

Specification for

Monobloc oil burners — Safety, control and regulation devices and safety times

This European Standard EN 230 : 1990 has the status of a British Standard.

Brûleurs à fioul à pulvérisation de type monobloc — Dispositifs de sécurité, de commande et de régulation — Temps de sécurité

Ölzerstäubungsbrenner in Monoblockausführung — Einrichtungen für die Sicherheit, die Überwachung und die Regelung sowie Sicherheitszeiten

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Contents

	Page
Cooperating organizations	Inside front cover
National foreword	i
Foreword	2
Text of EN 230 : 1990	3
National appendix NA (informative)	Inside back cover
National appendix NB (informative)	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Refrigeration, Heating and Air Conditioning Standards Policy Committee, and is the English language version of EN 230 'Monobloc oil burners — Safety, control and regulation devices and safety times', published by the European Committee for Standardization (CEN). It supersedes BS 799 : Part 6 : 1979, which is withdrawn.

Cross references. Where there are British Standards either identical or technically equivalent to the European standards quoted in this standard the relationship is given in national appendix NB.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Descriptors: Liquid fuel appliances, atomizing burners, oil burners, definitions, safety times, maximum value, safety devices, regulation devices, control devices, lock-out devices, constructional requirements, switching capacity, tests, marking

English version

Monobloc oil burners — safety, control and regulation devices and safety times

Brûleurs à fioul à pulvérisation de type monobloc — Dispositifs de sécurité, de commande et de régulation — Temps de sécurité

Ölzerstäubungsbrenner in Monoblockausführung — Einrichtungen für die Sicherheit, die Überwachung und die Regelung sowie Sicherheitszeiten

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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.

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CEN

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

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Foreword

This European Standard was drawn up by the Technical Committee CEN/TC 47 "Atomizing oil burners and their components — Function — Safety — Testing", the Secretariat of which is held by DIN.

According to the Common CEN/CENELEC Rules, the 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.

Contents list

	Page
1 Scope and field of application	3
2 Normative references	3
3 Definitions	3
4 Safety times and operational sequences	4
5 Supervision and control devices	5
6 Constructional requirements	8
7 Testing	9
8 Marking and technical documentation	11
Annex A	
A.1 Additional definitions	12
A.2 Specific safety conditions: Supplementary checking and control devices	12
Annex B : Functional diagrams of oil burner controls	
- Functional diagrams normal operation	14
- Functional diagrams fault conditions	16

1 Scope and field of application

This European Standard determines the requirements, operating conditions and test methods for safety, control and regulation devices for automatic and semi-automatic atomizing burners of the monobloc type for burning distillates and residual fuels, in the range from kerosene to heavy fuel oils.

It also applies to dual fuel burners, for use with either oil or gaseous fuels, when operating on oil.

It does not however give any requirement relating to electrical safety which will be dealt with in the publications of other standardization bodies.

2 Normative references

- CENELEC Harmonization Document HD 251 S3 "Safety of household and similar electrical appliances, Part 1 : General requirements"
- CENELEC Harmonization Document HD 419 "Low-voltage switch-gear and control-gear, contactors"
- CENELEC Harmonization Document HD 420 "Control switches (low-voltage switching-devices for control and auxiliary circuits, including contactor relays)"
- CENELEC Harmonization Document HD 365 S3 "Classification of degrees of protection provided by enclosures"
- prEN 267 "Atomizing oil burners of monobloc type; testing" (final draft — October 1990)

3 Definitions

Definitions for burners and regulation devices are given in the annex.

3.1 Supervision and control devices

These concern all or part of the following apparatus:

3.1.1 flame detector

Apparatus for signalling to the control device the non-establishment, existence and extinction of the flame. It is generally constituted by a sensing element (possibly connected to an amplifier) and delivers a signal.

3.1.2 burner control unit

Device which starts and stops the burner, according to a pre-set programme, in response to the command from the regulating, supervising or limiting devices. Certain elements of the flame detector may be incorporated in the burner control unit (e.g. amplifier with relay).

3.2 Burner ignition systems

3.2.1 automatic electrical ignition

System in which the fuel is ignited using only electrical energy.

3.2.1.1 ignition by controlled spark

System which allows the fuel to be released only when the presence of the ignition spark has been proven.

3.2.1.2 ignition by non-controlled spark

System in which the fuel may be released when the ignition spark is not controlled.

3.2.2 automatic ignition with liquid or gaseous fuel

System by which the fuel is ignited by a pilot burner using liquid or gaseous fuel; the operation of the pilot burner may be either permanent or intermittent.

Permanent pilot burners may be operated manually.

Intermittent pilot burners are operated automatically.

3.2.2.1 ignition by controlled pilot burner

System which allows the main fuel to be released only when the flame of the ignition burner is present.

3.2.2.2 ignition by non-controlled pilot burner

System in which the release of the main fuel is not prevented by the absence of the flame of the pilot burner.

3.3 Conditions for burner shut-down

3.3.1 controlled shut-down

Operation initiated by the action of a regulator, automatic limit device or a timing device (time switch).

3.3.2 safety lock-out

Operation initiated by the action of a flame detector, as a result of abnormal operating conditions described in clause 5.

This results in the immediate shut-off of the fuel supply and locking-out of the burner control unit.

3.3.3 safety shut-down

Operation initiated by the action of a limiter (e.g. pressure, temperature, water level, atomizing agent or combustion air limiter).

It interrupts the operation of the burner as for a controlled shut down. The limiter itself shall however comply with the requirements defined in the annex (see A.1.2.2.2 and A.1.2.2.3).

3.3.4 lock-out

Shut-down condition of the burner control unit such that re-start cannot be achieved without manual intervention.

3.3.5 ignition-restoration

Operation by which the fuel is re-ignited after the extinction of the flame during operation without the fuel supply being interrupted.

3.3.6 re-start

Operation by which the starting process is repeated, after the extinction of the flame during operation. When re-start takes place, the stipulated sequences of the control programme shall be adhered to.

3.4 Safety times and operating sequences (see diagram in annex)

3.4.1 total ignition time

Period during which the ignition device is in operation. Pre-ignition, actual ignition and post-ignition times make up the total ignition time.

3.4.1.1 pre-ignition time

Period between the start of the ignition cycle and the release of the fuel.

3.4.1.2 ignition time

Period between the release of the fuel and the first appearance of the flame.

3.4.1.3 post-ignition time

Period between the first appearance of the flame and the shut-off of the ignition device.

3.4.2 safety time

Duration of the maximum permissible time during which the burner control unit allows the fuel to be released without there being a flame.

Distinction shall be made for safety times, according to whether the resultant safety shut-down is due to a fault during ignition or during normal operation.

3.4.2.1 ignition safety time

Time starting from the signal for release of the fuel and terminating at the moment at which the signal for interrupting the fuel supply is given.

3.4.2.2 safety time during operation

Time starting at the moment the flame is extinguished and ending at the moment the signal for interrupting the fuel supply is given.

3.4.3 flame simulation

Signal indicating the existence of a flame when no flame is present.

NOTE. For protection against flame simulation and spurious light (see paragraph 5.2). (Applicable only in the case of systems with flame detection by a constant level of illumination).

3.4.4 purge time

Period during which the combustion chamber is compulsorily ventilated without any fuel being supplied.

3.4.4.1 pre-purge time

Period immediately preceding the release of fuel.

3.4.4.2 post-purge time

Period immediately following the cutting-off of the fuel supply.

3.4.5 operational state

State commencing with the presence of flame after the permissible ignition safety time has expired; it is the end of the starting process. Starting is, however, not considered to have taken place if the fuel release is not authorized or if it is interrupted after expiry of the safety time by the lock-out of the burner control unit.

3.4.6 intermittent operation

State of operation the duration of which does not exceed 24 h.

3.4.7 continuous operation

State of operation the duration of which exceeds 24 h.

3.5 nominal fuel throughput (see clauses 4 and 5)

Fuel throughput of the burner, expressed in kg/h.

4 Safety times and operational sequences

4.1 General

The safety times given below are maximum permissible values under normal operating conditions (rated voltage U_N and ambient temperature approximately 20 °C).

Safety times		
Nominal fuel throughput kg/h	Safety time max. (s)	
	at ignition	during operation
Up to and including 30	10	10
above 30	5	1

It is permitted, however, under limit operating conditions (voltage between 0.85 and 1.1 U_N at ambient temperatures between 0 °C and 60 °C) that the safety times given in the table may be increased by 100 % for burners with nominal throughput up to and including 30 kg/h and by 25 % for burners with nominal throughput in excess of 30 kg/h.