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Gas meters - Rotary displacement gas meters

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12480

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ICS 91.140.40 Supersedes EN 12480:2015

English Version

Gas meters - Rotary displacement gas meters

Compteurs de gaz - Compteurs de gaz à déplacement rotatif

Gaszähler - Drehkolbengaszähler

This European Standard was approved by CEN on 15 November 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists 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 CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 12480:2018) has been prepared by Technical Committee CEN/TC 237 “Gas meters”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by August 2018, and conflicting national standards shall be withdrawn at the latest by August 2018.

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

This document supersedes EN 12480:2015.

The main goal of this revision was to be harmonized with 2014/32/EU (Measuring Instruments Directive) and 2014/68/EU Pressure Equipment Directive.

This document has been prepared under mandates M/541 and M/071 given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directives 2014/32/EU and 2014/68/EU.

For relationship with EU Directives 2014/32/EU and 2014/68/EU, see informative Annexes ZA and ZB, which are integral parts of this document.

EN 12480:2015 was published when no New Approach Consultant was available and could not be assessed and published in the OJEU.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies ranges, construction, performances, output characteristics and testing of rotary displacement gas meters (hereinafter referred to as RD meters or simply meters) for gas volume measurement.

This European Standard applies to rotary displacement gas meters used to measure the volume of fuel gases of at least the 1st, 2nd and 3rd gas families, the composition of which is specified in EN 437:2003+A1:2009, at a maximum working pressure up to and including 20 bar over an ambient and gas temperature range of at least −10 °C to +40 °C.

This European Standard applies to meters that are installed in locations with vibration and shocks of low significance (class M1) and in

— closed locations (indoor or outdoor with protection as specified by the manufacturer) with condensing or with non-condensing humidity

or, if specified by the manufacturer,

— open locations (outdoor without any covering) with condensing humidity or with non-condensing humidity,

and in locations with electromagnetic disturbances (class E1 and E2). The standards apply to mechanical meters with mechanical index, electronic devices are not covered by this standard.

Unless otherwise specified in this standard:

— all pressures used are gauge;

— all influence quantities, except the one under test, are kept relatively constant at their reference value.

This European Standard applies to meters with a maximum allowable pressure PS and the volume *V* of less than 6 000 bar · litres or with a product of PS and DN of less than 3 000 bar.

This European Standard can be used for both pattern approval and individual meter testing. Cross-reference tables are given in:

— Annex A for the tests that need to be undertaken for pattern approval;

— Annex B for individual meter testing.

Some parts of this standard cover meters with mechanical index only.

The risk philosophy adopted in this standard is based on the analysis of hazards including pressure. The standard applies principles to eliminate or reduce hazards. Where these hazards cannot be eliminated appropriate protection measures are specified.

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.

EN 485-2:2013, *Aluminium and aluminium alloys — Sheet, strip and plate — Part 2: Mechanical properties*

EN 586-2:1994, *Aluminium and aluminium alloys — Forgings — Part 2: Mechanical properties and additional property requirements*

EN 754-2:2016, *Aluminium and aluminium alloys — Cold drawn rod/bar and tube — Part 2: Mechanical properties*

EN 755-2:2013, *Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles — Part 2: Mechanical properties*

EN 1057:2006+A1:2010, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1092-1:2007+A1:2013, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1092-2:1997, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 2: Cast iron flanges*

EN 1092-3:2003, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 3: Copper alloy flanges*

EN 1092-4:2002, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 4: Aluminium alloy flanges*

EN 1563:2011, *Founding — Spheroidal graphite cast irons*

EN 1652:1997, *Copper and copper alloys — Plate, sheet, strip and circles for general purposes*

EN 1706:2010, *Aluminium and aluminium alloys — Castings — Chemical composition and mechanical properties*

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EN 1759-3:2003, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated - Part 3: Copper alloy flanges*

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EN 1982:2008, *Copper and copper alloys — Ingots and castings*

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EN 10028-2:2009, *Flat products made of steels for pressure purposes — Part 2: Non-alloy and alloy steels with specified elevated temperature properties*

EN 10028-3:2009, *Flat products made of steels for pressure purposes — Part 3: Weldable fine grain steels, normalized*

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EN 10028-5:2009, *Flat products made of steels for pressure purposes — Part 5: Weldable fine grain steels, thermomechanically rolled*

EN 10028-6:2009, *Flat products made of steels for pressure purposes — Part 6: Weldable fine grain steels, quenched and tempered*

EN 10028-7:2016, *Flat products made of steels for pressure purposes — Part 7: Stainless steels*

EN 10083-1:2006, *Steels for quenching and tempering — Part 1: General technical delivery conditions*

EN 10083-2:2006, *Steels for quenching and tempering — Part 2: Technical delivery conditions for non alloy steels*

EN 10087:1998, *Free-cutting steels — Technical delivery conditions for semi-finished products, hot-rolled bars and rods*

EN 10088-1:2014, *Stainless steels — Part 1: List of stainless steels*

EN 10088-3:2014, *Stainless steels — Part 3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes*

EN 10111:2008, *Continuously hot rolled low carbon steel sheet and strip for cold forming — Technical delivery conditions*

EN 10130:2006, *Cold rolled low carbon steel flat products for cold forming — Technical delivery conditions*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN 10222-1:1998, *Steel forgings for pressure purposes — Part 1: General requirements for open die forgings*

EN 10222-5:1999, *Steel forgings for pressure purposes — Part 5: Martensitic, austenitic and austenitic-ferritic stainless steels*

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EN 12165:2016, *Copper and copper alloys — Wrought and unwrought forging stock*

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EN 60079-0:2012, *Explosive atmospheres — Part 0: Equipment - General requirements (IEC 60079-0:2011)*

EN 60079-11:2012, *Explosive atmospheres — Equipment protection by intrinsic safety "i" (IEC 60079-11:2011)*

EN 60730-1:2000, *Automatic electrical controls for household and similar use — Part 1: General requirements (IEC 60730-1:1999)*

EN 61000-6, *Electromagnetic compatibility (EMC) Generic standards (IEC 61000-6)*

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EN ISO 1518-2:2011, *Paints and varnishes — Determination of scratch resistance — Part 2: Variable-loading method (ISO 1518-2:2011)*

EN ISO 2409:2013, *Paints and varnishes— Cross-cut test (ISO 2409:2013)*

EN ISO 3506 (all parts), *Mechanical properties of corrosion-resistant stainless steel fasteners (ISO 3506)*

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EN ISO 11666:2010, *Non-destructive testing of welds — Ultrasonic testing — Acceptance levels (ISO 11666:2010)*

EN ISO 14732:2013, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732:2013)*

EN ISO 15607:2003, *Specification and qualification of welding procedures for metallic materials — General rules (ISO 15607:2003)*

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ISO 7005-1:2011, *Pipe flanges — Part 1: Steel flanges for industrial and general service piping systems*

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ISO 7724-3:1984, *Paints and varnishes — Colorimetry — Part 3: Calculation of colour differences*

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ASTM A 193/A 193M:2012, *Standard Specification for Alloy Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications*

ASTM A 194/A 194M:2012, *Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both*

ASTM A 213/A 213M:2011, *Standard Specification for Seamless Ferritic and Austenitic Alloy Steel Boiler, Superheater, and Heat Exchanger Tubes*

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ASTM A 276:2010, *Standard Specification for Stainless Steel Bars and Shapes*

ASTM A 312/A 312M:2012, *Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes*

ASTM A 320/A 320M:2011, *Standard Specification for Alloy Steel and Stainless Steel Bolting for Low Temperature Service*

ASTM A 333/A 333M:2011, *Specification for Seamless and Welded Steel Pipe for Low-Temperature Service*

ASTM A 350/A 350M:2010, *Standard Specification for Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components*

ASTM A 395/A 395M:2009, *Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures*

ASTM A 420/A 420M:2006, *Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service*

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ASTM A 516/A 516M:2010, *Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate and Lower Temperature Service*

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