



SLOVENSKI STANDARD
SIST EN 1505:1999
01-september-1999

Prezračevanje stavb – Pravokotni pločevinasti kanali in fazonski kosi - Mere

Ventilation for buildings - Sheet metal air ducts and fittings with rectangular cross section - Dimensions

Lüftung von Gebäuden - Luftleitungen und Formstücke aus Blech mit Rechteckquerschnitt - Maße

Ventilation des bâtiments - Conduits en tôle et accessoires a section rectangulaire - Dimensions

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ICS:

91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning
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EUROPEAN STANDARD

EN 1505

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1997

ICS 91.140.30

Descriptors: buildings, ventilation, air conditioning, aerualic pipes, accessories, rectangular form, metal plates, definitions, dimensions, dimensional tolerances

English version

Ventilation for buildings - Sheet metal air ducts and fittings with rectangular cross section - Dimensions

Ventilation des bâtiments - Conduits en tôle et accessoires
à section rectangulaire - Dimensions

Lüftung von Gebäuden - Luftleitungen und Formstücke aus
Blech mit Rechteckquerschnitt - Maße

This European Standard was approved by CEN on 25 October 1997.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a 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 European Standard 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

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

This standard is one of a series of standards for ductwork used for ventilation and air conditioning of buildings for human occupancy, and it has a parallel standard referring to dimensions of ducts with circular cross section.

The position of this standard in the field of mechanical building services is shown in figure 1.

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 June 1998, and conflicting national standards shall be withdrawn at the latest by June 1998.

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.

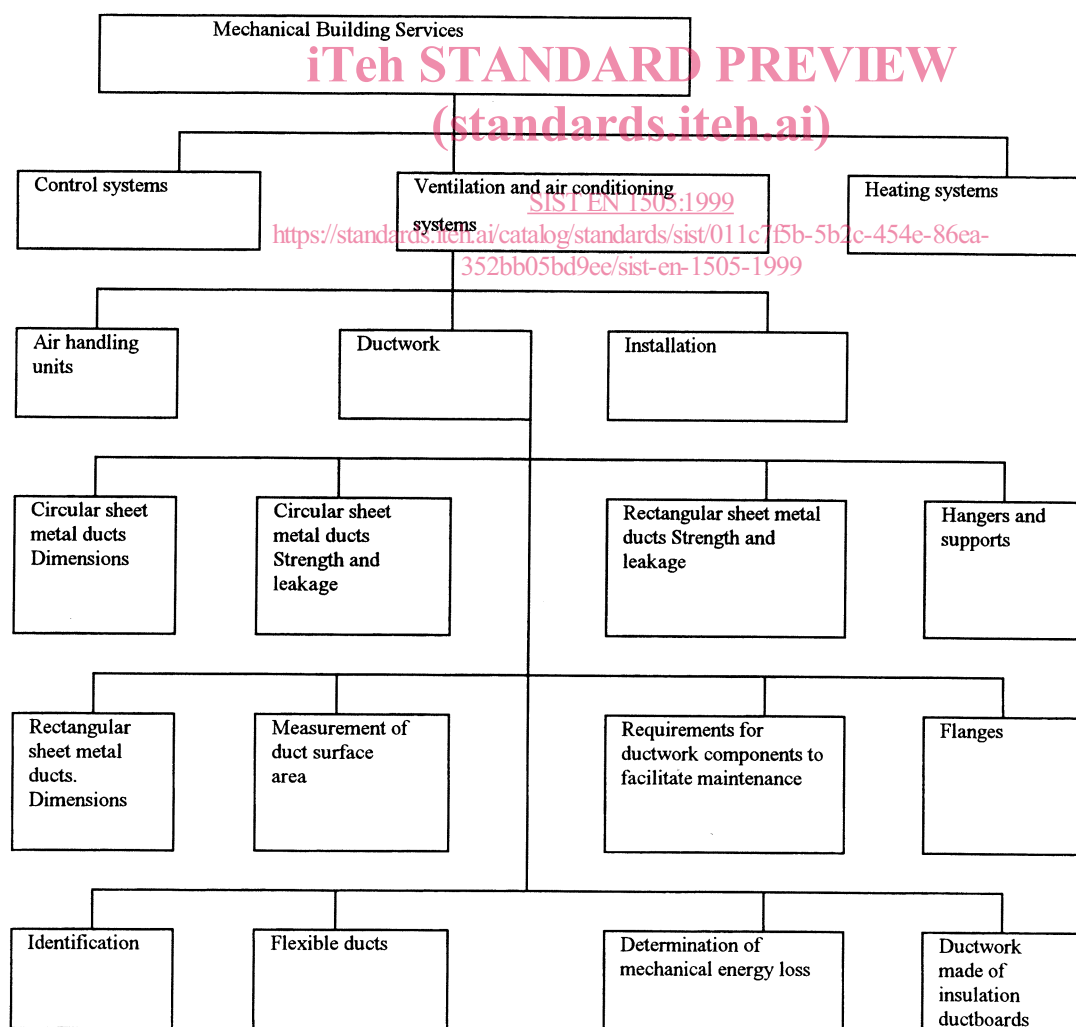


Figure 1: Position of EN 1505 in the field of mechanical building services

Introduction

This standard has been prepared by CEN/TC 156 to specify dimensions and tolerances for rectangular ducts and duct fittings used in ventilation systems.

Dimension and tolerances for straight ducts given in this standard are in accordance with ISO 7807:1983¹⁾ concerning recommended sizes.

The dimensions given for duct fittings are based on document EUROVENT 2/4¹⁾

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¹⁾ See annex C

1 Scope

This European Standard specifies dimensions of sheet metal air ducts and duct fittings with rectangular cross section. It applies to ductwork used in ventilation and air conditioning systems in buildings subject to human occupancy. The wall thickness of ducts and fittings is not specified in this standard; strength and leakage are dealt with in prEN 1507.

The corresponding standard for circular ducts is EN 1506.

2 Normative references

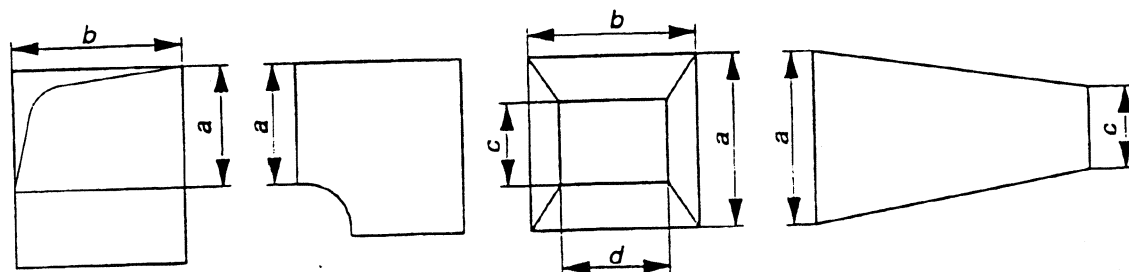
This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references the subsequent amendments to or revisions of any of these publications 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.

CR 12792	Ventilation for buildings - Symbols and terminology
EN 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

3 Definitions and symbols

For the purposes of this standard, the definitions given in CR 12792, together with the following, apply.

3.1 nominal size: Reference dimension used for designation, calculation and application of ducts and fittings. For ducts, the nominal size is the internal dimension of side a and side b , where a is the visible side (see figure 2). The lengths of the sides of the smaller end of a transformation piece are denoted by c and d , where c is the visible side (see figure 2).



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Figure 2: Application of denominations for the nominal size

3.2 effective length of fitting (l): Length by which a fitting contributes to the overall length of the air distribution system.

3.3 effective length of a straight duct (L): Length by which a straight duct contributes to the overall length of the air distribution system.

3.4 cross-sectional area (A_c): Product of the side lengths a and b .

3.5 duct surface area (A_i): Product of the internal perimeter and the duct length.

3.6 hydraulic diameter (d_h): For a rectangular duct, the diameter of a circular duct which will cause the same pressure drop at equal air velocity and equal friction coefficients

$$d_h = \frac{4 \text{ (cross-sectional area)}}{\text{internal perimeter}} = \frac{2ab}{a+b}$$

3.7 equivalent diameter (d_e): For a rectangular duct, the diameter of a circular duct which will cause the same pressure drop at equal air flow and equal friction coefficients.

3.8 angle of a transformation piece (α): The larger angle between two opposite sides of a transformation piece.

3.9 deviation, tolerance

3.9.1 upper deviation: Algebraic difference between the maximum limit of size and the corresponding nominal size.

3.9.2 lower deviation: Algebraic difference between the minimum limit of size and the corresponding nominal size.

3.9.3 tolerance: Difference between the upper deviation and the lower deviation. The tolerance is an absolute value without sign.

4 Dimensions and values for ducts

The dimensions for ducts, including the corresponding values of cross-sectional area (A_c in m^2), hydraulic diameter (d_h in mm), equivalent diameter (d_e in mm) and duct surface area per metre length (A_i in m^2/m), are given in table 1.

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The equivalent diameter d_e is calculated using the following formula:

$$d_e = 2b(\pi^{2-n} (1 + a/b)^{1+n} / (a/b)^3)^{1/(n-5)}$$

where:

$$n = 1/(1,05 \log Re - 0,45)$$

Tolerances and deviations are given in clause 6.