

REACT V BBAC

Variable flow damper – Belimo BACnet



QUICK FACTS

- Variable or constant flow regulation
- Can be mounted directly at bends and duct transitions/reductions (circular)
- Setting/reading of parameters via the hand-held terminal ZTH EU, PC-Tool or BACnet
- Analogue control and BACnet control
- Can be easily anti-condensation insulated in the duct system
- Variants:
 - Circular connections: Ø100-630 mm
 - Rectangular connections: 200x200-1400x700 mm

REACT V BBAC Size	FLOW RANGE			
	Min.		Max.*	
	l/s	m ³ /h	l/s	m ³ /h
100	5	18	58	209
125	9	32	97	349
160	16	58	170	612
200	25	90	272	979
250	40	144	438	1577
315	63	227	710	2556
400	102	367	1155	4158
500	164	590	1850	6660
630	300	1080	2920	10512

*Nominal flow (V_{nom}), based on 120 Pa in pressure reading.

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Technical description

General

- Intended for flow regulation of comfort ventilation.
- Moist, cold and aggressive environments must be avoided.
- Can be installed in both supply and extract air systems.
- Pressure independent but recommended working range between minimum pressure drop of 10 Pa to 300 Pa over the damper.
- The minimum air flow must be considered during design.
- For good regulation, a minimum difference between V_{min} and V_{max} of 20% of the product's V_{nom} is recommended.

Design

- Integrated air flow sensor.
- Analogue controls and BACnet control.

Circular design

- Connection: Ø100-630 mm.
- Always supplied with dust protection.
- Motor shelf with 25 mm spacer to facilitate condensation insulation of the duct system.
- A factory-insulated model available on request.

Rectangular design

- Slip-clamp connection.
- Connection 200x200-1400x700 mm.
- Other sizes are also available on request.

Functions

- Variable or constant flow regulation.
- Measurement of air flow.
- Setting and reading of parameters on the controller via the external hand-held terminal ZTH EU or PC-Tool.

Materials and surface treatment

- All sheet-metal parts are galvanized sheet steel (Z275).

Project design / Typical room

See separate documentation "REACT Belimo Description of functions & wiring diagram", available for download via www.swegon.com.

Maintenance

The product does not require any maintenance/service, except for any cleaning when necessary. See the separate Instructions for Use, available on www.swegon.com.

Environment

The Building Materials Declaration is available on www.swegon.com.

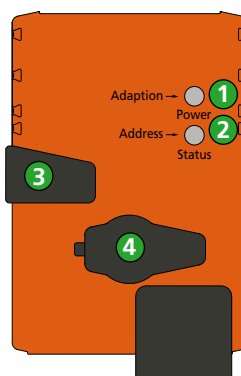
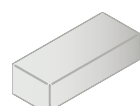


Figure 1. REACT V BBAC controller.
1. Pushbutton and LED lighting green
2. Pushbutton and LED lighting yellow
3. Release button
4. Service port

Accessories

REACT V COVER CIRCULAR	Cover panel for circular design in case of visible installation
FSR	Clamp for easy dismantling of a circular design for cleaning and inspection
ZTH EU	Hand-held terminal for setting of parameters on the actuator
DETECT Occupancy V110	Occupancy detector for wall and corner installation
DETECT Occupancy T360	Occupancy detector for ceiling installation
LUNA RC	Room controller for temperature regulation, with display
LUNA RC CO ₂	Room controller for temperature and CO ₂ regulation, with display
LUNA RE	Room controller for temperature regulation
DETECT IAQ	CO ₂ - and temperature controller
DETECT IAQ OCS	CO ₂ - and temperature controller that also detects occupancy
DETECT IAQ D	CO ₂ - and temperature controller for duct installation



REACT V COVER CIRCULAR



FSR



ZTH EU



DETECT O V110



DETECT O T360



LUNA RC /
LUNA RC CO₂



LUNA RE



DETECT IAQ



DETECT IAQ OCS



DETECT IAQ D

Technical data

IP class:	IP54
Corrosivity class:	C3
Pressure class:	A
Leakage classes according to SS-EN 1751	
- Leakage class, casing:	C
- Leakage class circular damper, closed:	4
- Leakage class rectangular damper, closed:	3
Running times open/close (90°):	
5 Nm:	100 s
10 / 20 Nm:	150 s
Ambient temperature	
Operation:	0 – +50°C
Storage:	-20°C – +80°C
RH:	5 – 95% (non-condensing)
CE marking:	2006/42/EC (MD) 2014/30/EU (EMC) 2011/65/EU (RoHS2)

Electrical data

Power supply:	24 V AC/DC ±15% 50 - 60 Hz		
Fixed connection cable, 1000 mm with cable size.	6 x 0,75 mm ² <i>See figure 2 below.</i>		
Power consumption, for transformer rating:			
REACT V BBAC 5 Nm	2.0 W	4.0 VA	
REACT V BBAC 10 Nm	3.0 W	5.0 VA	
REACT V BBAC 20 Nm	3.0 W	5.5 VA	
<i>See torque in tables on pages 8 and 10.</i>			

Connection

1-2 – Supply voltage	24 V AC/DC
3 – Control signal (Y)	0..10/(2..10) V DC
5 – Actual value signal (U)	0..10/(2..10) V DC
6 – BACnet (C ₁ = D- = A)	
7 – BACnet (C ₂ = D+ = B)	
Supply voltage and communication are not galvanically isolated.	

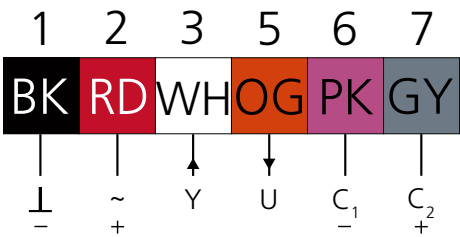


Figure 2. Connection.

Sizing

Circular design

- Important! Increased air flow gives increased duct velocity and increased sound level.

Acoustic data

Sound power level

- The diagrams show the A-weighted sound power (L_{WA} -dB), as a function of the air flow and pressure drop across the damper.
- Correct L_{WA} with correction factor K_{ok} from the tables below to obtain the sound power levels for each octave band ($L_W = L_{WA} + K_{ok}$).

Correction factors for conversion to sound power in octave bands:

L_{WA} = Sound level with A-filter but without room attenuation in the sizing diagram for duct products.

K_{ok} = Correction factor in octave bands.

K_{trans} = Correction factor in octave bands for transmitted sound.

Sound power in octave bands

$$L_W = L_{WA} + K_{ok} \text{ [dB]}$$

Correction factor K_{ok}

Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	7	7	5	-1	-5	-10	-17	-22
125	7	9	6	-2	-4	-10	-19	-25
160	5	10	6	-3	-5	-11	-18	-24
200	5	10	5	-2	-5	-11	-19	-27
250	8	5	2	-3	-6	-10	-18	-24
315	4	6	3	-3	-6	-10	-18	-25
400	6	3	1	-3	-5	-10	-17	-26
500	3	0	-1	-3	-5	-10	-17	-28
630	3	-1	-2	-3	-5	-9	-17	-27
Tol ±	6	3	2	2	2	2	2	2

Transmitted sound through uninsulated casing

$$L_W = L_{WA} + K_{trans} \text{ [dB]}$$

Correction factor K_{trans}

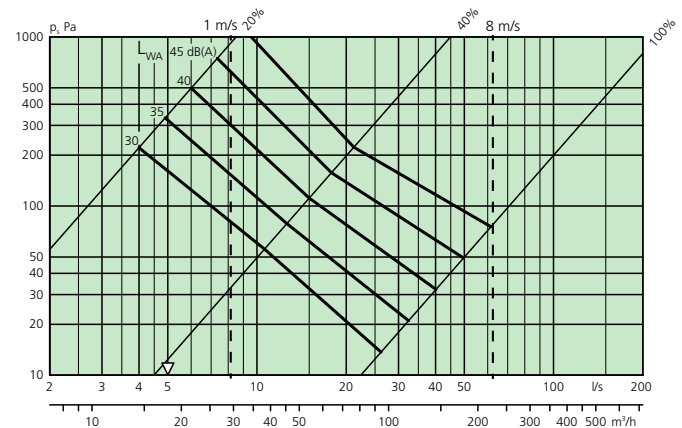
Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	-2	-9	-7	-10	-9	-10	-15	-22
125	-4	-9	-8	-13	-9	-12	-19	-27
160	-7	-9	-10	-15	-12	-15	-20	-28
200	-9	-11	-13	-16	-14	-16	-23	-32
250	-8	-18	-17	-19	-17	-17	-23	-31
315	-14	-19	-18	-21	-18	-19	-25	-34
400	-13	-23	-22	-22	-19	-21	-26	-37
500	-18	-28	-27	-24	-21	-22	-28	-40
630	-18	-27	-27	-24	-21	-21	-29	-38
Tol±	6	3	2	2	2	2	2	2

Sizing diagram

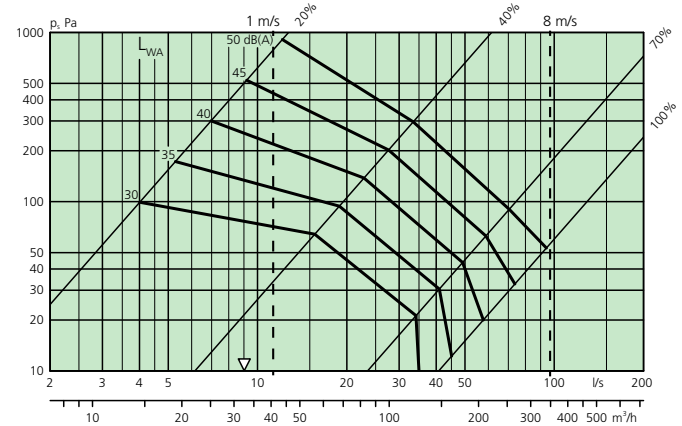
Air flow – Pressure drop – Sound level

- Specified sound levels L_{WA} : 30, 35, 40, 45 and 50 dB(A).
- The data is for the sound created in ducts.
- 100% corresponds to the damper being fully open.
- ▽ = Min. flow.

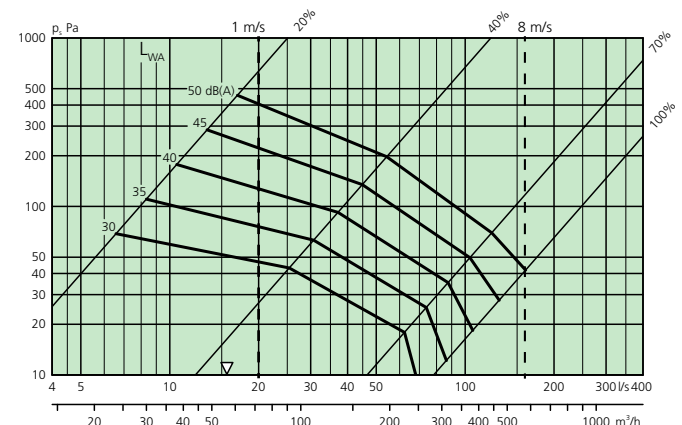
REACT V BBAC 100



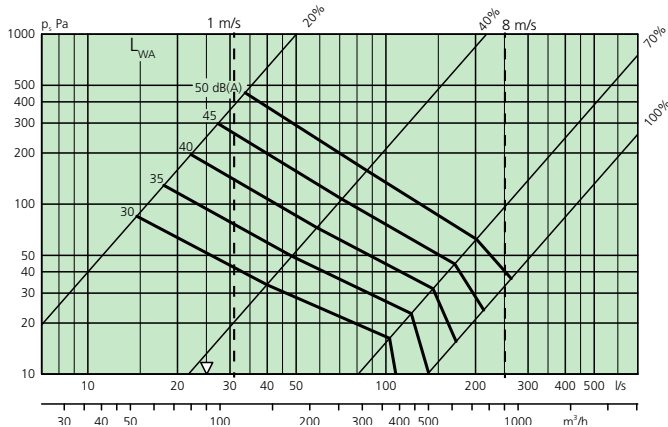
REACT V BBAC 125



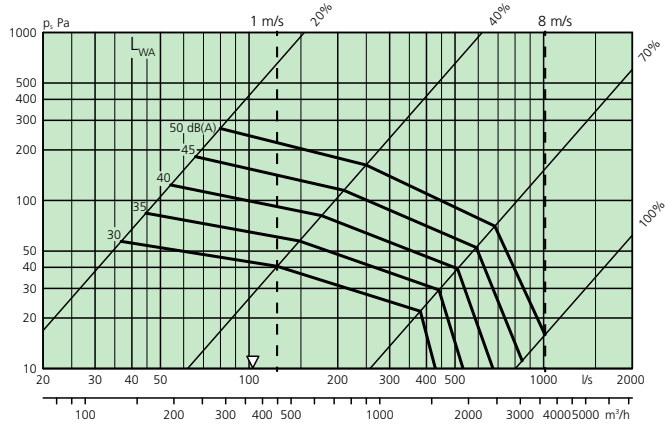
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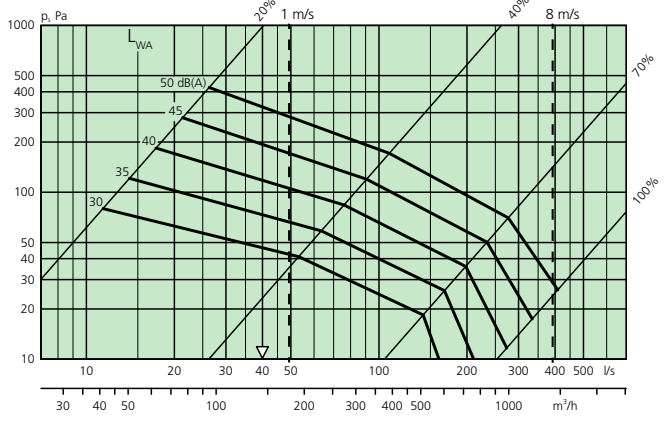
REACT V BBAC 200



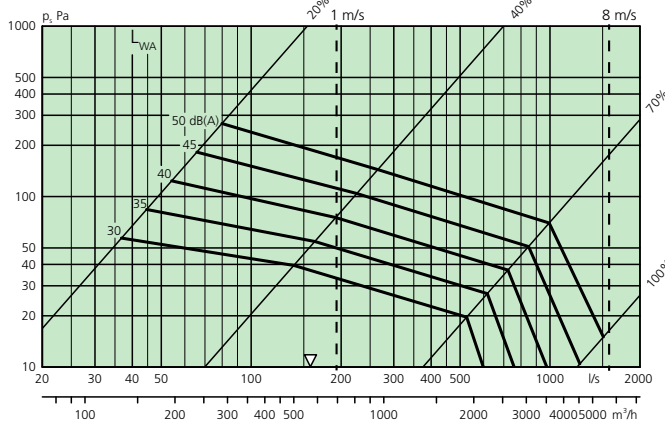
REACT V BBAC 400



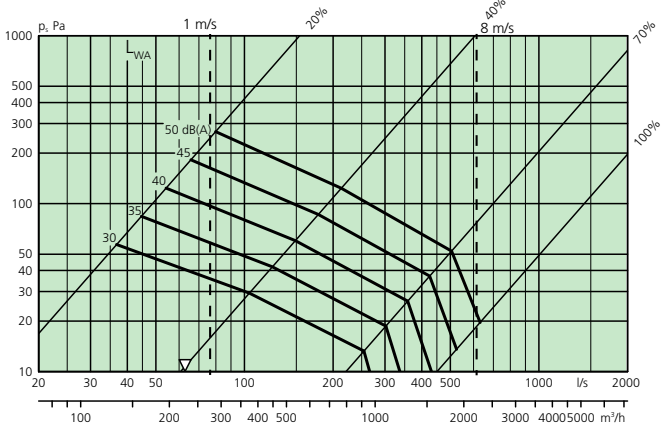
REACT V BBAC 250



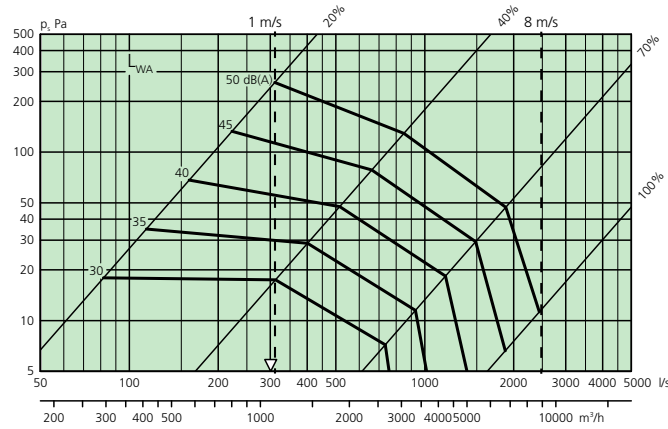
REACT V BBAC 500



REACT V BBAC 315



REACT V BBAC 630



Rectangular design

- Important! Increased air flow gives increased duct velocity and increased sound level.

Acoustic data

Sound power level

- The diagrams show the A-weighted sound power (L_{WA} -dB), as a function of the air flow and pressure drop across the damper.
- Correct L_{WA} with correction factor K_{ok} from the tables below to obtain the sound power levels for each octave band ($L_W=L_{WA}+K_k+K_{ok}$).

Sound power in octave bands

$$L_W = L_{WA} + K_k + K_{ok}$$

Correction factor K_{ok}

Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
All	7	3	1	0	-5	-14	-23	-22
Tol. $\pm$	4	4	3	2	2	2	2	2

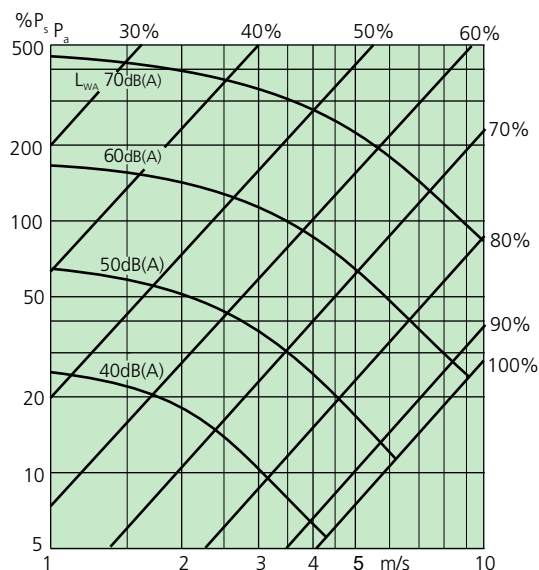
Correction factor K_k for the damper's face area

Correction factor – face area								
Area m ²	0.1	0.15	0.25	0.4	0.6	1.0	1.6	2.5
K_k	-3	-2	0	2	4	6	8	10

Sizing diagram

Velocity - Pressure drop - Sound level

- The data is for the sound created in ducts.
- Specified sound levels L_{WA} : 40, 50, 60 and 70 dB.
- Calculate the face velocity across the damper and read the sound data and pressure drop at an appropriate damper position.
- 100% corresponds to the damper being fully open.



Installation, torque, dimensions and weights

Circular design

Dimensions

Size Ød (mm)	A (mm)	B (mm)	C (mm)	E (mm)	Torque (Nm)	Weight (kg)	Flow range				Tolerance Q* ±5% with at least ±x	
							Min.		Max = Vnom*)			
							l/s	m³/h	l/s	m³/h	l/s	m³/h
100	475	485	190	50	5	1.6	5	18	58	209	2	7
125	475	485	215	50	5	1.8	9	32	97	349	2	7
160	475	485	255	50	5	2.1	16	58	170	612	2	7
200	475	485	300	50	5	2.7	25	90	272	979	3	11
250	525	535	350	50	5	3.4	40	144	438	1577	5	18
315	560	570	415	50	10	4.8	63	227	710	2556	8	29
400	695	705	505	60	10	6.8	102	367	1155	4158	13	47
500	820	840	605	60	10	9.4	164	590	1850	6660	20	72
630	915	935	735	60	20	14.4	300	1080	2920	10512	32	115

*)Vnom at 120 Pa in pressure reading.

*Installed according to the instructions.

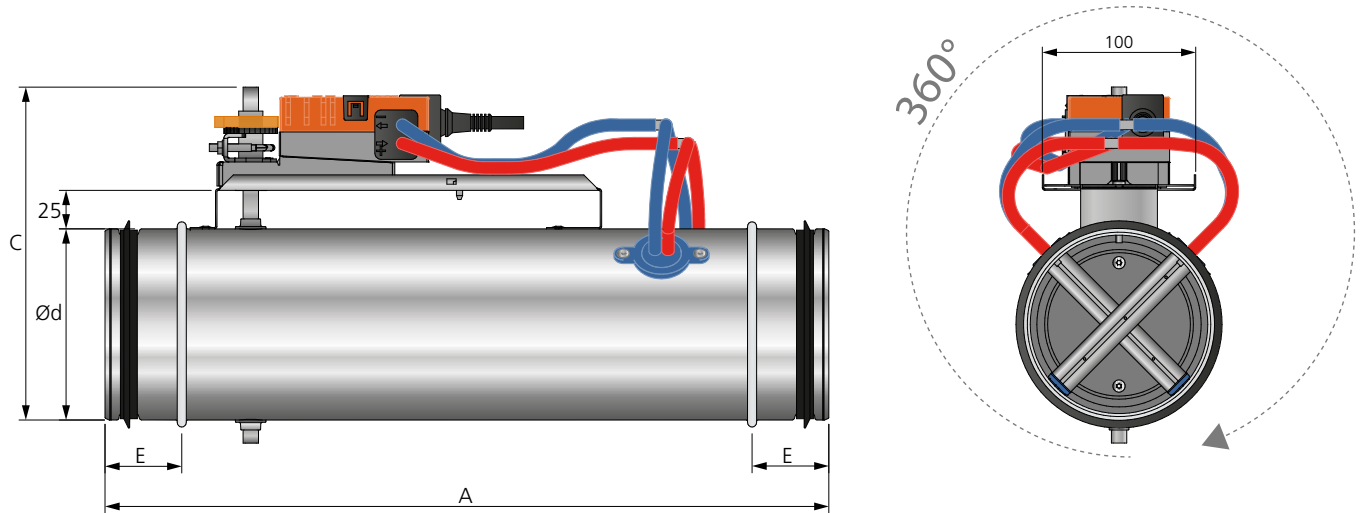


Figure 3. Dimensions (mm), REACT V BBAC circular. The damper can be installed at an optional angle.

Installation

- The product's air flow measurement requires a straight duct section as per the installation figures.
- In unfavourable conditions before or with disruption, the product's tolerances cannot be guaranteed.
- Installation is position independent.
- The product can be installed horizontally or vertically.
- Instructions for Use are supplied with the product on delivery, but can also be downloaded from www.swegon.com.

Straight duct section requirements

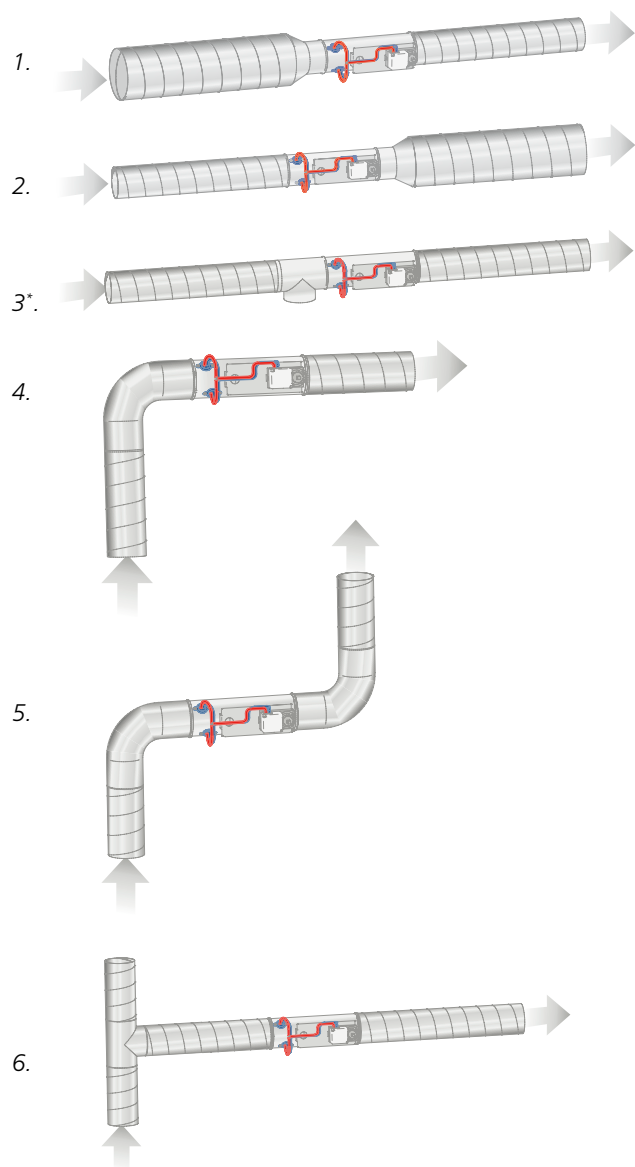


Figure 4. Straight duct section requirements in circular ducts, number of $\varnothing$ before product:
Image 1-5 require no straight duct section (image 3* illustrates a T piece with a cleaning hatch).
Image 6 requires a straight duct section before the damper equivalent to 4 x the diameter of the duct.

Straight duct section requirements in case of sound attenuator with baffle

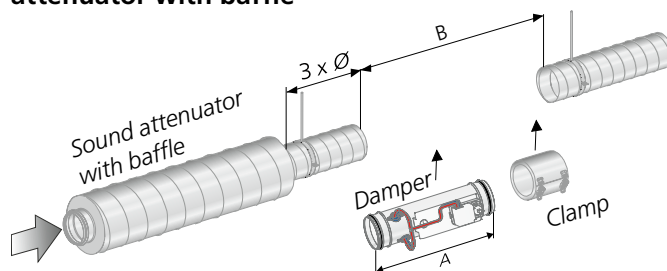


Figure 5. Straight duct section requirements 3 x $\varnothing$ in case of sound attenuator with baffle or centre body.

Installation in the duct system

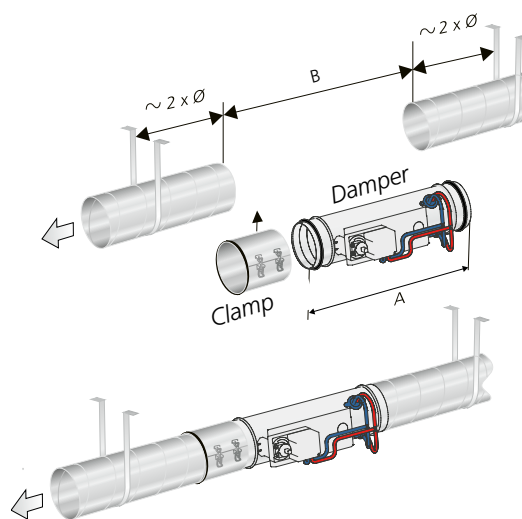


Figure 6. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of the product.

Rectangular design

Dimensions

Size BxH (mm)	Torque (Nm)	Weight (kg)	Flow range				Tolerance Q* ±5% with at least ±x	
			Min.		Max = Vnom*)			
			l/s	m³/h	l/s	m³/h	l/s	m³/h
200 x 200	5	6.0	67	241	365	1314	8	29
300 x 200	5	7.2	100	360	548	1973	12	43
400 x 200	5	8.3	133	479	730	2628	17	61
500 x 200	5	9.5	167	601	913	3287	21	76
600 x 200	5	10.5	200	720	1095	3942	25	90
700 x 200	5	11.7	233	839	1278	4601	29	104
800 x 200	5	12.9	267	961	1460	5256	33	119
1000 x 200	10	15.2	333	1199	1825	6570	42	151
300 x 300	5	8.8	152	547	834	3002	19	68
400 x 300	5	10.0	203	731	1112	4003	25	90
500 x 300	5	11.3	254	914	1390	5004	32	115
600 x 300	5	12.6	305	1098	1668	6005	38	137
700 x 300	5	13.7	355	1278	1946	7006	44	158
800 x 300	5	15.1	406	1462	2224	8006	51	184
1000 x 300	10	17.7	508	1829	2780	10008	63	227
400 x 400	5	12.0	273	983	1495	5382	34	122
500 x 400	5	13.4	341	1228	1869	6728	43	155
600 x 400	5	14.7	409	1472	2243	8075	51	184
700 x 400	5	16.3	478	1721	2616	9418	60	216
800 x 400	10	17.8	546	1966	2990	10764	68	245
1000 x 400	10	20.5	682	2455	3738	13457	85	306
1200 x 400	10	23.4	819	2948	4485	16146	102	367
1400 x 400	10	26.2	955	3438	5233	18839	119	428
1600 x 400	10	29.0	1092	3931	5980	21528	136	490
500 x 500	5	15.2	429	1544	2347	8449	54	194
600 x 500	5	16.7	514	1850	2816	10138	64	230
700 x 500	10	18.4	600	2160	3286	11830	75	270
800 x 500	10	19.9	686	2470	3755	13518	86	310
1000 x 500	10	23.0	857	3085	4694	16898	107	385
1200 x 500	10	26.1	1028	3701	5633	20279	129	464
1400 x 500	10	29.3	1200	4320	6572	23659	150	540
1600 x 500	10	32.4	1371	4936	7510	27036	171	616
600 x 600	10	19.0	618	2225	3388	12197	77	277
700 x 600	10	20.8	722	2599	3952	14227	90	324
800 x 600	10	22.4	825	2970	4517	16261	103	371
1000 x 600	10	25.9	1031	3712	5646	20326	129	464
1200 x 600	10	29.3	1237	4453	6775	24390	155	558
1400 x 600	10	33.2	1443	5195	7904	28454	180	648
1600 x 600	10	36.1	1649	5936	9033	32519	206	742
700 x 700	10	22.1	844	3038	4622	16639	105	378
800 x 700	10	24.7	964	3470	5282	19015	121	436
1000 x 700	10	28.4	1205	4338	6602	23767	151	544
1200 x 700	10	32.0	1446	5206	7923	28523	181	652
1400 x 700	10	35.8	1688	6077	9243	33275	211	760

*Vnom at 120 Pa in pressure reading.

*Installed according to the instructions.

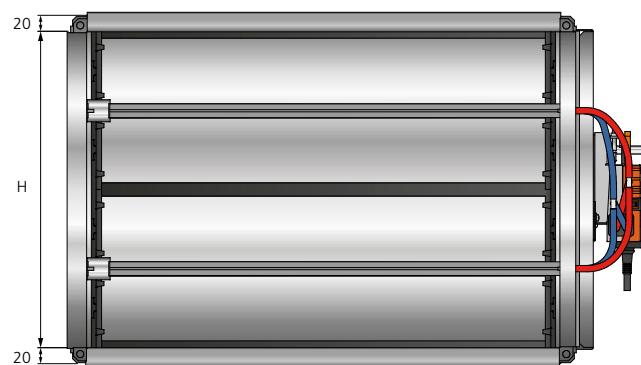
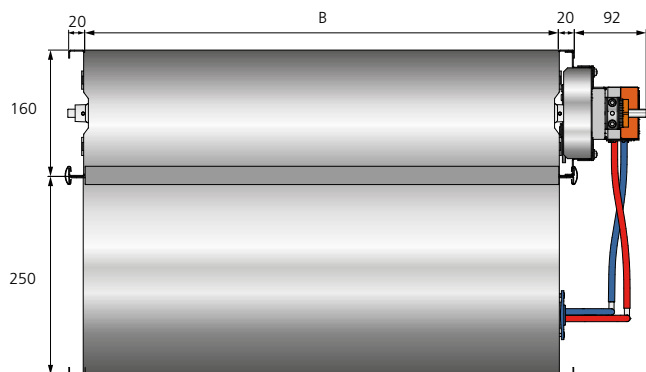


Figure 7. Dimensions (mm), REACT V BBAC rectangular.

Installation

- The product's air flow measurement requires a straight duct section as per the installation figures.
- In unfavourable conditions before or with disruption, the product's tolerances cannot be guaranteed.
- Damper spindles must be installed horizontally.
- For rectangular ducts, the damper is always installed so that the controller/actuator is placed along the side of the duct.
- Instructions for Use are supplied with the product on delivery, but can also be downloaded from www.swegon.com.

Straight duct section requirements

Type of disruption	E ($m_2=5\%$)	E ($m_2=10\%$)
One 90° bend	$E = 3 \times B$	$E = 2 \times B$
T piece	$E = 3 \times B$	$E = 2 \times B$

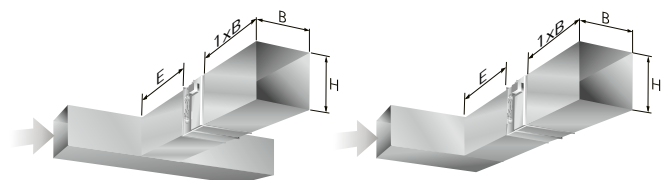


Figure 8. Straight duct section requirements in rectangular ducts.

E = Straight duct section

B = Width of duct

H = Height of duct

Straight duct section requirements in case of sound attenuator with baffle

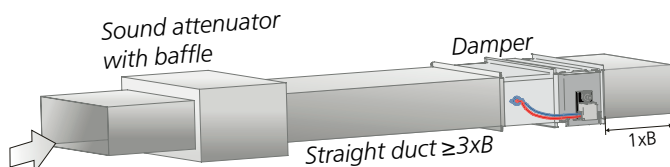


Figure 9. Straight duct section requirements $3 \times B$ in case of sound attenuator with baffle. Applies to both supply and extract air.

Specification

Product

Circular design

Circular variable flow damper REACT V BBAC a bbb

Version:

Size:

100, 125, 160, 200, 250, 315, 400, 500, 630

REACT V BBAC factory setting -

V_{max} = V_{nom} l/s and V_{min} = 0 l/s

Rectangular design

Rectangular variable flow damper REACT V BBAC b bbb-ccc

Version:

Size:

Dimension: B x H (see table on page 10)

REACT V BBAC factory setting -

V_{max} = V_{nom} l/s and V_{min} = 0 l/s

Accessories

FSR

Clamp for circular ventilation ducts FSR c aaa

Version:

Dimension: 100, 125, 160, 200, 250, 315, 400, 500, 630

REACT V COVER

Cover panel for visible installation REACT V COVER CIRCULAR

For circular design, all sizes

ZTH EU

Hand-held terminal for actuator ZTH EU

LUNA RC

Room controller for temperature regulation LUNA RC a TEMP-MB

Version:

Room controller for temperature regulation and CO₂ LUNA RC a CO2-TEMP-MB

Version:

LUNA RE

Room controller for temperature regulation LUNA d RE -S MB

Version:

Design: Screw terminal

DETECT IAQ

CO₂ and temperature controller for room areas DETECT IAQ a CO2-TEMP-MB

Version:

CO₂ and temperature controller with PIR for room areas DETECT IAQ OCS a CO2-TEMP-MB

Version:

CO₂ and temperature controller for ventilation duct DETECT IAQ D a CO2-TEMP-MB

Version:

DETECT Occupancy

Occupancy detector DETECT O a aaaa

Version:

Type:

Wall mounted: V110

Ceiling mounted: T360

Specification text

Example of a specification text according to VVS AMA.

QJB.11 Circular rotary damper with single blade

Make: Swegon

Type: REACT V BBAC

Variable flow damper with the following functions:

- Pressure independent VAV unit for demand-controlled ventilation.
- Integrated flow measurement.
- Integrated controller, flow regulating.
- The damper can be ordered with factory-fitted external insulation.

Must be installed with a minimum straight duct section on the inlet side as per the product sheet.

Size: Ø 100 to Ø 630

Specification

Standard SS-EN 1751: 2014, Annex C
 Power supply: 24 V AC ±15% 50 - 60 Hz
 Air tightness class, casing: C
 Air tightness class, closed damper: 4
 Corrosivity class: C3
 Pressure class: A
 Tolerance flow measurement: ±5%, however, at least ±x according to the table in the product sheet

Type: REACT V BBACa bbb-cc xx pcs

Accessories

Clamp for ventilation ducts FSRc xx pcs
 Cover panel for visible installation REACT V COVER CIRCULAR
 Hand-held terminal for actuator ZTH EU

QJB.41 Louvre damper with counter-rotating blade

Make: Swegon

Type: REACT V BBAC

Variable flow damper with the following functions:

- Pressure independent VAV unit for demand-controlled ventilation.
- Integrated flow measurement.
- Integrated controller, flow regulating.

Must be installed with a minimum straight duct section on the inlet side as per the product sheet.

Size: 200 x 200 to 1400 x 700

Specification

Standard SS-EN 1751: 2014, Annex C
 Power supply: 24 V AC ±15% 50 - 60 Hz
 Air tightness class, casing: C
 Air tightness class, closed damper: 3
 Corrosivity class: C3
 Pressure class: A
 Tolerance flow measurement: ±5%, however, at least ±x according to the table in the product sheet

Type: REACT V BBACb bbb-ccc-dd xx pcs

Accessories

Hand-held terminal for actuator ZTH EU