

Installation and Maintenance Instructions for the LTCW Sky Wing Power Roof Ventilator

1. General

The Sky Wing is an extract air fan, designed for use in most extract air systems in comfort ventilation applications, where the air has moderate impurity content. The fan should preferably be mounted on an LTSA roof duct. This provides a fire-resistant and sound-absorbent passage through the roof and tight connection to the extract air duct. The fan can also be mounted on an existing chimney by means of the LTSZ-A mounting frame. In both cases, the hinged fan can be opened for inspection and cleaning both fan and extract air duct.

2. Design

The Sky Wing is made of aluminium-zinc-plated sheet steel and its standard casing is made of sheet metal with a black Prelac painted finish. The anti-corrosion properties of the Sky Wing conform to the provisions of Environmental Class C4 in accordance with BSK 99 and SS-EN-ISO 12944-2 Standards.

The fan has foil-covered internal insulation. The fan impeller is of Swegon patented Wing type with an axial-centrifugal airflow path. The design of the fan and its suspension in the casing also enable a substantially low vibration level.

The LTCW is produced in sizes 040, 060 and 090.

3. Installation

The Sky Wing power roof ventilator is well-suited for installation on an LTSA roof duct or on an LTSZ-A mounting frame. This makes it simple to open the hinged roof ventilator for inspection and cleaning. The LTSZ-B jointing duct can be utilised if the roof has a steep slope and if the roof structure is thick. Several accessories are produced for various installation arrangements. These accessories and installation examples are presented on the next page.

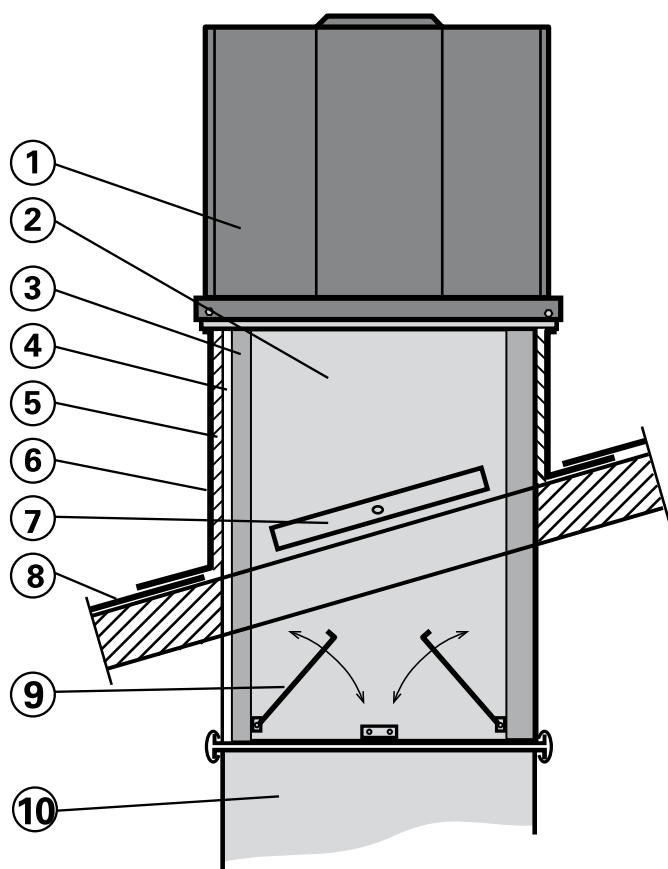


Sky Wing mounted on LTSA Power Roof Ventilator.



The fan is supplied with lifting lugs to facilitate handling. These should be removed after the fan has been lifted onto the roof duct/chimney.

Installation example LTSA Roof Duct



1. Sky Wing Power Roof Ventilator
2. LTSA Roof Duct
3. 50 mm thick insulation conforming to Fire-resistance Class EI 30, internally clad with perforated sheet metal.
4. Conduit for electric cable
5. Structural panel (not supplied by Swegon)
6. Roofing felt, sheet metal or similar weatherproof roofing material (not supplied by Swegon)
7. Pivotal mounting brackets.
8. Existing roofing material (not supplied by Swegon)
9. LTSZ-F automatic shutter that automatically opens when the fan starts up and remains open as long as the fan is running. Automatically shuts if the fan stops to prevent cold down-flow air currents.
10. LTSZ-B jointing duct, LTSZ-C bottom duct, LTSZ-J louvre damper or extract air duct.

Both the LTSA roof duct and LTSZ-B jointing duct are equipped with slip-clamps for jointing to rectangular ducts.

If an LTSZ-C bottom duct is used, a circular duct has to be connected sideways. For maximum tightness against leakage, use duct components fitted with rubber gasket.

4. Electrical Connections

If the speed of the LTCW power roof ventilator is not to be regulated, it is advisable to wire the fan across a TBCW-101 enclosed protective motor contactor.

If the speed is to be regulated, use TBCW-12-a- or TBCW-

14-a- (Q2-Q5) items of control equipment, depending on the mains supply voltage.

For wiring and other instructions, see the separate instructions for the TBCW control equipment.

Power Roof Ventilator Connected On-line across an Enclosed Protective Motor Contactor

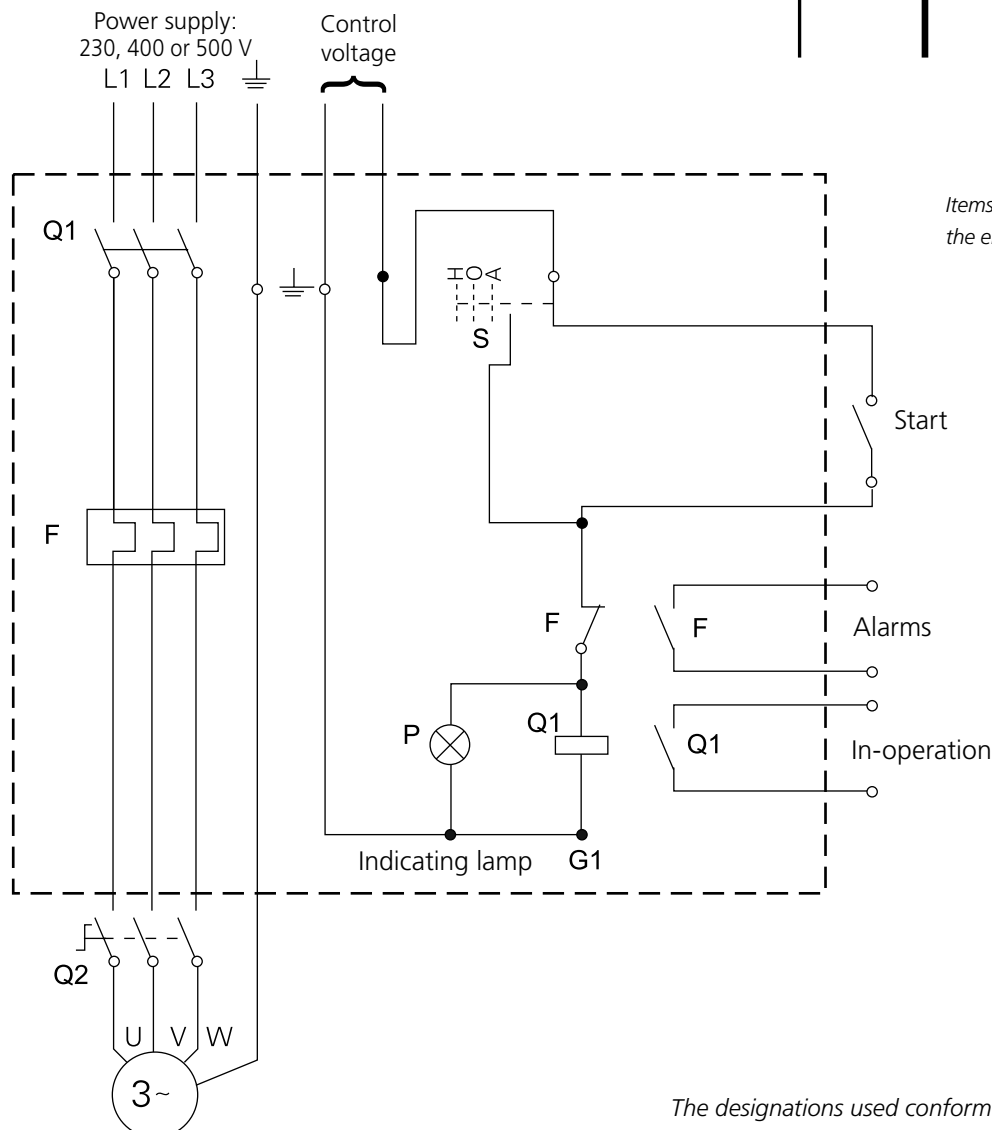
Function

G1 = Extract air fan

Q = Starter

Start/stop across a remote timer or switch. Constant speed. An alarm is initiated in the event of over-current condition.

Connection to Mains Power Supply



Items within the dashed frame are included in the enclosed protective motor contactor.

F = Over-current protection
G1 = Extract air fan
P = Indicating lamp
Q1 = Contactor
Q2 = Protective isolating switch
S = Switch

The designations used conform to EN 61346-2:2000 Standard.

5. Maintenance

5.1 Accessibility

The upper section of the fan can be easily removed for inspection and cleaning. Simply remove the bolts that secure the upper section. If necessary, both inner partitions can also be lifted straight out of their holders. If the Sky Wing is mounted on an LTSA roof duct, the hinged fan can also be opened and is then accessible from underneath.

A removable cover is provided on the side for access to the electrical connections and the control equipment.

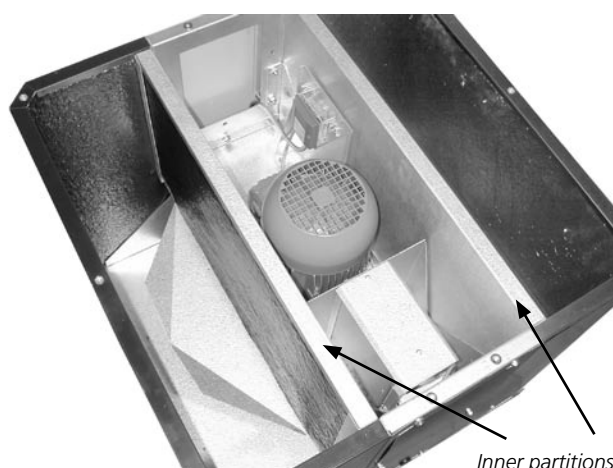
5.2 Intervals between Inspections

Check the condition of the fan and motor and clean them at least twice a year.

5.2 Cleaning

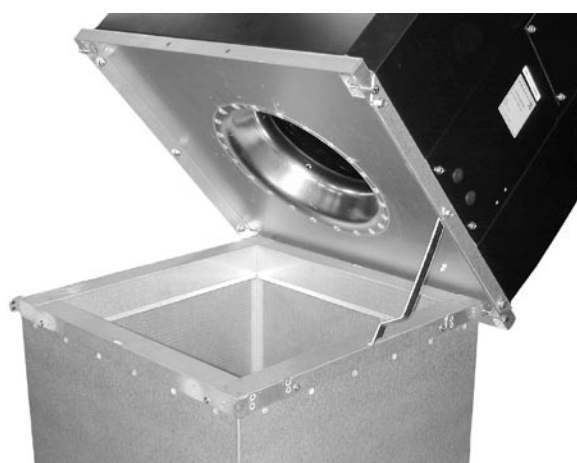
Impurities on the fan should be removed by vacuum-cleaning or wiping with a cloth dipped in an appropriate mild, non-corrosive detergent, depending in the type of impurities.

The motor should be brushed off or carefully with a damp cloth that has been dipped in a mild, non-corrosive detergent.



Inner partitions

The whole upper section can be easily dismantled for cleaning and inspection. Both inner partitions (indicated by arrows above) can also be lifted straight up out of their grooves.



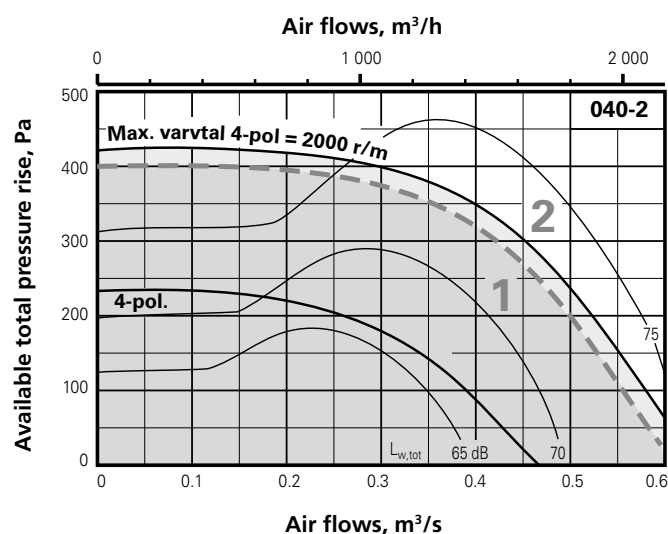
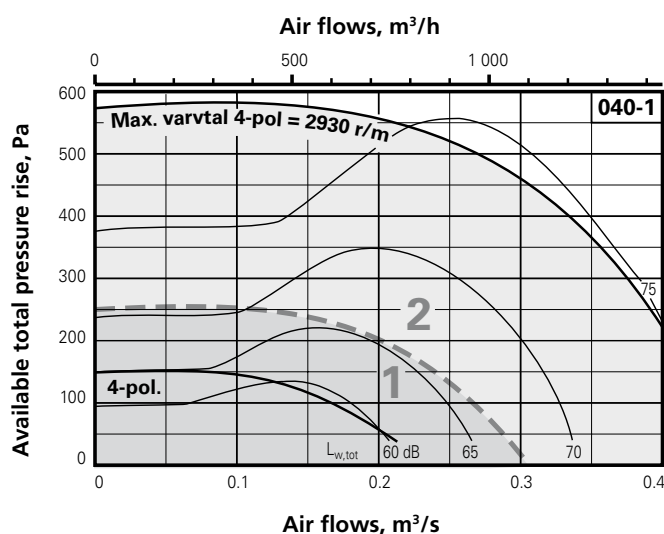
If the Sky Wing is mounted on an LTSA roof duct, the entire fan package is hinged. The support brace swings out from the bottom of the roof ventilator.



The electrical connections and the control equipment are accessible after removing a cover on the side of the roof ventilator.

6. Sizing

Sky Wing 040



Motor data

Motor option	Motor-output kW	Max. current A	Speed r/m*	Efficiency %	Voltage V
4-pole	0,25	1,2/0,69	1400(2930)	65,2	3x230Δ/3x400Y

*() = Max speed with frequency inverter

Motor data

Motor option	Motor-output kW	Max. current A	Speed r/m*	Efficiency %	Voltage V
4-pole	0,25	1,2/0,69	1400(2000)	65,2	3x230Δ/3x400Y

*() = Max speed with frequency inverter

NB! The size 040 Sky Wing is not available with built-in frequency inverter.

Acoustic Calculations

The sound power level emitted to the surroundings has been obtained from measurements in accordance with the ISO 3741 method and the sound power level emitted to the ducting has been obtained from measurements in accordance with the ISO 5136 method.

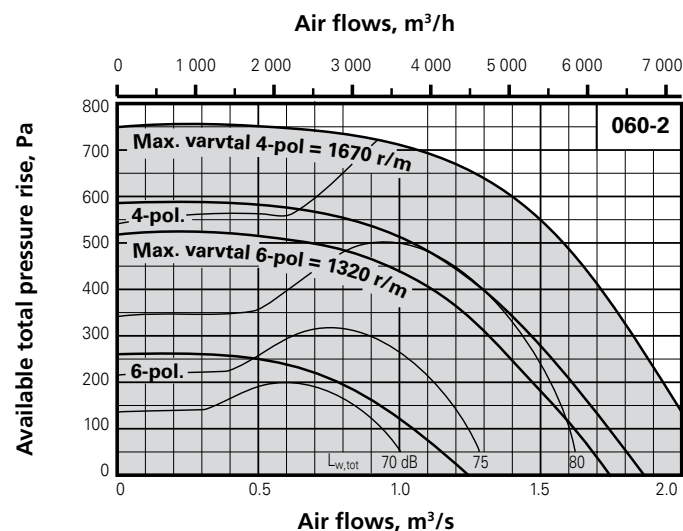
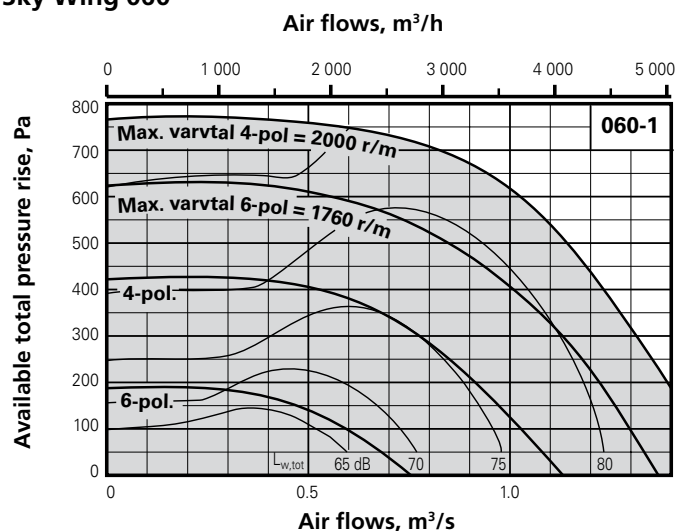
The total sound power level to the surroundings $L_{w,tot}$ can read in each fan chart. The following formula can be used for breaking down the sound into octave bands: $L_{w,ok} = L_{w,tot} + K_{ok}$. K_{ok} can be obtained from the table.

The following formula can be used for calculating the dB(A)-corrected sound power level emitted to the surroundings: $L_{wA} = L_{w,tot} + K_A$.

Correction factor K_{ok} for various sound paths and for calculating the sound power level in dB(A) emitted to the surroundings

Sound path	Zone in chart	Octave band, no. / centre frequency, Hz								dB (A)
		1 63	2 125	3 250	4 500	5 1000	6 2000	7 4000	8 8000	
To the surroundings	1	-7	-6	-5	-9	-9	-13	-20	-24	-5
	2	-17	-13	-11	-5	-3	-12	-23	-19	-1
To the ducting	1	-11	-6	-5	-12	-16	-11	-13	-20	
	2	-9	-13	-11	-5	-7	-11	-10	-15	

Sky Wing 060



Motor data

Motor option	Motor-output kW	Max current A	Speed r/m*	Efficiency %	Voltage V
4-pole	1,1	4,35/2,51	1440(2000)	77	3x230Δ /3x400Y
6-pole	0,75	3,35/1,95	910(1760)	72	3x230Δ /3x400Y

*() = Max speed with frequency inverter

Motor data

Motor option	Motor-output kW	Max current A	Speed r/m*	Efficiency %	Voltage V
4-pole	1,5	5,51/3,18	1420(1670)	80,5	3x230Δ /3x400Y
6-pole	0,75	3,38/1,95	910(1320)	72	3x230Δ /3x400Y

*() = Max speed with frequency inverter

The size 060 Sky Wing can be supplied either with a built-in or separate frequency inverter.

Acoustic Calculations

The sound power level emitted to the surroundings has been obtained from measurements in accordance with the ISO 3741 method and the sound power level emitted to the ducting has been obtained from measurements in accordance with the ISO 5136 method.

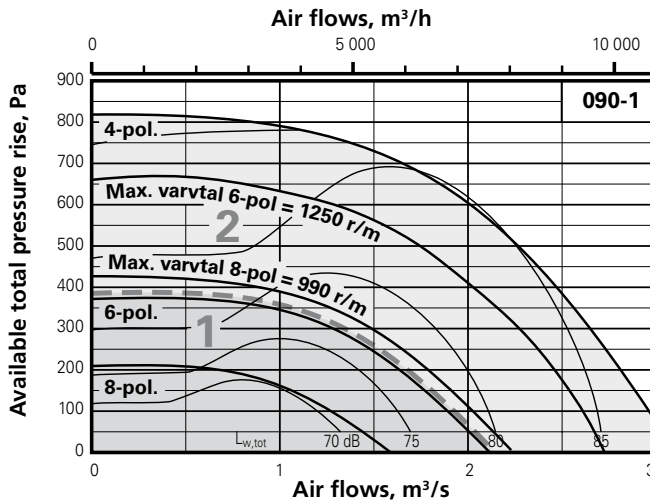
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The following formula can be used for calculating the dB(A)-corrected sound power level emitted to the surroundings: $L_{wA} = L_{w,tot} + K_A$.

Correction factor K_{ok} for various sound paths and for calculating the sound power level in dB(A) emitted to the surroundings

Sound path	Octave band, no. / centre frequency, Hz								dB (A)
	1	2	3	4	5	6	7	8	
To the surroundings	-7	-6	-5	-9	-9	-13	-20	-24	-5
To the ducting	-11	-6	-5	-12	-16	-11	-13	-20	

Sky Wing 090

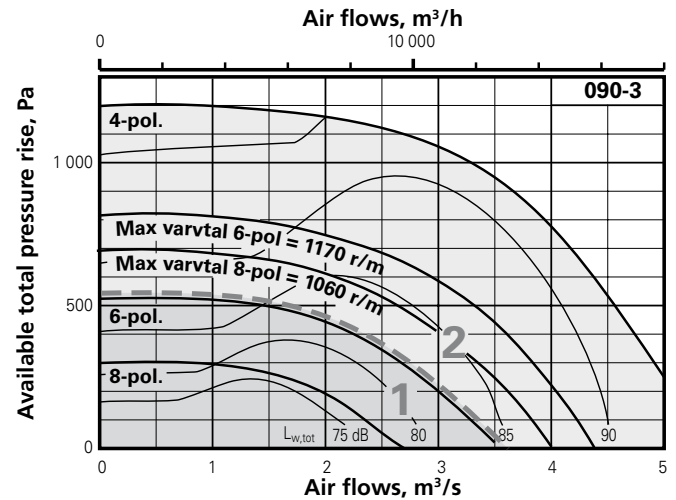


Motor data

Motor-option	Motor-output kW	Max. current A	Speed r/m*	Efficiency %	Voltage V
4-pole	2,2	7,87/4,54	1420(1420 ¹)	83	3x230Δ/3x400Y
6-pole	1,5	7,45/4,3	940(1250)	77,5	3x230Δ/3x400Y
8-pole	0,75	4,0/2,33	700(990)	72,6	3x230Δ/3x400Y

*() = Max speed with frequency inverter

1) Max frequency from frequency inverter to 4-pole motor: 50 Hz.

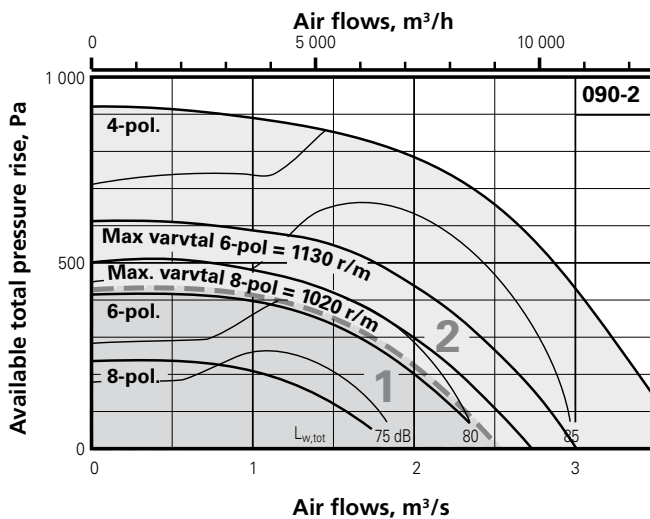


Motor data

Motor-option	Motor-output kW	Max. current A	Speed r/m*	Efficiency %	Voltage V
4-pole	7,5	24,6/14,2	1470(1470 ¹)	88,6	3x230Δ/3x400Y
6-pole	3	12,1/7	935(1170)	82,5	3x230Δ/3x400Y
8-pole	2,2	9,4/5,4	710(1060)	84	3x230Δ/3x400Y

*() = Max speed with frequency inverter

1) Max frequency from frequency inverter to 4-pole motor: 50 Hz.



Motor data

Motor-option	Motor-output kW	Max. current A	Speed r/m*	Efficiency %	Voltage V
4-pole	3	10,3/5,94	1420(1420 ¹)	83,5	3x230Δ/3x400Y
6-pole	1,5	7,45/4,3	940(1130)	77,5	3x230Δ/3x400Y
8-pole	1,1	5,7/3,3	700(1020)	74	3x230Δ/3x400Y

*() = Max speed with frequency inverter

1) Max frequency from frequency inverter to 4-pole motor: 50 Hz.

Acoustic Calculations

The sound power level emitted to the surroundings has been obtained from measurements in accordance with the ISO 3741 method and the sound power level emitted to the ducting has been obtained from measurements in accordance with the ISO 5136 method. The total sound power level to the surroundings $L_{w,tot}$ can be read in each fan chart. The following formula can be used for breaking down the sound into octave bands: $L_{w,ok} = L_{w,tot} + K_{ok}$. K_{ok} can be obtained from the table. The following formula can be used for calculating the dB(A)-corrected sound power level emitted to the surroundings: $L_{wA} = L_{w,tot} + K_{A}$.

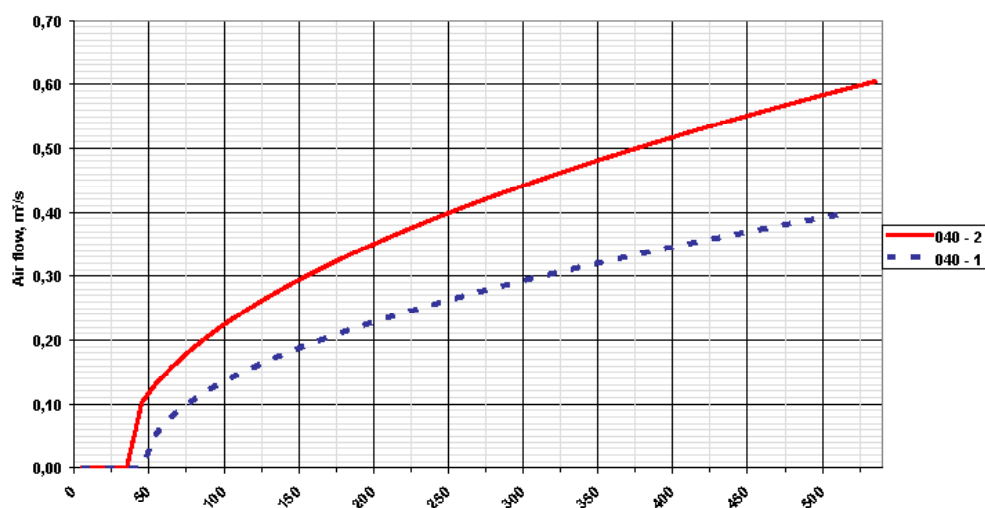
Correction factor K_{ok} for various sound paths and for calculating the sound power level in dB(A) emitted to the surroundings

Sound path	Zone in chart	Octave band, no. / centre frequency, Hz								dB (A)
		1 63	2 125	3 250	4 500	5 1000	6 2000	7 4000	8 8000	
To the surroundings	1	-10	-10	-12	-3	-8	-15	-19	-19	-5
	2	-7	-6	-5	-9	-9	-13	-20	-24	-5
to the ducting	1	-8	-8	-10	-8	-13	-15	-19	-14	
	2	-11	-6	-5	-12	-16	-11	-13	-20	

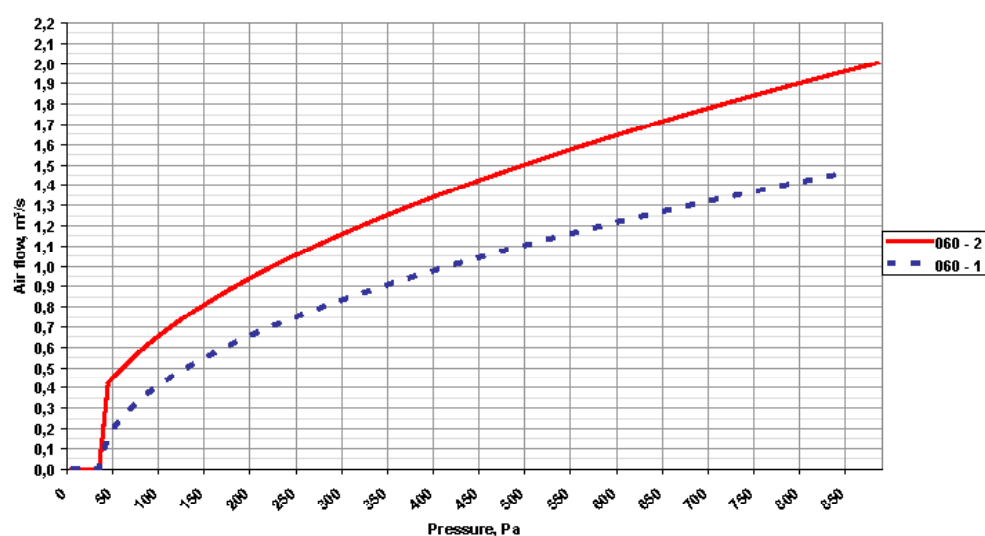
Auxiliary diagram for air flow meter

The pressure reading on the manometer corresponds to a relevant air flow which can be read in the chart below.

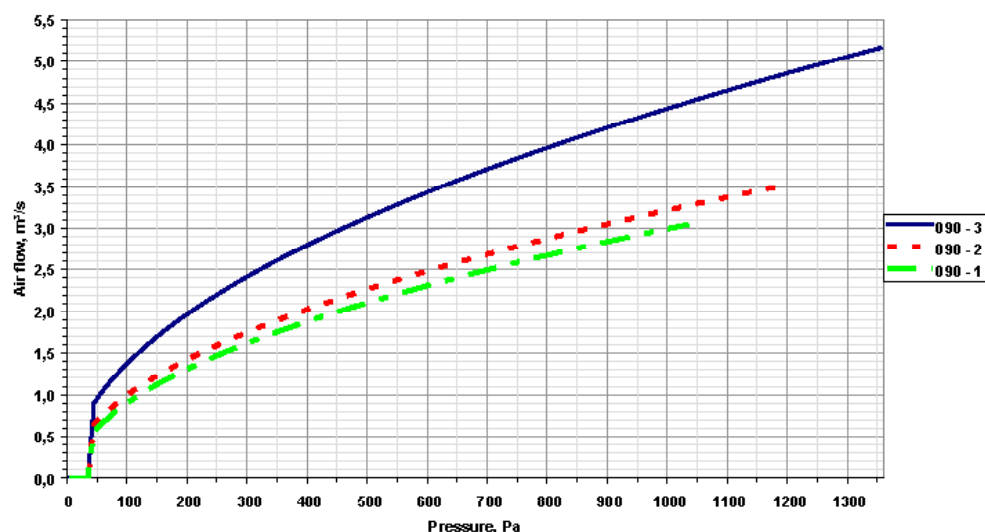
Sky Wing 040



Sky Wing 060

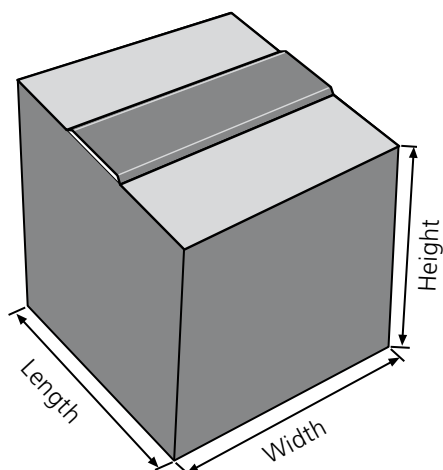


Sky Wing 090



Dimensions

Sky Wing



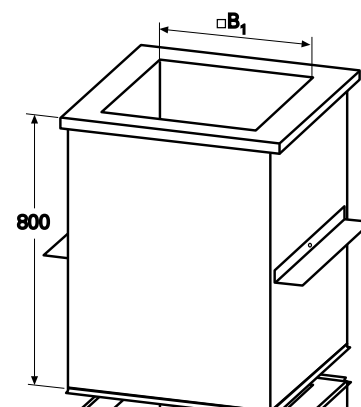
Size	Length	Width	Height	Max. wgt.
LTCW 040-1	495	495	430	44 kg
LTCW 040-2	495	495	430	46 kg
LTCW 060-1	695	695	600	80 kg
LTCW 060-2	695	695	600	85 kg
LTCW 090-1	995	995	850	145 kg
LTCW 090-2	995	995	850	155 kg
LTCW 090-3	995	995	850	200 kg

Size	B	B ₁	B ₂	C	D	E	Weight	
							L TSA	L TSZ-C
040	400	300	412	167	203	—*	29	12
060	600	500	612	167	203	290	46	21
090	900	800	912	167	203	400	63	40

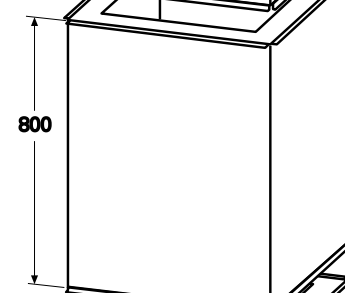
*) The size 040 unit has one connection on each side, laterally centred.

Accessories

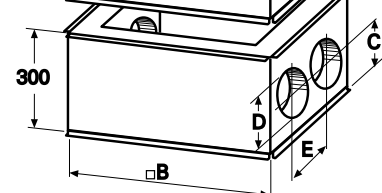
Roof Duct LTSA



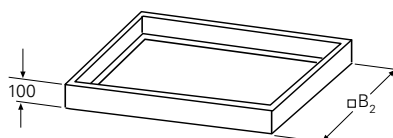
Jointing Duct LTSZ-B



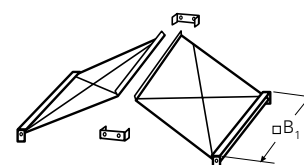
Bottom Duct LTSZ-C



Mounting Frame LTSZ-A



Automatic Shutter LTSZ-F



Louvre Damper LTSZ-J

