SLOVENSKI STANDARD

SIST EN 89:2001/A3:2007

01-februar-2007

Akumulacijski plinski grelniki za pripravo sanitarne tople vode – Dopolnilo A3

Gas-fired storage water heaters for the production of domestic hot water

Gasbeheizte Vorrats-Wasserheizer für den sanitären Gebrauch

Appareils de production d'eau chaude par accumulation pour usages domestiques utilisant les combustibles gazeux

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **EN 89:1999/A3:2006**

SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

ICS:

91.140.65

SIST EN 89:2001/A3:2007 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 89:1999/A3

October 2006

ICS 91.140.65

English Version

Gas-fired storage water heaters for the production of domestic hot water

Appareils de production d'eau chaude par accumulation pour usages domestiques utilisant les combustibles gazeux

Gasbeheizte Vorrats-Wasserheizer für den sanitären Gebrauch

This amendment A3 modifies the European Standard EN 89:1999; it was approved by CEN on 28 August 2006.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

© 2006 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 89:1999/A3:2006: E

Foreword

This document (EN 89:1999/A3:2006) has been prepared by Technical Committee CEN/TC 48 “Domestic gas-fired water heaters”, the secretariat of which is held by AFNOR.

This Amendment to the European Standard EN 89:1999 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2007, and conflicting national standards shall be withdrawn at the latest by April 2007.

The object of this amendment to EN 89 is to indicate additions, modifications and deletions to this standard relating to:

— measurement of NO_x emissions of on/off water heaters;

— alignment of some requirements and tests for type C water heaters with those defined in EN 483.

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

1 Scope

Add the following sentence:

"Requirements on NO_x emissions measurement for modulating water heaters are not included in this amendment."

In the first indent, replace "and" with a comma and add types "C_{51}, C_{72}, C_{73}, C_{81} connected to an individual flue duct, C_{82} and C_{83}".

Delete the first indent of the 3rd paragraph.

2 Normative references

Add the following text:

"CR 1404, *Determination of emissions from appliances burning gaseous fuels during type-testing*".

3.7.4
terminal

Amend the definition as follows:

iTeh STANDARD PREVIEW
(standards.iteh.ai)

"device fitted to the outside of the building, to which are connected:

— the air supply and combustion products evacuation ducts for type C_1 and C_3 water heaters (one or two devices);

SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

— the air supply duct on the one hand and the combustion products evacuation duct on the other hand for type C_5 water heaters (two devices);

— the air supply duct for type C_8 water heaters (one device)"

Add the following definitions:

"**3.7.10**
terminal guard
device that protects the terminal from mechanical damage from outside influences

3.7.11
secondary flue
part of the flue of a type C_7 water heater between the draught diverter/air inlet in the loft and the combustion products outlet above the roof

3.7.12
roof space (this is sometimes called loft)
ventilated part of a building between the uppermost habitable space of the building and the roof"

4.3.2.5 Type C_5

Delete:

"This standard does not cover this type of water heaters." *at the end of the definition of type* C_{51}.

Add the following subclauses:

"**4.3.2.7 Type C_7**

A type C appliance which is connected via its vertical ducts and a draught diverter, located in the roof space, to a secondary flue. The combustion air is taken from the roof space.

Type C_{72}

A type C_7 appliance incorporating a fan downstream of the combustion chamber/heat exchanger.

Type C_{73}

A type C_7 appliance incorporating a fan upstream of the combustion chamber/heat exchanger.

4.3.2.8 Type C_8

A type C appliance connected via one of its ducts to a single or common duct system[1)]. This duct system consists of a single natural draught duct (i.e. not incorporating a fan) that evacuates the products of combustion. The appliance is connected via a second of its ducts to a terminal, which supplies air to the appliance from outside the building.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Type C_{81}

SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

A natural draught type C_8 [2)] appliance.

Type C_{82}

A type C_8 appliance incorporating a fan downstream of the combustion chamber/heat exchanger.

Type C_{83}

A type C_8 appliance incorporating a fan upstream of the combustion chamber/heat exchanger."

5.1.2 Supplementary markings

After the first subclause, add:

"The water heater may carry supplementary marking concerning the class of NO_x emissions of the water heater."

---

1) This single or common duct system is part of the construction of the building and is not supplied with the appliance.

2) A type C_{81} appliance will not generally be included within the scope of European Standards for gas appliances.

5.2.1.4 For installation of the combustion products evacuation circuit

In d), add the following indents:

"

— for type C_1 water heaters:

  — the information if and how the terminal shall be placed on the wall and/or on the roof space;

  — the instruction that the terminal outlets from separate ducts shall fit inside a square of 50 cm;

— for type C_2 water heaters:

  — the characteristics of the shared duct systems to which the water heater may be connected;

— for type C_3 water heaters:

  — the instruction that the terminal outlets from separate ducts shall fit inside a square of 50 cm;

— for type C_4 water heaters:

  — the minimum and maximum pressure loss permitted in the air supply and combustion products evacuation ducts, or the minimum and maximum length of these ducts;

  — the combustion products temperature and mass rate at the maximum and minimum heat input with the maximum length of ducts, if necessary;

  — the characteristics of the shared duct systems to which the water heater may be connected;

— for type C_5 water heaters:

  — the instruction that the terminals for the supply of combustion air and for the evacuation of combustion products shall not be installed on opposite walls of the building;

— for type C_6 water heaters:

  — the minimum and maximum pressure loss permitted in the air supply and combustion products evacuation ducts, or the minimum and maximum length of these ducts;

  — the combustion products temperature and mass rate at the maximum and minimum heat input;

  — the instruction that the water heater shall only be installed with a terminal that complies with the requirements of EN 1856-1 (see Annex N);

  — the method of calculating the pressure loss in the air supply and combustion products evacuation ducts, starting from the values of the temperature and mass rate of the combustion products in relation to the CO_2 concentration;

— for type C_7 water heaters:

  — the instruction that the draught diverter and the air intake have to be installed in the roof space of the building;

— for type C_8 water heaters:

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

— the characteristics of the chimney to which the water heater may be connected."

5.2.2.3 For type C water heaters

Add the following indent:

"- for type C_7 water heaters the roof space shall not be used as living area."

6.1.6.2.2 Type C water heaters

Replace the first paragraph with:

"Parts which have to be removed during routine service and affect the soundness of the water heater and/or its ducts shall be sealed by mechanical means, excluding pastes, liquids and tapes. The need for replacement of the seal(s), following a cleaning or servicing operation as stated by the manufacturer, is permitted.

Where the water heater case forms part of the combustion circuit and it can be removed without the use of tools, either the water heater shall not operate, or there shall be no leakage of combustion products into the room where the water heater is installed when the case is replaced incorrectly."

6.1.7.3 Types C_1 and C_3 water heaters:

Replace the title of this subclause with "Type C water heaters".

Replace the text of the subclause with:

iTeh STANDARD PREVIEW
(standards.iteh.ai)

"6.1.7.3.1 General

All water heaters shall be designed so that there is an adequate supply of combustion air during ignition and over the whole range of possible heat inputs stated by the manufacturer. A gas/air ratio control is permitted.

SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/...
9b43f503fb64/sist-en-89-2001-a3-2007

Unless otherwise stated, fan-assisted water heaters may be fitted with a means of adjustment in the combustion circuit intended to adapt the water heater to the pressure losses in the installed ducts either by restrictors or by setting the means of adjustment to predetermined positions in accordance with detailed instructions from the manufacturer.

According to the water heater type, the manufacturer shall supply any terminal and/or fitting piece, with the water heater for test.

6.1.7.3.2 Air supply and combustion products evacuation ducts[3)]

The assembly of the various parts during installation shall be such that no work is necessary other than adjusting the length of the air supply and combustion products evacuation ducts (possibly by cutting them). Such adaptation shall not impair the correct operation of the water heater.

It shall be possible to connect the water heater, the air supply and combustion products evacuation ducts and the terminal or fitting piece using ordinary tools if necessary. All necessary accessories and the fitting instructions shall be supplied by the manufacturer.

The terminal outlets from separate ducts for the supply of combustion air and the evacuation of combustion products:

— shall fit inside a square of 50 cm for types C_1 and C_3 water heaters;

3) In accordance with national regulations sampling points in the combustion circuit may be required.

— may terminate in zones of different pressure for type C_5 water heaters, but not on opposite walls of the building.

6.1.7.3.3 Terminal

No opening in the external surfaces of the terminal shall permit the entry of a 16 mm diameter ball applied with a force of 5 N.

Any horizontal terminal shall be designed in such a way that any condensate is discharged away from the wall.

6.1.7.3.4 Terminal guard

If the manufacturer prescribes, in the installation instructions, a protective guard for the terminal for use when the outlets for evacuation of the combustion products open on to a walkway, this device shall be supplied to the laboratory for test.

The dimensions of the terminal guard, when installed in accordance with the manufacturer's instructions, shall be such that the distance between any part of the guard and the terminal, except the wall plate, exceeds 50 mm. The guard shall not have any sharp edges likely to cause injury.

6.1.7.3.5 Fitting piece

For water heaters of types C_2, C_4 and C_8, the fitting piece shall be designed so that it is possible to obtain the distances specified by the manufacturer for the projection of the ends of the combustion air supply and combustion products evacuation ducts into the common duct, whatever the total thickness (flue and cladding) of the common duct.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

6.1.7.3.6 Special requirements for certain components of water heaters with a fan

SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

6.1.7.3.6.1 Fan

Direct access to the rotating parts of a fan shall be prevented. The parts of a fan in contact with combustion products shall be effectively protected against corrosion unless they are of corrosion resistant material; furthermore they shall withstand the temperature of the combustion products.

6.1.7.3.6.2 Air monitoring device

Except for water heaters with gas/air ratio controls, before each fan start it shall be checked that there is no simulation of air flow in the absence of air flow.

The supply of combustion air shall be checked by one of the following methods:

— supervision of the combustion air pressure or the combustion products pressure. This supervision of pressure is only allowed for water heaters fitted with a constant speed fan during the operation of the main burner and where the combustion products evacuation duct is surrounded by combustion air throughout its length, which shall not exceed 3 m. In addition the following requirements shall be fulfilled:

  — the ducts shall not have adjustable or removable restrictions and

  — the pressure loss of the heat exchanger shall not exceed 0,05 mbar;

— continuous supervision of the combustion air rate or the combustion products rate. In this system, the supervision device is activated directly by the flow of combustion air or combustion products. This is also valid for water heaters with more than one fan speed in which the flows associated with each fan speed are monitored by separate supervision devices;

— gas/air ratio control.

The following two indirect supervision methods are also allowed, but only for water heaters where the combustion products circuit is completely surrounded by the air supply circuit or for separate ducts when the leakage rate of the combustion products evacuation ducts meets the requirements of 7.2.2.2.1.2:

— indirect supervision (e.g. fan speed supervision) when there is an air monitoring device which monitors the supply of combustion air at least once at each start up;

— supervision of the minimum and maximum air or combustion products rates with two rate supervision devices.

6.1.7.3.6.3 Gas/air ratio controls

Gas/air ratio controls shall be designed and constructed so that reasonably foreseeable damage does not give rise to a change capable of affecting safety.

Control tubes may be made of metal with suitable mechanical connections or of other materials with at least equivalent properties and in this case are considered immune to breakage, accidental disconnection and leakage after initial soundness checks. As such they are not subject to the tests in 7.16.2.4.2.

Control tubes for air or combustion products shall have a minimum cross-sectional area of 12 mm^2 with a minimum internal dimension of 1 mm. They shall be located and fixed so that any retention of condensate is avoided and positioned such that creasing, leakage or breakage is prevented. Where more than one control tube is used the relevant connection position for each shall be obvious. Provided that evidence is given and precautions are taken to avoid condensation in the control tubes, the minimum cross sectional area of air control tubes shall be 5 mm^2."

iTeh STANDARD PREVIEW
(standards.iteh.ai)

6.1.7.4 Type C_{21} water heaters

SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b43f503fb64/sist-en-89-2001-a3-2007

Delete this subclause.

6.1.7.5 Requirements for fan-assisted water heaters

Delete this subclause.

6.4 Discharge of condensate

At the end of the first paragraph, replace "C_{11}" *with* "C".

7.1.5.2 Installation requirements

Replace the text of the subclause with:

"a) general

For all tests, except where otherwise stated in the particular clauses, the water heater is installed, used and put into operation under the conditions specified in the manufacturer's instructions.

In particular, wall-mounted water heaters are installed on a vertical test panel of plywood, or of a material with the same thermal characteristics, in accordance with the information in the technical instructions.

The sample of the combustion products is taken in the plane perpendicular to the direction of flow of the combustion products, and at a distance L from the extreme end of the combustion products duct (see examples in Figures 4, 5 and 6):

— for circular ducts: $L=D_i$

— for rectangular ducts: $L = \frac{4S}{C}$

where

D_i is the internal diameter of the combustion products evacuation duct, in mm;

S is the cross-sectional area of this duct, in mm^2;

C is the circumference of this duct, in mm.

The sampling probe is positioned so as to obtain a representative sample of the combustion products.

b) for type B water heaters

Except where otherwise stated, a type B_1 water heater is subjected to the draught created by a test flue of height 1 m, with an internal diameter equal to the smallest diameter stated by the manufacturer in the technical instructions and compatible with those given in Table A.7.

The thickness of the flue pipe is less than 1 mm.

If the diameter of the water heater flue socket does not correspond to the external diameter given in Table A.6, a linking piece of thickness 1 mm is used to adapt the flue socket diameter.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The height of the flue is measured:

— for water heaters having a flue socket with a horizontal axis, from this axis;

SIST EN 89:2001/A3:2007
https://standards.iteh.ai/catalog/standards/sist/2783b5a1-7e55-44e6-a628-9b431503fb64/sist-en-89-2001-a3-2007

— for water heaters having a flue socket with a vertical axis, from the plane of the flue socket outlet.

c) for type C water heaters

Except where otherwise stated, the water heater is connected to the shortest ducts with the smallest pressure loss stated by the manufacturer in his installation instructions. If necessary, an external telescopic duct may be sealed in accordance with the manufacturer's instructions. The terminal guard is not fitted.

Type C_1, C_3, and C_5 water heaters are tested with their terminals fitted. Type C_1, water heaters are tested with a duct suitable for a wall with a thickness of 300 mm.

Type C_2, C_4 and C_8 water heaters are tested with their fitting pieces fitted but not connected to a test duct.

Type C_6 water heaters are fitted with restrictors enabling the minimum and maximum duct pressure losses specified by the manufacturer to be simulated.

Type C_7 water heaters are tested with 1 m of vertical secondary flue."

7.2.2 Soundness of the combustion circuit and evacuation of the combustion products

7.2.2.2 Type C water heaters

7.2.2.2.1 Requirements

Add under the title of the subclause the following title: