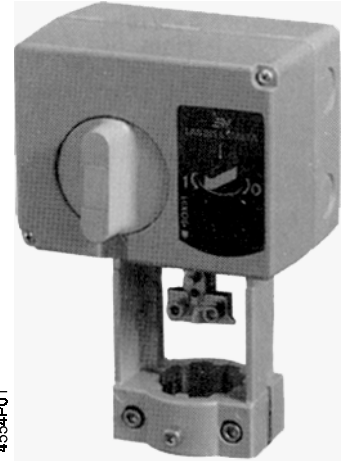


**SQX32...
SQX82...
SQX62...**

Electronic actuators for valves

with 20 mm stroke



- **SQX32...: AC 230 V operating voltage, 3-position signal**
- **SQX82...: AC 24 V operating voltage, 3-position signal**
- **SQX62...: AC 24 V operating voltage,
DC 0...10 V and/or 0...1000 Ω or DC 4...20 mA positioning signals**
- **Functional enhancement by means of auxiliary switch and potentiometer**
- **Positioning force 700 N**
- **Stroke 20 mm**
- **For direct valve mounting without additional setting tasks**
- **With manual adjustment and position indication**
- **SQX82...U and SQX62U are UL approved**

Use

To actuate two-port and three-port valves of type series VVF..., VVG..., VPF..., VXF..., and VXG... with 20 mm stroke

- Field of use as per IEC 721-3-3 Class 3K5
- Ambient temperatures: -15 ... +50 °C
- Medium temperature inside the valve: -25 ... +140 °C,
> 140 °C: use SKB... actuators,
< 0 °C: ASZ6.5 stem heating element required

Functions

SQX32..., SQX82...
3-position signal

The reversible synchronous motor is controlled by a 3-position signal either via terminals Y1 or Y2 and generates the desired stroke by means of a blocking-proof gear train and a gear rack.

- | | |
|----------------------------------|---|
| • Voltage on Y1: | valve stem retracts, through-port opens |
| • Voltage on Y2: | valve stem extends, through-port closes |
| • No voltage on either Y1 or Y2: | valve stem remains in the respective position |

SQX62, SQX62U
Positioning signals:
DC 0...10 V and/or
0...1000 Ω or DC 4...20 mA

The SQX62... is either controlled via terminals Y and/or R. The recorded positioning signals control the synchronous motor by means of microprocessor electronics. This motor generates the desired stroke via a blocking-proof gear train and gear rack.

- | | |
|---------------------------------------|---|
| • Positioning signal Y, R increasing: | valve stem retracts, through-port opens |
| • Positioning signal Y, R decreasing: | valve stem extends, through-port closes |
| • Positioning signal Y, R constant: | valve stem remains in the respective position |

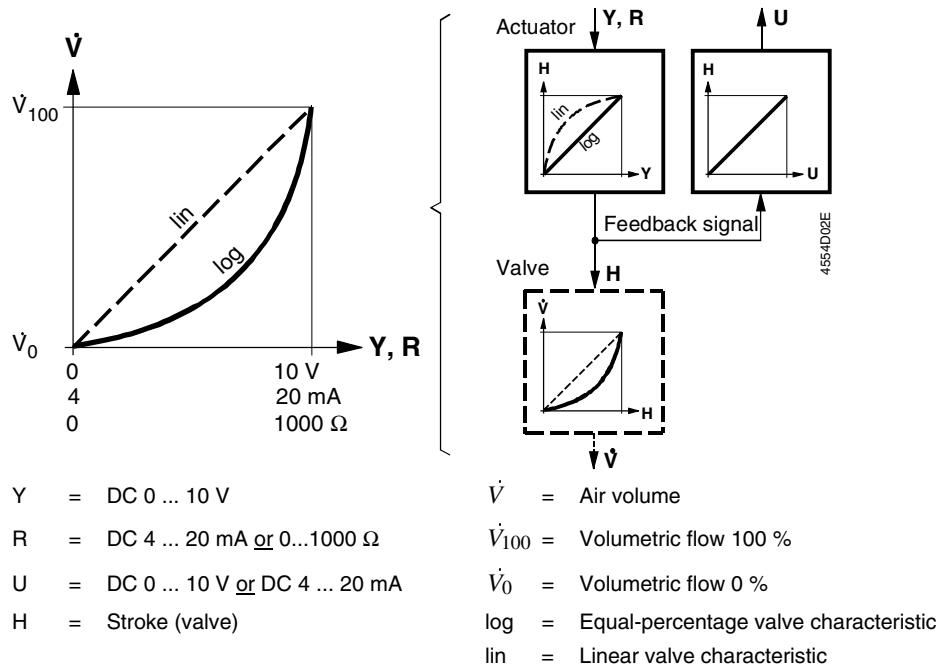
Selection of flow characteristic

Via a slider (on the circuit board below the housing cover), the flow characteristics for the VVF..., VVG..., VXF..., VXG..., and VPF... valves can be changed from "equal percentage" to "linear".

The microprocessor electronics are factory set to generate equal-percentage flow characteristics (log) related to the valve's throughport.

Flow characteristics

Relationship between the DC 0...10 V or DC 4...20 mA positioning signal and the volumetric flow:



Calibration stroke

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

Prerequisites for calibration are mechanical coupling of the actuator SQX62 or SQX62U with a VV... or VX... valve as well as AC 24 V supply.

Pressing button S3 – this button is available only if the housing cover has been removed – starts calibration.

Calibration automatically performs the following steps:

- Actuator moves to "0 stroke" position (valve closed), green LED flashes
- Actuator moves to "100 stroke" position (valve open), green LED flashes
- The measured values are saved in the microprocessor.

The actuator then moves to the position as indicated by control signals Y or R; the green LED is lit permanently (normal operation).

- Output U is inactive during calibration, i.e., the values correspond to the actual positions only after the green LED is lit permanently.

Voltage at output U is limited to DC 9.7 ± 0.2 V.

Current at output U is limited to 20 mA ± 0.5 mA.

The calibration stroke can be repeated any number of times.

Type summary

Stellantriebe

Standard version:

Type	Operating voltage	Control type (positioning signal)	Runtime [s]	
			Open	Close
SQX32.00 SQX32.03	AC 230 V	3-position (floating)	150	150
SQX82.00 SQX82.03			35	35
SQX62	AC 24 V		150	150
			35	35
		DC 0...10 V and/or 0...1000 Ω or DC 4...20 mA	35	35

Special, UL approved version:

SQX82.00U	AC 24 V	3-position (floating)	150	150
SQX82.03U			35	35
SQX62U		DC 0...10 V and/or 0...1000 Ω or DC 4...20 mA	35	35

Accessories

	Type	For actuators	Mounting location ^{*)}
Auxiliary switch	ASC9.5	SQX32..., SQX82..., SQX82...U	1x ASC9.5 or
Auxiliary switch with potentiometer 1000 Ω	ASZ7.4		1x ASZ7.4 or
Auxiliary switch pair	ASC9.4		1x ASC9.4
Stem heating AC 24 V ^{*)}	ASZ6.5	SQX32...,SQX82...,SQX62, SQX82...U, SQX62U	1x ASZ6.5

*) Only 1 accessory can be built into the actuator at a time. Exception: ASZ6.5 stem heating which is integrated between the actuator and the valve.

Ordering and delivery

On ordering, indicate the actuator type and, where required, the accessory type; for example: **SQX32.00**

Actuator, valve and accessories are packed and delivered separately and are not mounted on delivery.

Equipment combinations

The **SQX...** electronic actuators allow for actuating two-port and three-port valves of type series VVF..., VVG..., VPF..., VXF..., and VXG... with 20 mm stroke:

Type	DN [mm]	PN [bar]	Data sheet
Two-port valves VV... (control or safety shutoff valves)e)			
VVF21... (Flange)	25...80	6	4310
VVF31... (Flange)	25...80	10	4320
VVF41... (Flange)	50	16	4340
VVG41... (Thread)	15...50	16	4363
VVF52... (Flange)	15...40	25	4373
Three-port valves VX... (control valves for "mixing" and "diverting" functions)			
VXF21... (Flange)	25...80	6	4410
VXF31... (Flange)	25...80	10	4420
VXG41... (Thread)	15...50	16	4463
VXF41... (Flange)	15...50	16	4440
Combination valve VP... (two-port valve with integrated diff. pressure controller)			
VPF52... (Flange)	15...40	25	4374

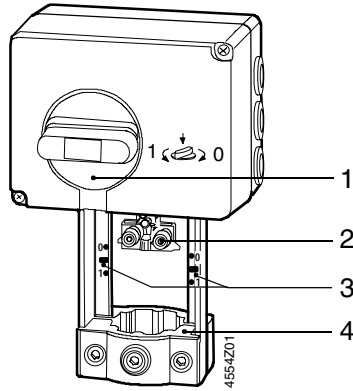
See the associated valve data sheets for permissible differential and close-off pressures Δp_{max} and Δp_s .

Mechanical design

Actuators

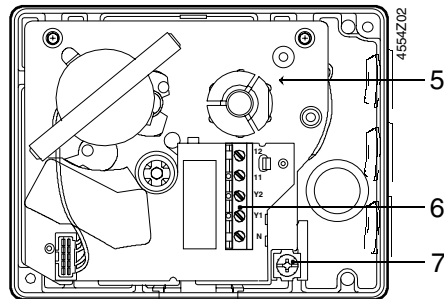
- Maintenance-free, electronic actuator
- Actuators **SQX32...**, **SQX82...** with reversible synchronous motor
- Actuators **SQX62...** with synchronous motor, controlled by microprocessor electronics
- Blocking-proof gear train with self-lubricating porous bearings
- Force-sensing end switches to protect components from overload
- Selectable flow characteristic: Equal percentage (log) or linear (lin)
- Manual adjustment with automatic reset to control mode
- Slot for auxiliary switch and potentiometer in **SQX32...**, **SQX82...**
- Stem heating between valve and actuator **SQX32...**, **SQX82...**, **SQX62...**
- The actuators **SQX82...U** and **SQX62U** are UL approved

SQX32..., SQX82..., SQX62...:



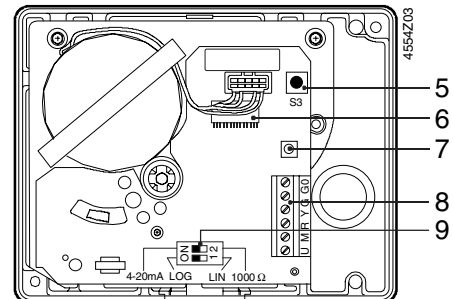
- 1 Manual adjustment
- 2 Coupling to valve stem
- 3 Position indication (0 to 1)
- 4 Console

SQX32..., SQX82...:



- 5 Mounting space for auxiliary switch or auxiliary switch pair or auxiliary switch and potentiometer
- 6 Terminal strip
- 7 Bonding screw (for SQX32...)

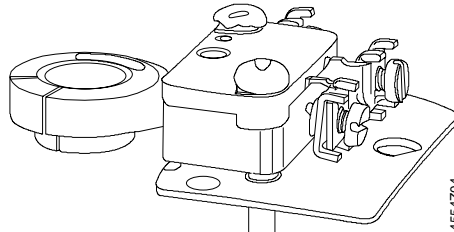
SQX62:



- 5 Button S3 "Manual calibration"
 - 6 Microprocessor
 - 7 LED, red/ green (operating status indication)
 - 8 Terminal strip
 - 9 DIL switches
No. 1: «**log**» / «**lin**» *)
No. 2: «**4-20mA**» / «**1000Ω**» *)
- *) **bold print = Factory setting**

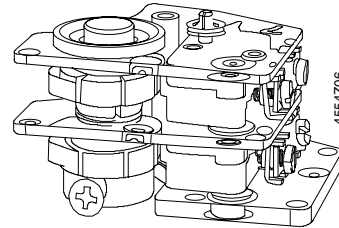
Accessories

Auxiliary switch ASC9.5



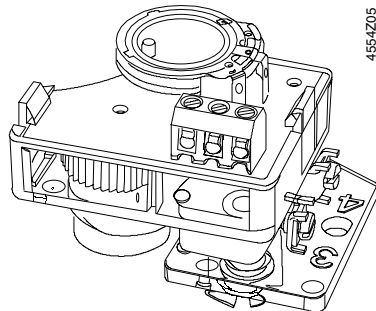
Adjustable switching point

Auxiliary switch pair ASC9.4.4



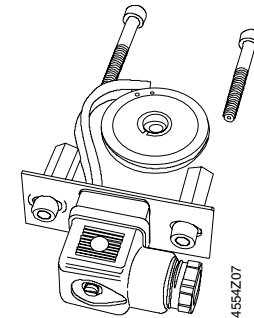
Adjustable switching points

Auxiliary switch with potentiometer ASZ7.4:



Adjustable switching point

Stem heating ASZ6.5:



for media below 0 °C.
Mounting between valve and actuator

See section "Technical data" for more information.

Disposal

The various material types used require that you disassemble the unit and sort the components prior to disposal.

Engineering notes



Conduct the electric connections in accordance with local regulations on electric installations as well as the unit or connecting diagrams on pages 7 and 8.

Observe all safety-related requirements and restrictions to prevent injuries and damages to goods.



The ASZ6.5 stem heating has a heating output of 30 VA and must keep the valve stem from freezing when used in a cooling range of 0 °C ... -25 °C.

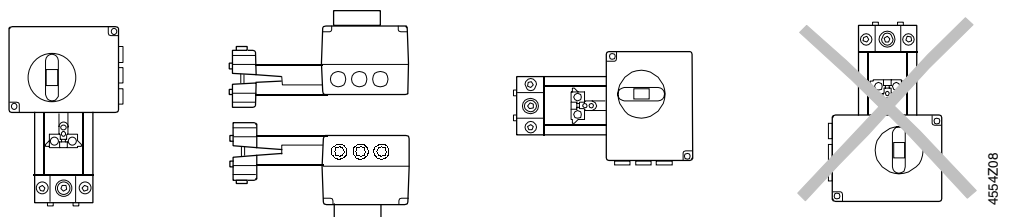
For this case, do not insulate the actuator console and the valve stem, as air circulation must be ensured. Do not touch the hot parts without prior protective measures to avoid burns.

Non-observance of the above may result in accidents and fires !

Additionally, pay attention to permissible temperatures as listed in sections "Use" and "Technical data". If an auxiliary switch is required, indicate its switching point on the plant schematic.

Mounting notes

Mounting positions



Permitted

Permitted

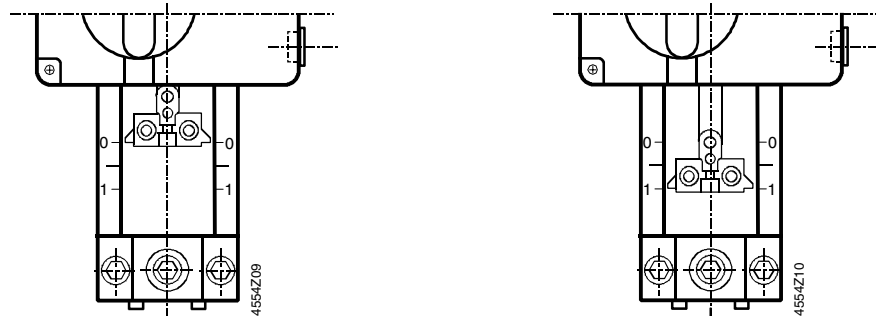
Permitted

Not permitted

The valve mounting instructions are printed on the rear of the actuator. Accessory instructions are located in the respective accessory's packaging.

Commissioning notes

During commissioning, check the wiring and conduct a functional check. Additionally, check or make the required settings at the auxiliary pair or the auxiliary switch.



Coupling fully retracted

Coupling fully extended



If the manual adjustment knob is turned clockwise to the end position, the Landis & Staefa valves of type series VVF..., VVG..., VPF..., VXF..., and VXG... are closed (stroke = 0 %). On pending controller signals, the actuator always moves to the preselected position as soon as the manual adjustment button is released.

For SQX62 and SQX62U only

- **The factory setting for the flow characteristic is "equal percentage = log".**
- **Calibration stroke**
 - On initial connection of the actuator to AC 24 V, trigger the calibration stroke by pressing button S3 (see "Functions"). A special note for initial positioning stroke has been glued to the housing cover.
 - Repeat the calibration stroke when mounting on a new valve a previously calibrated actuator.
 - The calibration stroke can be repeated any number of times.

Maintenance notes



For actuator service work:

- Turn off the pump and the operating voltage, close the shutoff valves, depressurize the pipes and allow them to cool down. Disconnect the electrical connections from the terminals, where required.
- Recommission the actuator only after mounting on a VV... or VX... valve and, for SQX62... actuators, after recalibration.

Warranty



The technical data (Δp_{\max} , Δp_s , leakage rate, noise level and life) apply only when used together with the Landis & Staefa valves as listed in "Equipment combinations".

Use with third-party valves expressly voids any warranty claims.

Technical data

Actuators

Power supply

Operating voltage

SQX32...	AC 230 V \pm 15 %
SQX82..., SQX82...U	AC 24 V \pm 20 %
SQX62, SQX62U	AC 24 V \pm 20 %

Frequency

50 oder 60 Hz

Power consumption

SQX32.00, SQX82.00U	3 VA
SQX32.03, SQX82.00, SQX82.03, SQX82.03U	6,5 VA
SQX62, SQX62U	8 VA

Switching capacity of the limit switches

on terminals 11 or 12

SQX32...	AC 250 V, 6 A res., 2.5 A ind.
SQX82..., SQX82...U	AC 24 V, 5 A res., 0.75 A ind.

Function dat

Control type (positioning signal)

SQX32..., SQX82..., SQX82...U	3-position
SQX62, SQX62U	DC 0...10 V and/or 0...1000 Ω or DC 4...20 mA (proportional)

Runtime

SQX32.00, SQX82.00, SQX82.00U	at 50 Hz	at 60 Hz
	150 s	120 s
SQX32.03, SQX82.03, SQX82.03U	35 s	30 s
SQX62, SQX62U	35 s	30 s

Positioning force

700 N

Stroke

20 mm

Signal inputs

SQX62, SQX62U

Terminal Y*)

Voltage	DC 0 ... 10 V (corresponds to 0 ... 100 % stroke)
Current	max. 0.1 mA / 5 nF

Terminal R *)

Current	DC 4...10 V (corresponding to 0...100 % stroke)
max. impedance	250 Ω / 5 nF
Resistance	0...1000 Ω (corresponds to 0 ... 100 % stroke)

*) If a DC 4...20 mA control signal is switched to terminal R, terminal Y cannot be used simultaneously!

Signal outputs

SQX62, SQX62U

Terminal U **)

Voltage	DC 0 ... 10 V corresponds to 0 ... 20 mm stroke
Current	DC 4 ... 20 mA corresp. to 0 ... 20 mm stroke

**) The measuring signal at terminal U corresponds to the stroke position, i.e., at measuring signal DC 0 ... 10 V, the result from a max. selection of the DC 0...10 V control signal at input Y and of the 0...1000 Ω control signal at input R is processed; for the DC 4...20 mA measuring signal, the DC 4...20 mA control signal at input R is processed.

Housing protection

Housing protection

IP 54 EN 60529

Cable entry glands

SQX32..., SQX82..., SQX62	Pg 11 (3x)
SQX82...U, SQX62U	for standard 1/2" conduit connector (2x) or Pg 16

Environmental conditions

Medium temperature, maximum permissible temp. inside valve

140 °C

Operation

IEC 721-3-3

Climatic conditions

Class 3K5

Temperature

-15 ... +50 °C

Humidity

5...95 % r.h.

Transport	IEC 721-3-22
Climatic conditions	Class 2K3
Temperature	-30 ... +65 °C
Humidity	<95 % r.h.
Storage	IEC 721-3-1
Climatic conditions	Class 1K3
Temperature	-15 ... +50 °C
Humidity	5...95 % r.h..

Standards

CE conformity as per	
EMC directive	89/336/EEC
low voltage directive	73/23/EEC
UL conformity declaration	UL 873

Materials

Actuator housing and console	Die-cast aluminium
Housing box and manual adjustment knob	Plastic

Dimensions

Actuators see "Dimensions"

Weight

Actuators	
Weight without packaging	1.5 kg
With packaging	1.7 kg

Accessories

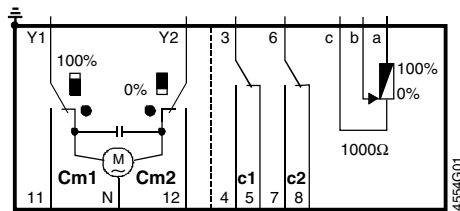
Auxiliary switch ASC9.5 for SQX32..., SQX82..., SQX82...U	Switching capacity	} AC 250 V, 10 A res., 3 A ind.
Auxiliary pair ASC9.4 for SQX32..., SQX82..., SQX82...U	Switching output of one auxiliary switch	
Auxiliary switch and potentiometer ASZ7.4 (as one unit) for SQX32..., SQX82..., SQX82...U	Switching output of auxiliary switch Change of overall resistance of the potentiometer at nominal stroke 20 mm	
Stem heating ASZ6.5 for SQX32..., SQX82..., SQX82...U, SQX62, SQX62U	Operating voltage	AC 24 V
	Power consumption	30 W

Diagrams

Internal diagrams

SQX32.00, SQX32.03

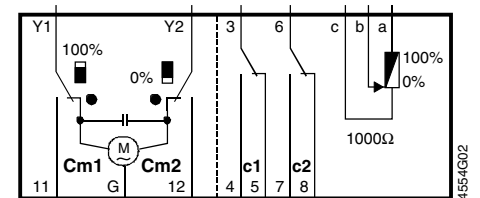
AC 230 V, 3-position



- Cm1 End switch
- Cm2 End switch
- c1 Auxiliary switch ASC9.5
- c1 } Auxiliary switch
- c2 } Pair ASC9.4
- c1 } Auxiliary switch and potentiometer
- 1000 Ω } (1000 Ω) ASZ7.4

SQX82.00, SQX82.03, SQX82.00U, SQX82.03U

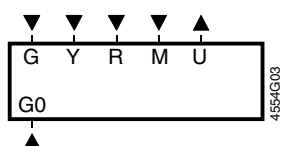
AC 24 V, 3-position



- Poss. mounting loc. for SQX32..., SQX82..., SQX82...U:
- 1 Auxiliary switch ASC9.5 or
- 1 Auxiliary pair ASC9.4 or
- 1 Auxiliary switch and potentiometer (as one unit) ASZ7.4 and
- 1 **Additional** ASZ6.5 stem heating

SQX62, SQX62U

AC 24 V, DC 0...10 V and/or 0...1000 Ω or DC 4...20 mA

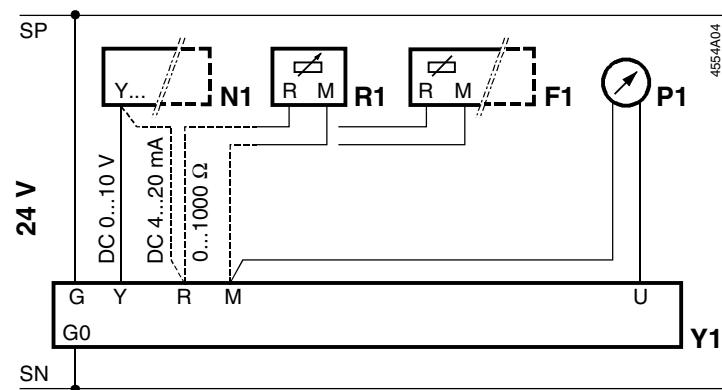


- G, G0 AC 24 V operating voltage
- G System potential (SP)
- G0 System neutral (SN)
- Y Control signal input for DC 0...10 V signal
- R Control signal for DC 4...20 mA signal or 0...1000 Ω (The signal type is defined at DIL switch no. 2)
- M Measuring neutral
- U DC 0...10 V measuring signal output at Y = DC 0...10 V or R = 0...1000 Ω (maximum selection of input signals) or DC 4...20 mA measuring signal output at R = DC 4...20 mA

Connection diagram

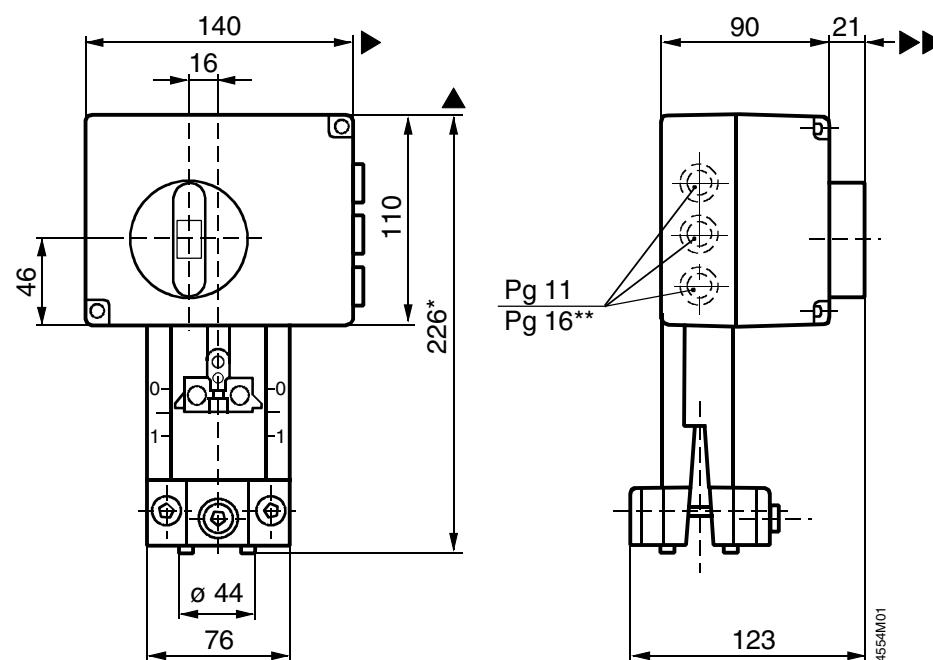
SQX62, SQX62U

The connection diagram shows all possible connections.
The amount and type of connection depends on the plan



- Y1 Actuator SQX62...
- N1 Controller F1
- F1 Frost protection monitor with 0...1000 Ω measuring element
(with DIL switch no. 2 in position "1000Ω")
- P1 Position indicator
- R1 Position transmitter with 0...1000 Ω potentiometer
(with DIL switch no. 2 in position "1000Ω")

Dimensions



* Actuator height from valve

** For the SQX82...U and SQX62U actuators, the plug hole diameter corresponds to the cable entry glands Pg16

- ▲ > 100 mm [Minimum mounting distance to wall or ceiling,
- ▲▲ > 200 mm [Connection, operation, maintenance, etc.