Electro-hydraulic actuators for valves

with a 20 mm stroke

SKB32..
SKB82..
SKB62..
SKB60

- **SKB32.. Operating voltage AC 230 V, 3-position control signal**
- **SKB82.. Operating voltage AC 24 V, 3-position control signal**
- **SKB6.. Operating voltage AC 24 V, control signal DC 0…10 V, 4…20 mA or 0...1000 Ω**
- **SKB6.. Choice of flow characteristic, position feedback, stroke calibration, LED status indication, override control**
- **SKB62UA with functions choice of direction of operation, stroke limit control, sequence control with adjustable start point and operating range, operation of frost protection monitors QAF21.. and QAF61..**
- **Positioning force 2800 N**
- **Actuator versions with or without spring-return function**
- **For direct mounting on valves; no adjustments required**
- **Manual adjuster and position indicator**
- **Optional functions with auxiliary switches, potentiometer, stem heater and mechanical stroke inverter**
- **SKB..U are UL-approved**

Use

For the operation of Siemens 2-port and 3-port valves, types VVF.., VVG.., VXF.. and VXG.. with a 20 mm stroke as control and safety shut-off valves in heating, ventilation and air conditioning systems.

Types

	Type	Operating voltage	Positioning signal	Spring-return Function	Spring-return Time	Positioning time Opening	Positioning time Closing	Enhanced functions
	SKB32.50	AC 230 V	3-position			120 s	120 s	
	SKB32.51 [2]			yes	10 s			
	SKB82.50	AC 24 V						
	SKB82.50U *							
	SKB82.51			yes	10 s			
	SKB82.51U *							
Standard electronics	**SKB62** [2]		DC 0...10 V, 4...20 mA, or 0...1000 Ω	yes	10 s	120 s	10 s	
	SKB62U *							
	SKB60							
Enhanced electronics	**SKB62UA ***			yes	10 s			yes [1]

[1] Direction of operation, stroke limit control, sequence control, signal addition

[2] Control devices MK..5.., MK..6.. or MK..5..G are TÜV tested per DIN EN 14597 and can therefore be used as control devices with safety shut-off function for protection against excessive temperature and pressure.

***** UL-approved versions

TÜV tested as per DIN EN 14597

Product number	Stock number	Description	Data sheet
MK..5..	S55329-M1..	Control device PN 25 for safety function per DIN EN 14597, for water	N4387
MK..5..G	S55329-M1..	Control device PN 25 for safety function per DIN EN 14597, for steam	N4389
MK..6.	S55329-M1..	Control device PN 40 for safety function per DIN EN 14597, for water, steam, brine and heat transfer oil	N4388

Accessories

Type	Description	For actuator	Mounting location
ASC1.6	Auxiliary switch	SKB6..	1 x ASC 1.6
ASC9.3	Dual auxiliary switches	SKB32.. SKB82..	1 x ASC9.3 or
ASZ7.3	Potentiometer 1000 Ω		1 x ASZ7.3 or
ASZ7.31	Potentiometer 135 Ω		1 x ASZ7.31 or
ASZ7.32	Potentiometer 200 Ω		1 x ASZ7.32
ASZ6.5	Stem heater AC 24 V	SKB..	1 x ASZ6.5
ASK51	Mechanical stroke inverter		1 x ASK51

Ordering

When ordering please specify the quantity, product name and type code.
Example: **1 actuator, type SKB32.50** and
1 potentiometer, 135 Ω, type ASZ7.31

Delivery

The actuator, valve and accessories are supplied in separate packaging and not assembled prior to delivery.

Spare parts

See overview, section «Replacement parts», page 17.

Equipment combinations

Valve type		DN	PN-class	k_{vs} [m³/h]	data sheet
Two-port valves VV... (control valves or safety shut-off valves)):					
VVF21..	Flange	25...80	6	1.9...100	4310
VVF31..	Flange	15...80	10	2.5...100	4320
VVF40..	Flange	15...80	16	1.9...100	4330
VVF41..	Flange	50	16	19...31	4340
VVF45..	Flange	50	16	19...31	4345
VVF53..	Flange	15…50	25	0.16…40	4405
VVF52..	Flange	15...40	25	0,16...25	4373
VVF61..	Flange	15...50	40	0.19...31	4382
VVG41..	Threaded	15...50	16	0.63...40	4363
Three-port valves VX... (control valves for «mixing» and« distribution»):					
VXF21..	Flange	25...80	6	1.9...100	4410
VXF31..	Flange	15...80	10	2.5...100	4420
VXF40..	Flange	15...80	16	1.9...100	4430
VXF41..	Flange	15...50	16	1,9...31	4440
VXF53..	Flange	15…50	25	1.6…40	4405
VXF61..	Flange	15...50	40	1.9...31	4482
VXG41..	Threaded	15...50	16	1.6...40	4463

For admissible differential pressures Δp_{max} and closing pressures Δp_s, refer to the relevant valve data sheets.

Note

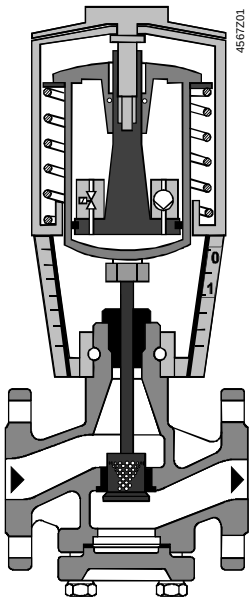
Third-party valves with strokes between 6...20 mm can be motorized, provided they are «closed with the de-energized» fail-safe mechanism and provided that the necessary mechanical coupling is available. For SKB32.. and SKB82.. the Y1 signal must be routed via an additional freely-adjustable end switch (ASC9.3) to limit the stroke.
We recommend that you contact your local Siemens office for the necessary information.

Rev. no.

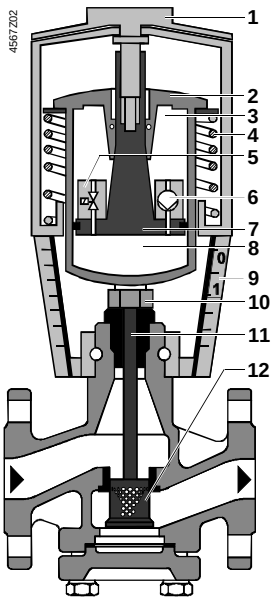
Overview table, see page 17.

Technology

Principle of electro-hydraulic actuators



Valve closed



Valve open

1 Manual adjuster
2 Pressure cylinder
3 Suction chamber
4 Return spring
5 Solenoid valve
6 Hydraulic pump
7 Piston
8 Pressure chamber
9 Position indicator (0 to 1)
10 Coupling
11 Valve stem
12 Plug

Opening the valve

The hydraulic pump (6) forces oil from the suction chamber (3) to the pressure chamber (8) and thereby moving the pressure cylinder (2) downwards. The valve stem (11) retracts and the valve opens. Simultaneously the return spring (4) is compressed.

Closing the valve

Activating the solenoid valve (5) allows the oil in the pressure chamber to flow back into the suction chamber. The compressed return spring moves the pressure cylinder upwards. The valve stem extends and the valve closes.

Manual operation mode

Turning the manual adjuster (1) clockwise moves the pressure cylinder downwards and opens the valve. Simultaneously the return spring is compressed.
In the manual operation mode the control signals Y and Z can further open the valve but cannot move to the «0%» stroke position of the valve. To retain the manually set position, switch off the power supply or disconnect the control signals Y and Z. The red indicator marked «MAN» is visible.

Note: Controller in manual operation

When setting the controller for a longer time period to manual operation, we recommend adjusting the actuator with the manual adjuster to the desired position. This guarantees that the actuator remains in this position for that time period. Attention: Do not forget to switch back to automatic operation after the controller is set back to automatic control.

Automatic mode

Turn the manual adjuster counterclockwise to the end stop. The pressure cylinder moves upward to the «0%» stroke position of the valve. The red indicator marked «MAN» is no longer visible.

Minimal volumetric flow

The actuator can manually be adjusted to a stroke position > 0 % allowing its use in applications requiring constantly a minimal volumetric flow.

Spring-return facility

The SKB32.51, SKB82.51.. and SKB62.. actuators, which feature a spring-return function, incorporate an additional solenoid valve which opens if the control signal or power fails. The return spring causes the actuator to move to the «0 %» stroke position and closes the valve.

TÜV tested as per DIN EN 14597

TÜV tested control devices per DIN EN 14597 can therefore be used as control devices with safety shut-off function for protection against excessive temperature and pressure.

- Water: MK..5.., PN 25, see data sheet N4387
- Steam: MK..5..G, PN 25, see data sheet N4389
- Water, steam, brine, heat transfer oil: MK..6.., PN 40, see data sheet N4388

SKB32../SKB82..
3-position control signal

The valve is controlled by a 3-position signal either via terminals Y1 or Y2 and generates the desired stroke by means of above described principle of operation.

• Voltage on Y1	piston extends	valve opens
• Voltage on Y2	piston retracts	valve closes
• No voltage on Y1 and Y2	piston / valve stem remain in the respective position	

SKB62.., SKB60
Y control signal
DC 0...10 V and/or
DC 4...20 mA,
0...1000 Ω

The valve is either controlled via terminal Y or override control Z. The positioning signal Y generates the desired stroke by means of above described principle of operation.

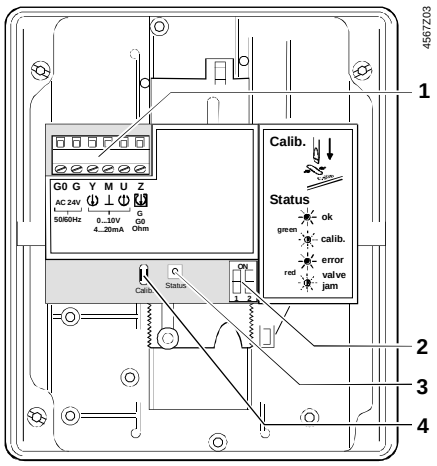
• Signal Y increasing:	piston extends	valve opens
• Signal Y decreasing:	piston retracts	valve closes
• Signal Y constant:	piston / valve stem remain in the respective position	
• Override control Z	see description of override control input, page 8	

Frost protection monitor
Frost protection thermostat

A frost protection thermostat can be connected to the SKB6.. actuator. The added signals from the QAF21.. and QAF61.. require the use of SKB62UA actuators. Notes on special programming of the electronics are described under «Enhanced electronics» on page 5.

«Connection diagrams» for operation with frost protection thermostat or frost protection monitor refer to page 15.

Standard electronics
SKB62.., SKB60



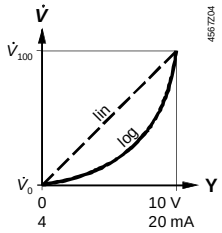
1 Connection terminals
2 Mode DIL switches
3 LED status indication
4 Slot for calibration

DIL switches
SKB62.., SKB60

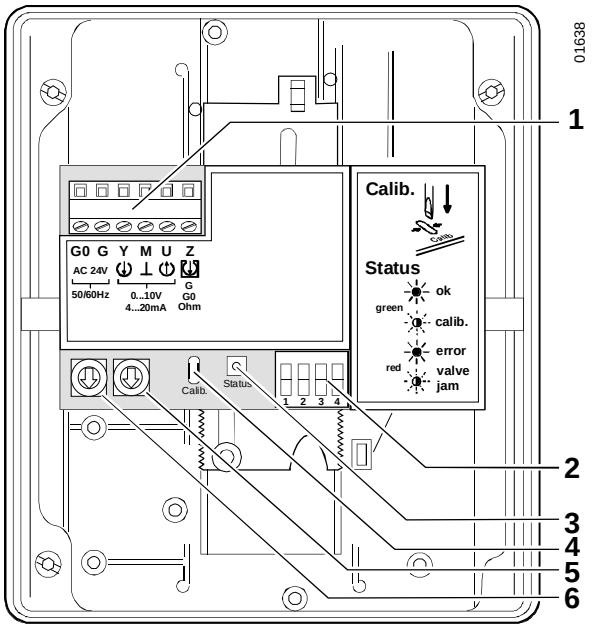
	Positioning signal Y Position feedback U	Flow characteristic
ON	 DC 4...20 mA	 lin = linear
OFF *)	 DC 0...10 V	 log = equal percentage

*) Factory setting:
All switches OFF

Relationship between control signal Y and volumetric flow



Enhanced electronics
SKB62UA



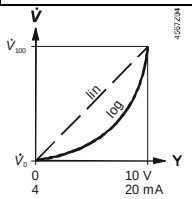
1 Connection terminals
2 DIL switches
3 LED status indication
4 Stroke calibration
5 Rotary switch **Up** (factory setting 0)
6 Rotary switch **Lo**

DIL switches
SKB62UA

	Direction of operation	Sequence control or stroke limit control	Control signal Y Position feedback U	Flow characteristic
ON	 reverse-acting	 Sequence control Signal addition QAF21../QAF61..	 DC 4... 20 mA	 lin = linear
OFF *	 direct-acting	 Stroke limit control	 DC 0...10 V	 log = equal percentage

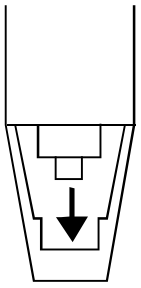
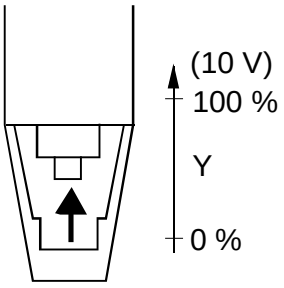
***** Factory settings: all switches OFF

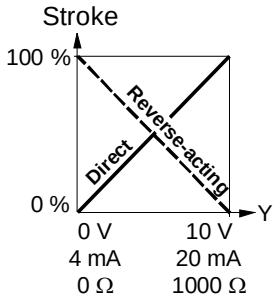
Relationship between control signal Y and volumetric flow



Selection of direction of operation
SKB62UA

- With normally-closed valves, «direct-acting» means that with a signal input of 0 V, the valve closes (applies to all Siemens valves listed under «Equipment combinations» on page 3)
- With normally-open valves, «direct-acting» means that with a signal input of 0 V, the valve is open.

Direct acting	Reverse-acting
	
Input DC 0...10 V DC 4...20 mA 0...1000 Ω	Input DC 10...0 V DC 20...4 mA 1000...0 Ω



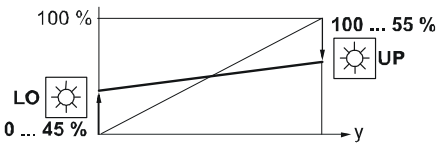
Note

The mechanical spring-return function is not affected by the direction of operation selected.

Stroke limit control and sequence control
SKB62UA

Setting the stroke limit control

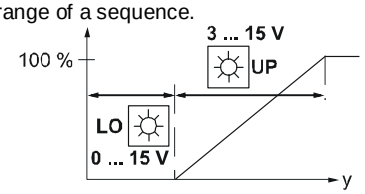
The rotary switches LO and UP can be used to apply an upper and lower limit to the stroke in increments of 3%, up to a maximum of 45%



Position of LO	Lower stroke limit	Position of UP	Upper stroke limit
0	0 %	**0**	100 %
1	3 %	**1**	97 %
2	6 %	**2**	94 %
3	9 %	**3**	91 %
4	12 %	**4**	88 %
5	15 %	**5**	85 %
6	18 %	**6**	82 %
7	21 %	**7**	79 %
8	24 %	**8**	76 %
9	27 %	**9**	73 %
A	30 %	**A**	70 %
B	33 %	**B**	67 %
C	36 %	**C**	64 %
D	39 %	**D**	61 %
E	42 %	**E**	58 %
F	45 %	**F**	55 %

Setting the sequence control

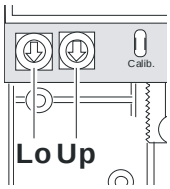
The rotary switches LO and UP can be used to determine the starting point or the operating range of a sequence.



Position of LO	Starting point for sequence control	Position of UP	Operating range of sequence control
0	0 V	**0**	10 V
1	1 V	**1**	10 V *****
2	2 V	**2**	10 V ******
3	3 V	**3**	3 V *******
4	4 V	**4**	4 V
5	5 V	**5**	5 V
6	6 V	**6**	6 V
7	7 V	**7**	7 V
8	8 V	**8**	8 V
9	9 V	**9**	9 V
A	10 V	**A**	10 V
B	11 V	**B**	11 V
C	12 V	**C**	12 V
D	13 V	**D**	13 V
E	14 V	**E**	14 V
F	15 V	**F**	15 V

***** Operating range of QAF21.. (see below)
****** Operating range of QAF61.. (see below)
******* The smallest adjustment is 3 V; control with 0…30 V is only possible via Y.

Stroke control with QAF21.. / QAF61.. signal addition SKB62UA only



Setting the signal addition			
The operating range of the frost protection monitor (QAF21.. or QAF61..) can be defined with rotary switches LO and UP.			
Position of LO	**Sequence control start point**	**Position of UP**	**QAF21.. / QAF61.. operating range**
0		1	QAF21..
0		2	QAF61..

Calibration
SKB62.., SKB60

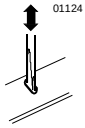
In order to determine the stroke positions 0 % and 100 % in the valve, calibration is required on initial commissioning:

Prerequisites

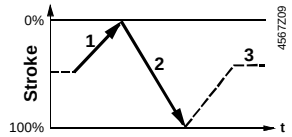
- Mechanical coupling of the actuator SKB6.. with a Siemens valve
- ⚠ **Actuator must be in «Automatic operation» enabling stroke calibration to capture the effective 0 % and 100 % values**
- AC 24 V power supply
- Housing cover removed

Calibration

1. Short-circuit contacts in calibration slot (e.g. with a screwdriver)
2. Actuator moves to «0 %» stroke position (1) (valve closed)
3. Actuator moves to «100 %» stroke position (2) (valve open)
4. Measured values are stored



green LED flashes; position feedback U inactive



Normal operation

5. Actuator moves to the position (3) as indicated by signals Y or Z	green LED is lit permanently; position feedback U active, the values correspond to the actual positions

A lit red LED indicates a calibration error.
The calibration can be repeated any number of times.

Indication of operating state
SKB62.., SKB60

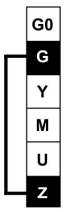
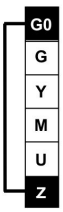
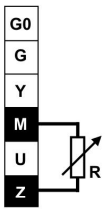
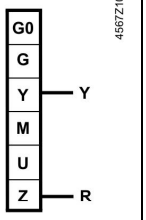
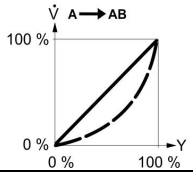
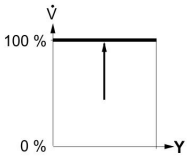
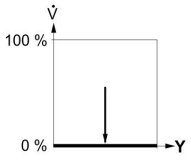
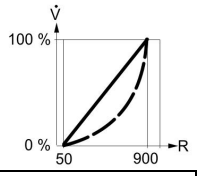
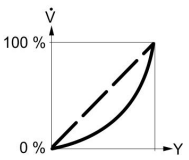
The LED status indication indicates operational status with dual-colored LED and is visible with removed cover.

LED	Indication	Function	Remarks, troubleshooting
Green	Lit ☀	Normal operation	Automatic operation; everything o.k.
	Flashing ◑	Calibration in progress	Wait until calibration is finished (LED stops flashing, green or red LED will be lit)
Red	Lit ☀	Faulty stroke calibration	Check mounting Restart stroke calibration (by short-circuiting calibration slot)
		Internal error	Replace electronics
	Flashing ◑	Inner valve jammed	Check valve
Both	Dark ○	No power supply	Check mains network, check wiring
		Electronics faulty	Replace electronics

As a general rule, the LED can assume only the states shown above (continuously red or green, flashing red or green, or off).

Override control input Z
SKB62.., SKB60

Override control input can be operated in following different modes of operation

	Z-mode				
	no function	**fully open**	**closed**	**override with 0...1000 Ω**	**Signal addition** SKB62UA only
Connections					 4567Z10
Transfer					
	linear or equal-percentage			linear or equal-percentage	linear or equal-percentage
	• Z-contact not connected • Valve stroke follows Y-input	• Z-contact connected directly to G • Y-input has no effect	• Z-contact connected directly to G0 • Y-input has no effect	• Z-contact connected to M via resistor R • Starting position at 50 Ω / end position at 900 Ω • Y-input has no effect	• Z-contact is connected to R of the frost protection monitor QAF21.. or QAF61.. • Valve stroke follows signals Y **and** R(Z)

Note

Shown operation modes are based on the factory setting «direct acting»
Y-input has no effect in Z-mode.

Accessories

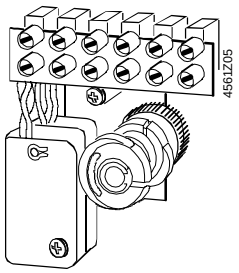
SKB..

ASZ6.5
stem heater

- for media below 0 °C
- mount between valve and actuator

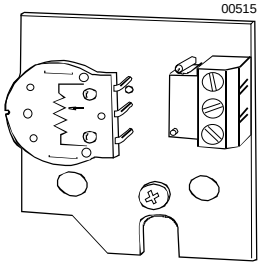
SKB32.., SKB82..

ASC9.3
double auxiliary switch



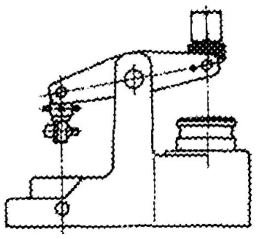
adjustable switching points

ASZ7.3..
potentiometer



ASZ7.3: 0...1000 Ω
ASZ7.31: 0...135 Ω
ASZ7.32: 0...200 Ω

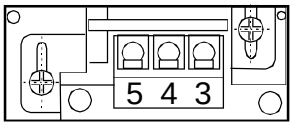
ASK51
stroke inverter



0 % actuator stroke corresponds to 100 % valve stroke; mount between valve and actuator

SKB62.., SKB60

ASC1.6
auxiliary switch



switching point 0...5 % stroke

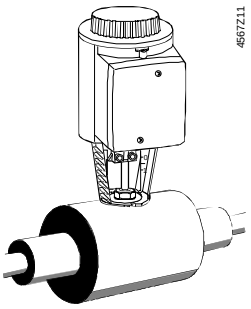
See section «Technical data» on page 12 for more information.

Engineering notes

Conduct the electrical connections in accordance with local regulations on electrical installations as well as the internal or connection diagrams.

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

Caution ⚠ **For media below 0 °C the ASZ6.5 stem heater is required to keep the valve from freezing. For safety reasons the stem heater is designed for an operating voltage of AC 24 V / 30 W.**
For this case, do not insulate the actuator bracket and the valve stem, as air circulation must be ensured. Do not touch the hot parts without prior protective measures to avoid burns.
Non-observance of the above may result in accidents and fires!
Recommendation: Above 140 °C insulating the valves is strictly recommended.



Observe admissible temperatures, refer to «Use» on page 1 and «Technical data» on page 12

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

Every actuator must be driven by a dedicated controller, refer to «Connection diagrams», page 15.

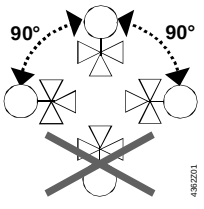
Mounting instructions

Mounting Instruction 74 319 0324 0 for fitting the actuator to the valve are by packed in the actuator packaging. The instructions for accessories are enclosed with the accessories themselves.

Accessories	Installation instructions	
ASC1.6	G4563.3	4 319 5544 0
ASC9.3	G4561.3	4 319 5545 0
SKB..	M3240	74 319 0324 0
SKB..		74 319 0326 0

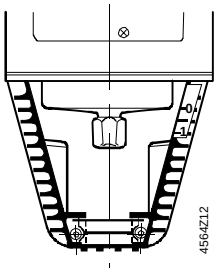
Accessory	Mounting instructions	
ASZ6.5	M4563.7	4 319 5564 0
ASK51	M4561.6	4 319 5550 0
ASZ7.3..		74 319 0247 0
ACT control unit	M4568	74 319 0554 0
QAF21..		74 319 0399 0

Orientation

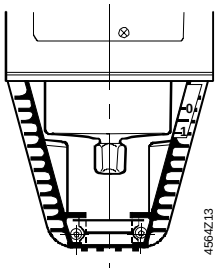


When commissioning the system, check the wiring and functions, and set any auxiliary switches and potentiometers as necessary, or check the existing settings.

Cylinder with valve stem connector fully retracted
→ stroke = 0%



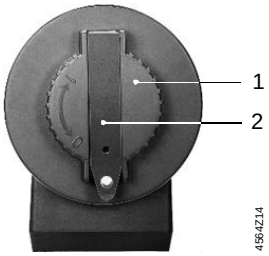
Cylinder with valve stem connector fully extended
→ stroke = 100 %



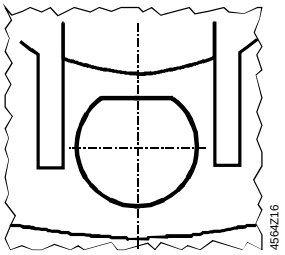
⚠ **The manual adjuster must be rotated counterclockwise to the end stop. This causes the Siemens valves, types VVF.. and VXF.. to close (stroke = 0 %).**

Automatic operation

For automatic operation, the crank (**2**) on the manual adjustment knob (**1**) must be engaged. If not engaged, turn the crank counter-clockwise until the display window (**3**) neither shows the scale (**4**) nor the crank engagement bar.



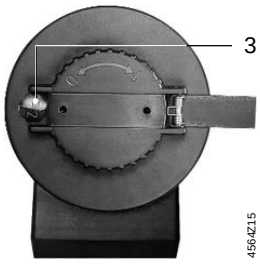
Engaged crank (**2**) on the manual adjustment knob (**1**)



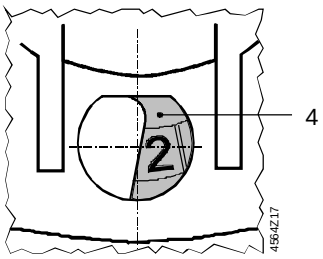
Display window with invisible scale dial and crank engagement bar

Manual operation

For manual operation, swing out the crank (**2**) so that the display window (**3**) becomes visible. By rotating the crank or the manual adjustment knob (**1**), the display window shows the engagement bar and/or the scale dial with stroke indication.



Swung-out crank, display window (**3**)



Display window with scale dial (**4**) and stroke indication

Maintenance notes

The SKB.. actuators are maintenance-free.

⚠ When servicing the actuator:

- Switch off pump of the hydronic loop
- Interrupt the power supply to the actuator
- Close the main shutoff valves in the system
- 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.

Recommendation SKB6..: trigger stroke calibration.

Repair «Replacement parts», see page 17.

⚠ **A damaged housing or cover represents an injury risk**

- **NEVER uninstall an actuator from the valve**
- **Uninstall the valve-actuator combination (actuating device) as a complete device**
- **Use only properly trained technicians to uninstall the unit**
- **Send the actuating device together with an error report to your local Siemens representative for analysis and disposal**
- **Properly mount the new actuating device (valve and actuator)**

Parts could fly ultimately resulting in injuries from uninstalling an actuator with a damaged valve housing due to the tensioned return spring.

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 3.

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

Technical data

		SKB32..	SKB82..	SKB6..
Power supply	Operating voltage	AC 230 V	AC 24 V	AC 24 V
	Voltage tolerance	± 15 %	± 20 %	–20 % / +30 %
			SELV / PELV	
	Frequency	50 or 60 Hz		
	Max. Power consumption at 50 Hz	SKB32.50: 10 VA / 8 W SKB32.51: 15 VA / 13 W	SKB82.50, ..50U 13 VA / 8 W SKB82.51, ..51U 18 VA, 11 W	SKB62.. 17 VA / 12 W SKB60.. 13 VA / 10 W
	External supply cable fuse	min. 0.5 A, slow max. 6 A, slow	min. 1 A, slow max. 10 A, slow	
Signal inputs	Control signal	3-position		DC 0...10 V, DC 4...20 mA or 0...1000 Ω
	Terminal Y			Voltage DC 0...10 V Input impedance 100 kΩ Current DC 4...20 mA Input impedance 240 Ω Signal resolution < 1% Hysteresis 1 %
	Terminal Z			Resistor 0...1000 Ω
	Override control			Z not connected No function, priority terminal Y Z connected directly to G max. stroke 100 % Z connected directly to G0 min. stroke 0 % Z connected to M via 0...1000 Ω stroke proportional to R
Position feedback	Terminal U			voltage DC 0...9,8 V ±2 % load impedance > 10 kΩ Current DC 4...19,6 mA ±2 % load impedance < 500 Ω
Operating data	Positioning time at 50 Hz			
	opening	SKB32.5.. 120 s	SKB82.5.. 120 s	120 s
	Closing	SKB32.5.. 120 s	SKB82.5.. 120 s	10 s
	Spring-return time (closing)	SKB32.51 10 s SKB32.50 –	SKB82.51 10 s SKB82.50 –	SKB60, SKB62 – SKB62.. 10 s
	Positioning force	2800 N		
	Nominal stroke	20 mm		
	Max. permissible medium temperature	-25…220 (350) °C < 0 °C: requires stem heater ASZ6.5		
Electrical connections	Cable entry ..U	4 x M20 (∅ 20,5 mm) with knockouts for standard ½" conduit connectors (Ø 21.5 mm)		
Norms and standards	CE-conformity			
	EMC-directive	2004/108/EC		
	Immunity	EN 61000-6-2 Industrial		
	Emission	EN 61000-6-3 Residential		
	Low voltage directive	2006/95/EC		
	Electrical safety	EN 60730-1		
	Product standards for automatic electric controls	EN 60730-2-14		
	Protection standard EN 60730	I	III	
	Housing protection standard			
	Upright to horizontal	IP54 to EN 60529		

		SKB32..	SKB82..	SKB6..
	Conform with UL standards	SKB82..U	UL 873	
		SKB62U, SKB62UA		UL873
	C-tick		N474	N474
	Environmental compatibility	ISO 14001 (Environment) ISO 9001 (Quality) SN 36350 (Environmentally compatible products) RL 2002/95/EG (RoHS)		
Dimensions / Weight	Dimensions	refer to «Dimensions», page 16		
	Weight (incl. packaging)	SKB32.50.. 8.50 kg SKB32.51.. 8.90 kg	SKB82.50.. 8.50 kg SKB82.51.. 8.90 kg	8,60 kg
	ASK51 stroke inverter	1.10 kg		
Materials	Actuator housing, bracket	Die-cast aluminum		
	Housing box and manual adjuster	Plastic		

Accessories		**SKB32.., SKB82..**	**SKB6..**
ASC1.6 Auxiliary switch	Switching capacity		AC 24 V, 10 mA...4 A resistive, 2 A inductive
ASC9.3 double auxiliary switch	Switching capacity per auxiliary switch	AC 250 V, 6 A resistive, 2.5 A inductive	
ASZ7.3 Potentiometer	Change in overall resistance of potentiometer at nominal stroke	ASZ7.3 0...1000 Ω ASZ7.31 0...135 Ω ASZ7.32 0...200 Ω	
	min. current in sliding contact	0,05 mA	
	expected lifetime	250'000 full lifts	
	max. current in sliding contact	2,5 mA	
	expected lifetime	100'000 full lifts	
ASZ6.5 stem heater	Operating voltage	AC 24 V ± 20 %	
	Power consumption	30 VA	

SKB62UA enhanced functions

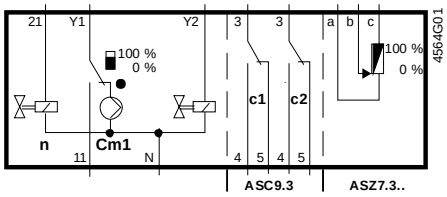
Direction of operation	Direct-acting, reverse-acting	DC 0...10 V / DC 10...0 V DC 4...20 mA / DC 20...4 mA 0...1000 Ω / 1000...0 Ω
Stroke limit control	Range of lower limit	0...45 % adjustable
	Range of upper limit	100...55 % adjustable
Sequence control	Terminal Y	
	Starting point of sequence	0...15 V adjustable
	Operating range of sequence	3...15 V adjustable
Signal addition	Z connected to R of	
	Frost protection monitor QAF21..	0...1000 Ω, added to Y signal
	Frost protection monitor QAF61..	DC 1.6 V, added to Y signal

General ambient conditions

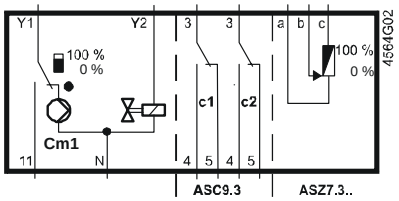
	Operation EN 60721-3-3	**Transport** EN 60721-3-2	**Storage** EN 60721-3-1
Environmental conditions	Class 3K5	Class 2K3	Class 1K3
Temperature	-15...55 °C	-30...65 °C	-15...55 °C
Humidity	5...95 % r.h.	< 95 % r.h.	5...95 % r.h.

Internal diagrams

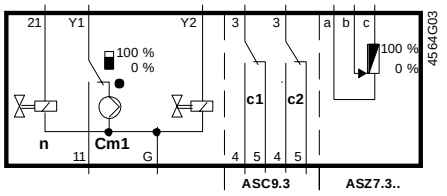
SKB32.51
AC 230 V, 3-Position



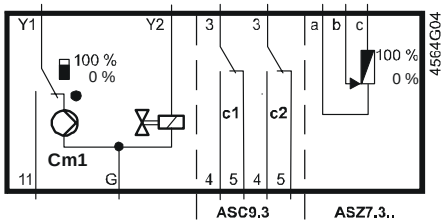
SKB32.50
AC 230 V, 3-Position



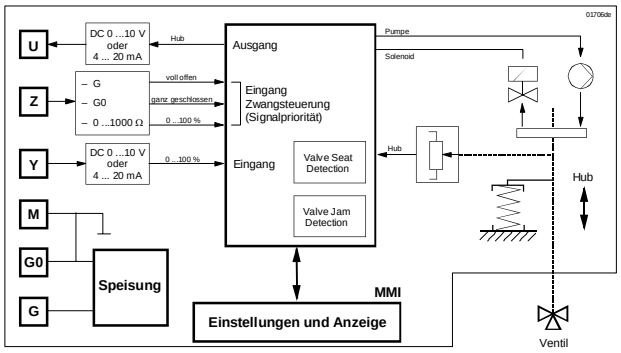
SKB82.51
AC 24 V, 3-Position



SKB82.50
AC 24 V, 3-Position



SKB60, SKB62
SKB60U, SKB62U
SKB62UA
AC 24 V, DC 0...10 V,
4...20 mA, 0...1000 Ω



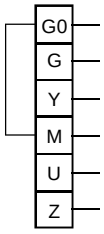
Cm1 end switch
n solenoid valve for spring-return
c1, c2 ASC9.3 double auxiliary switch
a, b, c ASZ7.. potentiometer
Y1 Positioning signal «open»
Y2 Positioning signal «close»
21 spring-return function
N neutral conductor

Cm1 end switch
n solenoid valve for spring-return
c1, c2 ASC9.3 double auxiliary switch
a, b, c ASZ7.. potentiometer
Y1 Positioning signal «open»
Y2 Positioning signal «close»
21 spring-return function
G System potential

U position indication
Z override control
Y positioning signal
M measuring neutral
G0 operating voltage AC 24 V: system neutral (SN)
G operating voltage AC 24 V: system potential (SP)

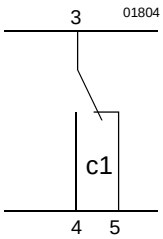
Connection terminals

SKB6..



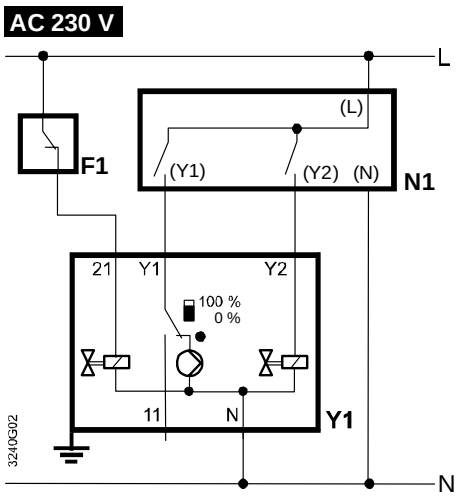
operating voltage AC 24 V: system neutral (SN)
operating voltage AC 24 V: system potential (SP)
Positioning signal DC 0...10 (30) V or DC 4...20 mA
Measuring neutral (= G0)
Position indication DC 0...10 V or DC 4...20 mA
Override control (functionality see page 8)

Auxiliary switch
ASC1.6

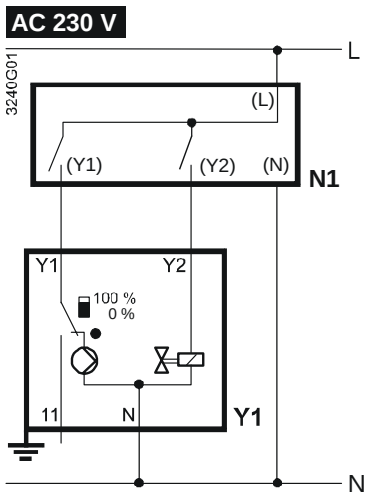


SKB32..
AC 230 V
3-Position

SKB32.51



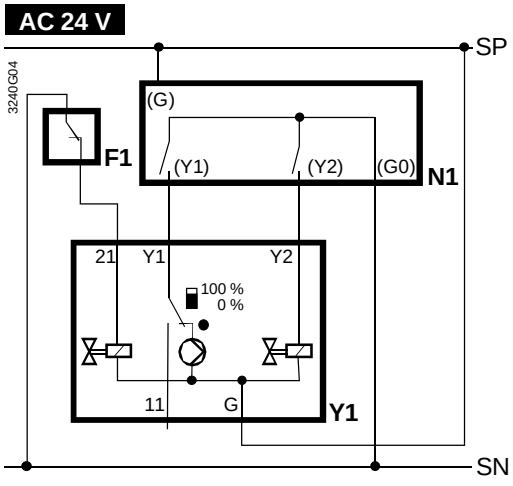
SKB32.50



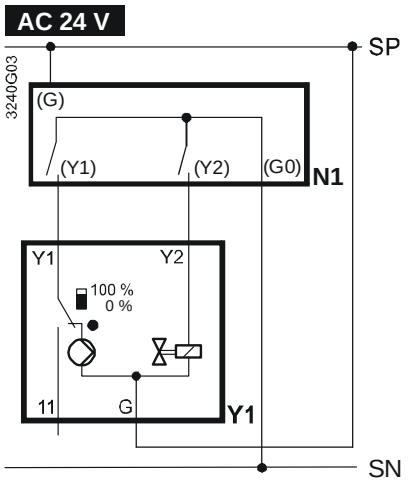
F1	temperature limiter	**L**	Phase	**Y1**	Positioning signal «open»
N1, N2	controller	**N**	neutral	**Y2**	Positioning signal «close»
Y1, Y2	actuators			**21**	Spring-return function

SKB82..
AC 24 V
3-Position

SKB82.51, SKB82.51U



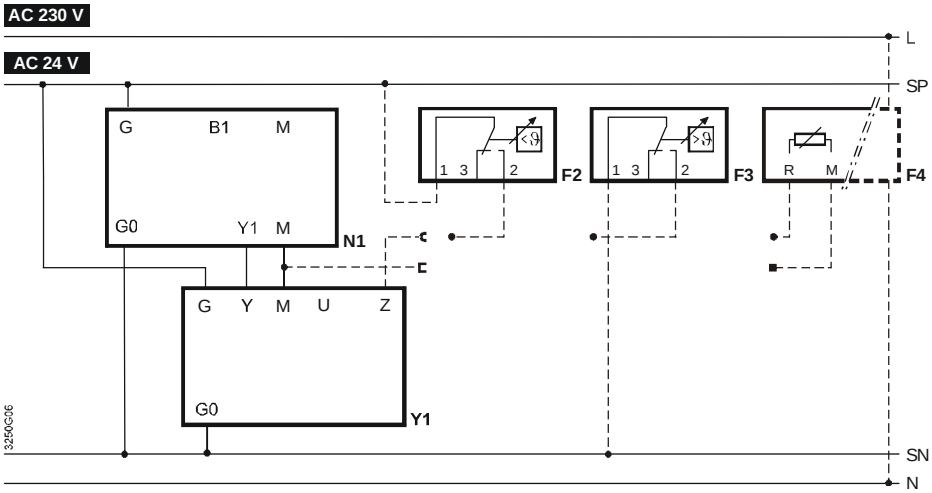
SKB82.50, SKB82.50U



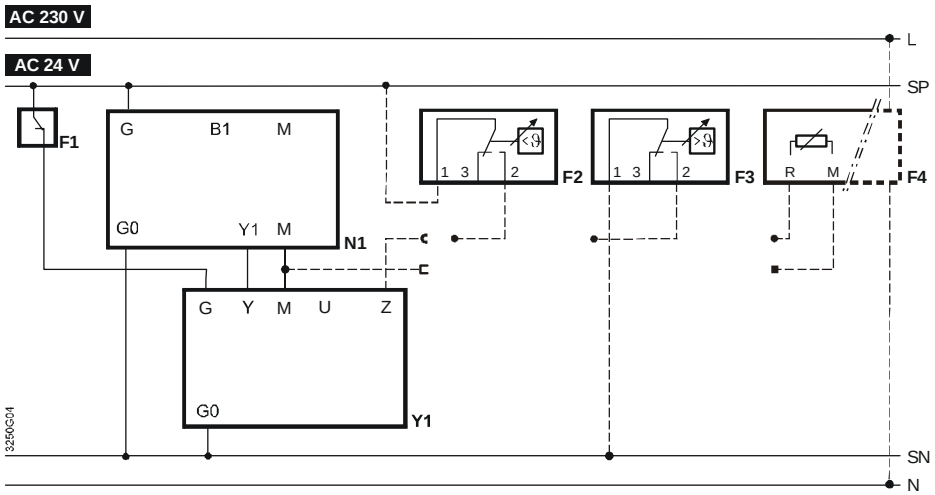
F1	temperature limiter	**SP**	Systempotential AC 24 V	**Y1**	Positioning signal «open»
N1, N2	controller	**SN**	System neutral	**Y2**	Positioning signal «close»
Y1, Y2	actuators			**21**	Spring-return function

SKB6..
AC 24 V
DC 0...10 V, 4...20 mA,
0...1000 Ω

SKB60



SKB62
SKB62U
SKB62UA

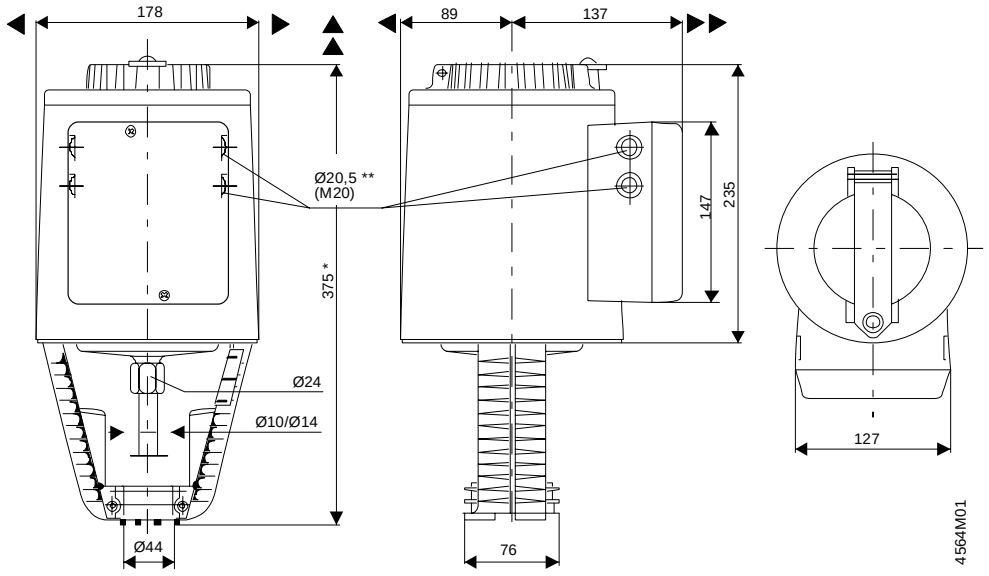


Y1 actuator
N1 controller
F1 temperature limiter
F2 frost protection thermostat
terminals: 1 – 2 frost hazard / sensor is interrupted (thermostat closes with frost)
1 – 3 normal operation
F3 temperature detector
F4 Frost protection monitor with 0…1000 Ω signal output, e.g. QAF21.. or QAF61.. (only SKB62UA) *
G (SP) System potential AC 24 V
G0 (SN) System neutral

* Only with sequence control and the appropriate selector switch settings (see page 5ff)

Dimensions

All dimensions in mm



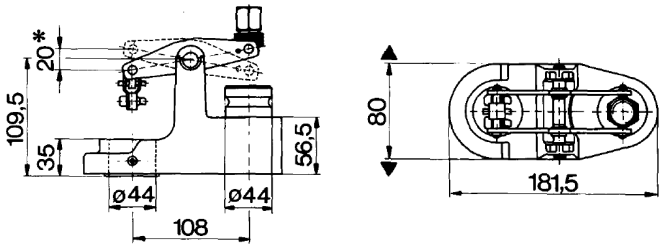
* Height of actuator from plate with stroke inverter **ASK51 = 432 mm**

****** **SKB..U:** with knockouts for standard ½" conduit connectors (Ø 21.5 mm)

► = >100 mm ⌈ Minimum clearance from ceiling or wall for mounting,

►► = >200 mm ⌊ connection, operation, maintenance etc.

ASK51 stroke inverter



* Maximum stroke = 20 mm

Replacement parts

Order numbers for replacement parts

Actuator type	Cover	Hand control [1]	Clamp	Stem connection	Control unit
					
SKB32.50	410455828	426855108	410355768	417856498	
SKB32.51	410455828	426855108	410355768	417856498	
SKB82.50	410455828	426855108	410355768	417856498	
SKB82.50U	410455828	426855108	410356058	417856498	
SKB82.51	410455828	426855108	410355768	417856498	
SKB82.51U	410455828	426855108	410356058	417856498	
SKB62	410455828	426855108	410355768	417856498	466857488
SKB62U	410455828	426855108	410356058	417856498	466857488
SKB60	410455828	426855108	410355768	417856498	466857598
SKB62UA	410455828	426855108	410356058	417856498	466857518

1) hand control, blue with mechanical parts

Revision numbers

Type reference	Valid from Rev.-No.	Type reference	Valid from Rev.-No.
SKB32.50	..B	SKB82.51U	..B
SKB32.51	..B	SKB62	..E
SKB82.50	..B	SKB62U	..E
SKB82.50U	..B	SKB60	..E
SKB82.51	..B	SKB62UA	..E