



SQS35.50, SQS35.53,  
SQS65.5  
with spring return function, without manual adjuster



SQS35.00, SQS35.03,  
SQS65, SQS65.2,  
SQS85.00, SQS85.03  
without spring return function, with manual adjuster

ACVATIX™

## Electromotoric actuators

**SQS35..**  
**SQS85..**  
**SQS65..**

for valves with 5.5 mm stroke

- **SQS35..** operating voltage AC 230 V, 3-position control signal
- **SQS85..** operating voltage AC 24 V, 3-position control signal
- **SQS65..** operating voltage AC 24 V, DC 0...10 V, DC 2...10 V or 0...1000 Ω control signal
- **Positioning force 400 N**
- **Direct mounting on valves; no adjustments required**
- **Optional auxiliary switch for extra functions with SQS35.00, SQS35.03, SQS85.00, SQS85.03**
- **With or without spring return function**
- **Position indication**
- **Manual adjuster on actuators without spring return function**

### Use

For operation of Siemens valves VVG44.., VVG55.. and VXG44.. with 5.5 mm stroke for water-side control of hot water and cooling water in heating, ventilation and air conditioning systems.

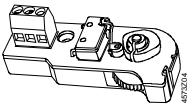
In conjunction with the ASK30 mounting kit, the former Landis & Gyr-valves with 4 mm or 5.5 mm stroke can also be operated: X3i.., VVG45.., VXG45.., VXG46.., VVI51...

## Type summary

Type reference	Operating voltage	Positioning signal		Positioning time	Spring return function	Spring return time	
SQS35.00	AC 230 V	3-position		150 s	No		
SQS35.03				35 s			
SQS35.50				150 s	Yes		8 s
SQS35.53				35 s			
SQS65.5	AC 24 V	DC 0...10 V	0...1000 Ω	35 s	Yes	8 s	
SQS65		DC 2...10 V					
SQS65.2							
SQS85.00		3-position		150 s	No		
SQS85.03				35 s			

1) Actuators SQS65 and SQS65.5 are UL-listed (only 60 Hz); type suffix ..U, e.g. SQS65U.

## Accessories

Type reference	Description	For actuators	Space for
ASC9.6 	Auxiliary switch Switching point adjustable from 0...100 % stroke	SQS35.00, SQS35.03 SQS85.00, SQS85.03	1 x ASC9.6

## Ordering

Example:

Product number	Stock number	Designation	Quantity
SQS35.00	SQS35.00	Electromotoric actuator, stroke 5.5 mm	20
ASC9.6	ASC9.6	Auxiliary switch	20

Delivery

Actuators, valves and accessories are supplied in separate packages.

Spare parts, Rev.-Nr.

See overview, page 9.

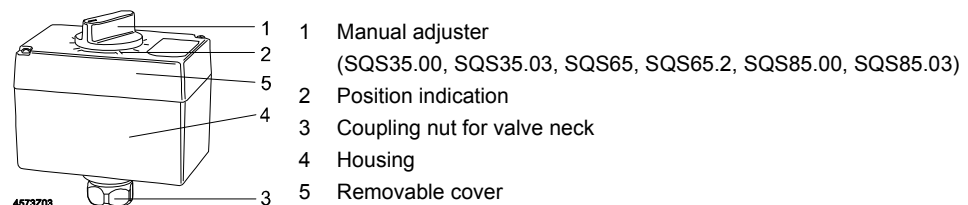
## Equipment combinations

Type reference	DN	PN class	$k_{vs}$ [m <sup>3</sup> /h]	Datasheet	SQS35..	SQS65..	SQS85..
VVG44..	15...40	PN 16	0.25...25	N4364	✓	✓	✓
VXG44..				N4464	✓	✓	✓
VVG55..	15...25	PN 25	0.25...6.3	N4379	✓	✓	✓

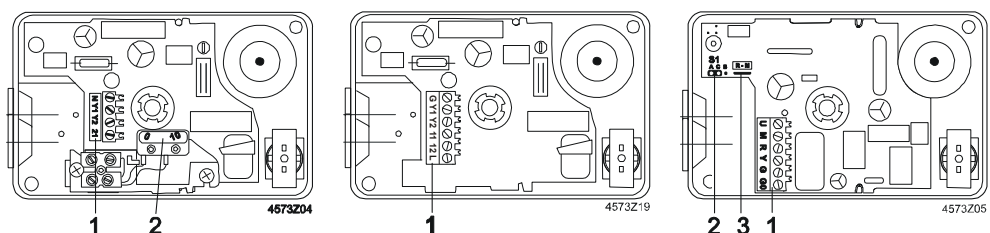
## Function / mechanical design

The reversible synchronous motor is driven by a 3-position or a proportional DC 0...10 V, DC 2...10 V or 0...1000 Ω control signal. The stroke is generated via an antilocking gear train.

## Design



## Terminal strip, auxiliary switch



**SQS35..**

- 1 Terminal strip
- 2 Auxiliary switch built-in as standard in SQS35.50, SQS35.53

**SQS85..**

- 1 Terminal strip

**SQS65..**

- 1 Terminal strip
- 2 «lin» / «log» connection
- 3 R – M bridge

**SQS35.., SQS85..**  
3-position  
control signal

- Voltage at Y1: Stem extends, valve opens
- Voltage at Y2: Stem retracts, valve closes
- No voltage at Y1 or Y2: Actuator holds the current position

**SQS35.50, SQS35.53**  
Spring return function

In the event of an AC 230 V power failure on terminal 21, the actuator will return mechanically (return spring) to its 0 % stroke position within 8 seconds, closing the valve. The Y positioning signal is not valued.

**SQS65..**  
DC 0/2...10 V or  
0...1000 Ω control  
signal

- The valve opens / closes in proportion to the control signal at Y or R.
- At DC 0/2 V or 0 Ω the valve is closed (A → AB).
- When power supply is removed, the actuator maintains its current position.

**SQS65.5**  
Spring return function

In the event of a power failure, the actuator will return mechanically (return spring) to its 0 % stroke position within 8 seconds, closing the valve. The Y positioning signal is not valued.

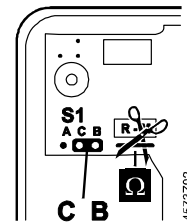
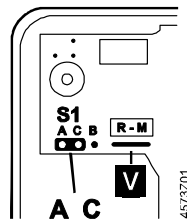
**SQS65..**  
Selecting the flow  
characteristic

Connector S1 (under the cover, on the printed circuit board) can be repositioned to change the flow characteristic of valves from «equal percentage» to «linear»; in all cases the flow characteristic relates to the through-port of the valve.

Position of S1

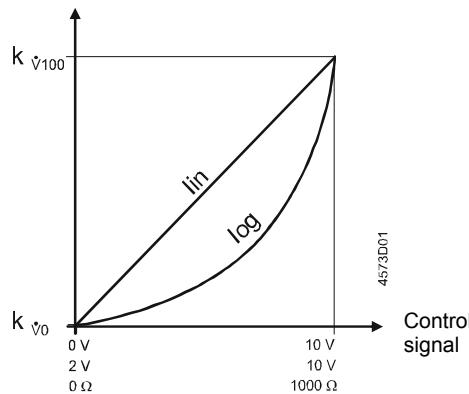
S1 connected to A and C:  
**equal-percentage** flow characteristic  
(factory setting)

S1 connected to B and C:  
**linear** flow characteristic



Flow characteristic

Volumetric flow rate



Relationship between the DC 0...10 V, DC 2...10 V or 0...1000 Ω control signal and the volumetric flow rate

Control signals:

- Y = DC 0...10 V or DC 2...10V
- R = 0...1000 Ω; **cut through R – M bridge**

Flow characteristic

- log = Equal-percentage valve characteristic (factory setting)
- lin = Linear valve characteristic

Flow range

- k v̇<sub>100</sub> = Volumetric flow 100%
- k v̇<sub>0</sub> = Volumetric flow 0%

Priority of signals

<b>Positioning signal Y</b>	DC 0/2...10 V		DC 0/2...10 V
<b>Signal R</b>		0...1000 Ω <sup>1)</sup>	0...1000 Ω <sup>1)</sup>
<b>Position / stroke</b>	The Y positioning signal is valued.	The R signal is valued.	Signal addition Y and R
<b>Position feedback U</b>	DC 0...10 V	DC 0...10 V	DC 0...10 V

<sup>1)</sup> Use with 0...1000 Ω signal indicator, e.g. frost protection. For details see connection diagram

**Features and benefits**

- Electromotoric actuator, maintenance-free

- Reversible synchronous motor
- Antilocking gear train
- Load-dependent switch-off in stroke limit positions

## Engineering notes

The actuators must be electrically connected in accordance with local regulations and the connection diagrams.

Caution 

**Safety regulations and restrictions designed to ensure the safety of people and property must be observed at all times.**

**SQS65..**

**With the SQS65.. actuators, the connector used to select the flow characteristic must be set to «lin» for valve types VVG55..**

Admissible temperatures refer to «Technical data»

If an auxiliary switch is required, its switching point should be indicated on the plant schematic.

## Mounting notes

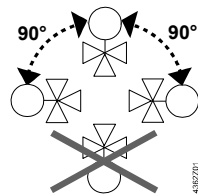
Mounting Instructions are enclosed in the product packaging.

Overview  
Mounting Instructions

Type reference	Mounting Instructions
<b>SQS35..</b>	M4573.7
<b>SQS85..</b>	
<b>ASC9.6</b>	G4573.1

Type reference	Mounting Instructions
<b>SQS65.5</b>	M4573.4
<b>SQS65</b>	
<b>SQS65.2</b>	

Orientation



## Commissioning notes

When commissioning the system, check wiring and the functions. In addition, select or check the auxiliary switch settings.

Manual adjuster 

Switching off the positioning signal.

The valve can be fully closed (= 0 % stroke) by turning the manual adjuster counterclockwise. Control is automatically resumed when the positioning signal returns.

**3-position control**

Every actuator must be driven by a dedicated controller (refer to «Connection diagrams»).

## Maintenance notes

The actuators are maintenance-free.

When servicing the actuator:

- Switch off pump and power supply
- Close the main shutoff valve in the pipework
- Release pressure in the pipes and allow them to cool down completely
- If necessary, disconnect electrical connections from the terminals

The actuator must be correctly fitted to the valve before recommissioning.

Repair

The actuator can not be repaired. It has to be replaced as a complete unit.

Disposal



The device contains electrical and electronic components and must not be disposed of together with domestic waste. This applies in particular to the PCB.

Legislation may demand special handling of certain components, or it may be sensible from an ecological point of view.

**Current local legislation must be observed.**

Warranty

The technical data relating to specific applications are valid only in conjunction with the valves listed in this Data Sheet under «Equipment combinations».

**The use of the actuators in conjunction with third-party valves invalidates all claims under Siemens Switzerland Ltd / HVAC Products warranty.**

Technical data

		SQS35.00 SQS35.03	SQS35.50 SQS35.53	SQS85.00 SQS85.03	SQS65 SQS65.2, SQS65.5
Power supply	Operating voltage	AC 230 V ± 15 %			AC 24 V ± 20 %
	Frequency	50 Hz			50 Hz <sup>1)</sup>
	Power consumption	SQS35.00: 2.5 VA SQS35.03: 3.5 VA	SQS35.50: 5 VA SQS35.53: 6 VA	2 VA	SQS65, SQS65.2: 4.5 VA SQS65.5: 7 VA
Signal inputs	End switches switching capacity, terminals 11 or 12	AC 250 V, 6 A res. 2.5 A ind.		AC 250 V, 6 A res. 2.5 A ind.	
	Terminals Y1, Y2	3-position			
	Terminal Y				SQS65, SQS65.5: DC 0...10 V, max. 0.1 mA SQS65.2: DC 2...10 V, max. 0.1 mA
Signal output	Terminal R				0...1000 Ω
	Terminal U				DC 0...10 V, max. 0.5 mA
	Parallel operation of actuators	not possible			max. 10
Operating data	Positioning time in control mode for opening / closing	SQS35.00: 150 s SQS35.03: 35 s	SQS35.50: 150 s SQS35.53: 35 s	SQS85.00: 150 s SQS85.03: 35 s	35 s
			8 s for closing		SQS65.5: 8 s for closing
	Positioning time with spring return				
	Positioning force	400 N			
	Nominal stroke	5.5 mm			
	Admissible temperature	of medium in the valve 1...130 °C (short-time up to 150 °C)			
Electrical connections	Cable entry	2 openings Ø20.5 mm (for M20)			
Norms and standards	CE-conformity EMC-directive	2004/108/EC			
	Immunity	EN 61000-6-2	Industrial <sup>2)</sup>	EN 61000-6-1	

	<b>SQS35.00</b> <b>SQS35.03</b>	<b>SQS35.50</b> <b>SQS35.53</b>	<b>SQS85.00</b> <b>SQS85.03</b>	<b>SQS65</b> <b>SQS65.2, SQS65.5</b>
				Residential
Emission	EN 61000-6-3 Residential			
Low voltage directive	2006/95/EC			
Electrical safety	EN 60730-1			
Housing protection standard Upright to horizontal	IP54 to EN 60529			
Environmental compatibility	ISO 14001 (Environment) ISO 9001 (Quality) SN 36350 (Environmentally compatible products) RL 2002/95/EG (RoHS)			
Dimensions / Weight	Dimensions	refer to «Dimensions»		
	Weight with packaging	0.6 kg	0.7 kg	0.6 kg SQS65.5: 0,7 kg
Materials	Actuator housing	Plastics		
	Housing cover and manual adjuster	Plastics		
	Gear train and stem with coupling	Plastics		
Accessories	Auxiliary switch ASC9.6 switching capacity	AC 250 V, 3 A resistive 3 A inductive		AC 250 V, 3 A resistive 3 A inductive

<sup>1)</sup> For applications at 60 Hz use SQS65..U resp. SQS85..U actuators.

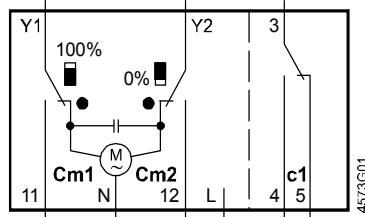
<sup>2)</sup> Transformer 160 VA (e.g. Siemens 4AM 3842-4TN00-0EAO) for AC 24 V actuators

#### General environmental conditions

	<b>Operation</b> EN 60721-3-3	<b>Transport</b> EN 60721-3-2	<b>Storage</b> EN 60721-3-1
Environmental conditions	Class 3K5	Class 2K3	Class 1K3
Temperature	-5...+50 °C	-25...+70 °C	-5...+50 °C
Humidity	5...95 % r.h.	< 95 % r.h.	5...95 % r.h.

## Internal diagrams

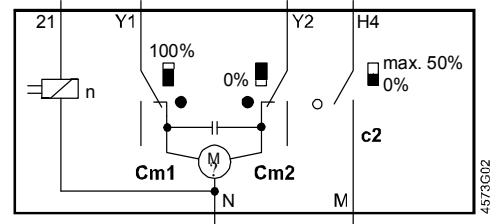
### SQS35..



#### SQS35.00, SQS35.03

AC 230 V, 3-position, without spring return function

- Cm1 End switch 100 % stroke
- Cm2 End switch 0 % stroke
- c1 ASC9.6 auxiliary switch can be fitted
- L Potential-free auxiliary terminal

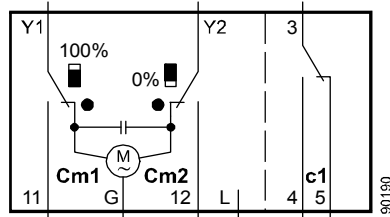


#### SQS35.50, SQS35.53

AC 230 V, 3-position, with spring return function

- c2 Built-in auxiliary switch with fixed preset minimum flow limit control (factory-fitted)
- 21 Spring return function

### SQS85..



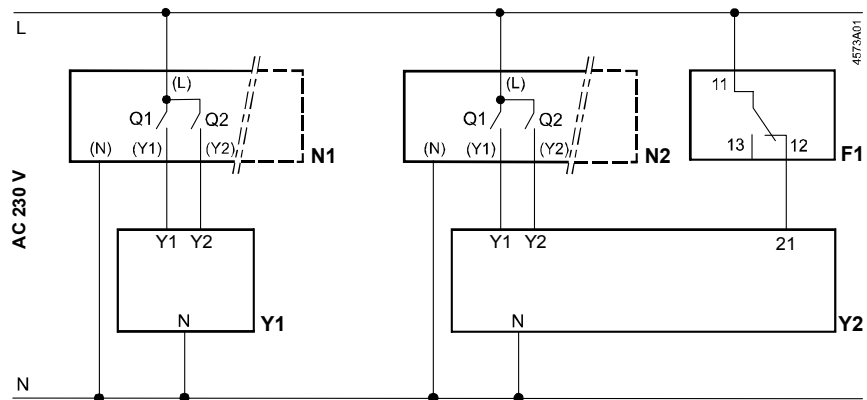
#### SQS85.00, SQS85.03

AC 24 V, 3-pos. without spring return function

- Cm1 End switch 100 % stroke
- Cm2 End switch 0 % stroke
- c1 ASC9.6 auxiliary switch can be fitted
- L Potential-free auxiliary terminal

## Connection diagrams

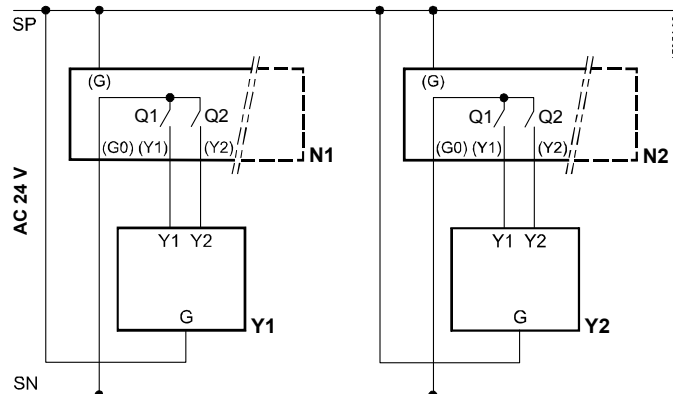
### SQS35..



- N1, N2 Controller
- Y1 Actuator SQS35.00, SQS35.03
- Y2 Actuator SQS35.50, SQS35.53
- L System potential AC 230 V

- N System neutral
- Q1, Q2 Controller contacts
- F1 Maximum limiter (spring return function)

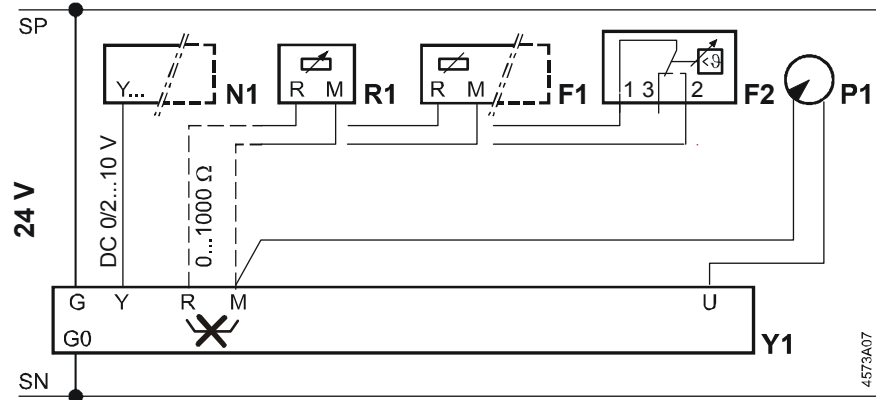
### SQS85..



- N1, N2 Controller
- Y1, Y2 Actuator
- SP System potential AC 24 V

- SN System neutral
- Q1, Q2 Controller contacts

**SQS65..**



- N1** Controller
- Y1** Actuator
- R1** Signal indicator with 0...1000 Ω output
- F1** Frost protection monitor with 0...1000 Ω output
- F2** Frost protection thermostat  
Terminal: 1 – 3 frost hazard / sensor is interrupted (thermostat closes with frost)  
1 – 2 Normal operation
- P1** Position indicator DC 0...10 V
- SP** System potential AC 24 V
- SN** System neutral

**Note** If a device is connected to terminal R, the factory-fitted bridge across R – M on the printed circuit board must be cut through.

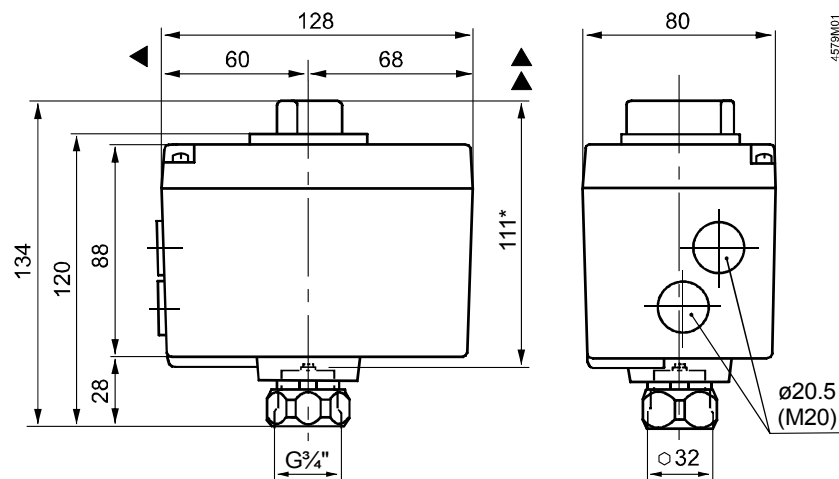
Connection terminals  
SQS65..

- U** Position indicator DC 0...10 V
- M** Measuring neutral (= G0)
- R** Signal input 0...1000 Ω
- Y** Signal input DC 0...10 V (SQS65.2: DC 2...10 V)
- G** Operating voltage AC 24 V: system potential SP
- G0** Operating voltage AC 24 V: system potential SN

4573Z06

**Dimensions**

Dimensions in mm






- \* Height of actuator after fitting on valve
- ◀ > 100 mm Minimum clearance from wall or ceiling
- ▲ > 200 mm for mounting, connection, operation, service etc



## Spare parts

### Order numbers for spare parts

	Cover	plug metric	Valve neck nut (M30x1,5)
<b>Actuator</b>			
<b>SQS35.00</b>	410455958	428056298	416014428
<b>SQS35.03</b>	410455958	428056298	416014428
<b>SQS35.50</b>	410455968	428056298	416014428
<b>SQS35.53</b>	410455968	428056298	416014428
<b>SQS65.5</b>	410455968	428056298	416014428
<b>SQS65</b>	410455958	428056298	416014428
<b>SQS65.2</b>	410455958	428056298	416014428
<b>SQS85.00</b>	410455958	428056298	416014428
<b>SQS85.03</b>	410455958	428056298	416014428

### Revision numbers

Type	Valid from rev. no.	Type	Valid from rev. no.	Type	Valid from rev. no.
<b>SQS35.00</b>	F	<b>SQS65.5</b>	F	<b>SQS85.00</b>	F
<b>SQS35.03</b>	F	<b>SQS65</b>	F	<b>SQS85.03</b>	F
<b>SQS35.50</b>	G	<b>SQS65.2</b>	F		
<b>SQS35.53</b>	G				

