



Electric actuators for butterfly valves

with 90° angle of rotation

SQK33.00
SQL33.0...
SQL83...

- **SQK33.00** Operating voltage AC 230 V
- **SQL33.0...** Operating voltage AC 230 V
- **SQL83.00** Operating voltage AC 24 V
- 3-position control signal
- Auxiliary switch and potentiometer for additional functions
- Nominal angle of rotation 90°
- Reversible electric motor
- For mounting on butterfly valves and slipper valves with ASK... mounting kit
- With manual adjuster and position indicator

Use

For use in heating, ventilation and air conditioning systems to operate Siemens butterfly valves and three-port and four-port slipper valves (mixing valves), types K1i..., VKF41..., VB... and VC... (see "Equipment combinations") and valves from other manufacturers.

The actuators can be fitted with additional auxiliary switches and potentiometers

Functions

If the actuator is driven by a 3-position signal from the controller, it generates a rotary motion which is transferred to the valve (butterfly, slipper valve, three-port or four-port mixing valve).

Direction of rotation of the actuator on delivery:

- Voltage at Y1 = Clockwise rotation
- Voltage at Y2 = Anti-clockwise rotation
- No voltage = No rotation; actuator fixed in relevant position

The direction of rotation can be reversed if required.

Extending the actuator functions

- The SQK33.00 actuator can be fitted with an auxiliary switch
- The SQL... actuators can be fitted with an auxiliary switch, a dual auxiliary switch or an auxiliary switch and a 1000-ohm potentiometer.

If an auxiliary switch and/or potentiometer are fitted, the electrical wiring must take account of this. Refer to the wiring diagram under the actuator cover and see also the "Commissioning" and "Connection diagrams" sections in this data sheet.

Types

Type	Operating voltage	Control signal	Run-time for 90° at 50 Hz	Space for accessories	Accessory function
SQK33.00	AC 230 V	3-position	125 s	1 x ASC9.5 only	1 auxiliary switch
SQL33.00	AC 230 V	3-position	125 s	1 x ASC9.5 or	1 auxiliary switch
SQL33.03	AC 230 V		30 s	1 x ASC9.4 or	1 dual auxiliary switch
SQL83.00	AC 24 V		125 s	1 x ASZ7.4	1 auxiliary switch and 1000 Ω potentiometer

Mounting kits

- ASK31** For slipper valves, type VBF21 ... (DN65 ... DN150), Series 01
- ASK32** For slipper valves, type VB... / VC (DN³/₄" ... DN1¹/₂") Series 02 or VBF21... (DN40 / 50)
- ASK33** For butterfly valves, type VKF41... (DN40 ... DN200), K1i... (³/₄" ... 1¹/₄")
- ASK40** For slipper valves from other manufacturers, see data sheet N4291
- ASK41** For slipper valves from other manufacturers, see data sheet N4291

Accessories

- ASC9.5** 1 auxiliary switch
- ASC9.4** 1 dual auxiliary switch
- ASZ7.4** 1 auxiliary switch and one 1000-ohm potentiometer

Ordering

The actuator, slipper valve or butterfly valve, mounting kit and accessories must be ordered separately.

When ordering, please specify the quantity, product name and type code.

Example: 1 actuator, type SQL33.03, 1 mounting kit, type ASK31 and 1 auxiliary switch with ASZ7.4 potentiometer

Delivery

The actuator, valve or butterfly valve, ASK.. mounting kit and accessories are packed separately and are not delivered fully assembled.

Equipment combinations

The table below shows which actuators may be used with which slipper valves and butterfly valves, and indicates the appropriate mounting kits in each case.

Valves		PN class	Data sheet	Actuators			Mounting kits
				SQK33.00	SQL33.00 SQL83.00	SQL33.03	
				Nominal size (DN)			
Three-port slipper valves (Mixing)							
VBF21...	(40 ... 50)	PN6	N4241	40 / 50	40 / 50	40 / 50	ASK32
	(65 ... 150)	PN6	N4241	---	65 ... 150	65 ... 150	ASK31
VBI31...	($\frac{3}{4}$ " ... 1 $\frac{1}{2}$ ")	PN10	N4232	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	ASK32
VBG31...	($\frac{3}{4}$ " ... 1 $\frac{1}{2}$ ")	PN10	N4233	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	ASK32
Other makes		PN6...	---	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	$\frac{3}{4}$ " ... 2"	$\frac{3}{4}$ " ... 2"	ASK40 *) ASK41 *)
Four-port valves (Mixing)							
VCI31...	($\frac{3}{4}$ " ... 1 $\frac{1}{2}$ ")	PN10	N4252	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	ASK32
Other makes		PN6...	---	$\frac{3}{4}$ " ... 1 $\frac{1}{2}$ "	$\frac{3}{4}$ " ...	$\frac{3}{4}$ " ... 2"	ASK40 *) ASK41 *)
Butterfly valves							
K1i...	($\frac{3}{4}$ " ... 1 $\frac{1}{4}$ ")	PN6	N4111	$\frac{3}{4}$ " ... 1 $\frac{1}{4}$ "	$\frac{3}{4}$ " ... 1 $\frac{1}{4}$ "	---	ASK33
VKF41...	(40 ... 200)	PN16	N4131	40	40 ... 200	40 ... 200	ASK33

*) Mounting kits ASK40 and ASK41 for non-Siemens actuators: refer to data sheet N42291

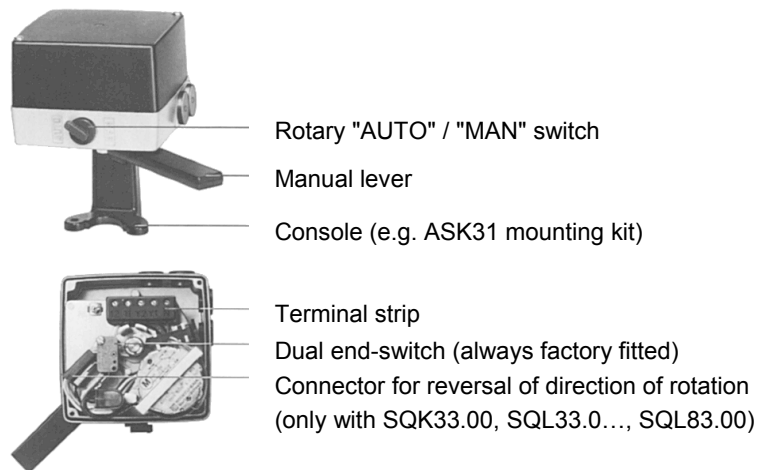
Mechanical design

The electric actuators require no maintenance. They have a reversible synchronous motor and reduction gears with self-lubricating sinter bearings. The housing base and the console are die-cast aluminium, and the cover is plastic.

"AUTO" and "MANUAL" modes can be selected with a rotary switch on the housing base. When the switch is set to "MANUAL", the actuator and valve can be operated with a manual lever. For manual operation, the angle of rotation is mechanically limited by an end-stop.

The actuators supplied have a 90° angle of rotation suitable for the Siemens valves. During automatic operation, rotation is limited by two built-in end-switches. For non-Siemens valves, the angle of rotation in the range 70° to 180° can be selected by repositioning the switching cams.

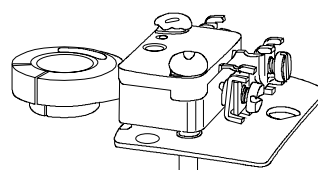
The direction of operation of the actuator can be reversed (refer to "Commissioning").



Accessory ASC9.5

1 auxiliary switch

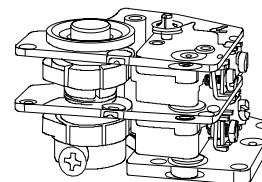
for SQK33.00,
SQL33.0...
SQL83.00



Accessory ASC9.4

1 dual auxiliary switch

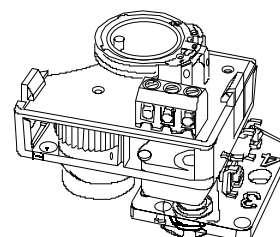
for SQL33.0...
SQL83.00



Accessory ASZ7.4

1 auxiliary switch and
1 1000-ohm potentiometer

for SQL33.0...
SQL83.00



Engineering

- Butterfly valves: see data sheets N4100 ... N4199.
- Three-port and four-port slipper valves: see data sheets N4200 ... N4299.
- Admissible ambient temperatures, see "Technical data".

Electrical installation

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



Regulations and requirements to ensure the safety of people and property must be observed at all times.

If additional functions are to be controlled by the actuator, the ASC9.. (auxiliary switch) or ASZ7.5 (auxiliary switch / potentiometer) must be fitted. The relevant switching point(s) and zero-ohm position must be noted in the plant documentation.

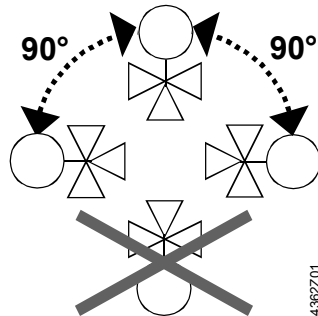
Mounting

Mounting instructions are enclosed with the mounting kit.

The valve, actuator and mounting kit are packed separately. The valve and actuator can be assembled easily on site. There is no need for special tools or calibration.

Take care to install the valve the right way up. Refer to the mounting instructions for the valve concerned (butterfly or slipper valves).

Orientation



Commissioning

When commissioning the complete motorised valve, consisting of actuator, mounting kit and (butterfly or slipper) valve, check the wiring and test the functions. This also applies to any additional components fitted (e.g. auxiliary switch or potentiometer).

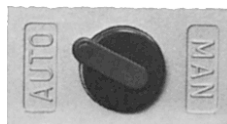
Note

Siemens slipper valves up to DN50 can be commissioned without an actuator being fitted. In this case, the flow rate must be adjusted manually with the standard manual adjuster fitted to the valve.

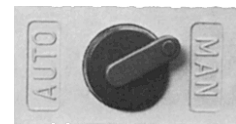
For automatic operation, the rotary switch must be set to "AUTO".

Mode of operation

Rotary switch for mode selection



"AUTO" = Automatic operation

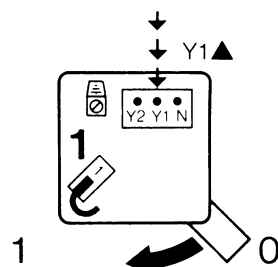


"MAN" = Manual operation

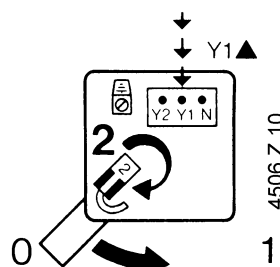
Reversing the direction of rotation

The actuators are factory-set to rotate in a clockwise direction (as seen from the front). The direction of rotation can be reversed by repositioning a connector located under the cover (see "Mechanical design").

The wiring for the OPEN and CLOSE control signal is not affected.



As supplied



Direction of rotation reversed

4506 Z 10

Setting the angle of rotation

The angle of rotation is factory-set to 90°. However, the angle can be changed to between 70° and 180°. This may be necessary when using non-Siemens valves. Special notes on this subject will be found in the mounting instructions for the ASK40 and ASK41 (mounting kits for non-Siemens valves).

Maintenance

Warning ! The actuators require no maintenance.
When servicing the valve and/or actuator: switch OFF the pump and power supply, close the main shut-off valve in the pipework, release pressure in the pipes and allow them to cool down completely.
If necessary, disconnect electrical connections from terminals.

Disposal



The device may 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 given for these applications is valid only in conjunction with the Siemens valves (butterfly and slipper valves) and third-party valves for use with the ASK40 / ASK41, as described under "Compatibility". The use of third-party valves other than those recommended by Siemens invalidates the warranty.

Technical data

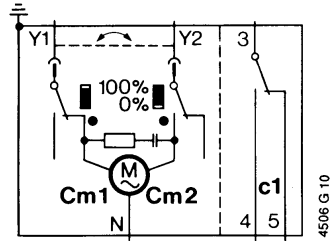
Power supply	Rated voltage		
	SQK33.00, SQL33.00, SQL33.03	AC 230 V ± 15 %	
	SQL83.00	AC 24 V ± 20 %	
	Rated frequency	50 / 60 Hz	
	Control signal	3-position	
Operating data	Power consumption *)		
	SQK33.00	3 VA	
	SQL33.00, SQL83.00	4 VA	
	SQL33.0...	6.5 VA	
Operating data	Run-time for rotation through 90°	at 50 Hz	at 60 Hz
	SQK33.00, SQL33.00	125 s	105 s
	SQL83.00	125 s	105 s
	SQL33.03	30 s	25 s
	Angle of rotation		
	Factory setting	90° ± 2°	
	Adjustment range	70° ... 180°	

	Torque *)	Nominal torque	Starting torque
	SQK33.00	5 Nm	10 Nm
	SQL33.03	10 Nm	12 Nm
	SQL33.00, SQL83.00	12.5 Nm	25 Nm
	End switch		
	Switching capacity	AC 250 V, 6 (2) A	
	Switching differential	Approx. 1°	
Materials	Housing base and console	Die-cast aluminium	
	Cover	Plastic	
Dimensions / Weight	Dimensions	See "Dimensions"	
	Cable glands	Ø 20,5 (M20) (4x)	
	Weight		
	SQK33.00	1.25 kg	
	SQL33.00, SQL83.00	1.35 kg	
	SQL33.03, SQL35.00, SQL85.00	1.40 kg	
Ambient conditions	Max. admissible temperature of medium in assembled valve	> 120 °C	
	Operation	To IEC 721-3-3	
	– Environmental conditions	Class 3K5	
	– Temperature	–15 ... +55 °C	
	– Humidity	5 ... 95 % rh	
	Transport	To IEC 721-2-3	
	– Environmental conditions	Class 3K2	
	– Temperature	– 30 ... +65 °C	
	– Humidity	< 95 % rh	
	Storage	To IEC 721-1-3	
	– Environmental conditions	Class 3K1	
	– Temperature	–15 ... +55 °C	
	– Humidity	0 ... 95 % rh	
Industry standards	Meets the requirements for CE marking in		
	EMC Directive	89/336/EEC	
	Low Voltage Directive	73/23/EEC	
	Housing protection standard	IP44 to IEC529 / DIN40050	
Accessories	ASC9.5	Auxiliary switch	
	ASC9.4	Dual auxiliary switch	
	Switching capacity	AC 250 V, 10 A resistive / 3 A inductive	
	Switching differential	Approx. 1°	
	ASZ7.4	Auxiliary switch with potentiometer	
	Switching capacity	AC 250 V, 10 A resistive / 3 A inductive	
	Switching differential	Approx. 1°	
	Change in resistance	0 ... 90° corresponding to 0 ... 1000 ohm	

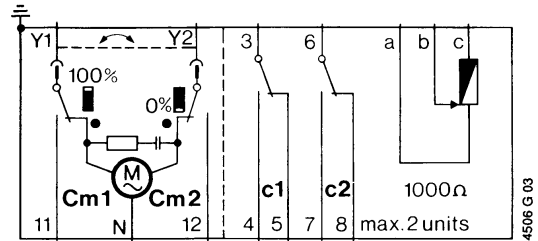
*) These values apply at nominal voltage, at an ambient temperature of 20°C and at the specified nominal running time

Connection diagrams

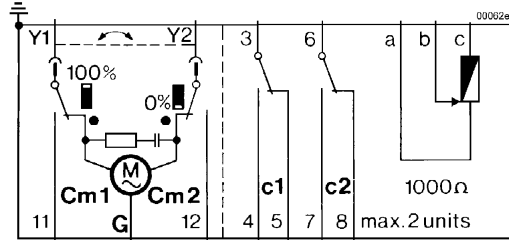
SQK33.00



SQL33.00, SQL33.03



SQL83.00

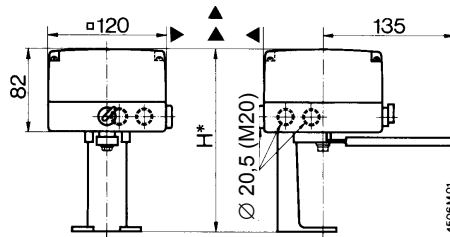


- Cm1 End switch
- Cm2 End switch
- c1 1 auxiliary switch **ASC9.5** or
- c1, c2 1 dual auxiliary switch **ASC9.4** or
- c1, 1000Ω 1 installable module **ASZ7.4** (1 auxiliary switch and 1 potentiometer)

Dimensions

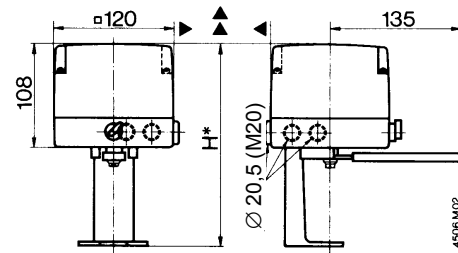
All dimensions in mm

SQK33.00



- Installation height H* for actuator with mounting kit
- ASK31 162 mm
 - ASK32 132 mm
 - ASK33 162 mm

SQL33.0... / SQL83.00



- Installation height H* for actuator with mounting kit
- ASK31 188 mm
 - ASK32 158 mm
 - ASK33 188 mm

Overall height of valve and actuator

- = Installation height of slipper or butterfly valve from the middle of the pipe
- + Installation height H* of the actuator with mounting kit
- + Minimum clearance from ceiling or wall for mounting, connection, operation, service etc.
 - Δ >100 mm
 - Δ Δ >200 mm