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Gas pressure regulators for inlet pressures up to 100 bar

I.S. EN 334:2005+A1:2009

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ICS 23.060.40

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English Version

Gas pressure regulators for inlet pressures up to 100 bar

Appareils de régulation de pression de gaz (régulateurs)
pour des pressions amont jusqu'à 100 bar

Gas-Druckregelgeräte für Eingangsdrücke bis 100 bar

This European Standard was approved by CEN on 23 December 2004 and includes Amendment 1 approved by CEN on 8 December 2008.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	page
Foreword.....	5
1 Scope	6
2 Normative references	7
3 Terms, definitions and symbols.....	9
3.1 A1 General terms and definitions of types of gas pressure regulators A1	9
3.2 A1 Terms and definitions of components of gas pressure regulators A1	12
3.3 A1 Terms, symbols and definitions of components of functional performance A1	14
3.3.7 A1 Terms, symbols and definitions of functional performance A1	16
3.4 A1 Terms, symbols and definitions related to design and tests A1	20
4 Construction requirements.....	22
4.1 Basic requirements	22
4.1.1 General.....	22
4.1.2 A1 Gas pressure regulators with associated safety devices	23
4.1.3 End connections	25
4.1.4 Flange ratings	25
4.1.5 Nominal sizes and face-to-face dimensions.....	25
4.1.6 Sealing of the adjusting device.....	29
4.1.7 A1 Springs	29
4.1.8 Replaceable parts that may be affected by erosion or abrasion	29
4.2 Materials	29
4.2.1 Requirements for metallic materials.....	29
4.2.2 Requirements for elastomers (including vulcanized rubbers)	34
4.2.3 Requirements for non metallic materials different from those in 4.2.2	34
4.3 Strength of housings.....	35
A1	35
4.3.1 Body and its inner metallic partition walls A1	35
4.3.2 Flanges	35
4.3.3 A1 Other pressure containing parts	35
4.3.4 Inner metallic partition walls	37
4.3.5 Minimum values of safety factor	37
4.3.6 Welded joint coefficient	38
5 Functional requirements.....	38
5.1 General.....	38
5.1.1 Mounting position.....	38
5.1.2 Sound emission	38
5.2 Shell strength, external tightness and internal sealing.....	39
5.2.1 Shell strength.....	39
5.2.2 External tightness.....	40
5.2.3 Internal sealing	40
5.3 Control classifications	40
5.3.1 Accuracy under stable conditions	40
5.3.2 Lock-up behaviour.....	40
5.3.3 Stable conditions	41
5.4 Final visual inspection	41
5.5 Fail-close conditions	42
6 Gas pressure regulator sizing.....	42
6.1 Flow behaviour	42

6.2	Sizing equations for the calculation of volumetric flow rates of a gas pressure regulator with its control member in its mechanically fully open position	43
6.2.1	Normal calculations	43
6.2.2	Practical calculations	43
6.2.3	Simplified calculations	43
6.3	Calculation of the maximum accuracy flow rate	44
6.4	Inherent flow characteristics	44
6.5	Calculation of volumetric flow rates for partially open gas pressure regulators	44
6.6	Flow coefficient	44
7	Testing	45
7.1	General	45
7.2	Tests	45
7.3	Type test	46
7.4	Selection of test samples	47
7.5	Routine tests	47
7.6	Production surveillance	47
7.7	Test and verification methods	47
7.7.1	Dimensional check and visual inspection	47
7.7.2	Materials check	47
7.7.3	Verification of the strength of pressure containing parts and inner metallic partition walls	48
7.7.4	Shell and inner metallic partition walls strength test	49
7.7.5	Alternative shell and inner metallic partition walls strength test	50
7.7.6	External tightness test	50
7.7.7	Functional tests	51
7.7.8	Final visual inspection	64
8	Documentation	64
8.1	Documentation related to type test	64
8.1.1	Documentation required prior to type test	64
8.1.2	Test report	64
8.2	Documentation related to the routine tests	64
8.2.1	Documentation provided at the request of the customer	64
8.2.2	Documentation provided with the regulator	65
8.3	Documentation related to production surveillance in accordance with 7.6	65
8.3.1	Documentation to be available for production surveillance	65
8.3.2	Production surveillance report	66
9	Marking	66
9.1	General requirements	66
9.2	Markings for the various connections	67
9.3	Marking of integrated safety devices	67
Annex A	(informative) Alternative methods for the determination of the accuracy class, the lock-up pressure class, the maximum accuracy flow rate, the flow coefficients and the verification of the hysteresis band	68
A.1	General	68
A.2	Test methods	68
A.2.1	Direct acting gas pressure regulator	68
A.2.2	Pilot controlled gas pressure regulators	69
A.3	Determination of flow coefficients for larger capacity regulators	70
Annex B	(informative) Inspection certificate	76
Annex C	(informative) Acceptance test	78
Annex D	(informative) Compliance evaluation¹	79
D.1	General	79
D.2	Introduction	79
D.3	Procedure	79
D.4	Manufacturer's compliance evaluation	80
D.5	Issue of the certificate of compliance	80

I.S. EN 334:2005+A1:2009**EN 334:2005+A1:2009 (E)**

Annex E (informative)  Seat leakage (alternative requirement) 	81
Annex F (normative) Creep (venting) relief device	82
F.1 General	82
F.2 Terms and definitions	82
F.3 Requirements	82
F.3.1 Construction	82
F.3.2 Functional requirements	82
F.4 Testing	82
F.5 Type test	83
F.6 Routine tests	83
F.7 Documentation	83
F.8 Marking	83
Annex G (informative) Order specification	84
G.1 General	84
G.2 Minimum specifications	84
G.2.1 Details of construction	84
G.2.2 Dimensions	84
G.2.3 Performance	84
G.3 Optional specifications	85
Annex H (normative) Materials	87
H.1 Steel materials for pressure containing parts and inner metallic partition walls	87
H.2 Metallic materials different from steel materials for pressure containing parts and inner metallic partition walls	93
H.3 Materials for fixtures, integral process and sensing lines, connectors and fasteners	98
Annex I (informative)  Glossary	101
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC	103
Bibliography	105

Foreword

This document (EN 334:2005+A1:2009) has been prepared by Technical Committee CEN/TC 235 "Gas pressure regulators and associated safety devices for use in gas transmission and distribution", the secretariat of which is held by UNI.

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 July 2009, and conflicting national standards shall be withdrawn at the latest by July 2009.

This document includes Amendment 1, approved by CEN on 2008-12-08.

This document supersedes A1 EN 334:2005 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 97/23/EC.

For relationship with EU Directive 97/23/EC, see informative Annex ZA, which is an integral part of this document.

Gas pressure regulators dealt with in this document are standard gas pressure regulators and, when used in pressure regulating stations complying with EN 12186 or EN 12279, they are considered as standard pressure equipment in accordance with Clause 3.1 of Art. 1 of Pressure Equipment Directive 97/23/EC (PED).

For standard gas pressure regulators used in pressure regulating stations complying with EN 12186 or EN 12279, Table ZA.1 given in Annex ZA includes all applicable Essential Requirements given in Annex I of PED, A1 except the external corrosion resistance in case of environmental conditions where corrosion is likely to occur A1.

The normative Annex H of this document lists some suitable materials for pressure containing parts, inner metallic partition walls, fasteners and connectors. Other materials may be used when complying with the restrictions given in Table 5.

A1 *deleted text* A1

A1 Continued A1 integrity of gas pressure regulators is assured by periodic functional checks. For periodic functional checks it is common to refer to national regulations/standards where existing or users/manufacturers practices.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

[A1] This document specifies constructional, functional, testing and marking requirements, sizing and documentation of gas pressure regulators used in the pressure regulating stations in accordance with EN 12186 or EN 12279: **[A1]**

- for inlet pressures up to 100 bar and nominal diameters up to DN 400;
- for an operating temperature range from -20 °C to +60 °C,

which operate with fuel gases of the 1st and 2nd family in accordance with EN 437 in transmission and distribution networks and also in commercial and industrial installations.

"Gas pressure regulators" hereafter will be called "regulators" except in the titles.

[A1] For standard regulators when used in pressure regulating stations complying with EN 12186 or EN 12279, Annex ZA lists all applicable Essential Requirements except the external corrosion resistance in case of environmental conditions where corrosion is likely to occur. **[A1]**

[A1] This document considers the following classes/types of regulators: **[A1]**

- class 1: operating temperature range from -10 °C to 60 °C;
- class 2: operating temperature range from -20 °C to 60 °C;

[A1]

- type IS: (integral strength type);
- type DS: (differential strength type). **[A1]**

This document applies to regulators which use the pipeline gas as a source of control energy unassisted by any external power source.

The regulator may incorporate a creep (venting) relief device, complying with the requirements in Annex F.

The regulators complying with the requirements of this document may be declared as "in compliance with EN 334" and bear the marking "EN 334".

This document does not apply to:

- regulators upstream from/on/in domestic gas-consuming appliances which are installed downstream of domestic gas meters;

[A1]

- regulators incorporated into pressure-regulating devices used in service lines¹ with volumetric flow rate ≤ 200 m³/h at normal conditions and inlet pressure ≤ 5 bar; **[A1]**
- regulators for which a specific document exists (e.g. EN 88, etc.);
- industrial process control valves in accordance with EN 1349.



¹⁾ **[A1]** The services lines are those defined in EN 12279. **[A1]**

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including amendments) applies.

 deleted text 


 EN 287-1, *Qualification test of welders – Fusion welding – Part 1: Steel*

 EN 473:2000 , *Non destructive testing – Qualification and certification of NDT personnel – General principles*

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 EN 970:1997 , *Non-destructive examination of fusion welds – Visual examination*

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 EN 1092-1:2007, *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 1349, *Industrial process control valves*

 EN 1418:1997 , *Welding personnel – Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanised and automatic welding of metallic materials*



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 EN 1759-1, *Flanges and their joint – Circular flanges for pipes, valves, fittings and accessories, Class designated – Part 1: Steel flanges, NPS ½ to 24*


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

EN 1759-4, *Flanges and their joint – Circular flanges for pipes, valves, fittings and accessories, class designated – Part 4: Aluminium alloy flanges* 

EN 10045-1, *Metallic materials – Charpy impact test – Part 1: Test method*

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

 EN 10226-1, *Pipe threads where pressure tight joints are made on the threads – Part 1: Taper external threads and parallel internal threads – Dimensions, tolerances and designation*

EN 10226-2, *Pipe threads where pressure tight joints are made on the threads – Part 2: Taper external threads and taper internal threads – Dimensions, tolerances and designation* 

I.S. EN 334:2005+A1:2009

EN 334:2005+A1:2009 (E)

EN 12186, *Gas supply systems – Gas pressure regulating stations for transmission and distribution – Functional requirements*

EN 12279, *Gas supply systems – Gas pressure regulating installations on service lines – Functional requirements*

☐_{A1} *deleted text* ☐_{A1}

☐_{A1} EN 12516-1:2005, *Industrial valves – Shell design strength – Part 1: Tabulation method for steel valves shells*

EN 12516-2:2004, *Industrial valves – Shell design strength – Part 2: Calculation method for steel valve shells*

EN 12516-4:2008, *Industrial valves – Shell design strength – Part 4: Calculation method for valve shells in metallic materials other than steel* ☐_{A1}

EN 12627, *Industrial valves – Butt welding ends for steel valves*

EN 13445-4, *Unfired pressure vessels – Part 4: Fabrication*

☐_{A1} EN 14382:2005 ☐_{A1}, *Safety devices for gas pressure regulating stations and installations – Gas safety shut-off devices for inlet pressures up to 100 bar*

EN 60534-1:1993, *Industrial-process control valves – Part 1: Control valve terminology and general considerations (IEC 60534-1:1987)*

EN 60534-2-1, *Industrial-process control valves – Part 2-1: Flow capacity – Sizing equations for fluid flow under installed conditions (IEC 60534-2-1:1998)*

EN 60534-2-3, *Industrial-process control valves – Part 2-3: Flow capacity – Test procedures (IEC 60534-2-3:1997)*

☐_{A1} EN 60534-8-3, *Industrial-process control valves – Part 8-3: Noise considerations – Control valve aerodynamic noise prediction method (IEC 60534-8-3:2000)* ☐_{A1}

EN ISO 175:2000, *Plastics – Methods of test for the determination of the effects of immersion in liquid chemicals (ISO 175:1999)*

☐_{A1} *deleted text* ☐_{A1}

☐_{A1} EN ISO 9606-2, *Qualification test of welders – Fusion welding – Part 2: Aluminium and aluminium alloys (ISO 9606-2:2004)*

EN ISO 9606-3, *Qualification test of welders – Fusion welding – Part 3: Copper and copper alloys (ISO 9606-3:1999)*

EN ISO 9606-4, *Qualification test of welders – Fusion welding – Part 4: Nickel and nickel alloys (ISO 9606-4:1999)*

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

EN ISO 15609-1:2005, *Specification and qualification of welding procedures for metallic materials – Welding procedure specification – Part 1: Arc welding (ISO 15609-1:2004)*

EN ISO 15610:2003, *Specification and qualification of welding procedures for metallic materials – Qualification based on tested welding consumables (ISO 15610:2003)*

EN ISO 15611:2003, *Specification and qualification of welding procedures for metallic materials – Qualification based on previous welding experience (ISO 15611:2003)*

EN ISO 15612:2004, *Specification and qualification of welding procedures for metallic materials – Qualification by adoption of a standard welding procedure (ISO 15612:2004)*

EN ISO 15613:2004, *Specification and qualification of welding procedures for metallic materials – Qualification based on pre-production welding test (ISO 15613:2004)*

EN ISO 15614-1:2004, *Specification and qualification of welding procedures for metallic materials – Welding procedure test – Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2004)*

EN ISO 15614-2:2005, *Specification and qualification of welding procedures for metallic materials – Welding procedure test – Part 2: Arc welding of aluminium and its alloys (ISO 15614-2:2005)* ^{A1}

EN ISO/IEC 17025:2000, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:1999)*

^{A1} deleted text ^{A1}

ISO 1817, *Rubber, vulcanized – Determination of the effect of liquids*

ISO 3419, *Non-alloy and alloy steel butt-welding fittings*

ISO 5752, *Metal valves for use in flanged pipe systems – Face-to-face and centre-to-face dimensions*

ISO 7005(all parts), *Metallic flanges*

^{A1} deleted text ^{A1}

MSS SP 55:1985, *Quality standard for steel castings for valves, flanges and fittings and other piping components (Visual method)*

3 Terms, definitions and symbols

^{A1} For the purposes of this document, the following terms, definitions and symbols apply.

NOTE Annex I list all terms in alphabetic order for English language, the relevant translation in French and German language and the relevant sub-clause of this clause. ^{A1}

3.1 ^{A1} General terms and definitions of types of gas pressure regulators ^{A1}

^{A1} deleted text ^{A1}

3.1.1

gas pressure regulator

device whose function is to maintain the value of the controlled variable ^{A1} (see 3.3.4.1) ^{A1} within its tolerance field irrespective of disturbance variables

3.1.2

direct acting gas pressure regulator

regulator in which the net force required to move the control member is supplied directly by the controlled variable (see example in Figure 1)

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