Classifications and standards

Information about which classifications the eQ-unit conforms to and the meaning of these classifications.

Index:

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1. Casing

1.1 Thermal insulation

The CEN standard EN 1886 classifies the air handling unit casing on the basis of its thermal insulating property in two ways.

Partly through the coefficient of thermal conductance U (W/m^2 ℃) in the classes T1 to T5, and partly through the insulation coefficient K_b. This indicates the air handling unit's capability to resist the formation of condensation TB1 to TB5.

The coefficient of thermal conductance, U, is determined by measuring the stationary heat loss for a temperature difference of 20 ℃ between the tempera ture inside the air handling unit and outside it. The coefficient of thermal conductance is classified according to the following table.

Class T1:	$0 < U \leq 0.5$
Class T2:	$0.5 < U \leq 1.0$
Class T3:	$1.0 < U \leq 1.4$
Class T4:	$1.4 < U \leq 2.0$
Class T5:	No requirements

A casing section's ability to resist condensation precipitation is classified by means of the insulation coefficient k_b. This is a dimensionless unit and is defined as follows:

$$k_b = \frac{(t_s - t_i)}{(t_e - t_i)}$$

Where
k_b = Insulation coefficient
t_i = The temperature of the air inside the air handling unit
t_e = The temperature in the surroundings
t_s = The unit sections lowest surface temperature

CEN classifies the insulation coefficient according to the following table.

Class TB1:	$0.75 < k_b \leq 1.00$
Class TB2:	$0.60 < k_b \leq 0.75$
Class TB3:	$0.45 < k_b \leq 0.60$
Class TB4:	$0.30 < k_b \leq 0.45$
Class TB5:	No requirements

The casing section that has the lowest insulation coefficient determines which insulation class is applicable to the air handling unit.

eQ conforms to:
Thermal insulation (coefficient of thermal transmittance class); T3 standard insulation, T4 heavy insulation
Anti-condensation insulation; TB3

1.2 Tightness

CEN-standard EN 1886 classifies leakage rates for air handling units as follows.

Leakage class	Suction -400 Pa Leakage flow max l/s, m^2	Pressure +700 Pa Leakage flow max l/s, m^2	Highest rec. filter class
L3	1,32	1,90	G1–F7
L2	0,44	0,63	F8–F9
L1	0,15	0,22	over F9

The leakage flow rate for a unit only subjected to suction must not exceed the above tabulated figures at -400 Pa. The leakage flow rate for a unit only sujected to pressure must not exceed the above tabulated figures at 700 Pa.

eQ conforms to:
Air-tightness class (leakage flow); L2 (CEN B)

1.3 Strength

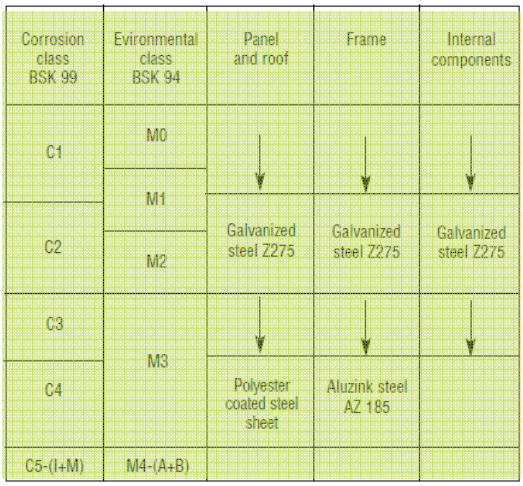
CEN-standard EN 1886 classifies casing strength as follows:

Casing class	Max deflection per meter	Meets max. fan pressure
D3	over10 mm	yes
D2	10 mm	yes
D1	4 mm	yes

To meet class D1, D2 or D3 the casing shall both not exceed the prescribed deflection and be able to withstand the maximum pressure the fan is capable of without plastic deflection. The maximum pressure below and above atmospheric that the casing can withstand without permanent deformation is 2500 Pa.

eQ conforms to:
Strength class; D2

1.3 Corrosion resistance



eQ conforms to:
Corrosivity class (environmental class); C4 in standard design, C5 in (stainless design included in the eQ PLUS range)

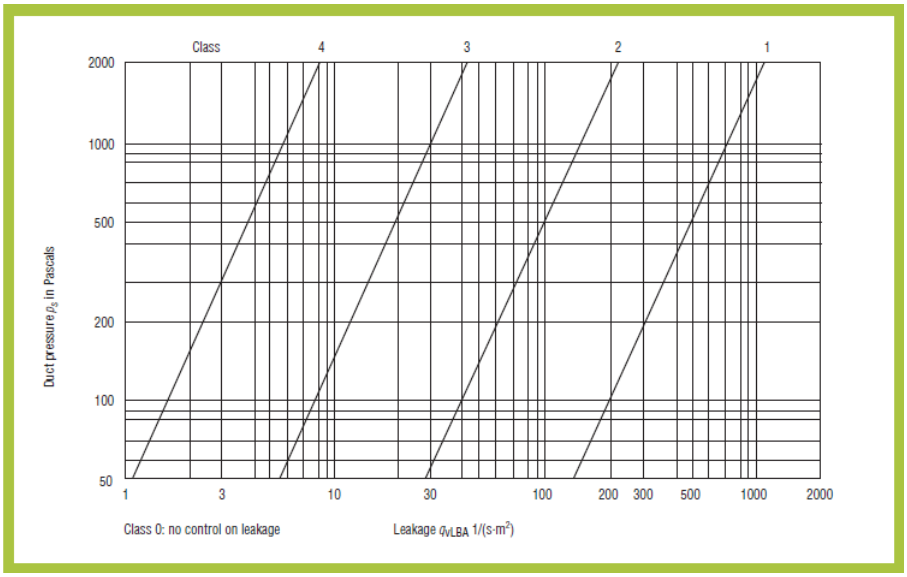
2. Dampers

The air leakage across an air damper in the closed position is an important characteristic and is defined by CEN-standard EN 1751. The tightness of dampers in the closed position depends on the stiffness of the damper blades, the quality of gaskets fixed to the edges of the damper blades and the gaskets between the ends of the blades and the air damper frame.

The air leakage across an air damper in the closed position is defined by:

CEN Classes	4	3	2	1

See figure for permitted maximum leakage q_{vLBA} in l/(s x m^2) across closed blades as a function of duct static pressure p_s in Pa.



The eQ dampers conforms to:
Air-tightness class CEN3 or CEN4. Note! If you want to have a unit in air-tightness class L2 (CENB) the outside mounted dampers need to fulfil CEN4.

3. Filters

A particle filter intended for a ventilation plant is tested and classified in accordance with CEN standard EN 779: 2002. The collecting efficiency, specified as a percentage, is tested for aerosols in the size of 0.4 µm. The tests are carried out in a number of steps adding synthetic dust to the air up to the final pressure drop and the mean value of the collecting efficiency, E_m is calculated. If the E_m is less than 40 %, the filter is a wide-meshed filter (G) and it is then classified according to its ability to collect the synthetic dust A_m. If the E_m is the same as or more than 40 %, the filter is a fine filter (F) and is classified according to a mean value of its ability to collect size 0.4 µm particles, when synthetic dust is supplied to the filter in steps up to the final pressure drop of 450 Pa.
To make clear how much of the filter's collecting ability is conditional on its possible electrostatic charge, EN 779 indicates in an appendix how the filter's charge should be eliminated. After it has been neutralised, the filter should be tested and the result should be entered in the test report.

A filter for very high collecting efficiency for example a HEPA- or ULPA-filter is classified to EN 1822.
The classification is based on the collecting efficiency for the particle size that gives the smallest collecting efficiency, i.e. at MPPS. Each filter of HEPA – class H 13 and H 14 is tested individually in conjunction with the manufacture.

Classification of filter in accordance with EN779				Filters can also be classified as follows	
Class	Final pressure drop Pa	Ability to separate synthetic dust, A_m	Mean value of the collecting efficiency, E_m	EUROVENT 4/5	ASHRAE
G 1	250	$50 \le A_m < 65$	-		
G 2	250	$65 \le A_m < 80$	-		
G 3	250	$80 \le A_m < 90$	-	EU3	G85
G 4	250	$90 \le A_m$	-	EU3	G90
F 5	450	-	$40 \le E_m < 60$	EU5	F45
F 6	450	-	$60 \le E_m < 80$	EU6	F65
F 7	450	-	$80 \le E_m < 90$	EU7	F85
F 8	450	-	$90 \le E_m < 95$	EU8	F95
F 9	450	-	$95 \le E_m$		

G4, F5, F7 and F9 are standard filters in eQ.

All other types of filter classes can be ordered as EQPZ-03, delivered as a set (not mounted).