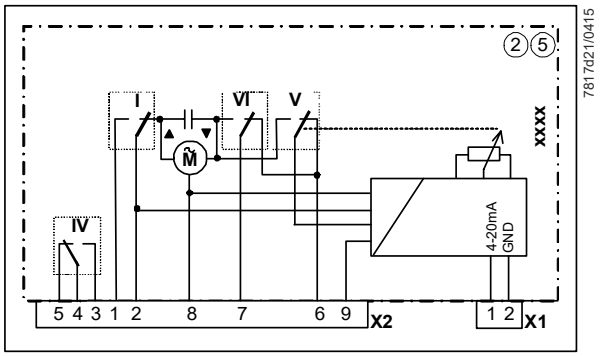
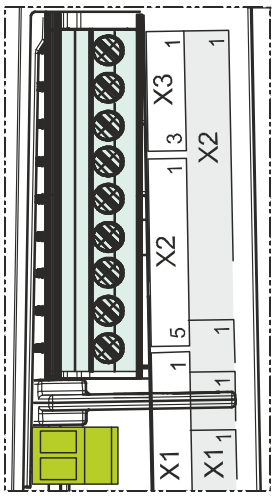
Connection diagrams and connection terminals

SQM4x.x5xxxx Electronic version with independent auxiliary switch

NOTE:
For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1…7.

Cam diagram



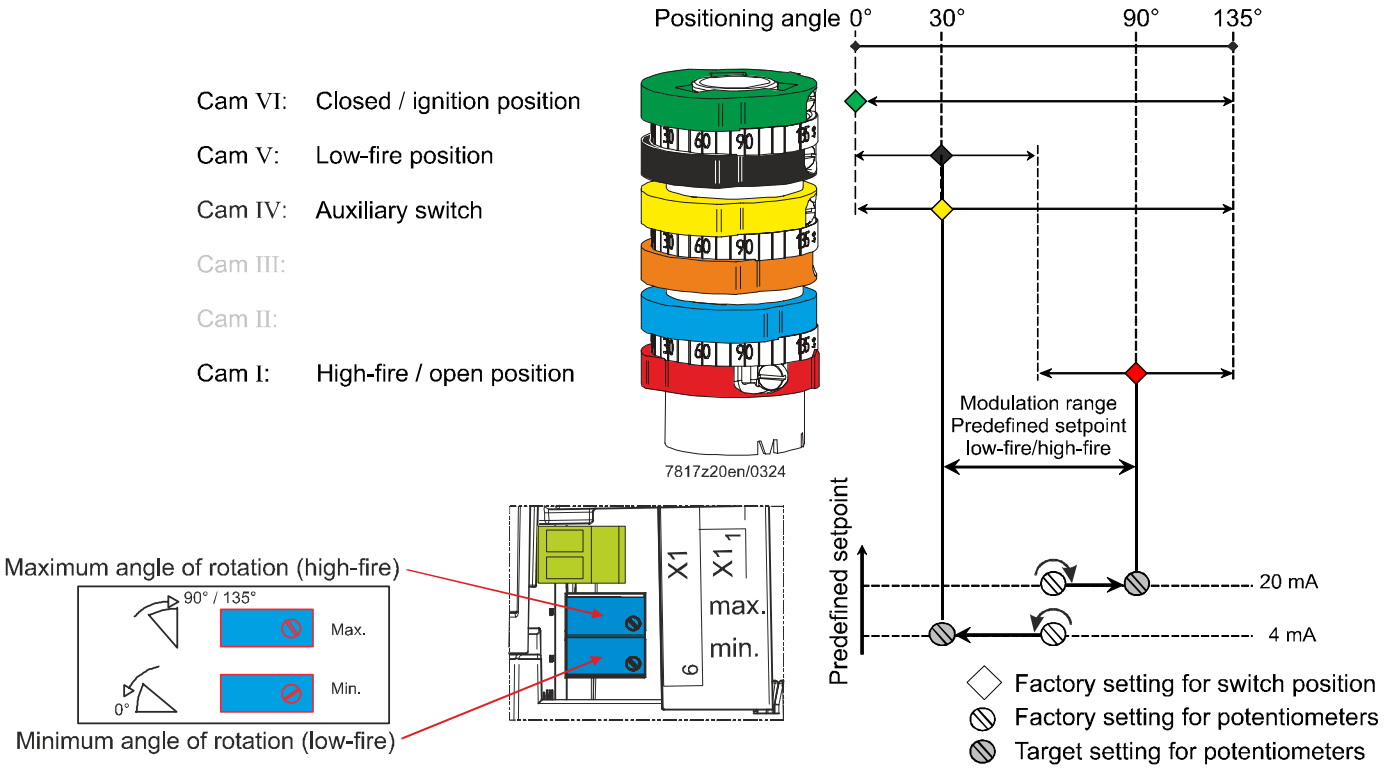


Mains voltage terminals			Dimensioning
X2-1	'OPEN' position reached (I)	Output	AC 120 V / max. 10 mA, cosφ >0.9
X2-2	Open / high-fire (I)	Input	AC 120 V / max. 1 A, cosφ >0.9 *
X2-3	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X2-4	Auxiliary switch AUX (IV)	Input	AC 120 V / max. 1 A, cosφ >0.9
X2-5	Auxiliary switch AUX (IV) / NC contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X2-6	Low-fire position / ignition load position reached (V, VI)	Output	AC 120 V / max. 10 mA, cosφ >0.9
X2-7	Close / ignition (VI)	Input	AC 120 V / max. 1 A, cosφ >0.9 *
X2-8	Neutral	Input	AC 120 V / max. 60 mA / 30 mA
X2-9	Controller release	Input	AC 120 V / max. 60 mA / 30 mA
Low-voltage terminals			**Dimensioning**
X1-1	4...20 mA	Input	max. 20 mA to X1-2
X1-2	GND	Input	---

* Only the control lines to the burner controls or to the control unit may be connected at the marked terminals. It is not permitted to connect additional external loads, such as signal lamps.

NOTICE:
The auxiliary switch IV is not suitable for controlling the fuel valves according to the standard.

NOTE:
The setting of the switching positions must be checked before commissioning.



Range adjustment / modulation range

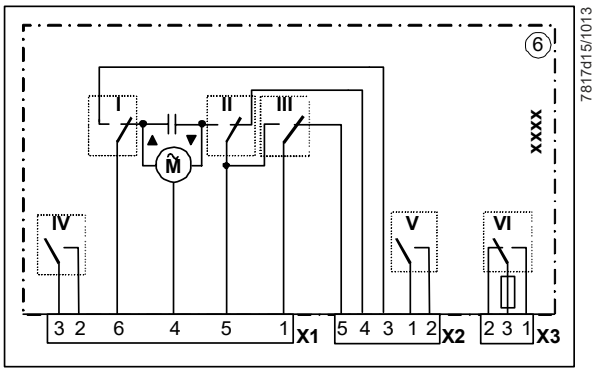
Adjust the range of the analog signal to match the switch positions (minimum and maximum position):
Set cam (I) to the required high-fire position
Set cam (V) to the required low-fire position
Apply predefined setpoint for the high-fire position at the analog input (depending on the type and application, the predefined setpoint can be applied in terms of current (4…20 mA), voltage (2…10 V) or resistance (0…135 Ohm)
Set the potentiometer for the maximum angle of rotation (default setting is the center position):
If the SQM40/SQM41 has not yet reached the maximum angle of rotation, the potentiometer must be turned clockwise until the predefined setpoint, the current angle position of the SQM40/SQM41, and the shutdown by the cam switch all match
OR
If the SQM40/SQM41 has already reached the maximum angle of rotation, the potentiometer must be turned counterclockwise until the predefined setpoint, the current angle position of the SQM40/SQM41, and the shutdown by the cam switch all match
Apply predefined setpoint for the low-fire position at the analog input (depending on the type and application, the predefined setpoint is 4 mA, 2 V, or 0 Ohm)
Set the potentiometers for the minimum angle of rotation:
If the SQM40/SQM41 has not yet reached the minimum angle of rotation, the potentiometer must be turned counterclockwise until the predefined setpoint, the current angle position of the SQM40/SQM41, and the shutdown by the cam switch all match
OR
If the SQM40/SQM41 has already reached the minimum angle of rotation, the potentiometer must be turned clockwise until the setpoint specification, the current angle position of the SQM40/SQM41, and the shutdown by the cam switch all match

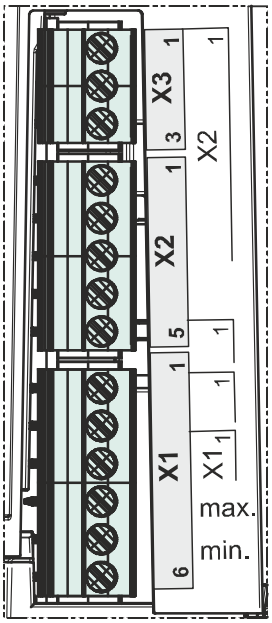
Connection diagrams and connection terminals

SQM4x.x6xxxx 3-position version with 2 end switches and 4 auxiliary switches

NOTE:
For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1…7.

Cam diagram





Mains voltage terminals			Dimensioning
X3-1	Auxiliary switch AUX (VI) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9 **
X3-2	Auxiliary switch AUX (VI) NC contact	Output	AC 120 V / max. 1 A, cosφ >0.9 **
X3-3	Auxiliary switch AUX (VI)	Input	AC 120 V / max. 1 A, cosφ >0.9 **
X2-1	Auxiliary switch AUX (V)	Input	AC 120 V / max. 1 A, cosφ >0.9
X2-2	Auxiliary switch AUX (V) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X2-3	'OPEN' position reached (I)	Output	AC 120 V / max. 0.3 A, cosφ >0.8
X2-4	'CLOSED' position reached (II)	Output	AC 120 V / max. 0.3 A, cosφ >0.8
X2-5	Ignition position reached (III)	Output	AC 120 V / max. 0.3 A, cosφ >0.8
X1-1	Move to ignition position (III)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-2	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X1-3	Auxiliary switch AUX (IV)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-4	Neutral	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-5	Closing (II)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-6	Opening (I)	Input	AC 120 V / max. 1 A, cosφ >0.9

NOTICE:
** When connecting a fuel valve: Max. 0.3 A, cosϕ >0.8 inductive.

NOTE:
The setting of the switching positions must be checked before commissioning.

Cam VI: Auxiliary switch

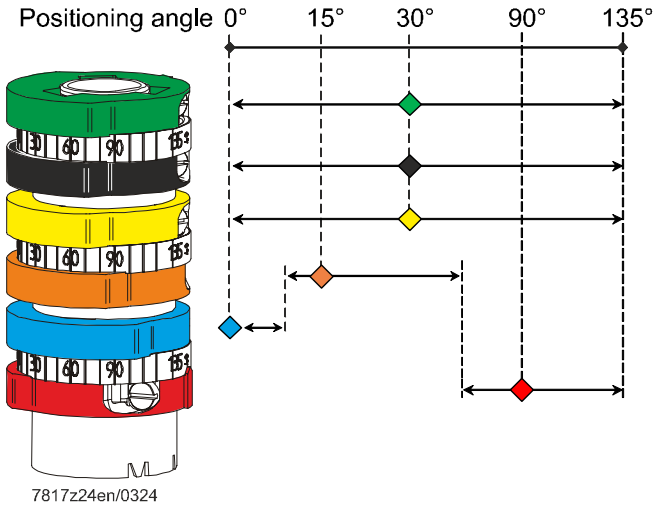
Cam V: Auxiliary switch

Cam IV: Auxiliary switch

Cam III: Ignition position

Cam II: Closed

Cam I: High-fire / open position



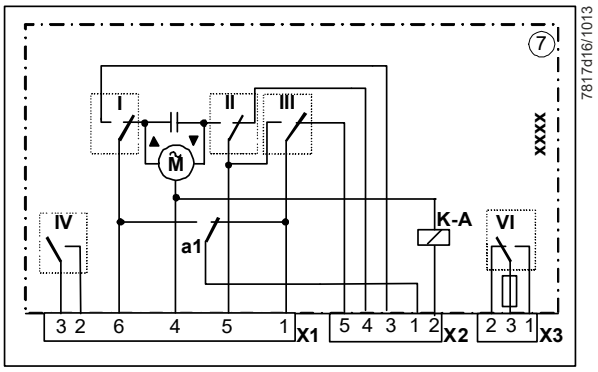
◇ Factory setting for switch position

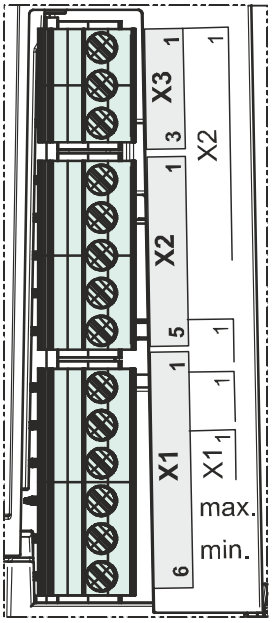
Connection diagrams and connection terminals

SQM4x.x7xxxx 2-position version with 2 end switches and 3 auxiliary switches, 1 relay

NOTE:
For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1…7.

Cam diagram





Mains voltage terminals			Dimensioning
X3-1	Auxiliary switch AUX (VI) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9 **
X3-2	Auxiliary switch AUX (VI) NC contact	Output	AC 120 V / max. 1 A, cosφ >0.9 **
X3-3	Auxiliary switch AUX (VI)	Input	AC 120 V / max. 1 A, cosφ >0.9 **
X2-1	Mains voltage	Input	AC 120 V / max. 1 A, cosφ >0.9
X2-2	Open / close relay	Input	AC 120 V / max. 1 A, cosφ >0.9
X2-3	'OPEN' position reached (I)	Output	AC 120 V / max. 0.3 A, cosφ >0.8
X2-4	'CLOSED' position reached (II)	Output	AC 120 V / max. 0.3 A, cosφ >0.8
X2-5	Ignition position reached (III)	Output	AC 120 V / max. 0.3 A, cosφ >0.8
X1-1	Move to ignition position (III)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-2	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X1-3	Auxiliary switch AUX (IV)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-4	Neutral	---	AC 120 V / max. 1 A, cosφ >0.9
X1-5	Closing (II)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-6	Opening (I)	Input	AC 120 V / max. 1 A, cosφ >0.9

NOTICE:
** When connecting a fuel valve: Max. 0.3 A, cosϕ >0.8 inductive.

NOTE:
The setting of the switching positions must be checked before commissioning.

Cam VI: Auxiliary switch

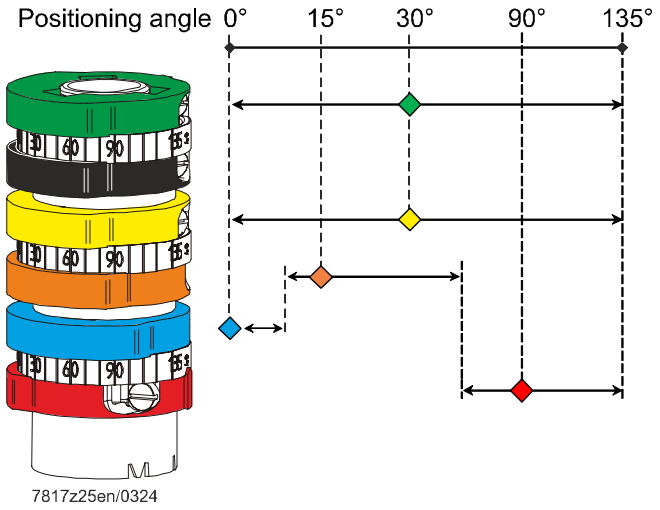
Cam V:

Cam IV: Auxiliary switch

Cam III: Ignition position

Cam II: Closed

Cam I: High-fire / open position



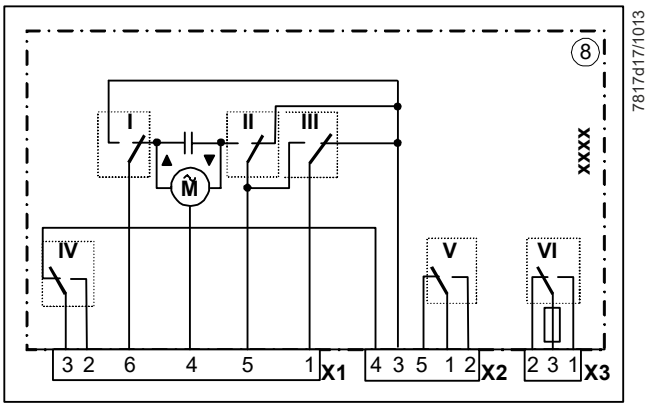
◇ Factory setting for switch position

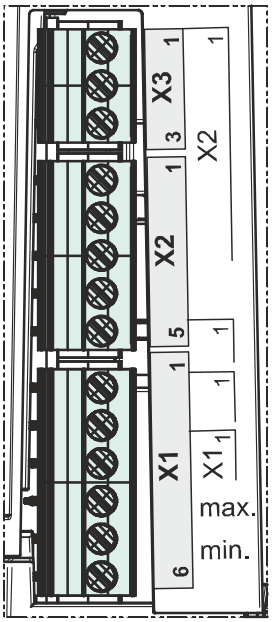
Connection diagrams and connection terminals

SQM4x.x8xxxx 3 position version with 2 end switches and 4 auxiliary switches

NOTE:
For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1…7.

Cam diagram





Mains voltage terminals			Rating
X3-1	Auxiliary switch AUX (VI) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9 **
X3-2	Auxiliary switch AUX (VI) NC contact	Output	AC 120 V / max. 1 A, cosφ >0.9 **
X3-3	Auxiliary switch AUX (VI)	Input	AC 120 V / max. 1 A, cosφ >0.9 **
X2-1	Auxiliary switch AUX (V)	Input	AC 120 V / max. 1 A, cosφ >0.9
X2-2	Auxiliary switch AUX (V) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X2-3	Position reached (I / II / III)	Output	AC 120 V / max. 0.3 A, cosφ >0.8
X2-4	Auxiliary switch AUX (IV) NC contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X2-5	Auxiliary switch AUX (V) NC contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X1-1	Move to position (III)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-2	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / max. 1 A, cosφ >0.9
X1-3	Auxiliary switch AUX (IV)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-4	Neutral	Input	AC 120 V / max. 1 A, cosφ >0.9 inductive
X1-5	Closing (II)	Input	AC 120 V / max. 1 A, cosφ >0.9
X1-6	Opening (I)	Input	AC 120 V / max. 1 A, cosφ >0.9

NOTICE:
** When connecting a fuel valve: Max. 0.3 A, cosϕ >0.8 inductive.

NOTE:
The setting of the switching positions must be checked before commissioning.

Cam VI: Auxiliary switch

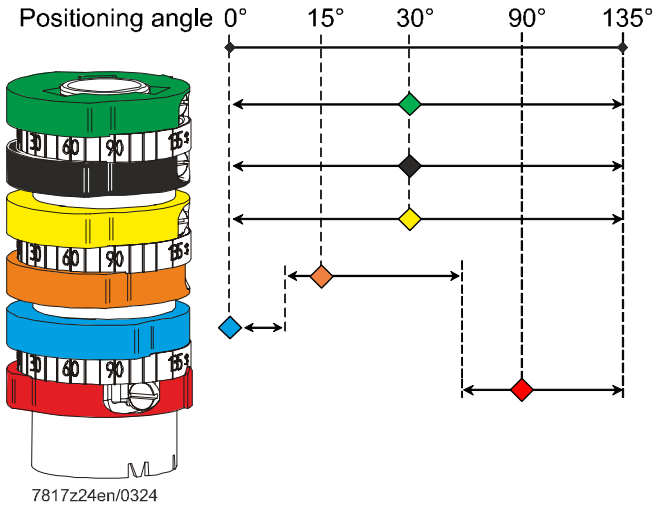
Cam V: Auxiliary switch

Cam IV: Auxiliary switch

Cam III: Ignition position

Cam II: Closed

Cam I: High-fire / open position

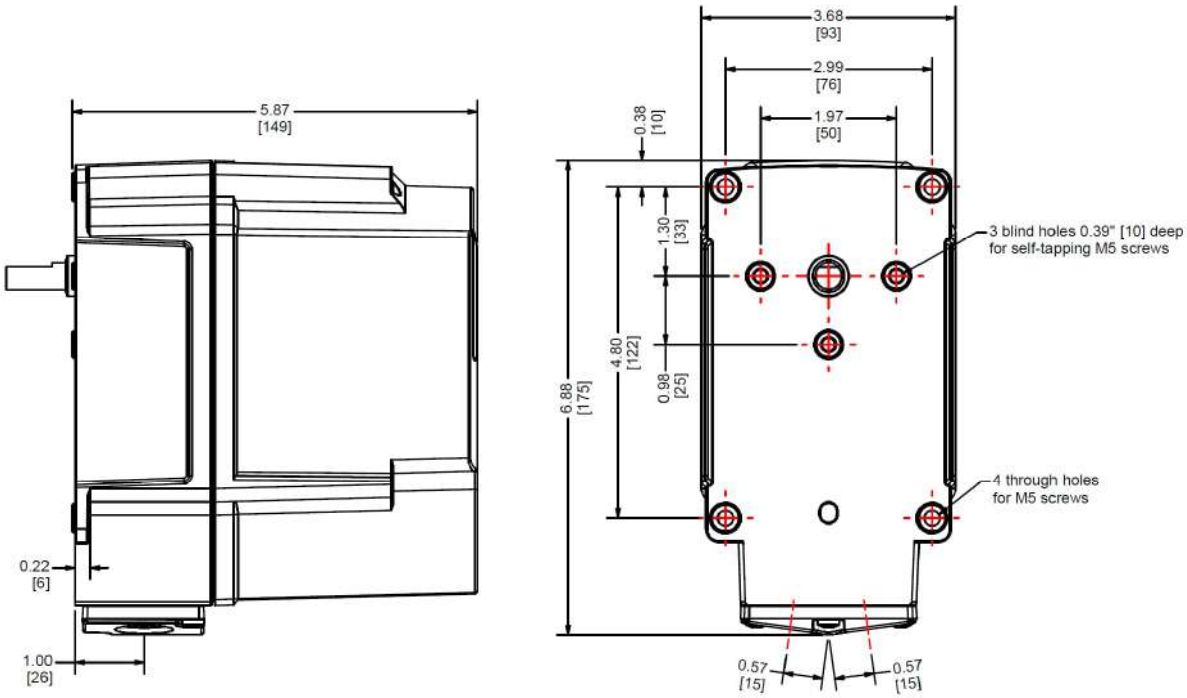


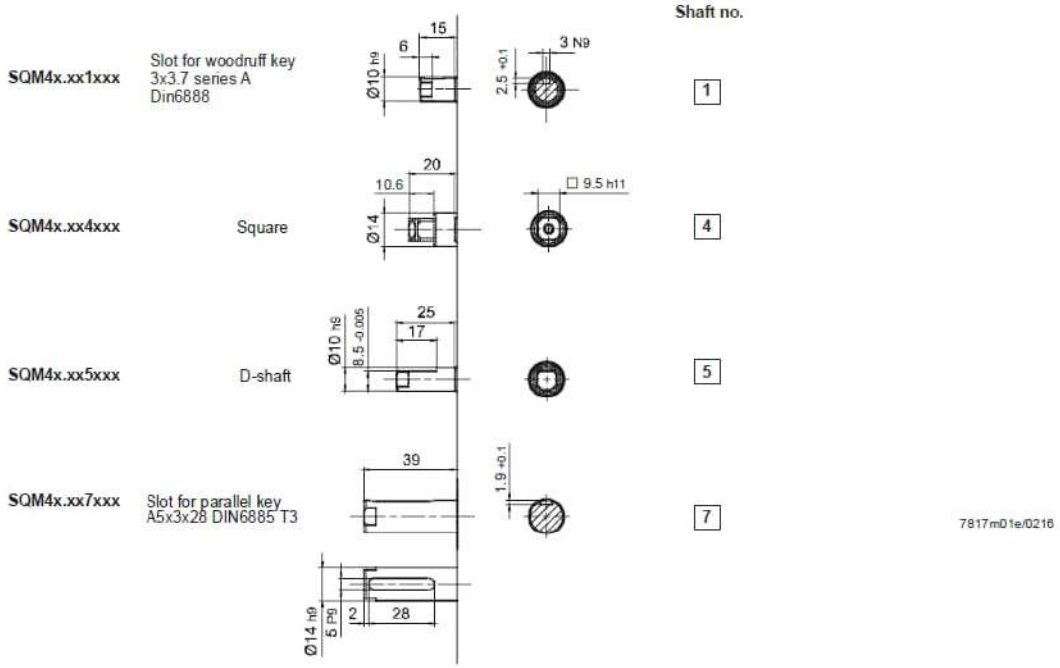
◇ Factory setting for switch position

Dimensions

SQM40 / SQM41

Dimensions in inches; millimeters in brackets

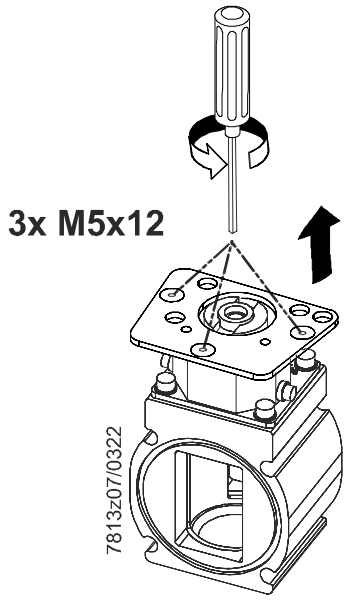




Mounting the SQM40.xx5xxx onto the VKP proportional controlling element

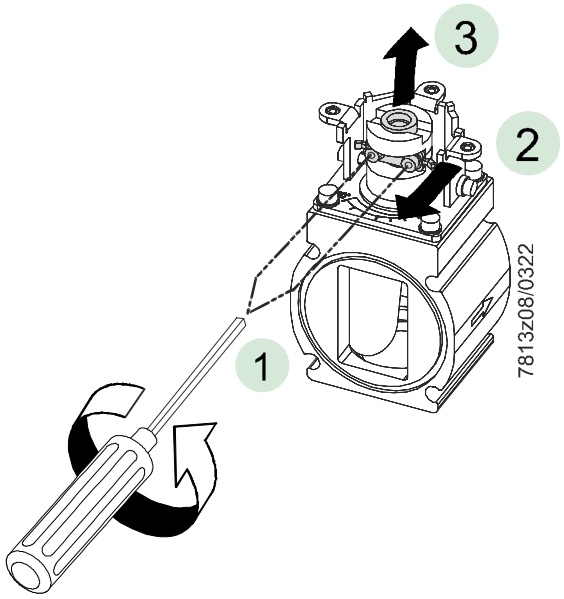
Step 1:

- Loosen the screws (M5)
- Remove the plate in the direction of the arrow



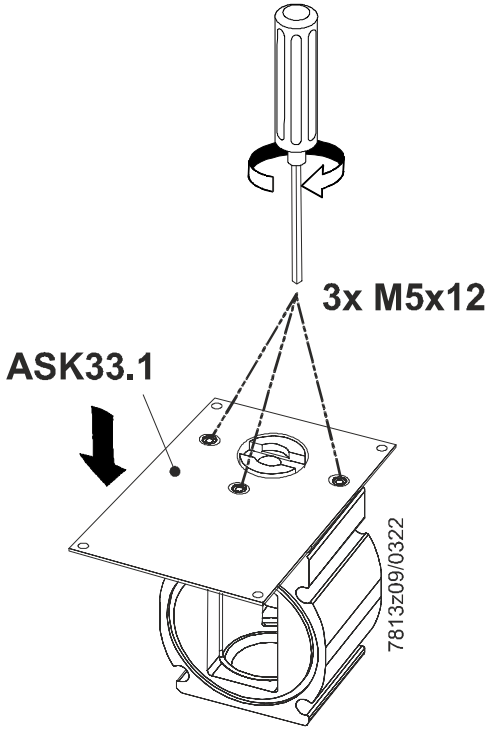
Step 2:

- Loosen the screws (1)
- Pull the plate in the direction of the arrow (2) and remove the reducing sleeve (3)



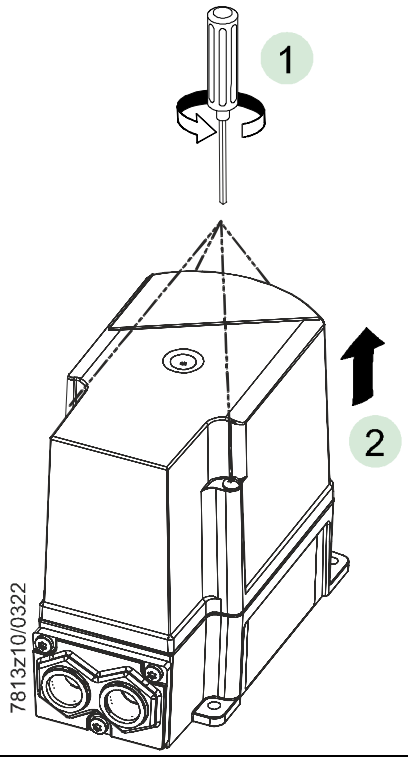
Step 3:

- Place the ASK33.1 mounting plate in the direction of the arrow
- Tighten the screws (M5)



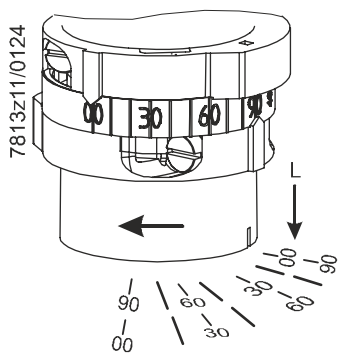
Step 4:

- Loosen the screws (1)
- Remove the housing cover in the direction of the arrow (2)

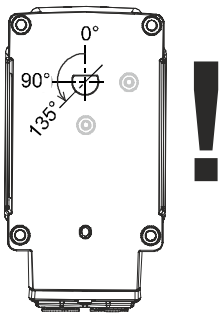


Mounting the SQM40.xx5xxx onto the VKP proportional controlling element (continued)

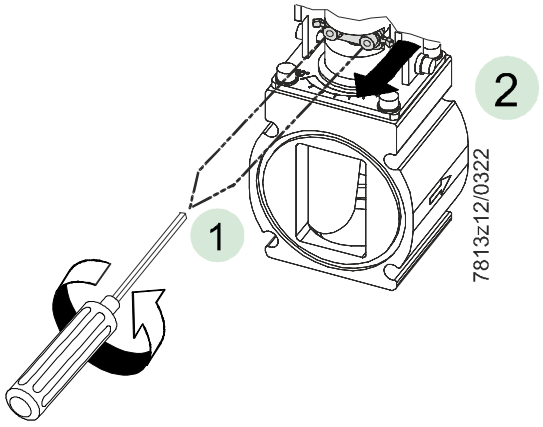
Step 5:
Check the zero position



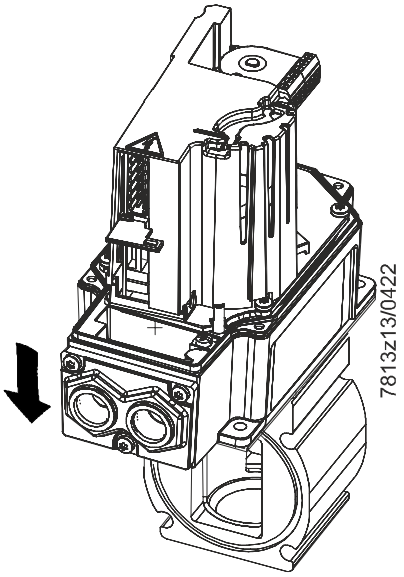
SQM40.xx5xxx
(left, CCW)



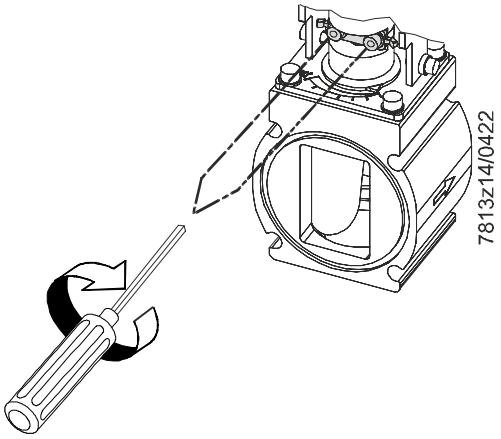
Step 6:
- Loosen the screws (1)
- Pull the plate in the direction of the arrow (2) and mount the SQM40.xx5xxx



Step 7:
Position the SQM40.xx5xxx

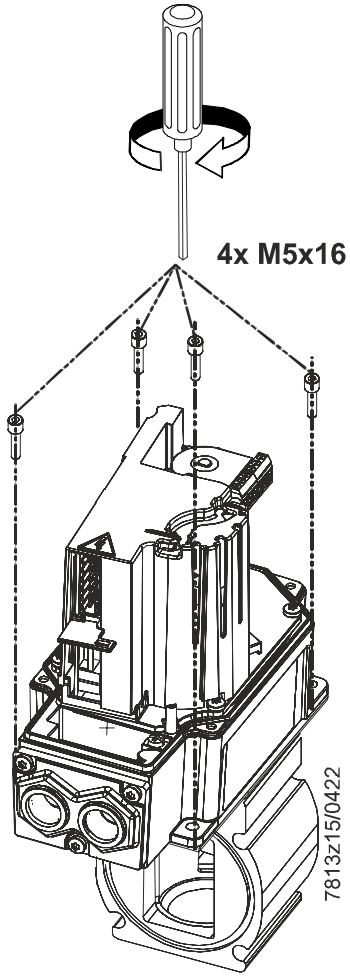


Step 8:
Tighten the screws

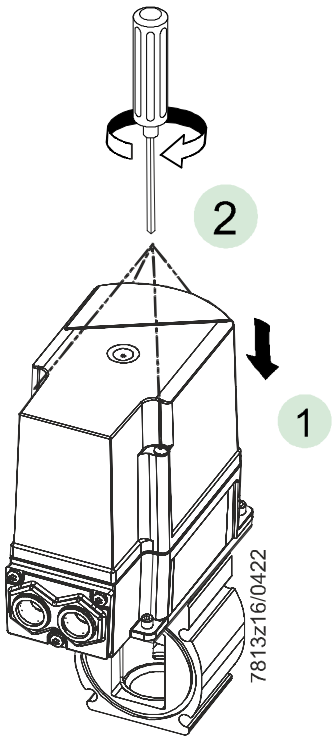


Mounting the SQM40.xx5xxx onto the VKP proportional controlling element (continued)

Step 9:
Screw the SQM40.xx5xxx to the plate



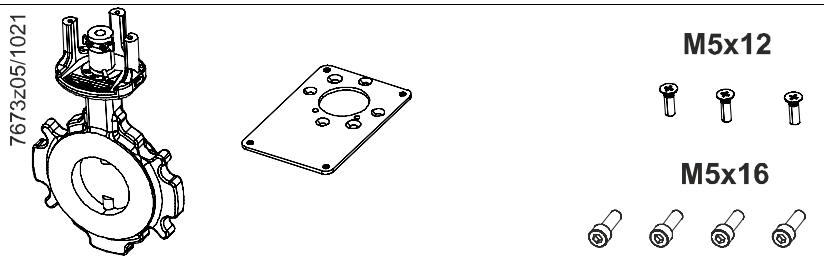
Step 10:
- Fit the housing cover in the direction of the arrow (2)
- Tighten the screws (1)

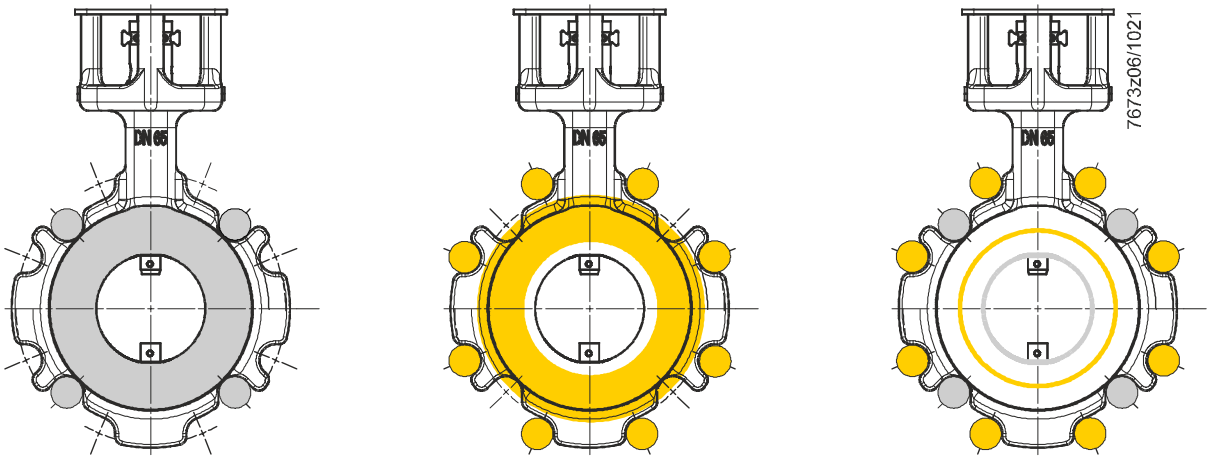


Mounting the SQM40.xx5xxx onto the VKF1x butterfly valve

VKF10 / VKF11

VKF10/VKF11 contents

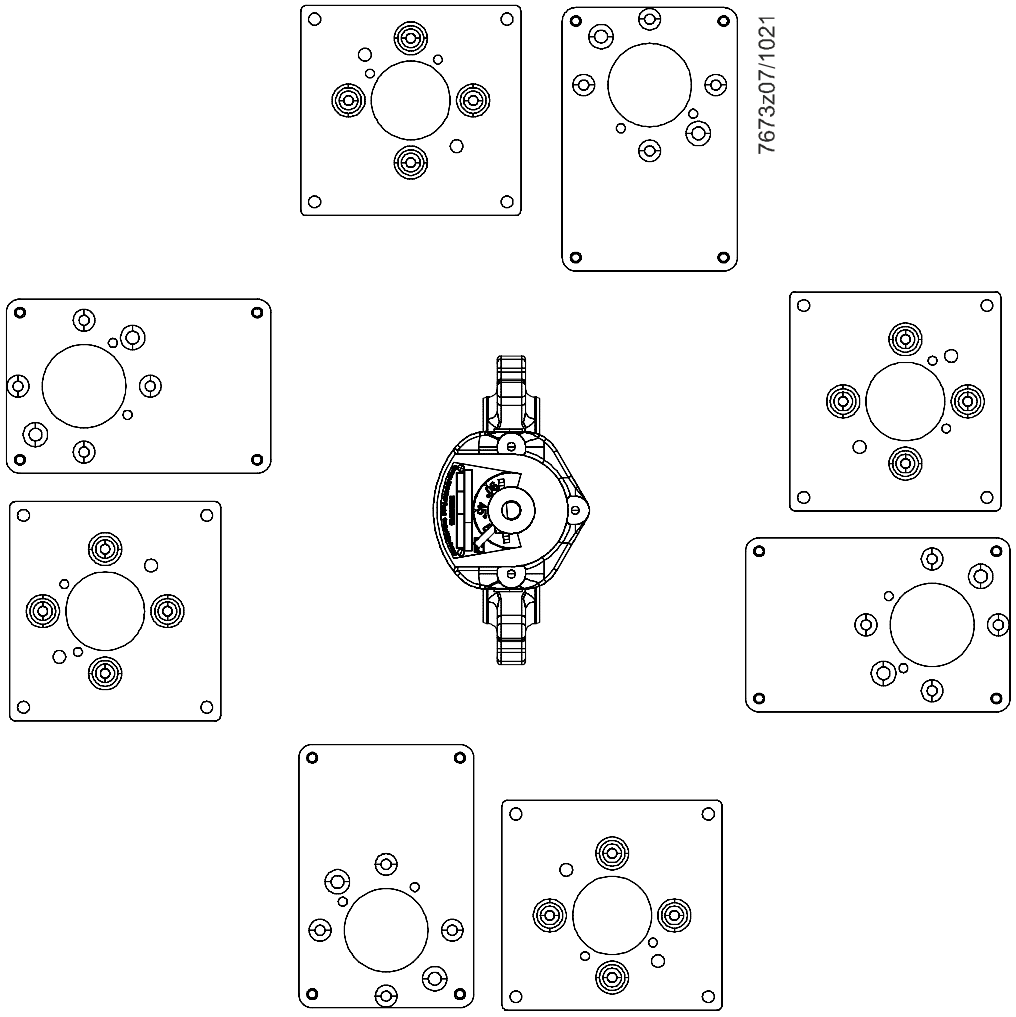


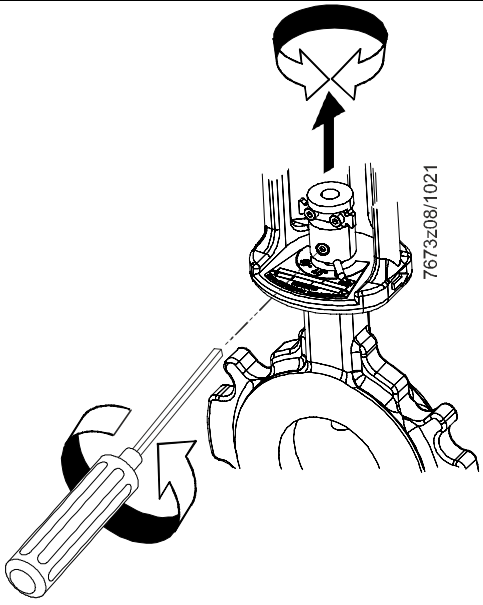


Nominal size	Swing thru	With mechanical stop	Suitable for flange size	Tightening torque	Mounting			
DN					DN ISO	DN ASME	DN+1 ISO	DN+1 ASME
32	VKF10.032	VKF11.032	DN32 + DN40	450 in-lb (50 Nm)	4 x M16	4 x ½	4 x M16	4 x ½
40	VKF10.040	VKF11.040	DN40 + DN50	450 in-lb (50 Nm)	4 x M16	4 x ½	4 x M16	4 x 5/8
50	VKF10.050	VKF11.050	DN50 + DN65	450 in-lb (50 Nm)	4 x M16	4 x 5/8	4 x M16	4 x 5/8
65	VKF10.065	VKF11.065	DN65 + DN80	450 in-lb (50 Nm)	4 x M16	4 x 5/8	8 x M16	4 x 5/8
80	VKF10.080	VKF11.080	DN80 + DN100	450 in-lb (50 Nm)	8 x M16	4 x 5/8	8 x M16	8 x 5/8
100	VKF10.100	VKF11.100	DN100 + DN125	700 in-lb (80 Nm)	8 x M16	8 x 5/8	8 x M16	8 x ¾
125	VKF10.125	VKF11.125	DN125 + DN150	1400 in-lb (160Nm)	8 x M16	8 x ¾	8 x M20	8 x ¾
150	VKF10.150	VKF11.150	DN150 + DN200	1400 in-lb (160Nm)	8 x M20	8 x ¾	12 x M20	8 x ¾
200	VKF10.200	VKF11.200	DN200	1400 in-lb (160Nm)	12 x M20	8 x ¾	---	---

Mounting the SQM40.xx5xxx onto the VKF1x butterfly valve (continued)

Mounting position of the mounting plate



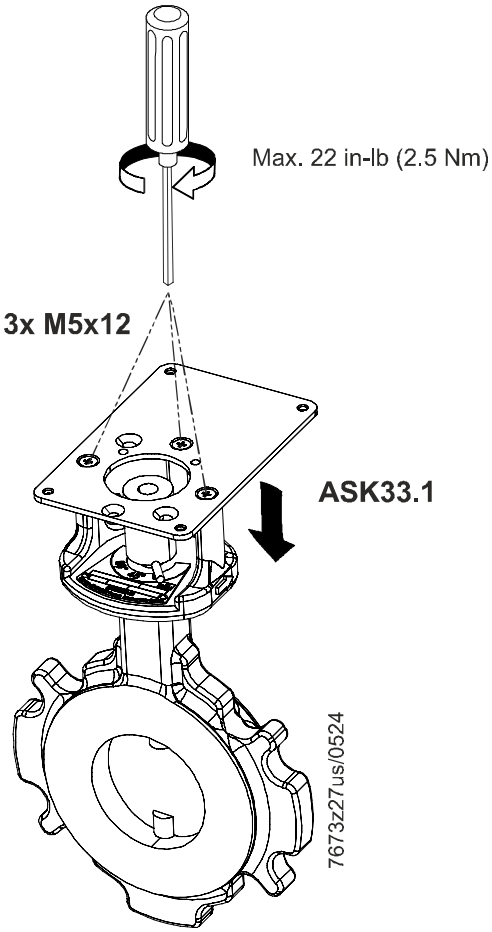


Step 1:
Loosen the screw. Align the coupling to suit the mounting position of the mounting plate. Tighten the screw again (max. 18 in-lb (2 Nm)).

Mounting the SQM40.xx5xxx onto the VKF1x butterfly valve (continued)

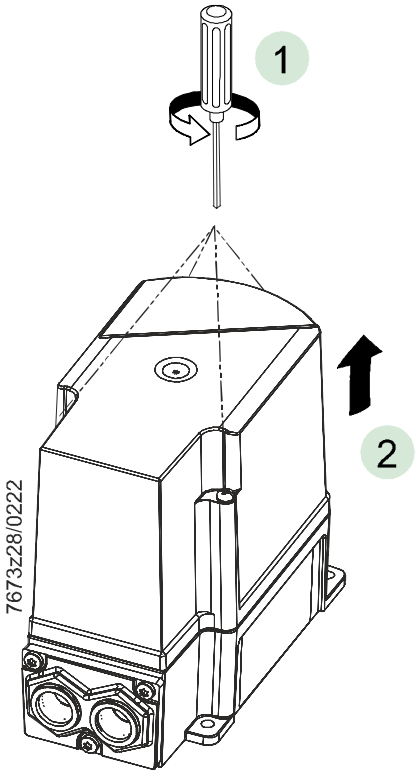
Step 2:

- Place the ASK33.1 mounting plate in the direction of the arrow
- Tighten the screws (M5)



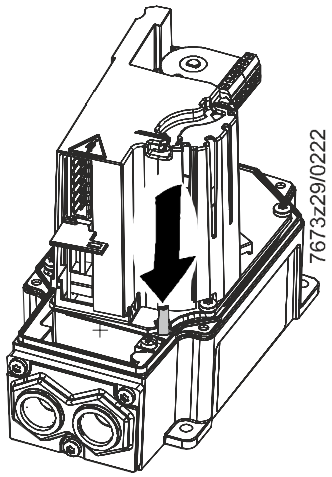
Step 3:

- Loosen the screws (1)
- Remove the housing cover in the direction of the arrow (2)

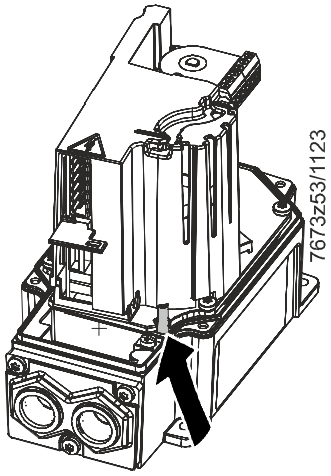


Mounting the SQM40.xx5xxx onto the VKF1x butterfly valve (continued)

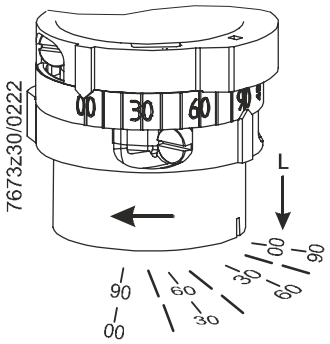
Step 4:
Press the pressure pin down to release the coupling.



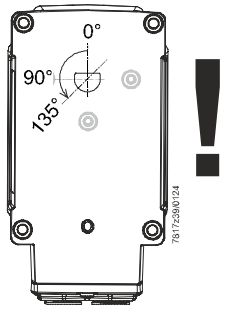
Step 5:
Then move the pressure pin towards the flattened side to fix the pressure pin in this position.



Step 6:
Check the zero position.



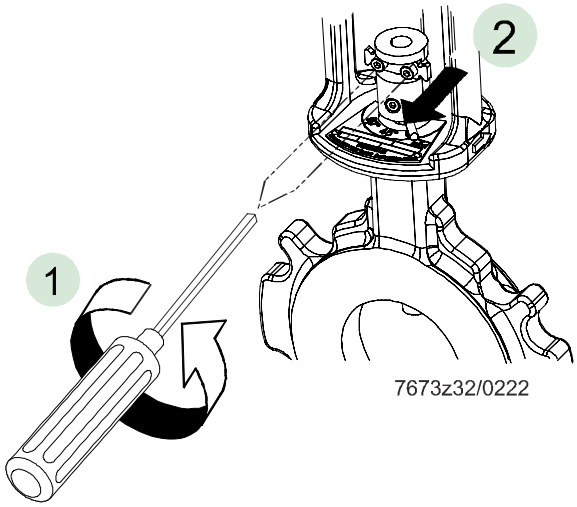
SQM40.xx5xxx (left, CCW)



Mounting the SQM40.xx5xxx onto the VKF1x butterfly valve (continued)

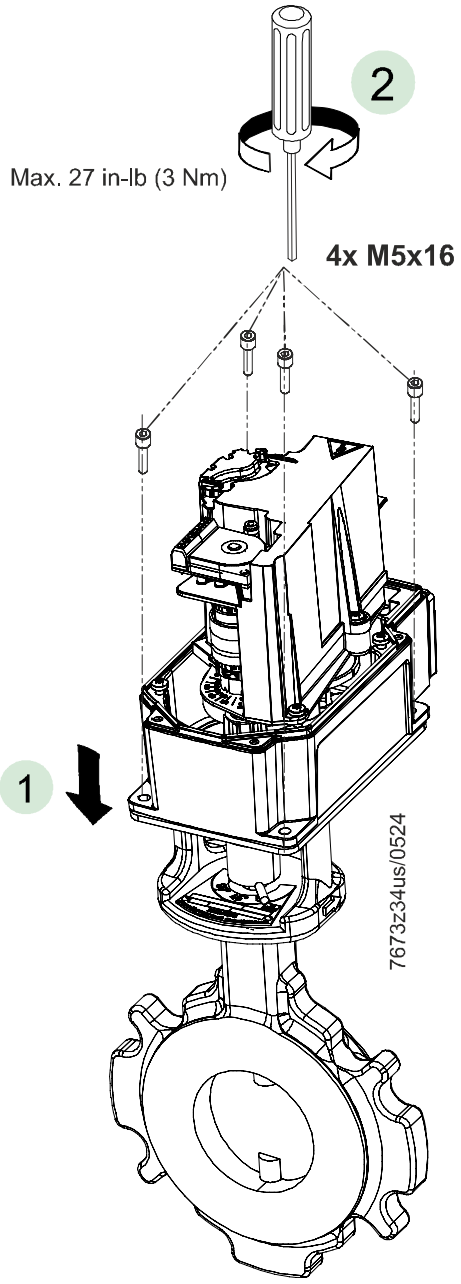
Step 7:

- Loosen the screws (1)
- Pull the plate in the direction of the arrow (2) so that the D-shaft of the SQM40.xx5xxx can be pushed into the coupling. Then fit the SQM40.xx5xxx

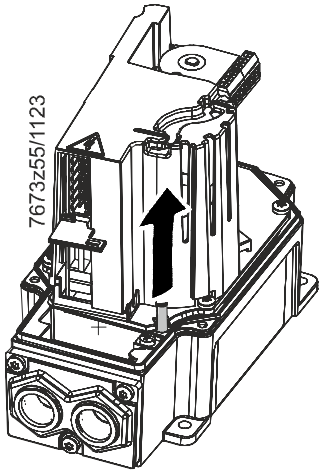


Step 8:

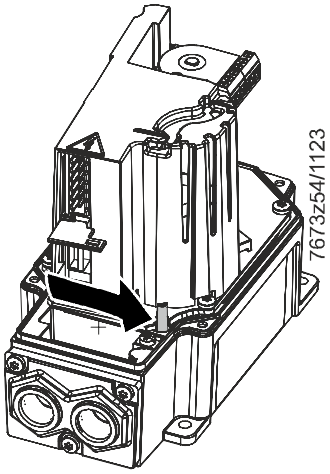
- Position the SQM40.xx5xxx in the direction of the arrow (1)
- Screw the SQM40.xx5xxx onto the plate (2)



Step 9:
Lock the coupling while loosening the pressure pin.



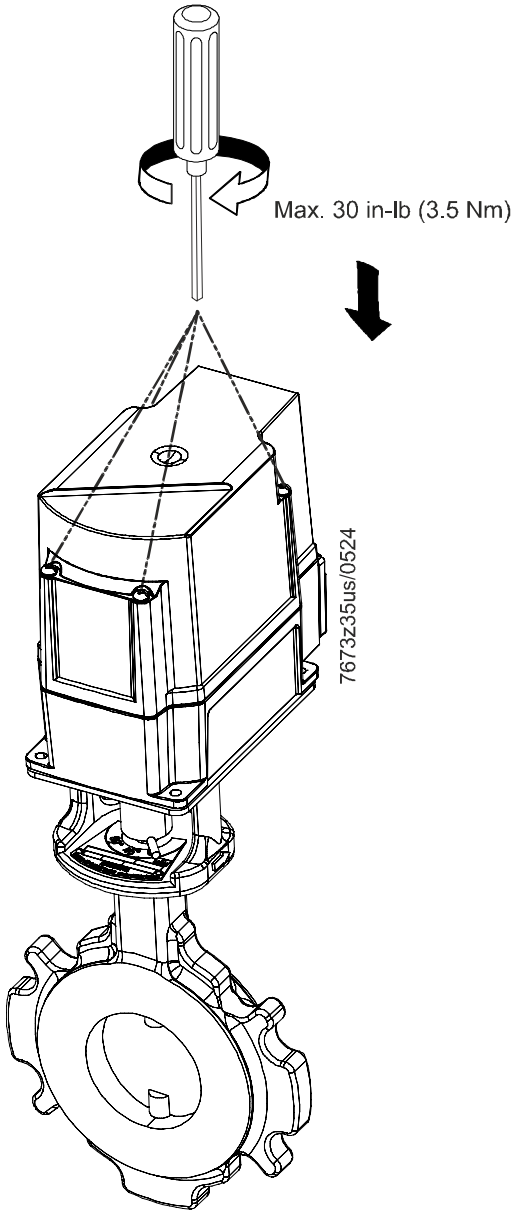
Step 10:
Move the pressure pin away from the flattened side to release the pressure pin from the lock and thus fix the coupling.



Mounting the SQM40.xx5xxx onto the VKF1x butterfly valve (continued)

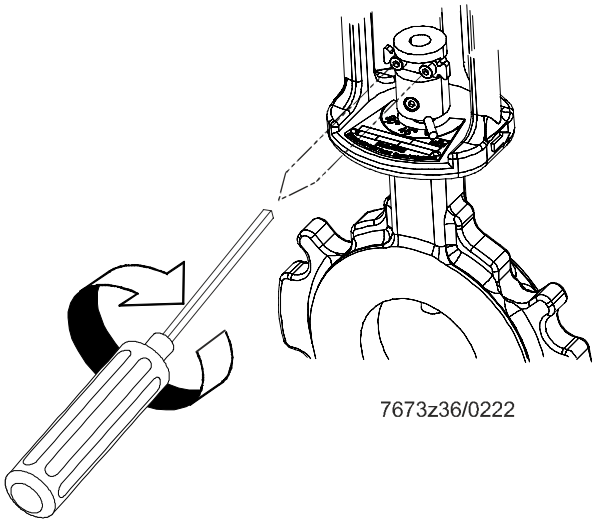
Step 11:

- Fit the housing cover in the direction of the arrow
- Tighten the screws



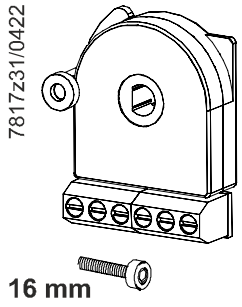
Step 12:

Tighten the screws (max. 18 in-lb (2 Nm)).



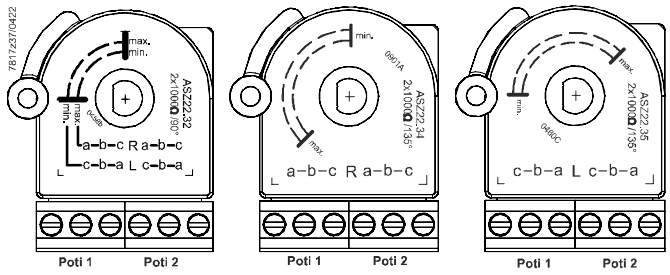
Installation of the ASZ22.3x

Double potentiometer → SQM40/SQM41



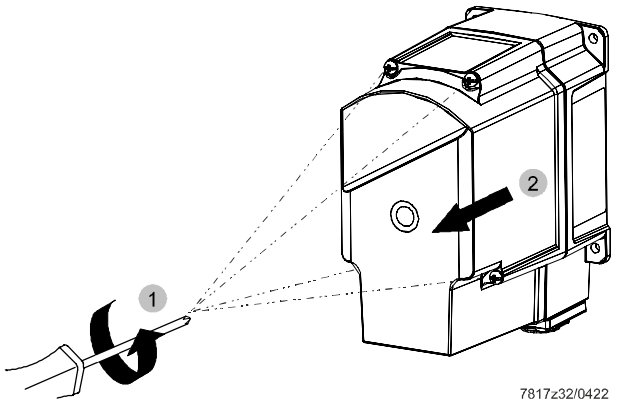
ASZ22.32 → SQM40 / SQM41	2x 1000 Ω, 90°
ASZ22.34 → SQM41	2x 1000 Ω, 135°
ASZ22.35 → SQM40	2x 1000 Ω, 135°

Step 1:
Select potentiometer.



Step 2:

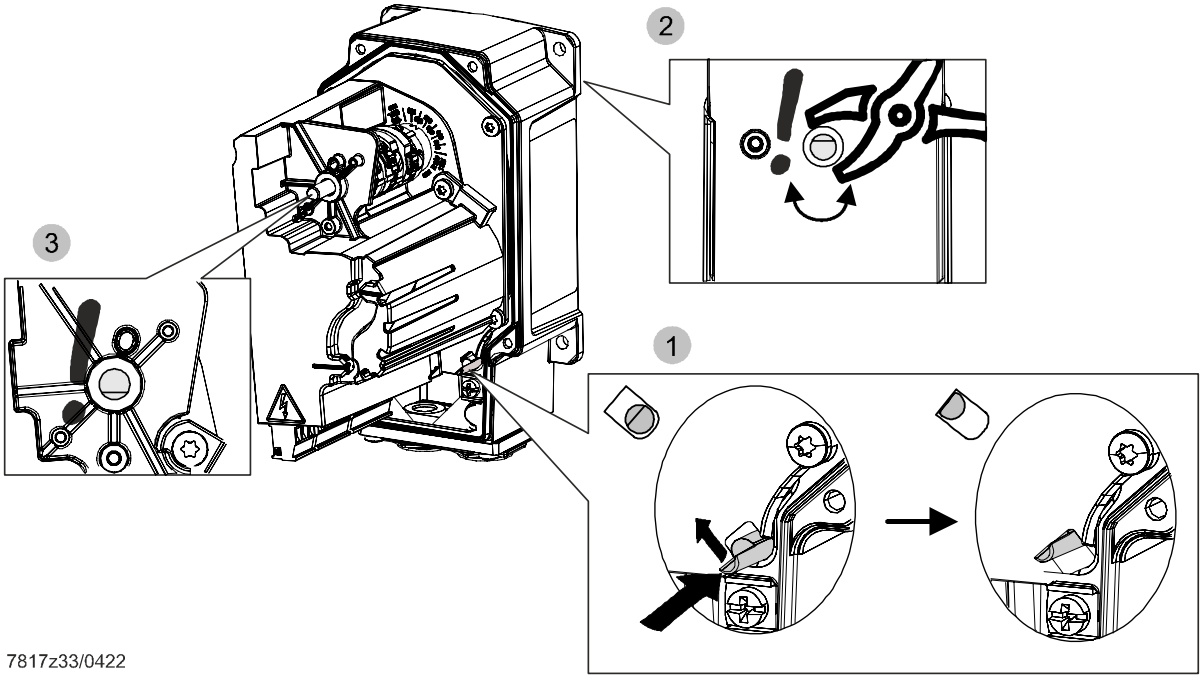
- Loosen the screws (1)
- Remove the housing cover in the direction of the arrow (2)



Installation of the ASZ22.3x (continued)

Step 3:

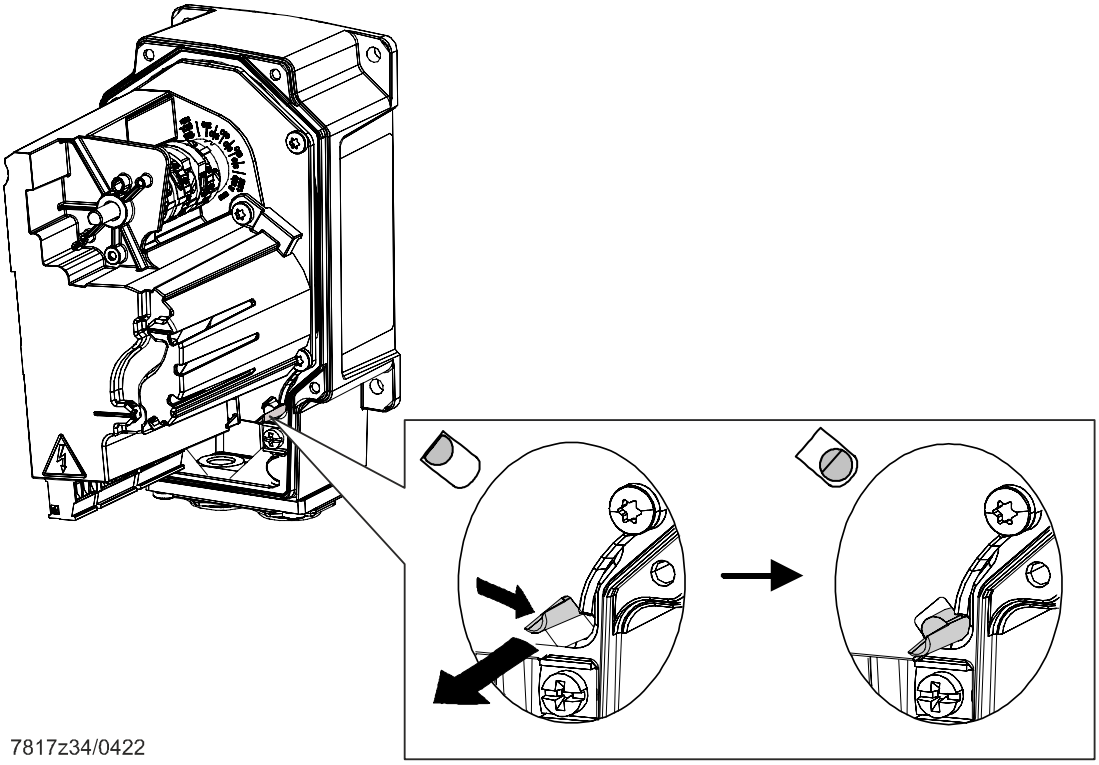
- Disengage (1)
- Turn the shaft (2) until the flattened side at the mounting point for the potentiometer (3) points downwards



7817z33/0422

Step 4:

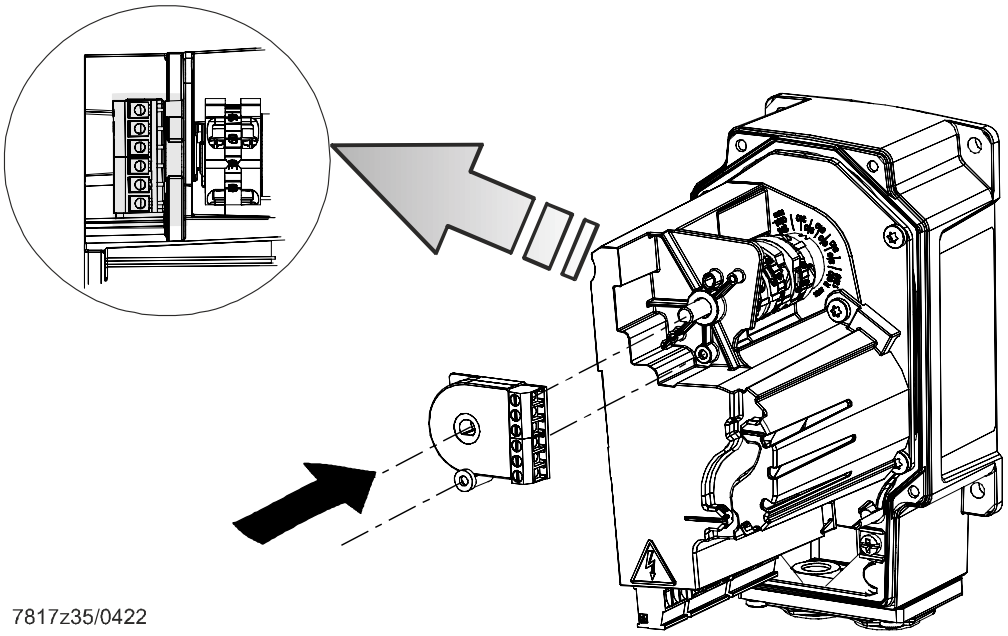
Engage



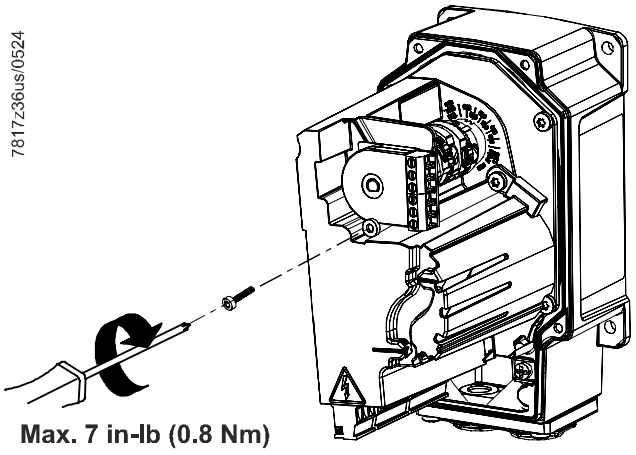
7817z34/0422

Installation of the ASZ22.3x (continued)

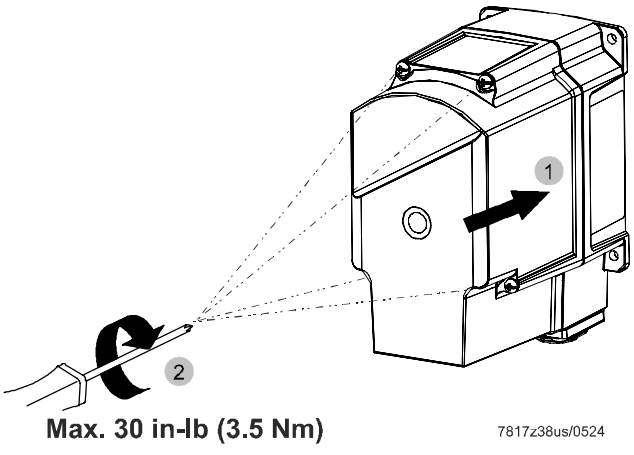
Step 5:
Push the potentiometer onto the shaft as far as it will go.



Step 6:
Tighten the screws (max. 7 in-lb (0.8 Nm)).



Step 7:
- Fit the housing cover in the direction of the arrow (1)
- Tighten the screws (2) (maximum 30 in-lb (3.5 Nm))



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