SIEMENS

7804

SQN70/SQN71 SQN74/SQN75

Actuators for air and gas dampers

SQN7…

Electromotoric actuators for air dampers and control valves of oil and gas burners of small to medium heat capacity.

The SQN7 and this data sheet are intended for original equipment manufacturers (OEMs) using the SQN7 in or on their products.

Use

The SQN7 actuators are designed for positioning and driving air/gas dampers of oil burners, gas burners, and other ancillary equipment of small and medium heat capacity. They also offer load-dependent control of the amount of fuel and combustion air.

The controlling elements are controlled as follows depending on the current burner load:

- In connection with P, PI, or PID controllers, such as the RWF5
- Directly via the different types of burner controls, such as LAL, LOA, LME, LMO, LFL, LGB, LGK16, LOK16
- In connection with 1- or 2-wire control or 3-position controllers

Features

- Impact-proof and heat-resistant plastic housings
- Screw terminals for electrical connections
- Maintenance-free gear train, which can be disengaged
- Internal position indication
- Easy-to-adjust end and auxiliary switches for adjusting the switching points
- Integrated electronic circuits
- Holding torque SQN70/SQN71/SQN75 0.7…1.3 Nm
  SQN74 0.7 Nm
- Running times SQN70/SQN71/SQN75 4…30 s
  SQN74 4 s
- Direction of rotation SQN70/SQN74 Counterclockwise
  SQN71/SQN75 Clockwise
- SQN74 / SQN75
  Fixing holes and cable entries equivalent to actuators of the same category made by Conectron and Berger.

Supplementary documentation

Product type	Documentation type	Documentation number
LAL	Data sheet	N7153
LFL	Data sheet	N7451
LFL1.148	Data sheet	N7454
LGB21 LGB22 LGB32	Data sheet	N7435
LGK16	Data sheet	N7785
LME22 LME23	Data sheet	N7101
LME7	Data sheet	N7105
LMO24 LMO39 LMO44	Data sheet	N7130
LOA24	Data sheet	N7118
LOK16	Data sheet	N7785
RWF50	Data sheet	N7866
	User manual	U7866
RWF55	Data sheet	N7867
	User manual	U7867

To avoid personal injury or damage to property or the environment, the following warning notes must be observed.

Only qualified personnel may open, interfere with or modify the actuators!

- Read the documentation on the actuators carefully and fully. If not observed, dangerous situations might occur
- The control functions inside the actuator are not intended to ensure the safety of the overall application. Users must take this into account during the electrical integration of any systems (e.g., burner controls), and perform a risk analysis of the respective unit
- Safety-relevant applications are only available with Siemens burner controls. An application-specific risk analysis must still be carried out
- All product-related activities (mounting, settings, and maintenance) must be performed by appropriately qualified and authorized personnel
- Before making any wiring changes in the connection area, completely isolate the plant from the power supply (all-polar disconnection). Ensure that the plant cannot be inadvertently switched on again and that it is indeed dead. If the plant is not switched off, there is a risk of electric shock
- Take suitable measures to provide touch protection at the electrical connections and ensure the housing cover is screwed down tight
- Each time work has been carried out (mounting, installation, service work, etc.), check that the wiring is in an orderly state
- These units must not be put back into operation following impact or shock; even if they do not exhibit any visible damage, their safety functions may be impaired
- The user must ensure that the actuators meet the requirements of the relevant application standards

Please note!
Risk of electric shock hazard

- **To disconnect the unit from power, it may be necessary to open more than one switch. Before performing maintenance work, the unit must be disconnected from power**
- **All cam switch settings must satisfy the requirements of the relevant application standards**

- To ensure protection against electric shock, the connection terminals must have adequate touch protection. Make certain that non-insulated connections or wires cannot be touched. The housing cover must be screwed tight
- Static charges must be avoided since they can damage the electronic components of the unit when touched.

Recommendation:
Use ESD equipment

Selection of actuator version

- Ensure that any torque from outside acting on the controlling element (e.g., torque from the airflow produced by the burner fan) is smaller than the self-holding torque of the actuator in zero-current state
- The mechanical design of the burner must be such that any inadmissibly high torque from outside acting on the controlling element will not lead to critical burner operation.

  Example:
  If a torque acts on the asymmetrical bearing of the air damper due to the airflow in the air duct of the burner, the air damper is moved in the OPEN direction. This leads to a certain amount of excess air during combustion, which is less critical than a lack of air.

Mounting notes

- Ensure that the relevant national safety regulations and notes on standards are complied with
- In the geographical areas where DIN regulations are in use for mounting and installation, the requirements of VDE must be complied with, especially DIN/VDE 0100, 0550, and DIN/VDE 0722
- Make certain that the actuator is not exposed to direct solar radiation
- The connection between the actuator shaft and controlling element must be **form-fitted** and **backlash-free**
- When mounting the actuator, be aware that additional axial and radial bearing loads are not permitted
- Be sure to observe the correct mounting sequence when mounting the actuator to the controlling element.

  This is usually as follows:
  1. Fit and secure the actuator
  2. Connect the actuator shaft to the controlling element via a coupling pin

Form-fitted design

Please note!
Possible shaft/hub connections:

- **Flattened shaft with corresponding counterpart**

To avoid inadmissible bearing loads caused by rigid hubs, it is recommended to use compensating couplings with no mechanical play (e.g., metal bellows couplings).

- **When dimensioning a shaft connection, note that torques higher than the rated output torque of the actuator can also act during operation:**
  - The actuator itself can apply a higher torque under optimum operating conditions
  - The effect of mass moments of inertia (caused by the rotating parts in the motor as well as on the actuator) can lead to sudden peak loads
- **Siemens recommends overdimensioning the shaft connection by a factor of 2 compared to the rated torque of the actuator**
- **The connection between the actuator and burner or controlling element must be very rigid (no bending). This is particularly important when using column-mounted structures**

Installation notes

- Ensure that the electrical wiring is in compliance with national and local regulations
- Ensure that the strain relief of the connected cables is in compliance with the relevant standards (e.g., as per EN 60730 and EN 60335)
- Ensure that spliced wires cannot come into contact with neighboring connections. Fit suitable ferrules
- When wiring the unit, the 230 V AC range must be strictly separated from the touchable low-voltage areas to ensure protection against electric shock
- The connection between the actuator shaft and the relevant controlling element must be form-fitted
- Only plastic versions of cable glands may be used

Standards and certificates

Applied directives:

- Low Voltage Directive 2014/35/EU
- Electromagnetic compatibility EMC (immunity) 2014/30/EU

Compliance with the regulations of the applied directives is verified by the adherence to the following standards/regulations:

- Automatic electrical controls for household and similar use
  Part 1:
  General requirements
  DIN EN 60730-1
- Automatic electrical controls for household and similar use
  Part 2-14:
  Particular requirements for electric actuators
  DIN EN 60730-2-14

The relevant valid edition of the standards can be found in the declaration of conformity.

EAC conformity (Eurasian compliance)

UKCA conformity mark (UK compliance)

China RoHS
Hazardous substances table:
http://www.siemens.com/download?A6V10883536

Only valid for SQN70.xxxRxx / SQN71.xxxRxx:

Lifetime

The actuator has a designed lifetime* of 250,000 burner startup cycles (OFF ⇨ ON ⇨ OFF) under load with the rated torque in the entire rotation angle range, which under normal operating conditions in heating mode corresponds to approx. 10 years of service (starting from the production date given on the type label). This is based on the endurance tests specified in the EN 298 standard. A summary of the conditions has been published by the European Control Manufacturers Association (Afecor) (www.afecor.org).

The designed lifetime is based on use of the actuator according to the manufacturer's data sheet. After reaching the designed lifetime in terms of the number of burner startup cycles, or after the corresponding usage time, the actuator must be replaced by authorized personnel.

*The designed lifetime is not the warranty time specified in the terms of delivery

Service notes

Unit replacement

When replacing an actuator, the following points must be checked and corrected if necessary:

- Correct connection to the basic unit
- Assignment of functions

Disposal notes

The SQN7 contains electrical and electronic components and must not be disposed of together with domestic waste. Local and currently valid legislation must be observed.

Design

Housing

- Made of impact-proof and heat-resistant plastic.
- The housing accommodates:
  – the synchronous motor with the **disengageable** reduction gear train
  – the camshaft of the control section
  – the relays – depending on the type
  – the switch section – connected to the connection terminals via an equipped PCB

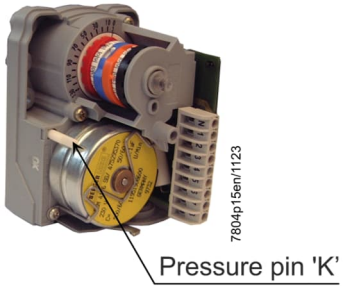
Color: SQN70/SQN71: Gear train housing dark gray, cover light gray
SQN74/SQN75: Gear train housing black, cover black

Actuator motor

Synchronous motor.

Coupling

- Shaft can be disengaged from the gear train and motor by manually actuating the coupling (pressure pin (K))
- Automatic reset



Switching point adjustment

- Via rotating cam disks
- Scales adjacent to the cams indicate the angle of the switching point
- Assignment of the cam disks to the color-coded end switches and auxiliary switches, refer to *Circuit diagrams*
- Cam disks with fine adjustment, adjustable with standard screwdriver

Position display

Internal: Scale at the beginning of the camshaft on the gear train side.

Connection technology

Refer to *Technical data*.

Gear train

Maintenance free.

Drive shaft

- Burnished steel
- Fixed on one side on the front of the gear train
- Available as an actuator variant in different versions

Mounting and fastening

- Front of gear train as a bearing surface
- Fastening with through holes

Special versions for potentiometer installation

Potentiometer installation

Certain types of actuators are supplied ready prepared for installing a potentiometer. These actuators differ from the basic type only in that **the housing is higher**. They are manufactured to accommodate the potentiometer and do not require any further parts. With these types of actuators, the third digit after the dot in the type reference is an **8**.

Example:
SQN7x.xx**8**Axx
→ Version for installing a potentiometer with an AGA34 higher housing cover preinstalled

Conversion by the user

Users have the choice of converting a basic type of actuator to a version for installing a potentiometer. An **AGA34 higher housing cover** is available to facilitate this conversion, if required – refer to *Accessories*. If a potentiometer is required, it must always be ordered separately, refer to *Accessories*.

Type summary (further types on request)

Diagram no.	Shaft [1]) no.	Running time at 50 Hz 2) for 90° (s)	Nominal torque (max.) Nm	Holding torque Nm	Auxiliary switch 6) Unit	Relay Unit	Potentiometer 8) 9)	Housing length 1) mm	Types for mains voltage / mains frequency				SQN7 replaces
									230 V AC 4) +10%/-15% 50…60 Hz		115 V AC 3) +10%/-15% 50…60 Hz		
									Article no.	Type	Article no.	Type	Type
SQN70 series A actuators / direction of rotation [8]) counterclockwise													
9	0	4	1.5	0.7	2	1	---	117	**BPZ:SQN70.294A20**	**SQN70.294A20**	---	---	SQN30.111A2700
9	0	30	2.5	1.3	2	1	---	117	**BPZ:SQN70.694A20**	**SQN70.694A20**	---	---	---
SQN70 series B actuators / direction of rotation [7]) counterclockwise													
2	0	4	1.5	0.7	2	2	---	117	**S55454-D315-A100**	**SQN70.224B20**	---	---	---
4	0	4	1.5	0.7	2	3	---	117	**S55454-D316-A100**	**SQN70.244B20**	---	---	SQN30.121A2700
5	0	4	1.5	0.7	2	3	---	117	**S55454-D317-A100**	**SQN70.254B20**	---	---	---
6	0	4	1.5	0.7	2	---	9)	80	**S55454-D304-A100**	**SQN70.264B20**	---	---	SQN30.101A2700
2	0	12	2.5	1.2	2	2	---	117	**S55454-D320-A100**	**SQN70.424B20**	---	---	---
5	0	12	2.5	1.2	2	3	---	117	**S55454-D321-A100**	**SQN70.454B20**	---	---	---
6	0	12	2.5	1.2	2	---	9)	80	**S55454-D305-A100**	**SQN70.464B20**	---	---	---
6	3	12	2.5	1.2	2	---	9)	80	**S55454-D306-A100**	**SQN70.464B23**	---	---	---
2	0	30	2.5	1.3	2	2	---	117	**S55454-D322-A100**	**SQN70.624B20**	---	---	---
6	0	30	2.5	1.3	2	---	9)	80	**S55454-D307-A100**	**SQN70.664B20**	---	---	SQN30.401A2700
6	1	30	2.5	1.3	2	---	9)	80	**S55454-D314-A100**	**SQN70.664B21**	---	---	---
6	3	30	2.5	1.3	2	---	9)	80	**S55454-D308-A100**	**SQN70.664B23**	---	---	SQN30.401A2730

Type summary (other types on request) (continued)

Diagram no.	Shaft [1] no.	Running time at 50 Hz 2) for 90° (s)	Nominal torque (max.) Nm	Holding torque Nm	Auxiliary switch 6) Unit	Relay Unit	Potentiometer 8) 9)	Housing length 1) mm	Types for mains voltage / mains frequency				SQN7 replaces
									230 V AC [4] +10%/-15% 50…60 Hz		115 V AC [3] +10%/-15% 50…60 Hz		
									Article no.	Type	Article no.	Type	Type
SQN70 actuators / direction of rotation [7] counterclockwise / *registered* for use in the USA and Canada with UL certification													
0	0	30	2.5	1.3	1	---	9)	80	---	---	**BPZ:SQN70.603R10**	**SQN70.603R10**	---
SQN71 series A actuators / direction of rotation [8] clockwise													
9	0	30	2.5	1.3	2	1	---	117	**BPZ:SQN71.694A20**	**SQN71.694A20**	---	---	---
SQN71 series B actuators / direction of rotation [7] clockwise													
4	0	4	1.5	0.7	2	2	---	117	**S55454-D324-A100**	**SQN71.244B20**	---	---	SQN31.121A2700
6	0	4	1.5	0.7	2	---	9)	80	**S55454-D309-A100**	**SQN71.264B20**	---	---	SQN31.101A2700
2	0	12	2.5	1.2	2	2	---	117	**S55454-D325-A100**	**SQN71.424B20**	---	---	---
6	1	12	2.5	1.2	2	---	9)	80	**S55454-D310-A100**	**SQN71.464B21**	---	---	---
6	0	30	2.5	1.3	2	---	9)	80	**S55454-D312-A100**	**SQN71.664B20**	**S55454-D311-A100**	**SQN71.664B10**	SQN31.401A2700
6	3	30	2.5	1.3	2	---	8)	117	**S55454-D313-A100**	**SQN71.669B23**	---	---	---
SQN71 actuators / direction of rotation [7] clockwise / *registered* for use in the USA and Canada with UL certification													
0	9	4	1.5	0.7	1	---	9)	80	---	---	**BPZ:SQN71.203R19**	**SQN71.203R19**	---
0	9	12	2.5	1.2	1	---	9)	80	---	---	**BPZ:SQN71.403R19**	**SQN71.403R19**	---
0	0	30	2.5	1.3	1	---	9)	80	---	---	**BPZ:SQN71.603R10**	**SQN71.603R10**	---

The UL-registered actuators:

- also meet CE requirements
- are of the same basic design as the equivalent standard types

The only difference between the standard versions and the UL-registered versions is the use of other materials, especially plastics. In addition, the UL-registered versions are supplied complete with a connection adapter for use in the USA and Canada (refer to *Dimensions)*.

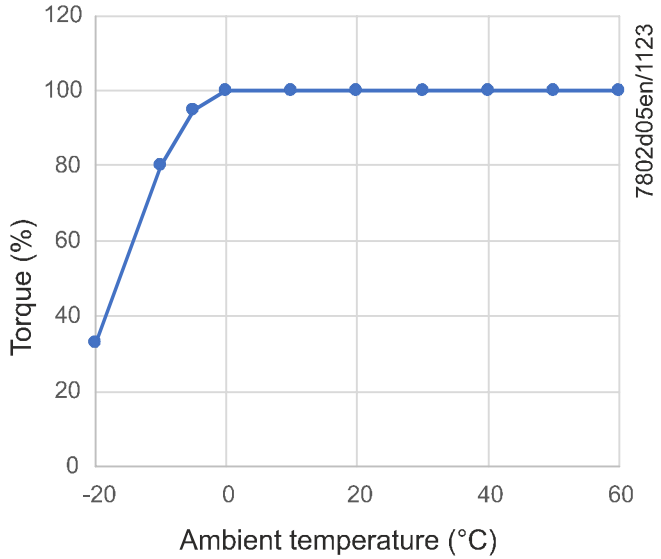
Type summary (continued) (other types on request)

Diagram no.	Shaft [1]) no.	Running time at 50 Hz 2) for 90° (s)	Nominal torque (max.) Nm	Holding torque Nm	Auxiliary switch 6) Unit	Relay Unit	Potentiometer 8) 9)	Housing length 1) mm	Types for mains voltage / mains frequency				SQN7 replaces
									230 V AC 4) +10%/-15% 50…60 Hz		115 V AC 3) +10%/-15% 50…60 Hz		
									Article no.	Type	Article no.	Type	Type
SQN74 series A actuators / direction of rotation 7) counterclockwise													
9	1	4	1.5	0.7	2	1	9)	115	**BPZ:SQN74.294A21**	**SQN74.294A21**	---	---	---
SQN74 series B actuators / direction of rotation 7) counterclockwise													
5	1	4	1.5	0.7	2	3	9)	115	**S55454-D338-A100**	**SQN74.254B21**	---	---	---
SQN75 series A actuators / direction of rotation 7) clockwise													
4	1	4	1.5	0.7	2	3	---	115	**BPZ:SQN75.244A21**	**SQN75.244A21**	---	---	---
4	6	4	1.5	0.7	2	3	---	115	**BPZ:SQN75.244A26**	**SQN75.244A26**	---	---	---
9	1	4	1.5	0.7	2	1	9)	115	**BPZ:SQN75.294A21**	**SQN75.294A21**	---	---	---
9	6	4	1.5	0.7	2	1	9)	115	**BPZ:SQN75.294A26**	**SQN75.294A26**	---	---	---
9	1	12	2.5	1.2	2	1	9)	115	**BPZ:SQN75.494A21**	**SQN75.494A21**	---	---	---
6	6	30	2.5	1.3	2	---	9)	115	**BPZ:SQN75.664A26**	**SQN75.664A26**	---	---	---
9	1	30	2.5	1.3	2	1	9)	115	**BPZ:SQN75.694A21**	**SQN75.694A21**	---	---	---
K	1	30	2.5	1.3	2	0	---	115	**BPZ:SQN75.6KA21**	**SQN75.6KA21**	---	---	---
SQN75 series B actuators / direction of rotation 7) clockwise													
2	1	4	1.5	0.7	2	2	---	115	**S55454-D339-A100**	**SQN75.224B21**	---	---	---
2	6	4	1.5	0.7	2	2	---	115	**S55454-D340-A100**	**SQN75.224B26**	---	---	---
4	1	4	1.5	0.7	2	3	---	115	**S55454-D347-A100**	**SQN75.244B21**	---	---	---
4	6	4	1.5	0.7	2	3	---	115	**S55454-D349-A100**	**SQN75.244B26**	---	---	---
2	1	12	2.5	1.2	2	2	---	115	**S55454-D342-A100**	**SQN75.424B21**	---	---	---
2	6	23	2.5	1.2	2	2	---	115	**S55454-D343-A100**	**SQN75.524B26**	---	---	---

Key

[1]) Refer to *Dimensions*
[2]) At 60 Hz frequency, the running times are approx. 20% shorter
[3]) 115 V AC +10 %/-15 % possible, but the torque is reduced by approx. 20% in the case of undervoltage
[4]) 230 V AC +10 %/-15 % possible, but the torque is reduced by approx. 20% in the case of undervoltage
[5]) On request
[6]) Free auxiliary switches (along with 2 end switches)
[7]) When looking at the shaft and control voltage at end switch I
[8]) Directly suitable for potentiometer installation, refer to chapter *Potentiometer installation*
[9]) Indirectly suitable for potentiometer installation, order AGA34 housing cover separately

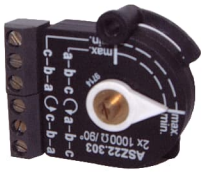
Torque at rated voltage



Accessories (must be ordered separately)

Proportional controlling element with mounting plate **VKP**
Proportional controlling element for mounting between threaded flanges in gas trains.
Refer to Data Sheet N7646.

ASZ potentiometer
Refer to Data Sheet N7921.



AGA70.3 mounting kit

- For mounting the SQN70/SQN71 as a replacement for the SQN3
- Fastening to SQN70/SQN71 by means of self-tapping screw supplied.

AGA34 housing cover
For retrofitting an SQN70/SQN71 with ASZxx.3x potentiometer.

Example of conversion by the user:

SQN70.664B20	Actuator (according to *Type summary*)
AGA34	Housing cover
ASZ12.30	Conductive plastic potentiometer 1000 Ω / 90°, 3-pole

RWF50 compact universal controller
For load-dependent control of the amount of fuel and combustion air in connection with P, PI, or PID controllers.
Refer to Data Sheet N7866.

RWF55 compact universal controller
For load-dependent control of the amount of fuel and combustion air in connection with P, PI, or PID controllers.
Refer to Data Sheet N7867.

Technical data

General unit data

Actuator

Mains voltage	230 V AC -15%/+10% 115 V AC -15%/+10%
Mains frequency	50…60 Hz ±6%
Actuator motor	Synchronous motor
Internal consumption	Max. 6 VA
External overload fuse	Max. 6.3 AT (slow) according to DIN EN 60127-5
Internal overload fuse	2 AT (slow), depending on the type, not interchangeable
Positioning angle, usable range	Max. 160°, scale range 0…130°
Mounting position	Optional
Degree of protection	
• All types	IP40 according to DIN 40050, provided adequate cable entries and fixing screws are used
• SQN74/SQN75	IP20 according to DIN 40050, if a lateral knockout opening is used for cable entry
Protection class	
• SQN70/SQN71	II according to EN 60730-1:2016 + A1:2019 and EN IEC 60730-2-14:2019
• SQN74/SQN75	I according to DIN EN 60730
Mode of operation	Type 1, rotary motion / multi-position mode of operation
Cable entry	
• SQN70/SQN71	Insertable threaded cable gland holder for 2 x Pg9, no locknut required
• SQN74/SQN75	Openings for locknuts for fastening cable glands Type of locknut 1 x Pg9 M Pg9 DIN 46320 MS 1 x Pg11 M Pg11 DIN 46320 MS Additional lateral knockout opening for loose insertion of 2 cables with max. Ø 6 mm.
Cable strain relief	Strain relief to be provided by the user, also refer to *Degree of protection*. Pg glands and locknuts for all types are not supplied.
Cable connection	Screw terminals for wires with a cross-sectional area of 0.5 to 2.5 mm²
Ferrules	Matching the cross-sectional area of the stranded wire
Direction of rotation (when facing the shaft)	Refer to *Type summary*
Torque and holding torque	Refer to *Type summary*
Running times	Refer to *Type summary*
Pause time at change in direction of rotation	> 100 ms
Lifetime	250,000 start cycles (OFF ⇨ ON ⇨ OFF) under load with the rated torque in the entire rotation angle range

Technical data (continued)

General unit data	Weight (on average)	Approx. 500 g
	Temperature of the mounting surface	Max. 60°C
	Rated surge voltage	4 kV Overvoltage category III according to DIN EN 60730-1 (VDE 0631-1):2021-06, Section 20 Pollution degree 2
	Permissible on time	60%, maximum 3 minutes without interruption
	Additional restrictions for SQN7x.4xx, SQN7x.6xx, and SQN7x.x4x	50%, ambient temperature from 24…35°C 40%, ambient temperature from 35…45°C 25%, ambient temperature from 45…60°C
	Gear train backlash between the actuator motor and actuator shaft	
	• Ex works	≤1.2° ±0.3°
	• After 250,000 cycles	≤1.5° ±0.3°

End switches and auxiliary switches

Type	In accordance with DIN 41636-1
Switching voltage	24…250 V AC
Number of end switches	2
Number of auxiliary switches	Refer to *Type summary*
Actuation	Via camshaft, color-coded cam disks, refer to *Circuit diagrams*. Switches with fine adjustment
Engagement of the cam disks with fine adjustment	Infinitely variable

Maximum permissible current load at cos φ = 0.9:
(Values in brackets: short-time peaks for max. 0.5 s)

Please note!
The control of fuel valves is only permitted at the cam designated for this purpose. When connecting a fuel valve: Max. 0.3 A, cosφ > 0.8 inductive. Safety-relevant applications are only available with Siemens burner controls!

• Connection diagram ⓪	
- Terminals 1, 2, 3, 4	0.5 A
- Terminals 5, 6, 7	1 A (5 A)
• Connection diagram ②	
- Terminals 1, 2, 3, 8	0.5 A
- Terminal 4, 5	2 A (5 A)
- Terminal 6, 7	1 A (5 A)
• Connection diagram ④	
- Terminals 1, 3, 8	0.5 A
- Terminal 4, 5	2 A (5 A)
- Terminal 6, 7	1 A (5 A)
• Connection diagram ⑤	
- Terminals 1, 2, 3, 8	0.5 A
- Terminal 4, 5	2 A (5 A)
- Terminal 6, 7	1 A (5 A)
• Connection diagram ⑥	
- Terminals 1, 2, 3, 4, 5	0.5 A
- Terminals 6, 7, 8	1 A (5 A)
• Connection diagram ⑨	
- Terminals 1, 2, 3, 4, 5, 8	0.5 A
- Terminal 6, 7	1 A (5 A)
• Connection diagram Ⓚ	
- Terminals 1, 2	0.5 A
- Terminals 3, 4, 5, 6, 7, 8	1 A (5 A)

Environmental conditions	**Storage**	DIN EN 60721-3- 1: 1997
	Climatic conditions	Class 1K3
	Mechanical conditions	Class 1M2
	Temperature range	-20…+60°C
	Humidity	< 95% r.h.
	Transport	DIN EN 60721-3- 2: 1997
	Climatic conditions	Class 2K2
	Mechanical conditions	Class 2M2
	Temperature range	-50…+60°C
	Humidity	< 95% r.h.
	Operation	DIN EN 60721-3- 3: 1995
	Climatic conditions	Class 3K5
	Mechanical conditions	Class 3M2
	Temperature range	-20…+60°C
	Humidity	< 95% r.h.
	Installation altitude	Max. 2,000 m above sea level

Please note!
Condensation, formation of ice, and ingress of water are not permitted. Failure to observe this poses a risk of impairing the safety functions and the risk of electric shock.

A synchronous motor drives the drive shaft with a mounted camshaft via a gear train. The camshaft actuates end switches and auxiliary switches. The switch position of each end switch and auxiliary switch can be adjusted by an assigned cams disk within the running range. Some actuator versions are equipped with electronic switching modules that perform additional functions in connection with the end switches and auxiliary switches and external units, such as controllers (refer to *Circuit diagrams*). The functions and technical data of the two actuator groups, SQN70/SQN71 and SQN74/SQN75, are nearly identical.

SQN30/SQN31 replacement

The *Type summary* lists **possible SQN3s** that can be replaced by SQN70/SQN71 actuators using a mounting kit (refer to *Accessories*).

The **SQN30** and **SQN31** listed in the *Type summary*

- refer to the SQN7 230 V AC variants.
- are variants **without** the capacity for potentiometer installation (refer to Data Sheet N7808).

Mechanical adaptations are not normally required. Note the different terminal assignments of the two actuators.

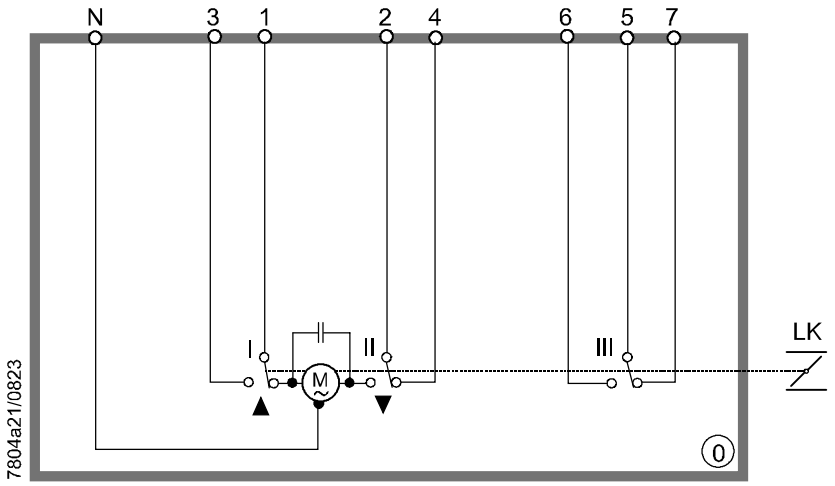
SQN7 series B replacement

The *Type summary* lists SQN7s in series A that are replaced by SQN7s in series B. Series B features an additional non-replaceable fuse on pin 6 of the auxiliary switch for fuel valves. Neither the SQN7s in series A nor the 115 V variants (marked with ‘R’) are suitable for controlling the fuel valves according to the standard.

Internal diagram

Note
The following internal diagrams all show the start position as supplied:
- End switch position II CLOSED
- No voltage

No. ⓪ → Universal use

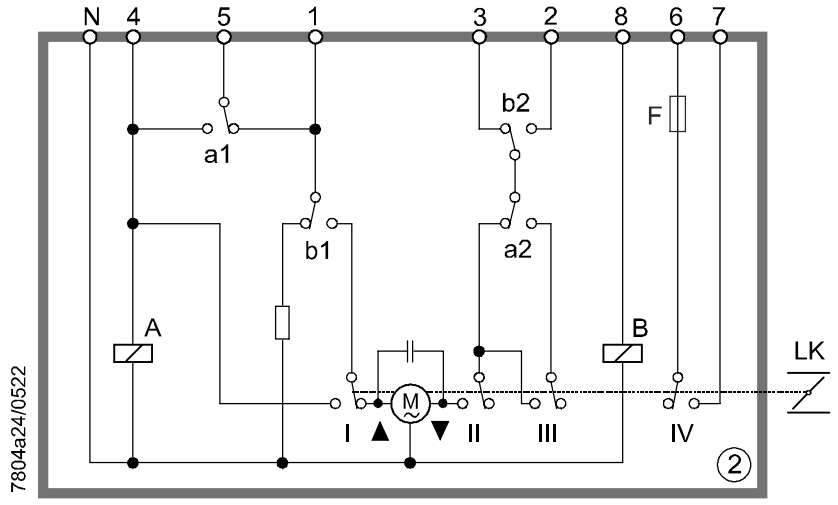


SQN7x.x0xxxx

Cam disks:
I Red
II Blue
III Orange

Please note!
This variant is not suitable for controlling a fuel valve according to standard regulations.

No. ② → 2-stage or modulating operation → Prepurging at high-fire position (NL)
e.g., for LGB22 / LGB32 / LME22 / LME23

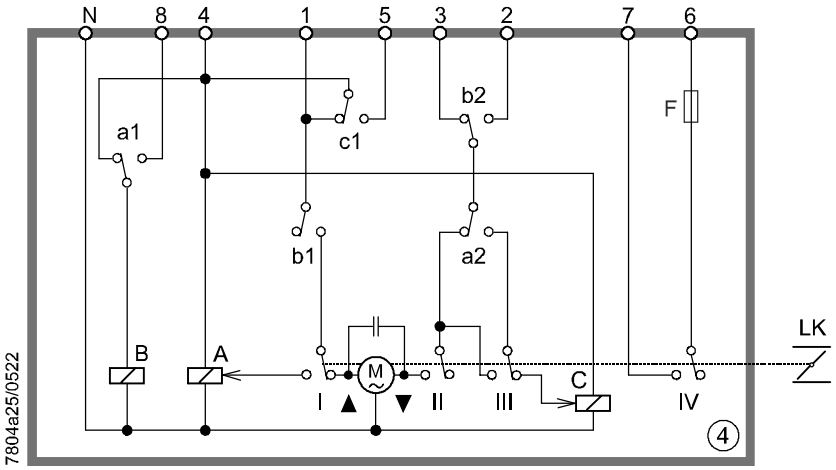


SQN7x.x2xBxx

Cam disks:
I Red
II Blue
III Orange
IV *) Black

*) **Please note!**
Connection of a fuel valve to cam IV only:
→ Max. 0.3 A, cosφ > 0.8 inductive.
Safety-relevant applications are only available with Siemens burner controls!

No. ④ → 2-stage operation → Prepurging at low-fire position (KL)
e.g., for LGB21 / LME21 / LOA24 / LOA25 / LOA26 / LOA28 / LOA36 / LMO24 / LMO44



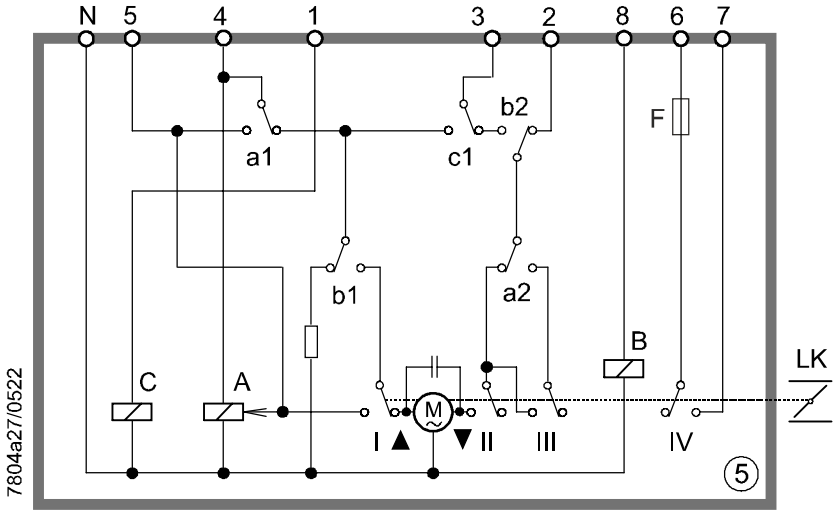
SQN7x.x4xBxx

Cam disks:
I Red
II Blue
III Orange
IV *) Black

*)

Please note!
Connection of a fuel valve to cam IV only:
→ Max. 0.3 A, cosφ > 0.8 inductive.
Safety-relevant applications are only available with Siemens burner controls!

No. ⑤ → 2-stage operation → Prepurging at high-fire position (NL)
e.g., for LME22 / LME23 / LGB22 / LGB32



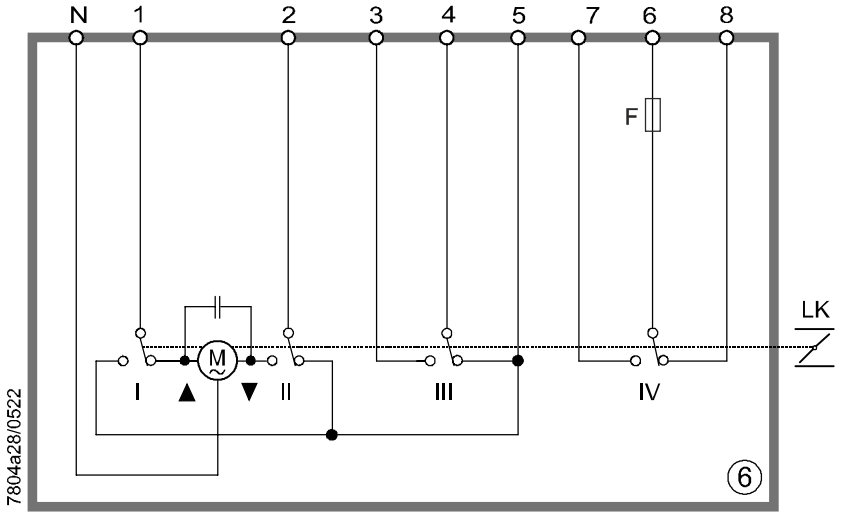
SQN7x.x5xBxx

Cam disks:
I Red
II Blue
III Orange
IV *) Black

*)

Please note!
Connection of a fuel valve to cam IV only:
→ Max. 0.3 A, cosφ > 0.8 inductive.
Safety-relevant applications are only available with Siemens burner controls!

No. ⑥ → 2-stage or modulating operation → Prepurging at high-fire position (NL)
e.g., for LFL / LGK16 / LAL / LOK16

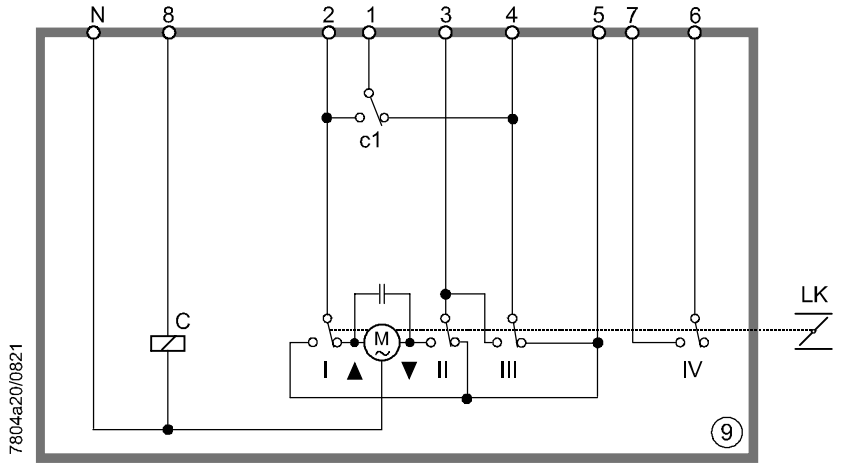


SQN7x.x6xBxx

Cam disks:
I Red
II Blue
III Orange
IV *) Black

*) **Please note!**
Connection of a fuel valve to cam IV only:
→ Max. 0.3 A, cosφ > 0.8 inductive.
Safety-relevant applications are only available with Siemens burner controls!

No. ⑨ → 2-stage operation, prepurging at low-fire position (KL)

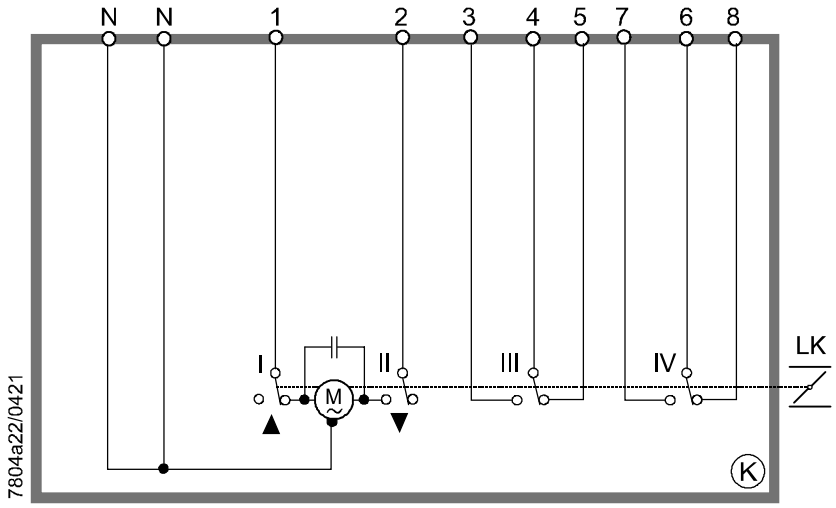


SQN7x.x9xAxx

Please note!
This variant is not suitable for controlling a fuel valve according to standard regulations.

Internal diagram (continued)

No. Ⓚ → Universal use



SQN7x.xKxAxx

Cam disks:

I	Red
II	Blue
III	Orange
IV	Black

Please note!
This variant is not suitable for controlling a fuel valve according to standard regulations.

Key

No. ②	Designation for internal circuit. Appears in the second position after the period in the type reference
I / II	End switches
III / IV / V	Auxiliary switches
AL	Remote lockout display (alarm)
BV1	Fuel valve stage 1
BV2	Fuel valve stage 2
BV3	Fuel valve stage 3
EK2	External remote lockout reset button
ION	Ionization probe
F	Internal fuse, not replaceable
FS	Flame signal
GL	Gas/air ratio control
GP	Gas pressure switch
HS	Main switch
KL	Low-fire
L	Phase
LK	Air damper
LKP	Air damper position
LP	Air pressure switch
LR	Load controller
M	Burner motor or fan motor
Ⓜ	Actuator synchronous motor
M1	Without postpurging
M2	With postpurging
N	Neutral conductor
NL	High-fire
OH	Oil preheater
OW	Oil preheater readiness contact
QRB	Photoresistive detector
R	Control thermostat or pressurestat
	Relay
RV	Control valve
SA	Actuator
Si	External primary fuse, as specified in the data sheet of the relevant burner control
SB	Safety limiter
STx	Stage
tx / Tx	Program times (refer to the data sheet of the relevant burner control)
TSA	Safety time
R	Resistor
Z	Ignition transformer
CLOSED	Damper closed
▲	Direction of rotation OPEN
▼	Direction of rotation CLOSED

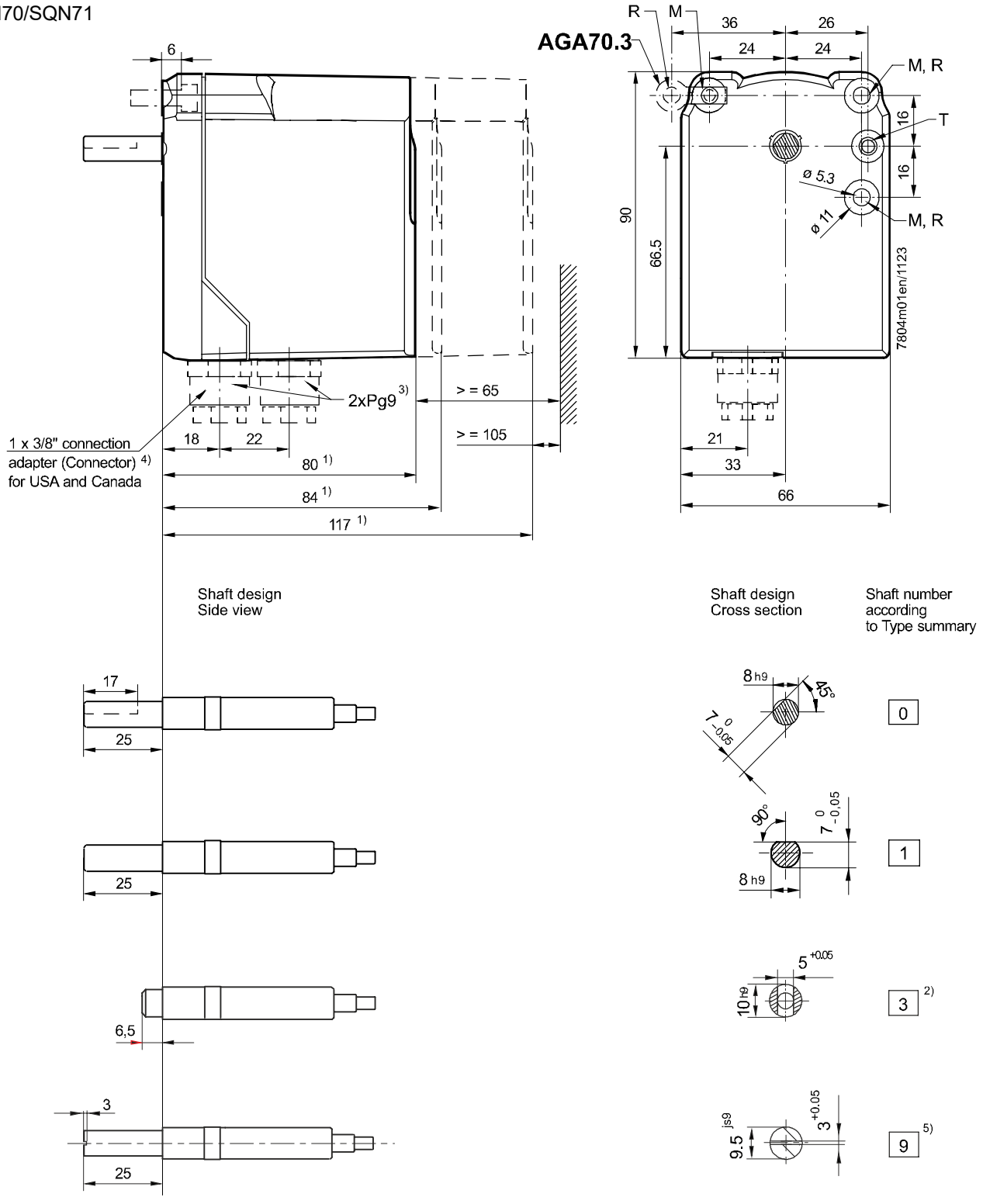
Program sequence – Diagrams

A	Burner ON
A–B	Burner startup
B–C	Burner operation / load control operation, modulating or 2-stage
C	Burner OFF
C–D	Overrun time
D	End of program sequence, burner control ready for restart

Dimensions

Dimensions in mm

SQN70/SQN71



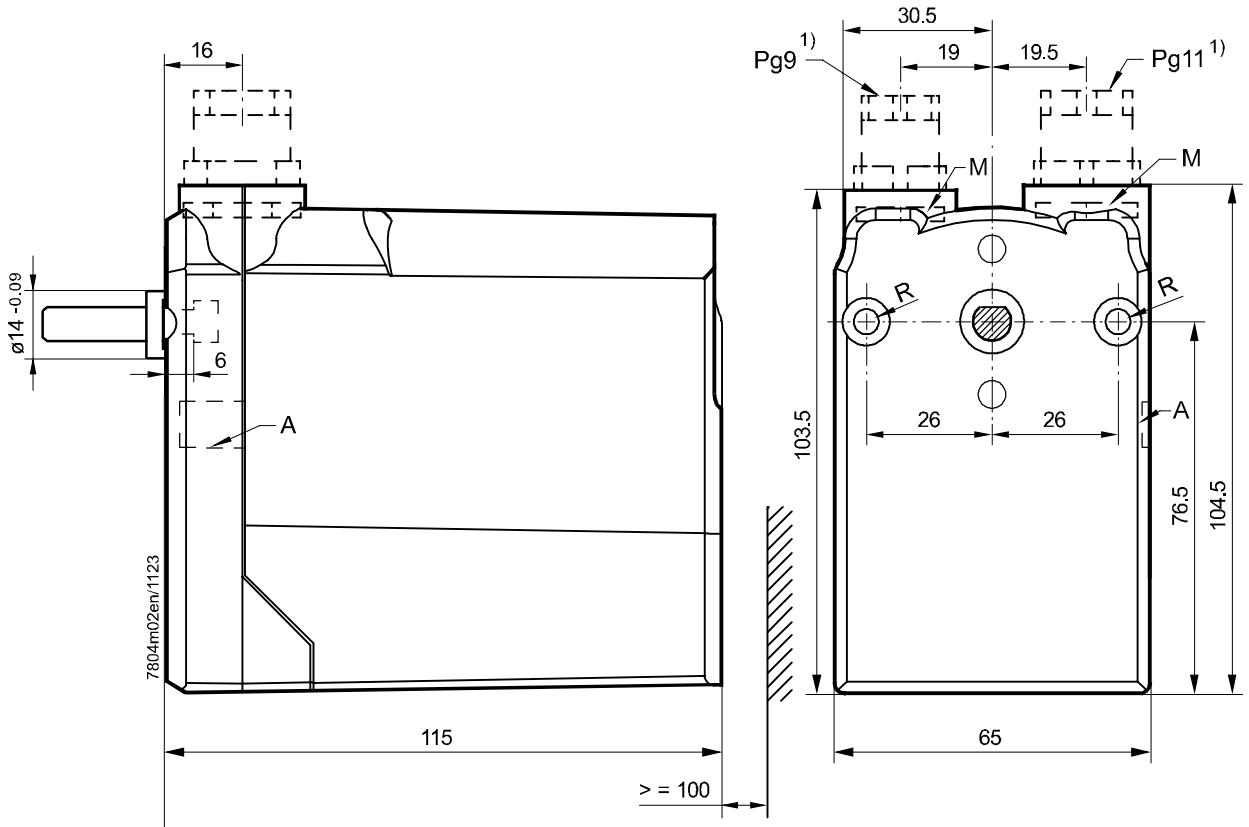
All shafts are shown in end switch position II CLOSED (as supplied).

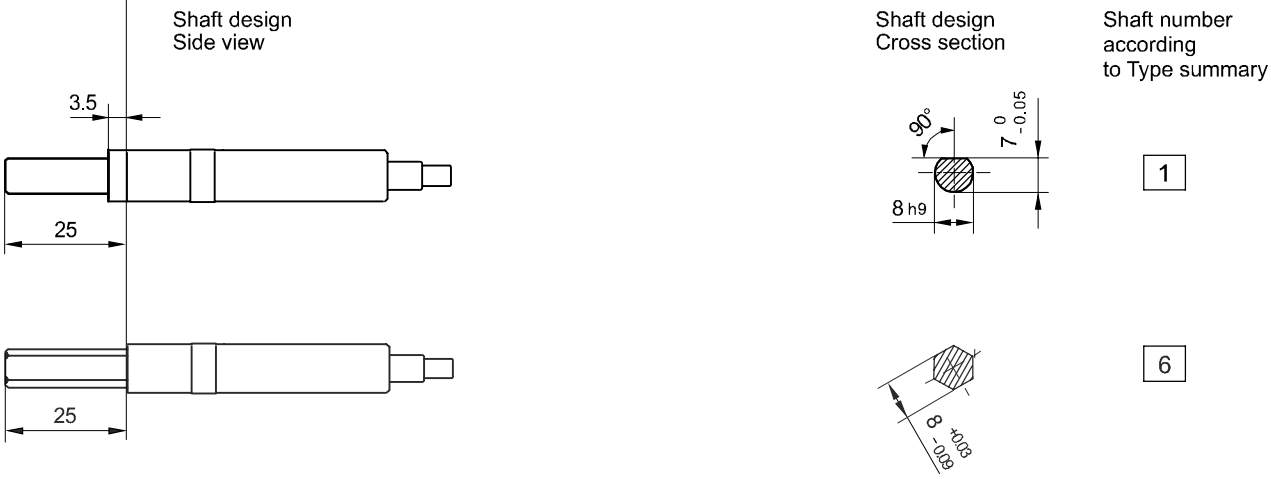
1) Housing length dependent on type of actuator (refer to *Type summary*)
2) Center slot: 6.3 mm deep
Hole Ø 5.1 mm: 16.5 mm deep (incl. center slot depth)
3) Not supplied
4) Supplied with SQN7x.xxxRxx types
5) Slot is not used for power transmission
R Fastening positions equivalent to the SQN3 (for direct replacement with SQN70/SQN71) AGA70.3 required
M Through-hole Ø 5.3 mm
T Knockout opening Ø 5.3 mm

Dimensions (continued)

Dimensions in mm

SQN74/SQN75





Shafts shown in CLOSED position (end switch II)

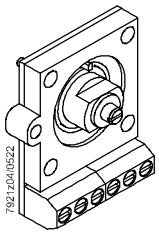
A Knockout opening for loose cable entry
R Through-hole Ø 5.3 mm
Fastening positions equivalent to Conectron LKS 160 and Berger STA
M Pg nuts (not supplied; refer to *Technical data* for type reference)

1) Not supplied

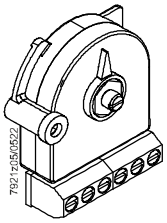
Installing the ASZxx.3x

Please note!
Electric shock hazard
The ASZ potentiometer must be installed when the unit is shut down.

ASZxx.3x potentiometer



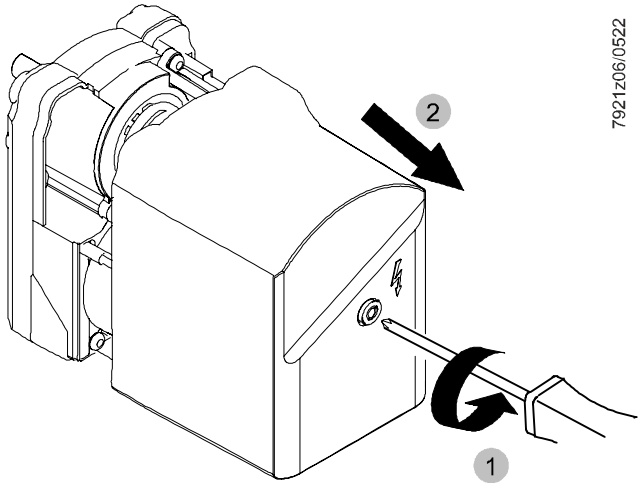
Option



SQN7x actuators

SQN70.x0x	SQN71.x0x
SQN70.x6x	SQN71.x6x
SQN70.x7x	SQN71.x7x
SQN74.x6x	SQN75.x6x
SQN74.x7x	SQN75.x7x
SQN74.x8x	SQN75.x8x
SQN74.x9x	SQN75.x9x
SQN74.xKx	SQN75.xKx

Step 1:



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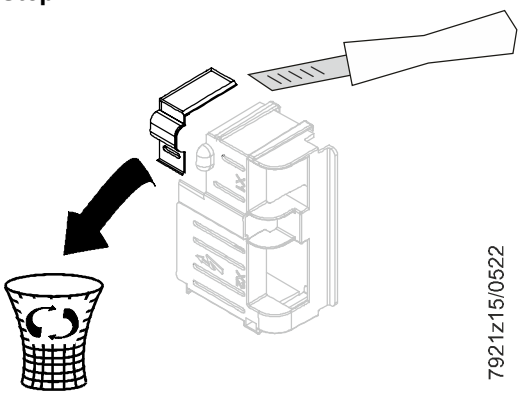

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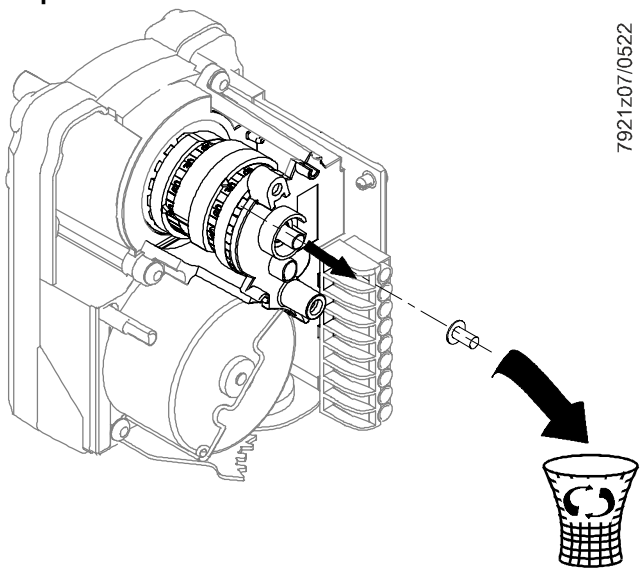
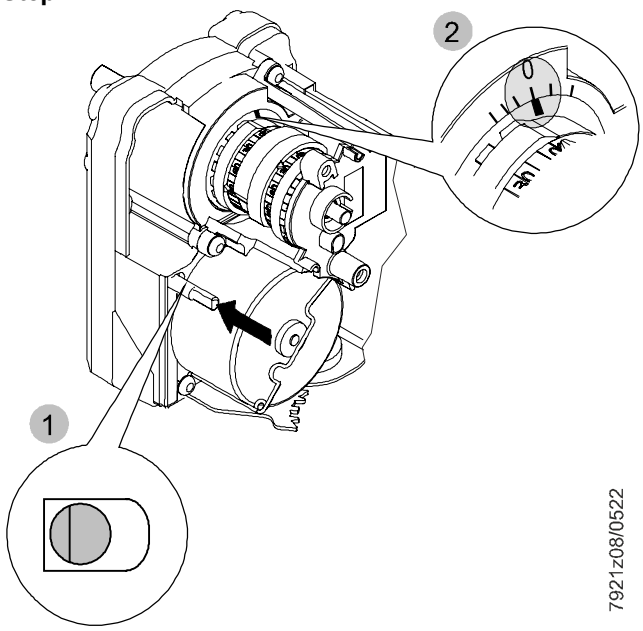


Step 4:



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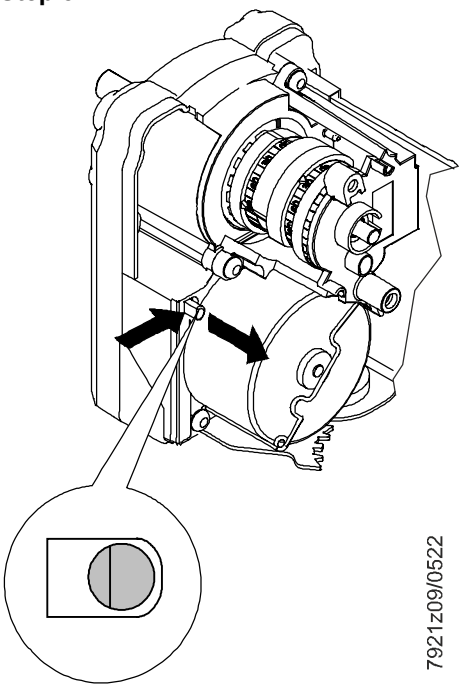

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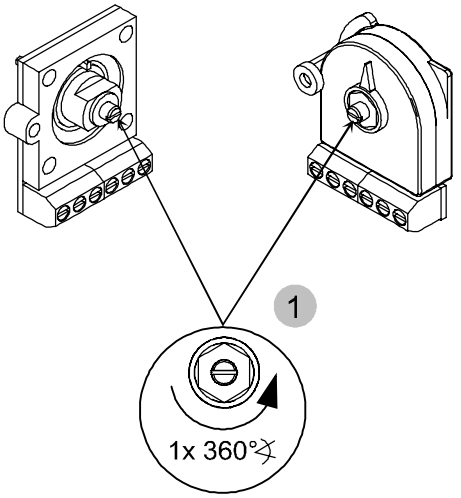
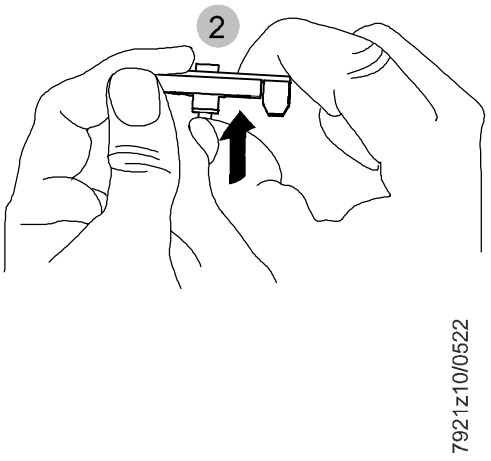
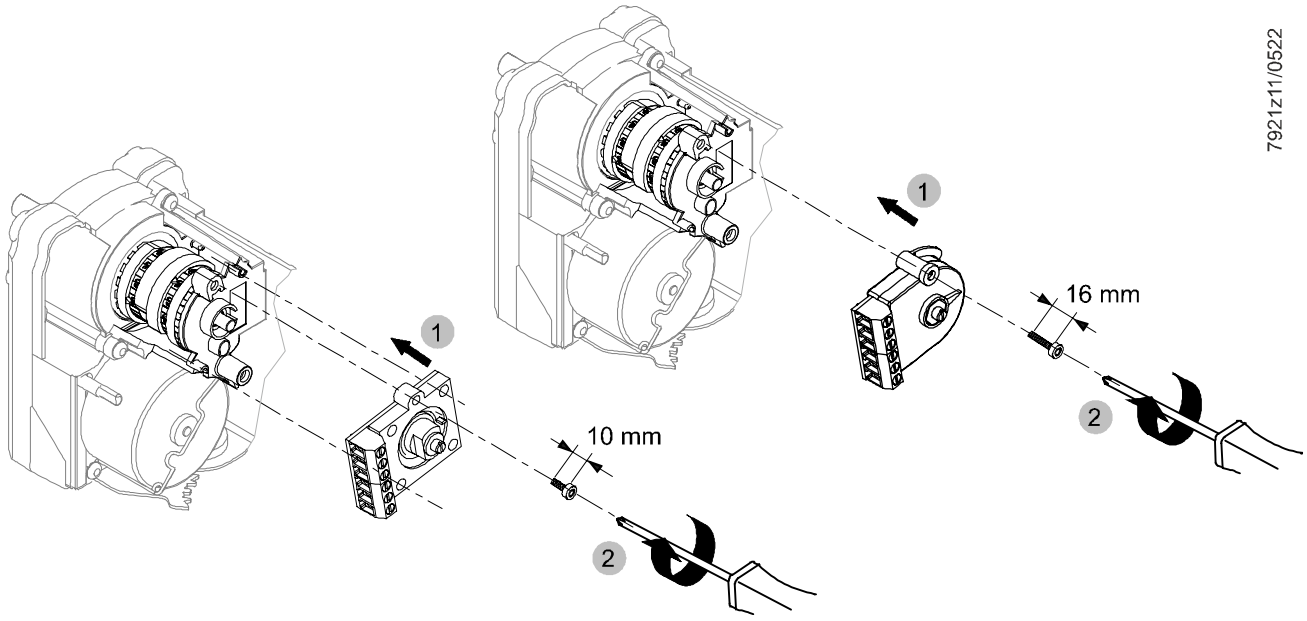
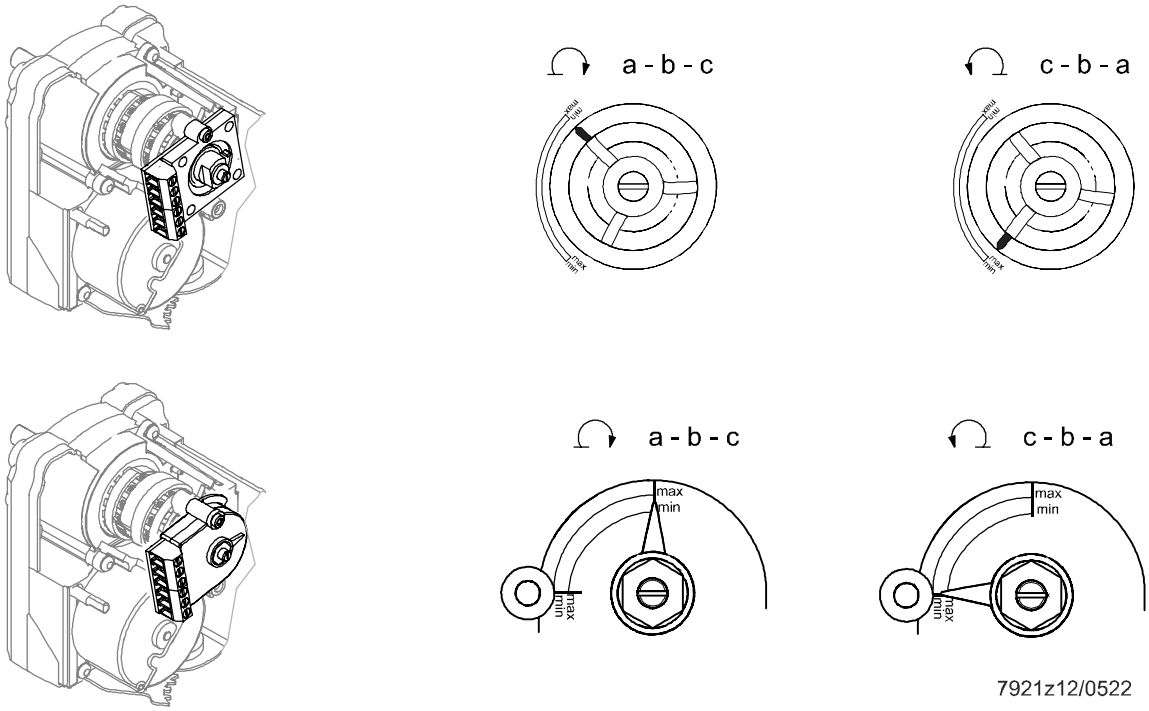




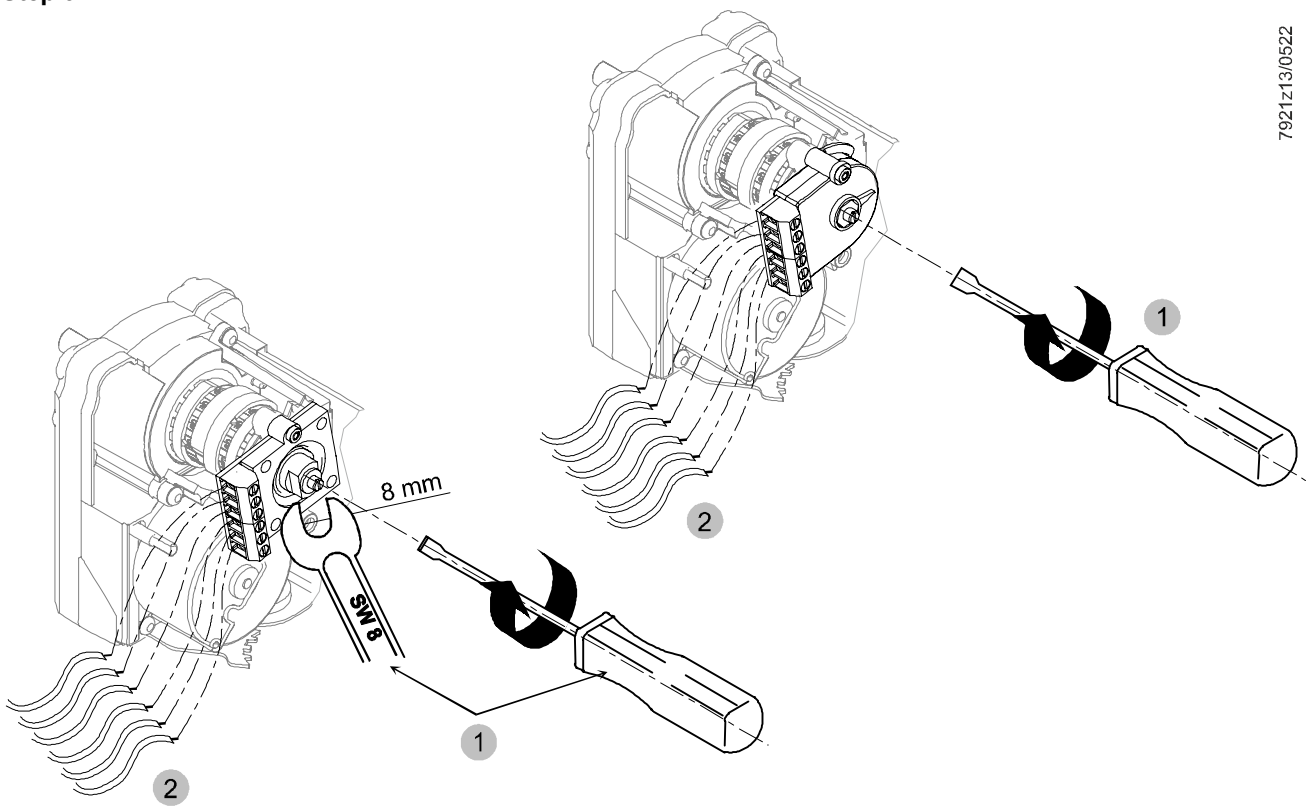
Step 7:



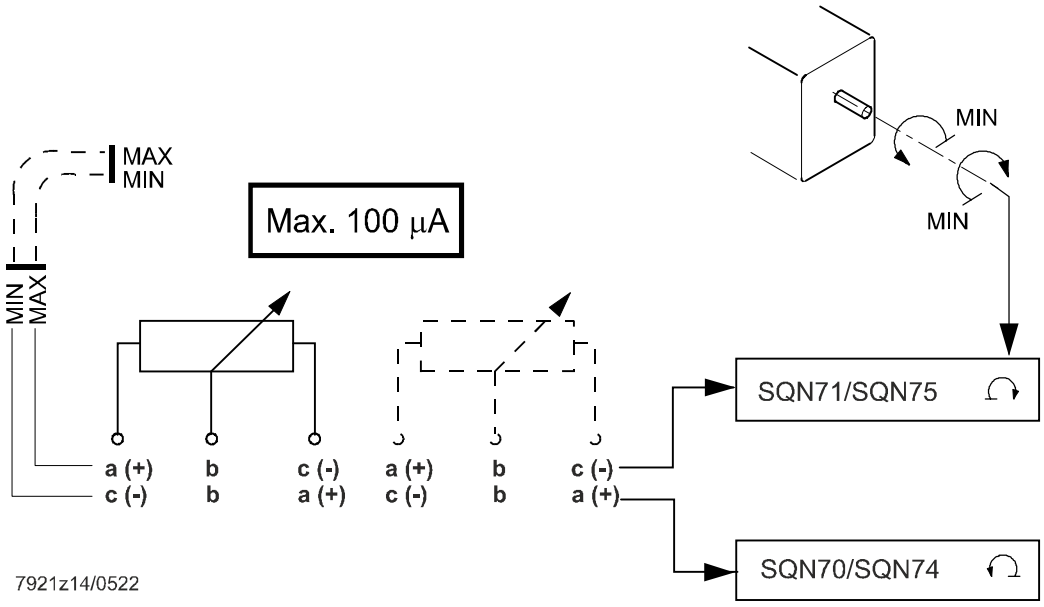
Step 8:



Step 9:



Step 10:



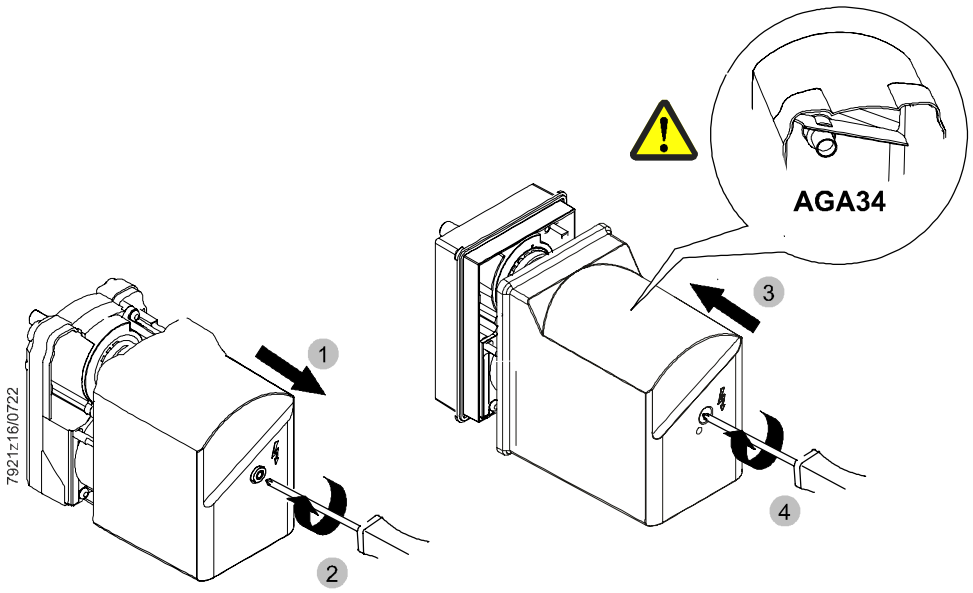
Step 11:

Only…

SQN70.x0x/SQN71.x0x

SQN70.x6x/SQN71.x6x

SQN70.x7x/SQN71.x7x

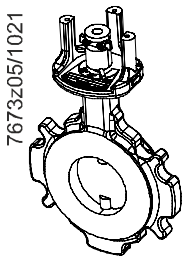


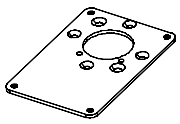
1 Remove the housing cover
2 Change the direction of rotation of the actuator
3 Fit the AGA34 higher housing cover (117 mm)
4 Screw the AGA34 housing cover in place

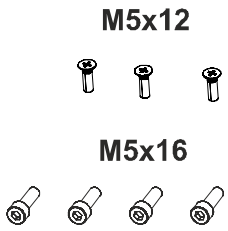
Fitting the SQN7x onto the VKF1x butterfly valve

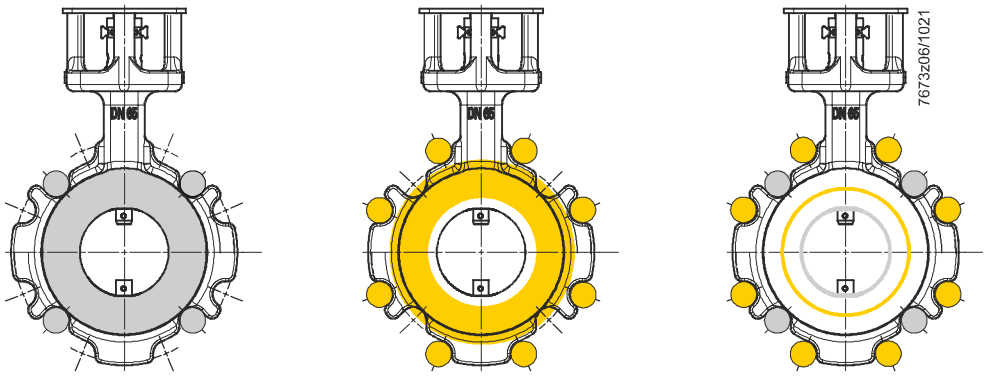
VKF10/VKF11

VKF10/VKF11 contents



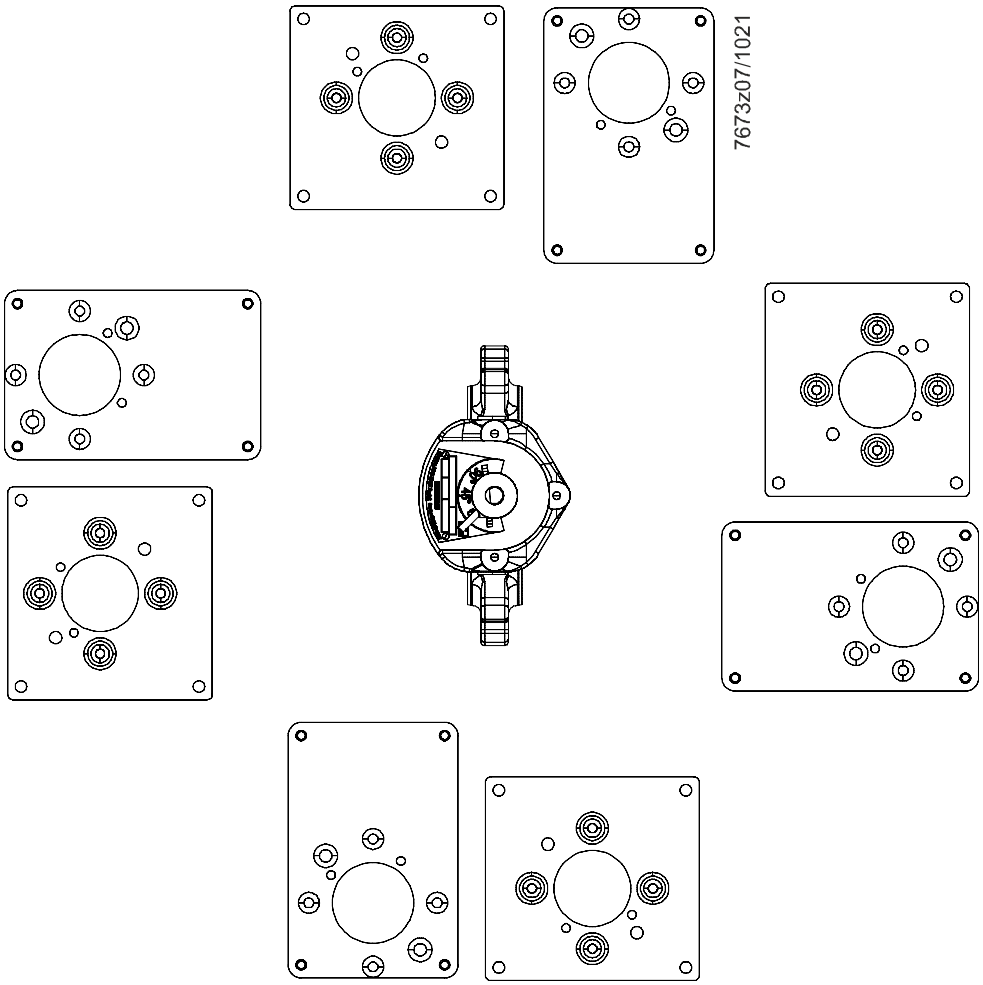


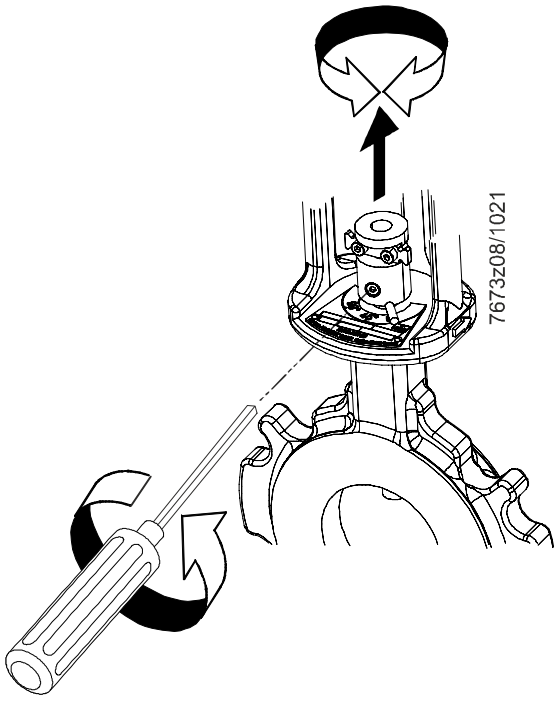




Nominal size	Swing thru	With mechanical stop	Suitable for flange size	Tightening torque	Mounting			
DN					DN ISO	DN ASME	DN+1 ISO	DN+1 ASME
32	VKF10.032	VKF11.032	DN32 + DN40	50 Nm	4 x M16	4 x ½	4 x M16	4 x ½
40	VKF10.040	VKF11.040	DN40 + DN50	50 Nm	4 x M16	4 x ½	4 x M16	4 x 5/8
50	VKF10.050	VKF11.050	DN50 + DN65	50 Nm	4 x M16	4 x 5/8	4 x M16	4 x 5/8
65	VKF10.065	VKF11.065	DN65 + DN80	50 Nm	4 x M16	4 x 5/8	8 x M16	4 x 5/8
80	VKF10.080	VKF11.080	DN80 + DN100	50 Nm	8 x M16	4 x 5/8	8 x M16	4 x 5/8
100	VKF10.100	VKF11.100	DN100 + DN125	80 Nm	8 x M16	8 x 5/8	8 x M16	8 x ¾
125	VKF10.125	VKF11.125	DN125 + DN150	160 Nm	8 x M16	8 x ¾	8 x M20	8 x ¾
150	VKF10.150	VKF11.150	DN150 + DN200	160 Nm	8 x M20	8 x ¾	12 x M20	8 x ¾
200	VKF10.200	VKF11.200	DN200	160 Nm	12 x M20	8 x ¾	---	---

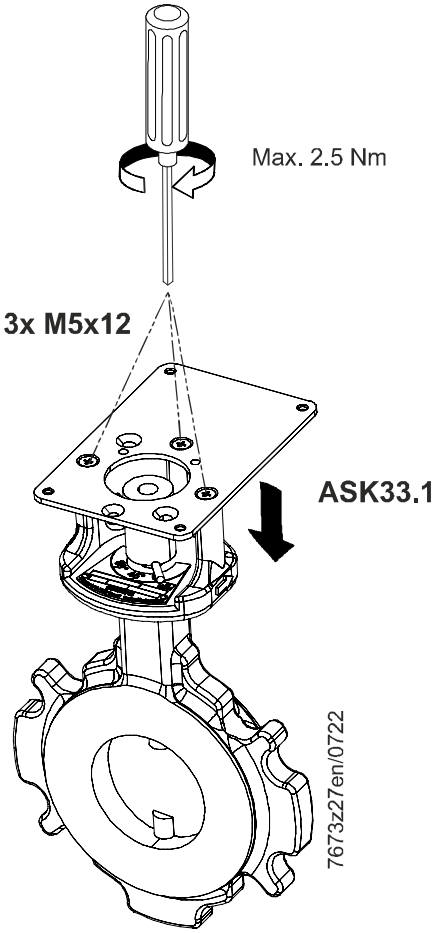
Mounting position of the mounting plate



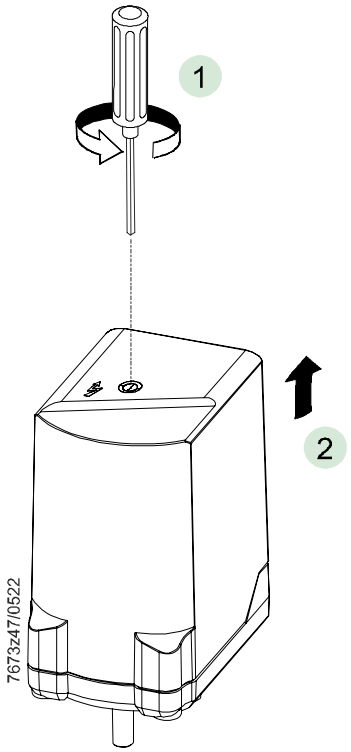


Loosen the screw. Align the coupling to suit the mounting position of the mounting plate. Tighten the screw again (max. 2 Nm).

Step 1:

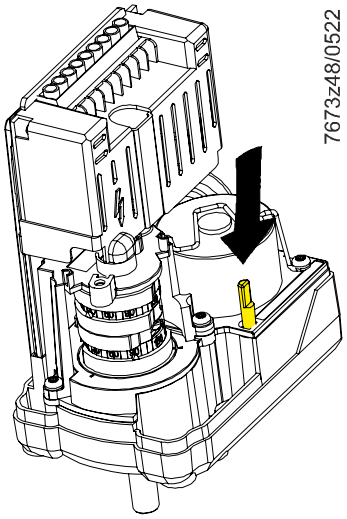


Step 2:

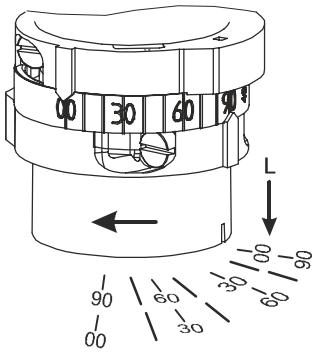


Step 3:

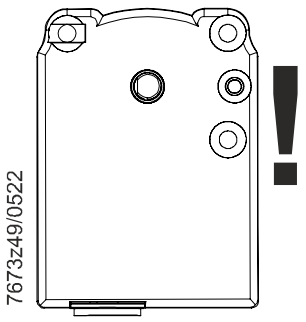
Release the coupling while pressing the pressure pin down



Step 4:

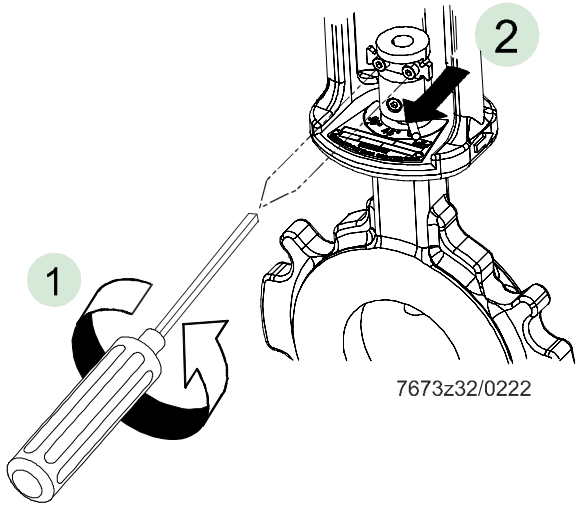


Zero position



Fitting the SQN7x onto the VKF1x butterfly valve (continued)

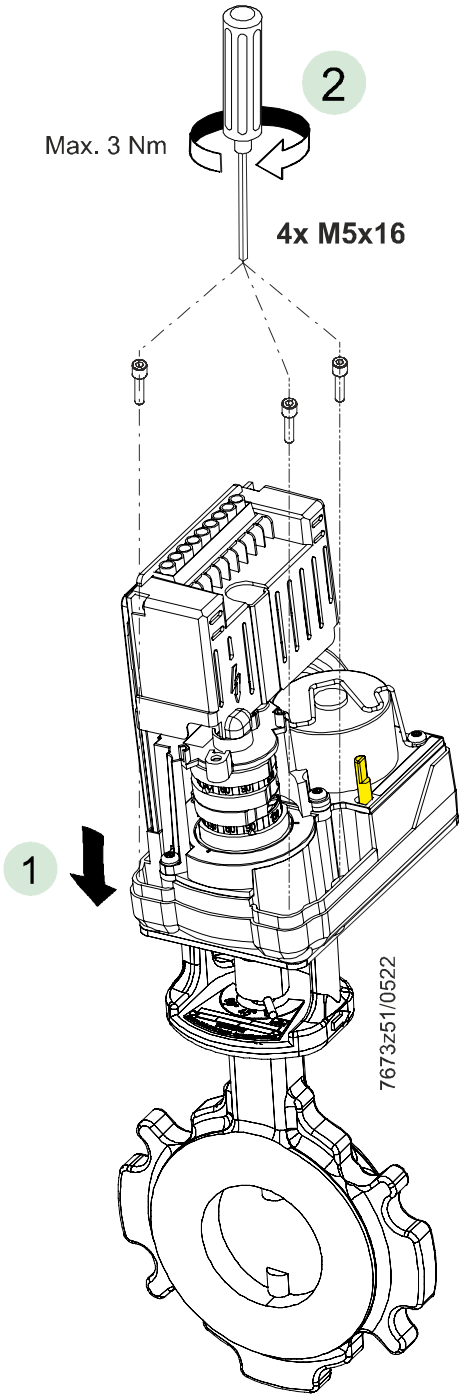
Step 5:



1 Loosen the screws.

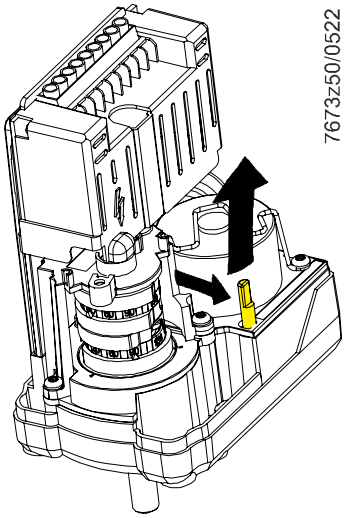
2 Pull the plate in the direction of the arrow and mount the SQN7x

Step 6:

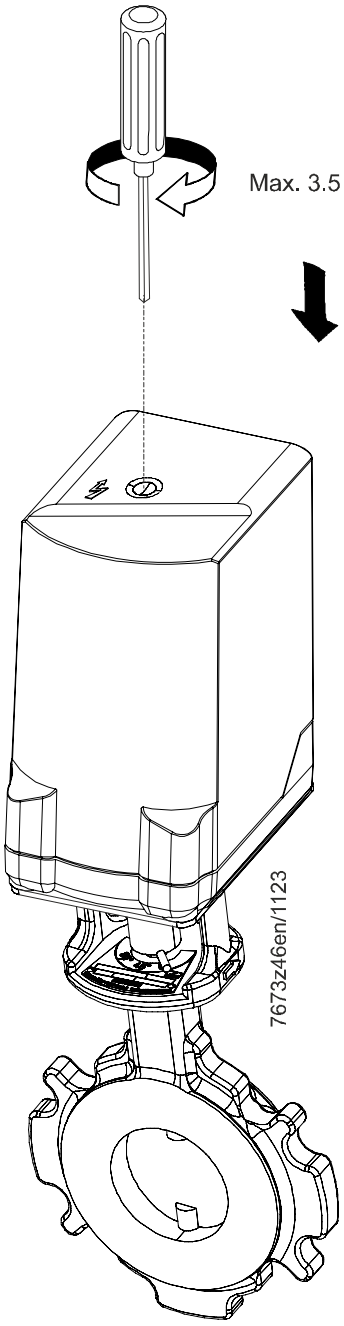


Step 7:

Lock the coupling while loosening the pressure pin



Step 8:



Step 9:

Tighten the screws (max. 2 Nm).