

GEMÜ LSC

Limit switch box for quarter turn actuators



Features

- Adjustable switch point tolerances
- Compact, solid housing
- Can be attached to all quarter turn valves in accordance with the VDI/VDE 3845 standard interface
- Simple mounting and retrofitting to quarter turn actuators
- Up to four position feedback messages
- Solenoid valve connection (optional)
- 3D optical position indicator (optional)
- Option with LED indication
- Low temperatures to -40 °C (optional)

Description

The GEMÜ LSC limit switch box is suitable for mounting to manually and pneumatically operated quarter turn valves. It is also fitted with an optical position indicator for visual confirmation of position.

Technical specifications

- **Ambient temperature:** -25 to 80 °C
- **Radial measuring range:** 0 to 90°
- **Supply voltages:** 5–250 V AC/DC
- **Protection class:** IP66. IP67
- **Electrical connection types:** Plug, Harting I Plug, Hirschmann I M20 cable gland I M12 plug I NPT threaded connection
- **Switch types:** Reed contact I Microswitch I 2-wire proximity switch (NAMUR) I 3-wire proximity switch
- **Conformities:** ATEX I EAC I Functional safety I IECEx

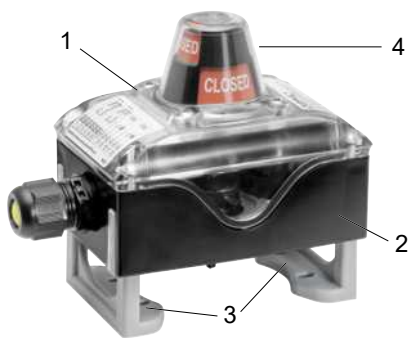
Technical data depends on the respective configuration



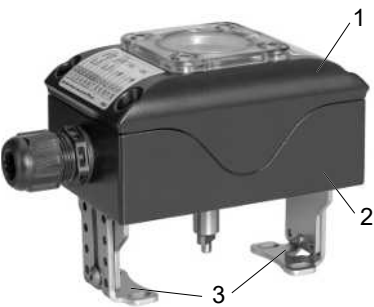
further information
webcode: GW-LSC



Product description



Item	Name	Materials
1	Housing cover	PC or Vestamid (ATEX version)
2	Housing base	PA6 or Vestamid (ATEX version)
3	Mounting kit	Code KK = PA6 Code KE, AE = Stainless steel 1.4305
4	3D display (option code 4D)	PC or Vestamid (ATEX version)
	Seals	EPDM, NBR



Item	Name	Materials
1	Housing cover	Aluminium
2	Housing base	Aluminium
3	Mounting kit	Stainless steel 1.4305
	Seals	EPDM, NBR

Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Products ordered with **bold marked ordering options** are so-called preferred series.

Order codes

1 Type	Code
Limit switch box for quarter turn valves	LSC
2 Switch	Code
Change-over contact, microswitch, 5-250V AC/DC ZF, D41X-SPDT, gold contacts	104
Change-over contact, microswitch, 12-250V AC/DC ZF, D44X-SPDT	105
Change-over contact, microswitch, 24-250 V AC/DC CROUZET, 83161.8-DPDT Gold: 0.1 A (250 V AC), 0.1 A (24V DC) Silver: 10 A (250 V AC), 2.5 A (24V DC)	108
Change-over contact, microswitch, 12-250V AC/DC ZF, D44X-DPDT	109
Change-over contact, microswitch, ATEX ia ZF, D41X-SPST Ui:30VDC/li:15mA/Pi:35mW	110
Change-over contact, microswitch, 5-250V AC/DC ZF, D41X-DPDT, gold contacts	111
Change-over contact, microswitch 24-250V AC/DC, ATEX de,t Bartec, 07-1511-1030	120
Change-over contact, microswitch 24-250V AC/DC, ATEX de,t Bartec, 07-1511-3530	121
Change-over contact, microswitch, 24-250 V AC/DC, ATEX de,t Crouzet, 831391-SPDT	122
Proximity switch, 2-wire, NAMUR, ATEX ia IFM, NS5002	205
Proximity switch, 2-wire, break contact/make contact, PNP/NPN, 5-36VDC IFM, IS5026	207
Proximity switch, 2-wire, NAMUR, ATEX ia P+F, SJ 3.5 N	208
Proximity switch, 2-wire, NAMUR, ATEX ia P+F, NJ2-V3-N	209
Proximity switch, 2-wire, NAMUR, ATEX ia P+F, NJ2-12GK-SN	212
Proximity switch, 2-wire, make contact, 5-60VDC P+F, NBB3-V3-Z4	213
Proximity switch, 2-wire, NAMUR, ATEX ia P+F, NJ3-18GK-S1N	214
Proximity switch, 2-wire, make contact, 20-250V AC Turck, BI2-Q10S-AZ31X	220
Proximity switch, 2-wire, make contact, 3.7–30 V DC P+F, NBB2-V3-Z4L	222
Proximity switch, 3-wire, make contact, PNP, 10-30VDC IFM, IS5001	305
Proximity switch, 3-wire, make contact, PNP, 10-30VDC P+F, NBB2-V3-E2	306

2 Switch	Code
Proximity switch, 3-wire, make contact, NPN, 10-36VDC IFM, IS5003	320
Proximity switch, 3-wire, dual make contact, PNP, 10-30VDC, ATEX tb, tc IFM, IN511A	322
Reed sensor, 3-wire, SPDT-CO (form C), 30 V AC/DC, ZF, MP200703	R01

3 Accessory	Code
Accessory	Z

4 Housing/mounting kit material	Code
Plastic housing	KK
Plastic mounting kit	
Plastic housing	KE
Stainless steel mounting kit	
Aluminium housing	AE
Stainless steel mounting kit	
Plastic housing for manually operated ball valves	KM

5 Electrical connection	Code
M12 plug, 5-pin	1112
M12 plug, 8-pin	12MA
M20 x 1.5 for 1 solenoid valve connection with 500 mm cable	
M20 x 1.5 cable gland, plastic	3101
M20 x 1.5 cable gland, stainless steel	3107
M20 x 1.5 cable gland, nickel-plated brass	3112
M20 x 1.5 cable gland, plastic M20 x 1.5 for 1 solenoid valve connection with 500 mm cable	31MA
M20 x 1.5 cable gland, plastic M20 x 1.5 for 2 solenoid valve connections with 500 mm cable	31MB
NPT ½ threaded connection	3201
2 x NPT ½ threaded connection	32MN
Hirschmann plug N6RAM	HM6R
Harting plug HS25199 Housing: Han 3A-EG-QB-M20 Pin: Han 7D-STI-C Crimp contact: R 15-STI-C-1 QMM (AU)	HM7D
Harting plug PE-HSM20-8PM Housing: Han 3M-eg-QB-M20 Pin: Han 8D-M Crimp contact: R 15-STI-C-1,5 QMM	HM8D

Order data

6 Option	Code
Without	00
3D display with pressure compensating element for outdoor use	3A
3D display	3D
3D display for L-port	3L
Large 3D display	4D
Pressure compensating element for outdoor use	DA

6 Option	Code
Extended ambient temperature -25 °C to +120 °C	HT
LED display for OPEN/CLOSE max. 24VDC	LD
Extended ambient temperature -40 °C.....	NT

7 SIL	Code
SIL 1–3 (IEC 61508:2010)	S

8 Approval	Code
Without	
ATEX (2014/34/EU), IECEx	X

Order example

Ordering option	Code	Description
1 Type	LSC	Limit switch box for quarter turn valves
2 Switch	105	Change-over contact, microswitch, 12-250V AC/DC ZF, D44X-SPDT
3 Accessory	Z	Accessory
4 Housing/mounting kit material	KK	Plastic housing Plastic mounting kit
5 Electrical connection	3101	M20 x 1.5 cable gland, plastic
6 Option	00	Without
7 SIL	S	SIL 1–3 (IEC 61508:2010)
8 Approval		Without

Technical data

Temperature

Ambient temperature:

Switch (code)	Housing material	
	Polyamide/aluminium	Vestamid/aluminium (ATEX version)
104, 105, 108, 109, 111, R01	-25 – 80 °C	-
207, 213, 220, 222, 305, 306, 320	-25 – 70 °C	-
120, 121, 122, 322	-	Vestamid: -20 – 40 °C Aluminium: -20 – 60 °C
110, 205*, 208, 209, 212, 214	-	-25 – 70 °C

*Switch (code 205) to -20 °C

Storage temperature:

Switch (code)	Housing material	
	Polyamide/aluminium	Vestamid/aluminium (ATEX version)
104, 105, 108, 109, 111, R01	-25 – 80 °C	-
207, 213, 220, 222, 305, 306, 320	-25 – 70 °C	-
120, 121, 122, 322	-	Vestamid: -20 – 40 °C Aluminium: -20 – 60 °C
110, 205*, 208, 209, 212, 214	-	-25 – 70 °C

*Switch (code 205) to -20 °C

Product conformities

EMC Directive: 2014/30/EU

Explosion protection: ATEX (2014/34/EU) and IECEx, order code Special version X

ATEX marking: **Switch: Code 110, 205, 208, 209, 212, 214**

Gas:  II 2G Ex ia IIC / IIB T6 / T4 Gb
Dust:  II 2D Ex ia IIIC T80°C / T110°C Db
Certificate: IBExU 11 ATEX 1154

For the 31MA or 31MB electrical connection, only pilot valves/solenoid valves with the Ex ia type of ignition protection may be used.

Switch: Code 120, 121, 122

Gas:  II 2G Ex db eb IIC/IIB T6 Gb
Dust:  II 2D Ex tb IIIC T80 °C Db
Certificate: IBExU 12 ATEX 1022 X

For the 31MA or 31MB electrical connection, only pilot valves/solenoid valves with the Ex d, Ex dm or Ex m types of ignition protection may be used.

Switch: Code 322

Dust:  II 2D Ex tb IIIC T80°C Db
 II 3D Ex tc IIIC T80°C Dc
Certificate: IBExU 12 ATEX 1022 X

For the 31MA or 31MB electrical connection, only pilot valves/solenoid valves with the Ex d, Ex dm or Ex m for Dust-Ex Ex nA types of ignition protection may be used.

IECEx marking: **Switch: Code 110, 205, 208, 209, 212, 214**

Gas:  Ex ia IIC/IIB T6/T4 Gb
Dust:  Ex ia IIIC T80°C/T110°C Db
Certificate: IECEx IBE 13.0042

For the 31MA or 31MB electrical connection, only pilot valves/solenoid valves with the Ex ia type of ignition protection may be used.

Switch: Code 120, 121, 122

Gas:  Ex db eb IIC/IIB T6 Gb
Dust:  tb IIIC T80°C Db
Certificate: IECEx IBE 13.0041 X

For the 31MA or 31MB electrical connection, only pilot valves/solenoid valves with the Ex d, Ex dm or Ex m types of ignition protection may be used.

Switch: Code 322

Dust:  Ex tb IIIC T80°C Db
 Ex ts IIIC T80°C Dc
Certificate: IECEx IBE 13.0041 X

For the 31MA or 31MB electrical connection, only pilot valves/solenoid valves with the Ex d, Ex dm or Ex m for Dust-Ex Ex nA types of ignition protection may be used.

SIL:	Product description:	GEMÜ electrical position indicator LSC
	Type of valve:	A
	Fail safe function:	The end position is reported at the right time within the defined limits.
	HFT (Hardware Fault Tolerance):	0
Further information and calculated values available on request		

Mechanical data

Installation position:	Optional
Weight:	780 g
Protection class:	IP66, IP67 (code AE) IP67 (code KK, KE, KM)
Measuring range radial:	0 to 90 °

Electrical data

Electrical connection type:

M12 plug, 5-pin (code 1112)
 M12 plug, 8-pin and solenoid valve connection (code 12MA)
 M20 x 1.5 cable gland for cables with a diameter of 6 to 12 mm (code 3101)
 M20 x 1.5 stainless steel cable gland for cables with a diameter of 6–12 mm (code 3107)
 M20 x 1.5 nickel-plated brass cable gland for cables with a diameter of 6–12 mm (code 3112)
 M20 x 1.5 cable gland for cables with a diameter of 6 to 12 mm and solenoid valve connection (code 31MA)
 M20 x 1.5 plastic cable gland and two solenoid valve connections (code 31 MB)
 NPT ½ threaded connection (code 3201)
 Two NPT ½ threaded connections (code 32MN)
 Hirschmann plug N6RAM (code HM6R)
 Harting plug HS25199 with housing Han 3A-EG-QB-M20 and pin Han 7D-STI-C as well as crimp contact R 15-STI-C-1 QMM (AU) (code HM7D)
 Harting plug PE-HSM20-8PM with housing Han 3M-eg-QB-M20 and pin Han 8D-M as well as crimp contact R 15-STI-C-1,5 QMM (code HM8D)

Microswitch

Switch type:

Switch (code)	Type
104, 105, 120, 121, 122	SPDT
110	SPST
108, 109, 111	DPDT

Supply voltage:

Switch (code)	Supply voltage
105, 109	12–250 V AC/DC
108, 120, 121, 122*	24–250 V AC/DC
110	30 V DC
104, 111	5–250 V AC/DC

*Code 122 only up to 240 V AC/DC

Current consumption:

Switch (code)	Current consumption
105, 109	250 V AC: 0.1–10 A 24 V DC: 0.1–2.5 A
108	Silver: 250 V AC: 0.1–10 A 24 V DC: 0.1–2.5 A Gold: 250 V AC: 0.01–0.1 A 24 V DC: 0.01–0.1 A
110	15 mA
104, 111	250 V AC: 0.01–0.1 A 24 V DC: 0.01–0.1 A
120	0.1–4 A
121	20–400 mA
122	0.15–4 A

Magnetic reed sensor

Switch type:	Switch (code)	Type
	R01	SPDT-CO

Supply voltage:	Switch (code)	Supply voltage
	R01	Max. 30 V AC/DC

Current consumption:	Switch (code)	Current consumption
	R01	Max. 200 mA

2-wire proximity switch

Switch type:	Switch (code)	Type
	205, 208, 209, 212, 214	2-wire NAMUR
	207, 213, 220, 222	2-wire, make contact

Supply voltage:	Switch (code)	Supply voltage
	205, 208, 209, 212, 214	8.2 V DC
	207	5–36 V DC
	220	20–250 V AC 10–300 V DC
	222	3.7–30 V DC

Current consumption:	Switch (code)	Current consumption
	205	≤ 1 mA (damped) ≤ 2.1 mA (undamped)
	208, 209, 212, 214	≤ 1 mA (damped) ≤ 3 mA (undamped)
	207	Max. 200 mA
	213, 220	Max. 100 mA
	222	Max. 30 mA

3-wire proximity switch

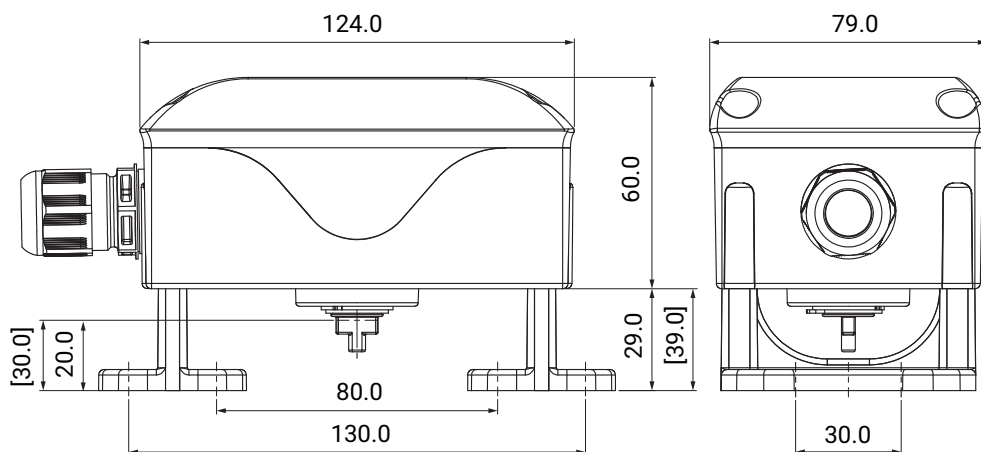
Switch type:	Switch (code)	Type
	305, 306, 322	3-wire, make contact, PNP
	320	3-wire, make contact, NPN

Supply voltage:	Switch (code)	Supply voltage
	305, 306	10 - 30 V DC
	320, 322	10 - 36 V DC

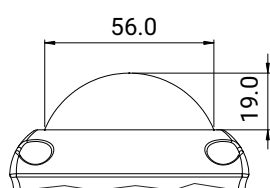
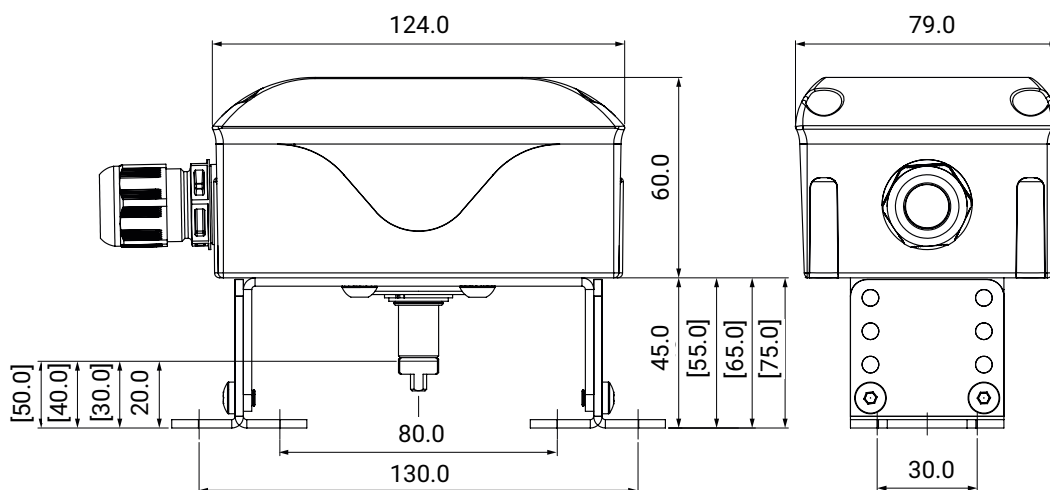
Current consumption:	Switch (code)	Current consumption
	305, 320	Max. 200 mA
	306	Max. 100 mA
	322	Max. 250 mA

Dimensions

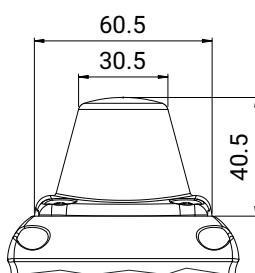
Housing/mounting kit material (code KK)



Housing/mounting kit material (code KE, AE)



"Option" ordering option, code
3D



"Option" ordering option, code
4D

Dimensions in mm

Various borehole patterns are available for installation on the pneumatic quarter turn actuators:

Borehole pattern	Housing/mounting kit material (code KK)	Housing/mounting kit material (code KE, AE)
80 x 30 x 20	X	X
80 x 30 x 30	X	X
130 x 30 x 30	X	X
130 x 30 x 50	-	X

For installation on manually operated valves, an LSC with material code KM and mounting kit LSFS01 must be entered. The correct selection is made via the GEMÜ accessories configurator.

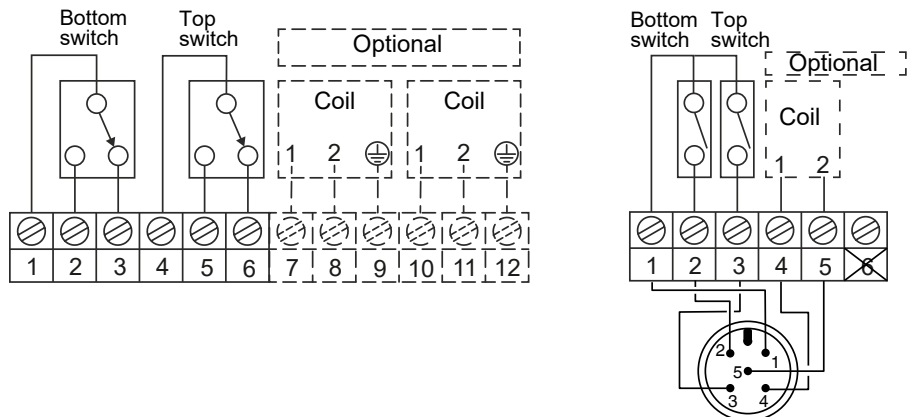
Dimensions in mm

Electrical connection

For explosion-proof applications/designs, please observe the information from the "Product conformities" chapter.

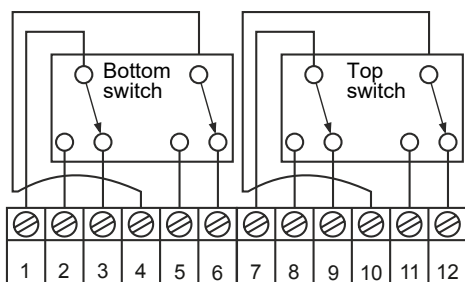
Microswitch

SPDT, switch ordering option, code 104, 105



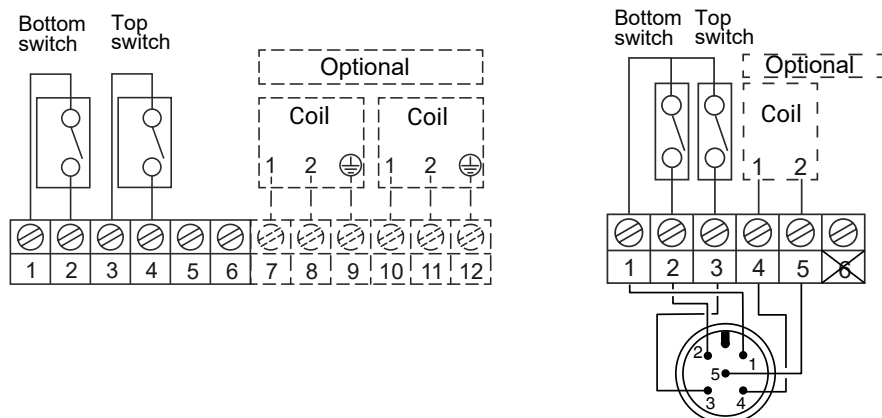
M12 connection options

DPDT, switch ordering option, code 108, 109, 111

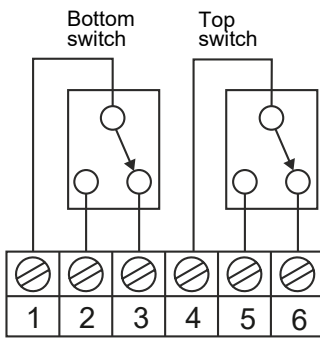


Note: Solenoid valve connection not possible

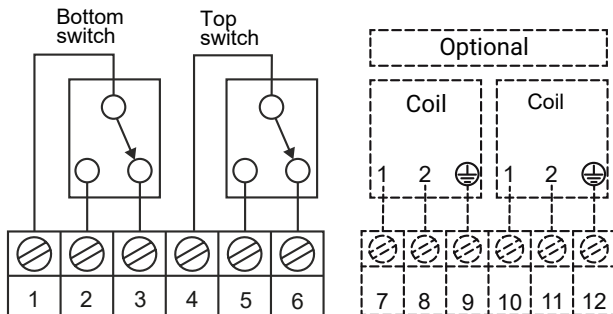
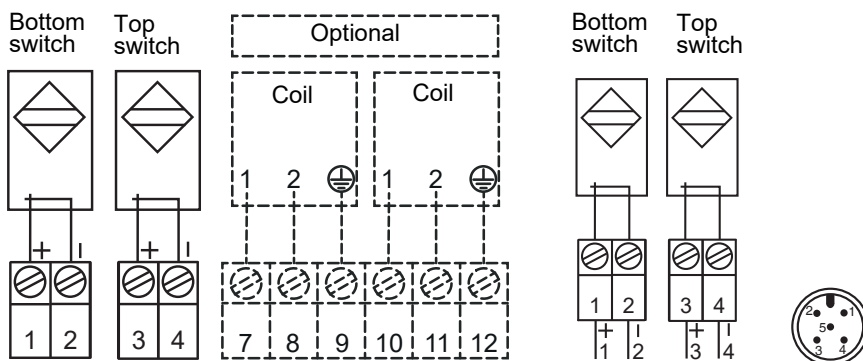
SPST, switch ordering option, code 110



M12 connection options

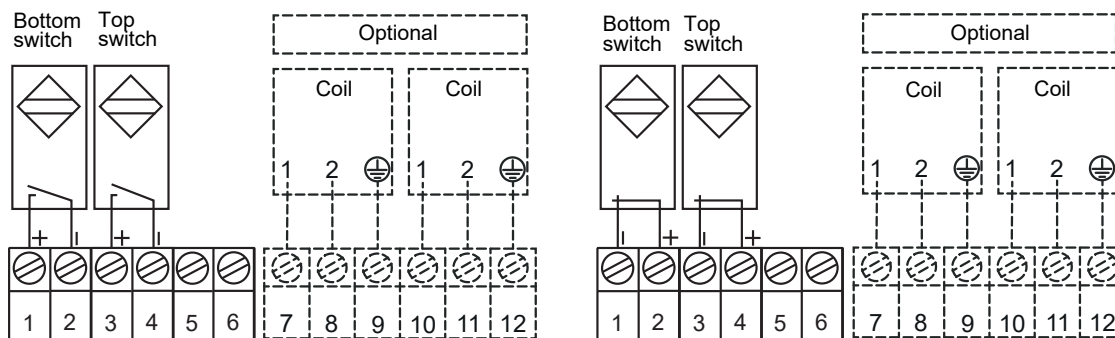
SPDT, switch ordering option, code 120, 121, 122

Note: Solenoid valve connection not possible

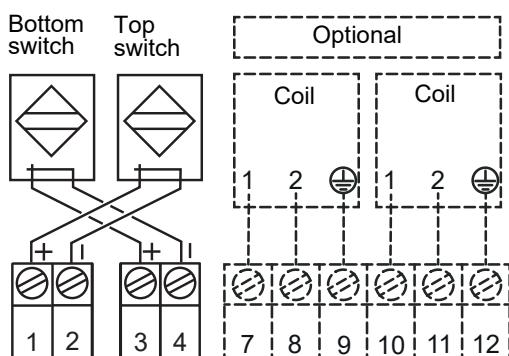
Magnetic reed sensor**SPDT-CO, switch ordering option, code R01****2-wire proximity switch****NAMUR, switch ordering option, code 205, 208, 209**

M12 connection options

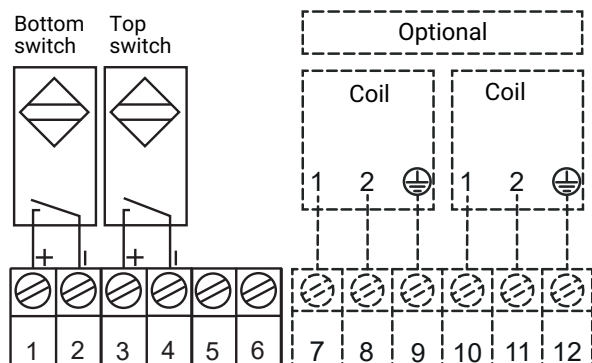
Make contact, switch ordering option, code 207



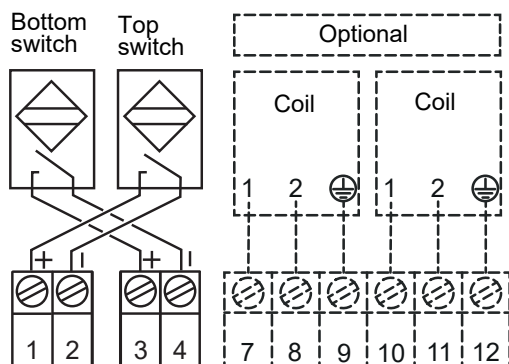
NAMUR, switch ordering option, code 212

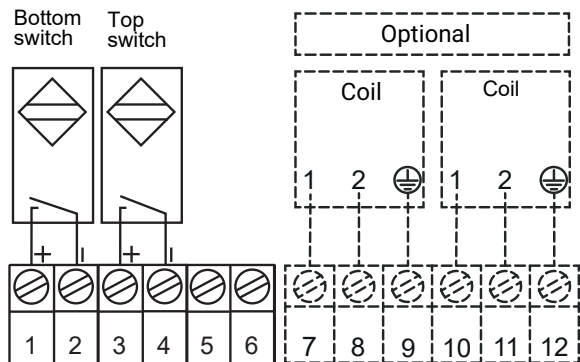
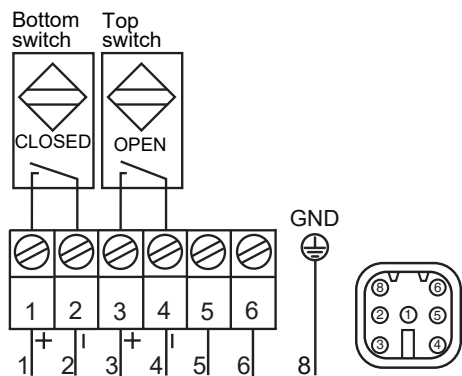
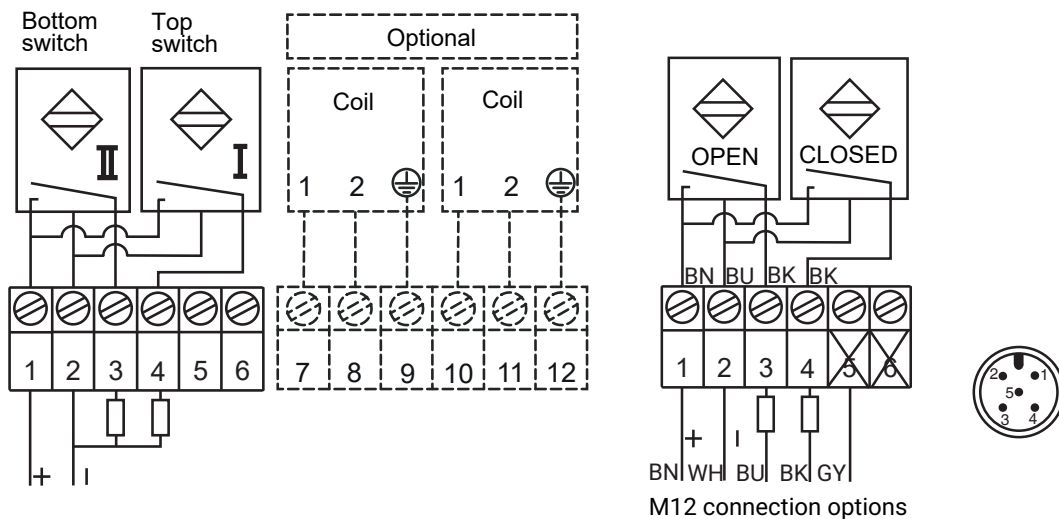


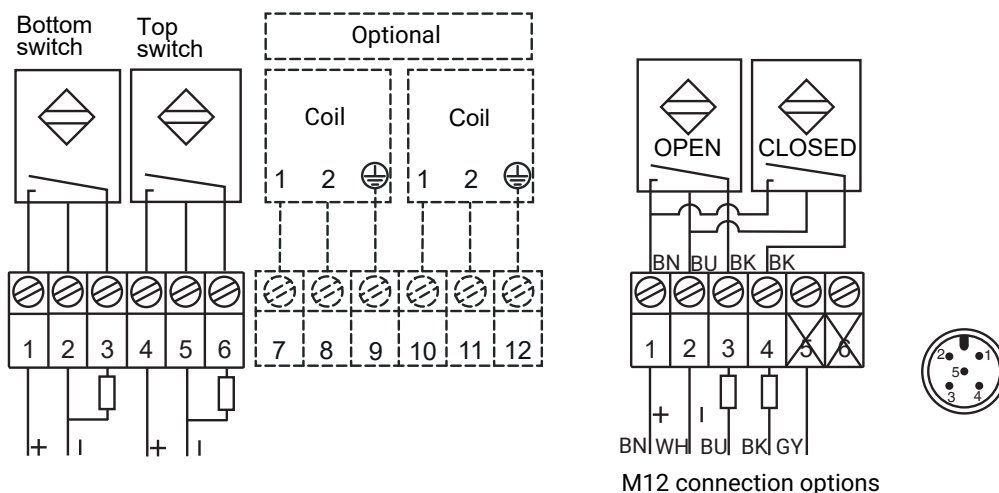
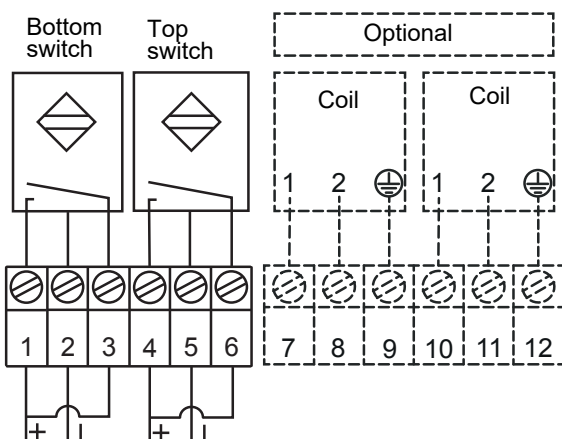
Make contact, switch ordering option, code 213



NAMUR with fail safe function, make contact, switch ordering option, code 214



Make contact, AC/DC, switch ordering option, code 220**Make contact, switch ordering option, code 222 with Harting plug (HM8D)****3-wire proximity switch****Make contact, PNP, switch ordering option, code 305**

Make contact, PNP, switch ordering option, code 306, 322**Make contact, NPN, switch ordering option, code 320****Accessories****GEMÜ LSC S01Z BV****Mounting kit for manually operated ball valves**

The mounting kit is suitable for mounting the limit switch box (LSC) on ball valves with hand levers and with a top flange in accordance with ISO 5211.

Nominal size	Flange size	Item number	Order description
DN 8 - 20	F04	88494998	LSCS01Z BV F04
DN 25 - 32	F05	88495013	LSCS01Z BV F05
DN 40 - 50	F07	88495019	LSCS01Z BV F07
DN 65 - 100	F10	88495024	LSCS01Z BV F10
DN 80 - 100	F12*	88582104	LSCS01Z BV F12

Only limit switch boxes which are ordered with the "housing/mounting kit material" order code KM can be installed with this mounting kit.

The ball valve must be ordered with the K-no. 7056.

*) for GEMÜ 711 with connection code 46



GEMÜ LSC S01Z BFV

Mounting kit for manually operated butterfly valves

The mounting kit is suitable for mounting the limit switch box (LSC) on manually operated butterfly valves and with a top flange in accordance with ISO 5211.

Butterfly valves with hand levers

One of the following mounting kits must be ordered for butterfly valves with hand levers:

For GEMÜ type	Nominal size	Flange size	Item number	Order designation
487, R487	DN 25 - 100	F05	88582110	LSCS01Z BFV F05
	DN 125 - 150	F07	88582111	LSCS01Z BFV F07
D487	DN 25 - 200	F07	88582111	LSCS01Z BFV F07
497	DN 25-40	F05	88582110	LSCS01Z BFV F05
	DN 50-150	F07	88582111	LSCS01Z BFV F07

Only limit switch boxes which are ordered with the "housing/mounting kit material" order codes KK, KE or AE can be installed with this mounting kit.

Butterfly valves with gearboxes

No mounting kit is required for butterfly valves with gearboxes. The butterfly valve must be ordered with the K-no. 7042.

Only limit switch boxes which are ordered with the "housing/mounting kit material" order codes KK, KE or AE can be mounted.



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