



ACVATIX™

## Electromotoric actuators

**SQD35.00**

**SQD85.03**

**SQD65**

for Combi valves VPI45..., DN40/50

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- **SQD35.00** operating voltage AC 230 V, 3-position control signal
  - **SQD85.03** operating voltage AC 24 V, 3-position control signal
  - **SQD65** operating voltage AC 24 V, DC 0...10 V control signal or 0...1000  $\Omega$
  - **Positioning force > 400 N**
  - **Direct mounting on valves; no adjustments required**
  - **Optional auxiliary switch for extra functions with SQD35.00, SQD85.03**
  - **Direction of movement indication**
  - **Manual adjuster**

### Use

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For operation of Siemens Combi valves VPI45..., DN40/50 with 6.5 mm stroke for water-side control of low temperature hot water and cooling water in heating, ventilation and air conditioning systems.

## Type summary

Type	Operating voltage	Positioning signal	Positioning time
<b>SQD35.00</b>	AC 230 V	3-position	170 s
<b>SQD65</b> <sup>1)</sup>	AC 24 V	DC 0...10 V, 0...1000 Ω	43 s
<b>SQD85.03</b> <sup>1)</sup>		3-position	

1) UL approved versions: SQD65UG, SQD85.03UG (AC 24V, 3-position, 43 s)

## Accessory

Type	Description	For actuators	Space for
<b>ASC9.6</b> 	Auxiliary switch. Switching point adjustable from 0...100 % stroke	SQD35.00 SQD85.03	1 x ASC9.6

## Ordering

Example:	Product number	Stock number	Designation
	SQD35.00	SQD35.00	Electromotoric actuator, stroke 6.5 mm
	ASC9.6	ASC9.6	Auxiliary switch

**Delivery** Actuators, valves and accessories are supplied in separate packages.

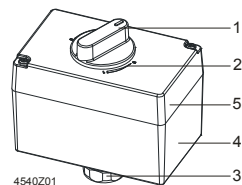
**Spare parts, Rev.-Nr.** See overview, page 8.

## Equipment combinations

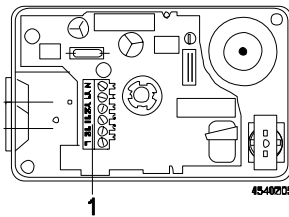
Valve type	DN	PN-class	V [l/h]	Data sheet	SQD35.00	SQD65	SQD85.03
VPI45..	40 / 50	PN 25	2300...8500	N4853	✓	✓	✓

## Technical / mechanical design

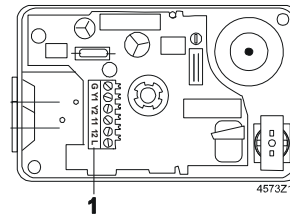
The reversible synchronous motor is driven by a 3-position or a proportional DC 0...10 V or 0...1000 Ω control signal. The stroke is generated via an antilocking gear train.



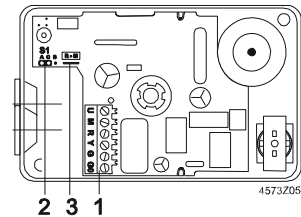
- 1 Manual adjuster (SQD35.00, SQD65, SQD85.03)
- 2 Direction of movement indication
- 3 Coupling nut M30x1.5 for valve neck
- 4 Housing
- 5 Removable cover



- SQD35.00**
- 1 Terminal strip



- SQD85.03**
- 1 Terminal strip



- SQD65**
- 1 Terminal strip
  - 2 «lin» / «log» connection
  - 3 R – M bridge

**SQD35.00, SQD85.03**  
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

## SQD65

DC 0...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 V or 0 Ω the valve is closed (A → AB).
- When power supply is removed, the actuator maintains its current position.

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.

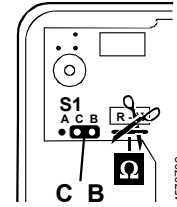
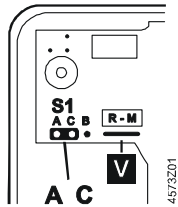
Position of S1

S1 connected to A and C:

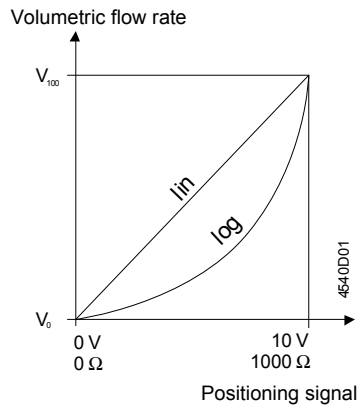
S1 connected to B and C:

**equal-percentage** flow characteristic

**linear** flow characteristic



Flow characteristic



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

Control signals:

Y = DC 0...10 V

R = 0...1000 Ω; cut through R – M bridge

Flow characteristic

log = Equal-percentage valve characteristic  
(factory setting)

lin = Linear valve characteristic

Flow range

V<sub>100</sub> = Volumetric flow 100%

V<sub>0</sub> = Volumetric flow 0 %

Priority of signals

<b>Positioning signal Y</b>	DC 0...10 V		DC 0...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.**

Admissible temperatures refer to "Technical data" (page 5).

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

## Mounting notes

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Mounting Instructions are enclosed in the product packaging.

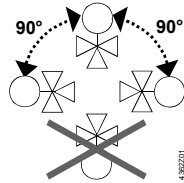
Overview mounting instructions

Type	Mounting instructions
SQD..	M4540
ASC9.6	G4573.1

## Installation notes

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Orientation



## Commissioning notes

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Manual adjuster 

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

Switch off the positioning signal.

The valve can be fully closed (= 0 % stroke) by turning the manual adjuster counter-clockwise. 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", page 6).

## Maintenance notes

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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

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The technical data relating to specific applications are valid only in conjunction with the valves listed in this Data Sheet under "Equipment combinations", page 2.

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

## Technical data

		SQD35.00	SQD85.03	SQD65
Power supply	Operating voltage	AC 230 V ± 15 %	AC 24 V ± 20 %	
			SELV/PELV	
	Rated voltage	AC 230 V	AC 24 V	
	Frequency	50 Hz	50 Hz <sup>1)</sup>	
	Power consumption	2.5 VA	2 VA	4.5 VA
Signal inputs	End switches Cm1, Cm2 Switching capacity terminal 11 or 12	AC 250 V, 6 A res., 2.5 A ind.		
	Terminals Y1, Y2	3-position		
	Terminal Y			
Terminal R	DC 0...10 V, max. 0.1 mA			
Terminal U	0...1000 Ω			
Signal output	Terminal U	DC 0...10 V, max. 0.5 mA		
	Parallel operation of actuators	max. 10		
Operating data	Positioning time open / close	170 s	43 s	43 s
	Positioning force	> 400 N		
	Nominal stroke	6.5 mm		
	Admissible temperature	of medium in the valve 1...120 °C		
	Cable entries	2 openings Ø 20.5 mm (for M20)		
Electrical connections Norms and standards	CE-conformity			
	EMC-directive	2004/108/EC		
	Immunity	EN 61000-6-2:[2005] Industrial <sup>2)</sup>	EN 61000-6-1: [2007] Residential	
	AC: Emission	EN 61000-6-3:[2007] 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	0.6 kg	0.6 kg
Mounting	Coupling thread to valve	valve neck nut M30 x 1.5		
Materials	Actuator housing	Plastics		
	Housing cover and manual adjuster	Plastics		
	Gear train and stem with coupling	Plastics		
Accessory	Auxiliary switch ASC9.6 switching capacity	AC 250 V, 3 A res., 3 A ind.		

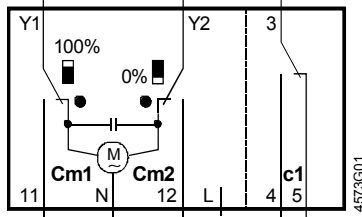
<sup>1)</sup> For applications at 60 Hz use SQD65UG respectively SQD85.03UG actuators.

<sup>2)</sup> Transformer 160 VA (e.g. Siemens 4AM 3842-4TN00-0EA0) for AC 24 V actuators

General environmental conditions	Operation	Transport	Storage
		EN 60721-3-3	EN 60721-3-2
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

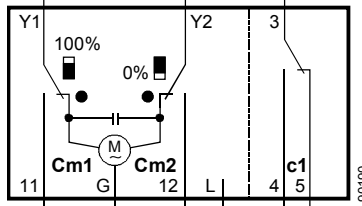
### SQD35.00



#### AC 230 V, 3-position

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

### SQD85.03

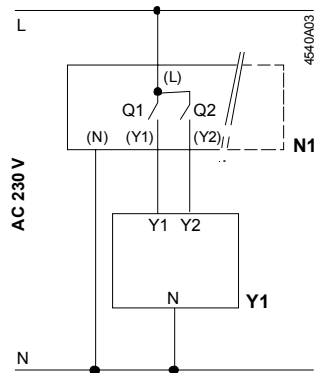


#### AC 24 V, 3-position

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

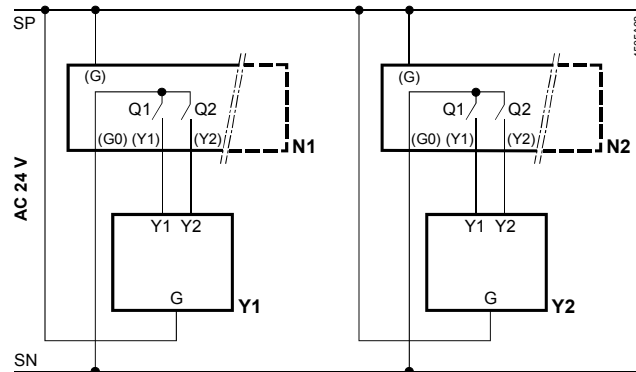
## Connection diagrams

### SQD35.00



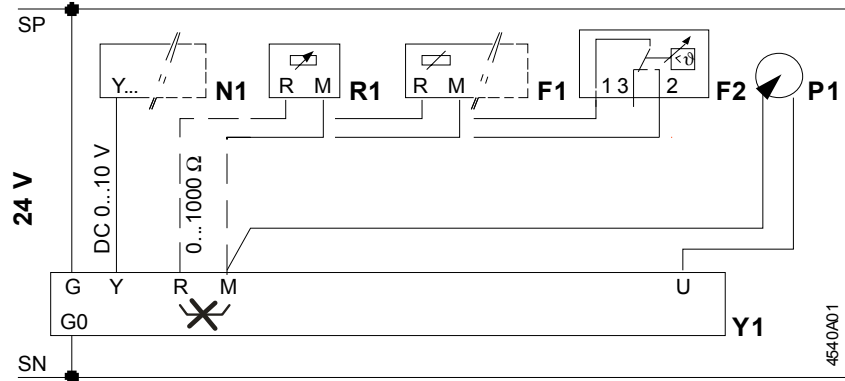
- N1 Controller
- Y1 Actuator SQD35.00
- Q1, Q2 Controller contacts
- L System potential AC 230 V
- N System neutral

### SQD85.03



- N1, N2 Controller
- Y1, Y2 Actuators
- Q1, Q2 Controller contacts
- SP System potential AC 24 V
- SN System neutral

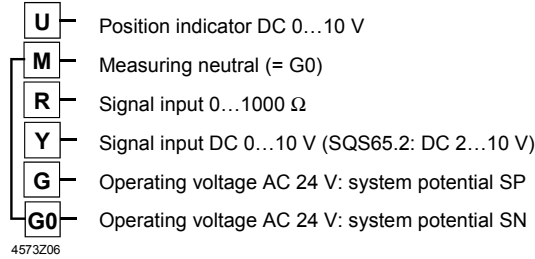
**SQD65**



- 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 feedback DC 0...10 V
- SP** System potential AC 24 V
- SN** System neutral

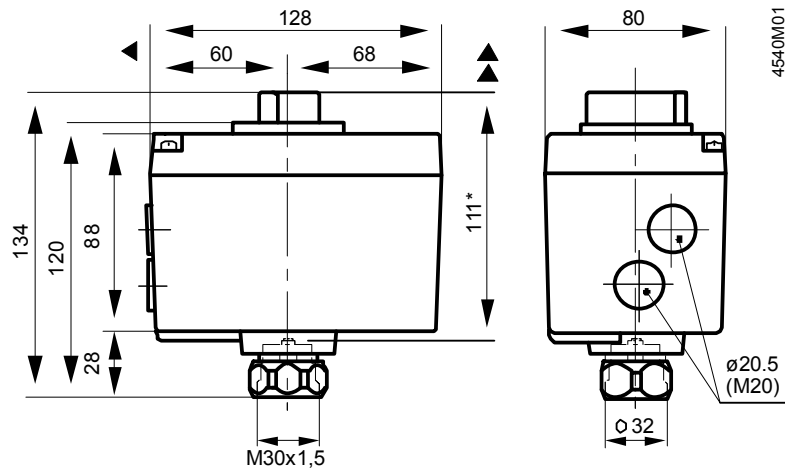
**Note** If a device is connected to terminal R, the factory-fitted bridge across R – M on the printed circuit board must be cut through.

**Connection terminals SQD65**



**Dimensions**

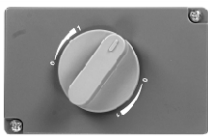


Dimensions in mm



- \* 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>SQD35.00</b>	74 104 0365 8	4 280 5629 8	74 160 0025 8
<b>SQD65</b>	74 104 0365 8	4 280 5629 8	74 160 0025 8
<b>SQD85.03</b>	74 104 0365 8	4 280 5629 8	74 160 0025 8

### Revision numbers

Type	Valid from rev. no.	Type	Valid from rev. no.	Type	Valid from rev. no.
<b>SQD35.00</b>	..A	<b>SQD65</b>	..A	<b>SQD85.03</b>	..A