

REACT V_d

Instructions for Use

20211005
Art. 1546059

Symbol key

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 is 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

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's 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 products that are not required to run in production.

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 be either open or close and there can be a certain risk for 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.



If the product is equipped with a spring return actuator there is 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 tube.

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 does not 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 in place.



The document was originally written in Swedish

Swegon

Installation, torque, dimensions and weights

Circular design

Size ØD (mm)	A (mm)	B (mm)	C (mm)	E (mm)	Normal motor		Spring return		Flow range				Tolerance Q* ±5% with at least ±x l/s
					Torque (Nm)	Weight (kg)	Torque (Nm)	Weight (kg)	Min.		Max=Vnom ¹⁾		
									l/s	m³/h	l/s	m³/h	
100	475	485	190	50	5	1.6	5	2.7	5	18	67	241	2
125	475	485	215	50	5	1.8	5	2.9	9	32	108	389	2
160	475	485	255	50	5	2.1	5	3.1	16	58	184	662	2
200	475	485	300	50	5	2.7	5	3.7	25	90	292	1051	3
250	525	535	350	50	5	3.4	5	4.5	40	144	470	1692	5
315	560	570	415	50	10	4.5	10	6.0	63	227	747	2689	8
400	695	705	505	60	10	6.5	10	8.0	102	367	1240	4464	13
500	820	840	605	60	10	9.1	10	10.6	164	590	1900	6840	20
630	915	935	735	60	15	14.0	20	15.5	300	1080	2950	10620	32

¹⁾ Vnom at 120 Pa in pressure reading.
^{*} Installed according to the instructions

Installation – all designs

- 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.
- Instructions for Use are supplied with the product on delivery, but can also be downloaded from www.swegon.com.

Installation – circular version

- Installation is position dependent.
- Can be installed horizontally or vertically.

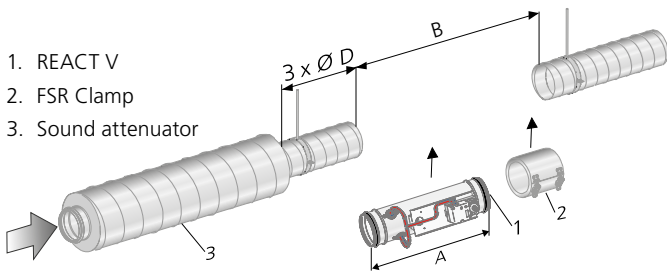


Figure 1. Requires a straight duct section of 3 x Ø for sound attenuators with baffle or centre body.

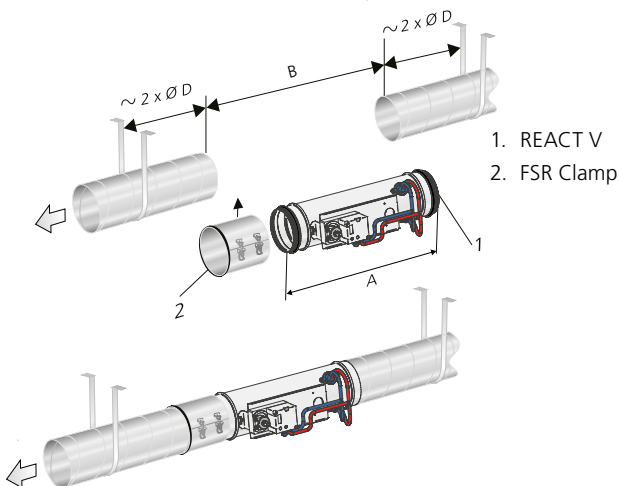


Figure 2. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of REACT V.

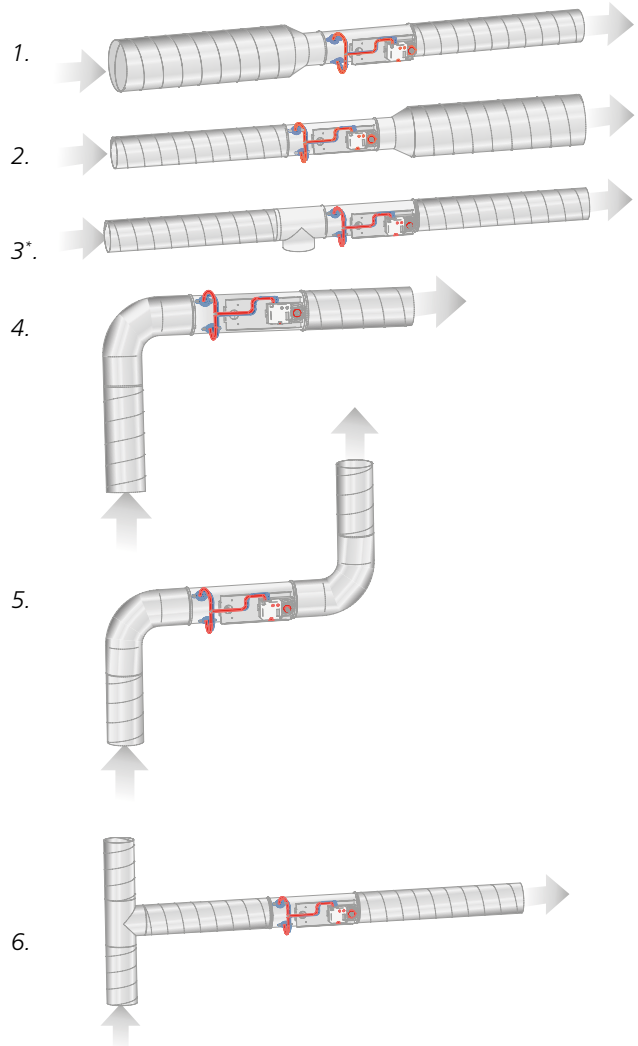


Figure 3. Straight duct section requirements, circular ducts, quantity Ø before the product: Figures 1-5 require no straight duct section (figure 3* illustrates the T piece with cleaning hatch). Figure 6 requires a straight duct section before the damper equivalent to 4 x the diameter of the duct.

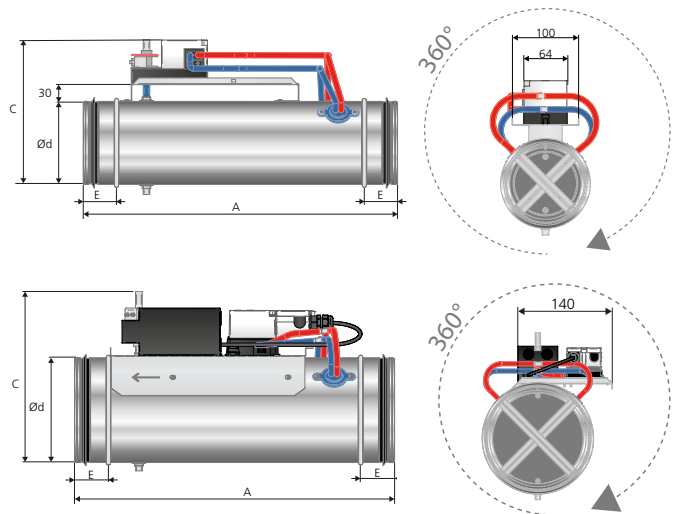


Figure 4. Dimensions (mm), REACT V circular and REACT V circular with spring return. The damper can be installed at an optional angle.

Rectangular design

Size WxH (mm)	Normal motor		Spring return		Flow range				Tolerance Q* ±5% with at least ±x l/s
	Torque (Nm)	Weight (kg)	Torque (Nm)	Weight (kg)	Min.		Max=Vnom ¹⁾		
					l/s	m ³ /h	l/s	m ³ /h	
200 x 200	5	7.2	5	8.0	67	240	365	1314	8
300 x 200	5	8.4	5	9.2	100	360	548	1971	12
400 x 200	5	9.9	5	10.7	133	480	730	2628	17
500 x 200	5	11.4	5	12.2	167	600	913	3285	21
600 x 200	5	12.9	5	13.7	200	720	1095	3942	25
700 x 200	5	14.4	5	15.2	233	840	1278	4599	29
800 x 200	5	15.4	5	16.2	267	960	1460	5256	33
1000 x 200	10	18.4	10	19.9	333	1200	1825	6570	42
300 x 300	5	10.9	5	11.3	152	548	834	3003	19
400 x 300	5	12.4	5	12.9	203	731	1112	4004	25
500 x 300	5	13.9	5	14.4	254	914	1390	5004	32
600 x 300	5	15.4	5	15.9	305	1096	1668	6005	38
700 x 300	10	16.8	10	17.8	355	1279	1946	7006	44
800 x 300	10	18.4	10	19.4	406	1462	2224	8007	51
1000 x 300	10	21.4	10	22.4	508	1827	2780	10009	63
400 x 400	5	14.0	5	14.5	273	983	1495	5382	34
500 x 400	10	16.0	10	18.0	341	1228	1869	6728	43
600 x 400	10	17.4	10	18.5	409	1474	2243	8073	51
700 x 400	10	19.6	10	20.6	478	1720	2616	9419	60
800 x 400	10	21.1	10	22.2	546	1965	2990	10764	68
1000 x 400	10	24.2	10	25.2	682	2457	3738	13456	85
1200 x 400	15	27.2	20	29.2	819	2948	4485	16147	102
1400 x 400	15	30.3	20	32.2	955	3439	5233	18838	119
1600 x 400	15	33.3	20	35.3	1092	3931	5980	21529	136
500 x 500	10	18.5	10	19.5	429	1543	2347	8449	54
600 x 500	10	20.5	10	21.6	514	1851	2816	10139	64
700 x 500	10	22.6	10	23.6	600	2160	3286	11829	75
800 x 500	10	24.6	10	25.6	686	2468	3755	13519	86
1000 x 500	15	28.6	20	30.6	857	3085	4694	16898	107
1200 x 500	15	32.7	20	34.6	1028	3702	5633	20278	129
1400 x 500	15	36.8	20	38.7	1200	4319	6572	23658	150
1600 x 500	15	40.8	20	42.8	1371	4936	7510	27037	171
600 x 600	10	22.7	10	23.7	618	2227	3388	12195	77
700 x 600	10	24.8	10	25.8	722	2598	3952	14228	90
800 x 600	15	26.8	20	27.8	825	2969	4517	16260	103
1000 x 600	15	30.9	20	32.9	1031	3711	5646	20325	129
1200 x 600	15	35.0	20	37.0	1237	4453	6775	24390	155
1400 x 600	15	39.2	20	41.1	1443	5195	7904	28455	180
1600 x 600	15	43.3	20	45.2	1649	5937	9033	32521	206
700 x 700	15	27.6	20	29.5	844	3038	4622	16638	105
800 x 700	15	30.3	20	32.2	964	3472	5282	19014	121
1000 x 700	15	34.9	20	36.8	1205	4339	6602	23768	151
1200 x 700	15	40.6	20	42.6	1446	5207	7923	28522	181
1400 x 700	15	45.7	20	47.7	1688	6075	9243	33275	211

¹⁾ Vnom at 120 Pa in pressure reading.
*Installed according to the instructions

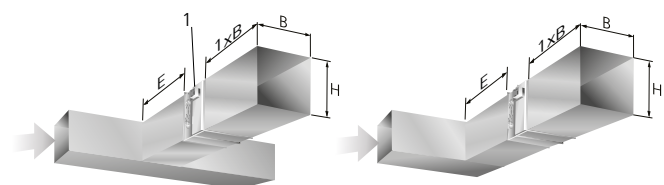
Installation – rectangular design

Dimension B in the figure and table below is found in the table “Rectangular design” to the left.

NOTE! Damper spindles must be installed horizontally.

Straight duct section before REACT V in rectangular ducts

Type of disruption	E (m ₂ =5%)	E (m ₂ =10%)
One 90° bend	E = 3 x B	E = 2 x B
T piece	E = 3 x B	E = 2 x B

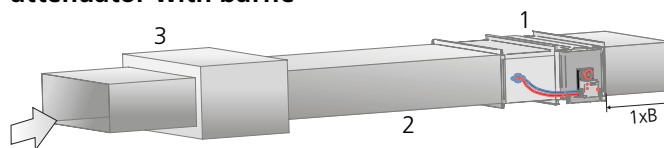


1. Controller/Actuator always on the side of the rectangular damper.

E = Straight section.
W = Width, duct.
H = Height, duct.

Figure 5. Straight section requirements, rectangular ducts.

Straight duct section before/after REACT V – sound attenuator with baffle



1. = Rectangular REACT V
2. = Straight duct ≥3xB.
3. = Sound attenuator with baffle.

Figure 6. Straight duct section requirements, rectangular REACT V and sound attenuator with baffle. Installation with a straight duct section applies to both the supply air and the extract air.

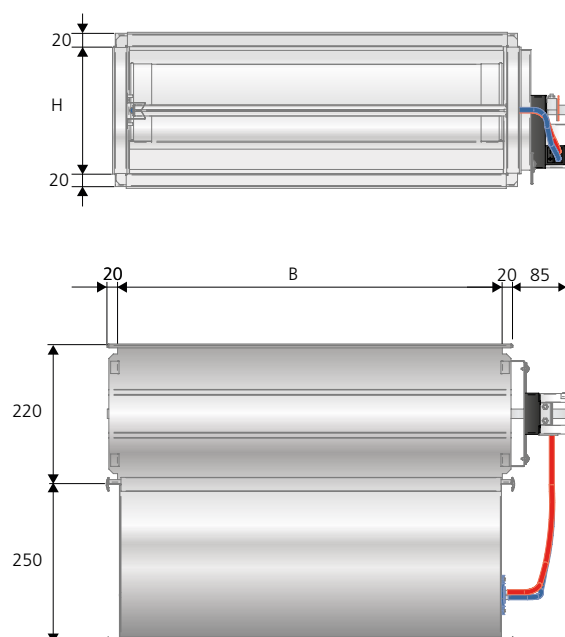


Figure 7. Dimensions (mm), REACT V rectangular, REACT V rectangular with spring return.

Connections

Connection, normal version

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

For further calculations of Y and U see the formulas page 8.
 Load on output 4: max. 0.5 mA

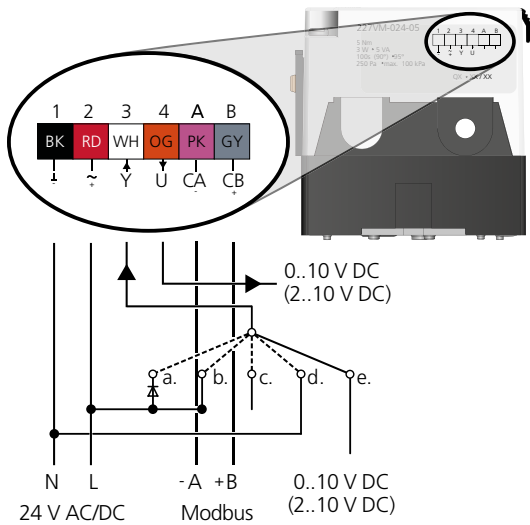


Figure 8. Wiring diagram, normal version.

Connection, spring return

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

For further calculations of Y and U see the formulas page 8.
 Load on output 4: max. 0.5 mA

NOTE! Electrical connection of the spring return actuator from the factory is completed.

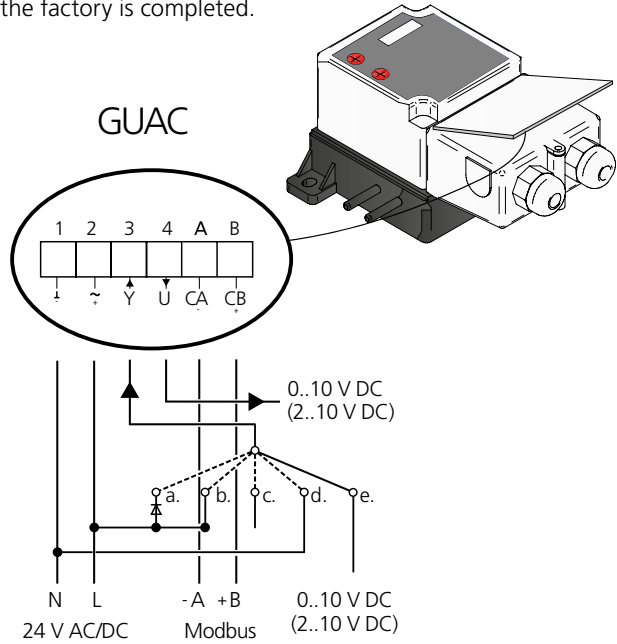


Figure 9. Wiring diagram, spring return.

Regulation and forced control via analogue control signal

See connection in the wiring diagram, figure 8 and 9.

- Open the damper: 24 VAC (L) via diode/rectifier (positive half-wave)
- Regulate to set max. value: 24 VAC/DC (L)
- Regulate to set min. value: Mode = 0 – 10 V, no control signal
- Close the damper: 24 VAC/DC (N)
 - Mode = 0 – 10 V, min. value = 0
 - Mode = 2 – 10 V
- Regulate according to control signal 0-10 V / 2-10 V
 - Mode = 0 – 10 V
 - 0 V = min. value
 - 10 V = max. value
 - Mode = 2 – 10 V
 - 0 V = close damper
 - 2 V = min. value
 - 10 V = max. value

Handling

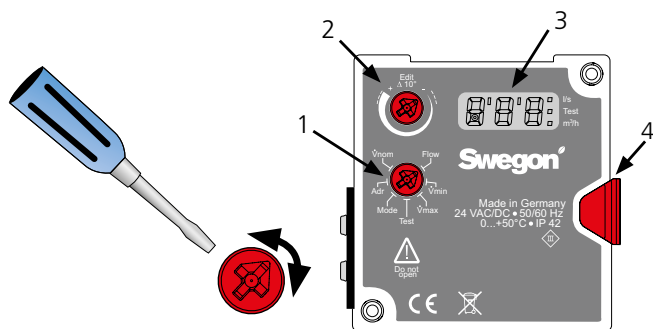


Figure 10. REACT interface.

- 1 – Select the required function by turning the “Function wheel”.
- 2 – Set the value or select submenus by turning the “Edit” wheel.
- 3 – The value flashes twice when a new value is accepted.
- 4 – Release button. (Not available on the spring return).

Menus



Flow

- Switch between l/s and m³/h via the edit wheel.
- A “Lit” square on the display indicates the selected unit.



Vmin

- Select new value for Vmin via the edit wheel.
- Vmin should be less than Vmax.



Vmax

- Select new value for Vmax via the edit wheel.
- Vmax must be greater than Vmin



Test

- Disconnects automatically after 10 hours.
- Turn the edit wheel to choose between the following modes:

oFF – Test mode switched off, the controller regulates normally

on – Test mode is on, the damper is locked in its position

oP – Opens the damper fully

cL – Closes the damper completely

Lo – The damper is regulated to the selected Vmin

Hi – The damper is regulated to the selected Vmax

123 – Shows the current software version



Mode

- Shows the selected control and actual value signal
- Switch between 0-10 and 2-10 V via the edit wheel



Addr

- Used for Modbus. for particulars on how to use Modbus, see next page.



Vnom

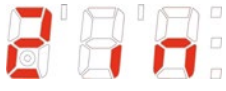
- For setting the damper size. The set damper size is shown according to the list below.

List of Vnom abbreviations

Display text	Physical size
r10	ø100
r12	ø125
r16	ø160
r20	ø200
r25	ø250
r31	ø315
r40	ø400
r50	ø500
r63	ø630
064	600x400
085	800x500
103	1000x300
104	1000x400
999=special size (check the maximum settable flow on Vmax to see what Vnom is set to)	

How to use Modbus

Modbus tables are available in a separate document (REACT-Modbus-m)

Function	Description	
Addr	 <p>Enables you to set the actuator's Modbus address, by turning the "edit wheel". It is possible to set the address from 1 till 247. If you turn the value selector to end stop "+", the display will show a "2". This makes it possible to select the second level. If you select the second level, this is indicated in the display by a small circle.</p>	
	The following functions are available at the second level:	
	Flow	Return to previous level
	V _{min}	Not used.
	V _{max}	Not used.
	Test	Not used.
	Mode	Shows the angle of the rotation (0...255 digital 0...100%)
	Addr.	Used for selecting communication settings for Modbus. See table below.
V _{nom}	Used for setting response delay for the Modbus communication (see separate documents)	

Display number	EEPROM value	Communication rate	Parity	Stop bits
1 ³	0	1200	None	2
2 ³	1	1200	Even	1
3 ³	2	1200	Odd	1
4	3	2400	None	2
5	4	2400	Even	1
6	5	2400	Odd	1
7	6	4800	None	2
8	7	4800	Even	1
9	8	4800	Odd	1
10	9	9600	None	2
11	10	9600	Even	1
12	11	9600	Odd	1
13	12	19200	None	2
14 ⁴	13	19200	Even	1
15	14	19200	Odd	1
16	15	38400	None	2
17	16	38400	Even	1
18	17	38400	Odd	1
19 ³	18	1200	None	1
20	19	2400	None	1
21	20	4800	None	1
22	21	9600	None	1
23	22	19200	None	1
24	23	38400	None	1

³ Limited data length per reading of max. 8 addresses

⁴ Default 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 "Use".
- 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 tube is 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 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 the wiring diagram in the document "Description of functions & wiring diagram".

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.

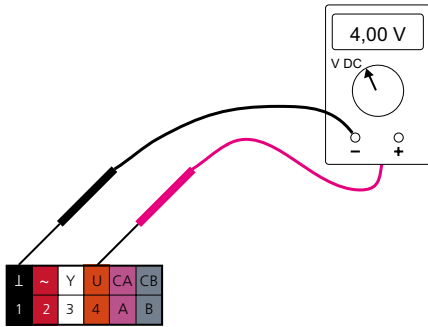


Figure 11. Shows connection of a voltmeter to check the actual value on the normal version.

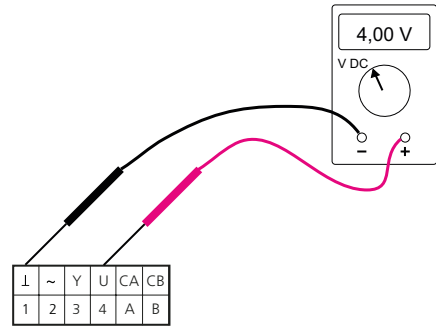


Figure 12. Shows connection of a voltmeter to check the actual value on the spring return.

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, m³/h]

V_{min} = set min. flow in [l/s, m³/h]

V_{max} = set max. flow in [l/s, m³/h]

V_{nom} = nominal flow in [l/s, m³/h], see tables page 2 & 3.

*Note! Does not indicate damper position.

Replacing the damper motor

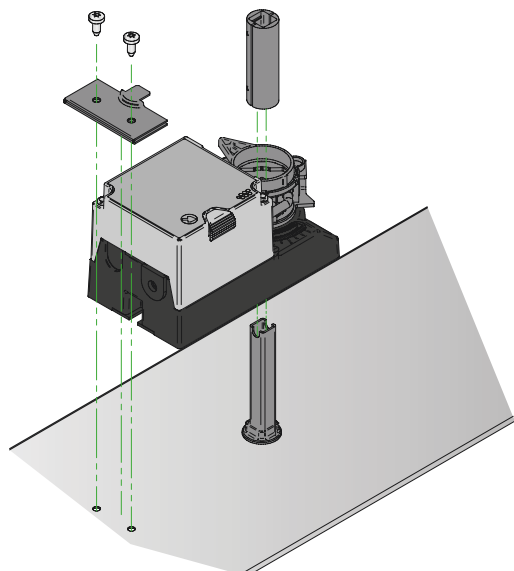


Figure 13. Dismantling the damper motor.

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: 8mm).
5. Dismantle 2 screws for the locking strip (screws: 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!

Normal motor

Positioning of the damper blade and locking strip, see figures 14 and 15.

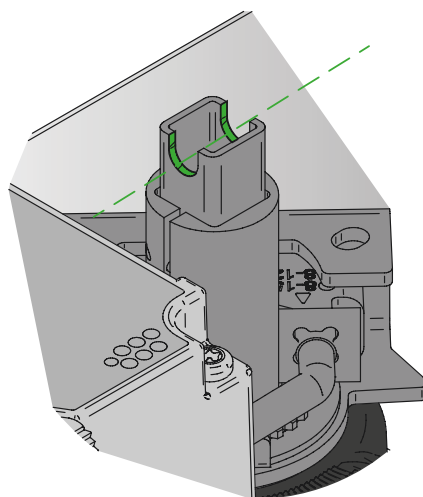


Figure 14. Recess in the damper spindle indicates the position of the damper.

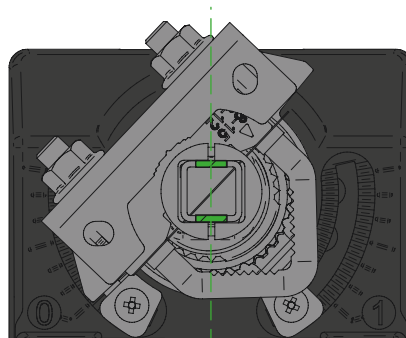


Figure 15. Damper open. Jumper to the left.

Technical data

IP class:	IP42
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
Spring return actuator, running time electricity (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

Normal

Power supply:	24 V AC/DC ±15% 50 - 60 Hz
Fixed connection cable, 1000 mm with cable size.	4 x 0.75 mm ² 2 x 0.38 mm ²

Power consumption, for transformer rating:

REACT V 5 Nm	2.5 W	4.0 VA
REACT V 10 Nm	2.5 W	5.5 VA
REACT V 15 Nm	3.0 W	5.5 VA

Spring return

Power supply:	24 V AC/DC ±15% 50 - 60 Hz
Connection to screw terminals, cable size.	6 x 0.5-2.5 mm ²

Power consumption, for transformer rating:

REACT V-SR 5 Nm	5.6 W	7.8 VA
REACT V-SR 10 Nm	5.6 W	9.3 VA
REACT V-SR 20 Nm	8.6 W	9.3 VA

Declaration of Conformity

Swegon AB hereby affirms that:

REACT V 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 controls for household and similar 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



Person responsible for this declaration:

Name: Freddie Hansson, R&D Manager Tomelilla

Address: Industrigatan 5, 273 21 Tomelilla, Sweden

Date: 200601

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 Product data sheet

REACT Description of functions & Wiring diagram

REACT Modbus

