BLB

Mixing box for two duct systems

QUICK FACTS

- Low pressure drop independent of the damper position heating/cooling
- Available in seven sizes
- Supplied with electric actuator as standard
- There is inspection glass on both sides, to easily check performance

FLOW RANGE			
BLB Size	l/s		
	1.0 m/s	5.0 m/s	7.0 m/s
100	8	39	55
125	12	61	86
160	20	100	140
200	31	157	220
250	49	245	340
315	78	390	545
400	125	630	880

Swegon

Technical description

Design

- BLB is a mixing box for mixing hot and cold air in two duct systems.

Function

- Hot and cold air are mixed in the mixing section. The ratio of hot/cold air is regulated using a damper in the mixing section, see figure 1.
- The position of the damper is adjusted with the motor (ST) according to pulses from the controller (RC1 and room sensor GT1) or from the room controller LUNA RE-S MB BLB.
- Control is by means of an electronic controller or position sensor with control system 2-10 V or 0-10 V (DC), see the diagram for the damper position in relation to the input voltage.
- In order to balance the difference in air flow that arises when the hot and cold air are mixed it's advisable to place a CAV/constant flow damper (REACT) or a DCV damper for demand-controlled air flow after BLB, see figure 1.
- A sound attenuator can be installed after the CAV/DCV damper if necessary.

Materials and surface treatment

- The box is made of galvanised sheet steel.
- The damper in the mixing box has filter cloth seals.
- The connection sleeves are fitted with rubber seal rings.

Accessories

LUNA RE-S MB BLB:

- Room controller for use with the electric actuator in BLB.
- The product is prepared for mixing with a neutral zone on one output, which is suitable when controlling the mixing box.
- See the separate product datasheet for detailed information about the product.

Motor options

- The mixing box comes as standard with an electric motor designed for electric control systems.

Electric motor

- The motor is mounted on the cold side by default and at 0 V is closed to the cold air duct.
- The mixing box as standard is equipped with Belimo motor NM24A-MF.
- When ordering, you must specify the working range that the control voltage should be set for: 0-10 V (BLB-0) or 2-10 V (BLB-1).
- For room controller LUNA RE-S MB BLB the setting should be 0-10 V.

Maintenance

- The mixing box requires inspection and servicing, see more detailed instructions in the MIS instruction (Installation-Commissioning-Maintenance). The MIS instruction is available for download from www.swegon.se
- If duct cleaning is required, a cleaning hatch should be designed in the vicinity of the mixing box.

Environment

The Building Materials Declaration is available from www.swegon.se.

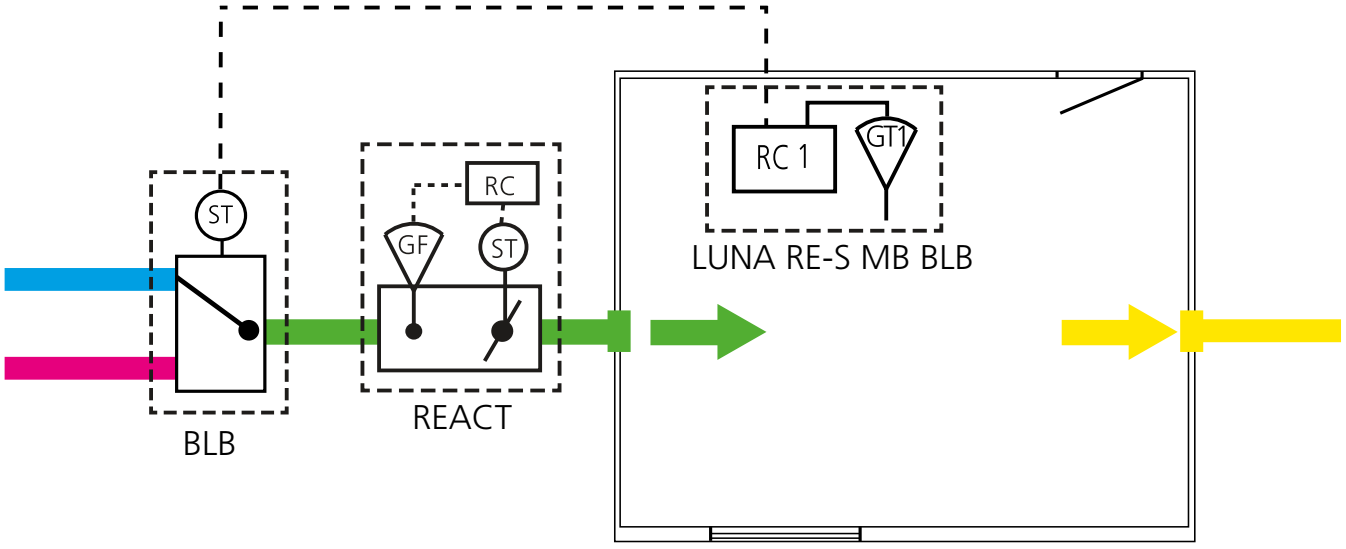
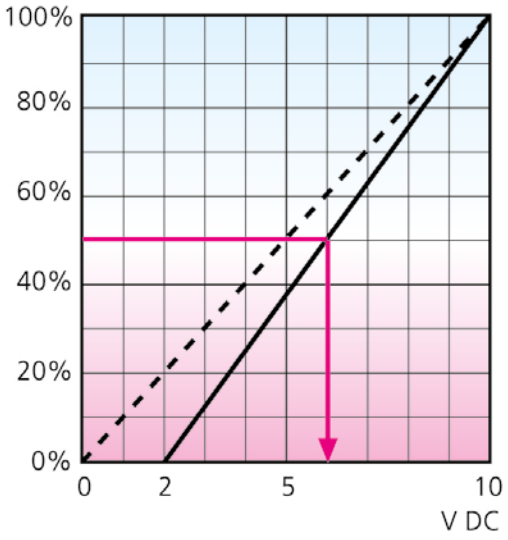


Figure 1. Description of BLB functions for electrical control systems in combination with REACT and LUNA RE-S MB BLB.

Control signals electric actuator

- The diagram below shows the position of the mixing damper in relation to the control signal for the electric actuator.
- 100% is full cooling. 0% is full heating.
- For best control, the room controller should be set for mixing box control, i.e. have its neutral position at 5 V.
- On LUNA RE-S MB BLB, this function is selected with the help of the hand-held terminal LUNAd T-CU. See the commissioning instruction for LUNA RE-S MB.



Wiring diagram

- Control signal from the room controller is connected to input Y (cable labelled 3).
- Output U is an actual value signal.
- Design power consumption: 5 VA, applies to BLB motor and LUNA RE-S MB BLB.

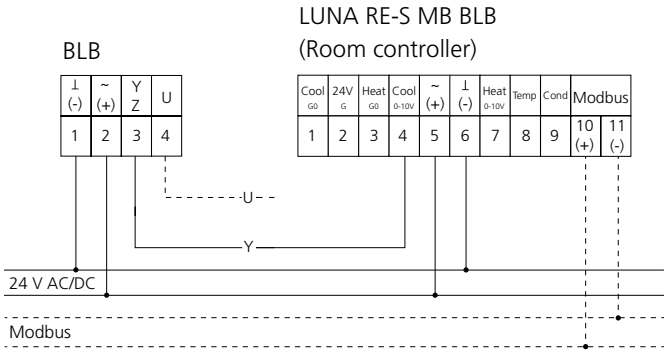


Figure 2. Wiring diagram, electric motor, Belimo NM24A-MF.

Sizing

Sound power level

The diagrams for the various sizes show the total generated sound power (L_{Wtot}dB), as a function of the air flow and pressure drop across the damper. By correcting L_{Wtot} with the correction factors from table 1, the sound power level for each octave band ($L_W = L_{Wtot} + K_{OK}$) can be obtained.

Acoustic data

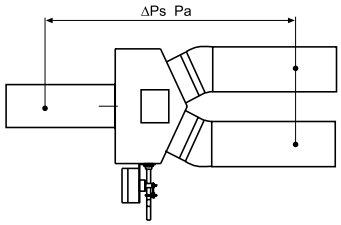
Sound power level L_W (dB)
Table – Correction factor, K_{ok}

Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	0	-5	-7	-14	-25	-33	-36	-39
125	0	-4	-7	-14	-24	-30	-34	-36
160	0	-4	-6	-13	-23	-29	-33	-34
200	0	-4	-7	-15	-22	-27	-31	-32
250	0	-4	-10	-16	-22	-27	-32	-32
315	0	-4	-10	-16	-22	-27	-32	-32
400	0	-4	-10	-15	-22	-26	-31	-32
Tol. ±	2	2	2	2	2	2	2	2

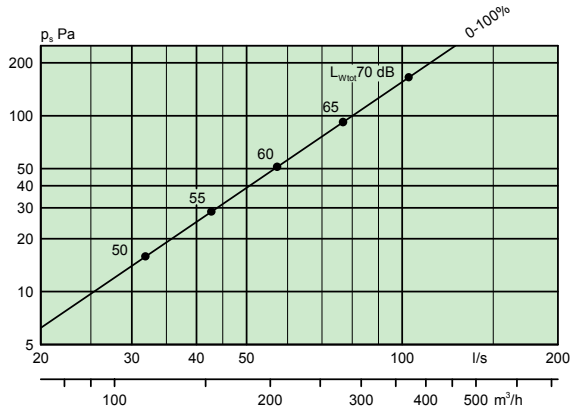
Sizing diagram

Air flow – Pressure drop – Sound level

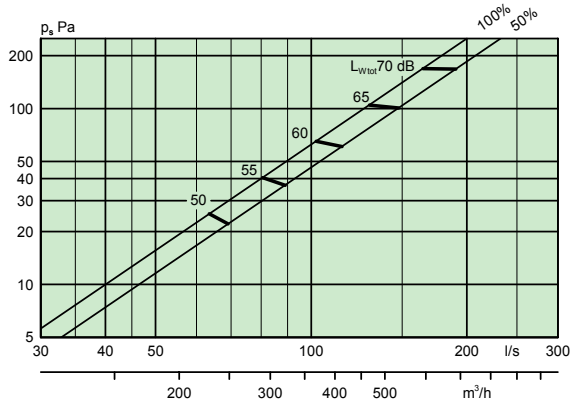
- The diagrams should not be used for commissioning.
- The diagrams show pressure and flow lines at various damper angles, 50% is the neutral position and 100% open to the hot or cold duct.



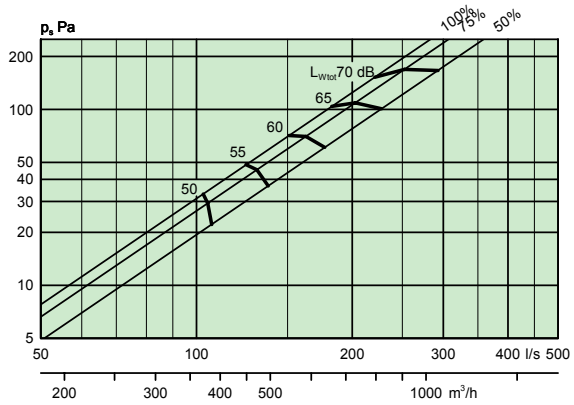
BLB 100



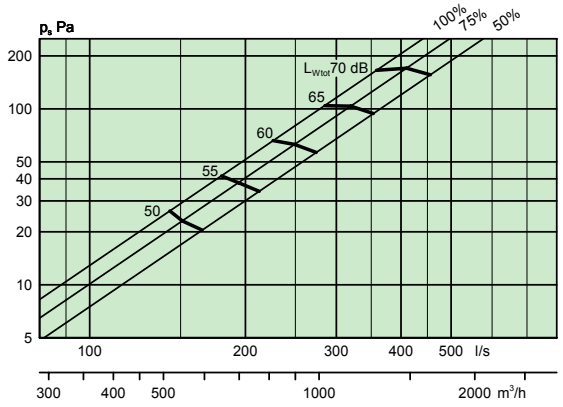
BLB 125



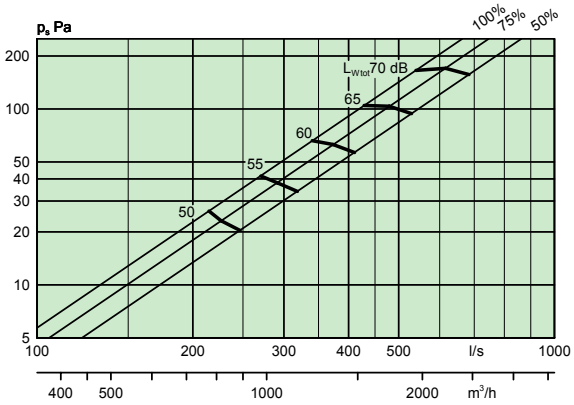
BLB 160



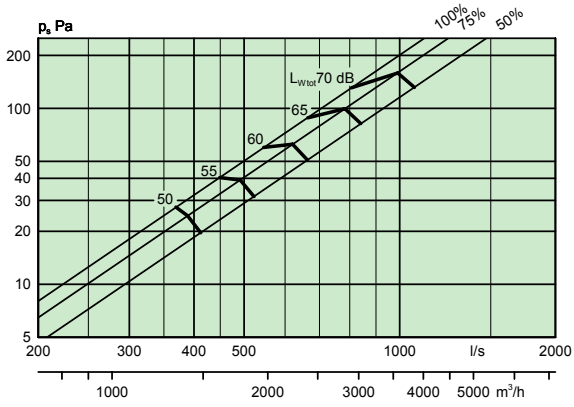
BLB 200



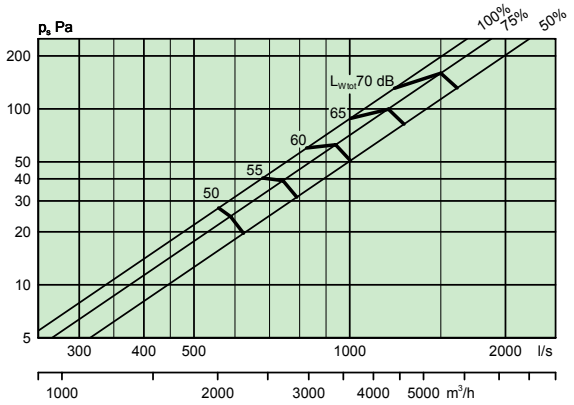
BLB 250



BLB 315



BLB 400



Dimensions and weights

Size	Dimensions (mm)								Weight (kg)
	A	W	C1	ød	D	E	F	V	
100	210	260	129	99	198	79	60	30	4.9
125	210	310	129	124	232	94	60	30	5.5
160	210	385	129	159	284	115	60	30	7.0
200	250	450	129	199	338	136	60	30	8.4
250	300	550	129	249	406	161	60	30	11.3
315	365	660	271	314	498	194	60	30	18.0
400	450	830	271	399	612	239	60	30	25.0

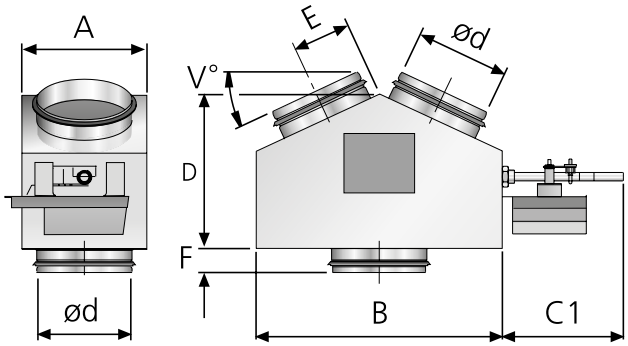


Figure 4. Dimensions, BLB.

Specification

Product

Mixing box	BLB	d	-a	-bbb
Version				
Motor setting for electric control system: 0 = Motor 0-10 V 1 = Motor 2-10 V				
Dimensions: 100, 125, 160, 200, 250, 315, 400				

Accessories

Room controller 0-10 V	LUNA RE-S MB BLB

Specification text

Swegon's mixing box, type BLB, with the following functions:

- Constant pressure drop independent of the mixing position
- Inspection glass
- Factory-fitted motor for 0-10 V DC control

Accessories

Room thermostat	LUNA RE-S MB BLB	
Size:	BLBd a - bbb	xx items