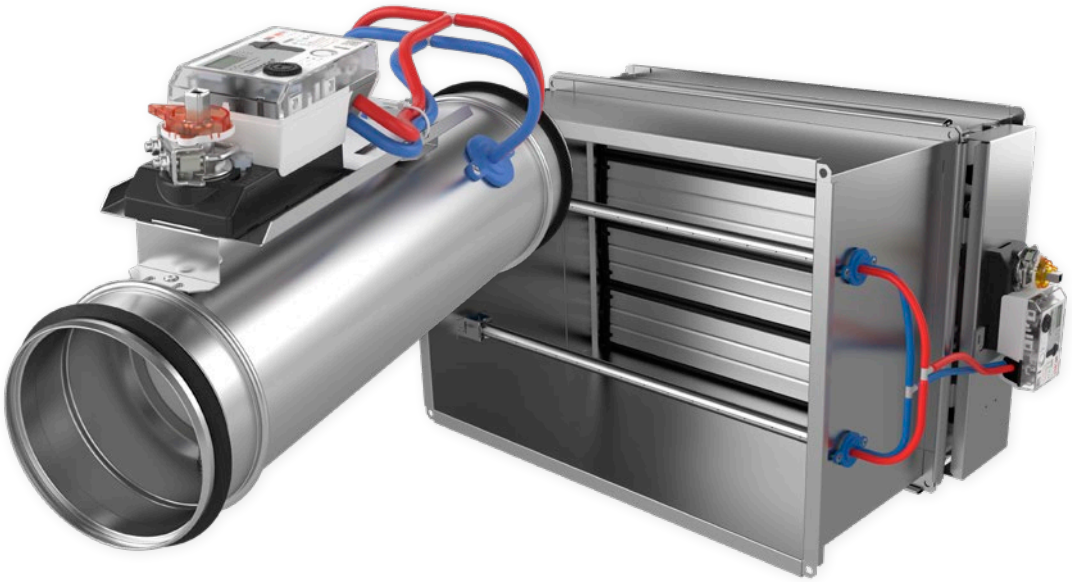
REACT V GMB

Variable flow damper – Gruner Modbus



QUICK FACTS

- Variable or constant flow regulation
- Can be mounted directly at bends and duct transitions/ reductions (circular)
- Rapid setting/reading of parameters via the controller's lit display
- Analog control and Modbus control
- Can be easily insulated against condensation in the duct system
- Commissioning without power possible with hand-held terminal Gruner GUIV3-M
- Variants:
  - Circular connections: Ø4-24 in
  - Rectangular connections: 8x8-55x28 in

FLOW RANGE			
REACT V GMB Size	Duct size in	Min. cfm	Max.* cfm
100	4	11	142
125	5	19	229
160	6	34	390
200	8	53	619
250	10	85	996
315	12	133	1583
400	16	216	2627
500	20	347	4026
630	24	636	6420

** Nominal flow (Vnom), based on 0.5 inWG in pressure reading.*

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Contents

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 exhaust air systems.
- Pressure independent but recommended working range between minimum pressure drop of 0.04 inWG to 1.2 inWG over the damper.
- The minimum air flow must be considered during planning.
- For good regulation, a minimum difference between Vmin and Vmax of 20% of the product's Vnom is recommended.

Design

- Integrated air flow sensor.
- Analog control and Modbus control.

Circular design

- Connection: Ø4–24 in.
- Always supplied with dust protection.
- Actuator mounting plate with 1 in spacer to facilitate condensation insulation of the duct system.
- A factory-insulated model is available on request.

Rectangular design

- Slip-clamp connection.
- Connection 8x8–55x28 in.
- Other sizes are also available on request.

Functions

- Variable flow or constant flow regulation.
- Measurement of air flow.
- Illuminated display for direct reading.
- Settings can be made directly on the controller without external tools.
- Setting and reading of parameters can be performed on the controller even when the actuator is without power via the external hand-held terminal Gruner GUIV3-M.

Materials and surface treatment

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

Project design / Typical room

See separate documentation "REACT Gruner Description of functions & wiring diagrams", 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 from www.swegon.com.

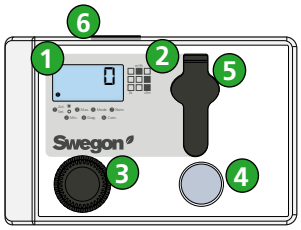


Figure 1. REACT V GMB controller.
1. Display
2. Unit matrix
3. Value selector
4. Pushbutton and LED lighting
5. Service port
6. Release button

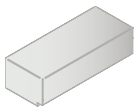
Accessories

DUCT ADAPTER 160-6"	Adapter for installing size 160 in a 6" circular duct
DUCT ADAPTER 315-12"	Adapter for installing size 315 in a 12" circular duct
DUCT ADAPTER 630-25"	Adapter for installing size 630 in a 25" circular duct
REACT V COVER CIRCULAR	Cover panel for circular design in case of visible installation
FSR	Clamp for easy dismantling of the circular design for cleaning and inspection
Gruner GUIV3-M	Hand-held terminal for setting of parameters on the actuator
RC-1	Passive House controller
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

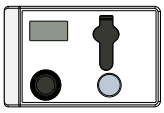

DUCT ADAPTER 160-6"


DUCT ADAPTER 315-12"


DUCT ADAPTER 630-25"


REACT V COVER CIRCULAR


FSR


Gruner GUIV3-M


RC-1


DETECT O V110


DETECT O T360


LUNA RC / LUNA RC CO_2


LUNA RE


DETECT IAQ


DETECT IAQ OCS


DETECT IAQ D

Technical data

IP class:	IP42 (Cable installed downwards)
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°):	
44 lbf.In:	100 s
89 lbf.In:	150 s
Ambient temperature	
Operation:	32 – 122°F
Storage:	-4 – 176°F
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, 39 in with cable size.		
Supply voltage/control signal		4x18AWG
Modbus		2x 22AWG
		See figure 2 below.
Power consumption, for transformer rating:		
REACT V GMB 44 lbf.In	2.0 W	3.5 VA
REACT V GMB 89 lbf.In	2.0 W	3.5 VA

See torque in table, pages 8 and 10.

Connections

1-2 – Supply voltage	24 V AC/DC
3 – Control signal (Y)	0..10/(2..10) V DC
4 – Actual value signal (U)	0..10/(2..10) V DC
A – Modbus (-CA)	
B – Modbus (+CB)	

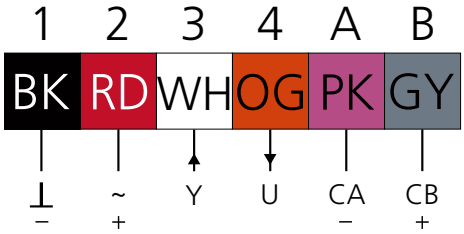


Figure 2. Connections.

Sizing

Circular design

- Note: Increased air flow gives increased duct velocity and increased sound level.

Sound 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 product.

K_{ok} = Correction factor in octave bands.

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

Sound power in octave bands

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

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

Correction factor, K_{trans}

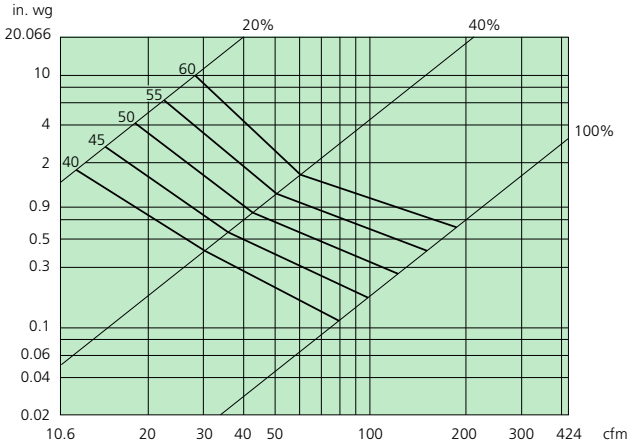
Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	-2	-9	-7	-10	-9	-10	-15	-22
125	-4	-9	-8	-13	-9	-12	-19	-27
160	-7	-9	-10	-15	-12	-15	-20	-28
200	-9	-11	-13	-16	-14	-16	-23	-32
250	-8	-18	-17	-19	-17	-17	-23	-31
315	-14	-19	-18	-21	-18	-19	-25	-34
400	-13	-23	-22	-22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

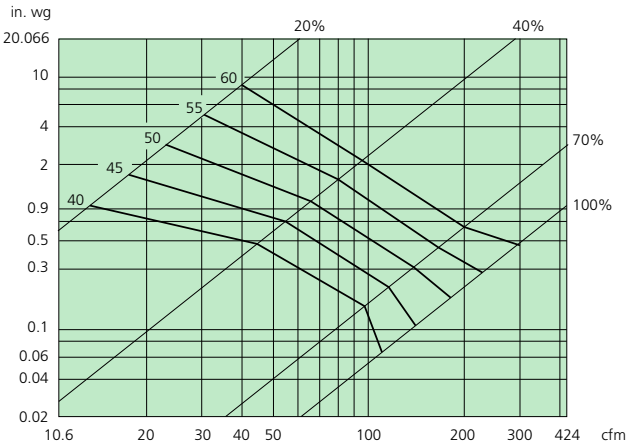
Air flow – Pressure drop – Sound level

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

REACT V GMB 100



REACT V GMB 125



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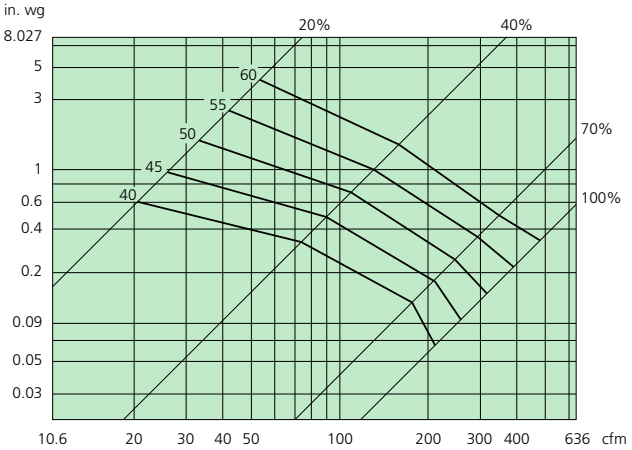
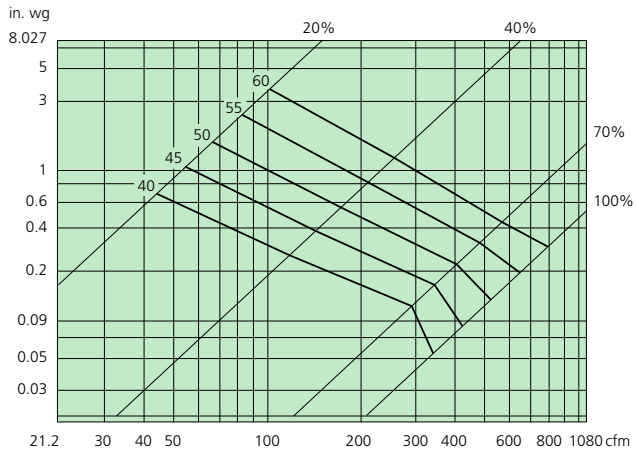
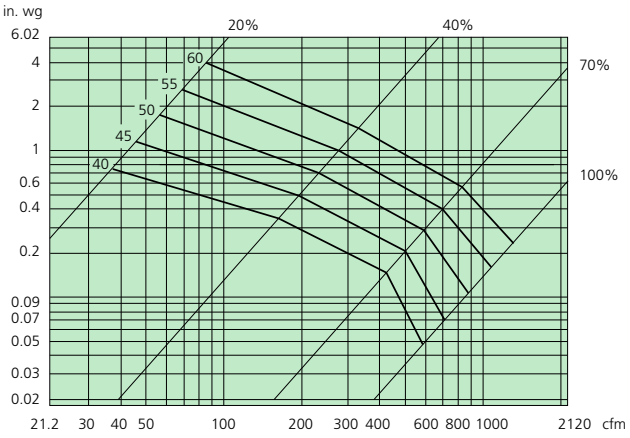


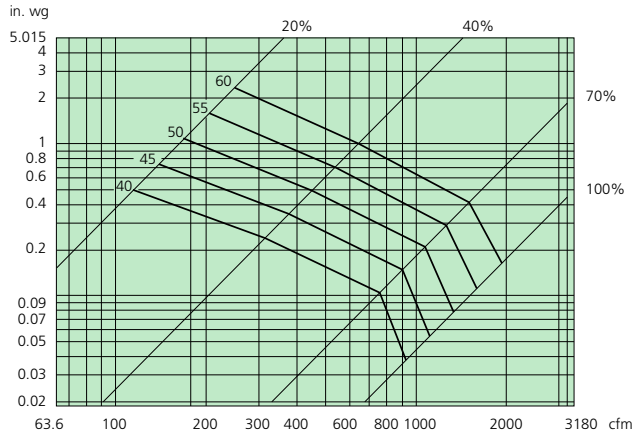
REACT V GMB 200



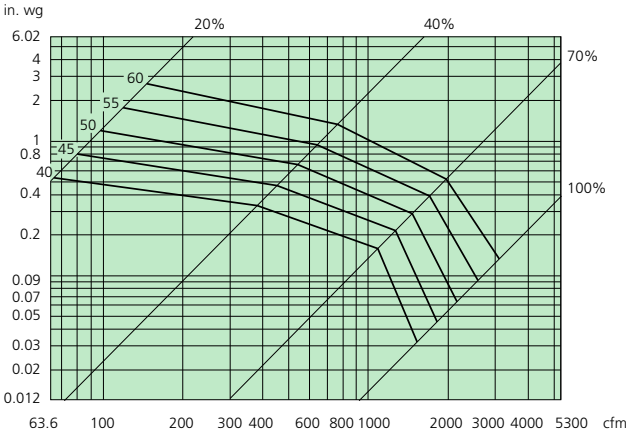
REACT V GMB 250



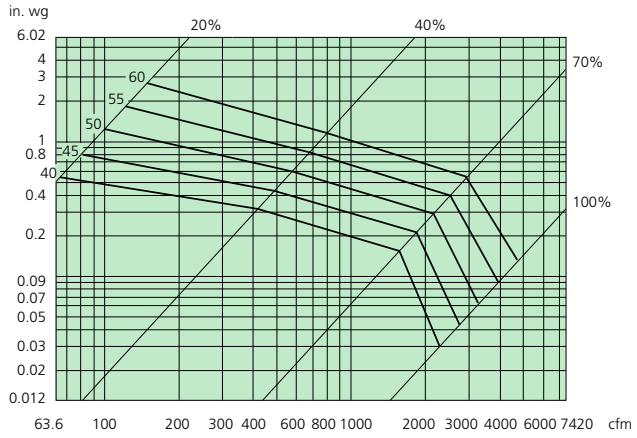
REACT V GMB 315



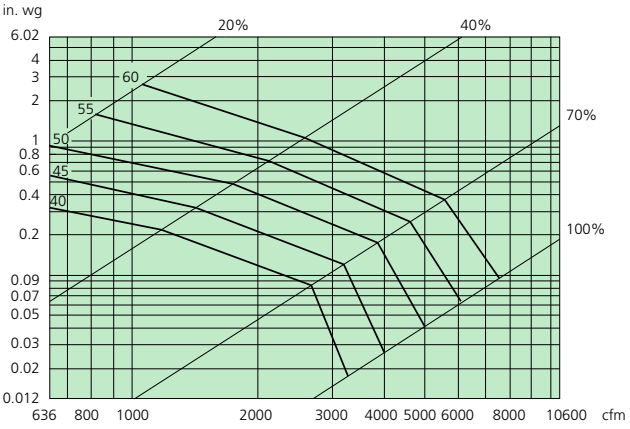
REACT V GMB 400



REACT V GMB 500



REACT V GMB 630



Rectangular design

- Note: Increased air flow gives increased duct velocity and increased sound level.

Sound data

Sound power level

- The diagram shows 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. ±	4	4	3	2	2	2	2	2

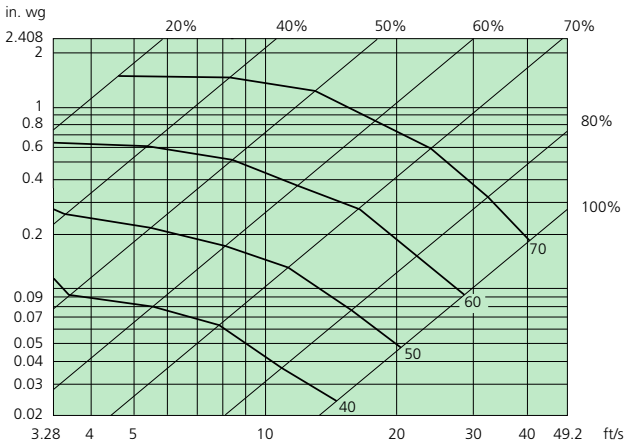
Correction factor, K_K for the front surface of the damper

Correction factor – front surface								
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

- Data is for the sound created in the duct.
- 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

REACT V GMB Size	Duct size (Nominal) Ød (in)	Inlet diameter Ød (in)	A (in)	B (in)	C (in)	E (in)	Torque (lbf. In.)	Weight (lb)	Flow range (cfm)		Tolerance Q[2] ±5% (cfm)
									Min.	Max. = Vnom[1]	
100	4	3.9	18.7	19.1	7.5	2	44	3.5	11	142	4
125	5	4.9	18.7	19.1	8.5	2	44	4.0	19	229	4
160	6	5.9*	18.7	19.1	10.0	2	44	4.6	34	390	4
200	8	7.8	18.7	19.1	11.8	2	44	6.0	53	619	6
250	10	9.8	20.7	21.1	13.8	2	44	7.5	85	996	11
315	12	11.8*	22.0	22.4	16.3	2	89	9.9	133	1583	17
400	16	15.7	27.4	27.8	19.9	2.4	89	14.3	216	2627	28
500	20	19.6	32.3	33.1	23.8	2.4	89	20.1	347	4026	42
630	24	23.8*	36.0	36.8	28.9	2.4	89	30.9	636	6420	68

*Dimensions including DUCT ADAPTER.

[1]Vnom at 0.5 inWG in pressure reading.

[2]Installed according to the instructions.

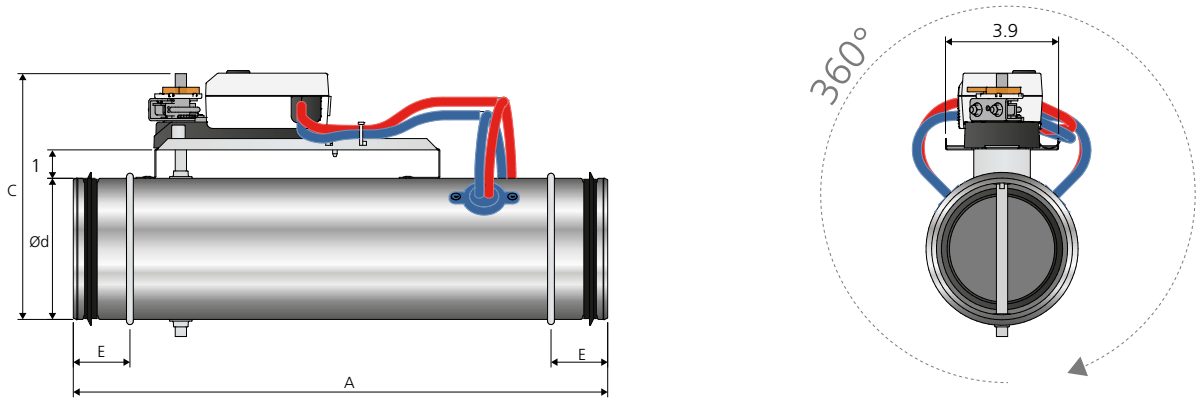


Figure 3. Dimensions (in), REACT V GMB circular. The damper can be installed at an optional angle.

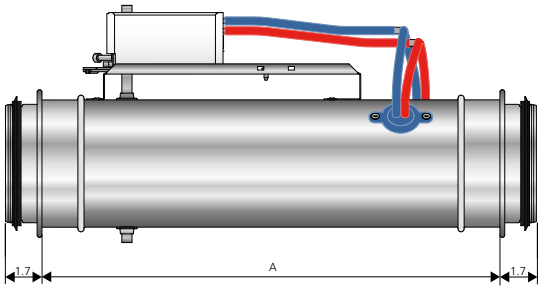


Figure 4. Dimensions with DUCT ADAPTER installed (in), REACT V GMB circular.

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 on delivery, but can also be downloaded from www.swegon.com.

Straight duct section requirements

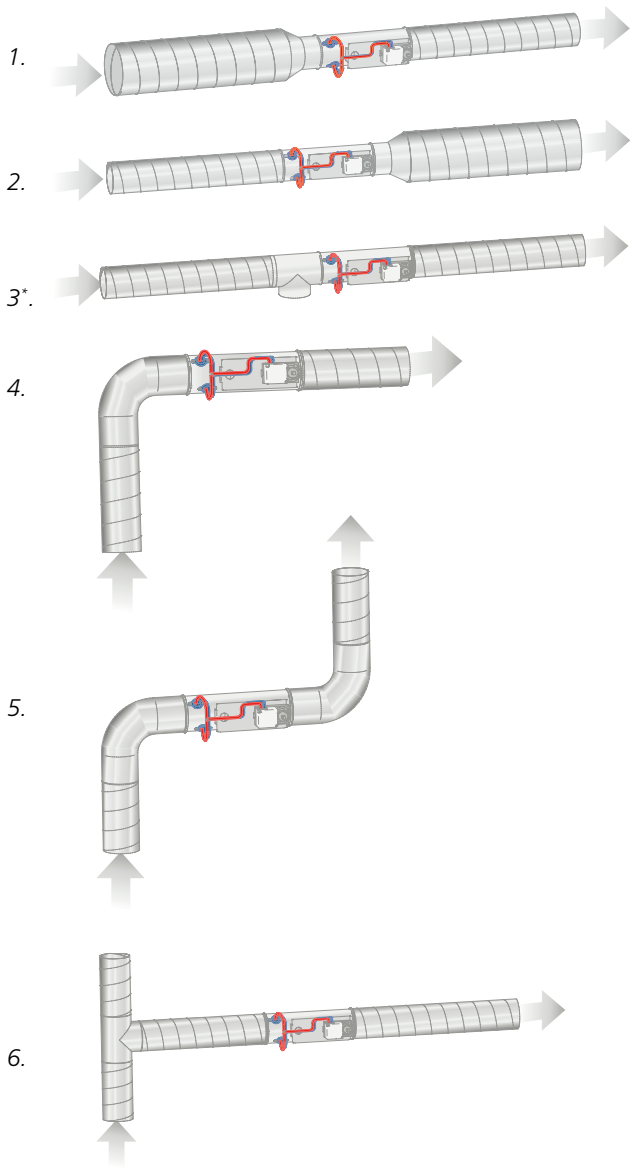


Figure 5. Straight duct section requirements in circular ducts, number of Ø before product:
Images 1-5 require no straight duct section (image 3 illustrates a T piece with a cleaning hatch).*
Image 6 requires a straight duct section before the damper equivalent to 4 x the diameter of the duct.

Straight duct section requirements in case of sound attenuator with baffle

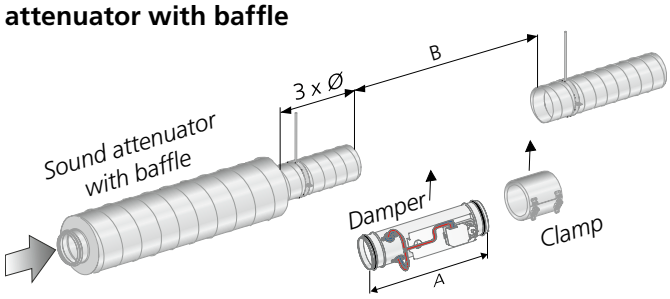


Figure 6. Straight duct section requirements 3 x Ø in case of sound attenuator with baffle or centre body.

Installation in the duct system

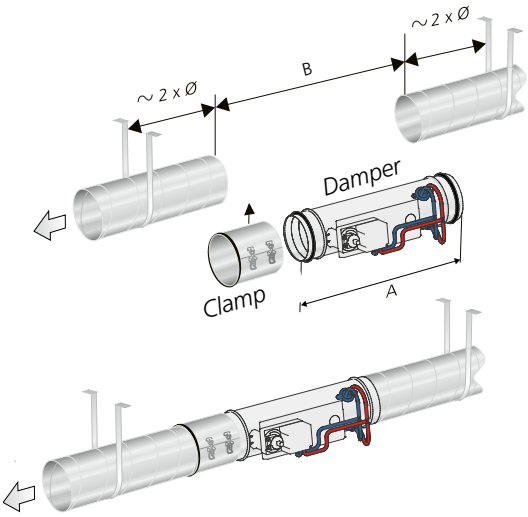


Figure 7. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of the product.

Rectangular design

Dimensions

REACT V GMB Size	Duct size (Nominal) (in)	Inlet dimensions BxH (in)	Torque (lbf. in.)	Weight (lb)	Flow range (cfm)		Tolerance Q* ±5% (cfm)
					Min.	Max. = Vnom*)	
200 x 200	8x8	7.9x7.9	44	13.2	142	773	17
300 x 200	12x8	11.8x7.9	44	15.9	212	1161	25
400 x 200	16x8	15.7x7.9	44	18.3	282	1547	36
500 x 200	20x8	19.7x7.9	44	20.9	354	1934	44
600 x 200	24x8	23.6x7.9	44	23.2	424	2320	53
700 x 200	28x8	27.6x7.9	44	25.8	494	2708	61
800 x 200	32x8	31.5x7.9	44	28.4	566	3093	70
1000 x 200	39x8	39.4x7.9	44	33.5	706	3867	89
300 x 300	12x12	11.8x11.8	44	19.4	322	1767	40
400 x 300	16x12	15.7x11.8	44	22.1	430	2356	53
500 x 300	20x12	19.7x11.8	44	24.9	538	2945	68
600 x 300	24x12	23.5x11.8	44	27.8	646	3534	81
700 x 300	28x12	27.6x11.8	44	30.2	752	4123	93
800 x 300	32x12	31.5x11.8	44	33.3	860	4712	108
1000 x 300	39x12	39.4x11.8	44	39.0	1076	5890	133
400 x 400	16x16	15.7x15.7	44	26.5	578	3168	72
500 x 400	20x16	19.7x15.7	44	29.5	723	3960	91
600 x 400	24x16	23.5x15.7	44	32.4	867	4752	108
700 x 400	28x16	27.6x15.7	44	35.9	1013	5543	127
800 x 400	32x16	31.5x15.7	44	39.2	1157	6335	144
1000 x 400	39x16	39.4x15.7	44	45.2	1445	7920	180
1200 x 400	47x16	47.2x15.7	89	51.6	1735	9503	216
1400 x 400	55x16	55.1x15.7	89	57.8	2023	11088	252
1600 x 400	63x16	63.0x15.7	89	63.9	2314	12670	288
500 x 500	20x20	19.7x19.7	44	33.5	909	4973	114
600 x 500	24x20	23.5x19.7	44	36.8	1089	5967	136
700 x 500	27x20	27.6x19.7	89	40.6	1271	6962	159
800 x 500	32x20	31.5x19.7	89	43.9	1453	7956	182
1000 x 500	39x20	39.4x19.7	89	50.7	1816	9946	227
1200 x 500	47x120	47.2x19.7	89	57.6	2178	11935	273
1400 x 500	55x20	55.1x19.7	89	64.6	2543	13925	318
1600 x 500	63x20	63.0x19.7	89	71.4	2905	15912	362
600 x 600	24x24	23.5x23.5	89	41.9	1309	7178	163
700 x 600	27x24	27.6x23.5	89	45.9	1530	8373	191
800 x 600	32x24	31.5x23.5	89	49.4	1748	9571	218
1000 x 600	39x24	39.4x23.5	89	57.1	2184	11963	273
1200 x 600	47x24	47.2x23.5	89	64.6	2621	14355	328
1400 x 600	55x24	55.1x19.7	89	71.4	3057	16747	381
1600 x 600	63x24	63.0x19.7	89	79.6	3494	19139	436
700 x 700	28x28	27.6x27.6	89	49.2	1788	9793	222
800 x 700	32x28	31.5x27.6	89	54.5	2043	11192	256
1000 x 700	39x28	39.4x27.6	89	62.6	2553	13988	320
1200 x 700	47x28	47.2x27.6	89	70.6	3064	16787	384
1400 x 700	55x28	55.1x27.6	89	78.9	3577	19584	447

*)Vnom at 0.5 inWG in pressure reading.

*Installed according to the instructions.

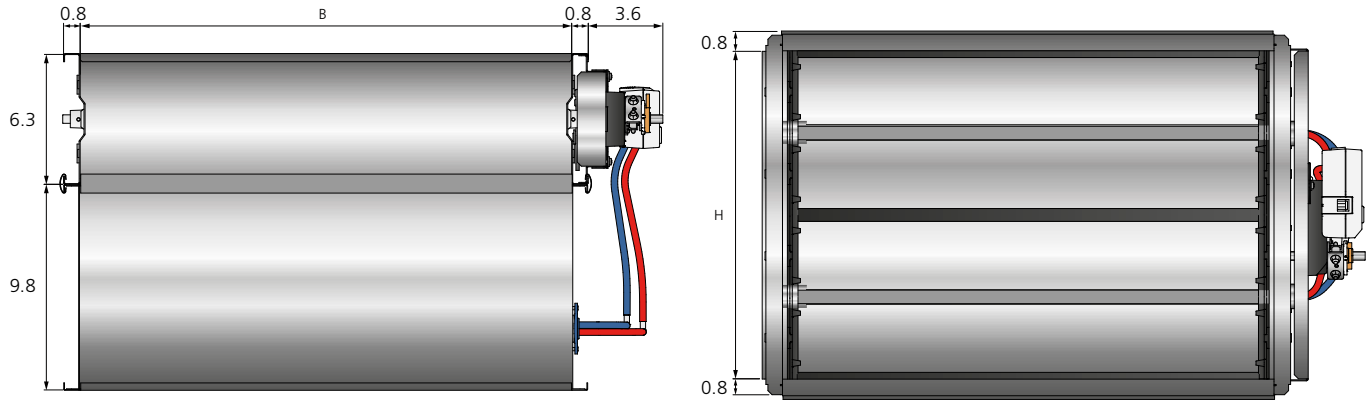


Figure 8. Dimensions (in), REACT V GMB rectangular.

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 shafts must be installed horizontally.
- For rectangular ducts, always install the damper so that the controller/actuator is placed along the side of the duct.
- Instructions for Use are supplied on delivery, but can also be downloaded from www.swegon.com.

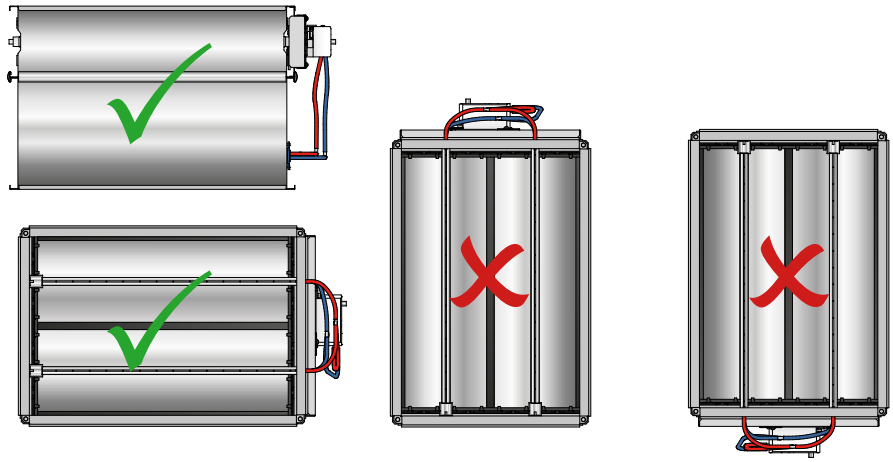


Figure 9. Installation - For rectangular ducts, always install the damper so that the controller/actuator is placed along the side of the duct.

Straight duct section requirements

Type of obstruction	Tolerance Q ±5%	Tolerance Q ±10%
One 90° bend	E = 3 x B	E = 2 x B
T piece	E = 3 x B	E = 2 x B

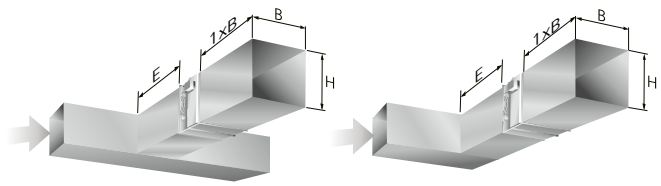


Figure 10. Straight duct section requirements in rectangular ducts.
E = Straight section
B = Width of duct
H = Height of duct

Straight duct section requirements in case of sound attenuator with baffle

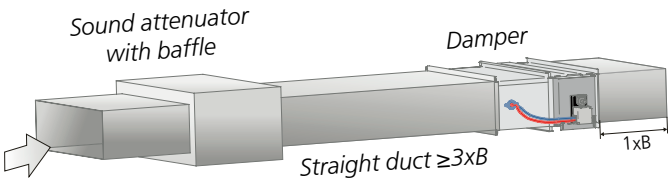


Figure 11. Straight duct section requirements 3 x B in case of sound attenuator with baffle. Applies to both supply and exhaust air.

Specification

Product

Circular design

Circular variable flow damper	REACT V GMB	a	bbb
Version:			
Size: 100, 125, 160, 200, 250, 315, 400, 500, 630			

REACT V GMB factory setting - Vmax = Vnom l/s and Vmin = 0 l/s

Rectangular design

Rectangular variable flow damper	REACT V GMB	a	bbb-ccc
Version:			
Size: Dimension: B x H (see table on page 10)			

REACT V GMB factory default - Vmax = Vnom l/s and Vmin = 0 l/s

Accessories

DUCT ADAPTER

Adapter for installing size 160 in a 6" circular duct	DUCT ADAPTER 160-6"
Adapter for installing size 315 in a 12" circular duct	DUCT ADAPTER 315-12"
Adapter for installing size 630 in a 25" circular duct	DUCT ADAPTER 630-25"

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	

Gruner GUIV3-M

Hand-held terminal for actuator	Gruner GUIV3-M

LUNA RC

Room controller for temperature regulation	LUNA RC	a	TEMP-MB
Version:			

Room controller for temperature regulation and CO_2	LUNA RC	a	CO2-TEMP-MB
Version:			

LUNA RE

Room controller for temperature regulation	LUNA	d	PE	-S	MB
Version:					
Design: Screw terminal					

DETECT IAQ

Carbon dioxide and temperature controller for room areas	DETECT IAQ	a	CO2-TEMP-MB
Version:			

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

Carbon dioxide and temperature controller for ventilation ducts	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 GMB

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%, although at least ±X according to table in product sheet
Type:	REACT V GMBa 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	Gruner GUIV3-M
Adapter for installing size 160 in a 6" circular duct	DUCT ADAPTER 160-6"
Adapter for installing size 315 in a 12" circular duct	DUCT ADAPTER 315-12"
Adapter for installing size 630 in a 25" circular duct	DUCT ADAPTER 630-25"

QJB.41 Louvre damper with counter-rotating blade

Make: Swegon

Type: REACT V GMB

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 measure-ment:	±5%, although at least ±X according to table in product sheet
Type:	REACT V GMBa bbb-ccc-dd xx pcs
Accessories	
Hand-held terminal for actuator	Gruner GUIV3-M