



ACVATIX™

Electromotoric actuators

SQR35.00

SQR85.03

SQR65

for Combi valves VPI45..., DN40/50

-
- **SQR35.00** operating voltage AC 230 V, 3-position control signal
 - **SQR85.03** operating voltage AC 24 V, 3-position control signal
 - **SQR65** operating voltage AC 24 V, DC 0...10 V control signal or 0...1000 Ω
 - **Positioning force > 400 N**
 - **Direct mounting on valves; no adjustments required**
 - **Optional auxiliary switch for extra functions with SQR35.00, SQR85.03**
 - **Direction of movement indication**
 - **Manual adjuster**

Use

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
SQD35.00	AC 230 V	3-position	170 s
SQD65 ¹⁾	AC 24 V	DC 0...10 V, 0...1000 Ω	43 s
SQD85.03 ¹⁾		3-position	

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

Accessory

Type	Description	For actuators	Space for
ASC9.6 	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.

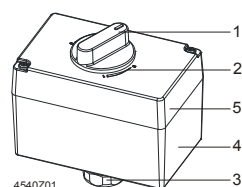
See overview, page 8.

Equipment combinations

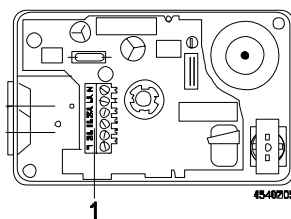
Valve type	DN	PN-class	V [l/h]	Data sheet	SQD35.00	SQD65	SQD85.03
VPI45..	40 / 50	PN 25	2300...8500	N4853	✓	✓	✓

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.

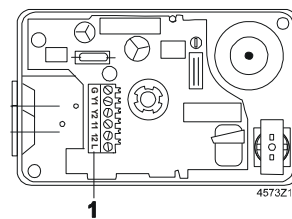


- 1 Manual adjuster (SQD35.00, SQD65, SQD85.03)
- 2 Direction of movement indication
- 3 Coupling nut M30x1.5 for valve neck
- 4 Housing
- 5 Removable cover



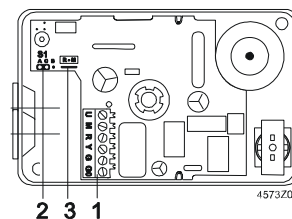
SQD35.00

- 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:
- Voltage at Y2:
- No voltage at Y1 or Y2:

Stem extends, valve opens

Stem retracts, valve closes

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.

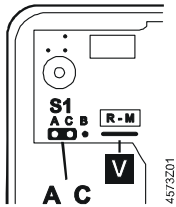
Position of S1

S1 connected to A and C:

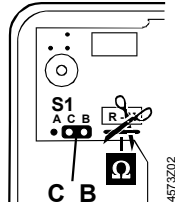
S1 connected to B and C:

equal-percentage flow characteristic

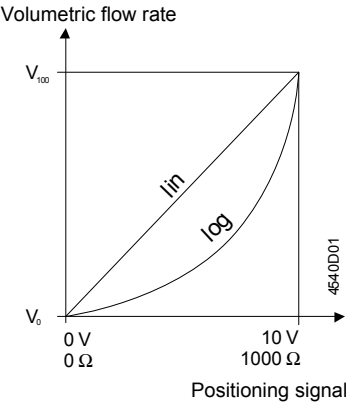
linear flow characteristic



(factory setting)



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
V₁₀₀ = Volumetric flow 100%
V₀ = Volumetric flow 0 %

Priority of signals

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

¹⁾ 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

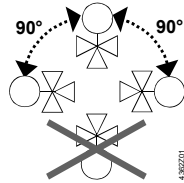
Mounting Instructions are enclosed in the product packaging.

Overview mounting instructions

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

Installation notes

Orientation



Commissioning notes

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

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", 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 ¹⁾
	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			DC 0...10 V, max. 0.1 mA
	Terminal R			0...1000 Ω
	Terminal U			DC 0...10 V, max. 0.5 mA
Operating data	Parallel operation of actuators			max. 10
	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		
Electrical connections	Cable entries	2 openings Ø 20.5 mm (for M20)		
Norms and standards	CE-conformity			
	EMC-directive	2004/108/EC		
	Immunity	EN 61000-6-2:[2005] Industrial ²⁾		EN 61000-6-1: [2007] Residential
	AC: Emission	EN 61000-6-3:[2007] Residential		
	Low voltage directive	2006/95/EC		
Dimensions / Weight	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	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.		

¹⁾ For applications at 60 Hz use SQD65UG respectively SQD85.03UG actuators.

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

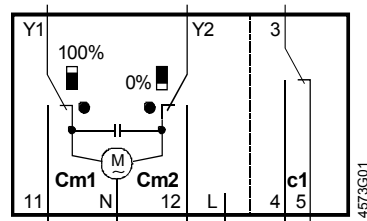
General

environmental conditions

	Operation	Transport	Storage
	EN 60721-3-3	EN 60721-3-2	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

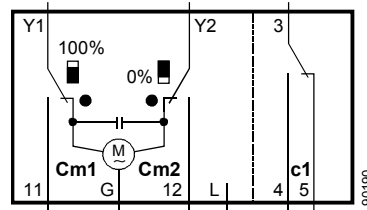
SQD35.00



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

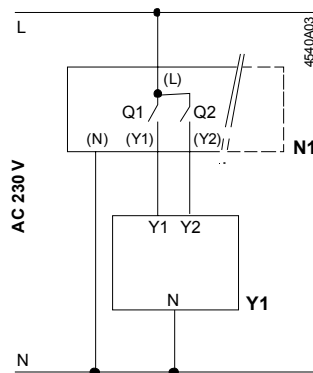


AC 24 V, 3-position

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

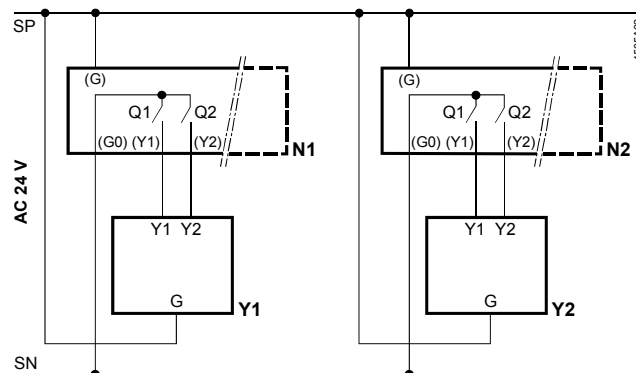
Connection diagrams

SQD35.00



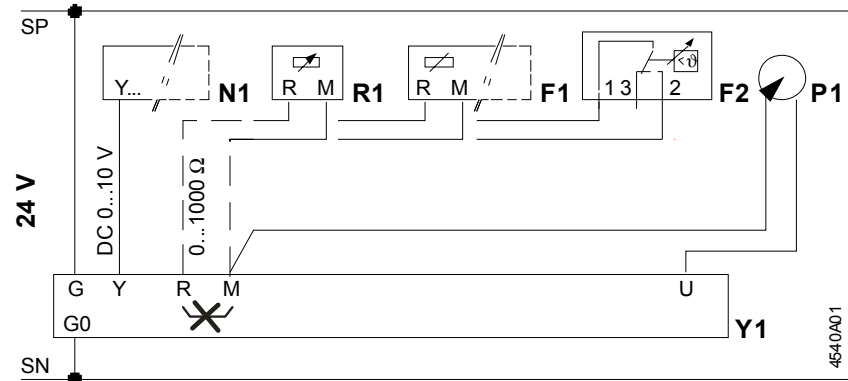
- N1 Controller
- Y1, Y2 Actuator SQD35.00
- Q1, Q2 Controller contacts
- L System potential AC 230 V
- N System neutral

SQD85.03



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

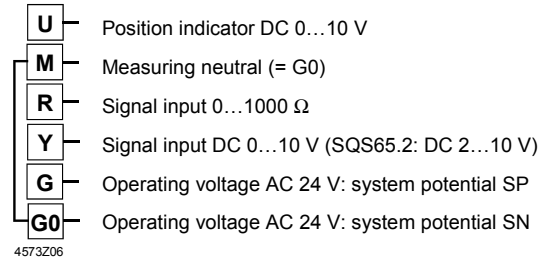
SQD65



- 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

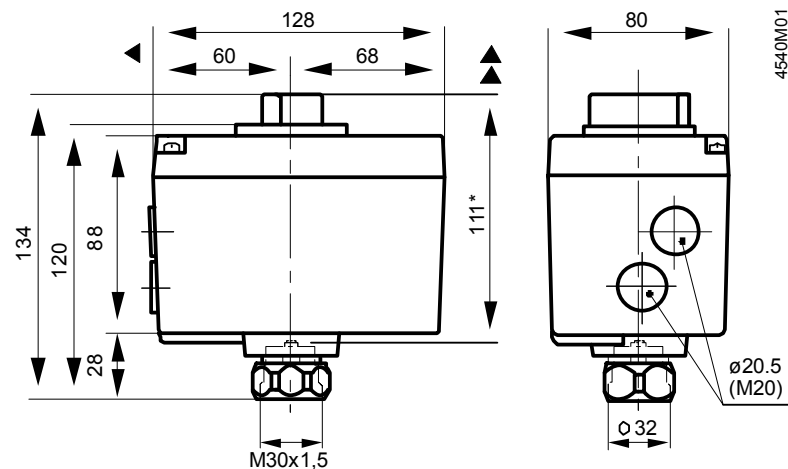
Note If a device is connected to terminal R, the factory-fitted bridge across R – M on the printed circuit board must be cut through.

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

Actuator	Cover	plug metric	Valve neck nut (M30x1,5)
			
	SQD35.00	74 104 0365 8	4 280 5629 8
	SQD65	74 104 0365 8	4 280 5629 8
	SQD85.03	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.
SQD35.00	..A	SQD65	..A	SQD85.03	..A