Nederlandse

Ontwerp

norm

NEN-EN 16129

Drukregelaars, automatische omschakelapparatuur met een maximale gereglementeerde druk van 4 bar, en een maximale capaciteit van 100 kg/h, bijbehorende veiligheidsapparatuur en -adapters voor butaan- en propaanmengsels

Pressure regulators, automatic change-over devices, having a maximum regulated pressure of 4 bar, with a maximum capacity of 100kg/h, associated safety devices and adaptors for butane, propane, and their mixtures

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Normcommissie 349092 "LPG-toepassingen"

NEN

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 16129

September 2010

ICS

Will supersede EN 12864:2001, EN 13785:2005+A1:2008, EN 13786:2004+A1:2008

English Version

Pressure regulators, automatic change-over devices, having a maximum regulated pressure of 4 bar, with a maximum capacity of 100kg/h, associated safety devices and adaptors for butane, propane, and their mixtures

Détendeurs, inverseurs automatiques, ayant une pression maximum de détente de 4 bar, avec une capacité maximale de 100 kg/h, dispositifs de sécurité associés et adaptateurs pour butane, propane et leurs mélanges

Druckregelgeräte, automatische Umschaltanlagen mit einem höchstem Ausgangsdruck bis einschließlich 4 bar und einem maximalen Durchfluss von 100 kg/h sowie die dazugehörigen Sicherheitseinrichtungen und Übergangsstücke für Butan, Propan und deren Gemische

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 181.

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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EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (prEN 16129:2010) has been prepared by Technical Committee CEN/TC 181 “Dedicated liquefied petroleum gas appliances”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12864:2001, EN 13786:2004+A1:2008, EN 13785:2005+A1:2008.

This standard covers only type testing.

Items relating to quality assurance systems, production testing and particularly certificates of conformity are not covered in this standard.

1 Scope

This standard defines the constructional and operational characteristics, the safety requirements, test methods and the marking of regulators and automatic change-over devices having a maximum regulated pressure of 4 bar, with a maximum capacity of 100 kg/h, for use with butane, propane and their mixtures in the vapour phase.

This European Standard also applies to the safety devices which are included within regulating devices covered by this standard. The characteristics of these safety devices are given in annexes A and B.

This standard also includes the requirements for:

- adaptors for connecting to self closing valves;
- remote supply-reserve indicators;
- remote safety devices.

For the purpose of these standards:

- Regulators and automatic change-over devices are referred to as "regulating devices"
- Regulators, automatic change-over devices and adaptors are referred to as "devices"

The requirements apply to devices used in locations where the temperature likely to be reached during use is between -20 °C and +50 °C. Additional requirements for devices to be used at temperatures below –20 °C are given in Annex C.

Additional requirements for regulating devices intended to be used in caravans, motor caravans and freshwater boats are given in annex D.

Additional requirements for regulating devices intended to be used in seawater boats are given in Annex M.

For specific uses in caravans motor caravans and boats (freshwater and seawater), the automatic change over devices function may also be carried out by an assembly of regulators, forming a "automatic change over devices system" as defined in 3.1.2.

This European standard does not include the installation rules for devices and their possible associated safety devices. In this matter, reference should be made to national regulations in force in the member countries.

All connection and their used in various countries are given in annexes G and H.

- Drawings of cylinder valve connections are given in EN 15202
- Drawings of cartridge connections are given in EN 417
- Drawings of other connections are given in annexes G and H where the device part is normative. The other part applies to the part to be connected to the device, is given only for test purposes and is not normative.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the editions cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.
EN 437, *Test gases - Test pressures - Appliances categories.*

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment.*

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.*

EN 12164, *Copper and copper alloys - Rod for free machining purposes.*

EN 12165, *Copper and copper alloys - Wrought and unwrought forging stock.*

EN 12420, *Copper and copper alloys — Forgings.*

EN 15202, *LPG equipment and accessories - Essential operational dimensions for LPG cylinder valve outlet and associated equipment connections.*

EN 60695-11-10, *Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods (IEC 60695-11-10:1999).*

EN ISO 75, *Plastics - Determination of temperature of deflection under load.*

EN ISO 178, *Plastics - Determination of flexural properties (ISO 178:2001).*

EN ISO 180, *Plastics - Determination of Izod impact strength (ISO 180:2000).*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads - Part 1 : dimensions, tolerances and designation (ISO 228-1:2003).*

EN ISO 527, *Plastics - Determination of tensile properties.*

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions - Part 1: Country codes (ISO 3166-1:1997).*

EN ISO 4892-3, *Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps (ISO 4892-3:1994).*

EN ISO 8434-1, *Metallic tube connections for fluid power and general use - Part 1: 24° compression fittings (ISO 8434-1:1994).*

ISO 301, *Zinc alloy ingots intended for casting.*

ISO 565, *Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of openings.*

ISO 7005-2, *Metallic flanges - Part 2: Cast iron flanges.*

ISO 9227, *Corrosion tests in artificial atmospheres - Salt spray tests.*

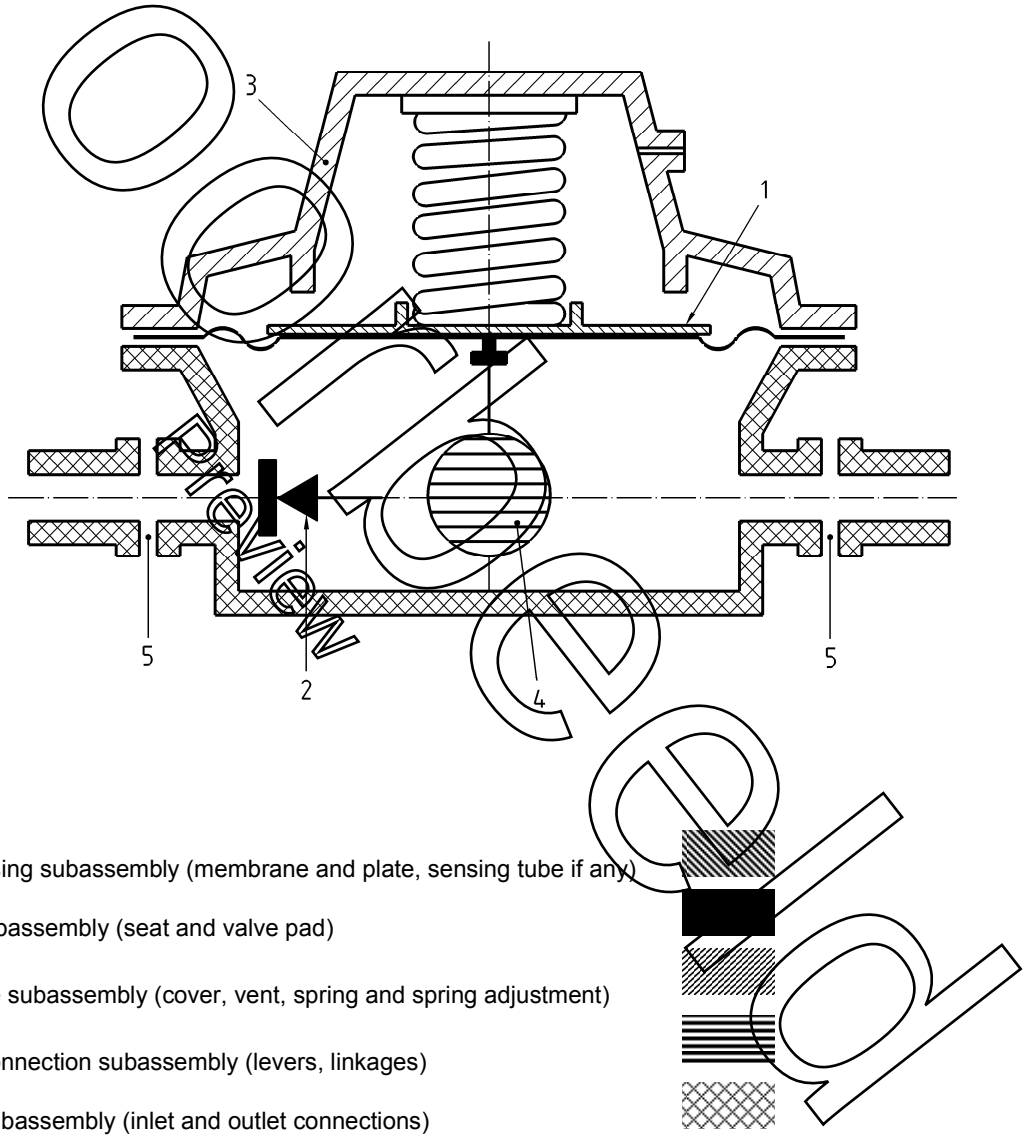
3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1 General terms and definitions

3.1.1
regulator
device which maintains a regulated pressure within preset limits, whatever the upstream pressure, rate and temperature

The terminology given is that shown in Figure 1. The diagram is given as information; no other method is excluded



Key

1 Pressure sensing subassembly (membrane and plate, sensing tube if any)

2 Regulation subassembly (seat and valve pad)

3 Back pressure subassembly (cover, vent, spring and spring adjustment)

4 Mechanical connection subassembly (levers, linkages)

5 Connection subassembly (inlet and outlet connections)

Figure 1 - Principal parts of a regulator

3.1.2
automatic change over device
device which maintains the gas supply continuity by automatically using a gas from a "reserve" cylinder or series of cylinders when the supply pressure from a "service" cylinder or series of cylinders preselected by the user drops below a set value. This device allows regulation of the gas with upstream pressure within set limits, to a specified regulated pressure. It controls the operation of a supply-reserve indicator, allowing the identification of the cylinder or series of cylinders in use.

3.1.3
regulating device
regulator or automatic change over device or combination of both

3.1.4
adaptor
device which connects another device (e.g hose) directly to a self closing cylinder valve and may incorporate an “on/off” or other function

3.1.5
fixed regulating device
regulating device whose regulated pressure is adjusted by the manufacturer and fixed and whose adjustment cannot be modified by the user

3.1.6
adjustable regulating device
regulating device whose regulated pressure may only be modified by a competent person at the time of installation; it is then fixed

3.1.7
variable regulating device
regulating device whose regulated pressure may be modified by the user with simple manipulation between two fixed limits

3.1.8
automatic change over device system
system of several regulators designed and adjusted in such a way as to operate like an automatic change over device as in 3.1.2

3.1.9
quick coupling
connection system which allows the fitting of a regulator or adaptor to a cylinder valve without a threaded connection and without using tools

3.1.10
manual closing device
device used on regulators or adaptors for closing the gas flow which requires an intentional manual action (for example on a lever, a knob)

3.1.11
self closing valve
device allowing the automatic shut off of the gas flow, by simple disconnection of the regulator or adaptor from the cylinder valve

3.1.12
valve pad
component part of the regulation subassembly which ensures soundness between the part of the regulator at supply pressure and the part of the regulator at regulated pressure, when the supply pressure is higher or equal to the lock-up pressure

3.1.13
sealing
any arrangement of any device, for example an adjuster, such that any interference likely to change its setting causes the breaking of the device or sealing material making the interference apparent

3.1.14
nominal diameter
DN
numerical designation common to all the components of a same pipework other than those named by their external diameter or by the size of the thread. It is a whole number used as a reference and related approximately to the manufacturing dimensions

3.1.15
freely rotating outlet connection
integral outlet connection designed to fully rotate

3.1.16
gas container
gas storage vessel such as gas cylinder, gas cartridge or tank

3.2 Terms and definitions concerning gas

3.2.1
butane
mixture of third family gases whose vapour pressure (p_v) at 50 °C is greater than or equal to 4,3 bar and at most equal to 7,5 bar, of mean volumetric mass in the gas phase equal to 2,4 kg/Nm^3

3.2.2
propane
mixture of third family gases whose vapour pressure (p_v) at 50 °C is greater than or equal to 7,5 bar or at most equal to 16 bar, of mean volumetric mass in the gas phase equal to 1,85 kg/Nm^3

3.2.3
LPG
mixture of third family gases whose vapour pressure (p_v) at 50 °C is greater than or equal to 4,3 bar or at most equal to 16 bar, of mean volumetric mass in the gas phase equal to 2,12 kg/Nm^3

3.3 Terms and definitions concerning pressures

The values of pressures given in the text are to be considered as gauge pressure and are expressed in bar (bar) or millibar (mbar).

3.3.1
supply pressure
p
value of the gas pressure measured at the regulating device inlet or at the self closing valve's inlet

3.3.2
regulated pressure
value of the gas pressure measured at the regulating device outlet

3.3.3
nominal regulated pressure
p_d
value of the regulated pressure corresponding:

— either to the normal pressure for appliances as defined in 3.6 of EN 437;

— either to the normal pressure for appliances operating outside the scope of EN 437;

— or to an intermediate pressure allowing for the supply of a second or third stage regulator under the conditions fixed

3.3.4
lock up pressure
p_o
maximum pressure obtainable at no flow for all values of the supply pressure given in 6.1.2.

3.3.5
pressure loss coefficient
multiplication factor equal to 0,85 for a pressure loss of 15 % and 0,5 for a pressure loss of 50 %

3.3.6
minimum pressure
p_{Mg}
minimum value of the regulated pressure supplied by the regulating device for all values of the supply pressure and all values of the flow rate

3.3.7
maximum pressure
p_{Mp}
maximum value of the regulated pressure supplied by the regulating device for all values of the supply pressure and all values of the flow rate between the closing area and the guaranteed rate

3.3.8
minimum intervention pressure of a limiter
p_{lim}
pressure under which a limiter does not operate

3.3.9
change over nominal pressure
p_{di}
value of the nominal regulated pressure of the change over function, in case of two stages automatic change over devices, integrating a change over function and a regulator

3.3.10
supply-reserve indicator
indicator showing which cylinder is in use.

3.4 Terms and definitions concerning flow rates

3.4.1
guaranteed flow rate
M_g
mass flow rate of gas that can be obtained at the minimum allowed regulated pressure, whatever the value of the supply pressure

NOTE The guaranteed flow rate is expressed in grams per hour (g/h) or kilograms per hour (kg/h)

3.4.2
pilot rate
M_p
for regulating devices up to 4 kg/h and for pressures complying with EN 437, gas flow rate (15 g/h) necessary for the supply of the ignition system of the appliance, generally called pilot

NOTE The pilot flow rate is expressed in grams per hour (g/h)

Bestelformulier

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