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INSTALLATIONS FOR OIL SUPPLY SYSTEMS FOR OIL BURNERS - PART 2: SAFETY REQUIREMENTS AND TESTS; PARTS, VALVES, PIPES, FILTERS, OIL DE-AERATORS, METERS

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPAISCHES KOMITEE FUR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 47 "Atomizing oil burners and their components - Function - Safety - Testing", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

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.

1 Scope

This standard applies to parts, valves, pipes, filters, oil de-aerators and meters of oil supply installations for automatic supply of one or more oil burners or oil consuming units with light fuel oil (maximum viscosity of 10 mm^2/s at a temperature of 20 °C) from one or more central storage tanks under static or dynamic pressure. This standard covers all the above mentioned components between the connection to one or more tanks and the connection to oil burners or oil consuming units, including the direct series-connected shut-off devices. EN 12514-1 covers technical safety requirements and tests for parts, oil feed pumps, control and safety devices and oil supply tanks.

This standard specifies the safety requirements and corresponding tests for all parts, valves, pipes, filters, oil de-aerators and meters within an oil supply installation.

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 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 12514-1
Installations for oil supply systems for oil burners - Part 1: Safety requirements and tests; Parts, oil feed pumps, control and safety devices, supply tanks

EN 60335-1
Safety of household and similar electrical appliances - Part 1: General requirements (IEC 60335-1 : 1991, modified)

EN 60529
Degrees of protection provided by enclosures (IP-Code) (IEC 60529 : 1989)

EN ISO 6806
Rubber hoses and hose assemblies for use in oil burners - Specification (ISO 6806 : 1992)

ISO 228-1
Pipe threads where pressure-tight joints are not made on the thread - Part 1: Dimensions, tolerances and designation

3 Definitions

For the purposes of this standard the following definitions apply:

3.1 shut-off valve: device to shut-off and release the flow in oil pipes.
Depending on their type, these can be for example valves, slide valves, cocks, butterfly valves.

3.2 quick-acting shut-off valve: device to shut-off and release the flow in oil pipes by short-stroke or maximum 90° rotation by hand or automatically.

3.3 reversing valve: device in oil pipes to shut-off or release one of several flow inlets to one flow outlet individually.

3.4 forced reversing valve: device in oil pipes with several forward-flow inlets and corresponding return outlets and with one or more forward-flow outlets and corresponding return inlets.

3.5 non-return valve: device to release the flow in oil pipes in flow direction and to shut-off in reverse direction automatically.

3.6 pressure compensating device: device to limit the pressure increase in closed pipe sections due to temperature depending volume changes of the fuel oil.

3.7 relief valve: device to limit the pressure to a predetermined maximum pressure value.

3.8 oil pressure controller: device to keep the supply pressure constant within the preset limits independently of fluctuations of initial pressure and changes of volume flow.

3.9 filter: device to retain solid matter of a specified minimum size out of the pumped fuel oil.

3.10 meter: device for the volumetric measurement of fuel oil.

3.11 oil de-aerator: device for automatic bleeding of gas and air from oil pipes.

3.12 protective siphon valve: mechanically or electromagnetically actuated valve to prevent siphoning of the oil tank automatically.

3.13 other components: components according to the scope stated in clause 1 and not defined in 3.1 to 3.12.

4 Safety requirements

4.1 Material and construction requirements

The quality of the material as well as type and dimensioning of components shall ensure the continuous safe operation and an adequate service life of the components forming part of the oil supply system, provided they are installed in accordance with the Good Practice and treated as required in the manufacturer's conditions for operation, maintenance and adjustment, and they shall be resistant against the mechanical, chemical and thermal stresses imposed under operational conditions.

Test according to 5.4.1 and 5.4.2.

4.2 Pressure resistance

All components subjected to pressure shall be capable of withstanding 1,3 times the maximum allowed operating pressure, but at least an overpressure of 6 bar.

Test according to 5 4.6.

4.3 Temperature range

Components according to this standard shall operate without failure in an oil temperature range between 0 °C and 40 °C.

4.4 Pipe connections

Components with threaded connections shall have a metric ISO-thread or a pipe-thread according to ISO 228-1, at least four complete (carrying) turns and flats for spanner or other suitable holding means to meet the necessary torque to obtain leaktightness.

Pipe connections (screws, flanges or soldered connections) and the seals used shall meet the requirements of 4.1 and shall be leaktight.

Test according to 5.4.1, 5.4.2 and 5.4.5.1.

NOTE: Flanges should be designed according to ISO 7005-1.

4.5 Flow resistance

Under test conditions specified in 5.4.4.1 (measuring results × 1,5), the differential pressure shall not exceed 50 mbar except for reversing valves in accordance with 4.9, forced reversing valves in accordance with 4.10 and non-return valves in accordance with 4.11 where the differential pressure shall not exceed 100 mbar.

If any components are integrated in one construction unit, e. g. filter and shut-off valve, this requirement is considered as met, if the differential pressure of the unit does not exceed n × 50 mbar or n × 100 mbar respectively.

Test according to 5.4.4.2.

4.6 Leaktightness

All components specified in accordance with this standard shall be leaktight from inside and outside.

Test according to 5.4.5.

4.7 Shut-off valve

The shut-off valve shall be leaktight in the closed position.

Test according to 5.4.1, 5.4.3 and 5.4.5.1.

4.8 Quick-acting shut-off valve

The quick-acting shut-off valve shall be tight in the closed position and shall only allow a completely opened or closed position, but no intermediate position.

The opened or closed position shall be visible.

Test according to 5.4.1, 5.4.3 and 5.4.5.1.

4.9 Reversing valve

The outlet of the reversing valve shall be connected only with one inlet and shall be leaktight against the other inlet.

The respective adjusted position shall be visible.

Test according to 5.4.1, 5.4.3 and 5.4.5.1.

4.10 Forced reversing valve

The forced reversing valve shall be adjustable only in a way where on the inlet side only one adjoined outlet connection (e. g. return flow) is opened for the flow from each adjustable inlet connection (e. g. forward flow).

The respective position shall be visible and be protected against unintentional adjustment (e. g. by engaging).

Test according to 5.4.1, 5.4.3 and 5.4.5.1.

4.11 Non-return valve

The non-return valve shall prevent the decrease of the oil column. Non-return valves with a distance pin (foot valves) shall be designed in such a way that a distance of at least 50 mm is ensured between the tank bottom and the inlet opening of the non-return valve. The distance pin shall neither damage the tank bottom mechanically nor cause a contact corrosion with the tank bottom.

Test according to 5.4.1, 5.4.2 and 5.4.5.2.