



ACVATIX™

Control device PN25, safety function to DIN EN 14597

Preassembled valve-actuator combinations

MKB533..
MKB563..
MKC533..
MKC563..
MKD533..
MKD563..

- **MK..533..** Operating voltage AC 230 V, 3-position control signal
- **MK..563..** Operating voltage AC 24 V, control signal DC 0...10 V, 4...20 mA or 0...1000 Ω
- **MK..563..** Choice of flow characteristic, position feedback, stroke calibration, LED status indication, override control
- **Electrohydraulic actuators**
- **With safety function to DIN EN 14597**
- **With position indicator**
- **Optional functions with auxiliary switches and potentiometer**
- **Nodular cast iron EN-GJS-400-18-LT valve body**
- **DN 15...150**
- **k_{vs} 0.16...315 m³/h**

Use

Control devices with safety shut-off function per DIN EN 14597 for protection against excessive temperature and pressure in district heating, heating, ventilation and air conditioning systems.
 For open and closed circuits (mind "Cavitation", refer to page 10).

Type summary

Control device	MKB533., MKD533., MKB533..K, MKC533..K		MKB563., MKD563.. MKB563..K, MKC563..K		2-port valve					
Operating voltage	AC 230 V		AC 24 V		Δp_{\max}	Δp_s	DN	k_{vs}	S_v	
Positioning signal	3-position		DC 0...10 V, DC 4...20 mA, 0...1000 Ω							[kPa]
	Product number	Stock number	Product number	Stock number						
	MKB533.15-0.5	S55329-M142-A110	MKB563.15-0.5	S55329-M142-A111	1200	2500	15	0,5	50 to 100	
	MKB533.15-0.63	S55329-M143-A110	MKB563.15-0.63	S55329-M143-A111				0,63		
	MKB533.15-0.8	S55329-M144-A110	MKB563.15-0.8	S55329-M144-A111				0,8		
	MKB533.15-1	S55329-M145-A110	MKB563.15-1	S55329-M145-A111				1		
	MKB533.15-1.25	S55329-M146-A110	MKB563.15-1.25	S55329-M146-A111				1,25		
	MKB533.15-1.6	S55329-M147-A110	MKB563.15-1.6	S55329-M147-A111				1,6		
	MKB533.15-2	S55329-M148-A110	MKB563.15-2	S55329-M148-A111				2		
	MKB533.15-2.5	S55329-M149-A110	MKB563.15-2.5	S55329-M149-A111				2,5		
	MKB533.15-3.2	S55329-M150-A110	MKB563.15-3.2	S55329-M150-A111				3,2		
	MKB533.15-4	S55329-M151-A110	MKB563.15-4	S55329-M151-A111				4		
	MKB533.20-6.3	S55329-M153-A110	MKB563.20-6.3	S55329-M153-A111		20	6,3	100 to 200		
	MKB533.25-5	S55329-M154-A110	MKB563.25-5	S55329-M154-A111		25	5			
	MKB533.25-6.3	S55329-M155-A110	MKB563.25-6.3	S55329-M155-A111			6,3			
	MKB533.25-8	S55329-M156-A110	MKB563.25-8	S55329-M156-A111			8			
	MKB533.25-10	S55329-M157-A110	MKB563.25-10	S55329-M157-A111			10			
	MKD533.32-16	S55329-M159-A110	MKD563.32-16	S55329-M159-A111		32	16			
	MKB533.40-12.5	S55329-M160-A110	MKB563.40-12.5	S55329-M160-A111		1600	40		12,5	
	MKB533.40-16	S55329-M161-A110	MKB563.40-16	S55329-M161-A111					16	
	MKB533.40-20	S55329-M162-A110	MKB563.40-20	S55329-M162-A111					20	
	MKB533.40-25	S55329-M163-A110	MKB563.40-25	S55329-M163-A111					25	
	MKB533.50-40K	S55329-M166-A110	MKB563.50-40K	S55329-M166-A111	1250	2500	50	36		
	MKD533.15-0.16	S55329-M137-A100	MKD563.15-0.16	S55329-M137-A101	1200	2500	15	0,16	50 to 100	
	MKD533.15-0.2	S55329-M138-A100	MKD563.15-0.2	S55329-M138-A101				0,2		
	MKD533.15-0.25	S55329-M139-A100	MKD563.15-0.25	S55329-M139-A101				0,25		
	MKD533.15-0.32	S55329-M140-A100	MKD563.15-0.32	S55329-M140-A101				0,32		
	MKD533.15-0.4	S55329-M141-A100	MKD563.15-0.4	S55329-M141-A101				0,4		
	MKD533.15-0.5	S55329-M142-A100	MKD563.15-0.5	S55329-M142-A101				0,5		
	MKD533.15-0.63	S55329-M143-A100	MKD563.15-0.63	S55329-M143-A101				0,63		
	MKD533.15-0.8	S55329-M144-A100	MKD563.15-0.8	S55329-M144-A101				0,8		
	MKD533.15-1	S55329-M145-A100	MKD563.15-1	S55329-M145-A101				1		
	MKD533.15-1.25	S55329-M146-A100	MKD563.15-1.25	S55329-M146-A101				1,25		
	MKD533.15-1.6	S55329-M147-A100	MKD563.15-1.6	S55329-M147-A101				1,6		
	MKD533.15-2	S55329-M148-A100	MKD563.15-2	S55329-M148-A101				2		
	MKD533.15-2.5	S55329-M149-A100	MKD563.15-2.5	S55329-M149-A101				2,5		
	MKD533.15-3.2	S55329-M150-A100	MKD563.15-3.2	S55329-M150-A101				3,2		
	MKD533.15-4	S55329-M151-A100	MKD563.15-4	S55329-M151-A101				4		
	MKD533.20-6.3	S55329-M153-A100	MKD563.20-6.3	S55329-M153-A101				20		6,3

MKD533.25-5	S55329-M154-A100	MKD563.25-5	S55329-M154-A101		2100	25	5	100 to 200
MKD533.25-6.3	S55329-M155-A100	MKD563.25-6.3	S55329-M155-A101				6,3	
MKD533.25-8	S55329-M156-A100	MKD563.25-8	S55329-M156-A101				8	
MKD533.25-10	S55329-M157-A100	MKD563.25-10	S55329-M157-A101				10	
MKD533.32-16	S55329-M159-A100	MKD563.32-16	S55329-M159-A101	1100	1200	32	16	
MKD533.40-12.5	S55329-M160-A100	MKD563.40-12.5	S55329-M160-A101	650	750	40	12,5	
MKD533.40-16	S55329-M161-A100	MKD563.40-16	S55329-M161-A101				16	
MKD533.40-20	S55329-M162-A100	MKD563.40-20	S55329-M162-A101				20	
MKD533.40-25	S55329-M163-A100	MKD563.40-25	S55329-M163-A101				25	
MKC533.65-63K	S55329-M167-A120	MKC563.65-63K	S55329-M167-A121	1250	2500	65	63	
MKC533.80-100K	S55329-M168-A120	MKC563.80-100K	S55329-M168-A121			80	100	
MKC533.100-150K	S55329-M169-A120	MKC563.100-150K	S55329-M169-A121			100	150	
MKC533.125-220K	S55329-M170-A120	MKC563.125-220K	S55329-M170-A121			125	220	
MKC533.150-315K	S55329-M171-A120	MKC563.150-315K	S55329-M171-A121			150	315	

DN = Nominal size

k_{vs} = Nominal flow rate of cold water (5...30 °C) through the fully open valve (H_{100}) by a differential pressure of 100 kPa (1 bar)

S_v = Rangeability k_{vs}/k_{vr}

k_{vr} = Smallest k_v value, at which the flow characteristic tolerances can still be maintained, by a differential pressure of 100 kPa (1 bar)

Accessories

Product number	Description	For control devices	Mounting location
ASC1.6	Auxiliary switch	MKB563.. MKD563.. MKB563..K, MKC563..K	1 x ASC 1.6
ASC9.3	Dual auxiliary switches	MKB533.. MKD533.. MKB533..K, MKC533..K	1 x ASC9.3 and 1 x ASZ7.3
ASZ7.3	Potentiometer 1000 Ω		

Ordering

Product number	Stock number	Designation
MKD533.40-25	S55329-M163-A100	Control device PN25, safety function to DIN EN 14597

Delivery

Prior delivery valve and actuator are preassembled. The control device is preset to 50% stroke. Accessories are packed and supplied separately.

Spare parts

No spare parts available. The control device has to be replaced as a whole unit else approval for the safety function to DIN EN 14597 ceases.

The functional principle and technical details are described in valve and actuator data sheets:

Product	Type	Data sheet
Electrohydraulic actuators	SKB..	N4564
Electrohydraulic actuators	SKC..	N4566
Electrohydraulic actuators	SKD..	N4561
2-port valves	VVF53..	N4405

Spring return facility

The return spring causes the actuator to move to the «0%» stroke position and closes the valve.

MK..533.. 3-position

- | | | |
|---------------------------|---|--------------|
| • 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 | |

MK..563.. DC 0...10 V, DC 4... 20 mA or, 0...1000 Ω

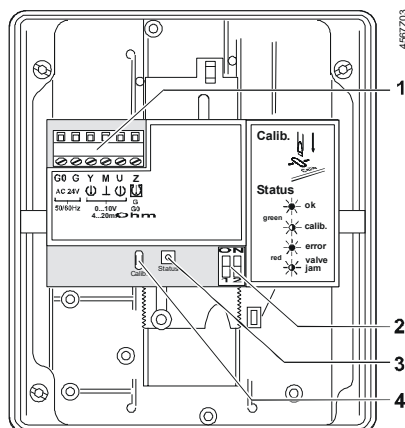
- | | | |
|------------------------|---|--------------|
| • Signal Y increasing: | piston extends | valve opens |
| • Signal Y decreasing: | piston retracts | valve closes |
| • Signal Y constant: | piston / valve stem remain in the respective position | |
| • Override control Z | see description of override control input, page 6 | |

Frost protection thermostat

A frost protection thermostat or temperature detector can be connected to the MKD..563.. control device.





The added signals from the QAF21.. and QAF61.. cannot be connected. «Connection diagrams» for operation with frost protection thermostat or frost protection monitor refer to page 21.

Standard electronics MK..563..



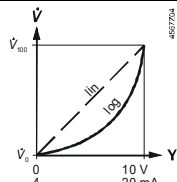
- 1 Connection terminals
- 2 Mode DIL switches
- 3 LED status indication
- 4 Slot for calibration

DIL switches
MK..563..

	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



Stroke calibration
MK..563..

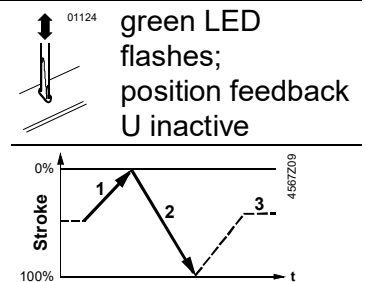
In order to determine the stroke positions 0% and 100% in the valve, calibration is required on initial commissioning:

Prerequisites

- AC 24 V power supply
- Red safety clamp is removed, see commissioning notes.
- 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



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
MK..563..

The LED status indication indicates operational status 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)
	Flashing 	Internal error	Replace electronics
Both	Dark 	Inner valve jammed	Check valve
		No power supply Electronics faulty	Check mains network, check wiring 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
MK..563..

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

		Z-mode			
		no function	fully open	closed	override with 0...1000 Ω
Connections					
	Transfer				
		linear or equal-percentage			linear or equal-percentage
		<ul style="list-style-type: none"> • Z-contact not connected • Valve stroke follows Y-input 	<ul style="list-style-type: none"> • Z-contact connected directly to G • Y-input has no effect 	<ul style="list-style-type: none"> • Z-contact connected directly to G0 • Y-input has no effect 	<ul style="list-style-type: none"> • Z-contact connected to M via resistor R • Starting position at 50 Ω / end position at 900 Ω • Y-input has no effect

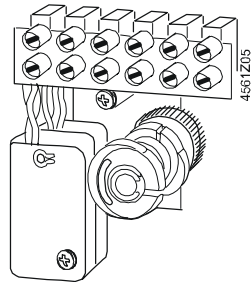
Note Shown operation modes are based on the factory setting «direct acting»
Y-input has no effect in Z-mode.

Accessories

MK..533..

ASC9.3

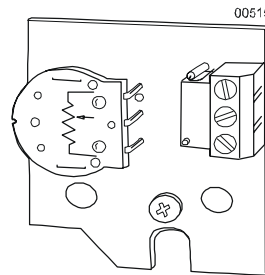
double auxiliary switch



adjustable switching points

ASZ7.3

potentiometer

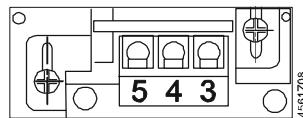


ASZ7.3: 0...1000 Ω

MK..563..

ASC1.6

auxiliary switch





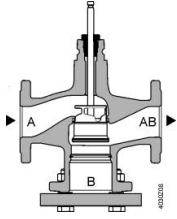
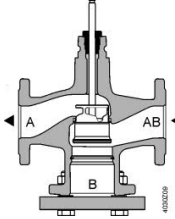


Switching point 0...5% stroke

Technical and mechanical design

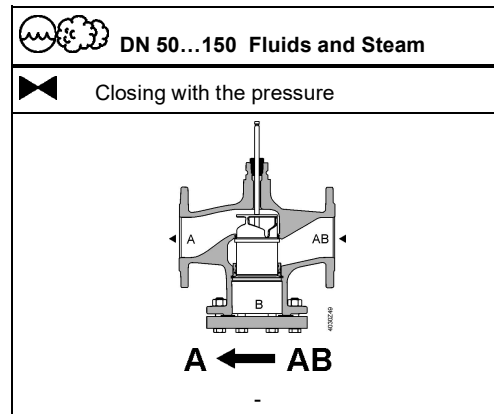
The illustrations below show the basic design of the valves. Constructional features, such as the shape of plugs, may differ.

2-port valves

 DN 15...40 Fluids	 DN 15...40 Steam
 Closing against the pressure	 Closing with the pressure
 <p style="text-align: center;">A → AB</p>	 <p style="text-align: center;">A ← AB</p>

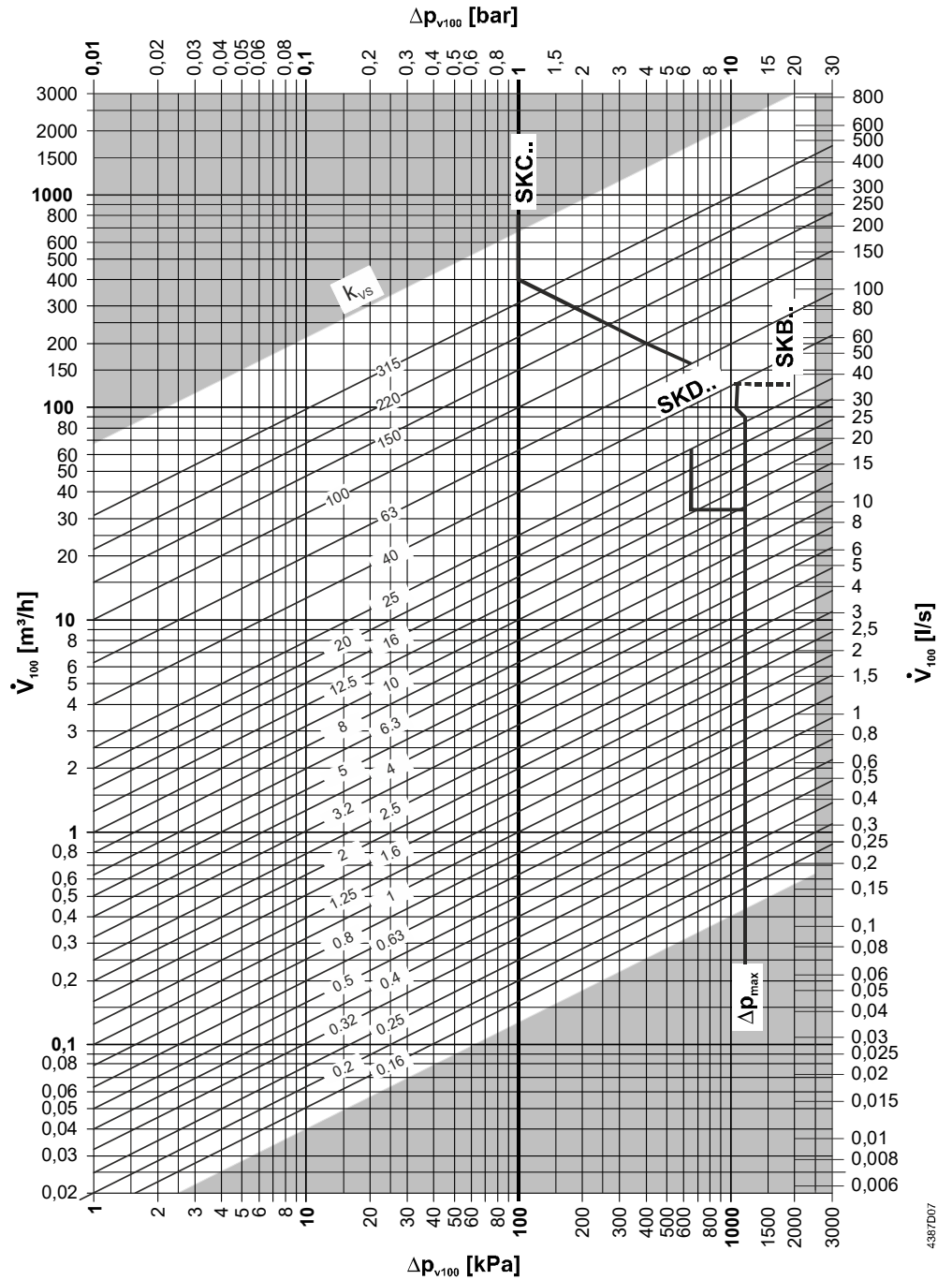
2-port valves pressure compensated

The VVF53..K valves use a pressure-compensated plug. This enables the same type of actuators to be used for the control of volumetric flow at higher differential pressures.



Sizing

Flow diagram



Δp_{max} = Maximum permissible differential pressure across the valve, valid for the entire actuating range of the motorized valve

Δp_{v100} = Differential pressure across the fully open valve and the valve's control path by a volume flow V_{100}

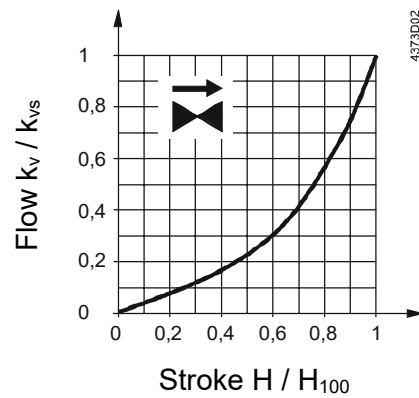
\dot{V}_{100} = Volume flow through the fully open valve (H_{100})

100 kPa = 1 bar \approx 10 mWC

1 m³/h = 0.278 l/s water at 20 °C

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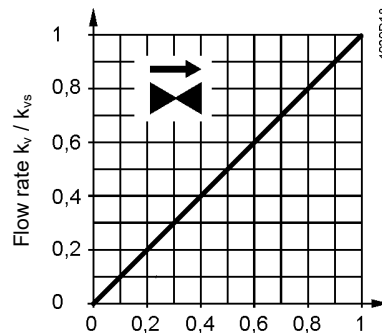
Valve flow characteristic



0...30% → linear
 30...100% → equal percentage
 $n_{gl} = 3$ as per
 VDI / VDE 2173

For product lines:

VVF53.125-220K
 VVF53.150-315



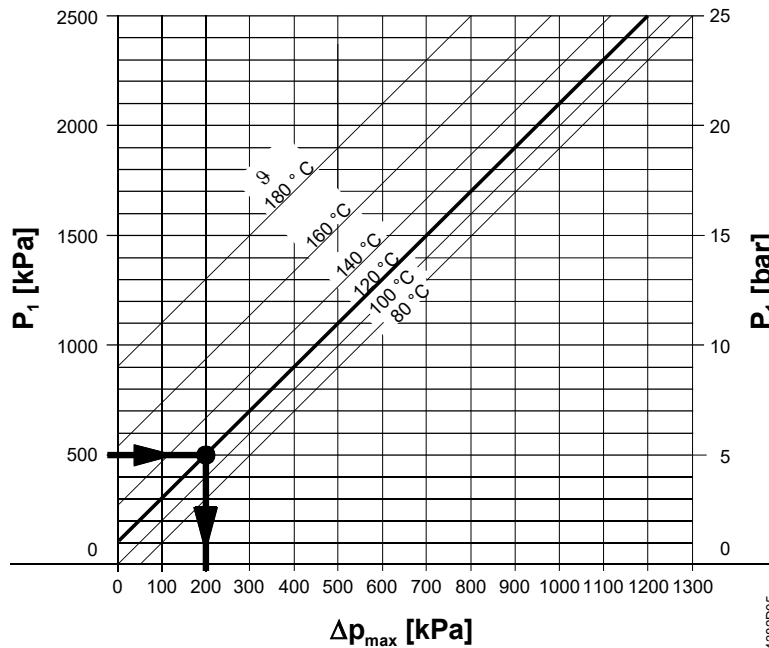
0...100%: Linear

Cavitation

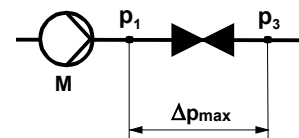
Cavitation accelerates wear on the valve plug and seat, and also results in undesirable noise. Cavitation can be avoided by not exceeding the differential pressure shown in the flow diagram on page 9 and by adhering to the static pressures shown below.

Note on chilled water

To avoid cavitation in chilled water circuits ensure sufficient counter pressure at valve outlet, e.g. by a throttling valve after the heat exchanger. Select the pressure drop across the valve at maximum according to the 80 °C curve in the flow diagram below.



- Δp_{max} = Differential pressure with valve almost closed, at which cavitation can largely be avoided
- p_1 = Static pressure at inlet
- p_3 = Static pressure at outlet
- M = Pump
- ϑ = Water temperature



High temperature hot water example:

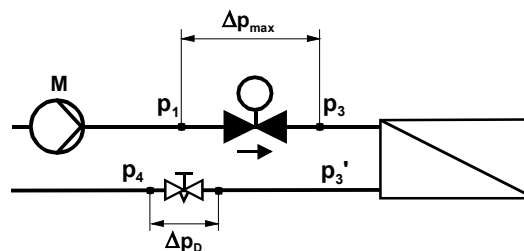
Pressure p_1 at valve inlet: 500 kPa (5 bar)
 Water temperature: 120 °C

From the diagram above, it will be seen that with the valve almost closed, the maximum permissible differential pressure Δp_{max} is 200 kPa (2 bar).

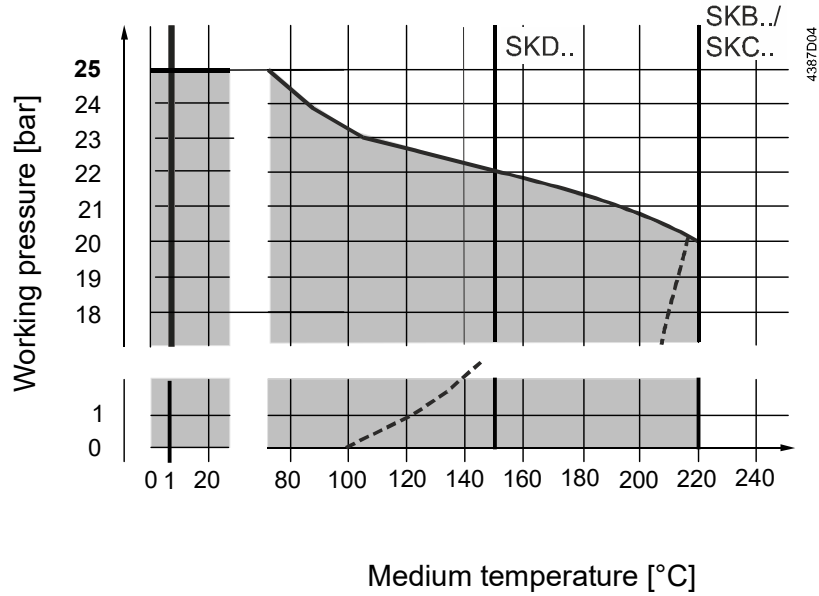
Chilled water example:

Spring water cooling as an example of avoiding cavitation:

- Chilled water = 12 °C
- p_1 = 500 kPa (5 bar)
- p_4 = 100 kPa (1 bar) (atmospheric pressure)
- Δp_{max} = 300 kPa (3 bar)
- $\Delta p_{3-3'}$ = 20 kPa (0.2 bar)
- Δp_D (throttle) = 80 kPa (0.8 bar)
- $p_{3'}$ = pressure after consumer in kPa



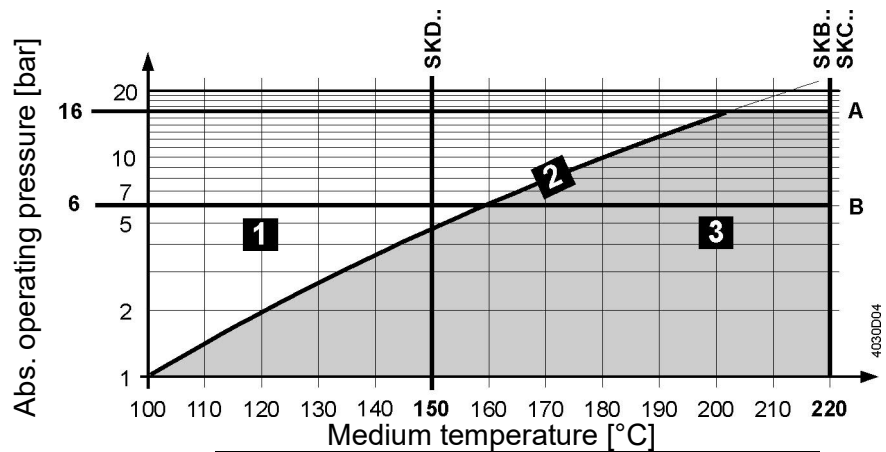
Working pressure and medium temperature
Fluids



Working pressure and medium temperature staged as per ISO 7005
Current local legislation must be observed.



Saturated steam
Superheated steam



1	Water	-
2	Wet steam	To be avoided
3	Saturated steam	Permissible operating range
	Superheated steam	
A	Subcritical pressure ratio	
B	Supercritical pressure ratio	

Engineering notes

We recommend installation in the return pipe, as the temperatures in this pipe are lower for applications in heating systems, which in turn, extends the stem sealing gland's life.

⚠ In open circuits the valve plug may seize as the result of scale deposits. We recommend that the valve should be exercised at regular intervals (two to three times per week).

A strainer **MUST** be fitted at the valve inlet

Ensure cavitation free flow (refer to page 10).

⚠ To ensure the reliability of the valve, we recommend the fitting of a strainer at the valve inlet even in closed circuits.

Conduct the electrical connections in accordance with local regulations on electrical installations as well as the internal or connection diagrams on page 21.

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

Observe admissible temperatures, refer to «Use» on page 1 and «Technical data» on page 17.

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 21).

Mounting notes

Valve and actuator are preassembled and must be mounted and installed as a whole unit.

The control device is preset to 50% stroke for flushing and pressure testing of the plant.

⚠ **Attention:** When removing anti-tamper screws approval for the safety function to DIN EN 14597 ceases!

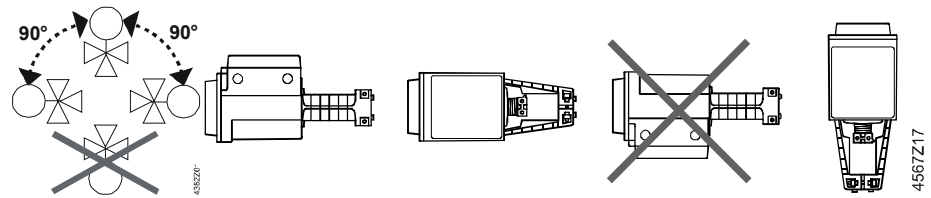
Mounting and installation instructions are by packed in the control device packing.

Control device	Installation instruction	
MKD....	–	74 319 0914 0
MK..563..	–	74 319 0326 0

The instructions for accessories are enclosed with the accessories themselves.

Accessories	Installation instructions		Accessories	Mounting instructions	
ASC1.6	G4563.3	4 319 5544 0	ASZ7.3	–	74 319 0247 0
ASC9.3	G4561.3	4 319 5545 0			

Orientation



Direction of flow

When mounting, pay attention to the valve's flow direction symbol →.
 MK..5.. → Direction of action: closes against pressure for DN15-40
 Direction of action: closes against pressure for DN50-150

Commissioning notes



The manual adjuster must remain secured with anti-tamper screws as factory delivered.
When removing anti-tamper screws approval for the safety function to DIN EN 14597 ceases.

Valve stem retracts: valve opens = increasing flow
 Valve stem extends: valve closes = decreasing flow

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

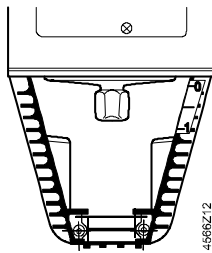
The actuator is driven to OPEN (valve open) until the red clamp, that fixes a stroke position of ca. 50% can be easily removed. Voltage must be applied to either terminal 21 and Y1 to drive to OPEN, or voltage to G-G0 as well as Y > 70%.



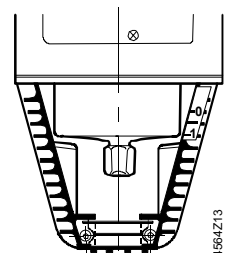
The safety function is only enabled after the red safety clamp is removed.

MKB.., MKC..

Cylinder with stem location fully retracted
 → stroke = 0%

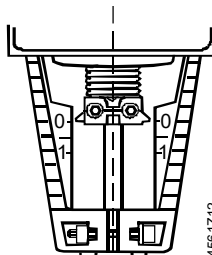


Cylinder with stem location fully extended
 → stroke = 100%

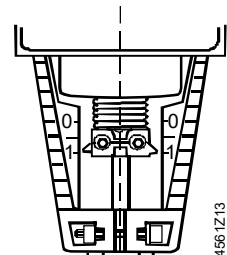


MKD..

Coupling fully retracted
 → stroke = 0%



Coupling fully extended
 → stroke = 100%

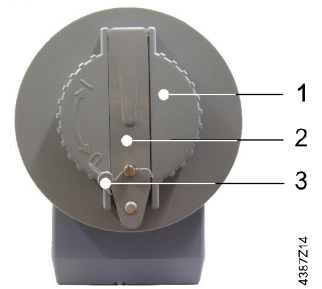


Automatic operation

MKB../MKC..

The control device can only be operated in automatic mode. The crank (2) is snapped und sealed in the manual adjustment knob (1).

When removing anti-tamper screws (3) approval for the safety function to DIN EN 14597 ceases



4387Z14

MKD..

The control device can only be operated in automatic mode, i.e. the red indicator marked «MAN» is not visible.

When removing anti-tamper screws (1) approval for the safety function to DIN EN 14597 ceases.



4387Z13

Maintenance notes



The MK..5.. control devices are equipped with maintenance-free gland materials.

When servicing the control device:

- **Never disassemble valve and actuator for maintenance or servicing else approval for the safety function to DIN EN 14597 ceases.**
- **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**

Recommendation MK..563..: Trigger stroke calibration after servicing or maintenance.

Repair

The control device has to be replaced as a whole unit else approval for the safety function to DIN EN 14597 ceases.



Warning

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.

Sealing gland

It is not permitted to replace the sealing glands. In case of leakages, the control device has to be replaced as a whole unit else approval for the safety function ceases.

Disposal



The device is considered electrical and electronic equipment for disposal in terms of the applicable European Directive and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Warranty

The technical data relating to specific applications are valid only in conjunction with the control devices listed in this data sheet under «Type summary», page 2.



Approval as actuating device with safety function as per DIN EN 14597 applies to the entire actuator. Approval as actuating device with safety function as per DIN EN 14597 expires if the actuator is separated from the valve. This also voids any guarantees on the part of Siemens Switzerland Ltd.

Technical data

		MKB533..	MKC533..	MKD533..	MKB563..	MKC563..	MKD563..
Valve	PN class	PN 25 to ISO 7268					
	Working pressure	to ISO 7005 within the permissible "working pressure and medium temperature" according to the diagram on page 12					
	Flow characteristic	linear					
	DN 15...100: 0...30%	equal percentage; $n_{gl} = 3$ value to VDI 2173					
	DN 125, DN 150: 30...100%	linear					
	DN 125, DN 150: 0...100%	linear					
	Leakage rate	0...0,05% vom k_{vs} -value to DIN EN 1349					
Permissible media	cooling water, chilled water, low temperature hot water, high temperature hot water, water with anti-freeze; recommendation: water treatment to VDI 2035 Brine Steam						
Medium temperature	Brine	+1...220 °C	+1...150 °C	+1...220 °C	+1...220 °C	+1...150 °C	+1...150 °C
	Steam	+1...220 °C	+1...150 °C	+1...220 °C	+1...220 °C	+1...150 °C	+1...150 °C
Materials	Rangeability S_v	DN 15, DN 20: 50 to 100 DN 25...40: 100 to 200 DN 50...150: 100 to 200					
	Valve body	Nodular cast iron EN-GJS-400-18-LT					
	Stem	Stainless steel					
	Plug, seat	Stainless steel					
	Sealing gland	Stainless steel, silicon-free					
	Gland materials	FEPM-O-Ring, silicon-free					
Actuators	Power supply	Operating voltage	AC 230 V			AC 24 V	
		Voltage tolerance	± 15%			± 20%	
					SELV / PELV		
	Frequency	50 or 60 Hz					
	Max. Power consumption at 50 Hz	16 VA / 12 W	24 VA / 18 W	17 VA / 12 W	14 VA / 10W	21 VA / 15W	14 VA / 10W
External supply cable fuse	<ul style="list-style-type: none"> Fuse slow 0.5...6 A Circuit breaker max. 6 A, Characteristic B, C, D according to EN 60898 Power source with current limitation of max. 6 A 			<ul style="list-style-type: none"> Fuse slow 1...10 A Circuit breaker max. 13 A, Characteristic B, C, D according to EN 60898 Power source with current limitation of max. 10 A 			
Signal inputs	Control signal Y	3-position			DC 0...10 V, DC 4...20 mA or 0...1000 Ω		

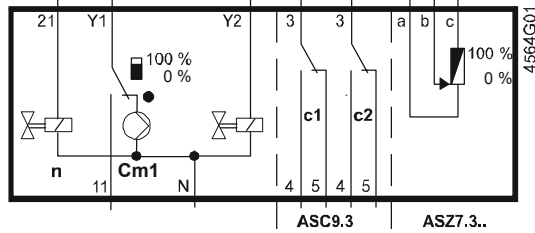
		MKB533..	MKC533..	MKD533..	MKB563..	MKC563..	MKD563..
Signal inputs	Terminal Y	Voltage Input impedance Current Input impedance Signal resolution Hysteresis			DC 0...10 V 100 kΩ DC 4...20 mA 240 Ω < 1% 1%		
Signal inputs	Override Control Z	Resistor Z not connected Z connected directly to G Z connected directly to G0 Z connected to M via 0...1000 Ω			1000 Ω No function, priority terminal Y Max. stroke 100% Min. stroke 0% stroke proportional to R		
Signal outputs	Position feedback U	voltage load impedance current load impedance			DC 0...9,8 V ±2% > 10 kΩ DC 4...19,6 mA ±2% < 500 Ω		
Operating data	Positioning time at 50 Hz opening	120 s	120 s	120 s	120 s	120 s	30 s
	closing	120 s	120 s	120 s	10 s	20 s	15 s
	Spring-return time (closing)	5...25 s	5...25 s	5...25 s	5...25 s	5...25 s	5...25 s
	Nominal stroke	20 mm	40 mm	20 mm	20 mm	40 mm	20 mm
El. Connections	Cable entry	4 x M20 (∅ 20,5 mm)					
Materials	Actuator housing, bracket	Die-cast aluminum					
	Housing box and manual adjuster	Plastic					
Dimensions	Dimensions	Refer to "Dimensions", page 22					
	Weight	Refer to "Dimensions", page 22					
Norms	Electromagnetic compatibility (Application)	For residential, commercial and industrial environments					
	<ul style="list-style-type: none"> EU Conformity (CE) RCM Conformity 	SKB../SKC...: A5W00007751					
	AC 230 V	SKD...: A5W00007752 CE1T4387xx EN 60730-x					
	Product standards	DIN EN 14597					
	Control device with safety function	Temperature control devices and temperature limiters for heat generating systems; Actuator devices with safety functions in heat generating systems Registration no.: 1F170					
	Protection standard EN 60730	I			III		
	Housing protection standard Upright to horizontal	IP54 to EN 60529					
	Environmental compatibility	The product environmental declaration contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).					
	Pressure Equipment Directive	DGR 2014/68/EU					
	Accessories with safety functions	As per article 3, section 1.4					
Fluid group 2	Category IV, with EC design examination module B, test authority number 0036						
Flange connections	to ISO 7005						

		MKB533..	MKC533..	MKD533..	MKB563..	MKC563..	MKD563..
Zubehöre							
ASC1.6 Hilfsschalter	Switching capacity				AC 24 V, 10 mA...4 A ohm., 2 A ind.		
ASC9.3 Hilfsschalterpaar	Switching capacity per auxiliary switch				AC 250 V, 6 A ohm., 2.5 A ind.		
ASZ7.3 Potentiometer	Change in overall resistance of potentiometer	0...1000 Ω					

¹⁾ The documents can be downloaded from <http://siemens.com/bt/download>.

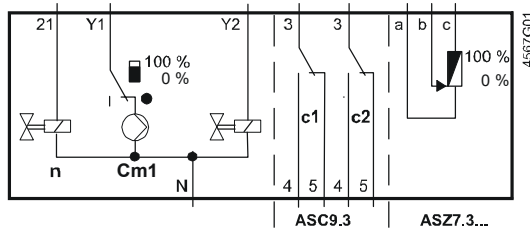
Internal diagrams

MKB533.., MKC533..,
AC 230 V, 3-position



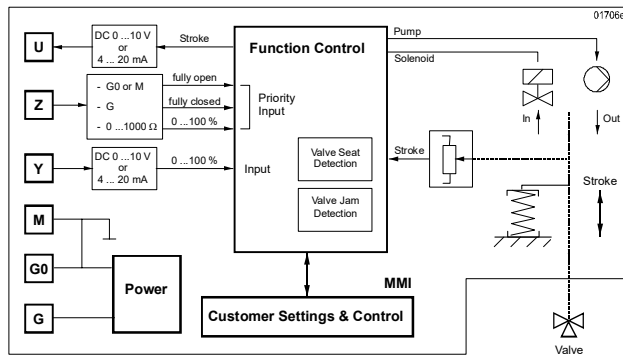
- Cm1** end switch
- n** solenoid valve for spring-return
- c1, c2** ASC9.3 double auxiliary switch
- a, b, c** ASZ7.. potentiometer
- Y1** Positioning signal «open»
- Y2** Positioning signal «close»
- 21** spring-return function
- N** neutral conductor

MKD533..
AC 230 V, 3-position



- 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

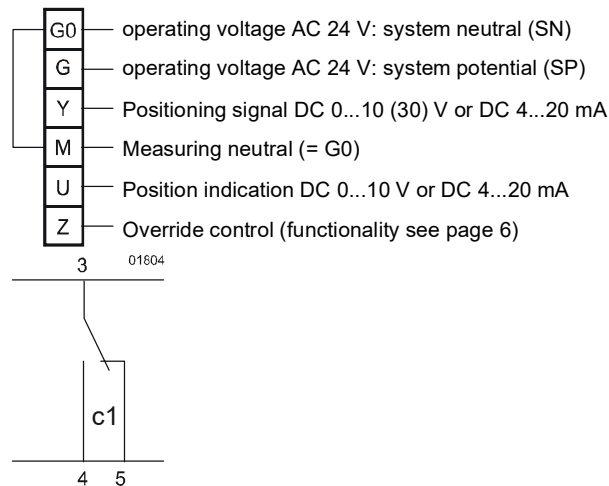
MK..563..
AC 24 V,
DC 0...10 V,
4...20 mA,
0...1000 Ω



- U** Position feedback
- Z** Override control input
- Y** control signal
- M** Measuring neutral
- G0** Operating voltage AC 24 V: system neutral (SN)
- G** Operating voltage AC 24 V: system potential

Connection terminals

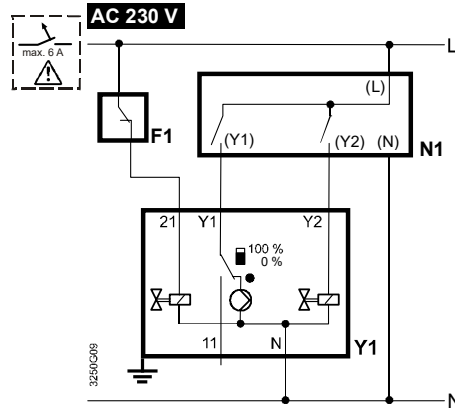
MK..563..



**Auxiliary switch
ASC1.6**

Connection diagrams

MKB533...,
MKC533...,
3-position

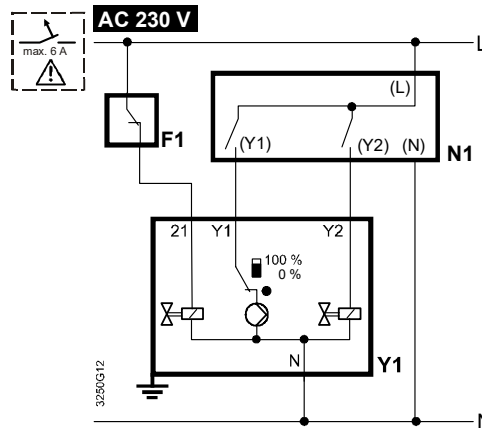


F1 safety limiter (e. g. temperature limiter)
N1, N2 controller
Y1, Y2 actuators

L Phase
N neutral

(Y1) controller contacts
(Y2) controller contacts
Y1 Positioning signal «open»
Y2 Positioning signal «close»
21 spring-return function

MKD533..
3-position

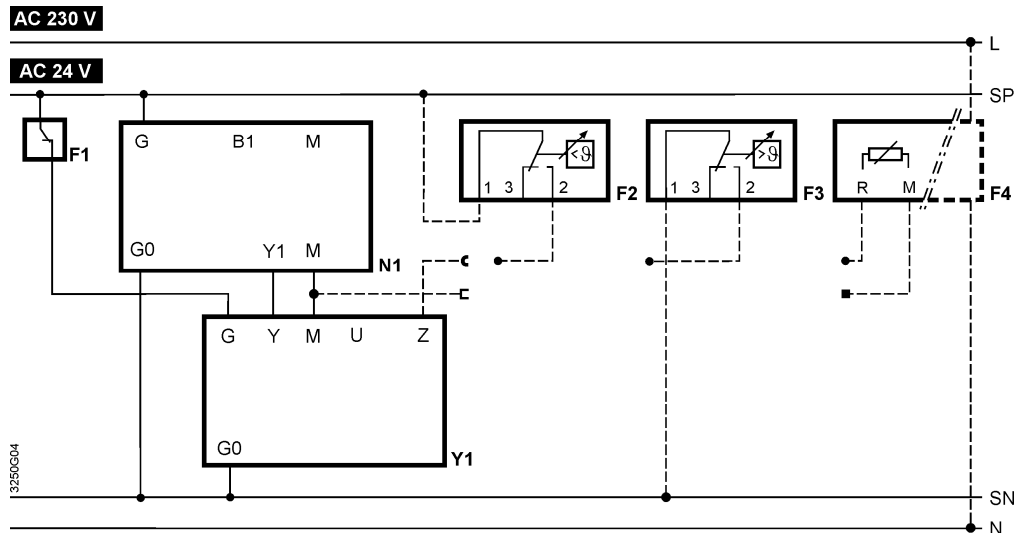


F1 safety limiter (e. g. temperature limiter)
N1, N2 controller
Y1, Y2 actuators

L Phase
N neutral

(Y1) controller contacts
(Y2) controller contacts
Y1 Positioning signal «open»
Y2 Positioning signal «close»
21 spring-return function

MK..563...,
DC 0...10 V,
4...20 mA,
0...1000 Ω



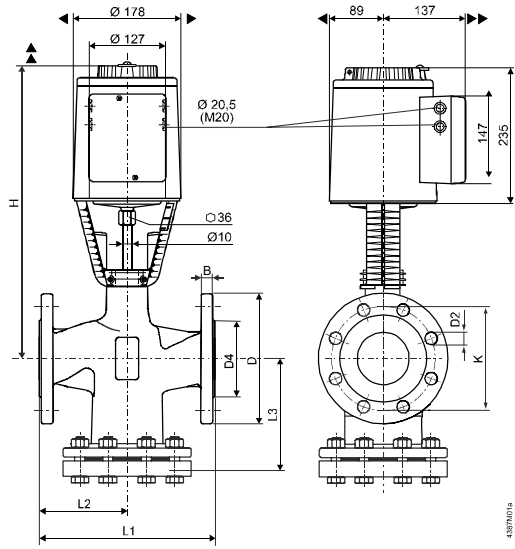
Y1 actuator
N1 controller
F1 safety limiter (e. g. temperature limiter)
F2 frost protection thermostat
terminals: 1 – 2 frost hazard / sensor is interrupted (thermostat closes with frost)
1 – 3 normal operation
F3 temperature detector
F4 frost protection monitor with 0...1000 Ω signal output *
G (SP)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

* QAF21.. and QAF61.. frost protection monitor cannot be connected with control devices MK..5...

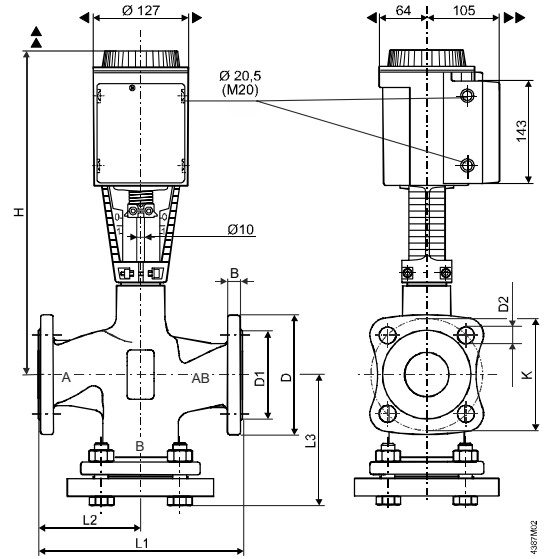
Dimensions

All dimensions in mm

MKB.., MKC..



MKD..



▶ => 100 mm

Minimum clearance from ceiling or wall for mounting, connection, operation, maintenance etc.

▶▶ => 200 mm

DN	B	D Ø	D2 Ø	D1 Ø	K Ø	L1	L2	L3	H			kg		
									MKB..	MKC..	MKD..	MKB..	MKC..	MKD..
15	14	95	14 (4x)	46	65	130	65	87.5	438		363	13.6	-	8.1
20	16	105		56	75	150	75	99.5				14.7		9.2
25	15	115		65	85	160	80	104.5				15.5		10
32	17	140	19 (4x)	76	100	180	90	119	435		360	18.1	-	12.6
40	16	150		84	110	200	100	129				19.5		14
50	16	165		99	125	230	115	146				475		-
65	17	185	19 (8x)	118	145	290	145	178	-	490	-	32		
80	17	200		132	160	310	155	190	-	490	-	37.6		
100	17	235		23 (8x)	156	190	350	175	212.5	-	521	-	48.6	
125	17	270	28 (8x)	184	220	400	200	242	-	534	-	63.8		
150	17	297		211	250	480	240	284	-	562	-	85		

DN = Nominal size

Revision numbers for control devices MK..5..

Type	Valid from Rev.-No.	
MKB533..K	Actuator , refer to data sheet N4564: SKB	Valve , refer to data sheet N4405: VVF53..
MKB563..K		
MKC533..K	Actuator , refer to data sheet N4566: SKC	
MKC563..K		
MKB533..	Actuator , refer to data sheet N4564: SKB	
MKB563..		
MKD533..	Actuator , refer to data sheet N4561: SKD	
MKD563..		

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