Rotary actuators for butterfly valves
- **Torque 90 ... 3500 Nm**
- **Nominal voltage AC 230 V**
- **Control: Open-close or 3-point**
- **2 Auxiliary switches**

Overview of types

Type	Torque (Nominal torque)	Running time	Power consumption In operation	Power consumption For wire sizing	Current consumption	Connection flange	Weight
SY2-230-3-T	**90 Nm** [1]	17 s	40 W [2]	115 VA	0.5 A	ISO 5211 / F07	Approx. 11 kg
SY3-230-3-T	**150 Nm** [1]	26 s	40 W [2]	115 VA	0.5 A	ISO 5211 / F07	Approx. 11 kg
SY4-230-3-T	**400 Nm** [1]	18 s	120 W [2]	138 VA	0.6 A	ISO 5211 / F10	Approx. 22 kg
SY5-230-3-T	**500 Nm** [1]	25 s	120 W [2]	161 VA	0.7 A	ISO 5211 / F10	Approx. 22 kg
SY6-230-3-T	**650 Nm** [1]	31 s	120 W [2]	184 VA	0.8 A	ISO 5211 / F10	Approx. 22 kg
SY7-230-3-T	**1000 Nm** [1]	55 s	180 W [2]	368 VA	1.6 A	ISO 5211 / F14	Approx. 36 kg
SY8-230-3-T	**1500 Nm** [1]	55 s	220 W [2]	460 VA	2 A	ISO 5211 / F14	Approx. 36 kg
SY9-230-3-T	**2000 Nm** [1]	70 s	180 W [2]	368 VA	1.6 A	ISO 5211 / F16	Approx. 72 kg
SY10-230-3-T	**2500 Nm** [1]	70 s	220 W [2]	460 VA	2 A	ISO 5211 / F16	Approx. 72 kg
SY11-230-3-T	**3000 Nm** [1]	70 s	250 W [2]	368 VA	1.6 A	ISO 5211 / F16	Approx. 72 kg
SY12-230-3-T	**3500 Nm** [1]	70 s	300 W [2]	506 VA	2.2 A	ISO 5211 / F16	Approx. 72 kg

[1] @ Nominal voltage
[2] @ Nominal torque

Technical data

Electrical data	Nominal voltage	AC 230 V, 50/60 Hz
	Nominal voltage range	AC 198 ... 253 V
	Power consumption	See «Overview of types»
	Current consumption	See «Overview of types»
	Auxiliary switches	2 x SPDT, 5 A, AC 230 V I ⏚ Switching points: 90°∢ adjustable
	Connection	Terminals, 2 x 1.5 mm² or 1 x 2.5 mm²
	Parallel operation	Not possible
Functional data	Torque (nominal torque)	See «Overview of types»
	Manual override	Temporary with handwheel (not revolving)
	Angle of rotation	90°∢ (internal limit switch)
	Running time	See «Overview of types»
	Duty cycle	30% (e.g. 17 s / 40 s)
	Sound power level	Max. 70 dB (A)
	Position indication	Mechanical (integrated)
Safety	Protection class	I Protective earth ⏚
	Degree of protection	IP67
	EMC	CE according to 2004/108/EC
	Low-voltage directive	CE according to 2006/95/EC
	Certification	Tested in accordance with EN 61000-6-1 : 2007 EN 61000-6-3 : 2007
	Mode of operation	Type 1
	Control pollution degree	4

Technical data *(continued)*

Safety	Ambient temperature	–20 ... +65°C
	Medium temperature	–20° ... +120°C (in the butterfly valve) Max. 130°C / 1 h
	Non-operating temperature	–30 ... +80°C
	Ambient humidity	95% r.h., non-condensating
	Maintenance	Maintenance-free
Mechanical data	Connection flange	See «Overview of types»
	Housing material	Cast aluminium
Dimensions / Weight	Dimensions	See «Dimensions» on page 3
	Weight	See «Overview of types»

Safety notes

- **The actuator has been designed for use in stationary heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.**
- **Caution: Power supply voltage!**
- **It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **The device does not contain any parts that can be replaced or repaired by the user.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Simple direct mounting
Simple direct mounting on the butterfly valve. The mounting position in relation to the butterfly valve can be selected in 90°∢ steps.

Manual override
The butterfly valve can be closed (turn clockwise) and opened (turn anticlockwise) with the handwheel. The handwheel does not move while the motor is running. The butterfly valve remains in its position as long as no voltage is applied.

Internal heating
An internal heater prevents condensation buildup.

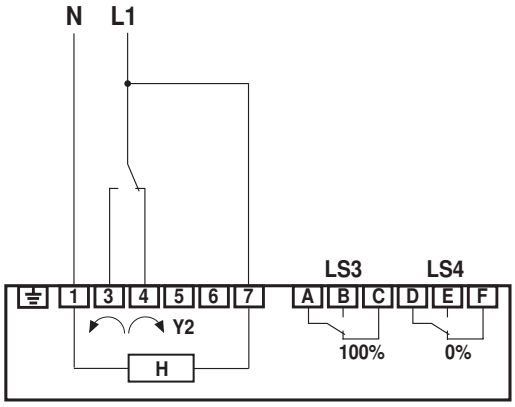
High functional reliability
Mechanical stops limit the actuator to –2° and 92°∢. The internal limit switches interrupt the voltage supply to the motor. In addition, a motor thermostat provides overload protection because at 135°C it interrupts the voltage supply.

Combination butterfly valve actuators
Refer to the butterfly valve documentation for suitable butterfly valves, their permitted media temperatures and closing pressures.

Electrical installation

Wiring diagrams

Note
Caution: Power supply voltage!



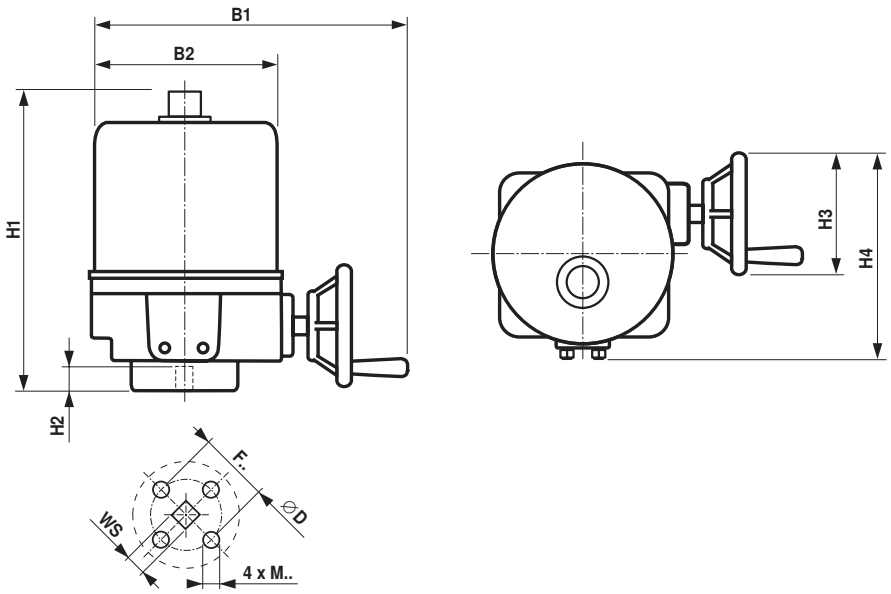
Y2 = 0%	LS3	LS4
1 4	A B C	D E F

H Internal heating

LS3 Auxiliary switch 100% (butterfly valve open)
LS4 Auxiliary switch 0% (butterfly valve closed)

Dimensions [mm]

Dimensional drawings



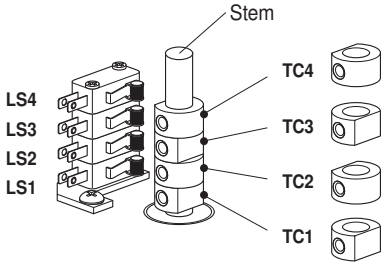
Type	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]	B1 [mm]	B2 [mm]	F.. ISO 5211	D [mm]	WS [mm]	M..
SY2 ... 3-230-3-T	255	30	123	208	326	180	F07	70	22	M8
SY4 ... 6-230-3-T	317	40	194	294	394	217	F10	102	35	M10
SY7 ... 8-230-3-T	406	45	295	336	347	217	F14	140	36	M16
SY9 ... 12-230-3-T	554	57	398	402	455	261	F16	165	36	M20

Settings

Setting cam

Important!
Settings are only allowed to be made by authorised specialist personnel.

The setting cams for limit and auxiliary switches can be accessed by removing the housing cover. Optionally, auxiliary switches LS4 / LS3 can be connected for signalling.
Limit switches LS2 / LS1 interrupt the voltage to the motor and are controlled by setting cams TC.. . The setting cams turn with the stem. The butterfly valve closes when the stem is turning clockwise (cw) and opens when the stem is turning counterclockwise (ccw).



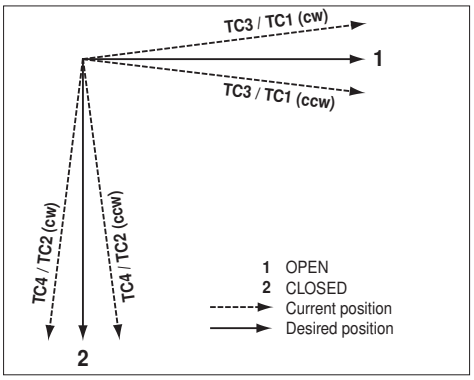
Settings of setting cams TC..

- TC4 for auxiliary switch position closed (factory setting 3°◁).
- TC3 for auxiliary switch position open (factory setting 87°◁).
- TC2 for limit switch closed (factory setting 0°◁).
- TC1 for limit switch open (factory setting 90°◁).

Settings *(continued)*

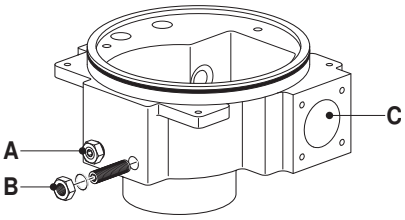
Adjusting setting cams

1 Use a 2.5 mm Allen key to unscrew the corresponding setting cams TC..
2 Turn the setting cam using the Allen key
3 Set as shown in the illustration below
4 Use the Allen key to tighten the corresponding setting cams



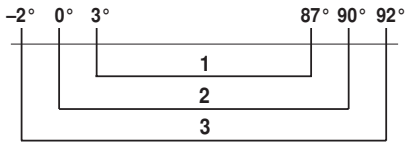
Mechanical angle of rotation limitation

The mechanical angle of rotation is set at the factory to 94°∢ and cannot be changed.
The handwheel is rotated by means of a worm gear in a planetary gear unit. The gearing is stopped mechanically by means of two setscrews **A** und **B** (1½ rotations of the setscrews correspond to 2°∢).
Both limit switches LS 2 /LS 1 are set to 90°∢ and must always switch off the motor before the mechanical angle of rotation limitation.



A Angle of rotation limiting OPEN (90°∢)
B Angle of rotation limiting CLOSED (0°∢)
C Connection of handwheel for angle of rotation limiting

Relationship between mechanical angle of rotation limiting, limit and auxiliary switches



1 Auxiliary switch TC3 / TC4
2 Limit switch TC1 / TC2
3 Mechanical angle of rotation limitation (A + B)

Further documentations

- Complete overview «The complete range of water solutions»
- Data sheets, butterfly valves
- Installation instructions for actuators and/or butterfly valves, respectively
- Notes for project planning (hydraulic characteristic curves and circuits, installation regulations, commissioning, maintenance, etc.)