SLOVENSKI STANDARD
SIST EN 126:1997

01-marec-1997

Večnamenski krmilniki za plinske aparate

Multifunctional controls for gas burning appliances

Mehrfachstellgeräte für Gasgeräte

Robinetterie multifonctionnelle pour les appareils utilisant les combustibles gazeux

Ta slovenski standard je istoveten z: **EN 126:1995**

ICS:

23.060.99	Drugi ventili	Other valves
27.060.20	Plinski gorilniki	Gas fuel burners

SIST EN 126:1997 **en**

EUROPEAN STANDARD **EN 126**

NORME EUROPÉENNE

EUROPÄISCHE NORM February 1995

ICS 23.060.40

Descriptors: Gas appliances, burners, valves and fittings, classifications, specifications, safety, equipment specifications, performance evaluation, tests, marking, technical notices

English version

Multifunctional controls for gas burning appliances

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Mehrfachstellgeräte für Gasgeräte

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

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Foreword

This European Standard was prepared by Technical Committee CEN/TC 58 "Safety and control devices for gas-burning appliances", the Secretariat of which is held by British Standards Institution (BSI).

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

The methods of test given in this standard are intended for product type testing. Tests intended for production testing are not specifically included.

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of an identical text or by endorsement, at the latest by August 1995, and conflicting national standards shall be withdrawn at the latest by December 1995.

In accordance with the CEN/CENELEC Internal Regulations, following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This standard is drawn up by taking the relevant clauses of the existing European Standards EN 88, EN 125, EN 161 and EN 257. The construction and performance requirements are as far as applicable in total conformity with these above mentioned European Standards. Since a multifunctional control is a combination of at least two functions, the aspects of their combination are the new items of this standard. If in future important aspects are changed in one of the above mentioned EN's, the necessity shall be considered to change EN 126 at the same time.

1 Scope

This European standard specifies the safety, constructional and performance requirements for multifunctional controls for gas burners and gas burners and gas appliances, hereafter referred to as multifunctional controls. It also gives the test procedures for evaluating these requirements and information necessary to the purchaser and the user.

It applies to multifunctional controls of nominal inlet connection size up to and including DN 50 with a declared maximum working pressure up to and including 200 mbar for use on burners or in appliances for use with one or more fuel gases of the 1st, 2nd or 3rd families.

It applies to multifunctional controls with two or more of the following functions, one of which is a shut-off function.

These functions may be:

- automatic shut-off;
- flame supervision;
- governor;
- manually operated tap;
- mechanical thermostat;
- gas pressure switch.

Multifunctional controls complying with this standard may also include additional features (e.g. igniters, timers).

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 60 730-1: 1991	Automatic electrical controls for household and similar use - Part 1: General requirements
EN 88: 1991	Pressure governors for gas appliances for inlet pressures up to 200 mbar
EN 125: 1991	Flame supervision devices for gas burning appliances - Thermoelectric flame supervision devices.
EN 161: 1991	Automatic shut-off valves for gas burners and gas appliances

EN 257: 1992	Mechanical thermostats for gas burning appliances
EN 60335-1: 1988/ A5: 1989	Safety of household and similar electrical appliances - Part 1 : General requirements (IEC 335-1: 1983 Modified)
EN 60529: 1991	Classification of degrees of protection provided by enclosures (IP Code)
ISO 7-1: 1982	Pipe threads where pressure tight joints are made on the threads - Part 1: Designation, dimensions and tolerances
ISO 65: 1981	Carbon steel tubes suitable for screwing in accordance with ISO 7-1
ISO 228-1: 1982	Pipe threads where pressure-tight joints are not made on the threads - Part 1 : Designation, dimensions and tolerances
ISO 262: 1973	ISO general purpose metric screw threads - Selected sizes for screws, bolts and nuts
ISO 274: 1975	Copper tubes of circular section - Dimensions
ISO 301: 1981	Zinc alloy ingots intended for casting
ISO 1817: 1985	Rubber, vulcanized - Determination of the effect of liquids
ISO 7005	Metallic flanges
IEC 998-2-1: 1990	Connecting devices for low voltage circuits for household and similar purposes - Part 2-1 : Particular requirements for connecting devices as separate entities with screw-type clamping units
IEC 998-2-2: 1991	Connecting devices for low voltage circuits for household and similar purposes - Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units
CEE Rec.6: 1974	Snap-on connectors

3 Definitions

For the purposes of this standard the following definitions apply.

3.1 multifunctional control: A device having two or more functions, one of which is a shut-off function, integrated within one housing, whereby the functional parts can not operate if separated.

3.2 valves

3.2.1 automatic shut-off valve: A valve designed to open when energized and to close automatically when de-energized. (see EN 161)

3.2.2 closure member: The movable part of the valve which shuts off the gas flow.

3.3 actuating mechanism: That part which actuates the closure member.

3.4 energy and force

3.4.1 actuating energy: The energy necessary for the actuating mechanism to move the closure member to the open position. It is supplied from an external source (electric, pneumatic, hydraulic) and may be converted within the valve.

3.4.2 opening force: The force required to move the closure member to the open position.

3.4.3 closing force: The force available to close the valve independent of any force provided by fuel gas pressure.

3.4.4 sealing force: The force acting on the valve seat when the closure member is in the closed position, independent of any force provided by fuel gas pressure.

3.4.5 frictional force: The largest force which, with the closure spring removed, is necessary for the displacement of the actuating mechanism together with the closure member from the open to the closed position, independent of any force provided by fuel gas pressure.

3.4.6 auxiliary energy: The external energy for the multifunctional control (e.g. electric, pneumatic or hydraulic auxiliary energy) other than that provided by the thermocouple.

3.5 component parts

3.5.1 breather hole: An orifice that allows atmospheric pressure to be maintained in a compartment of variable volume.

3.5.2 governor diaphragm: The flexible member which, under the influence of the forces arising from loading and pressure, operates the valve.

3.5.3 diaphragm plate: A stiffening plate fitted to the diaphragm.

3.5.4 thermocouple: A thermo-electric flame sensing element that responds to the temperature of the supervised flame, and in which the flame generates an electromotive force (emf).

3.5.5 flame supervision device: A device which, in response to a sensed flame by the flame sensor, maintains the gas supply to the main burner or the main burner and the pilot burner and which shuts off the gas supply to the main burner at least, after extinction of the supervised flame. (For thermo-electric flame supervision devices see EN 125).

3.5.6 ignition interlock: Mechanism which prevents the operation of the igniter as long as the main gasway is open.

3.5.7 re-start interlock: Mechanism which prevents the manual re-opening of the gasway to the main burner or to the main burner and the pilot burner during the closing time of the flame supervision device.

3.6 leak-tightness

3.6.1 external leak-tightness: The leak-tightness of a gas-carrying compartment with respect to the atmosphere.

3.6.2 internal leak-tightness: The leak-tightness of the closure member (in the closed position) sealing a gas-carrying compartment with respect to another compartment or to the outlet of the multifunctional control.

3.7 pressures

3.7.1 actuating pressure: The pressure, either hydraulic or pneumatic, supplied to the actuating mechanism of the multifunctional control.

3.7.2 pressure difference: The difference between the inlet and outlet pressures.

3.7.3 test pressure: The pressure to be applied during a test.

3.7.4 pressure drop: The pressure difference with the valve open to its fullest extent.

3.7.5 governor pressures

3.7.5.1 maximum inlet pressure (p_{1max}): The maximum inlet pressure declared by the manufacturer.

3.7.5.2 minimum inlet pressure (p_{1min}): The minimum inlet pressure declared by the manufacturer.

3.7.5.3 inlet pressure range: The range of inlet pressure between the maximum and minimum values.

3.7.5.4 maximum outlet pressure (p_{2max}): The maximum outlet pressure declared by the manufacturer.

3.7.5.5 minimum outlet pressure (p_{2min}): The minimum outlet pressure declared by the manufacturer.

3.7.5.6 outlet pressure range: The range of outlet pressure between the maximum and minimum values.

3.7.5.7 setting point: This refers to the inlet and outlet pressures declared by the manufacturer, to which the governor is initially adjusted for test purposes (see 7.7.4 and 8.7.4) at a declared flow rate. The respective pressures and flow rate are termed "inlet setting pressure", "outlet setting pressure" and "setting flow rate".

3.7.5.8 inlet setting pressure: See 3.7.5.7

3.7.5.9 outlet setting pressure: See 3.7.5.7.

3.8 rated flow rate: The air flow rate at a given pressure difference, declared by the manufacturer, corrected to standard conditions.

3.9 governors: (see EN 88)

3.9.1 governor: A device which maintains the outlet pressure constant independent of the variations in inlet pressure and/or flow rate, within defined limits.

3.9.2 adjustable governor: A governor provided with means for changing the outlet pressure setting.

3.10 governor flow rates

3.10.1 flow rate: The volume of the medium flowing through the governor in unit time.

3.10.2 maximum flow rate (q_{max}): A maximum rate, as a function of inlet and outlet pressures, declared by the manufacturer and expressed in m^3/h of air at standard conditions. For a non-adjustable governor there is only one flow rate.

3.10.3 minimum flow rate (q_{min}): A minimum rate, as a function of inlet and outlet pressures, declared by the manufacturer and expressed in m^3/h of air at standard conditions. For a non-adjustable governor there is only one flow rate.

3.10.4 flow rate range: The range of flow rate between the maximum and minimum values.

3.10.5 setting flow rate: See 3.7.5.7.

3.11 times

3.11.1 opening time: The time interval between the instant the electrical control signal to open the valve is given and the achievement of the maximum or other defined flow rate.

3.11.2 closing time: The time interval between the instant the electrical control signal is removed and the achievement of the closed position.

3.11.3 delay time: The time interval between the instant the electrical control signal to open the valve is given and the start of flow through the valve.

3.12 mounting position: A position declared by the manufacturer for mounting the multifunctional control.

3.13 de-energized position: The position of the valve or valves in the absence of the thermo-electrical energy or auxiliary energy (if applicable).

3.14 pilot valve: A valve which controls the fluid (e.g. compressed air) supplied to the actuating mechanism.

3.15 temperature

3.15.1 maximum ambient temperature: The highest temperature of the surrounding air declared by the manufacturer at which the multifunctional control may be operated.

3.15.2 minimum ambient temperature: The lowest temperature of the surrounding air declared by the manufacturer at which the multifunctional control may be operated.

3.16 rated voltage: The voltage declared by the manufacturer at which the multifunctional control may be operated.

3.17 standard conditions: The standard conditions for air and gas are 15 °C, 1013 mbar, dry.

3.18 thermostats

3.18.1 mechanical thermostat: Thermostat which controls the temperature by adjusting the gas flow according to the temperature of the sensor without any external energy, such that the temperature remains within defined limits (see EN 257).

3.18.2 types of mechanical thermostat

3.18.2.1 adjustable thermostat: Thermostat in which the temperature set point can be adjusted by the user between minimum and maximum values.

3.18.2.2 fixed setting thermostat: Thermostat with a pre-set fixed operating temperature which cannot be adjusted by the user.

3.18.2.3 snap-acting thermostat: Thermostat with only two positions for the flow rate, i.e. "On - Off", "Full on - Reduced Rate" or "Reduced Rate - Off".

3.18.2.4 modulating thermostat: Thermostat which controls the flow rate in accordance with a predetermined and continuous function of the temperature of the temperature sensor.

3.18.2.5 modulating thermostat with additional on-off action: Thermostat which acts as a snap-acting thermostat between the closed and reduced positions and as a modulating thermostat between the reduced and full-on positions.

3.19 pre-setting devices

3.19.1 pre-setting device: Device for adjusting an operating condition by an authorized person only. It may be fixed or variable, e.g. when the gas flow is adjustable, either an orifice or an adjusting screw may be used.

3.19.2 fixed by-pass: Non-adjustable pre-setting device for fixing the minimum gas flow through a thermostat.

3.19.3 by-pass adjusting device: Screw adjustment or an exchangeable orifice, which fixes the minimum gas flow rate through the thermostat, and which is accessible only by the use of tools.

3.20 temperature sensor: Device which senses the temperature of the medium to be controlled or to be supervised.

3.21 operating curve: Graphical representation of the gas flow as a function of the sensor temperature at a given temperature set-point and at a constant inlet pressure.

3.22 backlash: Difference in the positions of the adjusting knob when it is moved in both directions to obtain the same gas flow at a constant sensor temperature.

3.23 maximum cycling frequency: Number of working cycles in unit time as declared by the manufacturer which shall not be exceeded during operation.

3.24 temperature set-point: Any value selected within the temperature range at which the controlled temperature is maintained.

3.25 calibration flow rate: Gas flow rate declared by the manufacturer for calibration.

3.26 calibration temperature set-point: Temperature at which the calibration gas flow is obtained with the adjustment of the thermostat set to the position and in the direction declared by the manufacturer.