SLOVENSKI STANDARD
SIST EN 334:2000/A1:2003

01-januar-2003

Regulatorji tlaka plina za vstopne tlake do 100 bar

Gas pressure regulators for inlet pressures up to 100 bar

Gas-Druckregelgeräte für Eingangsdrücke bis 100 bar

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

Ta slovenski standard je istoveten z: **EN 334:1999/A1:2000**

ICS:

23.060.40 Tlaļ ni regulatorji Pressure regulators

SIST EN 334:2000/A1:2003 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 334:1999/A1

September 2000

ICS 23.060.40

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

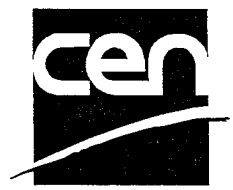
Gas-Druckregelgeräte für Eingangsdrücke bis 100 bar

This amendment A1 modifies the European Standard EN 334:1999; it was approved by CEN on 10 September 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. 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.

This amendment 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 Central Secretariat has the same status as the official versions.

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



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

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

Ref. No. EN 334:1999/A1:2000 E

Foreword

This Amendment EN 334:1999/A1:2000 to the EN 334:1999 has been prepared by Technical Committee CEN/TC 235 "Gas pressure regulators and associated safety shut-off devices for use in gas transmission and distribution", the secretariat of which is held by UNI.

This Amendment to the European Standard EN 334:1999 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2001, and conflicting national standards shall be withdrawn at the latest by March 2001.

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

Introduce the following modifications in the text of EN 334:1999.

General

In all the text, replace the expression "standard conditions" *with* "normal conditions".

1 Scope

Add to the 1st indent of the 1st sentence "and nominal diameter up to DN 400".

In the 2nd indent of 1st sentence replace "ambient temperature" *with* "operating temperature".

Replace the 4 th sentence with :

"For inlet pressure higher than 100 bar and/or operating temperatures outside the range from – 20 °C to 60 °C and/or nominal diameter DN > 400 this European Standard may be used as a "guideline"".

2 Normative references

Add at the appropriate places:

"EN 287-1, *Approval testing of welders – Fusion welding - Part 1: Steels.*

EN 287-2, *Approval testing of welders – Fusion welding - Part 2: Aluminium and aluminium alloys.*

EN 288-1, *Specification and qualification of welding procedures for metallic materials – Part 1: General rules for fusion welding.*

EN 288-2, *Specification and approval of welding procedures for metallic materials – Part 2: Welding procedure specification for arc welding.*

EN 288-3, *Specification and approval of welding procedures for metallic materials – Part 3: Welding procedure tests for the arc welding of steels.*

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

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

EN 12732, *Gas supply systems – Welding steel pipework – Functional requirements.*

prEN 13787:2000, *Elastomers for gas pressure regulators and associated safety devices for inlet pressures up to 100 bar.*

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1 : Bolts, screws and studs (ISO 898-1:1999).*

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

ISO 6761, *Steel tubes – Preparation of ends of tubes and fittings for welding.*

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

3.1.1.1 direct acting gas pressure regulator

Replace the description of this subclause with:

"Regulator in which the net force required to move the control member is supplied directly by the controlled variable (see example in figure 1)."

3.1.1.2 pilot controlled gas pressure regulator (indirect acting)

Replace the description of this subclause with:

"Regulator in which the net force required to move the control member is supplied by a pilot (see example in figure 2)."

3.1.1.5 fail open regulator *and* **3.1.1.6 fail close regulator**

Add note as follows to both subclauses:

"NOTE The definition in this clause covers typical main failure modes. There are other failure modes that may be considered."

3.1.2.4 seat ring

Delete "soft" *in the description.*

3.2.1.2.1 standard conditions

Replace this subclause with:

"**3.2.1.2.1 normal conditions**
absolute pressure of 1,013 25 bar and temperature of 0 °C (273,15 K).

NOTE For calculation purposes a value of 273 K is used in this European Standard."

4.1.1 Operational requirements

Replace the 2nd paragraph with:

"Any breather line or device fitted shall be designed to prevent the ingress of foreign materials."

4.1.3 End connections

Replace the 2nd indent with:

"- flangeless type (e.g. wafer body)"

Add new indent as follows:

"- butt weld connections in accordance with ISO 6761"

4.1.5 Nominal sizes and face-to-face dimensions

Add new indent as follows:

"- angle pattern bodies in accordance with ISO 5752;"

4.2.2.1 With a minimum operating temperature of –10 °C

Replace this subclause with:

"**4.2.2.1 Minimum requirements**

All pressure containing parts, including those that become pressure containing parts in the event of diaphragm or differential pressure seal failure, shall be constructed of the materials given in table 5.

The restrictions in table 5 apply to all components of the regulator and its fixtures.

Table 5 does not apply to the following:

a) bolts, screws, studs
For these parts the materials shall have:

- $A \geq 9$ % for $p_{zul} \leq 50$ bar

- $A \geq 12$ % for $p_{zul} > 50$ bar

Where:
A = elongation after fracture in accordance with EN ISO 898-1

For $p_{zul} \leq 16$ bar and DN ≤ 50 fasteners with properties class 12.9 in accordance with EN ISO 898-1 may be used .

b) compression fittings
For these parts the materials shall have a percentage of elongation greater than or equal to 8 % after fracture at an ambient temperature, in accordance with the relevant standard.

The internal components of regulators not subjected to differential pressure, may be constructed of either the materials given in table 5, without taking into account the restrictions for pressures and nominal sizes, or of different materials provided they comply with the requirements of this European Standard."

In table 5, change the values of A_{min} for aluminium wrought alloys from 8 % to 7 %.

4.2.2.2 With minimum operating temperature down to –20 °C

Replace this subclause with:

"**4.2.2.2 With minimum operating temperature down to –20 °C and allowable pressure $p_{zul} > 25$ bar**

In addition to the requirements of 4.2.2.1 the following supplementary requirements with respect to resilient properties in accordance with EN 10045-1, shall be applied to bodies, bonnets, casings of actuators and blind flanges made of rolled, forged and cast steel or spheroidal cast iron:

- for carbon steel the Charpy-V strength shall be at least:

  - 27 J as an average of three test pieces and

  - 20 J as minimum individual value

  at a temperature of –20 °C or:

  - 17,6 J as an average of three test pieces and

  - 13,6 J as minimum individual value

  at a temperature not higher than –45 °C,

- for spheroidal cast iron the Charpy-V strength shall be at least:

  - 12 J as an average of three test pieces and

  - 9 J as minimum individual value

  at a temperature of –20 °C.

The above data may be obtained in two ways:

- actual test in accordance with EN 10045-1 or

- technical data sheet for the material (relevant standard or test certificate from the manufacturer or test laboratory).

Wrought and cast aluminium alloys may be used if the ultimate tensile strength is less than or equal to 350 N/mm^2.

The above supplementary requirements do not apply to austenitic stainless steel, copper-zinc and copper-tin alloys.

For $p_{zul} \leq 25$ bar the above supplementary requirements may be included in the order specification.

Additional requirements with respect to resilient properties for bolts, screws and studs may be included in the order specification.

Additional requirements with respect to resilient properties for bodies, bonnets, casings of actuators and blind flanges at –20 °C or –45 °C may be included in the order specification."

Delete clause "**4.2.2.3 Alternative materials**" *(this subclause becomes the new 4.2.4, see below).*

4.2.2.4 Manufacturing

Replace this subclause with:

"**4.2.2.3 Manufacturing**

Materials used in the construction of a regulator shall conform to the requirements of the relevant standards for manufacturing, chemical composition, heat treatment and mechanical properties. The manufacturer shall select standards for these materials that meet the requirements of this European Standard and state them in the relevant documentation (see clause 8).

Fabrication welds in all pressure containing parts shall be made using qualified procedures, carried out by qualified welders or welding operators according to EN 288-1, EN 288-2, EN 288-3, EN 287-1, EN 287-2 and EN 1418 respectively.

In addition, for fabrication welds to make bodies (including blind flanges, bonnets and actuator casings):

- only full penetration welds shall be used;
- weld fabrication and heat-treatment shall comply with the ASME Boiler and Pressure Vessel Code, Section VIII, division I (If equivalent national standards exist that cover all relevant aspects they may be used instead. Where equivalent ISO or EN standards are available that cover all relevant aspects they shall be applied).

These additional requirements are not applicable to seal or attachment welds or welds in accessories."

4.2.2.5 Non destructive testing or examination (NDT)

Replace this subclause with:

"**4.2.2.4 Non destructive testing (NDT)**

Steel bodies shall be non-destructively tested in accordance with tables 5 a and 5 b.

Additional non destructive testing may be specified in the order specification.

Table 5 a - Non destructive testing

		Type of non destructive testing				
		Volumetric		Surface		
		Radiographic	Ultrasonic	Visual	Magnetic particle	Liquid penetrant
Sections[1] to be examined and/or extent of coverage[2]	Castings	ASME B16.34 8.3.1.1	ASME B16.34 8.3.1.3	Accessible surfaces	ASME B16.34 8.3.1.2	
	Forgings, bars, plates and tubular products	ASME B16.34 8.3.2.1		Not applicable	ASME B16.34 8.3.2.2	
	Welded fabrication	ASME B16.34 8.3.3		Accessible surfaces	ASME B16.34 8.3.3	
NDT procedures and acceptance criteria for castings, forgings and their fusion weld repairs[2]		ASME B16.34 Annex B	ASME B16.34 Annex E	MSS SP-55[3] and EN 970[4]	ASME B16.34 Annex C	ASME B16.34 Annex D
NDT procedures and acceptance criteria for fabrication welds, including their repairs[2]		ASME Boiler and pressure vessel code, section V Article 2, Section VIII division I, clause UW 51 (also for «spot» examination). EN 12732 for visual examination of fabrication welds only.				
General requirements		• Examinations shall be performed on the material after any heat treatment required by the material or welding procedure specification, either before or after the finish machining at the option of the manufacturer. • Accessible surfaces in case of surface examination include exterior and interior surfaces but no threads, drilled or threaded holes etc. • Volumetric examination on castings and full penetration butt welds up to 60 mm thickness should be done radiographically and ultrasonically on forgings and other (full penetration) welds, however one of these techniques may substitute the other provided that the purchaser agrees and it can be demonstrated that interpretable results are produced.				

1) In the case of flanged bodies, the fillets between the line-flanges and the body shall be examined instead of the welding ends to an extent equivalent to that for the bonnet flange in figures 10 and 11 of ASME B16.34-1996. For bodies of a fundamental different shape, it may be necessary to define other critical sections, based on experience gained from pilot castings.

2) If equivalent national standards exist that cover all relevant aspects they may be used instead. Where equivalent ISO or EN standards are available that cover all relevant aspects they shall be applied.

3) This standard is applicable only to castings.

4) This standard is applicable only to fusion weld repairs.