SLOVENSKI STANDARD
SIST ENV 12097:1999

01-september-1999

Prezraļevanje stavbï Razvod zrakaï Zahteve za omogoļanje vzdrģevanja elementov prezraļevalnih sistemov

Ventilation for buildings - Ductwork - Requirements for ductwork components to facilitate maintenance of ductwork systems

Lüftung von Gebäuden - Luftleitungen - Anforderungen an Luftleitungsbauteile zur Wartung von Luftleitungssystemen

Ventilation des bâtiments - Réseau de conduits - Prescriptions relatives aux composants destinés a faciliter l'entretien des réseaux de conduits

Ta slovenski standard je istoveten z: **ENV 12097:1997**

ICS:

91.140.30	Prezraļevalni in klimatski sistemi	Ventilation and air-conditioning

SIST ENV 12097:1999 **en**

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Descriptors: air conditioning equipment, air conditioners, heat pumps, compressors, electric motors, acoustic measurement, sound power, engine noise, airborne noise

English version

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CEN members are required to announce the existance of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

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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

Contents

Foreword

This European Prestandard has been prepared by Technical Committee CEN/TC 156 "Ventilation for buildings", the secretariat of which is held by BSI.

This standard is a part of a series of standards for ductwork used for ventilation and air conditioning of buildings for human occupancy. The position of this standard in the field of mechanical building services is illustrated in figure 1.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

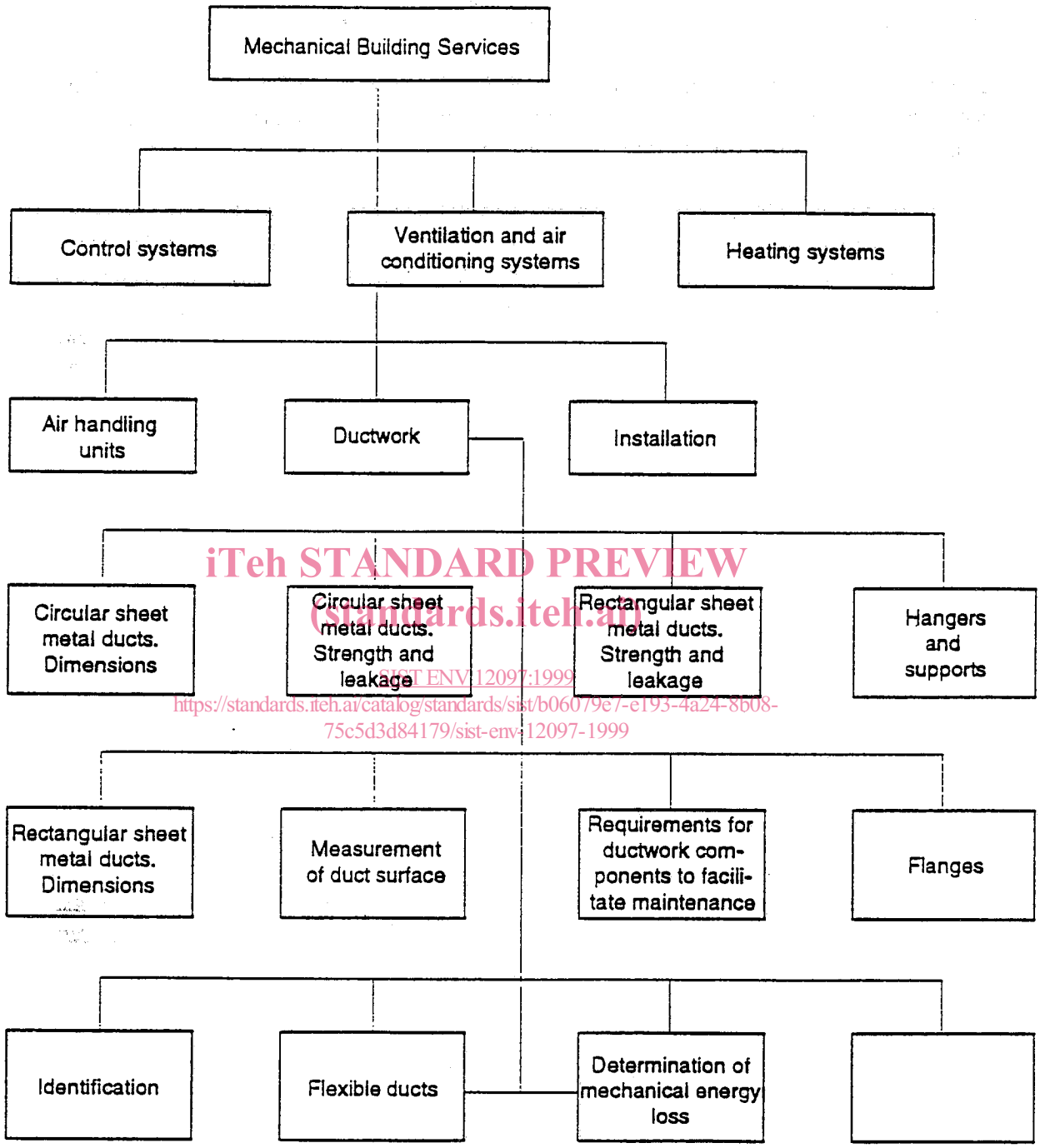


Figure 1: Position of ENV 12097 in the field of mechanical building services

1 Scope

This Prestandard applies to ductwork in buildings subject to human occupancy. It specifies requirements for dimensions, shape and location for openings, access and inspection covers and access doors for cleaning and service in supply and exhaust air ducts which conform to prEN 1505, prEN 1506 and prEN XXXD.

This Prestandard does not specify requirements related to fire safety.

2 Normative references

This European Prestandard 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 the subsequent amendments to or revisions of any of these publications apply to this European Prestandard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

CR XXXX	Ventilation for buildings - Symbols, units and terminology.
prEN 1505	Ventilation for buildings - Sheet metal air ducts and fittings with rectangular cross section - Dimensions.
prEN 1506	Ventilation for buildings - Sheet metal air ducts and fittings with circular cross section - Dimensions.
prEN 1507	Ventilation for buildings - Strength and leakage of sheet metal air ducts with rectangular cross section - Requirements and testing.
prEN 12237	Ventilation for buildings - Strength and leakage of sheet metal air ducts with circular cross section - Requirements and testing.
prEN XXXB	Ventilation for buildings. System Performance (in preparation)
prEN XXXC	Ventilation for buildings. Air handling units. Ratings and performance, Components and sections (in preparation)
prEN XXXD	Ventilation for buildings. Flexible ducts. Dimensions and mechanical requirements. (in preparation)

3 Definitions

For the purpose of this Prestandard the definitions given in CR XXXX shall apply.

4 Requirements

4.1 General

The air distribution system shall be designed, manufactured and installed in such a way that cleaning of all internal surfaces and components is possible.

The components (e.g. dampers, sensors, air flow measuring devices etc.) shall be installed in such a way that they can be cleaned, or located so that they can be removed for service and cleaning. If removal is not possible, service access shall be provided in compliance with clause 6.1. Access to service openings shall not be obstructed by suspended ceilings, electric wires, pipes, other ducts etc. (See annex A).

Stiffeners and other equipment in the ductwork shall be installed so that the cleaning of ducts is not obstructed. Stiffeners inside a rectangular duct shall be smooth in shape preferably circular, and shall not be perforated strips or difficult to clean.

Sharp bends and abrupt reductions shall be avoided. Sharp pointed screws and other objects which can cause injury to persons or damage to cleaning equipment shall not be used. Sharp edges in openings, access covers and doors are not allowed.

4.2 Openings

Access components shall be provided to ensure that the whole ductwork can be cleaned.

The arrangements for cleaning depend on the category of air system, as specified in prEN XXXB. This category influences the frequency of access covers or doors, the method for cleaning and the cleaning intervals.

The requirements for the strength and airtightness of ducts equipped with access components shall conform to those for the whole ductwork, as specified in prEN 12237 and in prEN 1507.

Where the air distribution system requires any thermal, acoustic or fire insulation the design documentation shall define how the insulation value is maintained across the opening. Components shall be constructed and installed in the ductwork such that the integrity of the thermal, acoustic or fire insulation is maintained.

Covers and access doors shall be easy to open. Consideration shall be given to the security of access doors installed in public areas. Detachable access doors shall be secured to prevent them falling into the duct or causing injury.

The air leakage due to a number of openings shall be related to life time and determined according to the air tightness tests given in prEN 12237 and prEN 1507.

Where the duct is large enough to allow human access for cleaning, the following requirements apply:

- the duct and its supports shall withstand the additional loads;
- the type and location of access components shall allow the cleaning person to enter and exit from the ducts.

A ductwork component which may be dismounted for cleaning may also be regarded as an access cover, provided that its dimensions are in accordance with table 1 or 2, and it fulfils the other requirements stated, or if its dimensions are suitable for the specified and documented cleaning method. (See clause 5).

Examples are given in annex B.

5 Dimensions

5.1 General

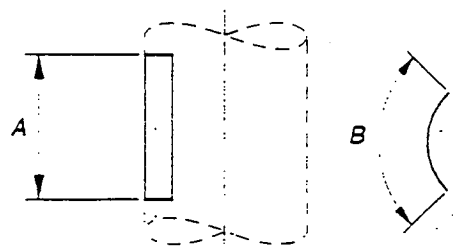
Unless otherwise specified (e.g. in cases where the cleaning method is known and allows smaller openings for cleaning), the dimensions shall conform to 5.2 and 5.3.

5.2 Openings for cleaning for rigid circular ducts

Removable end caps or T-pieces with end caps shall be provided for cleaning access in all ducts up to 200 mm diameter. For larger ducts, either openings of sizes according to table 1, or T-pieces with a minimum diameter of 200 mm shall be provided.

Table 1: Openings for circular ducts. Minimum dimensions

Duct diameter (mm)	Minimum dimensions of openings on duct walls (mm)	
d	A	B
$200 \leq d \leq 315$	300	100
$315 < d \leq 500$	400	200
> 500	500	400
[1]	600	500



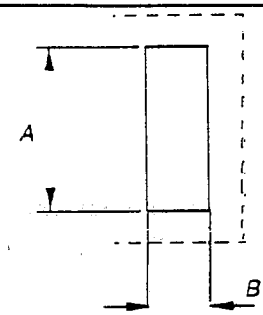
[1] A manhole is required if it is necessary for a person to gain access to the ducts.

Consideration shall be given to access points where the dimensions of a circular duct changes more than two diameter steps according to the recommended sizes in table 1 of prEN 1506: 1996 to enable another cleaning equipment to match these sizes to be introduced into the duct system.

5.3 Openings for rectangular ducts

Table 2: Openings for rectangular ducts. Minimum dimensions

Duct side (mm)	Minimum dimensions of openings on duct sides (mm)	
s[1)]	A	B
≤ 200	300	100
200 < s ≤ 500	400	200
> 500	500	400
[2)]	600	500



[1)] The side where the opening is installed.

[2)] A manhole is required if it is necessary for a person to gain access to the ducts.

For an opening installed in the end of a duct, the dimensions of the opening shall be equal to those of the duct or if one or both of the dimensions are smaller than required in table 2, then s is the smaller of the two dimensions.

Where a component is to be removed to facilitate cleaning, the openings created shall be at least equal to the openings specified in table 2, for each duct size.

If the height of an opening is greater than 1000 mm, 400 mm is a sufficient width, e.g. access openings in air handling units.

Consideration shall be given to access points where rectangular ducts change dimensions or profile to enable another cleaning equipment to match the size to be introduced into the duct system.

5.4 Openings in suspended ceilings

An unobstructed access to the access covers of the ducts shall be provided. An example is given in figure A.1.

5.5 Location and type of components

The design and installation documentation shall indicate by dimensions the location of all access components and provide details of the size and type of component required. The documentation shall also indicate the location of components mentioned in 6.1 to enable proper service and re-adjustment.

6 Installation and location in ductwork

6.1 General

Guidelines are given in annex C for design and installation such that the ductwork may meet the required levels of cleanliness during the lifetime of the ventilation system.

Access to duct-mounted components shall also be provided at the following locations in the duct system:

Dampers	both sides[1)]
Fire dampers	one side
Heating and cooling coils	both sides
Circular sound attenuators	one side
Rectangular sound attenuators	both sides[1)]
Filter sections	both sides[1)]
In-duct fans	both sides[1)]
Heat recovery devices	both sides[1)]
Air flow control devices	both sides[1)]

The components listed above and other equipment like flow regulators, measuring devices and control gauges shall be located in the ductwork in such a way that they may be easily serviced and cleaned. The equipment or device should whenever possible be located centrally in machine rooms, near the terminals and main branches.

Figure A.4 provides examples of access locations and distances between components for cleaning. The top and bottom of vertical ducts shall be equipped with openings located in spaces with easy access

Access locations in ducts that are insulated for noise, thermal or fire protection shall be individually considered to define whether the insulation is contained in the access component or is achieved by secondary insulation across the component.

The thermal, acoustic and fire properties of a duct system shall be maintained at all access locations.

[1)] Unless easily removable for cleaning.