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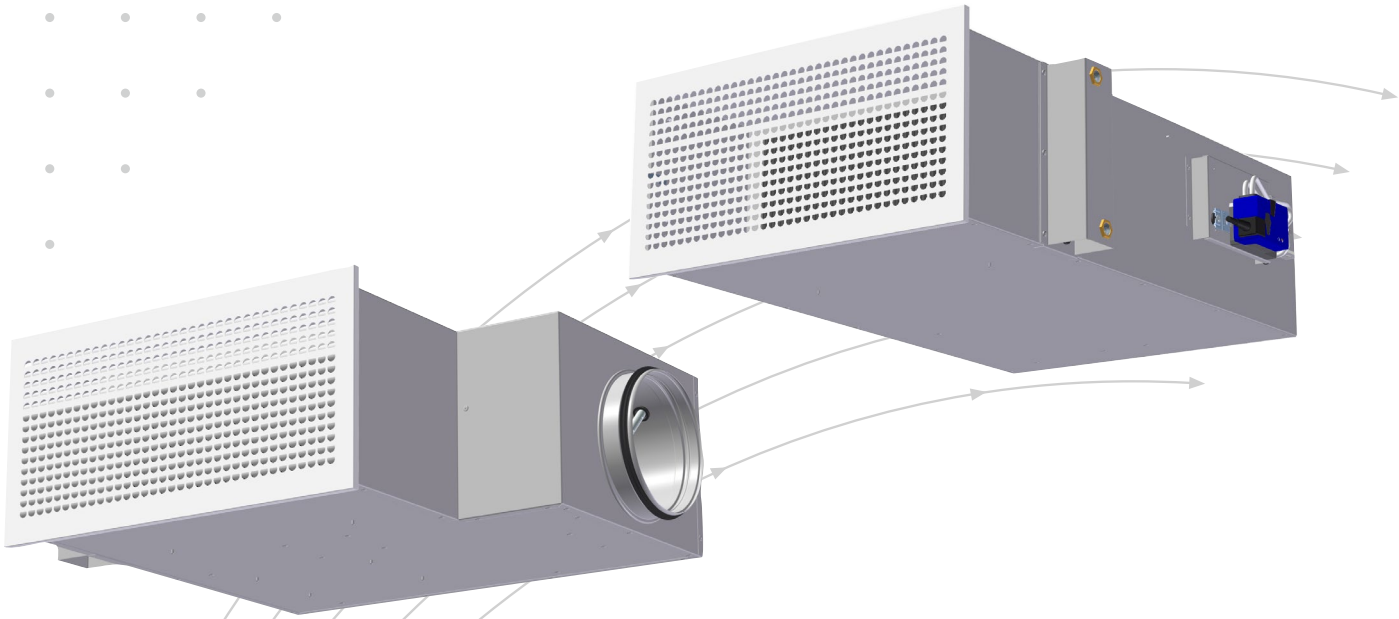
Pegasus Comfort

Wall diffusor with VAV function and heating coil



- With heating coil for waterborne heating of supply air
- Unique damper function
- Large working range
- Can be used with internal linear regulator or external rotary regulator.

TROX® TECHNIK

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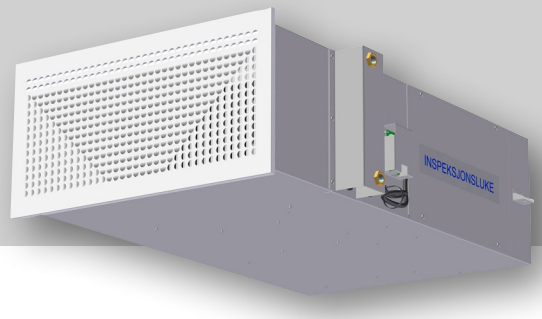
Pegasus Comfort



APPLICATION

Pegasus Comfort is a wall diffusor with VAV functionality and a heating coil. It is used as a volume regulator and air inlet unit in demand controlled ventilation systems. Pegasus Comfort has very good induction, which makes it well-suited for variable airflows.

FUNCTION

Pegasus Comfort has a built-in VAV regulator for demand control of the airflow. The damper solution will choke the pressure at high flow rates and will maintain a low sound level. This may reduce the need for additional dampers and sound attenuators in a duct system.The unit is equipped with a heating coil for waterborne heating of inlet air. Pegasus Comfort can be delivered with several different bus options for SD-Systems.

Deviation for working range
10 - 20% of V_{nom}:±25%
20 - 40%: of V_{nom} <±10%
40 - 100%: of V_{nom} <±4%

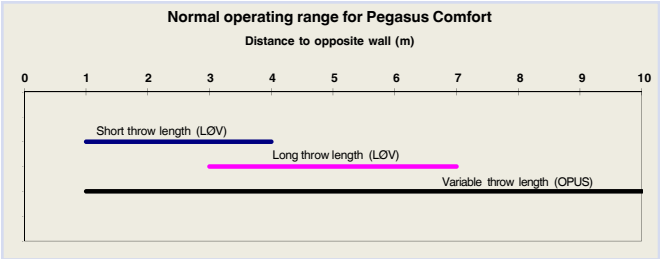
If T-pipes are used, a spacing of at least 5 x ØD is recomended in order to maintain the measurement accuracy.

DESIGN

Pegasus Comfort is built as a complete measurement and regulating unit for demand control of the airflows in the ventilation system. The measurement station measures pressure difference via measurement rods integrated into the unit. The unit is equipped with VAV controller from Belimo or Siemens. Pegasus MI (motor inside) is supplied with a linear regulator from Belimo. Access to the actuator is through an inspection hatch. Pegasus MU (external motor) is supplied with rotating motor from Belimo or SIemens. When choosing the Pegasus MU, other engine variants can delivered on request. The regulators` specifications can be found in table 1. Complete technical documentation can be found on our website: www.trox.no.The unit has a simple connection and service point on the outside of the box's side. See figure 10.
Pegasus Comfort has a detachable front plate with selectable LØV- or Opus execution. LØV has 2 different patterns, long (L) or short (K) air throw. If Opus pattern is selected with turnable plastic nozzles, the designation (V) is for variable air throw. Pipe connection waterside is delivered as standard with internal 1/2" threads.

MATERIALS AND FINISH

Pegasus Comfort is made of galvanised steel. The measurement cross is in aluminium, hoses and nipples are in plastic. The damper has an affixed polyester cloth. The spigot has a rubber EPDM seal. Battery made of copper and aluminium. The K and L type front panels are made of steel with a RAL 9003 - gloss 30 finish. Other colours are available on request. The V type diffuser front features Opus nozzles in ABS plastic, is made of steel and comes in a RAL 9003 - gloss 30 finish. Other colours are also available, but without the adjustable nozzle option.

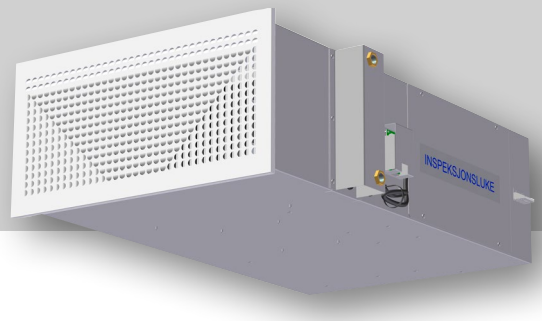


REGULATION RANGE, PEGASUS-COMFORT

Pegasus-Comfort	(m^3/h)	
Dim.	Minimum	Maximum
125	26	265
160	43	434
200	70	700
250	106	1060

Regulation range for VAV, airflow in m^3/h.
See dimensioning diagram for sound power and pressure loss.

Pegasus Comfort



ORDER CODE, Pegasus Comfort

Pegasus Comfort - MU - B - 160 - L - 10 - 0 - 0 - 0

Produkt:

Function:
MI = Internal motor
MU = External motor

Connection:
B = Rear edge
S = Side

Dim:
125
160
200
250

Front, type:
K = LØV perforation, short air throw
L = LØV perforation, long air throw
V = Opus nozzles, variable distribution pattern

MS = Labeling scheme
SL = Special paint

Plug:
0 = Without plug
1 = Wago 4. Pol Midi, Gray*
2 = Wago 4. Pol Midi, Green*

*Only for controller option 0
**Only for controller option 3,4,7

Connection:
0 = Belimo MP-Bus
2 = Belimo LON-Bus
3 = Belimo MOD-Bus
4 = Belimo BAC net
7 = Belimo KNX
8 = MOD-Bus for XAC
9 = XAC-ZM MOD-Bus
9.1 = XAC-ZM MOD-Bus w/light relay
9.2 = XAC-ZM MOD-Bus w/heating-cooling relay
9.3 = XAC-ZM MOD-Bus w/light, heating-cooling relay
9.4 = XAC-ZM MP-Bus
10 = Siemens KNX ***
11 = Siemens Bacnet ***
45 = Siemens MOD-Bus ***

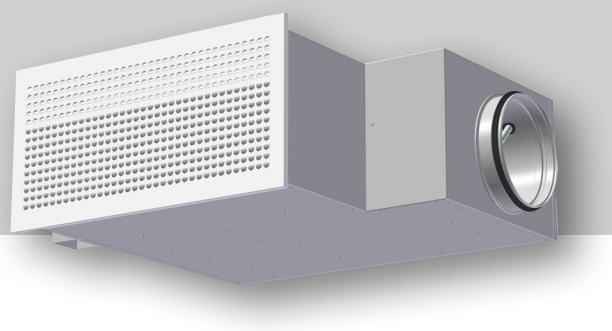
***Only for Pegasus MU

Example:
Pegasus Comfort-MU-B-L-160-10-0-0-0
Explanation:
Pegasus Comfort with external motor and rear edge connection, dimension duct Ø160, LØV front with long air throw, with Siemens KNX, without special paint, without plug and without labelling scheme.

Produsent	Regulator code	Moment	Type	Operating voltage	Power consum-ption in operation	Dim.effect
Belimo	LHV-D3-MP/MOD/BAC/KNX	150 N	Linear	AC/DC 24 V, 50/60 Hz	2,5W	4,5 VA (max. 8 A @ 5 ms)
Belimo	LMV-D3-MP/MOD/BAC/KNX	5 Nm	Rotating	AC/DC 24 V, 50/60 Hz	2W	4 VA (max. 8 A @ 5 ms)
Siemens	GDB181.1E/KN (KNX)	5 Nm	Rotating	AC 24 V, 50/60 Hz	2.5W	3 VA
Siemens	GDB181.1E/BA (Bacnet)	5 Nm	Rotating	AC 24 V, 50/60 Hz	2,5W	3 VA
Siemens	GDB181.1E/MO (Modbus)	5 Nm	Rotating	AC 24 V, 50/60 Hz	2,5W	3 VA

Table 1, Technical specification

Pegasus Comfort



QUICK SELECTION PEGASUS-COMFORT LØV-B-K/L

Pegasus-Comfort LØV-B-K/L	m³/h (open)		
Dim.	25 dB(A)	30 dB(A)	35 dB(A)
125	158	194	241
160	277	335	403
200	331	396	475
250	594	706	832

QUICK SELECTION PEGASUS-COMFORT OPUS-B

Pegasus-Comfort Opus-B	m³/h (open)		
Dim.	25 dB(A)	30 dB(A)	35 dB(A)
125	140	173	212
160	234	284	342
200	266	335	425
250	497	605	731

QUICK SELECTION PEGASUS-COMFORT LØV-S-K/L

Pegasus-Comfort LØV-B-K/L	m³/h (open)		
Dim.	25 dB(A)	30 dB(A)	35 dB(A)
125	169	205	252
160	274	335	407
200	342	410	490
250	518	630	763

QUICK SELECTION PEGASUS-COMFORT OPUS-S

Pegasus-Comfort Opus-S	m³/h (open)		
Dim.	25 dB(A)	30 dB(A)	35 dB(A)
125	137	173	216
160	230	281	342
200	281	349	432
250	536	626	727

Table 2, Quick selection Pegasus Comfort

DIMENSIONS AND WEIGHT, PEGASUS COMFORT

Dim.	D	BF	HF	BK	BK2	HK	DS	A	B	CB	CS	E	F	G	H	I	J	Weight [Kg]
125	124	510	205	470	700	173	570	82	145	378	378	197	175	18	138	235	257	15
160	159	560	255	520	700	223	605	100	163	378	378	197	175	18	188	235	257	17
200	199	580	295	540	700	263	645	120	183	378	378	197	175	25	213	235	257	19
250	249	840	367	800	800	337	695	145	208	403	478	186	186	37	275	246	246	25

Table 3

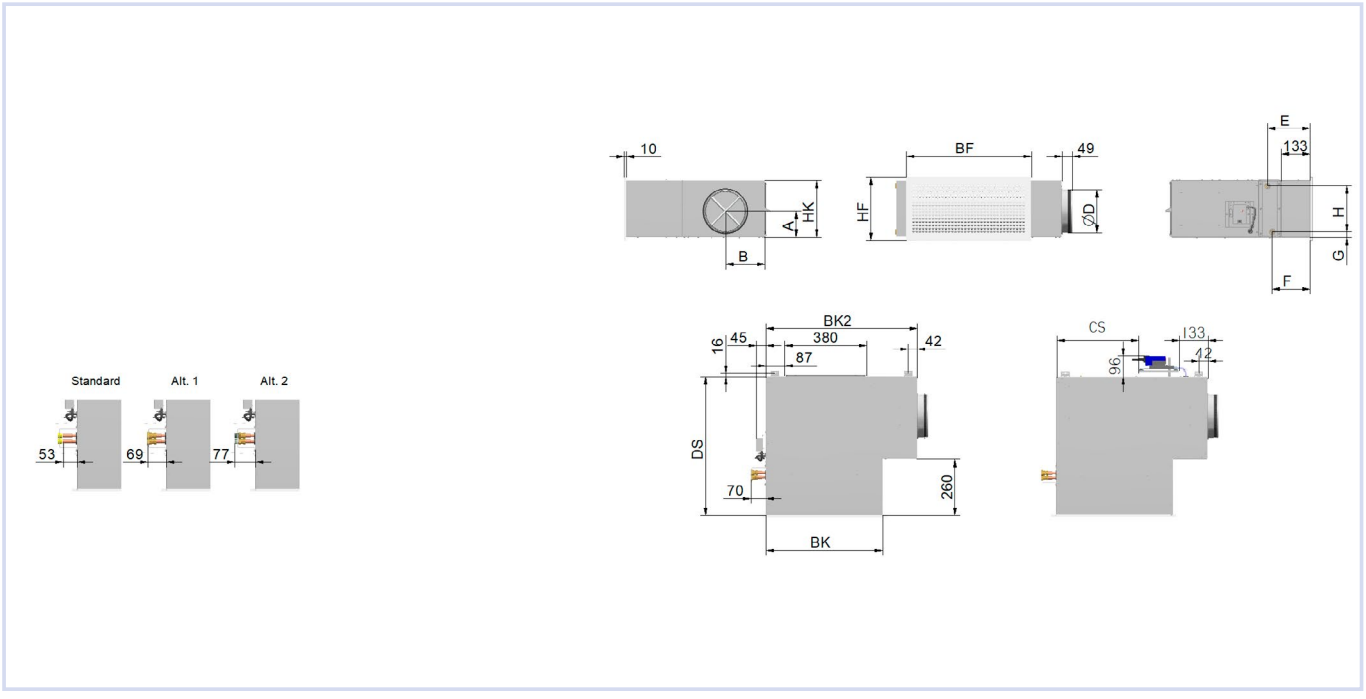
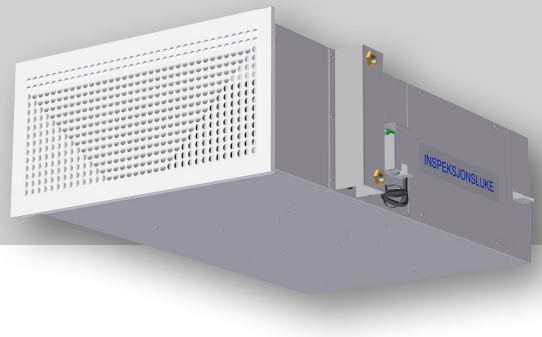


Figure 2, Dimensional sketch Pegasus Comfort-S

Pegasus Comfort



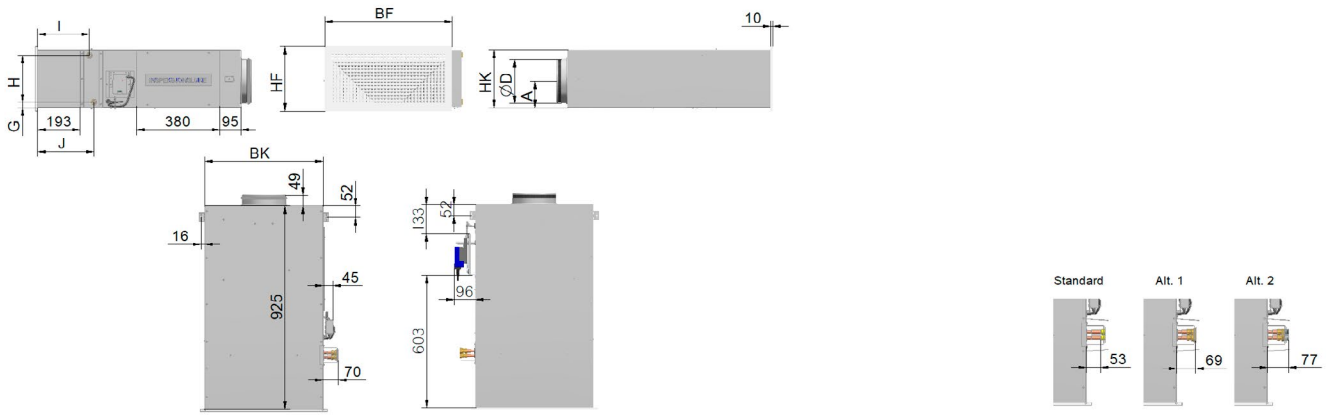


Figure 3, Dimensional sketch Pegasus Comfort-B

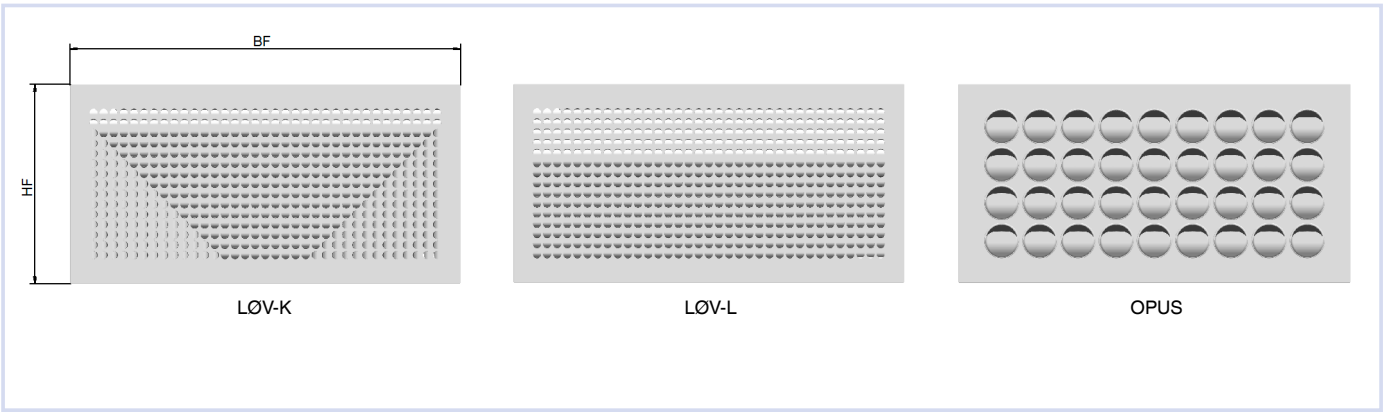
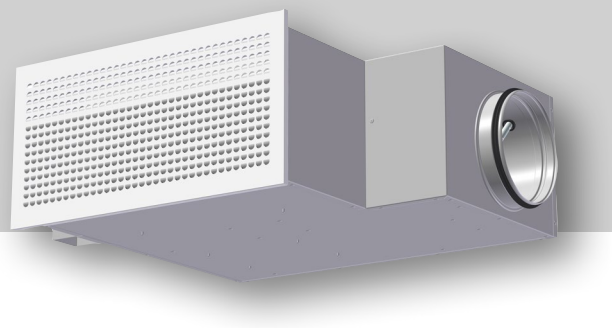


Figure 4, Pegasus Comfort fronts

Pegasus Comfort



ACOUSTIC DOCUMENTATION

In the diagrams, the summed A-weighted sound power level from the valve is given, L_{WA}. The correction factors in table 5 and 6 on page 11 will be used to calculate the emitted frequency-distributed sound power level, $L_W = L_{WA} + KO$. The sound pressure level in a room with absorption equivalent to 10 m2 Sabine will be 4 dB lower than the emitted sound power level.

Example:
Pegasus Comfort Ø125 with back connection and LØV front plate, desired airflow 50 l/s. From the diagram we find that L_{WA} = 27dB(A) with open damper and 49 Pa total pressure loss.

We would like to find the following data:

a) Emitted sound power level at 250 Hz.
b) A-weighted sound pressure level from the valve in an office with 4dB room attenuation.
c) A-weighted sound pressure level is the pressure loss increases to 80 Pa across the unit.

a) Correction factor for 250 Hz is (-2 dB). Emitted sound power level at 250 Hz then becomes:
$L_W = L_{WA} + KO = 27 + (-2) = \underline{25\ dB}$
b) With 4dB room attenuation the A-weighted sound pressure level is:
27 - 4 = <u>23 dB(A)</u>
c) By following the line for 50 l/s in the diagram up to 80 Pa 26 dB(A) is read, the sound pressure level is: 26-4= 22dB(A).

CALCULATION DIAGRAM

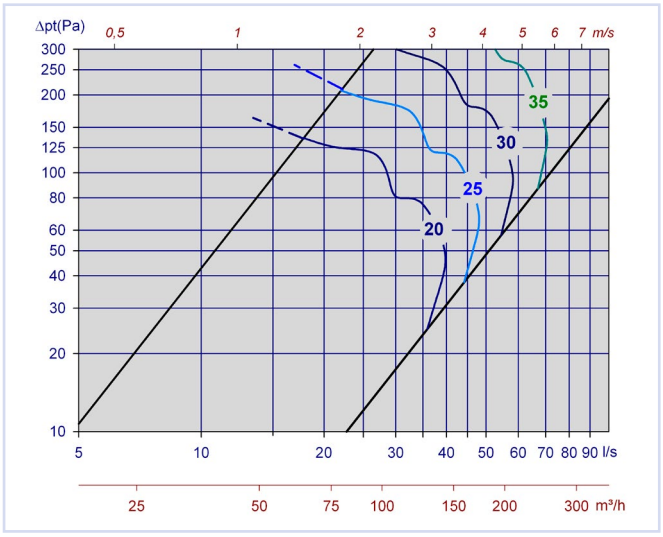


Diagram 1, Pegasus Comfort LØV 125-B

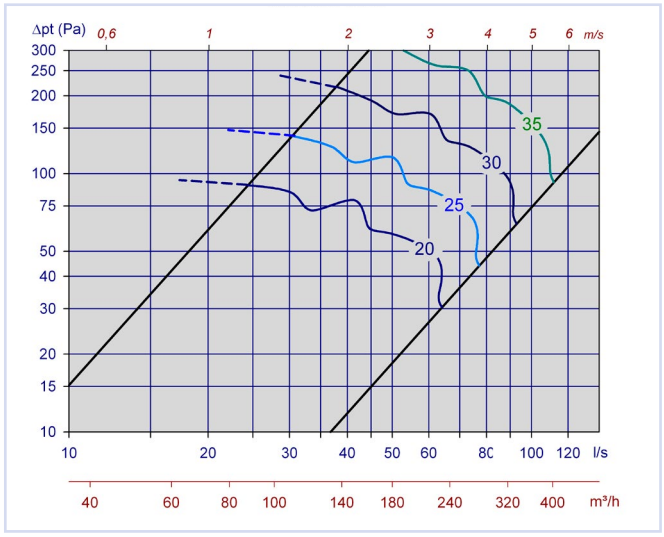


Diagram 2, Pegasus Comfort LØV 160-B

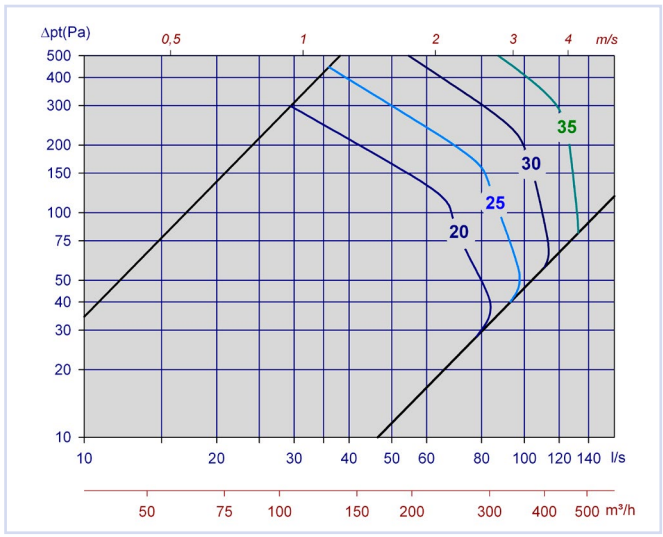


Diagram 3, Pegasus Comfort LØV 200-B

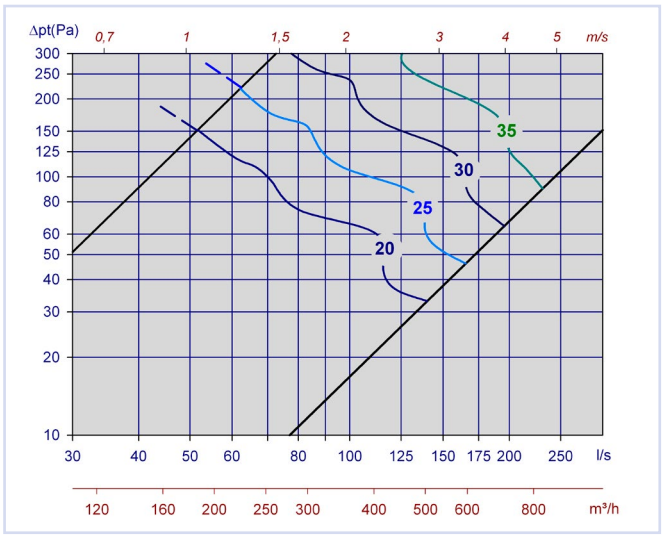
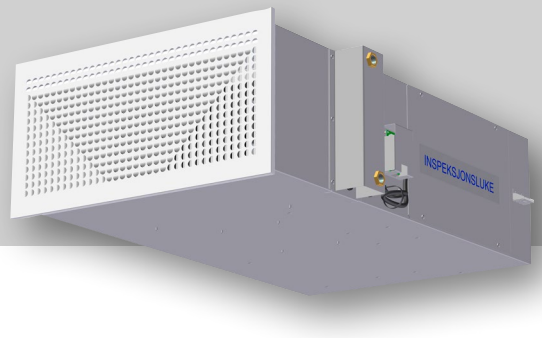


Diagram 4, Pegasus Comfort LØV 250-B

Pegasus Comfort



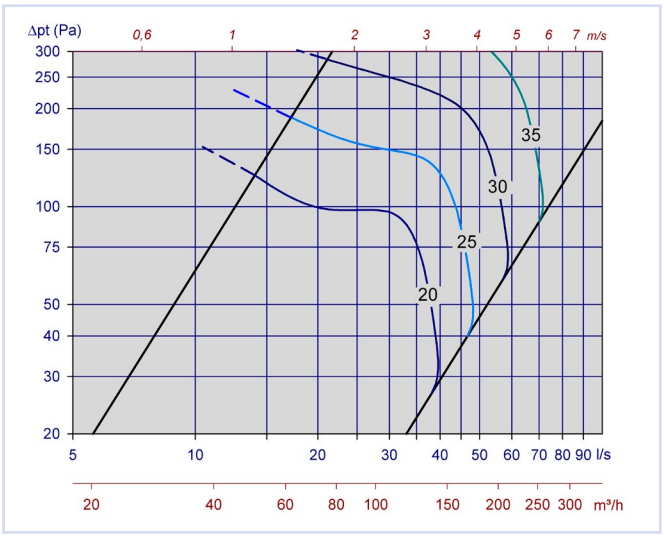


Diagram 5, Pegasus Comfort LØV 125-S

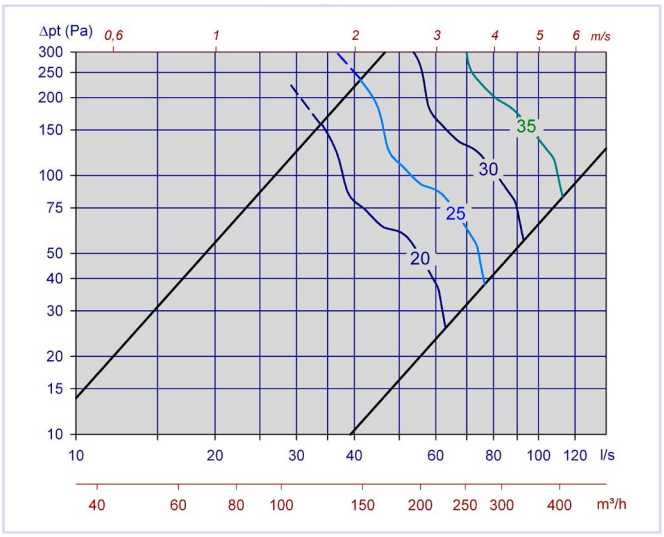


Diagram 6, Pegasus Comfort LØV 160-S

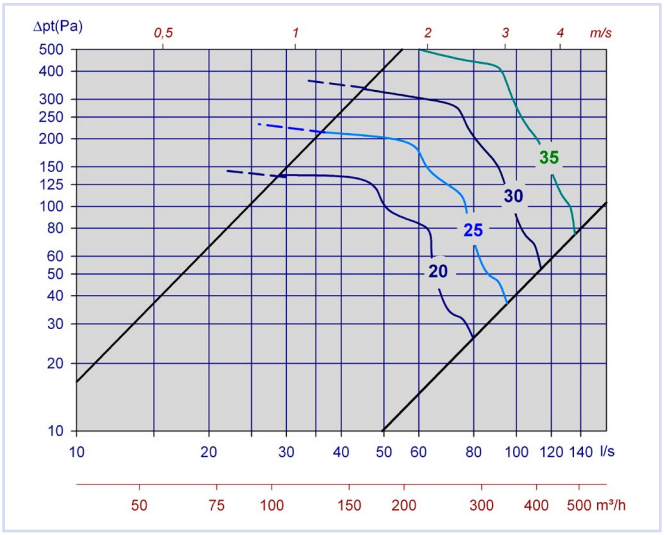


Diagram 7, Pegasus Comfort LØV 200-S

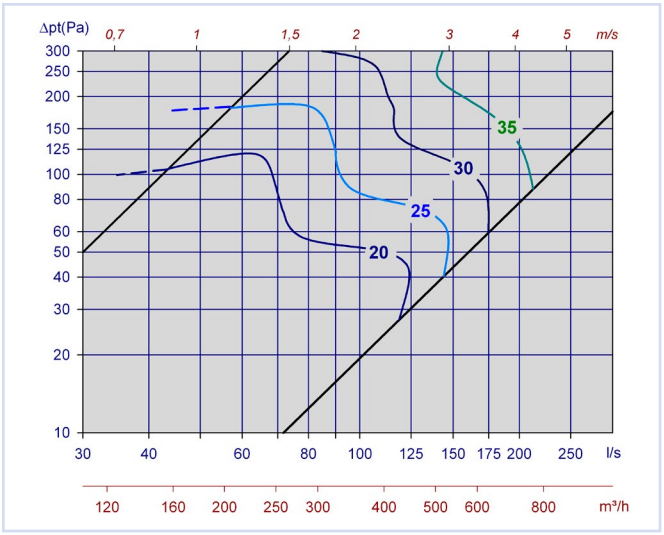


Diagram 8, Pegasus Comfort LØV 250-S

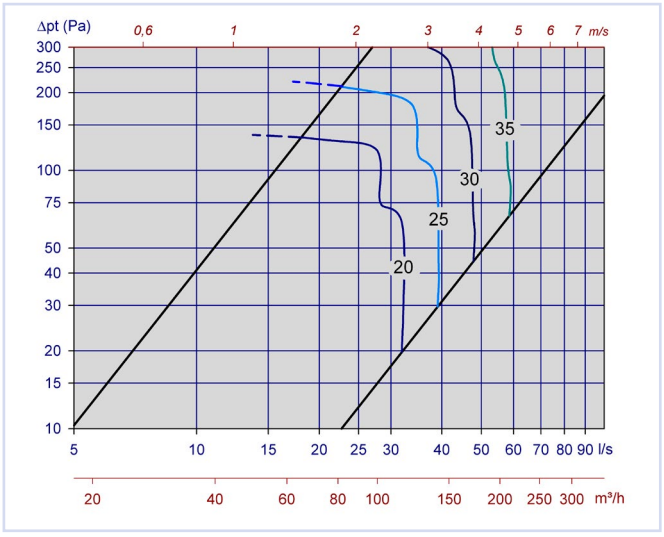


Diagram 9, Pegasus Comfort Opus 125-B

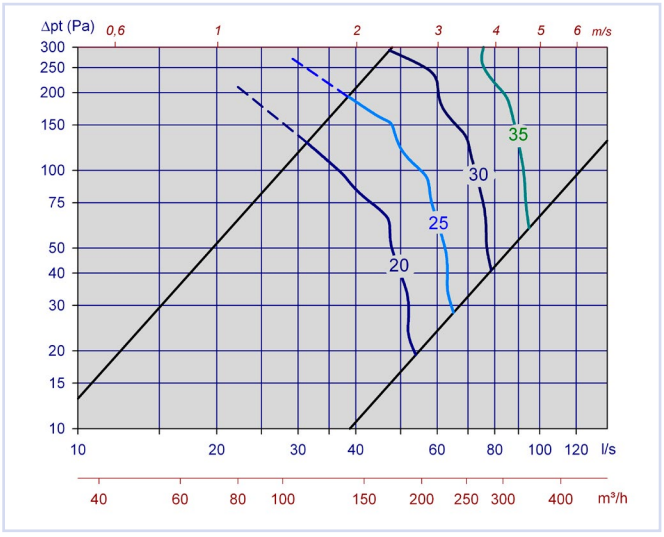
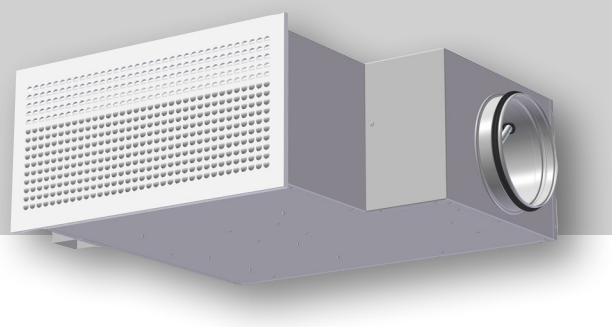


Diagram 10, Pegasus Comfort Opus 160-B

Pegasus Comfort



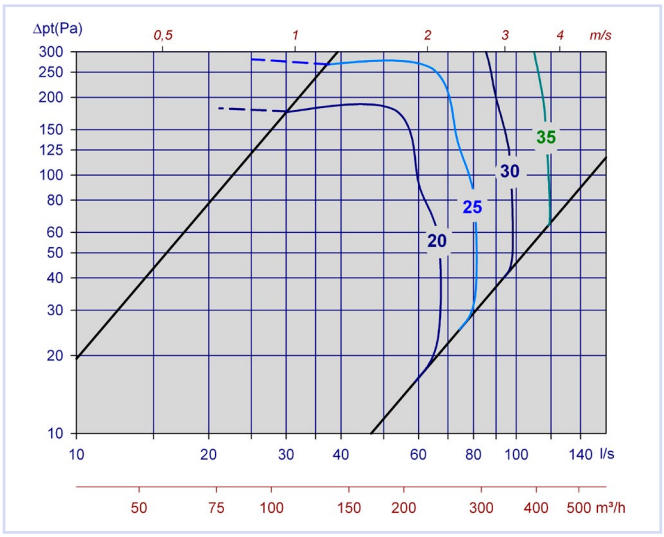


Diagram 11, Pegasus Comfort Opus 200-B

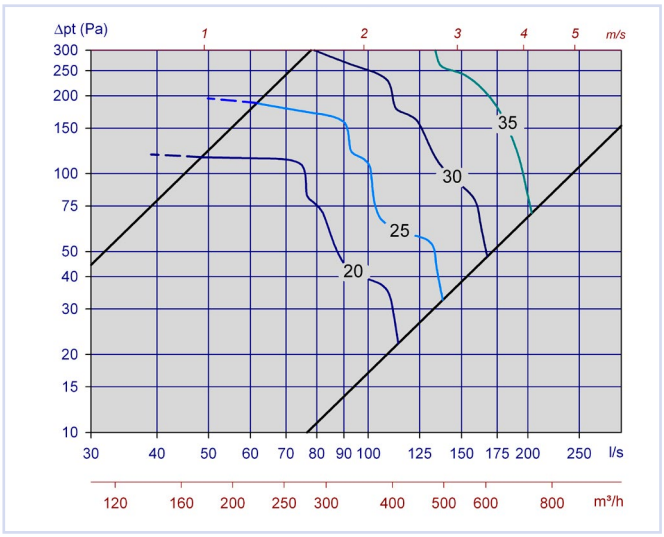


Diagram 12, Pegasus Comfort Opus 250-B

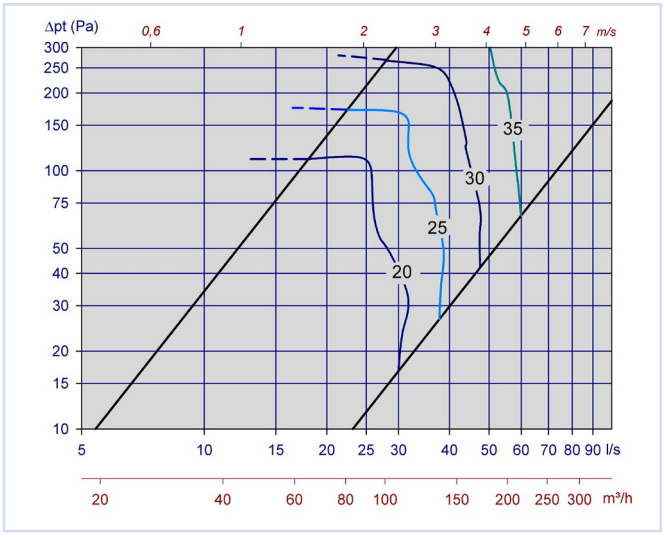


Diagram 13, Pegasus Comfort Opus 125-S

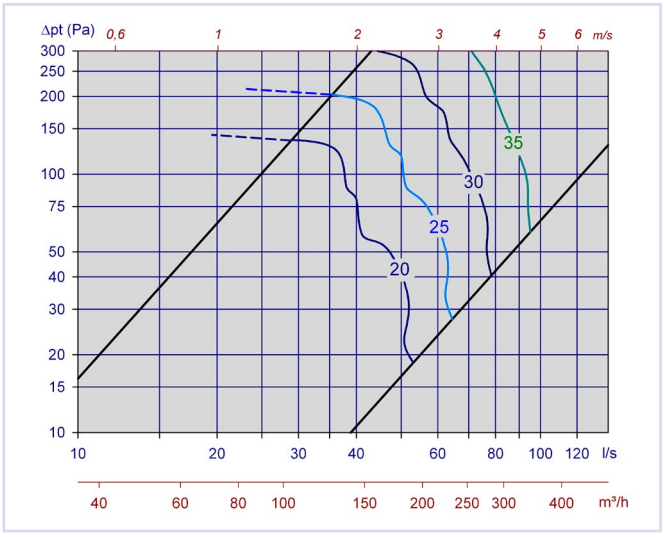


Diagram 14 Pegasus Comfort Opus 160-S

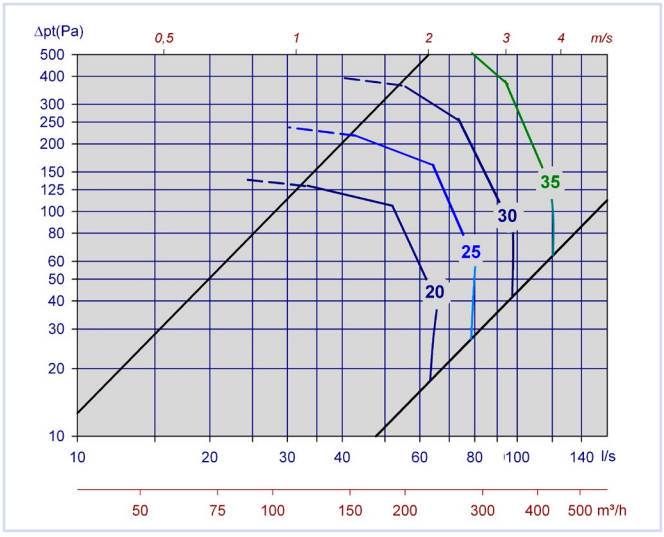


Diagram 15, Pegasus Comfort Opus 200-S

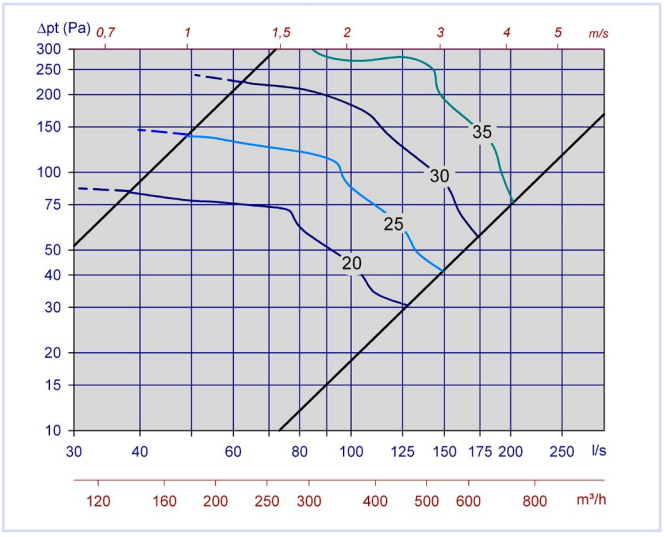
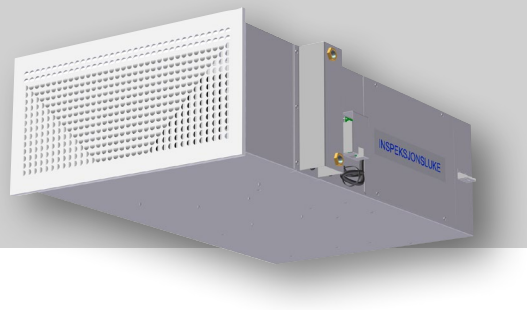


Diagram 16, Pegasus Comfort Opus 250-S

Pegasus Comfort



HEAT CALCULATION

Example of calculation of heating:
A Pegasus Comfort 125 with airflow of 150m^3/h has been selected for heating of an office cell with a size of 4.2 x 2.4 x 2.7m.

A heating requirement of approx. 40W/m^2 is calculated.
This gives a heating need of: 40 x 4.2 x 2.4=403Watt.

Operating conditions:
Desired room temperature: 22.0 °C
Airflow: 140m^3/h
Intake air temperature: 20°C
Supply temperature of hot water: 35°C

Because the intake air has 2 °C lower temperature than the desired room temperature, this cooling effect must be compensated for, (140/3.6 x 2.0 x 1.2=93 Watt).
Total heating needs thus are 403+93=496Watt.

In the diagram for this unit, diagram No. 19, we find that the power is covered with a quantity of water of 0.03 l/s.

The water's temperature reduction will be computed as per the formula:
Power water side /(the water's heat capacity x water quantity)
= 496/(4207 x 0.03) = 4°.
The water's return temperature will then be: 35 - 4 = 31°C.

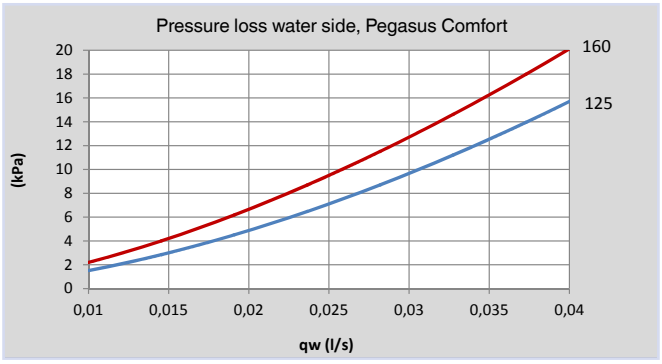


Diagram 17

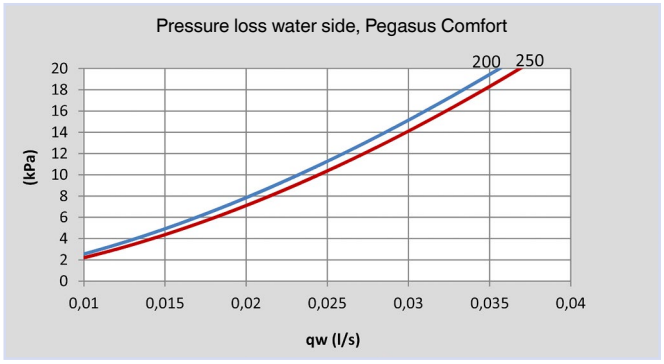


Diagram 18

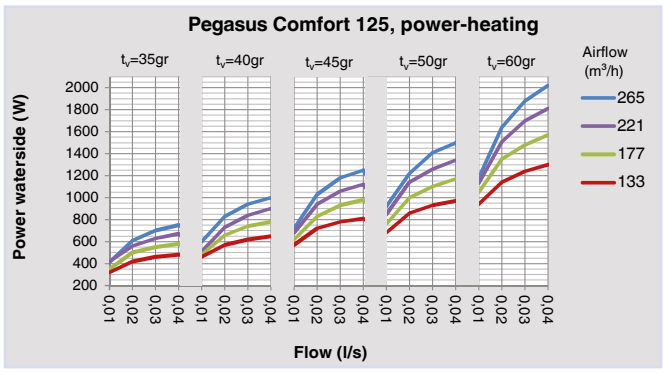


Diagram 19

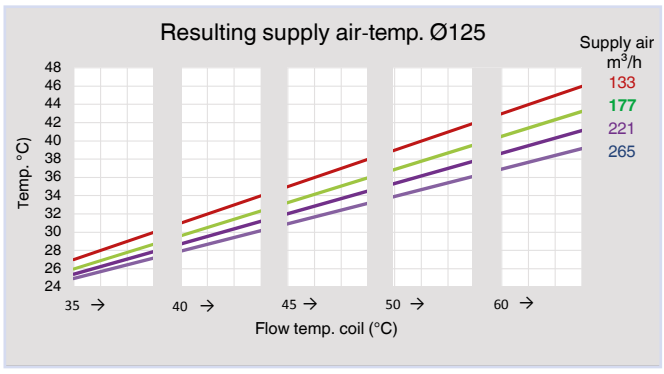


Diagram 20

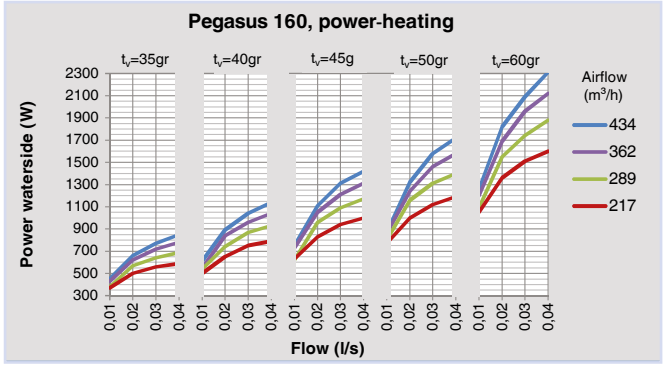


Diagram 21

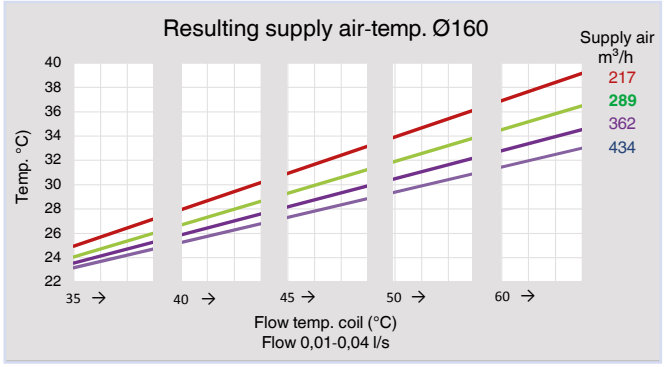
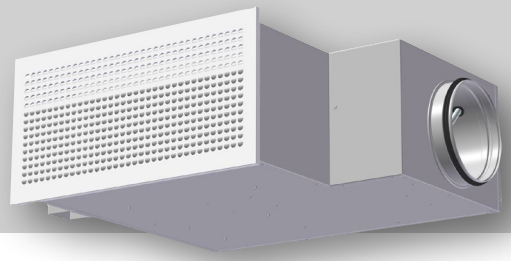


Diagram 22

Pegasus Comfort



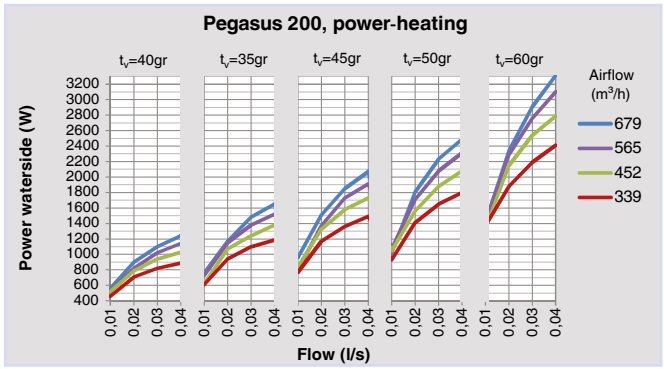


Diagram 23

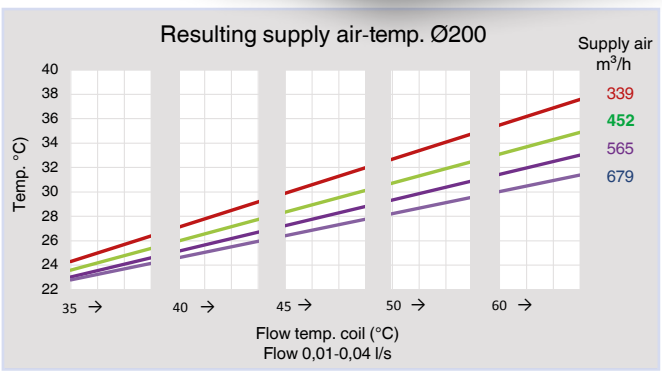


Diagram 24

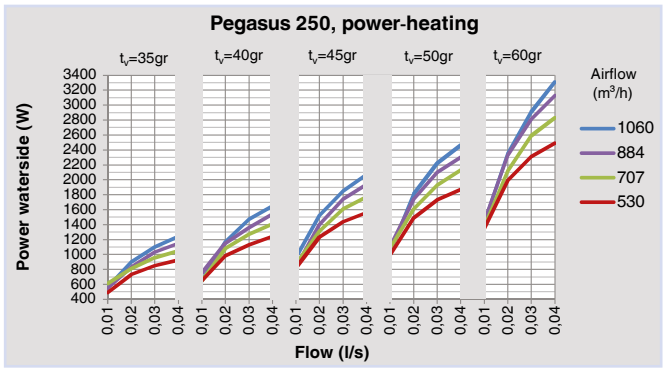


Diagram 25

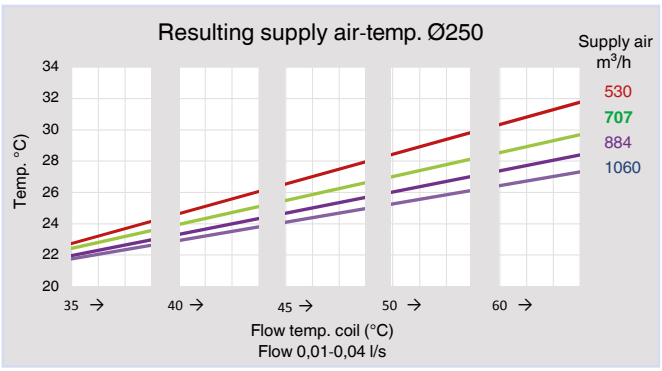
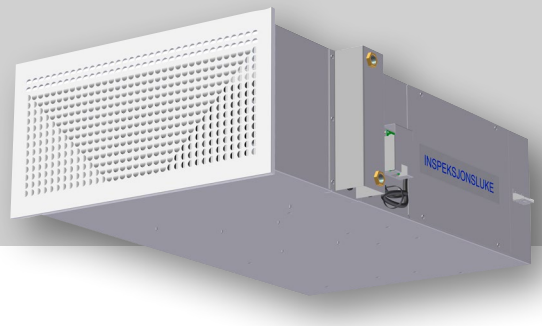


Diagram 26

THROW LENGTH

Throw lengths can be dimensioned in our simulation program, Aurasim. aurasim.no

Pegasus Comfort



DISTRIBUTION PATTERN

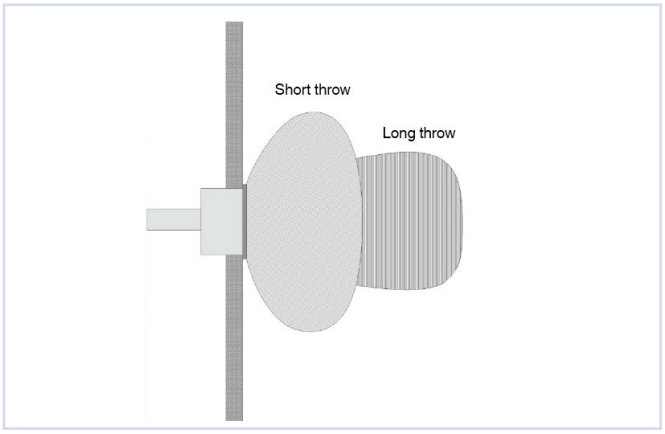


Figure 5, Example of flow pattern - front panel with LØV perforation

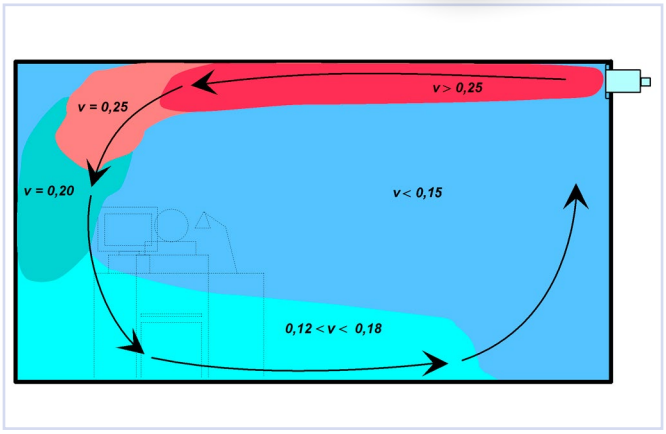


Figure 6, Example of velocity distribution

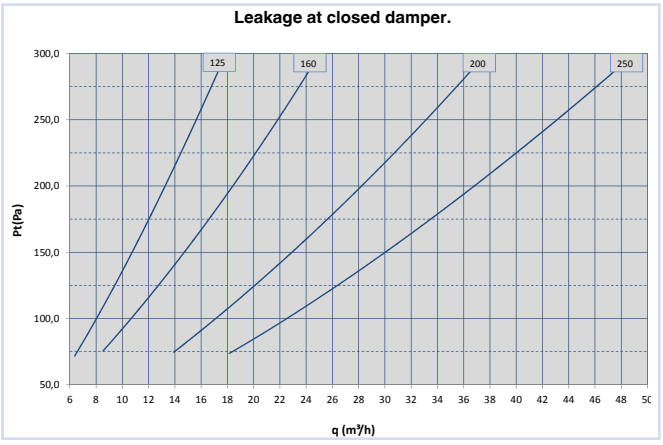


Figure 7, Leakage amount Pegasus Comfort

MOUNTING

Pegasus Comfort is mounted as a wall diffusor, with a suspension bracket in the back edge of the unit with a threaded rod or belt, see figure 8 and 9 below.

ADJUSTMENT

On Pegasus Comfort, Belimo PC-Tool or ZTH-GEN is used to make the necessary settings, see figure 10.
Max. working pressure waterside 10 bars.
Max. test pressure waterside 15 bars.

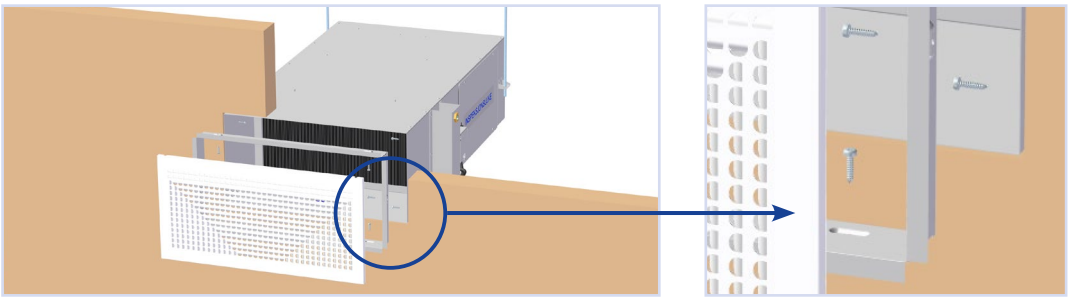


Figure 8, Pegasus-Comfort B Installation

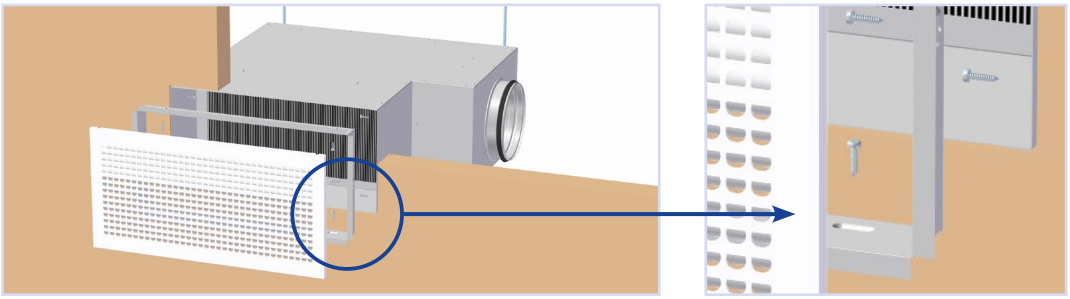
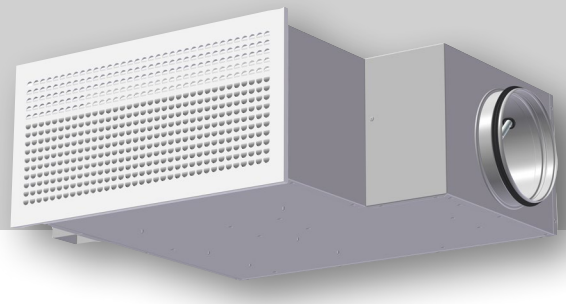


Figure 9, Pegasus-Comfort S Installation

Pegasus Comfort



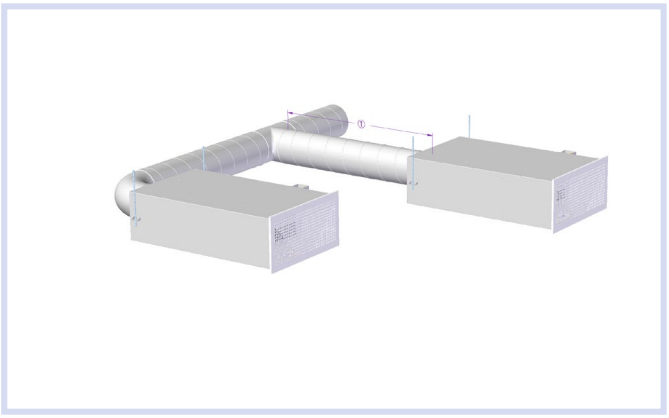


Figure 10, Pegasus-Comfort B installation duct system
① Recommended min. 5 x Dia.

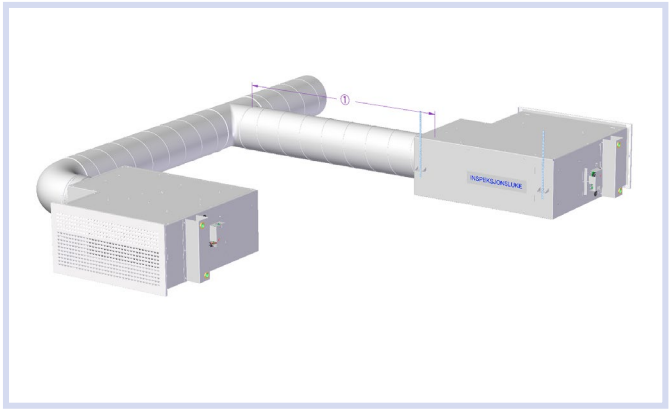


Figure 11, Pegasus-Comfort S installation duct system
① Recommended min. 5 x Dia.

KO factors Pegasus Comfort LØV

Type	Position	Frequency (Hz) 63	125	250	500	1k	2k	4k	8k
125-B	Open	0	-1	-2	-2	-6	-10	-11	-10
	Closed	4	-2	-6	-8	-8	-8	-6	-8
125-S	Open	-2	0	0	-3	-5	-11	-13	-10
	Closed	-2	-7	-6	-9	-8	-7	-5	-10
160-B	Open	4	1	-3	-3	-5	-11	-12	-10
	Closed	2	-5	-7	-9	-6	-7	-6	-10
160-S	Open	2	2	-1	-3	-5	-11	-12	-10
	Closed	6	3	0	-5	-6	-11	-9	-8
200-B	Open	3	2	-1	-2	-5	-9	-11	-10
	Closed	4	1	-3	-7	-6	-8	-8	-10
200-S	Open	3	1	-2	-2	-5	-10	-13	-11
	Closed	3	1	-3	-9	-6	-8	-7	-10
250-B	Open	1	1	-2	-2	-5	-13	-13	-10
	Closed	2	-1	-3	-7	-8	-10	-7	-5
250-S	Open	3	2	-1	-1	-6	-14	-13	-10
	Closed	4	3	-2	-6	-7	-11	-8	-6

Table 4

KO factors Pegasus Comfort Opus

Type	Position	Frequency (Hz) 63	125	250	500	1k	2k	4k	8k
125-B	Open	5	3	-2	-2	-5	-12	-13	-11
	Closed	4	-1	-4	-7	-8	-8	-6	-7
125-S	Open	5	4	0	-3	-6	-13	-13	-9
	Closed	3	-1	-4	-7	-8	-9	-5	-9
160-B	Open	5	3	-2	-2	-6	-14	-13	-9
	Closed	6	0	-5	-8	-7	-9	-5	-9
160-S	Open	5	6	1	-3	-7	-14	-13	-10
	Closed	4	1	-3	-7	-6	-9	-7	-8
200-B	Open	5	5	1	-2	-5	-13	-12	-10
	Closed	5	2	-2	-5	-6	-7	-10	-8
200-S	Open	6	5	0	-2	-6	-14	-13	-10
	Closed	5	3	-2	-7	-7	-8	-8	-7
250-B	Open	4	3	-1	-2	-6	-15	-13	-9
	Closed	4	0	-2	-7	-9	-11	-7	-4
250-S	Open	4	3	-1	-1	-5	-15	-15	-11
	Closed	1	-3	-5	-9	-6	-8	-6	-8

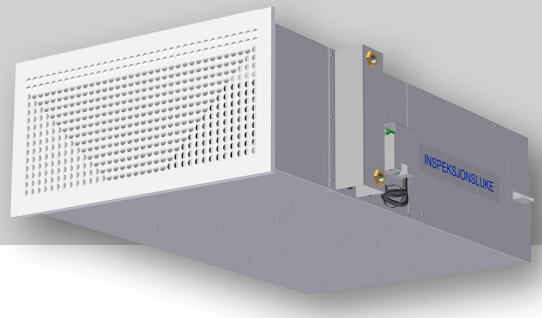
Table 5

Dim	Spigot	Pegasus Comfort-LØV attenuation figure 63	125	250	500	1k	2k	4k	8k
125	back	21	12	18	11	8	8	9	13
	side	23	10	16	16	11	12	15	19
160	back	16	12	16	9	7	8	11	15
	side	18	10	15	14	11	13	15	19
200	back	21	10	16	8	7	9	12	14
	side	19	9	17	12	10	13	15	17
250	back	11	9	14	6	7	10	11	13
	side	11	8	12	11	11	13	14	18

Table 6, static sound attenuation incl. end reflection
Pegasus Comfort-LØV

Dim	Spigot	Pegasus Comfort-Opus attenuation figure 63	125	250	500	1k	2k	4k	8k
125	back	15	17	19	13	9	10	14	17
	side	17	13	16	16	11	16	16	22
160	back	15	15	17	10	8	10	13	18
	side	17	11	16	15	12	15	17	21
200	back	18	12	16	9	9	11	14	16
	side	17	10	17	13	11	15	16	21
250	back	11	8	14	7	8	11	13	16
	side	11	9	15	11	10	13	14	18

Table 7, static sound attenuation incl. end reflection
Pegasus Comfort-Opus



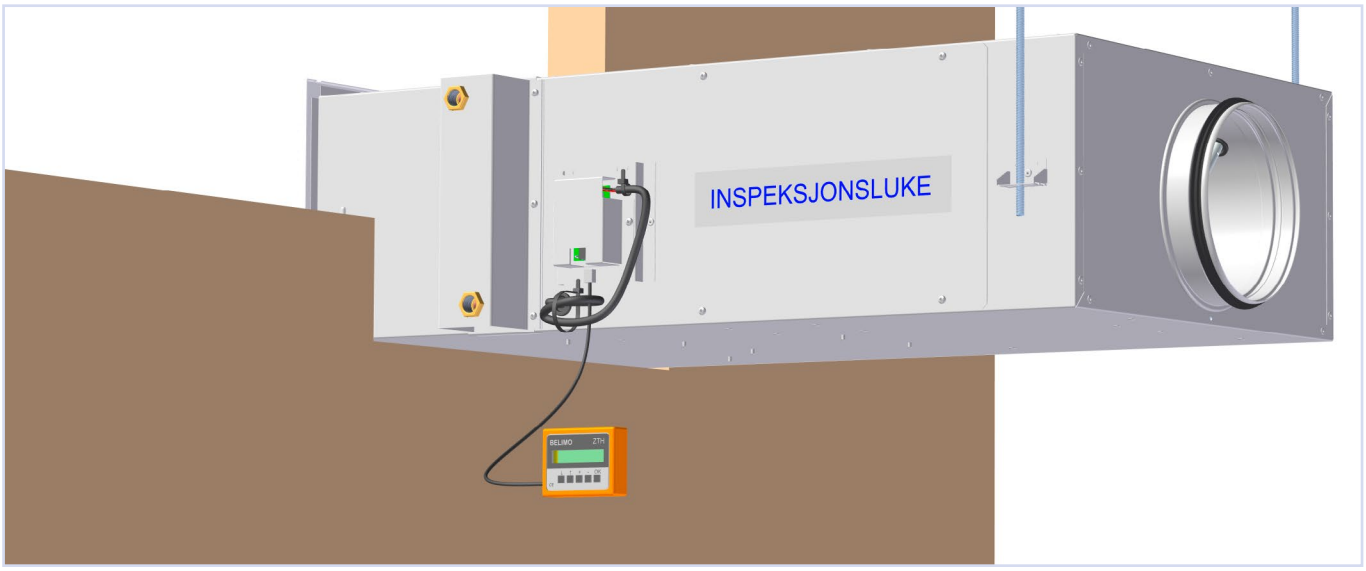


Figure 12, ZK6-GEN cable with 2 x RJ12 contacts to be used between ZTH and PCB

ENVIRONMENT

Inquiries concerning building product declarations may be directed to one of our sales representatives, or be found on our Web site: www.trox.no

MAINTENANCE

There are no special requirements for maintenance.