REACT V GMBa

Instructions for Use

02/09/2024
Art. 1546152

Key to symbols

Symbols on the machine

This product complies with applicable EU directives

Symbols in this user manual

Warning/Caution!

Risk of crushing

Application area

The product is a variable flow damper or constant flow damper designed for comfort ventilation indoors. The product is used to regulate the supply air or extract air flow in ventilation ducts.

The product may not be used for anything other than its intended use.

General

Read through the entire Instructions for Use before you install/use the product and save the instructions for future reference. It's not permissible to make changes or modify this product other than those specified in this document.

The packaging contains the following items

1 x REACT V GMB

1 x Instructions for Use

Protective equipment

Always use appropriate personal protective equipment for the work in question, in the form of gloves, respirators and protective glasses during handling, installation, cleaning and service/maintenance.

Electrical safety

Permitted voltage, see "Electrical data". It is not permissible to insert foreign objects into the product's contactor connections or the electronics' ventilation openings; risk for short circuiting.

24 V isolation transformer to be connected should comply with the provisions of IEC 61558-1.

Cable sizing must be carried out for cabling between the product and the power supply source.

Disconnect the power supply when working on the product and it is not required to be running.

Always follow the local/national rules for who shall be permitted to carry out this type of electrical installation.

Other risk

When the product is voltage fed, the damper will either open or close. This can entail a certain risk of pinch injuries, for example, on the fingers if these are placed between the damper blade and ventilation duct when the damper blade rotates. The product's actuator is equipped with a release button that permits manual control of the damper blade, always ensure this is activated before working on the internal parts of the damper.

Handling

- Always use appropriate transport and lifting devices when the product is to be handled to reduce ergonomic loads.
- The product must be handled with care.
- It is not permissible to carry the product by the measuring tubes.

Installation

- Moist, cold and aggressive environments must be avoided.
- Avoid installing the product near a heat source.
- Assemble the product according to applicable industry regulations.
- Install the product so that it is not accessible by unauthorized persons, for example above a suspended ceiling.
- Install the product for easy access during service/maintenance.
- Supplement the duct system with a cleaning hatch in the vicinity of the product to facilitate cleaning.
- If the product is mounted above a fixed ceiling, the inspection hatch must be located so that the product is accessible for inspection.
- If the product is mounted so that it is possible to gain access to the inside of the product, it must be supplemented with appropriate protection, for example, a ventilation unit.
- If the product is mounted in cold areas, the whole product must be insulated on the outside against condensation.
- For installation, the accessory FSR is recommended.
- The product can be installed position-independent.
- It is recommended to mount the product so that the product's display is visible.
- The product must be laid down prior to installation so that it cannot fall over.
- Check to make sure that the product doesn't have any visible defects.
- Check that the product is properly secured after it has been installed.
- Use the product's eyes to secure the cables with cable ties.
- Check that all cables are properly secured in place after installation.
- Check that the actuator/controller is properly mounted.

The document was originally written in Swedish

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% but 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	67	241	2	7
125	475	485	215	50	5	1.8	9	32	108	389	2	7
160	475	485	255	50	5	2.1	16	58	184	662	2	7
200	475	485	300	50	5	2.7	25	90	292	1051	3	11
250	525	535	350	50	5	3.4	40	144	470	1692	5	18
315	560	570	415	50	10	4.5	63	227	747	2689	8	29
400	695	705	505	60	10	6.5	102	367	1240	4464	13	47
500	820	840	605	60	10	9.1	164	590	1900	6840	20	72
630	915	935	735	60	15	14.0	300	1080	3030	10908	32	115

*) Vnom at 120 Pa in pressure reading.

*Installed according to the instructions.

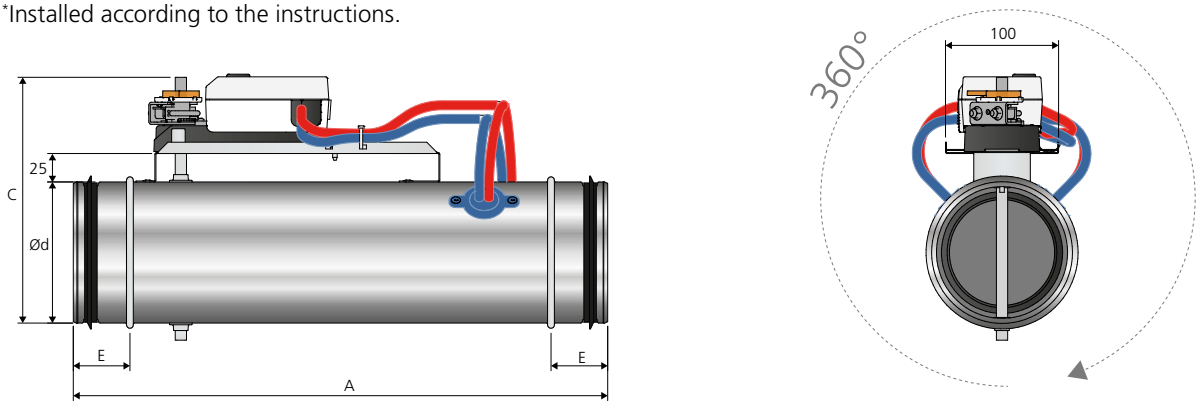


Figure 1. Dimensions (mm), REACT V GMB circular. The damper can be installed at an optional angle.

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

Straight duct section requirements

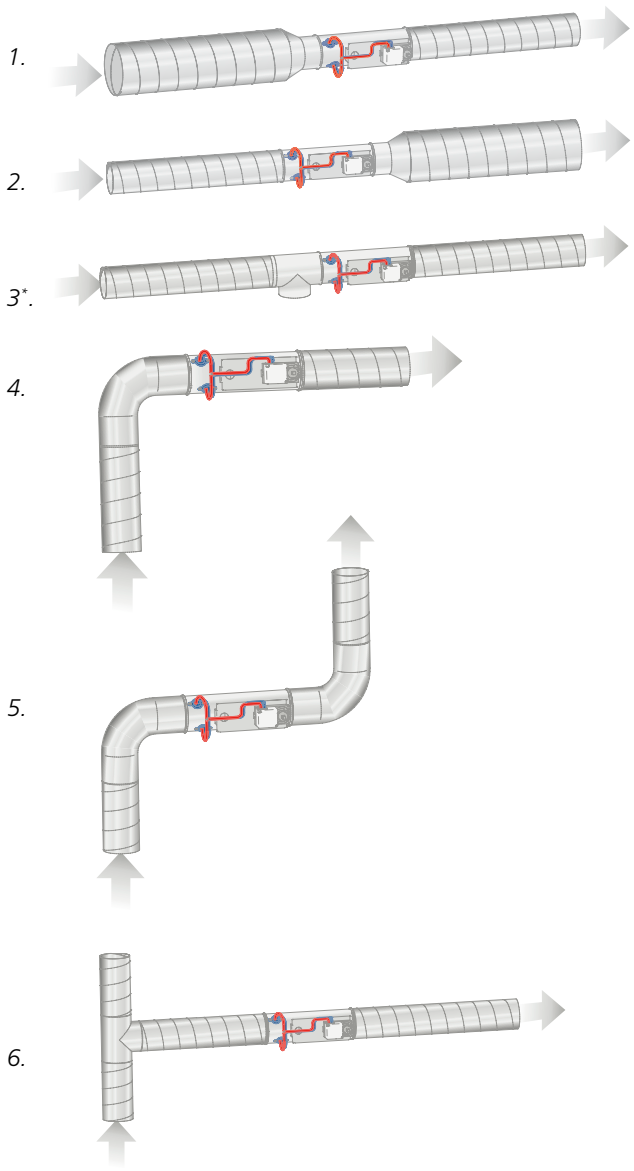


Figure 2. Straight duct section requirements in circular ducts, number of Ø before product:
Images 1-5 require no straight duct section (image 3 illustrates a T piece with a cleaning hatch).*
Image 6 requires a straight duct section before the damper equivalent to 4 x the diameter of the duct.

Straight duct section requirements in case of sound attenuator with baffle

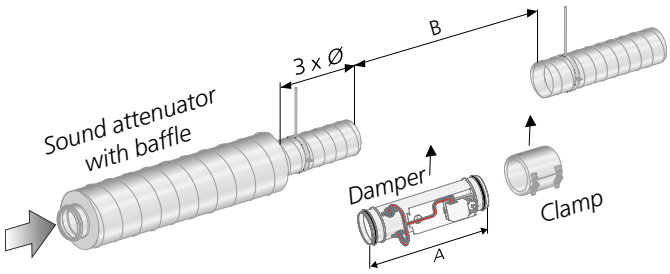


Figure 3. Straight duct section requirements 3 x Ø in case of sound attenuator with baffle or centre body.

Installation in the duct system

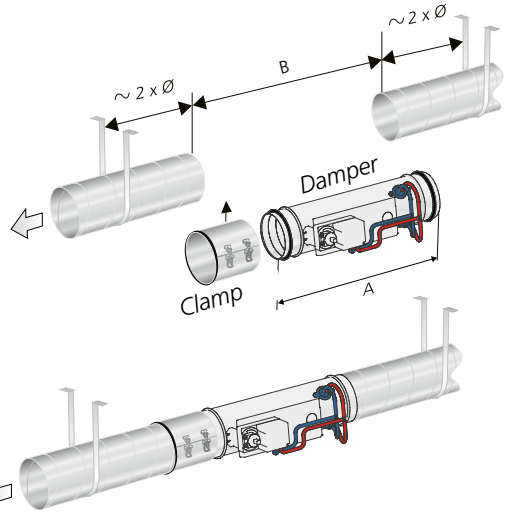


Figure 4. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of the product.

Rectangular design

Dimensions

Size BxH (mm)	Torque (Nm)	Weight (kg)	Flow range				Tolerance Q* ±5% but 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.

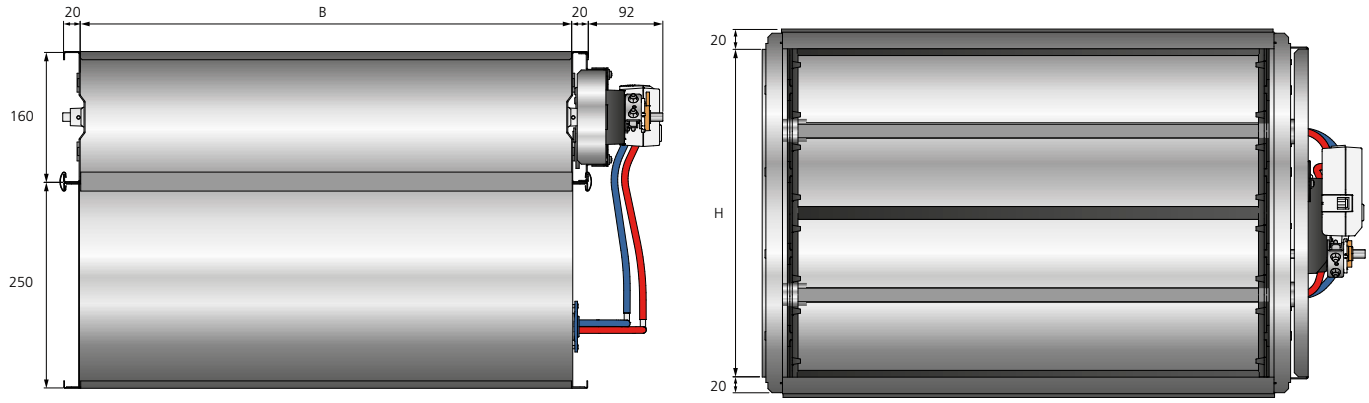


Figure 5. Dimensions (mm), REACT V GMB rectangular.

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 spindles 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.

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

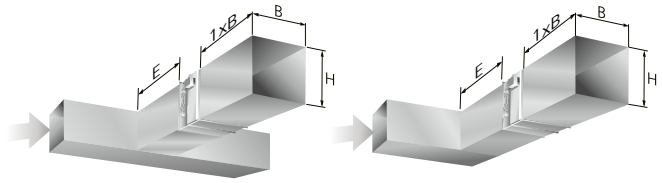


Figure 6. Straight duct section requirements in rectangular ducts.
E = Straight section
B = Width of duct
H = Height of duct

Straight duct section requirements in case of sound attenuator with baffle

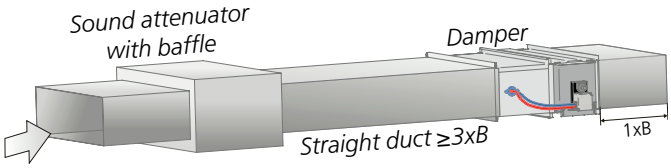


Figure 7. Straight duct section requirements 3 x B in case of sound attenuator with baffle. Applies to both supply and extract air.

Connection

1-2 – Supply voltage 24 V AC/DC

1-3 – Control signal (Y) 0..10/(2..10) V DC

1-4 – Actual value signal (U) 0..10/(2..10) V DC

A – Modbus (-CA)

B – Modbus (+CB)

For further calculations of Y and U, see the formulas on page 11.

Load on output 4: max. 0.5 mA.

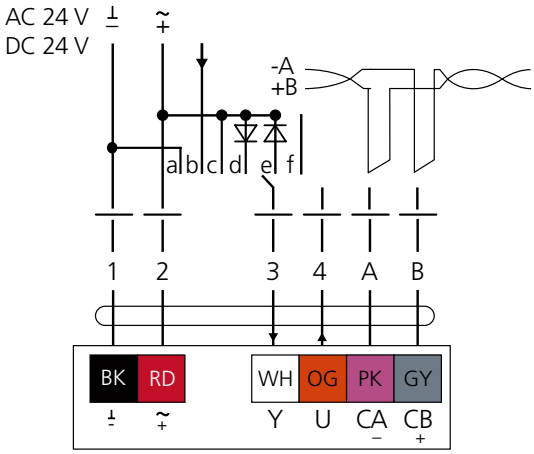


Figure 8. Wiring diagram.

Regulation and forced control via analogue control signal

See connection in the wiring diagram, Figure 8.

Signal	a	b	c	d	e	f
	⊥ − 3	3	~ + 3	~ 3	~ 3	3
Mode 2...10 V	Closed	Vmin[1]	Vmax	Open[2]	Closed[3]	Vmin
Mode 0...10 V	Vmin	Vmin[1]	Vmax	Open[2]	Closed[3]	Vmin

[1]Control signal 0-10 V DC / 2-10 V DC
[2]Positive half-wave, AC only
[3]Negative half-wave, AC only

Mode 2-10 V: Damper closed < 0.8 V

Handling

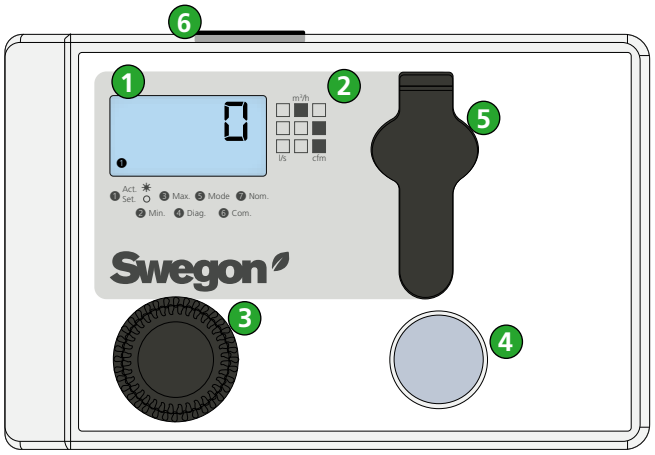


Figure 9. Gruner actuator.

1 Display

Display for setting and changing values directly on the actuator without external tools, with backlighting that goes out automatically. The display only shows three figures; in the case of larger values, apostrophes are shown and the remaining figures are hidden.

- 1000 = 1´00
- 10000 = 10´0
- 1278 = 1'27

2 Unit matrix

The unit matrix can be read on the label/checked against required values on the display

l/s:	No square is shown on the display
m^3/h:	Only the top square is shown on the display
cfm:	The middle and bottom squares are shown on the display

3 Value selector

To change the values shown on the display

4 Pushbutton and LED lighting

Off:	No power
On:	Required set point achieved
Flashing:	Required set point not achieved
Pressing button:	Select between the menus

5 Service port

For connection of the hand-held terminal GUIV3-M

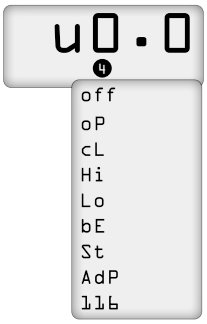
6 Release button

Pressed button:	Actuator disconnected, the motor stops, manual overriding possible
Released button:	Returns to standard mode

Setting and reading of parameters

1. Select required menu by pressing the Pushbutton.
2. Press and hold the Pushbutton for more than 2 seconds (the value will flash in the display) to make it possible to make changes in the selected sub menu.
3. To save the selected value, press the Pushbutton once (the value flashes three times when a new value has been accepted).

Settings for actuator

Menu	Display	Description
1 Act.✳ Set.o		Alternately shows actual value / set point Change of unit
2 Min.		Adjustment to required min. value (set point Y = 0/2 V DC) The min. value must be less than the max. value Min. value is greater than the max value = forced to min. value
3 Max.		Adjustment to required max. value (set point Y = 10 V DC) The max. value must be greater than the min. value
4 Diag.	 off oP cL Hi Lo bE St AdP 111	Alternately shows set point (y) / feedback signal (u) Forced control Normal Operation Opens the damper fully Closes the damper fully Damper regulates to selected max. value The damper is regulated to selected min. value Damper regulates to selected intermediate value, 50% of nominal value Actuator stops in the current position End position calibration (Applies to 15 Nm or Modbus version) Shows the current software version
5 Mode	 0Ai 2Ai *0Bi* *2Bi*	Actuator control 0-10 V DC, Analogue, Inverted direction of rotation 2-10 V DC, Analogue, Inverted direction of rotation *0-10 V DC, Bus, Inverted direction of rotation. Can only be changed via Modbus.* *2-10 V DC, Bus, Inverted direction of rotation. Can only be changed via Modbus.*
6 Com.	 1 b14	Bus communication, see Handling Modbus Modbus address 1…247 Communication settings b1…b32
7 Nom.		Shows the nominal air flow The display only shows three figures; in the case of larger values, apostrophes are shown and the remaining figures are hidden

How to use Modbus

Modbus tables can be found in separate document (REACT Gruner – Modbus settings).

Menu 6 (Com) makes it possible to set Modbus address and communication settings. The Modbus address can be set between 1 and 247. Communication settings can be set between b1 and b32, see table below.

Display number	Baud Rate - Parity - Stop bit
1	1200-None-2
2	1200-Even-1
3	1200-Odd-1
4	2400-None-2
5	2400-Even-1
6	2400-Odd-1
7	4800-None-2
8	4800-Even-1
9	4800-Odd-1
10	9600-None-2
11	9600-Even-1
12	9600-Odd-1
13	19200-None-2
14[1]	19200-Even-1
15	19200-Odd-1
16	38400-None-2
17	38400-Even-1
18	38400-Odd-1
19	1200-None-1
20	2400-None-1
21	4800-None-1
22	9600-None-1
23	19200-None-1
24	38400-None-1
25	76800-None-1
26	115200-None-1
27	76800-None-2
28	76800-Even-1
29	76800-Odd-1
30	115200-None-2
31	115200-Even-1
32	115200-Odd-1

[1] Standard setting

Trouble shooting

The product does not communicate over Modbus

- Make sure that the product is energised.
- Check the product's Modbus connection.
- Check the product's communication settings.
- Check that the product has the right and unique Modbus address.

The product shows incorrect/no air flow

- Make sure that the product is energised.
- Check that the motor's set size (Vnom) corresponds with the physical size of the damper, see "Handling".
- Make sure that the product is installed according to the recommended distance to disruptions, see "Installation".
- Check that there is an air flow.
- Make sure that the product is correctly oriented in terms of air direction. The air flow must follow the instructions on the product.
- Check that the measuring tubes are mounted correctly, plus to plus (red), minus to minus (blue).
- Check that the measuring tubes are undamaged and not creased.
- Check with the help of the K-factor and the pressure difference between the red and blue measuring tubes that the flow is within the product's measurement range.

The product does not regulate the air flow

- Make sure that the product is energised.
- Check that the damper motor has not become detached from the damper spindle.
- Check that the damper motor works by pressing in the motor's release button, turn the damper spindle, release the release knob and then see whether the damper motor starts to move.
- Check that the product is connected correctly.
- Check that the product is not force controlled.

The product does not regulate on the desired air flow

- Check that the settings for Vmin and Vmax correspond with the required regulation range.
- Check the electrical connection for the required function, see wiring diagrams in the document "REACT Gruner Description of functions & wiring diagrams".

Product does not exit test mode

- Check that the product is connected correctly, check the "Y" signal and the polarity on "G" and "G0". See "Connection".
- Check the setpoint settings for Vmin and Vmax. The value for Vmax must be higher than Vmin in order for the product to be in automatic mode.
- If Modbus communication is used for the damper, test mode can be active via the communication. Try disconnecting the Modbus cables and attempt to set the motor in automatic mode. See "Handling".

Cleaning

Ideally, the product should be cleaned in connection with the cleaning of the rest of the ventilation system.

Cleaning of electrical components

- If needed, use a dry cloth to clean the components.
- Never use water, detergent and cleaning solvent or a vacuum cleaner.

External cleaning

- If necessary use tepid water and a well-wrung cloth.
- Never use detergent and cleaning solvent or a vacuum cleaner.

Internal cleaning

- When cleaning the ventilation system, the product must be dismantled if there are no cleaning hatches close to the product.
- Cleaning equipment such as whisks and the like must not be fed through the product.
- If necessary remove dust and other particles that can be present in the product.
- Never use detergent and cleaning solvent or a vacuum cleaner.

Service/maintenance

- The product does not require any maintenance, except for any cleaning when necessary.
- In connection with a service, mandatory ventilation inspection or cleaning of the ventilation system, check that the general condition of the product appears to be good. Pay particular attention to the suspension, cables and that they sit firmly in place.
- It's not permissible to open or repair electrical components.
- If you suspect that the product or a component is defective, please contact Swegon.
- A defective product or component must be replaced by an original spare part from Swegon.

Materials and surface treatment

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

Disposal

Waste must be handled according to local regulations.

Product warranty

The product warranty or service agreement will not be valid/will not be extended if: (1) the product is repaired, modified or changed, unless such repair, modification or change has been approved by Swegon AB; or (2) the serial number on the product has been made illegible or is missing.

Performance checks

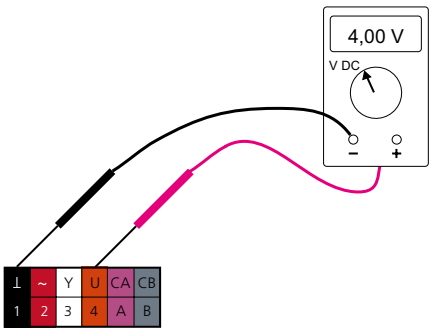


Figure 10. Shows connection to a voltmeter for checking the actual value.

Formulas for calculating air flow

The following applies for analogue control.

Control signal 0..10 V DC give the following formulas:

- Calculation of current flow (V_{act}) when you know the value of the control signal (Y) :

$$V_{act} = V_{min.} + \frac{Y}{10\ V\ DC} \bullet (V_{max.} - V_{min.})$$

- Calculation of the current actual value (U) when you know the value of the current flow (V_{act}):

$$U = 10\ V\ DC \bullet \frac{V_{act}}{V_{nom}}$$

Control signal 2..10 V DC gives the following formulas:

- Calculation of current flow (V_{act}) when you know the value of the control signal (Y):

$$V_{act} = V_{min.} + \frac{Y - 2\ V\ DC}{8\ V\ DC} \bullet (V_{max.} - V_{min.})$$

- Calculation of the current actual value (U) when you know the value of the current flow (V_{act}):

$$U = 2\ V\ DC + 8\ V\ DC \bullet \frac{V_{act}}{V_{nom}}$$

Key to formulas above:

Y = control signal in [V] DC
U* = actual value signal in [V] DC, always refers to 0-V_{nom}.
V_{act} = current air flow in [l/s, m³/h, cfm]
$V_{min.}$ = set min. flow in [l/s, m³/h, cfm]
$V_{max.}$ = set max. flow in [l/s, m³/h, cfm]
V_{nom} = nominal flow in [l/s, m³/h, cfm], see tables pages 2 & 4.

*Note: Does not indicate damper position.

Replacing the damper motor

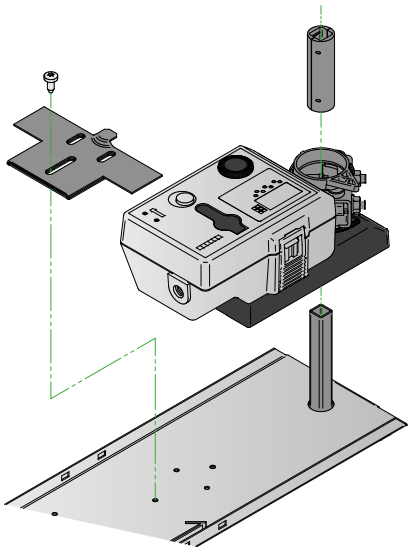


Figure 11. Dismantling the damper motor.

1. *Disconnect the cable.*
2. *Disconnect the measuring tubes.*
3. *Set damper motor to the open position.*
4. *Loosen the nuts on the spindle clamp (nuts: 8 mm).*
5. *Remove 1 screw for the locking strip on the circular design and 2 screws for the locking strip on the rectangular design (screw: TX20).*
6. *Lift off the damper motor and spindle adapter*
   (The rectangular design has a round damper spindle and no spindle adapter).
7. *Reassemble in the reverse order.*
   Note: Positioning of damper blade and locking strip, see figures 12 and 13.

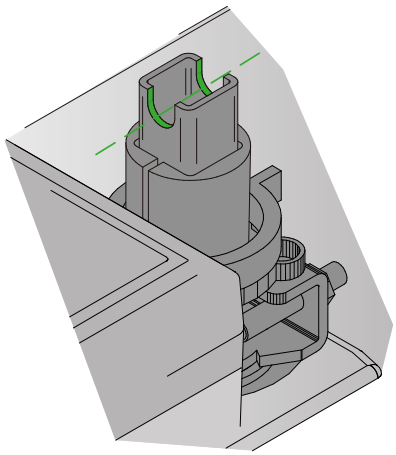


Figure 12. Recess in the damper spindle indicates the position of the damper.

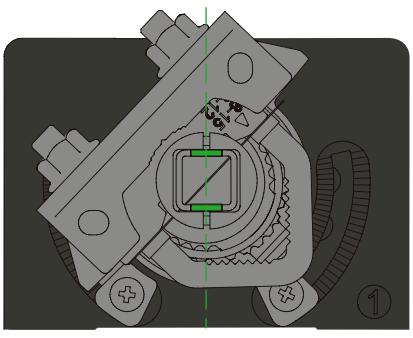


Figure 13. Damper open. Jumper to the left.

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°):	
5 Nm:	100 s
10 / 15 Nm:	150 s
Ambient temperature	
Operation:	0 – +50 °C
Storage:	-20 – +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.	
Supply voltage/control signal	4 x 0.75 mm^2
Modbus	2 x 0.38 mm^2

Power consumption, for transformer rating:

REACT V GMB 5 Nm	2.0 W	3.5 VA
REACT V GMB 10 Nm	2.0 W	3.5 VA
REACT V GMB 15 Nm	2.0 W	4.0 VA

Declaration of Conformity

Swegon AB hereby affirms that:

REACT V GMBa complies with the essential characteristic demands and relevant regulations specified in the directives, 2006/42/EC (MD), 2014/30/EU (EMC) and 2011/65/EU (RoHS2):

The following standards have been observed:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: Generic standards
EN 60730-1:2011	Automatic electrical control and control unit for household use - Part 1: Generic standards
EN 61000-6-2:2007	Electromagnetic compatibility (EMC). Generic standards. Immunity for industrial environments
EN 61000-6-3:2007	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments

CE

Person responsible for this declaration:

Name: Freddie Hansson, R&D Manager Tomelilla

Address: Industrigatan 5, 273 21 Tomelilla, Sweden

Date: 231117

This declaration is applicable only if the product has been installed according to the instructions in this document and if no modifications or changes have been made on this product.

References

www.swegon.com

Building Materials Declaration

REACT V GMB Product data sheet

REACT Gruner – Description of functions & wiring diagrams

REACT Gruner – Modbus settings