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Chimneys - Design, installation and commissioning of chimneys - Part 2: Chimneys for roomsealed appliances

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Chimneys - Design, installation and commissioning of chimneys - Part 2: Chimneys for roomsealed appliances

Conduits de fumée - Conception et mise en oevre des conduits de fumées - Partie 2 : Conduits de fumée pour appareils qui ne pas dèpendent de l'air dans la pièce

Abgasanlagen - Planung, Montage und Abnahme von Abgasanlagen - Teil 2: Abgasanlagen für raumluftunabhängige Feuerstätten

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

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Foreword

This document (prEN 15287-2:2006) has been prepared by Technical Committee CEN/TC 166 “Chimneys”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This European standard is one of a series of specifications as listed below.

Chimneys – Design, installation and commissioning of chimneys – Part 1: Chimneys for non-roomsealed heating appliances.

Chimneys – Design, installation and commissioning of chimneys – Part 2: Chimneys systems for roomsealed heating applications.

The Annexes F and G are normative, the Annexes A, B, C, D, E, H, I, J, K, L, M and N are informative.

1 Scope

This European Standard describes the method of specifying the design, installation and labelling criteria for chimney systems and connecting flue pipes and air supply pipes for room sealed heating applications. It also gives information on commissioning of an installed chimney.

Room sealed gas appliances are classified as type C according to CR 1749. This classification is also used for oil fired appliances.

This Standard excludes:

— chimneys designated H (high positive pressure chimneys), and chimneys designated P (normal positive pressure chimneys) serving more than one appliance,

— chimneys which serve a mixture of fan assisted or forced draught burners or natural draught appliances,

— installations having a configuration of the type C_2.

This European Standard does not apply to freestanding chimneys covered by EN 13084-1.

This standard also specifies limitations for supporting a chimney, and the maximum unsupported chimney height for system chimneys and custom built chimneys.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1443, *Chimneys – General requirements.*

EN 1457, *Chimneys — Clay/ceramic flue liners — Requirements and test methods.*

EN 1806, *Chimneys – Clay/ceramic flue blocks for single wall chimneys - Requirements and test methods.*

EN 1856-1, *Chimneys – Requirements for metal chimneys – Part 1: System chimney products.*

EN 1856-2, *Chimneys – Requirements for metal chimneys – Part 2: Metal liners and connecting flue pipes.*

EN 1857, *Chimneys – Components – Concrete flue liners.*

EN 1858, *Chimneys – Components – Concrete flue blocks.*

EN 12446, *Chimneys – Components – Concrete outer wall elements.*

EN 13063-1, *Chimneys – System chimneys with clay/ceramic flue liners – Part 1: Requirements and test methods for sootfire resistance.*

EN 13063-2, *Chimneys – System chimneys with clay/ceramic flue liners – Part 2: Requirements and test methods under wet conditions.*

prEN 13063-3, *Chimneys - System chimneys with clay/ceramic flue liners - Part 3: Requirements and test methods for air flue system chimneys.*

EN 13069, *Chimneys – Clay/ceramic outer walls for system chimneys – Requirements and test methods.*

EN 13084-1, *Free-standing industrial chimneys – Part 1: General requirements.*

EN 13384-1, *Chimneys – Thermal and fluid dynamic calculation methods – Part 1: Chimneys serving one appliance.*

EN 13384-2:2003, *Chimneys – Thermal and fluid dynamic calculation methods – Part 2: Chimneys serving more than one heating appliance.*

EN 13502, *Chimneys - Requirements and test methods for clay/ceramic flue terminals*

EN 14471, *Chimneys - System chimneys with plastic flue liners - Requirements and test methods.*

ENV 1993-3-2*, Eurocode 3: Design of steel structures – Part 3-2: Towers, masts and chimneys – Chimneys.*

CEN/TR 1749, *European scheme for the classification of gas appliances according to the method of evacuation of the combustion products (types*).

prEN 14989-1, *Chimneys and air supply duct systems for roomsealed appliances – Requirements and test methods-Part :Vertical terminals for C6-type appliances.*

prEN 14989-2, *Chimneys and air supply duct systems for room sealed appliances - Requirements and test methods - Part 2: Flue and air supply ducts for individual room sealed appliances.*

prEN 15287-1, *Chimneys - Design, installation and commissioning of chimneys - Part 1: Chimneys for non-roomsealed heating appliances*

prEN ISO 13732-1, Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1443 and EN 15287-1 and the following apply.

NOTE 1 Examples of balanced air/flue configurations for roomsealed applications are given in figures 1 and 2. The configurations of figure 1 and figure 2 may be created from converting or relining an existing chimney.

NOTE 2 The European scheme for the classification of gas appliances is given in CEN/TR 1749.

3.1
chimney system for room sealed applications
combination of both a flue duct and an air supply duct

NOTE For common usage in this standard the words chimney system refers to chimney systems for room sealed applications.

3.2
balanced flue chimney system
system where the air entry to the combustion air supply duct is adjacent to the discharge of combustion products from the flue, the inlet and outlet being so positioned that wind effects are substantially balanced.

3.3
flue duct
the duct containing the flue of the chimney system.

3.4
connecting flue pipe
component or components connecting the heating appliance flue outlet to the flue duct of the chimney system.

3.5
air supply duct
duct in a chimney system only for conveying combustion air to a room-sealed appliance.

3.6
connecting air supply pipe
component or components connecting the heating appliance air supply to the chimney system air supply duct.

3.7
room sealed appliance
appliance in which the combustion circuit (air supply, combustion chamber, heat exchanger and evacuation of the products of combustion) is sealed with respect to the room in which the appliance is installed

3.8
system chimney for room sealed applications
a system chimney which comprises both, flue duct and air supply duct

3.9
custom-built chimney
chimney that is installed or built on-site using a combination of compatible chimney components that may be from one or different sources

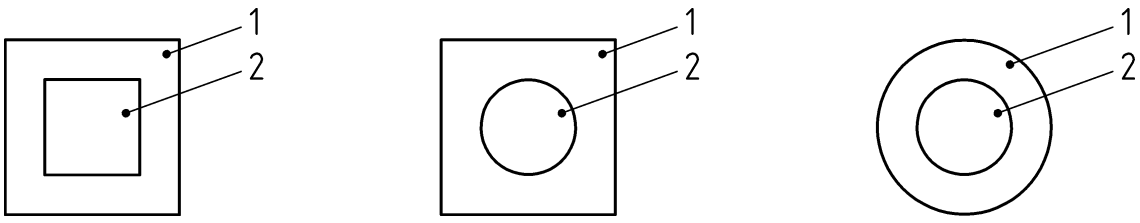
3.10
relined chimney
existing chimney where a liner is restored or replaced

NOTE The process of inserting a new liner into an existing chimney without a change of the air/flue configuration is also regarded as relining the chimney.

3.11
converted chimney
existing chimney changed to an air/flue configuration for room sealed applications

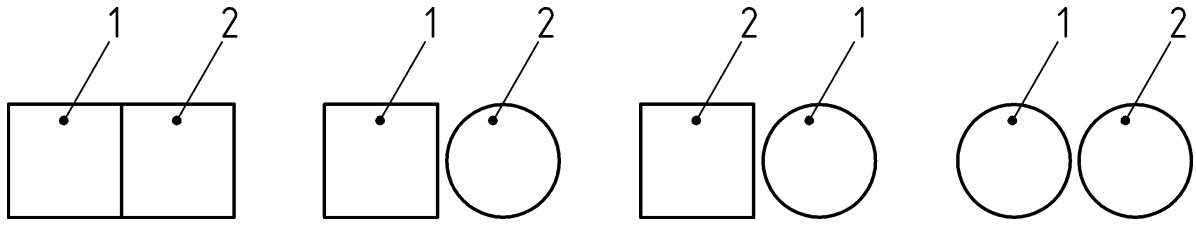
3.12
concentric chimney system configuration
configuration in which the chimney flue is fully surrounded by the air supply duct

3.13
separate chimney system configuration
configuration in which the air supply duct and the chimney flue are separate (non-concentric)



Key
1 = flue gas
2 = combustion air

Figure 1 — Concentric configurations



Key
1 = flue gas
2 = combustion air

Figure 2 — Separate (side by side) configurations

4 Design

4.1 General

In order to design a chimney installation the following steps should be followed to achieve a chimney system installation compatible with the designation according to EN 1443 (see Annex A).

Specify whether the chimney design is for a single appliance or multiple appliance application. Specify the type of multiple appliance configuration, i.e. whether cascade or multiple inlet (see clause 15 EN 13384-2).

The design shall specify whether the chimney system to be installed shall comprise two concentric or separate ducts.

Chimneys shall comply with national regulations (or practice), e.g. based on the type and size of heating appliance and the fuel it burns.

NOTE Where a chimney is approved together with the heating appliance the information for flue sizing or the designation parameters not associated with the installation aspects are not necessary as the combination of appliance and chimney has been certificated together.

4.2 Data requirements

4.2.1 Sources of data and information

The data and information specified in 4.2.2 to 4.2.6 shall be obtained and documented as appropriate.

NOTE The sources may be:
-heating appliance manufacturer‘s literature,
-chimney manufacturer‘s literature including installation instructions,
-architects drawings or plans and/or site surveys,
-Annexes of this document (e.g. material characteristics),
-local building rules.

Where this data and information cannot be obtained from the sources above typical or average data can be found in EN 13384-1 and EN 13384-2.

4.2.2 Heating appliance information

For chimney systems with more than one appliance specify number of appliances to be connected to the chimney system and whether they are connected in a multiple inlet arrangements or cascade arrangements.

The following information for the heating appliance(s) from the list below shall be obtained from the documentation of the heating appliance manufacturer, according to the information of EN 13384-1 and EN 13384-2.

For selecting the chimney type (required designation):

— kind/type of appliance/burner;

NOTE An example for a gas appliance is type C63 (C13, C33).

— kind of fuel;

— maximum/nominal flue gas temperature;

— for wet chimneys, the information if condensate from the chimney is allowed to flow back through the appliance.

For sizing the chimney (see 4.3.4):

— kind/type of appliance/burner;

— kind of fuel;

— maximum and where there is a range minimum flue gas mass flow
(or burning rate and related CO_2-content
or heat input and related CO_2-content
or heat output, boiler efficiency and related CO_2-content);

— minimum flue gas temperature for maximum/nominal and for minimum heat output;

— minimum draught (for negative pressure chimneys) or maximum differential pressure (for positive pressure chimneys);

— CO_2-content (if not previously provided);

— size/shape of flue gas outlet;

— minimum and maximum allowable pressure difference between combustion air inlet and flue gas outlet if required by the appliance;

— maximum allowable temperature of combustion air if required by the appliance;

— size/shape of combustion air inlet.

For appliance/connecting flue pipe/chimney adapter and combustion air supply/connecting air pipe/appliance adaptor design/choice:

— size/shape of flue gas outlet;

— position/height of flue gas outlet

— size/shape of combustion air inlet;

— position/height of combustion air inlet;

For terminal design/choice:

— maximum allowed CO_2-content in the combustion air (re-circulation) if required by the appliance.

4.2.3 Chimney product specification

The following information about the chimney product specification shall be obtained:

— identification and designation of the system chimney or of the components for custom built chimneys or for relining an existing chimney (see also Annex B, C and D);

— design load or maximum allowed chimney height to be supported by lengths, fittings and supports;

— weight of components;

— manufacturer's installation instruction.

— termination characteristics

— condensate drainage system.

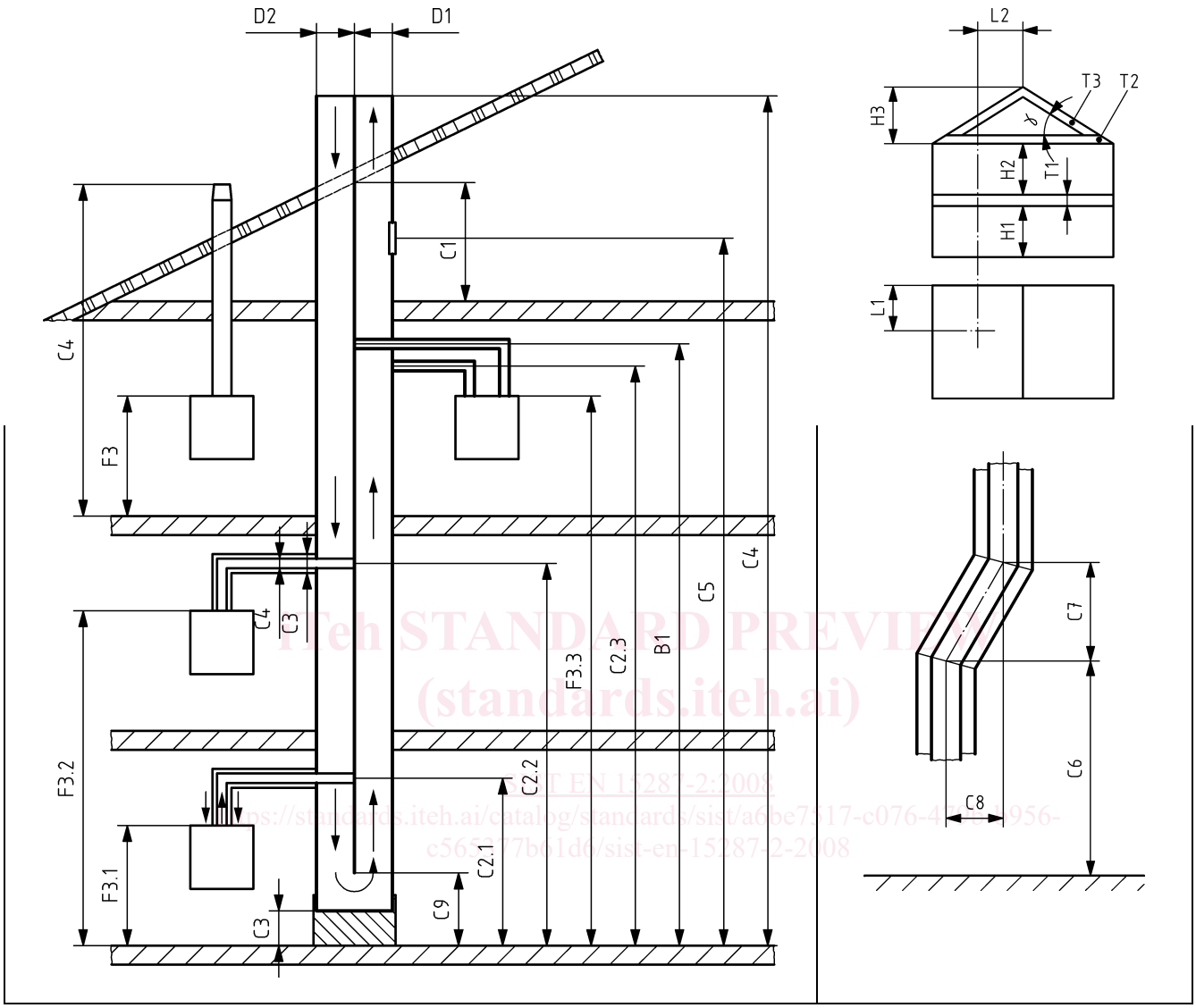
Additional information may be required for chimney sizing (see EN 13384-1 or EN 13384-2).

4.2.4 Building construction and chimney system route information

In order to allow the chimney route to be determined the relevant details of the building or support structure shall be obtained (see Figure 3 and 4).

If the chimney is to be supported by the building structure, the construction of the building and the materials used shall be capable of supporting the loads imposed upon it by the chimney. The fixings shall be compatible with the materials of construction of the building. This shall be checked before installing the chimney.

Figure 3 is an example of a gas appliance type C_{3-} and a type C_4 - installation and figure 4 is an example for connecting flue pipe and connecting air supply pipe dimensions for a C_4 application with separate ducts.



dimensions are listed at the end of this clause

Figure 3 - Example for room sealed installations – dimensions

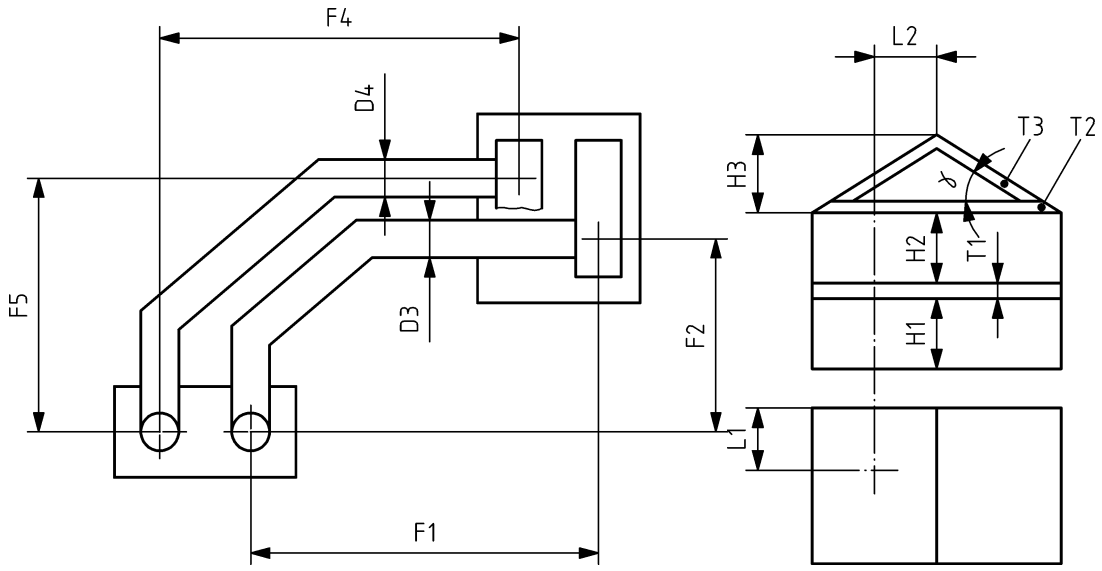


Figure 4 — Example for connecting flue pipe and connecting air supply pipe dimensions for C4 application with separate ducts.

The following is a check list of information from which details of the building construction and chimney system construction and route shall be obtained.

The following list of information should be supplied where appropriate (see Figure 3 and 4):

— H1 height from ground to ceiling (structural or finished);

— H2 height from intermediary floor to ceiling (structural or finished);

— H3 height of ridge;

— γ pitch of roof;

— T1 depth and thickness of intermediate floor joist timbers and distances between centres;

— T2 depth and thickness of roof space floor joist timbers and distances between centres;

— T3 depth and thickness of roof timbers (rafters) and distance between centres;

— L1 the horizontal distance between the centre line of the chimney above roof level and the gable end of the building;

— L2 the horizontal distance between the centre line of the chimney above roof level and the ridge of the roof;

— C1 distance through loft measured at centre line of the chimney system;

— C2 height from the ground to the centre line of each flue inlet;

— C3 height from the ground to the bottom of the liner;

— C4 total chimney height from the ground to the chimney system outlet;

— C5 height from the ground to the centre of each access opening;

— C6 height from the ground to the lower bend of each offset where the centre line of the liner changes the