

Ventilation for buildings - Air terminal units - Aerodynamic testing and rating of constant and variable rate terminal units

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12589:2002 sisaldab Euroopa standardi EN 12589:2001 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 19.04.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12589:2002 consists of the English text of the European standard EN 12589:2001.</p> <p>This document is endorsed on 19.04.2002 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This European Standard specifies methods for the aerodynamic testing and rating of constant and variable flow rate terminal units suitable for use with air distribution systems. The terminal units considered are: - Single and dual duct. - Induction. - Fan assisted induction (parallel and series). - Single duct with integral diffuser.</p>	<p>Scope: This European Standard specifies methods for the aerodynamic testing and rating of constant and variable flow rate terminal units suitable for use with air distribution systems. The terminal units considered are: - Single and dual duct. - Induction. - Fan assisted induction (parallel and series). - Single duct with integral diffuser.</p>
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Võtmesõnad: aerodynamics, definition, displacement flow, evaluations, gas permeability, laboratory testing, measuring techniques, mechanical engineering, methods, passages, pressure, service installations in buildings, testing, thermal environment systems, use, ventilation

ICS 91.140.30

English version

Ventilation for buildings - Air terminal units - Aerodynamic testing and rating of constant and variable rate terminal units

Ventilation des bâtiments - Unités terminales - Essais aérodynamiques et évaluation des unités terminales à débit constant et variable

Lüftung von Gebäuden - Luftdurchlasseinheiten - Aerodynamische Prüfung und Bewertung von Luftdurchlasseinheiten mit konstantem und variablem Luftvolumenstrom

This European Standard was approved by CEN on 18 August 2001.

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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 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 March 2002, and conflicting national standards shall be withdrawn at the latest by March 2002.

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 European Standard specifies methods for the aerodynamic testing and rating of constant and variable flow rate terminal units suitable for use with air distribution systems.

The terminal units considered are:

- Single and dual duct.
- Induction.
- Fan assisted induction (parallel and series).
- Single duct with integral diffuser.

The tests for each type of unit are summarized in Figure 1.

The tests in this standard are designed to determine fully the aerodynamic performance of terminal units and provide a basis for the comparison of the suitability of such assemblies when correctly installed in an air distribution system.

2 Normative references

This European Standard incorporated 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 (including amendments).

CR 12792	Ventilation for buildings - Symbols, units and terminology
ISO 5167-1	Measurement of fluid flow by means of pressure differential devices - Part 1 : Orifice plates, nozzles and venturic tubes inserted in circular cross-section conduits running full
ISO 3966	Measurement of fluid flow in closed conduits – Velocity area method using Pitot static tubes
ISO 5221	Air distribution and air diffusion - Rules to methods of measuring air flow rate in an air handling duct

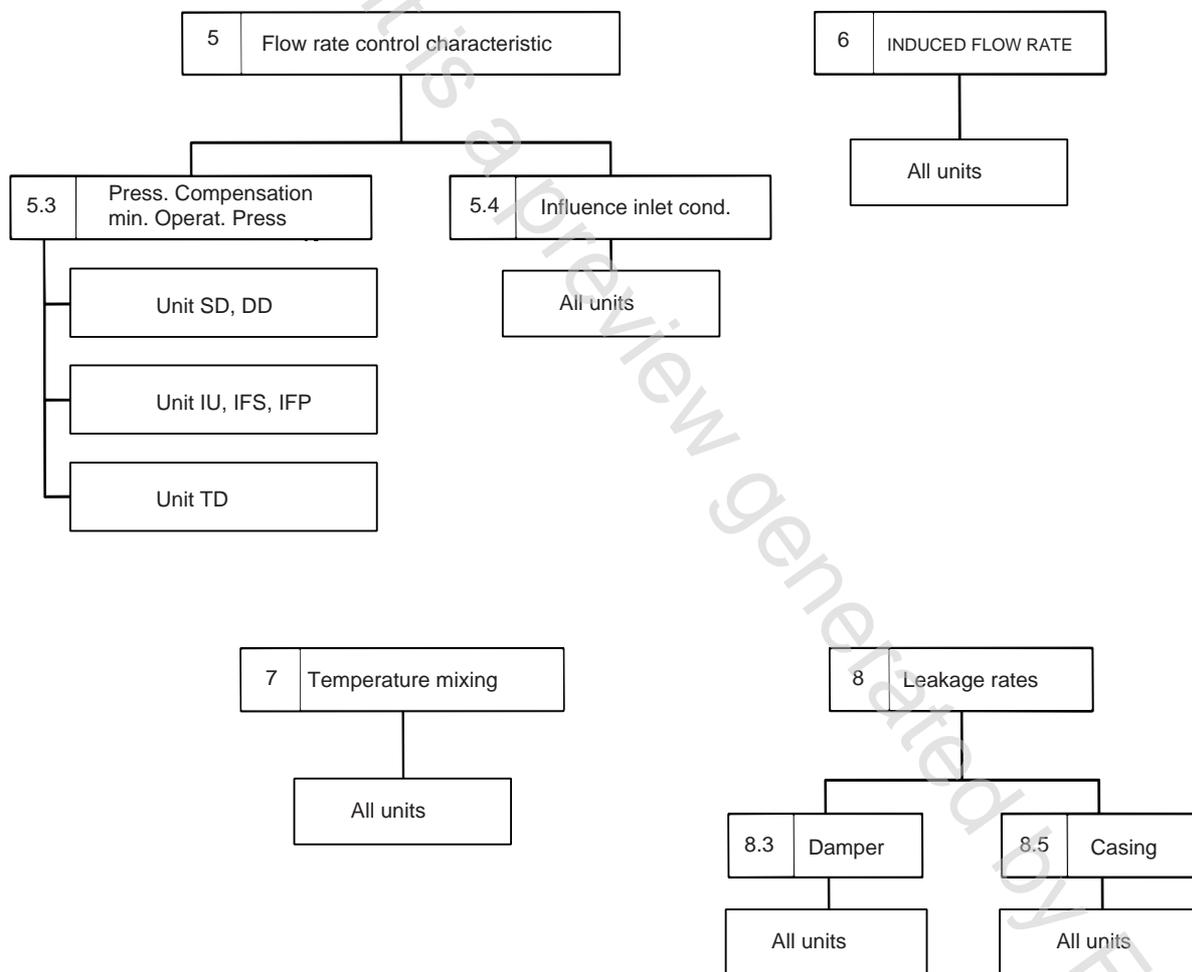
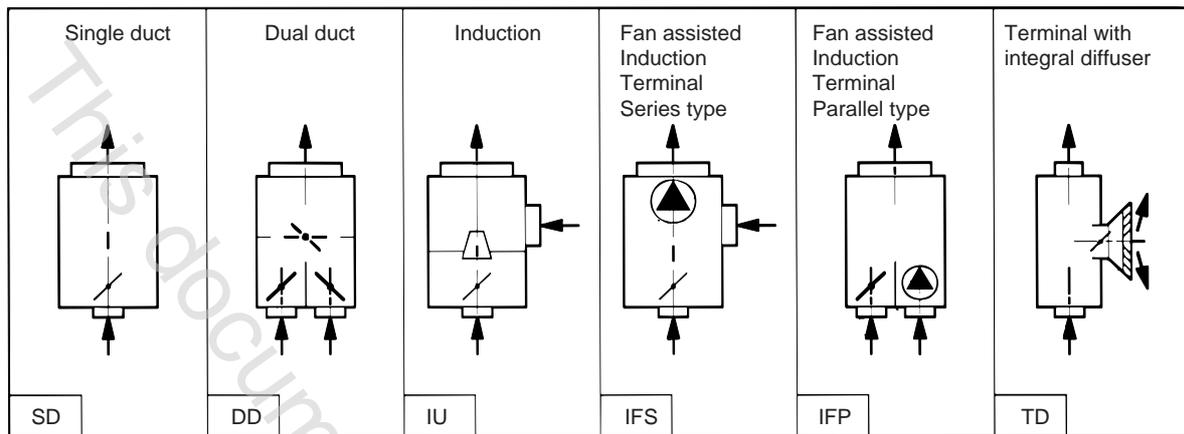


Figure 1 - Test units and test requirements

3 Terms, definitions and symbols

3.1 For the purposes of this standard, the terms and definitions given in CR 12792 apply.

3.2 The symbols and the suffixes used in this standard are shown in Tables 1 and 2 respectively.

Table 1 - Symbols used for testing air terminal units

Symbol	Quantity	Units
A_c	Internal cross-sectional area of duct	m^2
d_e	Equivalent diameter $\sqrt{4A_c/\pi}$	m
p	Absolute static pressure	Pa
p_a	Atmospheric pressure	Pa
p_d	Velocity pressure	Pa
p_r	Stagnation (or absolute total pressure)	Pa
p_s	Static gauge pressure ($p - p_a$)	Pa
p_t	Total pressure ($p_r - p_a$)	Pa
Δp	Flow meter pressure difference	Pa
Δp_t	Total pressure difference	Pa
q_v	Volume rate of air flow at the flow meter	$m^3 \cdot s^{-1}$ or $l \cdot s^{-1}$
q_{vL}	Leakage volume rate of air flow	$m^3 \cdot s^{-1}$ or $l \cdot s^{-1}$
Q_{vLBA}	Leakage volume rate of air flow across a valve per unit cross-sectional area	$m^3 \cdot s^{-1} \cdot m^{-2}$ or $l \cdot s^{-1} \cdot m^{-2}$
Q_{vLCA}	Leakage volume rate of air flow through casing per unit cross-sectional area	$m^3 \cdot s^{-1} \cdot m^{-2}$ or $l \cdot s^{-1} \cdot m^{-2}$
v	Velocity	$m \cdot s^{-1}$
ρ	Air density	$kg \cdot m^{-3}$
θ	Celsius temperature	$^{\circ}C$
S	Position of valve or induction damper setting	% or α
n	Fan speed control setting	V or position

Table 2 - Suffixes used with the symbols in Table 1

0	recommended value (usually by the manufacturer)
1	inlet of the unit under test
2	outlet of the unit under test
3	induction port(s) of the unit under test
i	outlet air temperature
c	cold side of the unit under test
w	warm side of the unit under test
u	measuring point upstream of the flow meter
D	measuring point upstream of the discharge flow meter
sn	nett surface area of the unit under test
ca	casing of the unit under test
va	valve of the unit under test