

# REACT V-SR GMBd

## Instructions for Use

09/02/2024  
Article 1546172

### 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

1 x REACT V-SR 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 connectors or the electronics' ventilation openings; risk of 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, to the fingers if these are placed between the damper blade and ventilation duct when the damper blade rotates.



The product is equipped with a spring return actuator and has no release button, manual control is performed using the supplied hex key where the damper blade is cranked to the required position and then locked. Do not forget to disable the lock after working on it.

#### 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

**Swegon**

# Installation, torque, dimensions and weights

## 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 <sup>*)</sup>			
							l/s	m³/h	l/s	m³/h	l/s	m³/h
100	475	485	190	50	5	2.7	5	18	67	241	2	7
125	475	485	215	50	5	2.9	9	32	108	389	2	7
160	475	485	255	50	5	3.1	16	58	184	662	2	7
200	475	485	300	50	5	3.7	25	90	292	1051	3	11
250	525	535	350	50	5	4.5	40	144	470	1692	5	18
315	560	570	415	50	10	6.0	63	227	747	2689	8	29
400	695	705	505	60	10	8.0	102	367	1240	4464	13	47
500	820	840	605	60	10	10.6	164	590	1900	6840	20	72
630	915	935	735	60	20	15.5	300	1080	2950	10620	32	115

\*)Vnom at 120 Pa in pressure reading.

\*Installed according to the instructions.

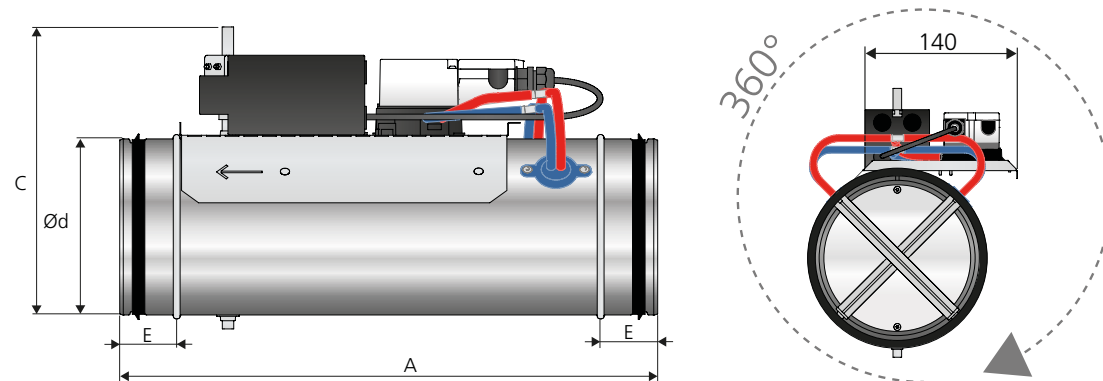


Figure 1. Dimensions (mm), REACT V-SR GMB. The damper can be installed at an optional angle.

## Mounting

- 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 dependent.
- The product can be installed horizontally or vertically.
- Instructions for Use are supplied on delivery, but can also be downloaded from [www.swegon.com](http://www.swegon.com).

### Straight duct section requirements

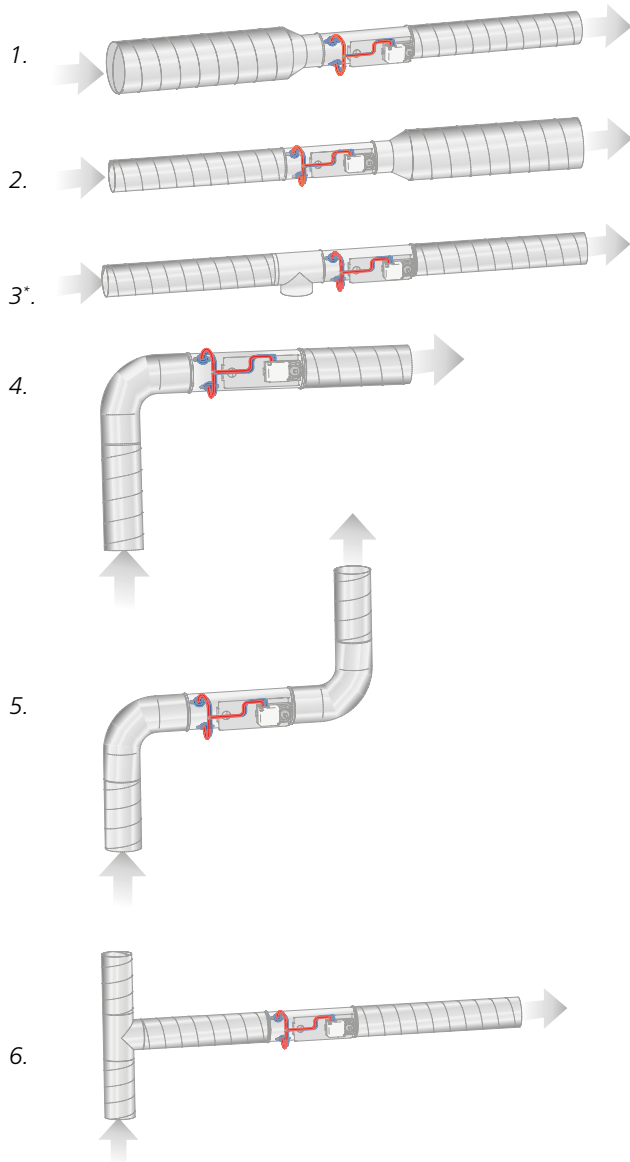


Figure 2. Straight duct section requirements, number of  $\emptyset$  before product:

Figures 1-5 require no straight duct section (figure 3\* illustrates the T piece with cleaning hatch).

Figure 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

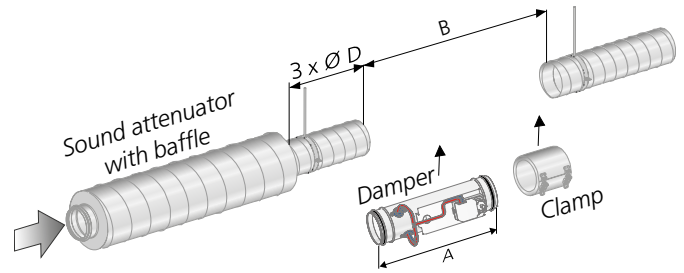


Figure 3. Straight duct section requirements 3 x  $\emptyset$  for sound attenuators with baffle or centre body.

### Installation in the duct system

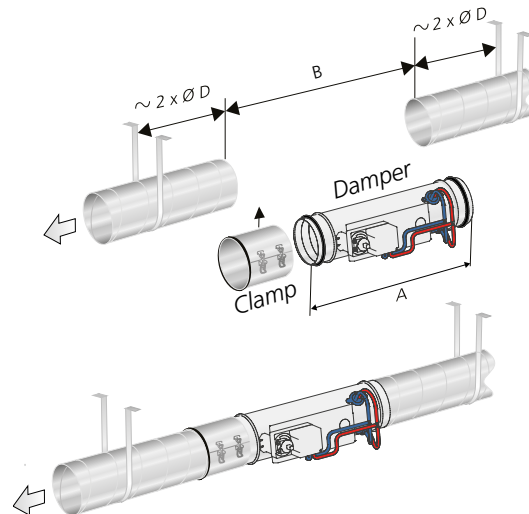


Figure 4. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of the product.

Connection

- 1-2 – Supply voltage

3 – Control signal (Y)

4 – Actual value signal (U)

A – Modbus (-CA)

B – Modbus (+CB)
- 24 V AC/DC

0..10/(2..10) V DC

0..10/(2..10) V DC
- For further calculations of Y and U see the formulas on page 7.
- Load on output 4: max. 0.5 mA.

Note: Electrical connection configured from the factory.

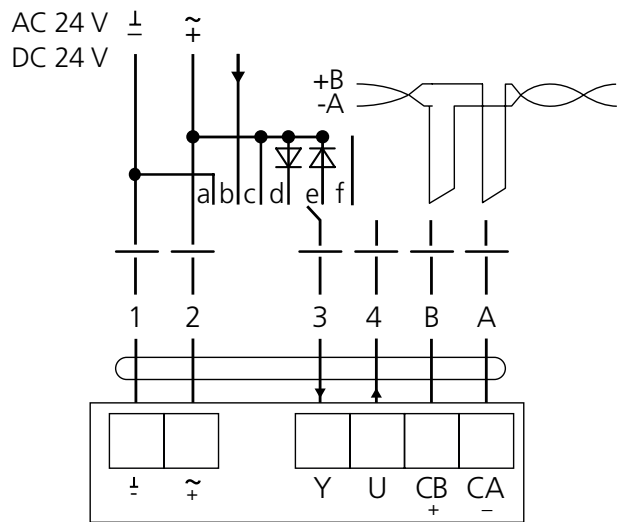


Figure 5. Wiring diagram.

Regulation and forced control via analogue control signal

See connection in the wiring diagram, Figure 5.

	a	b	c	d	e	f
Signal	$\perp$		$\sim$	$\sim$	$\sim$	
	-		+			
	$\frac{\perp}{3}$	$\frac{\perp}{3}$	$\frac{\perp}{3}$	$\frac{\sim}{3}$	$\frac{\sim}{3}$	$\frac{\perp}{3}$
	3	3	3	3	3	3
Mode 2...10 V	Closed	Vmin <sup>1</sup>	Vmax	Open <sup>2</sup>	Closed <sup>3</sup>	Vmin
Mode 0...10 V	Vmin	Vmin <sup>1</sup>	Vmax	Open <sup>2</sup>	Closed <sup>3</sup>	Vmin

<sup>1</sup>Control signal 0-10 V DC / 2-10 V DC

<sup>2</sup>Positive half-wave, AC only

<sup>3</sup>Negative half-wave, AC only

Mode 2-10 V: Damper closed < 0.8 V

# Use

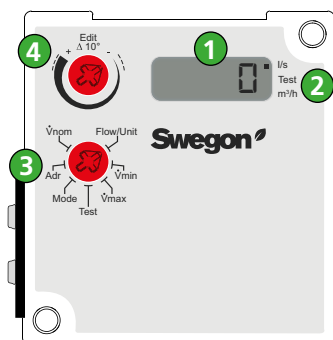


Figure 6. Gruner controller.

1

## Display

Display for setting and changing value directly on the controller with a screwdriver. 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 the required values on the display

l/s: Square is shown in the top right corner of the display

m<sup>3</sup>/h: Square is shown in the bottom right corner of the display

3

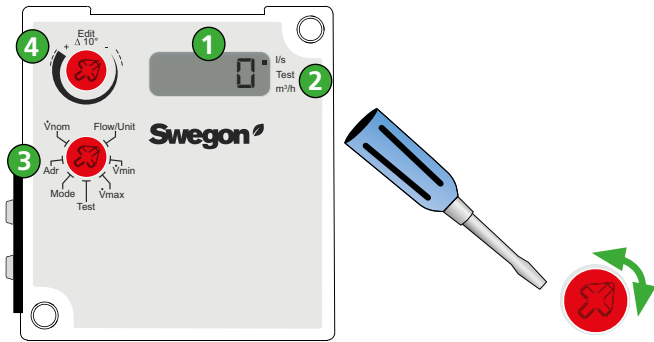
## Function wheel

To select among the menus

4

## Edit wheel










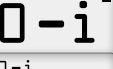




To select a sub menu or to change the values that are shown on the display. The value flashes twice when a new value has been accepted.



## Setting and reading parameters

1. Select the required menu by turning the Function wheel.
2. Set the values or select sub menus by turning the Edit wheel.
3. The value flashes twice when a new value has been accepted.

## Actuator settings

Menu	Display	Description
 <b>Flow/Unit</b>		I/s Test m³/h Shows set point (flashes until the set point is reached) Change of unit, square in the display indicates the selected unit
 <b>Vmin</b>		I/s Test m³/h Adjustment to required min. value (set point Y = 0 / 2 V DC) The min. value must be smaller than the max. value
 <b>Vmax</b>		I/s Test m³/h Adjustment to required max. value (set point Y = 10 V DC) The max. value must be larger than the min. value
 <b>Test</b>	 off on oP cL Lo Hi AdP 123	I/s Test m³/h Forced control. Square in the display indicates active test mode. Alternately shows test mode/ current air flow. Disconnects automatically after 10 hours. Normal operation Actuator stops in the current position Opens the damper fully Closes the damper fully The damper regulates to selected min. value The damper regulates to selected max. value End position calibration Shows the current software version
 <b>Mode</b>	 0-i 2-i 0-n 2-n	I/s Test m³/h Actuator control. <i>Direction of rotation can only be changed via Modbus.</i> 0-10 V DC, Analogue, Inverted direction of rotation (NO) 2-10 V DC, Analogue, Inverted direction of rotation (NO) 0-10 V DC, Analogue, Normal direction of rotation (NC) 2-10 V DC, Analogue, Normal direction of rotation (NC)
 <b>Addr</b>	 1 024	I/s Test m³/h Bus communication, see How to use Modbus Modbus address 1...247 Communication settings 0 1...0 24
 <b>Vnom</b>		I/s Test m³/h Shows the nominal air flow The display only shows three figures. In the case of larger values, apostrophes are shown and the nominal value is rounded to the nearest zero or five

## How to use Modbus

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

Display number	Baud Rate - Parity - Stop bit
1 <sup>3</sup>	1200-None-2
2 <sup>3</sup>	1200-Even-1
3 <sup>3</sup>	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 <sup>4</sup>	19200-Even-1
15	19200-Odd-1
16	38400-None-2
17	38400-Even-1
18	38400-Odd-1
19 <sup>3</sup>	1200-None-1
20	2400-None-1
21	4800-None-1
22	9600-None-1
23	19200-None-1
24	38400-None-1

<sup>3</sup> Limited data length per reading of max. 8 addresses.

<sup>4</sup> Standard setting.

## Trouble shooting

### **The product does not communicate over Modbus**

- Make sure that the product is energized.
- 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 the incorrect/no air flow**

- Make sure that the product is energized.
- 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 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 energized.
- Check that the damper motor has not become detached from the damper spindle.
- 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 polarity on "G" and "GO". See "Connections".
- 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 "Use".

## 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 is 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

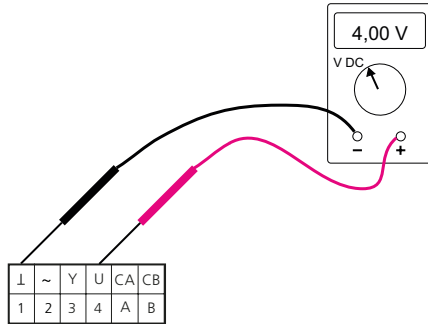


Figure 7. Shows how to connect a voltmeter for checking the actual value.

### Formulas for calculating air flow

The following applies for analogue control.

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

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

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

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

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

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

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

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

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

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

Key to formulas opposite:

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, m<sup>3</sup>/h]

$V_{min}$  = set min. flow in [l/s, m<sup>3</sup>/h]

$V_{max}$  = set max. flow in [l/s, m<sup>3</sup>/h]

$V_{nom}$  = nominal flow in [l/s, m<sup>3</sup>/h], see table on page 2.

\*Note! Does not indicate damper position.

## Replacing the damper motor

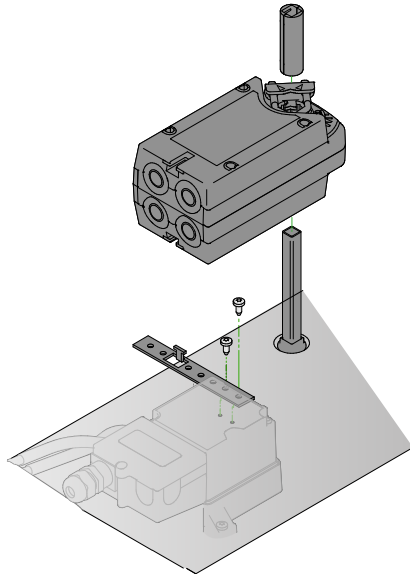


Figure 8. Dismantling the damper motor.

1. Disconnect the cable.
2. Set damper motor to the open position.
3. Loosen the nuts on the spindle clamp (nuts: 8 mm).
4. Dismantle 2 screws for the locking strip (screws: TX20).
5. Lift off the damper motor and spindle adapter.
6. Reassemble in the reverse order.

Positioning of damper blade and locking strip, see figures 9 and 10.

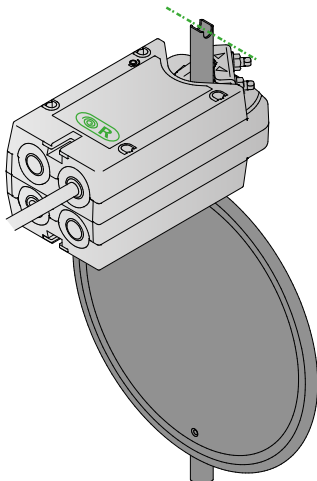


Figure 9. Standard installation (NC), damper closed with jumper to the right.

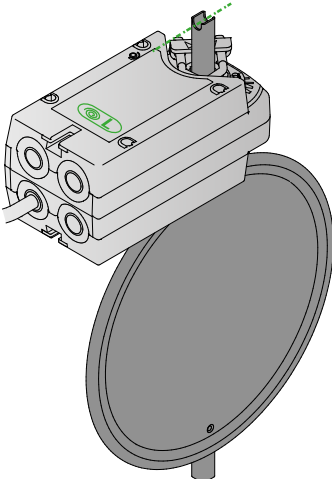


Figure 10. Damper open with jumper to the left (NO).

## Change of direction



Figure 11. Change of direction.

1. Standard installation of damper motor (NC ©R) Damper blade installed in closed position, see Figure 9.
2. Dismantle the circlip and spindle clamp.
3. Turn damper motor.
4. Refit spindle clamp and circlip. Then open the damper blade, see Figure 10.
5. Installed with spindle clamp (NO ©L).

Note: Settings must be changed on the product via Modbus (address 551, mode), see Modbus document.

## Technical data

IP class:	IP42
Corrosivity class:	C3
Pressure class:	A
Leakage classes according to SS-EN 1751	
- Leakage class, casing:	C
- Leakage class, damper, closed:	4
Running time, electric (90°):	
5 Nm:	100 s
10 / 20 Nm:	150 s
Return time spring:	max. 20 s (90°)
Ambient temperature	
Operation:	0 – +50 °C
Storage:	-20 – +50°C
RH:	10 - 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 $\pm 15\%$ 50 - 60 Hz
Connection to screw terminals, cable size	6 x 0.5-2.5 mm <sup>2</sup>

Power consumption, for transformer rating:

REACT V-SR GMB 5 Nm	5.0 W	6.5 VA
REACT V-SR GMB 10 Nm	5.0 W	8.0 VA
REACT V-SR GMB 20 Nm	8.0 W	11.5 VA

## Declaration of Conformity

Swegon AB hereby affirms that:

REACT V-SR 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 mitigation
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 - Generic standards - Immunity for equipment in industrial environments
EN 61000-6-3:2007	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments



Person responsible for this declaration:

Name: Freddie Hansson, R&D Manager Tomelilla

Address: Industrigatan 5, 273 21 Tomelilla, Sweden

Date: 28/11/2023

A handwritten signature in black ink, appearing to read 'Freddie Hansson'.

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](http://www.swegon.com)

Building Materials Declaration

REACT V-SR GMB Product data sheet

REACT Gruner – Description of functions & wiring diagrams

REACT Gruner – Modbus settings