
**Varnostne in nadzorne naprave za plinske gorilnike in plinske aparate - 3. del:
Regulatorji tlaka in/ali regulatorji pretoka za vstopne tlake do vključno 500 kPa,
elektronski tip**

Safety and control devices for gas burners and gas burning appliances - Part 3: Pressure and/or flow rate regulators for inlet pressures up to and including 500 kPa, electronic types

Sicherheits- und Regeleinrichtungen für Gasbrenner und Gasbrennstoffgeräte - Teil 3: Druck- und/oder Durchflussregler für Eingangsdrücke bis einschließlich 500 kPa, elektronische Ausführung

Équipements auxiliaires pour brûleurs à gaz et appareils à gaz - Partie 3 - Régulateurs de pression et/ou de débit électroniques pour pression amont inférieure ou égale à 500 kPa Élément complémentaire

Ta slovenski standard je istoveten z: prEN 88-3

ICS:

23.060.40	Tlačni regulatorji	Pressure regulators
27.060.20	Plinski gorilniki	Gas fuel burners

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Safety and control devices for gas burners and gas burning appliances - Pressure and/or flow rate regulators for inlet pressures up to and including 500 kPa, electronic types

Sicherheits- und Regeleinrichtungen für Gasbrenner und Gasbrennstoffgeräte - Druck- und/oder Durchflussregler für Eingangsdrücke bis einschließlich 500 kPa, elektronische Ausführung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 58.

If this draft becomes a European Standard, 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.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	5
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Classification	13
4.1 Classes of control	13
4.2 Groups of control	13
4.3 Classes of control functions	13
4.4 Types of DC supplied controls	13
5 Test conditions and uncertainty of measurements	14
6 Design and construction	14
6.1 General	14
6.2 Mechanical parts of the control	14
6.2.1 Appearance	14
6.2.2 Holes	14
6.2.3 Breather holes	14
6.2.4 Screwed fastenings	15
6.2.5 Jointing	15
6.2.6 Moving parts	15
6.2.7 Sealing caps	15
6.2.8 Dismantling and reassembly	15
6.2.9 Auxiliary canals and orifices	15
6.2.10 Presetting device	15
6.2.101 Adjustments	15
6.2.102 Resistance to pressure	15
6.2.103 Blockage of canals and orifices	16
6.2.104 Signal tube connections	16
6.3 Materials	16
6.3.1 General material requirements	16
6.3.2 Housing	16
6.3.3 Zinc alloys	16
6.3.4 Springs	16
6.3.5 Resistance to corrosion and surface protection	16
6.3.6 Impregnation	16
6.3.7 Seals for glands for moving parts	16
6.4 Gas connections	16
6.4.1 Making connections	16
6.4.2 Connection sizes	16
6.4.3 Threads	17
6.4.4 Union joints	17
6.4.5 Flanges	17
6.4.6 Compression fittings	17
6.4.7 Nipples for pressure test	17
6.4.8 Strainers	17

6.5	Electrical parts of the control	17
6.5.1	General	17
6.5.2	Switching elements.....	17
6.5.3	Electrical Components.....	17
6.6	Protection against internal faults for the purpose of functional safety	17
6.6.1	Design and construction requirements	17
6.6.2	Class A.....	17
6.6.3	Class B.....	18
6.6.4	Class C	18
6.6.5	Circuit and construction evaluation	18
7	Performance.....	18
7.1	General.....	18
7.2	Leak tightness.....	18
7.2.1	Requirements	18
7.2.2	Tests	18
7.3	Torsion and bending.....	19
7.3.1	General.....	19
7.3.2	Torsion and bending moments	19
7.4	Rated flow rate	20
7.4.1	Requirement	20
7.4.2	Test.....	20
7.4.3	Conversion of air flow rate.....	20
7.5	Durability	20
7.6	Performance tests for electronic controls.....	20
7.7	Long-term performance for electronic controls.....	20
7.8	Data exchange.....	20
7.101	Regulator performance.....	20
7.101.1	General.....	20
7.101.2	General test procedure.....	20
7.101.3	Pressure regulator performance and stability.....	22
7.101.4	Flow rate regulator performance and stability.....	23
7.101.5	Settling time	25
7.101.6	Endurance.....	26
7.102	Regulator performance with respect to application safety	27
8	Electrical requirements	27
8.1	General.....	27
8.2	Protection by enclosure.....	27
8.101	Electrical equipment.....	27
9	Electromagnetic compatibility (EMC).....	27
9.1	Protection against environmental influences.....	27
9.2	Supply voltage variations below 85 % of rated voltage	27
9.3	Voltage dips and interruptions	27
9.4	Supply frequency variations	27
9.5	Surge immunity tests	27
9.6	Electrical fast transient/burst.....	28
9.7	Immunity to conducted disturbances induced by radio frequency fields.....	28
9.8	Immunity to radiated fields induced by radio frequency fields.....	28
9.9	Electrostatic discharge tests	28
9.10	Power frequency magnetic field immunity tests.....	28
9.11	Harmonics and interharmonics including mains signalling at a. c. power port, low frequency immunity tests.....	28

prEN 88-3:2019 (E)

10	Marking, instructions	28
10.1	Marking	28
10.2	Instructions	28
10.3	Warning notice	30
Annex A (informative) Abbreviations and Symbols		31
Annex B (informative) Leak-tightness test for gas controls — volumetric method		32
Annex C (informative) Leak-tightness test for gas controls — pressure loss method		33
Annex D (normative) Conversion of pressure loss into leakage rate		34
Annex E (normative) Electrical/electronic component fault modes		35
Annex F (normative) Additional requirements for safety accessories and pressure accessories as defined in EC Directive 2014/68/EC		36
Annex G (normative) Materials for pressurized parts		37
Annex H (normative) Additional materials for pressurized parts		38
Annex I (normative) Requirements for controls used in DC supplied burners and appliances burning gaseous or liquid fuels		39
Annex J (normative) Method for the determination of a Safety integrity level (SIL)		40
Annex K (normative) Method for the determination of a Performance level (PL)		41
Annex L (informative) Relationship between Safety integrity level (SIL) and Performance level (PL)		42
Annex M (normative) Reset functions		43
Annex N (informative) Guidance document on Environmental Aspects		44
Annex O (normative) Seals of elastomer, cork and synthetic fibre mixtures		45
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Regulation (EU) 2016/426 aimed to be covered		46
Annex ZB (informative) Relationship between this European Standard and the essential requirements of Directive 2014/68/EU aimed to be covered		51
Bibliography		55

European foreword

This document (prEN 88-3:2020) has been prepared by Technical Committee CEN/TC 58 “Safety and control devices for burners and appliances burning gaseous or liquid fuels”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directives.

For relationship with EU Directives, see informative Annexes ZA and ZB, which are an integral part of this document.

EN 88 *Pressure regulators and associated safety devices for gas appliances* consist of the following parts:

- EN 88-1, *Pressure regulators and associated safety devices for gas appliances — Part 1: Pressure regulators for inlet pressures up to and including 50 kPa*;
- EN 88-2, *Pressure regulators and associated safety devices for gas appliances — Part 2: Pressure regulators for inlet pressures above 500 mbar up to and including 5 bar*;
- EN 88-3, *Safety and control devices for gas burners and gas burning appliances — Part 3: Pressure and/or flow rate regulators for inlet pressures up to and including 500 kPa, electronic types*.

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prEN 88-3:2019 (E)**Introduction**

This document is intended to be used in conjunction with EN 13611:2019. This document refers to clauses of EN 13611:2019 or adapts clauses by stating “with the following modification”, “with the following addition”, “is replaced by the following” or “is not applicable” in the corresponding clause. This document adds clauses or subclauses to the structure of EN 13611:2019 which are particular to this document. It should be noted that these clauses and subclauses are not indicated as an addition. Subclauses or annexes which are additional to those in EN 13611:2019 are numbered starting from 101 or are designated as Annex AA, BB, CC etc.

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1 Scope

This document specifies the safety, design, construction, and performance requirements and testing of electronic pressure and/or flow rate regulators (hereafter referred to as ‘regulators’) for burners and appliances burning one or more gaseous fuels. This document is applicable to regulators with declared maximum inlet pressure up to and including 500 kPa and of nominal connection sizes up to and including DN 250.

This document is applicable to

- regulators which use auxiliary energy,
- regulators, which function by controlling a gas outlet pressure or a gas flow rate,
- regulators with a modular structure specified as a unit,
- regulators intended for gas appliances to be installed indoor or in the open air and exposed to the environment.

This document does not cover regulators connected directly to a gas distribution network or to a container that maintains a standard distribution pressure.

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 161:2011+A3:2013, *Automatic shut-off valves for gas burners and gas appliances*

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EN 13611:2019, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels — General requirements*

EN 175301-803, *Detail Specification: Rectangular connectors — Flat contacts, 0,8 mm thickness, locking screw not detachable*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13611:2019 and the following apply.

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

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

3.101

pressure regulator

device which maintains the outlet pressure constantly, independently of the variations of inlet pressure and/or flow rate and within defined limits

Note 1 to entry: Examples are shown in Figure 1 and Figure 2.

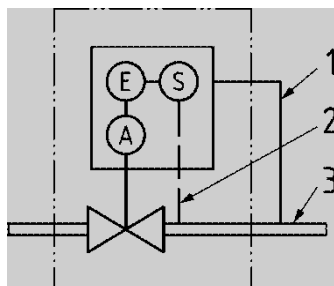
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3.102

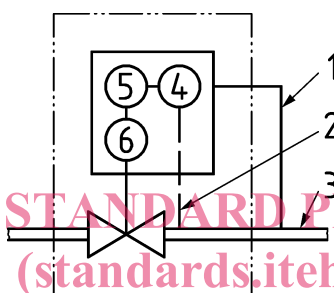
flow rate regulator

device which maintains the flow rate constantly, independently of the variations of inlet pressure and/or outlet pressure and within defined limits

Note 1 to entry: Examples are shown in Figure 1 and Figure 2.



a)



b)

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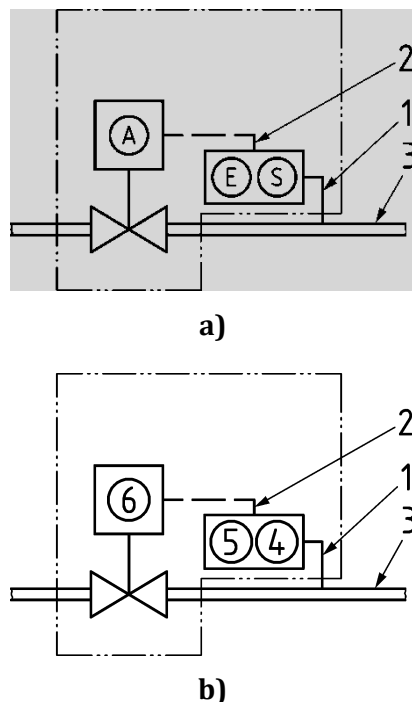
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Key

- 1 Rigid pipe
- 2 Internal impulse line
- 3 Sensing element
- 4 Regulating controller including signal conditioner
- 5 Gas line
- 6 Actuator

Figure 1 — Illustration of the components of a pressure and/or flow rate regulator

**Key**

- 1 Rigid pipe
- 2 Wire
- 3 Sensing element
- 4 Regulating controller including signal conditioner
- 5 Gas line
- 6 Actuator

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Figure 2 — Illustration of the components of a pressure and/or flow rate regulator

3.103**adjustable regulator**

regulator provided with means for changing the outlet pressure or flow rate set point

3.104**control member**

moveable part of the regulator which varies flow rate and/or outlet pressure directly

3.105**minimum inlet pressure**

p_{umin}

lower limit of the inlet pressure, as stated in the instructions

3.106**maximum inlet pressure**

p_{umax}

upper limit of the inlet pressure, as stated in the instructions

prEN 88-3:2019 (E)**3.107****inlet pressure range**

difference between the maximum and minimum values of the inlet pressure, as stated in the instructions

3.108**minimum outlet pressure**

p_{dmin}

lower limit of the outlet pressure, as stated in the instructions

3.109**maximum outlet pressure**

p_{dmax}

upper limit of the outlet pressure, as stated in the instructions

3.110**outlet pressure range**

difference between maximum and minimum values of the outlet pressure, as stated in the instructions

3.111**outlet pressure set-point**

p_{ds}

outlet pressure to which the regulator is set

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Note 1 to entry: p_{ds} can be an electrical signal which is equivalent to a desired set pressure.

3.112**minimum rated flow rate**

q_{min}

lower limit of the rated flow rate, as stated in the instructions

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3.113**maximum rated flow rate**

q_{max}

upper limit of the rated flow rate, as stated in the instructions

3.114**rated flow rate range**

difference between the maximum and minimum values of the rated flow rate, as stated in the instructions

3.115**rated flow rate set-point**

q_s

rated flow rate to which the regulator is set

Note 1 to entry: q_s can be an electrical signal which is equivalent to a desired set flow rate.

3.116**furnace pressure**

pressure of combustion gases from the combustion chamber connected to the regulator

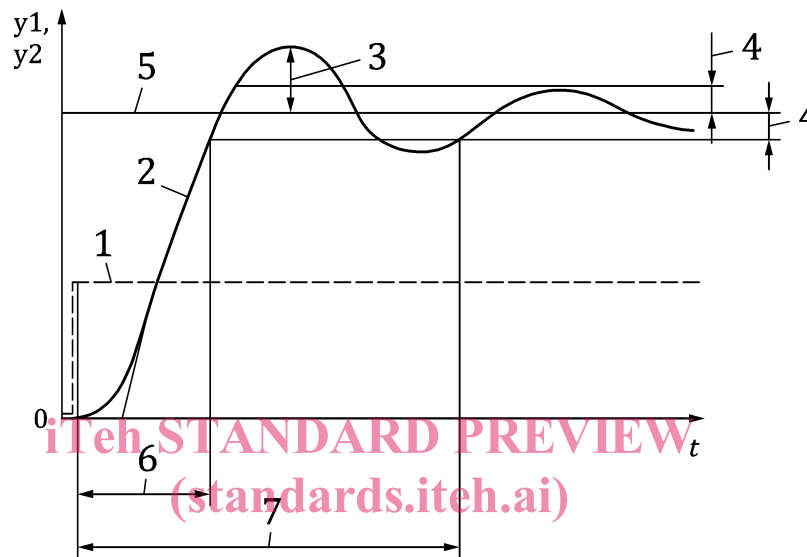
3.117**signal connection**

connection that is used to convey pressure or flow from part of an installation to the EPS

3.118**step response**

outlet pressure or flow rate change of the regulator having a step change of the outlet pressure or flow rate set-point signal (e.g. voltage)

Note 1 to entry: For further information refer to Figure 3.

**Key**

- 1 step function (y_1)
- 2 step response (y_2)
- 3 overshoot value
- 4 settling tolerance
- 5 steady-state value
- 6 response time
- 7 settling time
- t time

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Figure 3 — Step response of a transfer element

3.119**steady state value**

outlet pressure or flow rate measured after step response (outlet pressure or flow rate set-point signal remains constant)

Note 1 to entry: For further information refer to Figure 3.

3.120**settling tolerance**

maximum difference between the current outlet pressure or flow rate and its steady state value

Note 1 to entry: For further information refer to Figure 3.

prEN 88-3:2019 (E)**3.121****response time**

time counted from start of the step change of the outlet pressure or flow rate set-point signal (e.g. voltage) until the outlet pressure or flow rate is within the settling tolerance for the first time

Note 1 to entry: For further information refer to Figure 3.

3.122**settling time**

time counted from start of the step change of the outlet pressure or flow rate set-point signal until the outlet pressure or flow rate remains within the settling tolerance

Note 1 to entry: For further information refer to Figure 3.

3.123**overshoot value**

largest difference between the outlet pressure or flow rate and its steady state value after step change of the outlet pressure or flow rate set-point signal exceeding the setting tolerance for the first time

Note 1 to entry: For further information refer to Figure 3.

3.124**withstand pressure**

pressure that is withstood without degraded characteristic after returning below the maximum inlet pressure

Note 1 to entry: The withstand pressure is equal to or higher than the maximum inlet pressure.

[EN 1854:2010, 3.116]

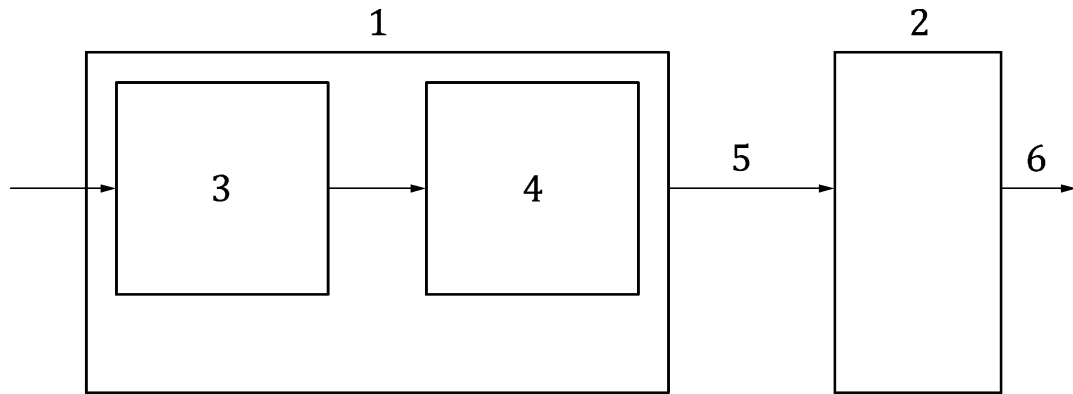
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3.125**electronic pressure or flow rate sensor**

EPS

assembly of electronic based pressure or flow rate sensing element and signal conditioner

Note 1 to entry: Figure 4, clarifies the EPS.

**Key**

- 1 EPS
- 2 Central unit
- 3 Electronic pressure or flow rate sensing element
- 4 Signal conditioner
- 5 Interface
- 6 Output pressure or flow rate signal

Figure 4 — EPS**3.126****electronic pressure or flow rate sensing element**

part of the EPS, which transforms the signal to be sensed (e.g. pressure or flow rate) to another physical value (e.g. force, voltage)

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3.127**signal conditioner**

transforms the signal from the sensing element into the output signal of the EPS

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3.128**reposition**

movement of the control member in any direction from one position to the next and back

4 Classification**4.1 Classes of control**

EN 13611:2019, 4.1 is replaced by the following:

Regulators are not classified.

4.2 Groups of control

Shall be according to EN 13611:2019, 4.2.

4.3 Classes of control functions

Shall be according to EN 13611:2019, 4.3.

4.4 Types of DC supplied controls

Shall be according to EN 13611:2019, 4.4.