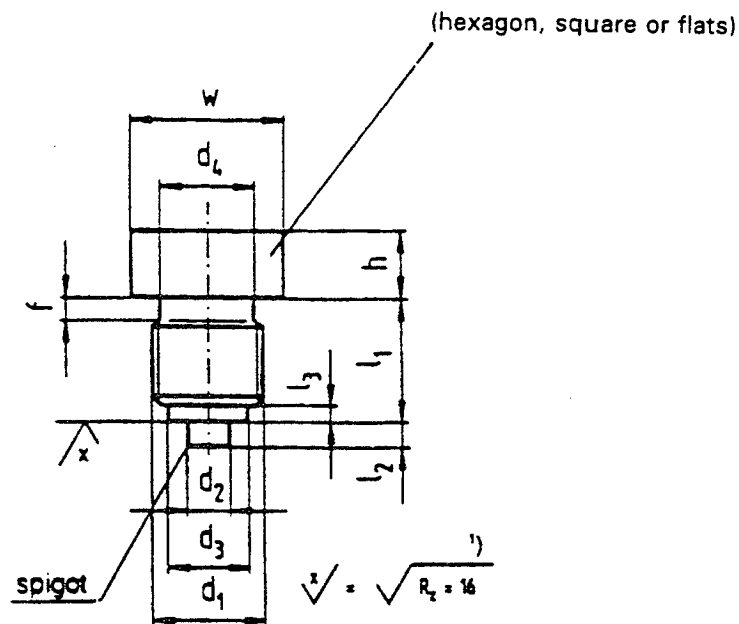
Other threads specific to certain industries are acceptable.

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7.3.2 Shanks with parallel pipe threads



NOTE: Minimum height h of flats shall be compatible with use of standard spanners according to ISO 10102

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Figure 2

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Table 4: Dimensions of parallel threaded shanks

Dimensions in millimetres

Thread size d_1	d_2	d_3	d_4 min.	l_1 +0,5 0	l_2	l_3 +0,5 0	f	w min.
G 1/8 B	4	8	8	10	2	2	1,6	8
G 1/4 B	5	9,5	9,5	13	2	2	2	10
G 3/8 B	5,5	13	13	16	3	3	2	13
G 1/2 B	6	17,5	17,5	20	3	3	3	17

NOTE 1: For stainless steel screwed connection, f dimensions can be raised up to 50 %.

NOTE 2: G 1/8 B may be made without spigot.

NOTE 3: G 1/8 B may be made without groove f . In this case the length of threading must be equal to l_1 .

NOTE 4: For interchangeability with previous standards the spigot of G 1/4 B can be manufactured with diameter 4 mm.

NOTE 5: On diaphragm gauges, spigot may be omitted to allow maximum permissible bore.

¹⁾ According to ISO 1302

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