

BLBd

Mixing box for dual duct systems



FUNCTION

The BLB is a mixing box for mixing warm and cold air in dual duct systems.

QUICK FACTS

- Low pressure drop irrespective of damper setting for heating / cooling
- Can be supplied with either electric or pneumatic actuator
- Available in seven sizes
- Inspection window for convenient functional inspection

QUICK GUIDE

BLBd Size	FLOW RANGE		
	1,0 m/s	5 m/s	7 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

The pneumatic version of BLB is only available in sizes 100 to 315.

DESIGN

The mixing box is available in one model and seven sizes. The box is made of galvanized sheet steel. Filter cloth is used to seal the damper. The spigots are fitted with rubber sealing rings. The standard version of the mixing box is supplied with a Belimo electric actuator or a pneumatic actuator of our own design. The motor is attached to the cold air duct as standard and at "0" pressure or 0 V the damper shuts off the cold air flow. The BLB is supplied with a control signal range of 2-10 V DC as standard. When the BLB is incorporated in an erimix system the 0-10 V signal range must be chosen.

FUNCTION

Warm and cold air flows are mixed in the mixing section (SP1) of the box. The proportion of warm to cold air is regulated by the damper in the mixing section. The position of the damper is regulated by the actuator (ST), which is controlled by impulses from the control unit (RC1 and the room sensor GT1). An electronic regulator or level indicator with a 2-10 V or 0-10 V (DC) control system is used. The diagram shows the damper position in relation to the input voltage. It is recommended that a constant flow damper (SP2) or a damper for

demand-controlled air flow is installed after the mixing box. This second damper is needed to balance any variations in air flow that might result from resetting the warm/cold air mixing proportions. This function is included in the erimix system. For more information see the e.r.i.c. catalogue.

SPECIAL VERSIONS

Please contact your nearest sales office for further information.

MAINTENANCE

The mixing box is equipped with a plexiglass inspection window. If cleaning is required, an access panel should be installed near to the mixing box.

ENVIRONMENT

The declaration of construction materials is available on our website or may be ordered from one of our sales offices.

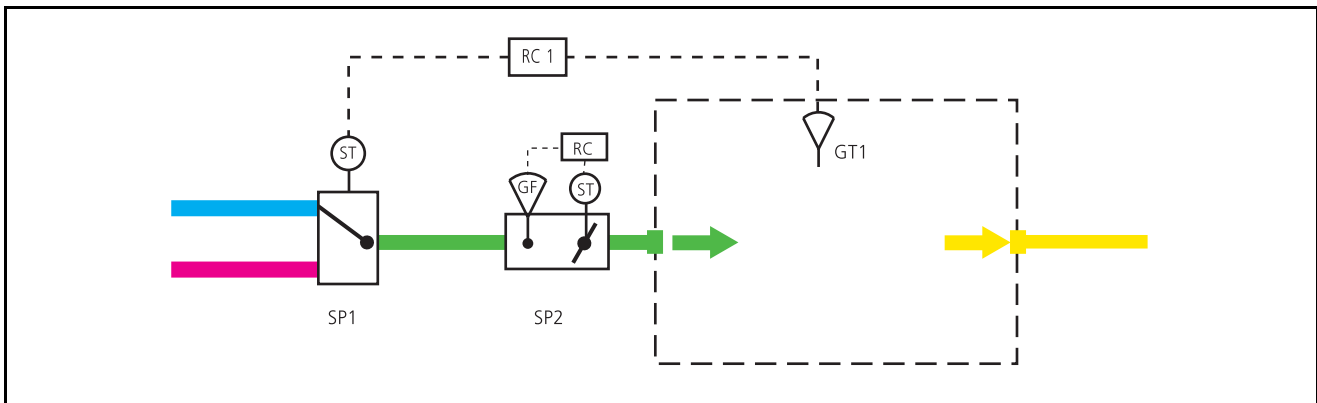


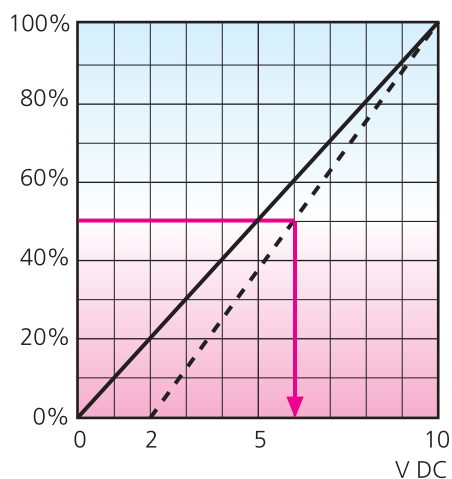
Figure 1.

Control signals, electrical actuator

The diagram below shows the mixing percentage in relation to the electrical control signal. 100% corresponds to full cooling, 0% to full heating.

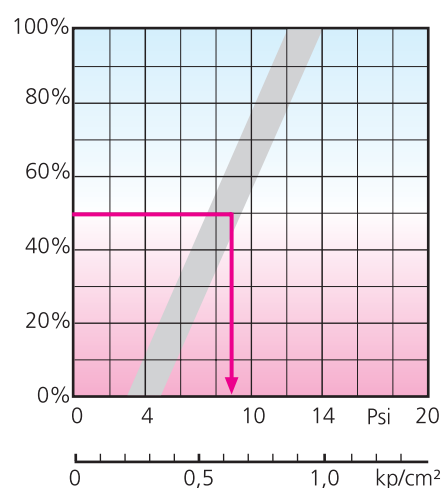
For optimum control, set the room thermostat to the mixing box control setting, i.e. its neutral position should be at 5V.

On the RTC, use the LUNA T-CU hand-held micro terminal to select this function. See the commissioning instructions for the RTC.



Control signals, pneumatic actuator

The diagram below shows the mixing percentage in relation to the pneumatic control signal. 100% corresponds to full cooling, 0% to full heating. The exact pressure required for to fully open/close the damper depends on the mounting position. With a horizontal damper spindle the pressure range is 3 to 13 Psi.



Wiring diagram

The control signal from the room thermostat is connected to the Y input (wire marked 3). Output U is an "is value signal" 2-10 V. Dimensioning power: 5 VA, is valid for BLB motor and RTC.

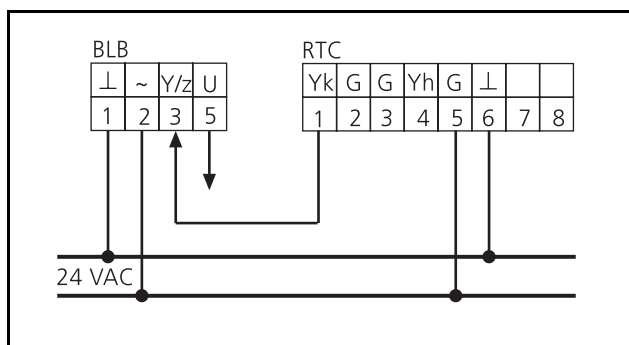


Figure 2. Wiring diagram.

TECHNICAL DATA FOR BLB

Sound power level

The diagrams for the different sizes show the total generated sound power level ($L_{w\text{tot}}$ dB) as a function of the airflow and pressure drop through the damper. The sound power levels for the respective octave bands can be obtained by correcting $L_{w\text{tot}}$ with the correction factors from Table 1 ($L_w = L_{w\text{tot}} + K_{OK}$).

Sound data BLB

Table 1

Sound power level BLB

Correction factor, K_{OK}

Size BLBd	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

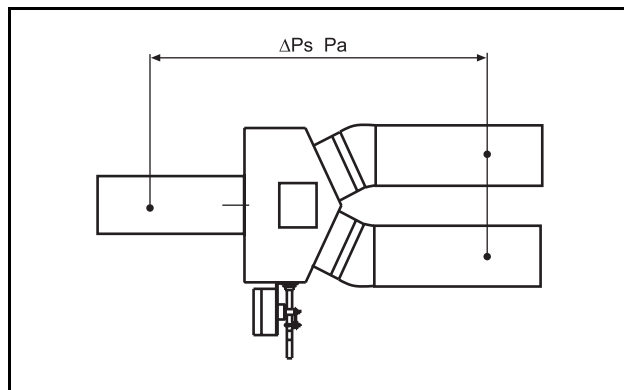


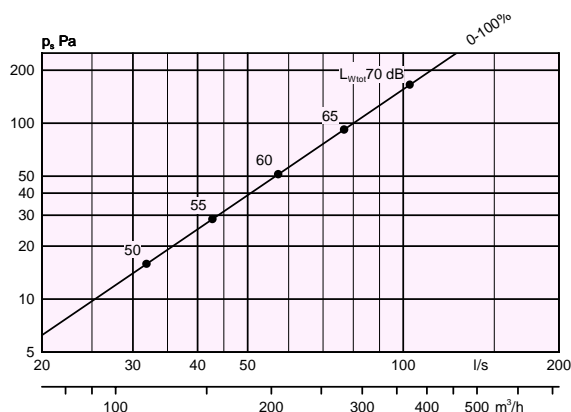
Figure 3. The pressure drop across the BLB is irrespective of the damper setting. The diagram shows the pressure drops and sound levels for different mixing proportions, from 50-100%. The same data is valid for mixing proportions, 0-50%.

Engineering graphs - BLB

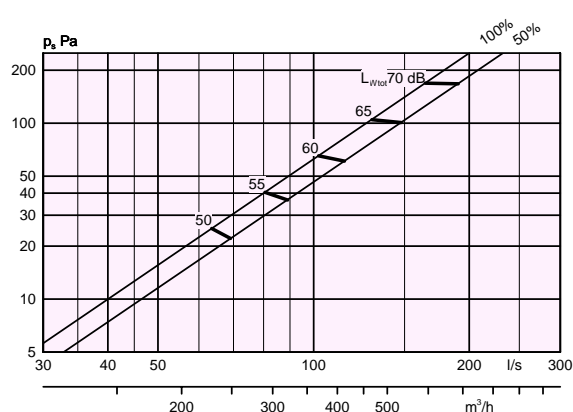
Air flow - Pressure drop - Sound level

- The graphs must not be used for commissioning.
- The graphs show pressure drop, airflow and sound level at different damper positions.

BLBd 100



BLBd 125

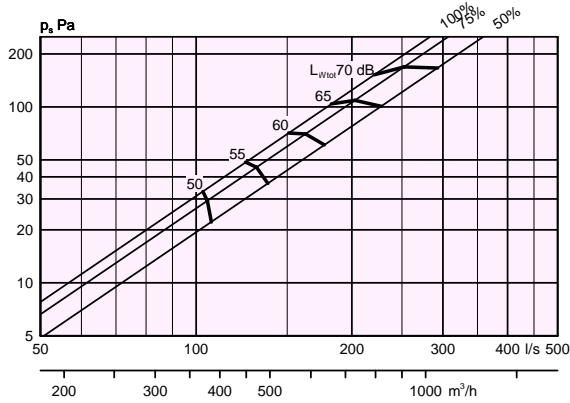


Engineering graphs - BLB

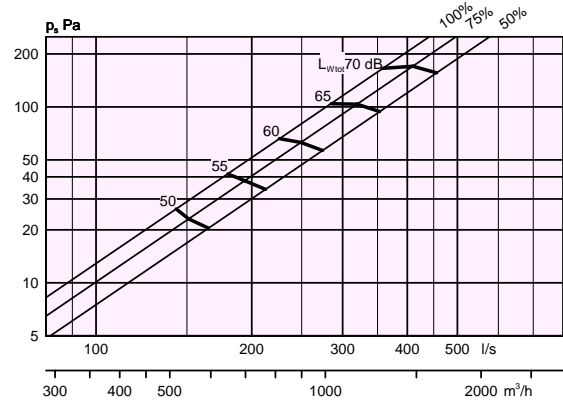
Air flow - Pressure drop - Sound level

- The graphs must not be used for commissioning.
- The graphs show pressure drop, airflow and sound level at different damper positions.

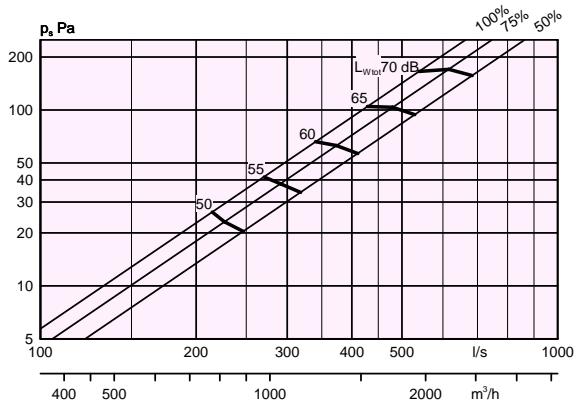
BLBd 160



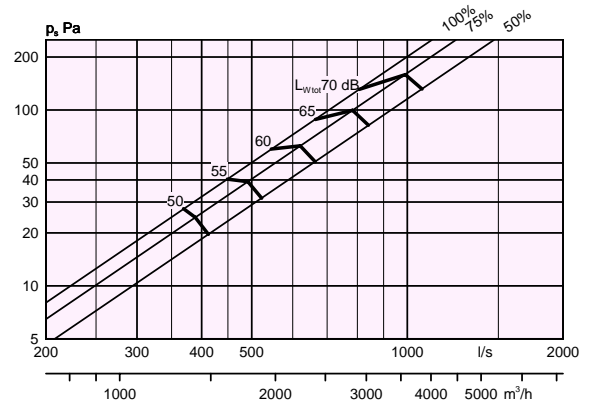
BLBd 200



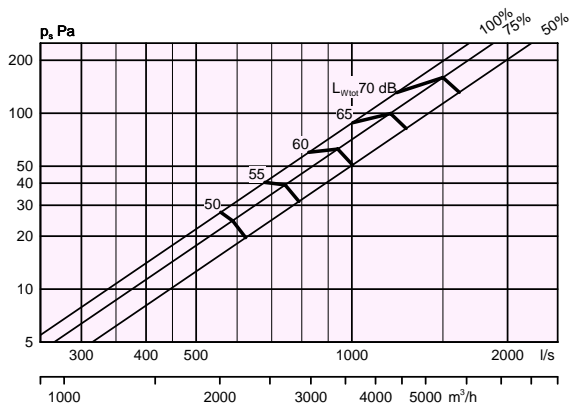
BLBd 250



BLBd 315



BLBd 400



DIMENSIONS AND WEIGHTS

Size	A	B	C1	C2	Ød	D	E	F	V°
100	210	260	139	165	99	198	79	60	30
125	210	310	139	165	124	232	94	60	30
160	210	385	139	240	159	284	115	60	30
200	250	450	139	240	199	338	136	60	30
250	300	550	139	240	249	406	161	60	30
315	365	660	271	300	314	498	194	60	30
400	450	830	271	-	399	612	239	60	30

C1 refers to the electric actuator version
C2 refers to the pneumatic actuator version

Size	Weight, kg BLB-0, BLB-1	Weight, kg BLB-2
100	4.9	3.8
125	5.5	4.5
160	7.0	7.1
200	8.4	8.8
250	11.3	11.7
315	18.0	17.5
400	25.0	-

ORDER KEY

Product designation

Mixing box	BLBd	-a	-bbbb
Motor			
0 = electric actuator, 0-10 V			
1 = electric actuator, 2-10 V			
2 = pneumatic actuator, size 100 to 315			
Dimension:			
100, 125, 160, 200, 250, 315, 400			

The 100 to 400 mm sizes are supplied with a Belimo NM24A-MF electric actuator. The actuator supplied with the pneumatic versions is of our own design. N.B. The 400 mm size cannot be supplied with a pneumatic actuator.

Product designation

Room thermostat	RTC
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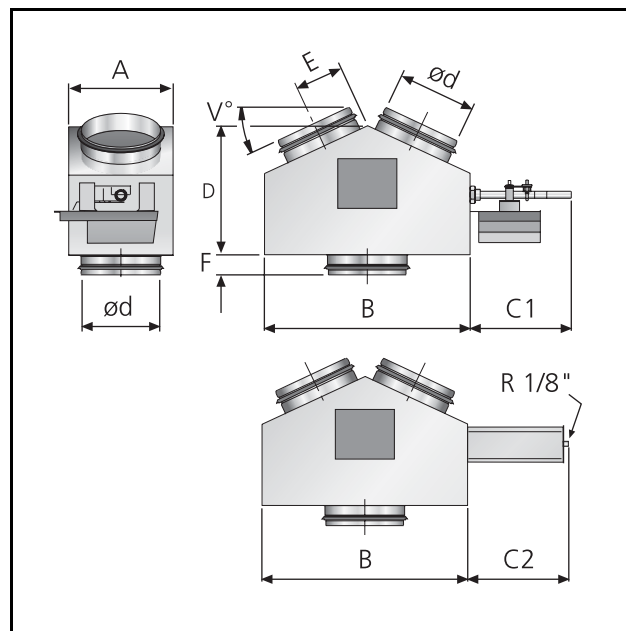


Figure 4. BLB.

SPECIFICATION EXAMPLE

Swegon's mixing box of type BLBd with the following functions:

- Constant pressure drop irrespective of mixing position
- Inspection window
- Factory-installed actuator for 0-10 V DC styrning

Accessories:

Room thermostat	RTC	
Size:	BLBd a -bbb	xx items