

REACT P-X_d

Instructions for Use

20201202
Art. 1546083

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 pressure regulating damper designed for comfort ventilation indoors. The product is used to regulate the supply air or exhaust air pressure 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 P-X

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.

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)	C (mm)	E (mm)	F (mm)	Normal motor				Spring return			
					B (mm)	G (mm)	Torque (Nm)	Weight (kg)	B (mm)	G (mm)	Torque (Nm)	Weight (kg)
100	210	190	220	50	27	80	10	1.4	45	70	5	1.9
125	210	220	220	50	27	80	10	1.5	45	70	5	2
160	210	260	220	50	27	80	10	1.6	45	70	5	2.1
200	210	300	220	50	27	80	10	1.9	45	70	5	2.4
250	210	355	220	50	27	80	10	2.1	45	70	5	2.6
315	210	415	220	50	27	80	10	2.6	70	95	10	3.1
400	255	505	265	50	5	80	10	3.6	70	95	10	4.1
500	255	605	275	50	5	80	10	5.1	70	95	10	5.6
630	255	735	275	50	5	80	15	6.7	70	95	20	7.2

Installation – all designs

- The product’s pressure measurement requires spacing 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.

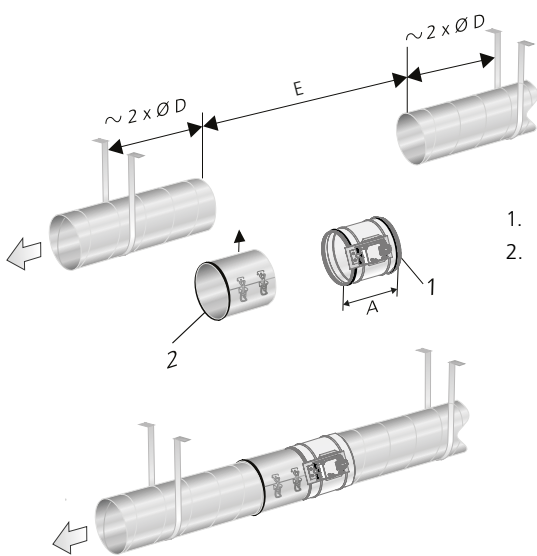


Figure 1. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of REACT P-X.

1. REACT P-X
2. FSR Clamp

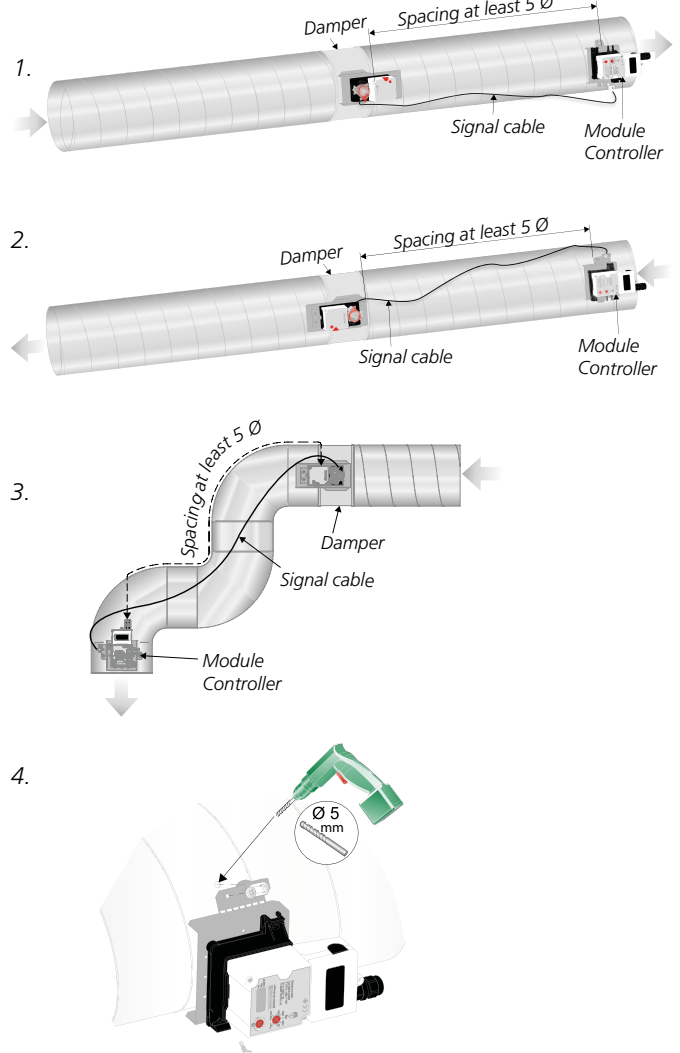


Figure 2. Spacing requirements, circular ducts, quantity Ø before and after the product:

1. At least 5 x Ø after the damper (supply air).
2. At least 5 x Ø before the damper (extract air).
3. Examples of how spacing can be measured.
4. Controller installation.

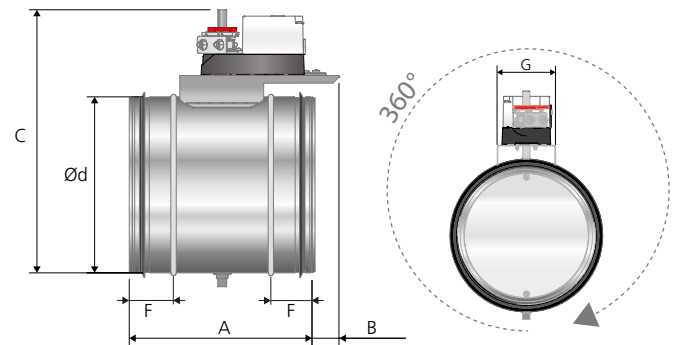


Figure 3. Dimensions (mm), REACT P-X circular and REACT P-X circular with spring return. The damper can be installed at an optional angle.

Rectangular design

Size WxH (mm)	Normal motor		Spring return	
	Torque (Nm)	Weight (kg)	Torque (Nm)	Weight (kg)
200 x 200	10	7.2	5	8.0
300 x 200	10	8.4	5	9.2
400 x 200	10	9.9	5	10.7
500 x 200	10	11.4	5	12.2
600 x 200	10	12.9	5	13.7
700 x 200	10	14.4	5	15.2
800 x 200	10	15.4	5	16.2
1000 x 200	10	18.4	10	19.9
300 x 300	10	10.9	5	11.3
400 x 300	10	12.4	5	12.9
500 x 300	10	13.9	5	14.4
600 x 300	10	15.4	5	15.9
700 x 300	10	16.8	10	17.8
800 x 300	10	18.4	10	19.4
1000 x 300	10	21.4	10	22.4
400 x 400	10	14.0	5	14.5
500 x 400	10	16.0	10	18.0
600 x 400	10	17.4	10	18.5
700 x 400	10	19.6	10	20.6
800 x 400	10	21.1	10	22.2
1000 x 400	10	24.2	10	25.2
1200 x 400	15	27.2	20	29.2
1400 x 400	15	30.3	20	32.2
1600 x 400	15	33.3	20	35.3
500 x 500	10	18.5	10	19.5
600 x 500	10	20.5	10	21.6
700 x 500	10	22.6	10	23.6
800 x 500	10	24.6	10	25.6
1000 x 500	15	28.6	20	30.6
1200 x 500	15	32.7	20	34.6
1400 x 500	15	36.8	20	38.7
1600 x 500	15	40.8	20	42.8
600 x 600	10	22.7	10	23.7
700 x 600	10	24.8	10	25.8
800 x 600	15	26.8	20	27.8
1000 x 600	15	30.9	20	32.9
1200 x 600	15	35.0	20	37.0
1400 x 600	15	39.2	20	41.1
1600 x 600	15	43.3	20	45.2
700 x 700	15	27.6	20	29.5
800 x 700	15	30.3	20	32.2
1000 x 700	15	34.9	20	36.8
1200 x 700	15	40.6	20	42.6
1400 x 700	15	45.7	20	47.7

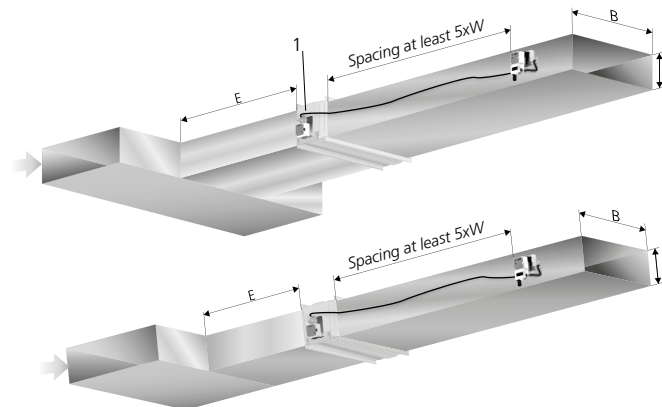
Installation – rectangular design

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 P-X in rectangular ducts

Type of disruption	E
One 90° bend	$E = 2 \times B$
T piece	$E = 2 \times B$



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

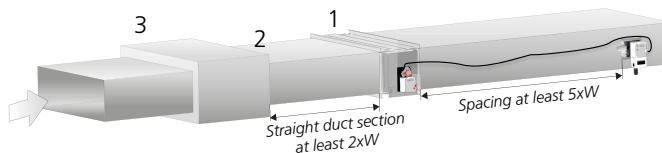
E = Straight section.

W = Width, duct.

H = Height, duct.

Figure 4. Straight section requirements and spacing, rectangular ducts.

Straight duct section before/after REACT P-X – sound attenuator with baffle



1. = Rectangular REACT P-X.

2. = Straight duct $\geq 2 \times B$.

3. = Sound attenuator with baffle.

Figure 5. Straight duct section and spacing requirements, rectangular REACT P-X and sound attenuator with baffle. Installation with a straight duct section applies to both the supply air and the extract air.

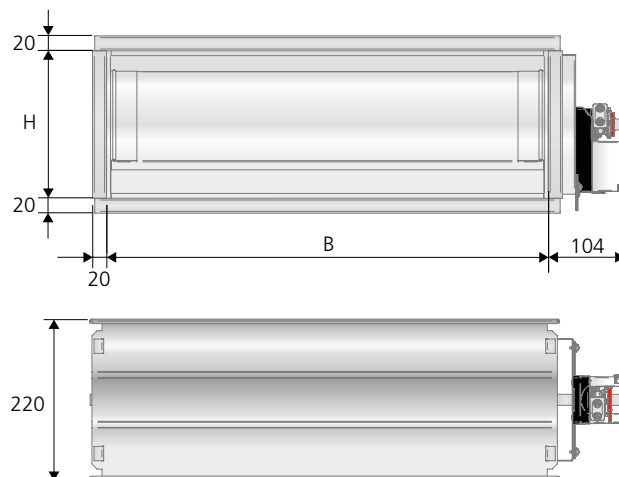


Figure 6. Dimensions (mm), REACT P-X rectangular, REACT P-X rectangular with spring return.

Connections

- 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 motor from the factory is not complete.

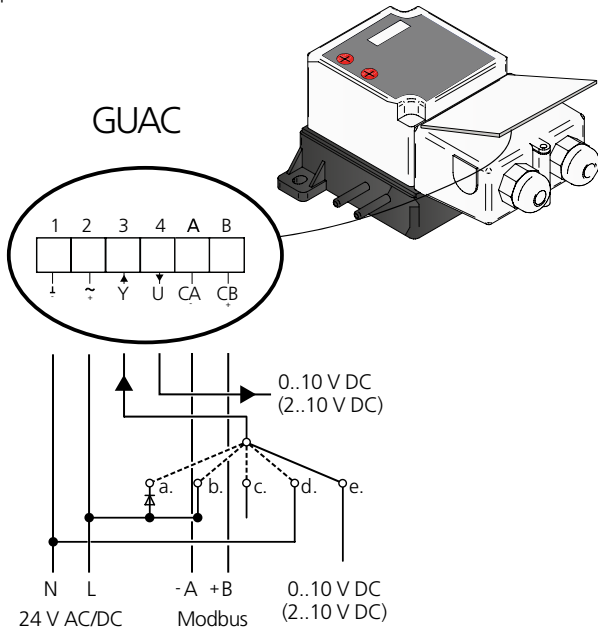


Figure 7. Wiring diagram, normal and spring return.

Regulation and forced control via analogue control signal

See connection in the wiring diagram, figure 7.

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

Signal cable connection

A signal cable is connected between the actuator and controller's connection cables as per the numbers/colour coding.

For example, 1 to 1, or black to black.

Connection points and signal cable not included.

Module Controller

Fixed connection cable,
1000 mm with cable size.

4 x 0.75 mm²
See figure 8 below

Actuator

Fixed connection cable,
1000 mm with cable size.

4 x 0.75 mm²
See figure 8 below



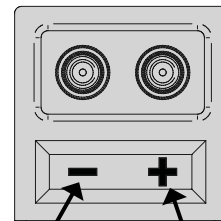
Figure 8. Connection cable controller and actuator.

Length of cable

Max cable length between controller and actuator.

Cable area	Max. cable length
0.75 mm ²	20 m
1.0 mm ²	30 m
1.5 mm ²	45 m
2.5 mm ²	75 m

Pressure tube



Pressure tube for extract air installation

Pressure tube for supply air installation

Figure 9. Tube couplings controller.

Handling

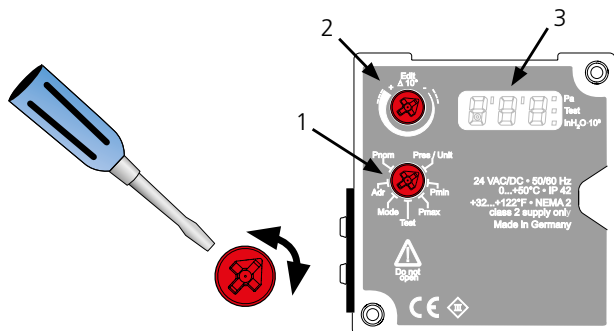


Figure 10. REACT interface.

- 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.

Menus



Pres/Unit

- Switch between Pa and inH₂O×10⁻³ via the edit wheel.
- A “Lit” square on the display indicates the selected unit.



Mode

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



Pmin

- Select new value for Pmin via the edit wheel.
- Pmin must be less than Pmax.



Addr

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



Pmax

- Select new value for Pmax via the edit wheel.
- Pmax must be greater than Pmin.



Pnom

- Not used.



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 selected Pmin

Hi – The damper is regulated to selected Pmax

123 – Shows the current software version

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>
	<p>The following functions are available at the second level:</p> <p>Pres/Unit Return to previous level</p> <p>P_{min} Not used.</p> <p>P_{max} Not used.</p> <p>Test Not used.</p> <p>Mode Shows the angle of the rotation (0...255 digital 0...100%)</p> <p>Addr. Used for selecting communication settings for Modbus. See table below.</p> <p>P_{nom} Used for setting response delay for the Modbus communication (see separate documents)</p>

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 pressure

- Make sure that the product is energized.
- Check that the product's set size corresponds with the physical size.
- 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 for supply air function or minus for extract air function.
- Check that the measuring tubes are undamaged and not creased.
- Check the pressure in the measuring tube. Check the pressure in the measuring nipple.

The product does not regulate the air pressure

- 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.

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.

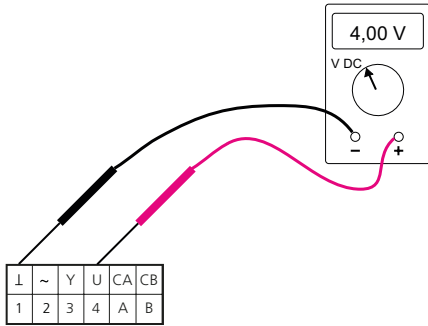


Figure 11. Shows how to connect a voltmeter for checking the actual value.

Formulas for calculating air pressure

The following applies for analogue control.

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

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

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

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

$$U = 10 \text{ V DC} \cdot \frac{P_{act}}{300}$$

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

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

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

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

$$U = 2 \text{ V DC} + 8 \text{ V DC} \cdot \frac{P_{act}}{300}$$

Key to formulas opposite:

Y = control signal in [V] DC

U = actual value signal in [V] DC

P_{act} = current air pressure in [Pa, inH₂O×10⁻³]

P_{min} = set min. pressure in [Pa, inH₂O×10⁻³]

P_{max} = set max. pressure in [Pa, inH₂O×10⁻³]

Replacing the damper motor

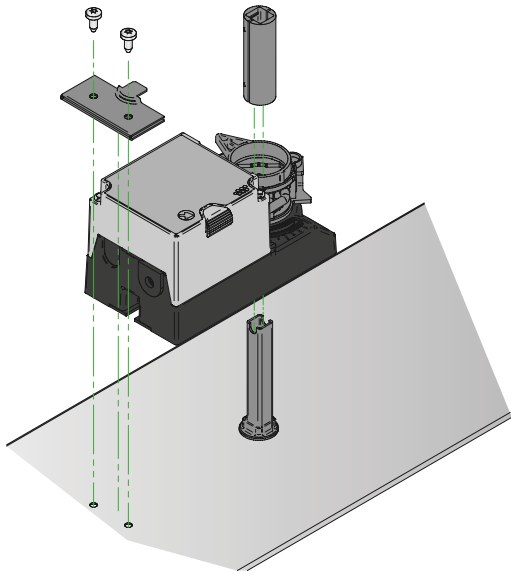


Figure 12. Dismantling the damper motor.

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 damper blade and locking strip, see figures 13 and 14.

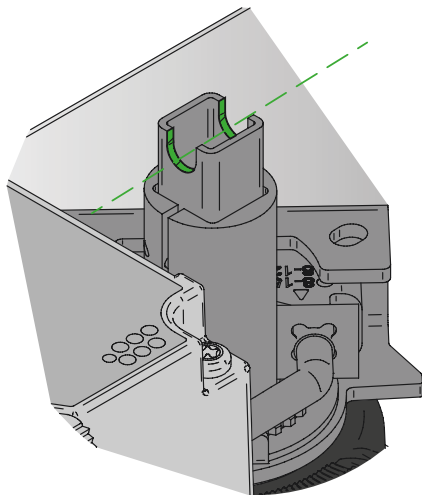


Figure 13. Recess in the damper spindle indicates the position of the damper.

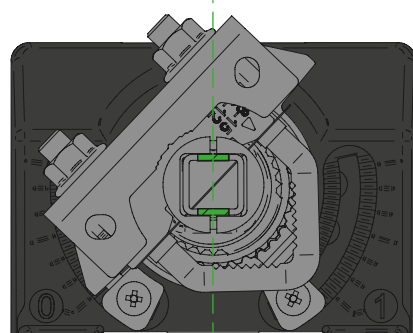


Figure 14. Damper open. Jumper to the left.

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°):	
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)

Signal cable connection

Module Controller

Fixed connection cable,
1000 mm with cable size. 4 x 0.75 mm²

Actuator

Fixed connection cable,
1000 mm with cable size. 4 x 0.75 mm²

Electrical data

Normal

Power supply:	24 V AC/DC ±20% 50 - 60 Hz
Connection to screw terminals:	6 x 0.5-2.5 mm ²

Power consumption, for transformer rating:

REACT P-X 10 Nm	2.6 W	4.8 VA
REACT P-X 15 Nm	2.6 W	4.8 VA

Spring return

Power supply:	24 V AC/DC ±20% 50 - 60 Hz
Connection to screw terminals:	6 x 0.5-2.5 mm ²

Power consumption, for transformer rating:

REACT P-X-SR 5 Nm	7.1 W	8.8 VA
REACT P-X-SR 10 Nm	5.6 W	9.3 VA
REACT P-X-SR 20 Nm	8.6 W	9.3 VA

Declaration of Conformity

Swegon AB hereby affirms that:

REACT P-X 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 P-X Product data sheet

REACT Description of functions & Wiring diagram

REACT Modbus

