SeGMo-Positioning

Positioning drive with through hollow shaft

GEL 6113

Technical information

Version 2019-08

General

The SeGMo-Positioning GEL 6113 forms a compact mechatronic unit comprising a brushless DCmotor, a 32-bit microprocessor, a compact power amplifier and a powerful gear, as well as a magnetic multiturn encoder.
Active system protection against thermal overload and comprehensive system software allow load-dependent duty cycles well above 25 %.
The rigid aluminium housing with its high degree of protection (IP 67) is suitable for a wide range of applications in various industrial areas.

Variable type of connection and interface

Features

- Nominal torques 5 Nm, 7 Nm, 10 Nm
- Aluminium housing
- Operating temperature -10 °C to +60 °C
- BLDC motor
- Magnetic-absolute multiturn encoder
  - Detection range: 114 turns, also in de-energised state
- Degree of protection IP67
- Integrated communication interfaces
  CANopen (CiA 402); PROFIBUS-DP (V0/V1); Sercos III; POWERLINK; PROFINET IO / RT; EtherCAT; EtherNet/IP; Modbus/TCP
- Optionally with cULus component recognition

Advantages

- Either hybrid cable or plug outlet
- Onboard joystick for straightforward commissioning
- Monitoring of important system parameters ensures reliable operation (overload protection)
- Ready for use immediately after power on due to absolute multiturn position detection
- Maintenance-free due to sealed-for-life lubrication

Fields of application

- Packaging machines
- Food and bottling plants
- Wood and plastic working machines
- Printing presses and book binding machines
- Extensive production plants

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Description

System concept

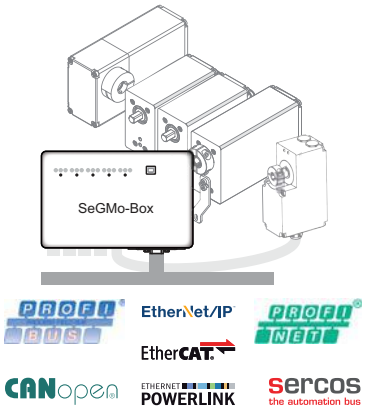
The positioning drives belong to the product group SeGMo-Positioning and are a component of the SeGMo-System.
Each positioning drive in the GEL 6113 series is an intelligent adjustment unit for pushing onto the end of a shaft or for attachment to a shaft or spindle.
The positioning drive can be integrated directly into a plant control system via the communication interfaces integrated.

SeGMo-System

The SeGMo-System is suitable for the efficient integration of several positioning drives in a machine or plant. The system consists of the following components:

- SeGMo-Positioning:
  Positioning drive for fully automatic format adjustment
- SeGMo-Motion:
  Positioning drive for cyclic operation
- SeGMo-Box:
  Decentral control unit for up to 5 drives
- SeGMo-Connect:
  Single cable concept (hybrid cable suitable for drag chain)
- SeGMo-Lib:
  Ready-made function blocks for integration in the machine control system
- SeGMo-Support Tool:
  Software for advanced commissioning and configuration

The usage of SeGMo-Box and SeGMo-Connect significantly reduces the cabling effort for the positioning drives. Instead of the usual two separate cables for internal bus communication and a third cable to supply power to the positioning drives, only **ONE** hybrid cable suitable for use in drag chains is connected. In the maximum configuration with 5 positioning drives connected, the number of cables typically reduces from 15 to 5 due to SeGMo-Connect.
With the aid of the SeGMo-Box the overall system offers a high degree of flexibility during integration, as it supports all common communication interfaces.



On usage with the SeGMo-Box all common communication interfaces are available

Construction

The SeGMo-Positioning GEL 6113 is operated with a supply voltage of 24 V DC and supports fieldbus profiles (CANopen (CiA 402); PROFIBUS-DP (V0/V1)) and Industrial Ethernet protocols (Sercos III; POWERLINK; PROFINET IO / RT; EtherCAT; EtherNet/IP; Modbus/TCP).
SeGMo-Connect is available with either a plug connection or hybrid cable.
The rigid housing made of anodised aluminium is particularly robust and achieves the degree of protection IP 67 due to the Viton shaft sealing ring.
The positioning drive is equipped with mechanical manual adjustment so that the positioning drive can be actuated if there is a fault, e.g. a power failure.
The mechanical manual adjustment is not allowed to be actuated on devices with the holding brake option, this will cause damage to the device!
The optional holding brake guarantees secure retention even if there are shock and vibration loads, especially on vertical feed axes.
A USB service connector is accessible on the rear of the device for service purposes.
The device variants with integrated fieldbus (CANopen (CiA 402); PROFIBUS-DP (V0/V1)) have rotary selection switches for setting the device ID and baud rate, as well as an onboard joystick. The positioning drive can be operated in the set-up mode using the joystick without prior PLC programming. All elements are accessible on the rear of the device.

Integrated absolute rotary encoder

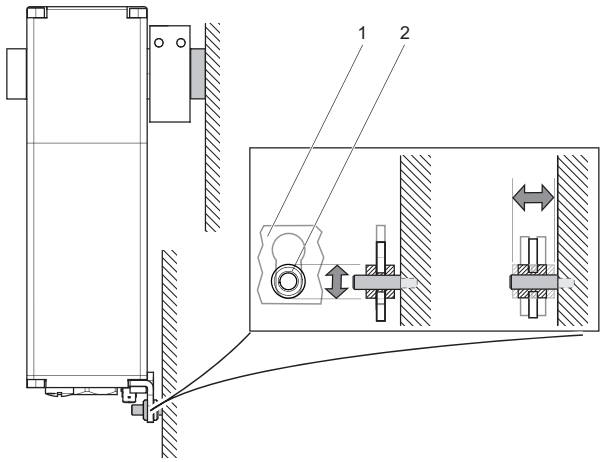
A magnetic-absolute multiturn rotary encoder makes reference search routines after a power failure or emergency stop unnecessary. Due to the batteryless encoder, the positioning drive detects its position after power on and is immediately ready for use.
In the switched off state the drive shaft can be moved by ±57 turns without loss of the absolute position.
The absolute rotary encoder withstands high shock/ vibration loads.

General information on SeGMo-Connect

The hybrid cable SeGMo-Connect is designed for flexible application in drag chains. It is available in the foodgrade, halogen-free and cULus recognised variants. The hybrid cable is screened under the outer sheath. The internal communication cores are fully insulated and multiply screened.
All positioning drives are available with hybrid cable and connectors and can be connected quickly and straightforwardly to the SeGMo-Box via the pre-assembled hybrid connecting cables that can be configured as required. Connectors with a quick-release coupling permit quick connection and disconnection. The positioning drive is therefore reliably and quickly disconnected from the power supply for maintenance and service work in a matter of seconds. Pre-assembled connection cables are available for the connection, see "Technical information BZK".

Mounting

The mounting concept comprises a fixed-moving bearing. The machine shaft supports the weight of the positioning drive via the fixed bearing. For this purpose the positioning drive is mounted directly and positively on the machine shaft using a clamp coupling with a form-fit via the hollow shaft. The torque support prevents the positioning drive rotating and, as the moving bearing, compensates any movements that occur on the drive shaft due to imbalance, if necessary. The shape and design of the torque support are order-specific. Various accessories are available for mounting.



Recording imbalance movements at the moving bearing (example with standard torque support from Lenord + Bauer)

1 Torque support
2 Plain bearing

Modes of operation

The drive is designed for positioning at nominal torque. The following intervals are valid for a duty cycle (ED) of

- Duty cycle = 25 % at 100 % load torque, positioning mode S2
  (base time 4 minutes: ED = 1 minute, PD = 3 minutes)
- Duty cycle ≤ 50 % with reduced load torque, dependent on ambient parameters and application

Other methods of operation are protected by I^2t and temperature monitoring as well as an adjustable current limit. This protection permits a briefly increased breakaway torque.

Reliability

Important parameters such as motor power and device temperature are monitored and in this way the positioning drive actively protected against overload. The following monitoring devices ensure trouble-free operation:

- Soft start and shutdown via acceleration and deceleration ramps
- Over / undervoltage detection on the power circuit supply and logic circuit supply
- Lag error detection (drive shaft in relation to motor shaft)
- Temperature monitoring on the power amplifier and inside the housing
- Motor and power amplifier overload protection via I^2t monitoring and in combination with the box by means of the maximum current.

Technical data

Nominal torque (housing size)	05 (K)	07 (K)	10 (L)
Electrical data			
Nominal voltage logic circuits	24 V DC -5% / +25%		
Nominal voltage power circuits	24 V DC -5 % / +25% (Attention: max. motor speed is voltage dependent!)		
Nominal current logic circuits	Max. 400 mA, external fuse required		
Nominal current power circuits	2.0 A (max. 7.0 A), external fuse required	2.8 A (max. 7.5 A), external fuse required	4.1 A (max. 10 A), external fuse required
Duty cycle in % (load-dependent)	Duty cycle = 25 % at 100 % load torque, positioning mode S2 (base time 4 minutes: ED = 1 minute, PD(1) = 3 minutes) Duty cycle ≤ 50 % with reduced load torque, dependent on ambient parameters and application		
Positioning range	Unlimited (2)		
Fieldbus interfaces	CANopen (CiA 402); PROFIBUS-DP (V0/V1)		
Industrial Ethernet	Sercos III; POWERLINK; PROFINET IO / RT; EtherCAT; EtherNet/IP; Modbus/TCP		
Dielectric strength	√2 × 500 V DC; as per DIN EN 61439-1:2012-06		
EMC (3)	Electromagnetic immunity EN 61000-6-1:2007-10 / EN 61000-6-2:2006-03 Electromagnetic emissions EN 61000-6-3:2011-09 / EN 61000-6-4:2011-09		
Encoder data			
Resolution	1000 increments per 360°		
Detection range	114 turns, also in de-energised state		
Mechanical data			
Nominal torque drive shaft	5 Nm at 55 min^{-1}	7 Nm at 55 min^{-1}	10 Nm at 55 min^{-1}
Drive shaft	Through hollow shaft Ø D = 20 mm		
Shaft materials	1.4305		
Housing material	**A**: Aluminium AlMgSi		
Weight	Min. 2.33 kg (4)		
Degree of protection	IP 67, EN 60529:2014-09, shaft sealing ring made of Viton		
Shock resistance	150 m/s^2 (approx. 15 g); as per DIN EN 60068-2-27:2010-02		
Vibration resistance	50 m/s^2 (approx. 5 g), 10 to 50 Hz; as per DIN EN 60068-2-6:2008-10		
Ambient data			
Assured operating temperature range	0 °C to +60 °C		
Operating temperature range	-10 °C to +60 °C		
Storage temperature range	-20 °C to +85 °C		
Max. relative humidity of air	95%		
Condensation	Not permitted (condensation protection upon request)		

(1) PD length of space
(2) If the supply voltage is present, an electronic counter measures the positioning range over the detection range of the measuring system.
(3) Use only screened cables.
(4) Depending on the type of connection and the housing size

Nominal torque (housing size)	**05 (K)**	**07 (K)**	**10 (L)**
UL data (design C)			
cULus recognised component, E196161	UL 61800-5-1 CSA C22.2 No. 274-13		
Input voltage (power circuits)	24 V to 30 V DC		
Input power (power circuits), continiuous operation	65 VA		80 VA
Input power (power circuits), ED = 1 minute, PD(1) = 3 minutes	80 VA		100 VA
Protection class	Type 1		
Assured operating temperature range	0 °C to +55 °C		
Operating temperature range	-10 °C to +55 °C		

(1) PD length of space

Technical data

Connector M23

Type of connection **H1 / H2 / H3**

Technical data – coupling / connector (connector size M23)	
Rated voltage	Max. 30 V AC / DC
Current carrying capacity	According to DIN EN 60512
Contact type (coupling / connector)	Male / female
Housing material coupling / connector	Nickel-plated brass (others upon request)
Union nut material	Nickel-plated brass
Ambient temperature	-20 °C to +130 °C
Degree of protection(1)	IP 66 / IP 67
Mating cycles	> 500
Vibration resistance	≤ 200 m/s^2
Approval	cULus recognised component (no. E247738)

Connector M17

Type of connection **HS / S1 / S2 / S3**

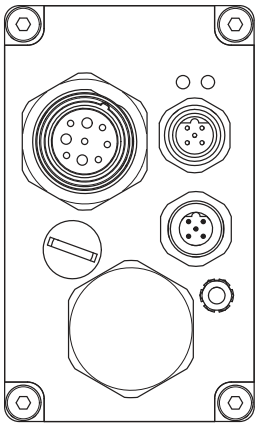
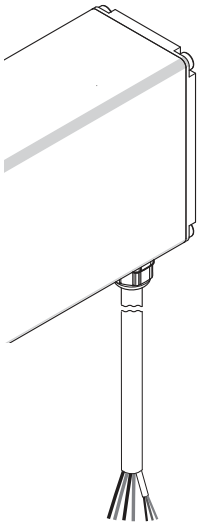
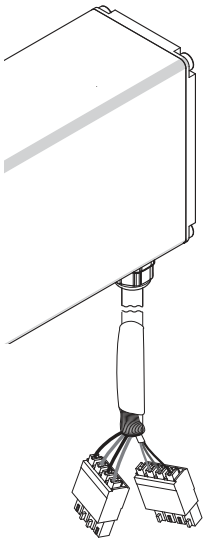
Technical data – coupling / connector (connector size M17)	
Rated voltage	Max. 30 V AC / DC
Current carrying capacity	According to DIN EN 60512
Contact type (coupling / connector)	Male / female
Housing material coupling / connector	Brass, die-cast zinc and encapsulated in plastic
Ambient temperature	-20 °C to +130 °C
Degree of protection(1)	IP 66 / IP 67
Mating cycles	> 500
Approval	cULus recognised component (no. E247738)

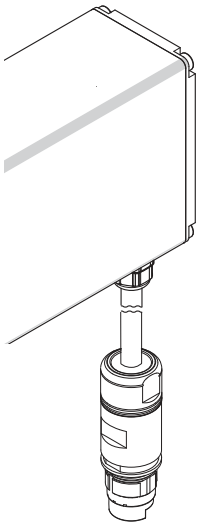
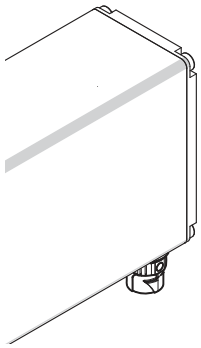
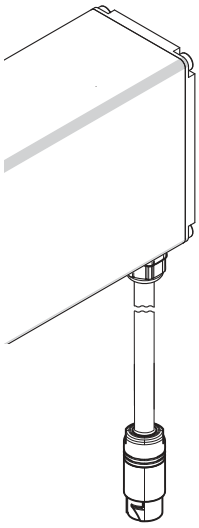
Technical data, cables

Hybrid cable	Design **0** (standard)	Design **1** (separate fuse protection)	Design **C** (cULus recognised component)
Sheath material	PUR, black, glossy	PUR, black, matt	PUR, black, matt
Cable properties	Screened	Screened	Screened
Suitable for drag chains	Yes	Yes	Yes
Food grade	Yes	No	No
Halogen-free	No	Yes	Yes
Cable diameter (d)	9.5 mm	9.5 mm	9.5 mm
Bending radius	Permanently flexible: 10 × d Fixed routing: 5 × d	Permanently flexible: 15 × d Freely moving: 10 × d Fixed routing: 5 × d	Permanently flexible: 15 × d Freely moving: 10 × d Fixed routing: 5 × d
Peak operating voltage	Max. 350 V CAN bus Max. 30 V DC (logic / power)	Max. 300 V CAN bus Max. 30 V DC (logic / power)	Max. 300 V CAN bus Max. 30 V DC (logic / power)
Temperature range	-40 °C to +80 °C	-40 °C to +80 °C	-40 °C to +80 °C

(1) In the screwed-in state, according to DIN EN 60529 / DIN 40050

Device overview — types of connection

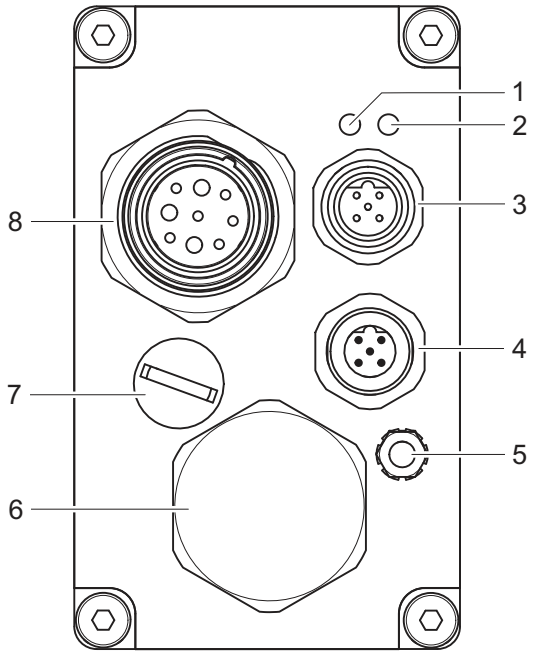
ST	**xx**: Cable length can be selected (1 m to 20 m)	**Vx**: Cable length can be selected (1 m to 20 m)
Plug outlet	Flying lead	Cable with spring-cage terminals for the SeGMo-Box connection
		
Communication interfaces: **CO** (CANopen) **DP** (PROFIBUS-DP) **EC** (EtherCAT) **IP** (EtherNet/IP) **MB** (Modbus/TCP) **PL** (POWERLINK) **RT** (PROFINET IO / RT) **SC** (SERCOS III)	Communication interface **CO** (CANopen)	Communication interface **CO** (CANopen)

H1: Cable length 30 cm **H2**: Cable length 50 cm **H3**: Cable length 100 cm	**HS**	**S1**: Cable length 30 cm **S2**: Cable length 50 cm **S3**: Cable length 100 cm
Cable with M23 connector (coupling with pin contacts)	M17 panel-mounting socket (pin contacts)	Cable with M17 connector (coupling with pin contacts)
		
Communication interface **CO** (CANopen)	Communication interface **CO** (CANopen)	Communication interface **CO** (CANopen)

Type of connection ST

Rear side

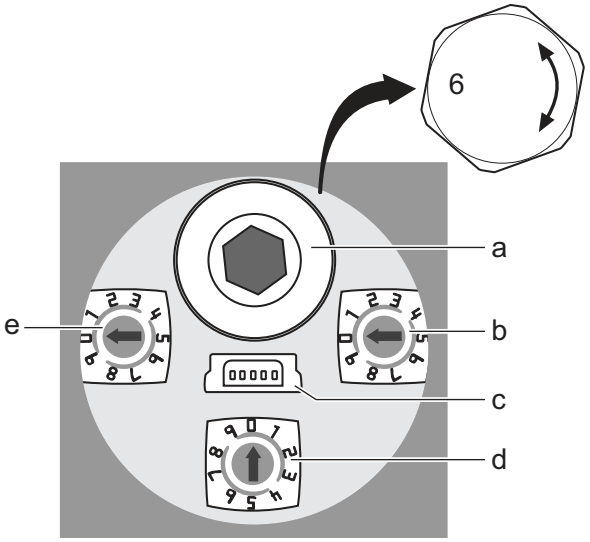
Type of connection **ST** (here for PROFIBUS-DP)



Key

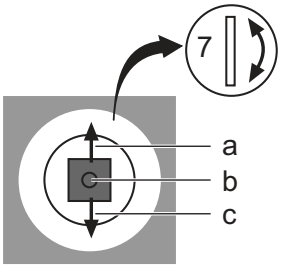
1 Status indication — device
2 Status indication — communication
3 Communication interface (IN)
4 Communication interface (OUT)
5 Function earth (stud M4)
6 Removable blanking plug for the setting elements
7 Removable blanking plug for manual adjustment
8 Supply connector

Setting elements, fieldbus variants (communication interface CO and DP)



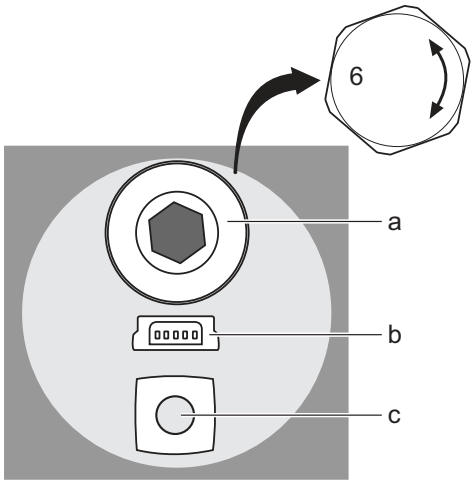
a Manual emergency adjustment
b Rotary switch bus address units
c Service connector (mini USB)
d Rotary switch configuration
  0 to 8 Baud rate
  9 Service mode
  (no bus operation; jog mode via joystick possible)
e Rotary switch bus address decades

Manual adjustment, fieldbus variants (communication interface CO and DP)



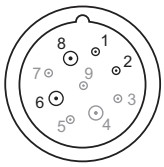
Joystick
a Jog mode clockwise rotation
b Acknowledge error (pressure)
c Jog mode counter-clockwise

Setting elements for Industrial Ethernet variants (communication interfaces EC, MB, SC, PL, RT und IP)

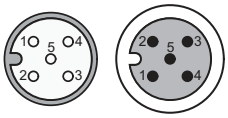
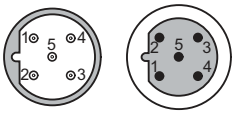


a Manual emergency adjustment
b Service connector (mini USB)
c Push-button (for service purposes)

Pin layout – supply connector

Supply connector	Pin identifier	Signal identifier
M23  Pins	1	+ 24 V DC logic circuits
	2	GND logic circuits
	6	+ 24 V DC power circuits
	8	GND power circuits
	GND wires connected internally.	

Pin layout – communication interfaces

CANopen	PROFIBUS-DP	Industrial Ethernet Sercos III; POWERLINK; PROFINET IO / RT; EtherCAT; EtherNet/IP; Modbus/TCP
M12 A-coded	**M12** B-coded	2 × **M12** D-coded
 IN OUT	 IN OUT	
Male Female	Male Female	Switch sockets

Pin	IN / OUT
1	Cable screen
2	n.c.
3	CAN GND
4	CAN high
5	CAN low

Pin	IN	OUT
1	n.c.	5 V bus voltage
2	A-wire	A-wire
3	n. c.	GND Bus
4	B-wire	B-wire
5	Cable screen	Cable screen

Pin	IN / OUT
1	Transmission Data+
2	Receive Data+
3	Transmission Data-
4	Receive Data-

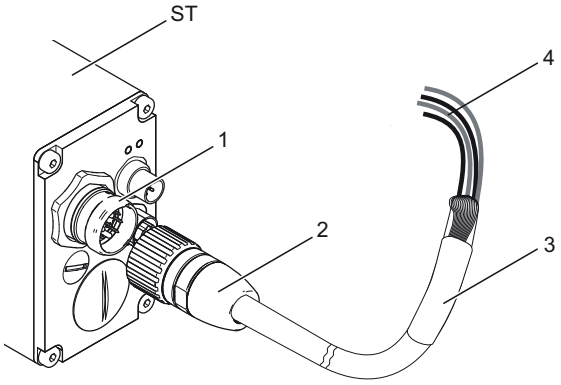
Type of connection ST

Connection accessories for type of connection ST(1)

Description	Item no.
Mating connector PROFIBUS-DP, M12, B-coded input (female)	FS3016
Mating connector PROFIBUS-DP, M12, B-coded output (male)	FS3017
Terminating resistor PROFIBUS-DP, M12, B-coded (male)	FS3041
Mating connector CANopen, M12, A-coded input (female)	FS3020
Mating connector CANopen, M12, A-coded output (male)	FS3021
Terminating resistor CANopen, M12, A-coded (male)	FS3040
Mating connector Industrial Ethernet input/output, M12, D-coded (male)	FS3039
PROFIBUS-DP, 1 connector, male, 10 m cable	FS3024
PROFIBUS-DP, 1 connector, female, 10 m cable	FS3025
PROFIBUS-DP, 1 connector, male, 2 m cable	FS3026
PROFIBUS-DP, 1 connector, female, 2 m cable	FS3027
PROFIBUS-DP, 2 connectors, female/male, 2 m cable	FS3028
Network cable Ethernet, M12 D-coded (male) on RJ45, 3 m cable	BK6921
Mating connector power supply M23 (female)	FS3038
Mating connector power supply M23 (female, angled)	FS3067
Connection cable power supply M23 (female) and flying lead	BZK23S1N_ _ L(a)
(a) for _ _ cable length, state in m (min. 3 m / max. 20 m)	

Power supply cable connection accessories (see Technical information BZK)

Connection cable BZK23S1NxxL / BZK23S1UxxL / BZK23S1CxxL
(xx = length in m)

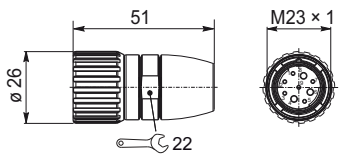


Power supply cable for the positioning drive with type of connection ST

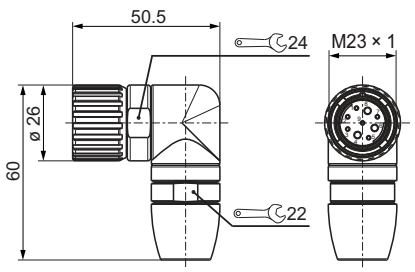
- ST Positioning drive with type of connection ST
- 1 Supply connector on the positioning drive
- 2 Connector 1/connector design **S1**
- 3 Design
  N 16 AWG food grade
  U 16 AWG halogen-free or
  C 14 AWG cULus recognised
- 4 Connector 2: **L**
  (flying lead)

Connection accessories: Mating connector power supply (M23 female)

Item no. FS3038



Item no. FS3067

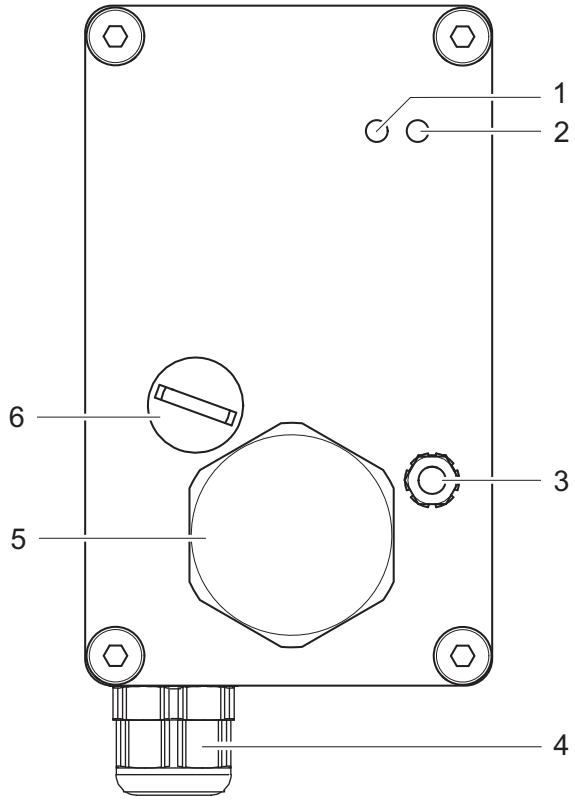


(1) Other accessories: fieldbus cable, couplings etc. upon request

Type of connection H1 / H2 / H3 / S1 / S2 / S3 / xx / Vx

Rear side

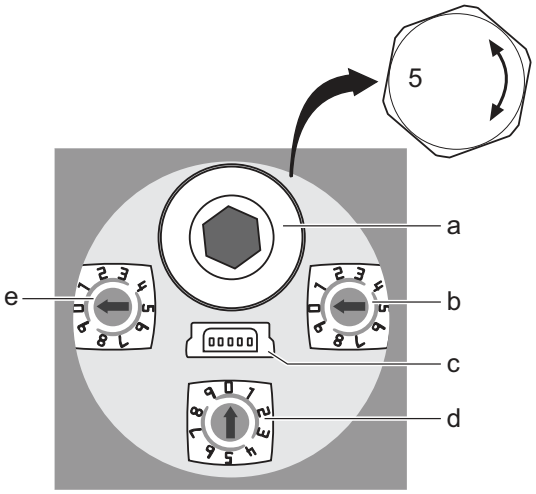
Type of connection **H1 / H2 / H3 / S1 / S2 / S3 / xx / Vx**



Key

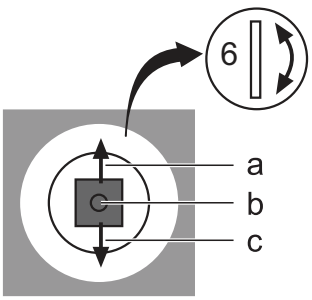
1 Status indication — device
2 Status indication — communication
3 Function earth (stud M4)
4 M16 cable gland
5 Removable blanking plug for the setting elements
6 Removable blanking plug for manual adjustment

Setting elements CANopen (communication interface CO)



a Manual emergency adjustment
b Rotary switch bus address units
c Service connector (mini USB)
d Rotary switch configuration
  0 to 8 Baud rate
  9 Service mode
  (no bus operation; jog mode via joystick possible)
e Rotary switch bus address decades

Manual adjustment CANopen (communication interface CO)



Joystick
a Jog mode clockwise rotation
b Acknowledge error (pressure)
c Jog mode counter-clockwise

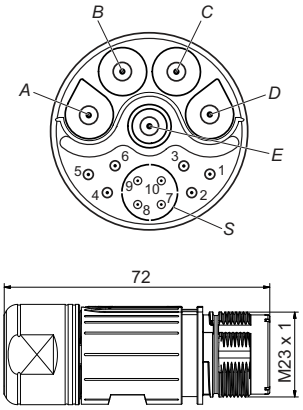
Type of connection H1 / H2 / H3 / S1 / S2 / S3 / xx / Vx

Terminal assignment xx / Vx

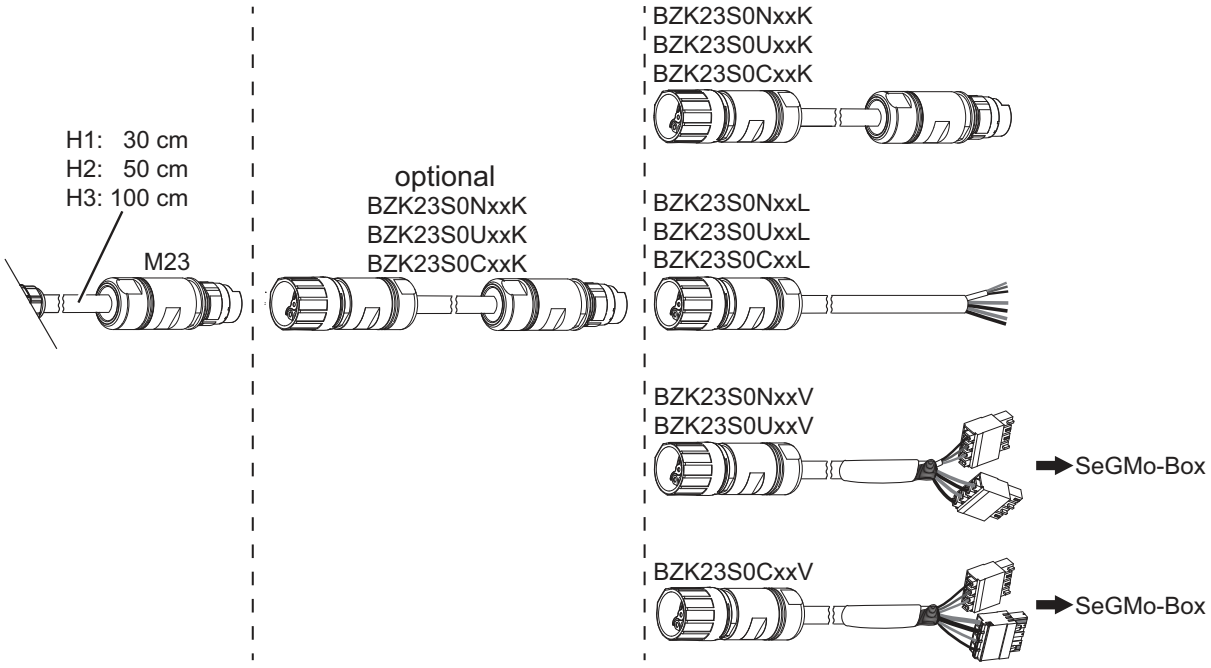
Type of connection **xx**: flying lead				Type of connection **Vx**: pre-assembled for the box connection		Signal identifier
Core colour/ core no.	cross-section Design **0**	cross-section Design **1**	cross-section Design **C**	4-pole spring-cage terminal (internal positioning drive communication) pin identifier	4-pole spring-cage terminal (positioning drive power supply) pin identifier	
red/1	0.5 mm^2	0.5 mm^2	0.5 mm^2	–	3	+24 V logic circuits
red/2	1.5 mm^2	1.5 mm^2	2.5 mm^2	–	1	+24 V power circuits
black/2	1.5 mm^2	1.5 mm^2	2.5 mm^2	–	2	GND power circuits
black/1	0.5 mm^2	0.5 mm^2	0.5 mm^2	–	4	GND logic circuits
black	0.14 mm^2	0.14 mm^2	0.14 mm^2	1	–	CAN GND
green	0.25 mm^2	0.25 mm^2	0.25 mm^2	3	–	CAN low
yellow	0.25 mm^2	0.25 mm^2	0.25 mm^2	2	–	CAN high

Type of connection H1 / H2 / H3 / S1 / S2 / S3 / xx / Vx

Pin layout H1 / H2 / H3

M23 connector		
Coupling with pin contacts	Pin identifier	Signal identifier
	*A*	+24 V logic circuits
	B	GND logic circuits
	C	GND power circuits
	D	+24 V power circuits
	E	Cable screen
	7	CAN high
	8	CAN GND
	9	CAN low
	S	CAN screen

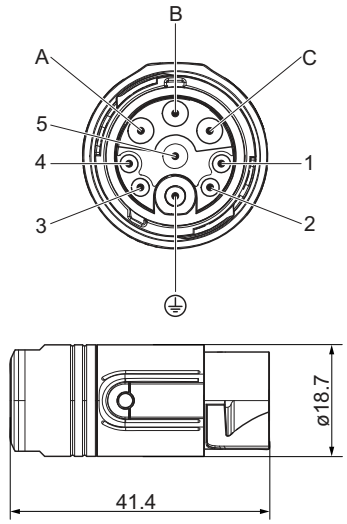
Connection accessories H1 / H2 / H3 (see Technical information BZK)



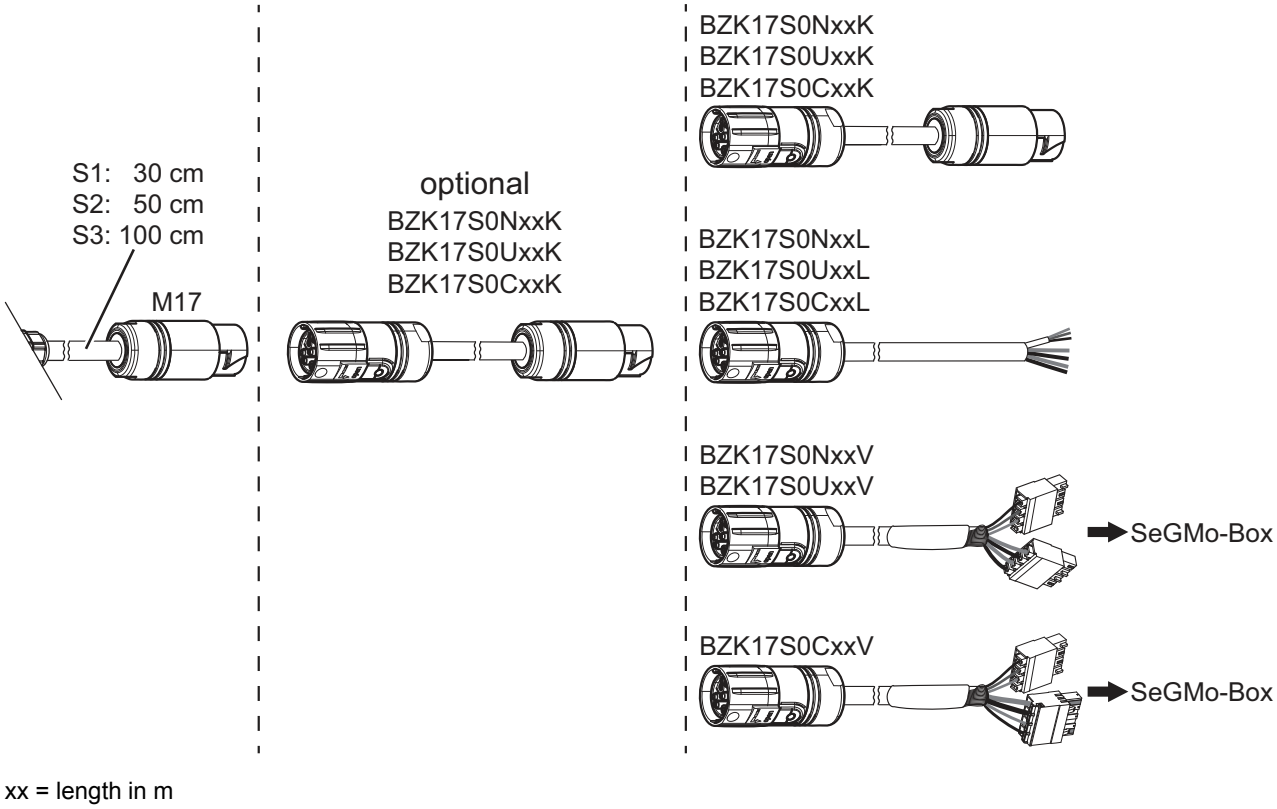
xx = length in m

Type of connection H1 / H2 / H3 / S1 / S2 / S3 / xx / Vx

Pin layout S1 / S2 / S3

M17 connector		
Coupling with pin contacts	Pin identifier	Signal identifier
	*A*	+24 V logic circuits
	B	+24 V power circuits
	C	GND power circuits
	1	GND logic circuits
	2	CAN GND
	3	CAN low
	4	CAN high

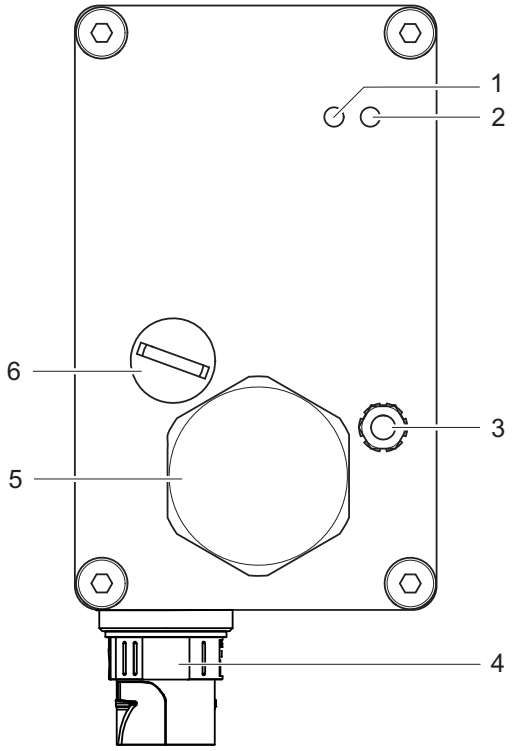
Connection accessories S1 / S2 / S3 (see Technical information BZK)



xx = length in m

Rear side

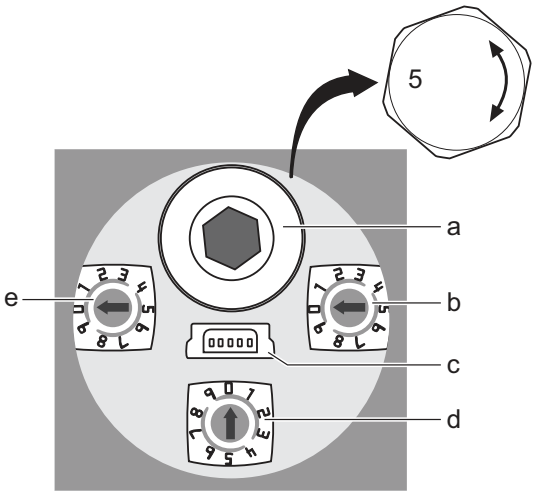
Type of connection **HS**



Key

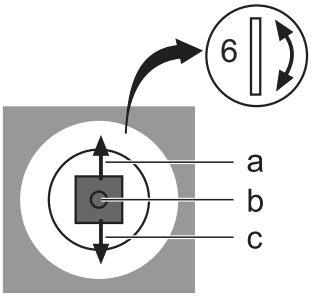
1 Status indication — device
2 Status indication — communication
3 Function earth (stud M4)
4 M17 panel-mounting socket with pin contacts
5 Removable blanking plug for the setting elements
6 Removable blanking plug for manual adjustment

Setting elements CANopen (communication interface CO)



a Manual emergency adjustment
b Rotary switch bus address units
c Service connector (mini USB)
d Rotary switch configuration
  0 to 8 Baud rate
  9 Service mode
  (no bus operation; jog mode via joystick possible)
e Rotary switch bus address decades

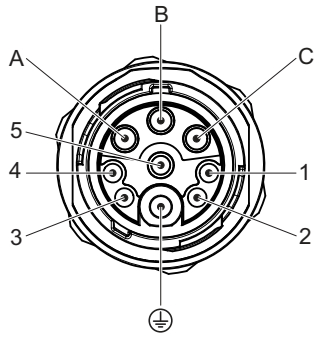
Manual adjustment CANopen (communication interface CO)



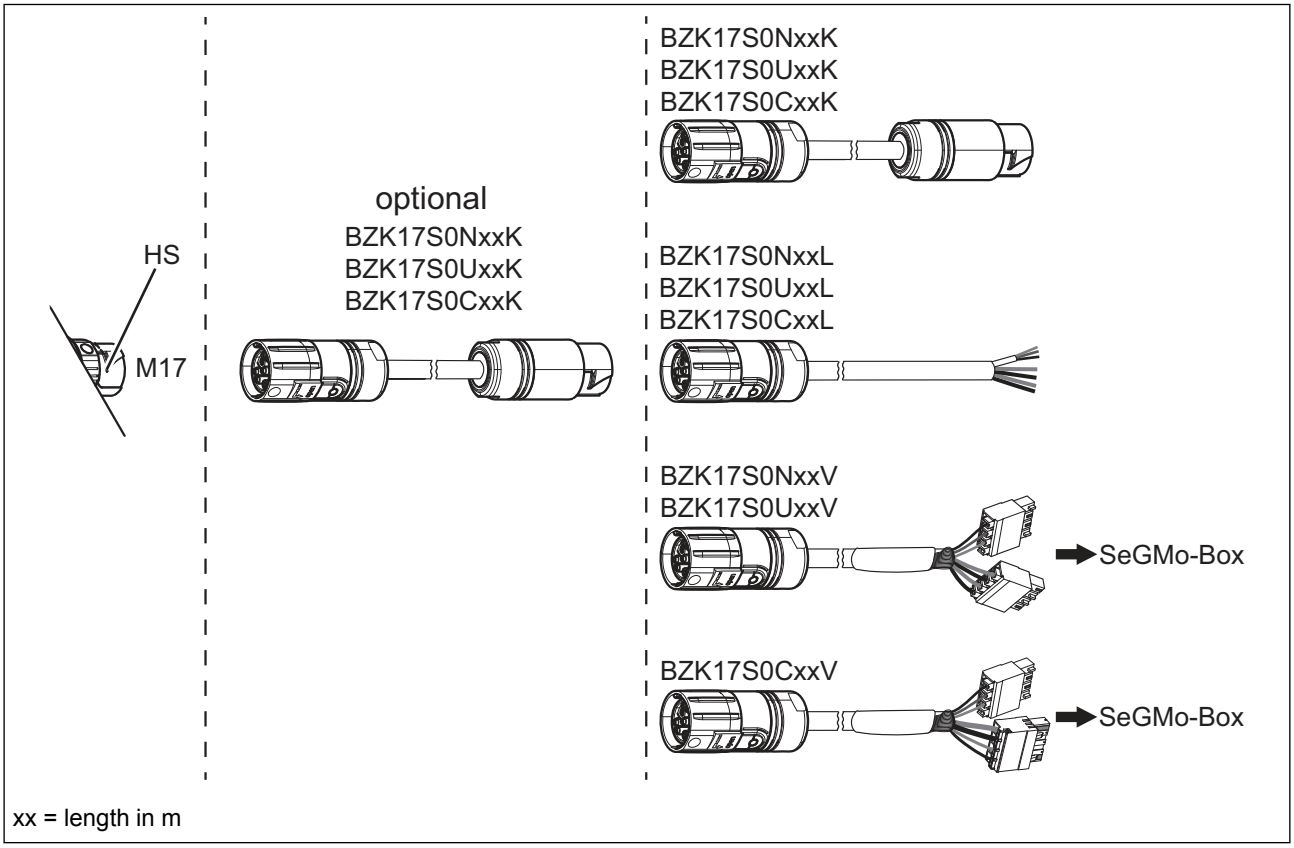
Joystick
a Jog mode clockwise rotation
b Acknowledge error (pressure)
c Jog mode counter-clockwise

Type of connection HS

Pin layout HS

M17 connector		
Panel-mounting socket with pin contacts	Pin identifier	Signal identifier
	*A*	+24 V logic circuits
	B	+24 V power circuits
	C	GND power circuits
	1	GND logic circuits
	2	CAN GND
	3	CAN low
	4	CAN high

Connection accessories HS (see Technical information BZK)



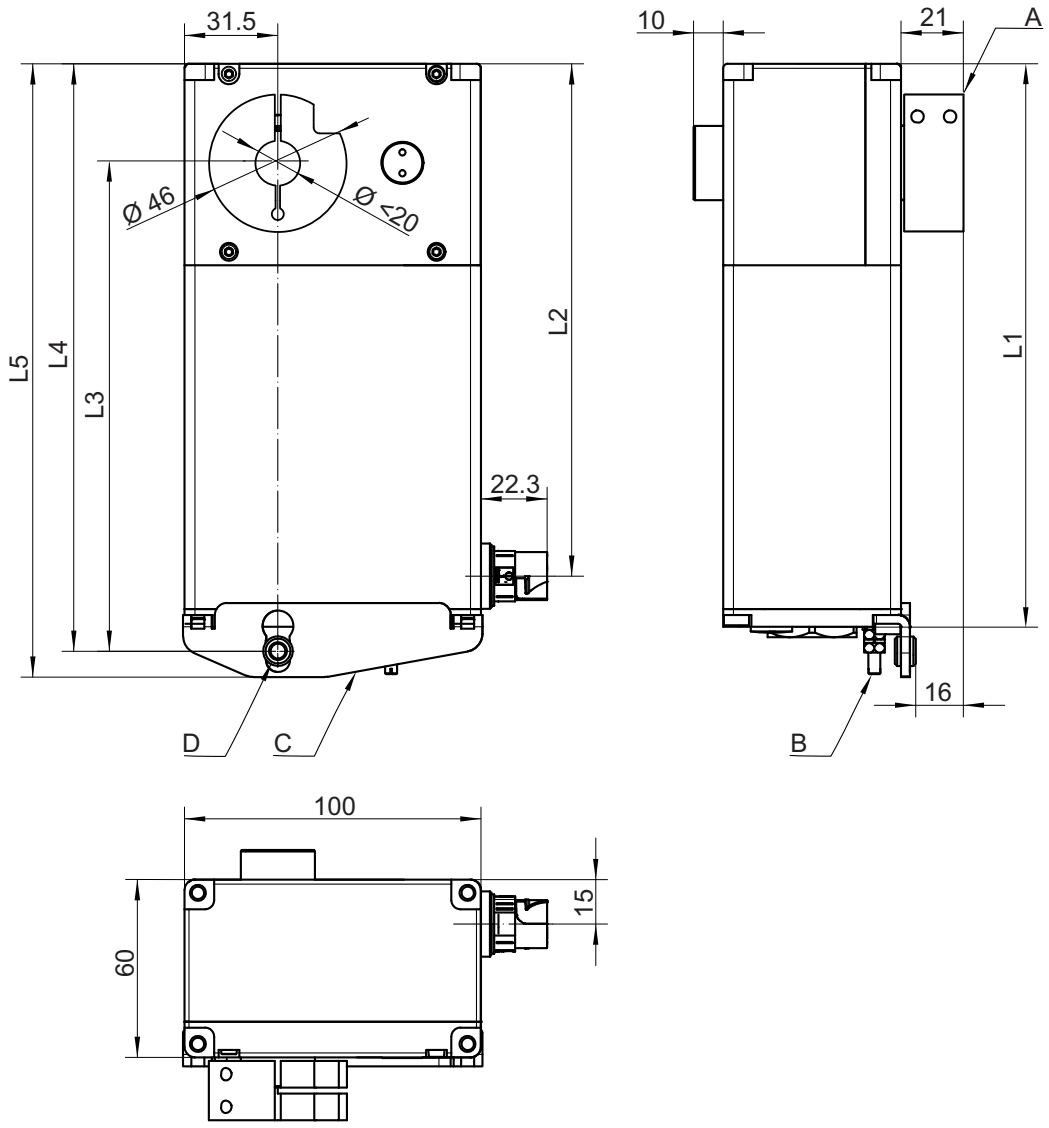
xx = length in m

Mechanical accessories (not included in the scope of supply)

Identifier:	Item no.
Clamp coupling for shaft diameter: — 15 mm — 16 mm — 17 mm — 18 mm — 19 mm — 20 mm	 MZ1351 MZ1335 MZ1354 MZ1356 MZ1355 MZ1339
Plain bearing accessories package (Contents: 5 pcs. plain bearing, item no. OG0001)	ZB61X01
Headless screws accessories package (Contents: 5 pcs. headless screw M5 × 20, item no. VS3412)	ZB61X02
Torque support screws accessories package (Contents: 10 pcs. screw M5 × 8, item no. VS2107)	ZB61X03
Accessories kit for option **0** and **1**, consisting of: ▪ 1 pc. torque support left, part number GZ1168 ▪ 1 pc. plain bearing, part number OG0001 ▪ 2 pcs. screw M5×8, part number VS2107 ▪ 1 pc. headles screw M5×20, part number VS3412	ZB6113L01
Accessories kit for option **0** and **1**, consisting of: ▪ 1 pc. torque support right, part number GZ1167 ▪ 1 pc. plain bearing, part number OG0001 ▪ 2 pcs. screw M5×8, part number VS2107 ▪ 1 pc. headles screw M5×20, part number VS3412	ZB6113R01
Accessories kit for option **0** and **1**, consisting of: ▪ 1 pc. torque support left and right, part number GZ1169 ▪ 1 pc. plain bearing, part number OG0001 ▪ 2 pcs. screw M5×8, part number VS2107 ▪ 1 pc. headles screw M5×20, part number VS3412	ZB6113LR1

Dimensional drawings

SeGMo-Positioning GEL 6113, type of connection HS, option R

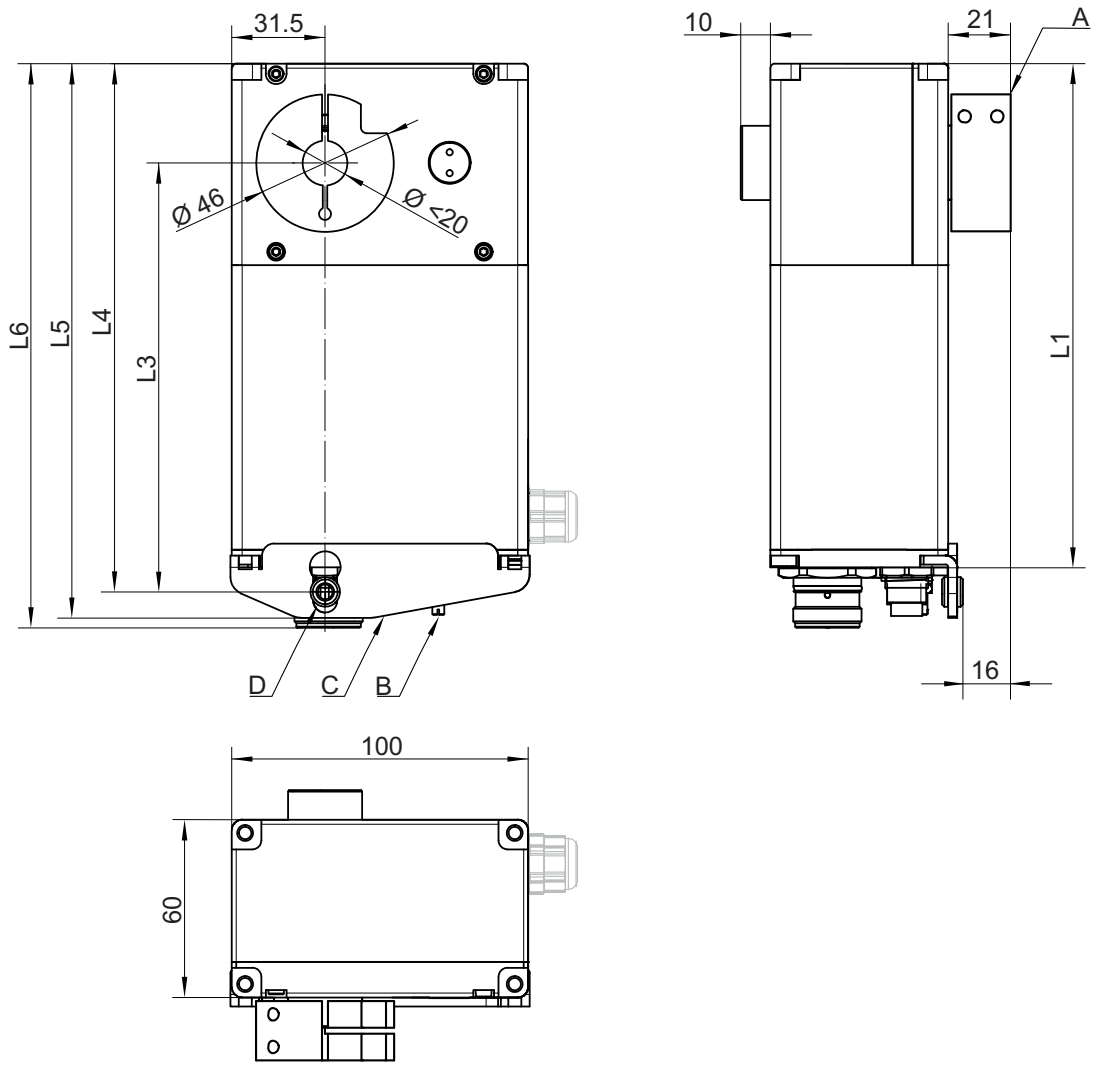


A Clamp coupling can be fitted on both sides
B Function earth (stud M4)
C Torque support right, GZ1167
D Plain bearing OG0001

Note: Application point for the torque support always on the side of the clamp coupling.

All dimensions stated in mm (≈ approximate dimension); General tolerance DIN ISO 2768 medium

SeGMo-Positioning GEL 6113, type of connection ST, option R



A Clamp coupling can be fitted on both sides
B Function earth (stud M4)
C Torque support right, GZ1167
D Plain bearing OG0001

Grey: Hybrid cable
type of connection **H1 / H2 / H3 / S1 / S2 / S3 / Vx / xx**

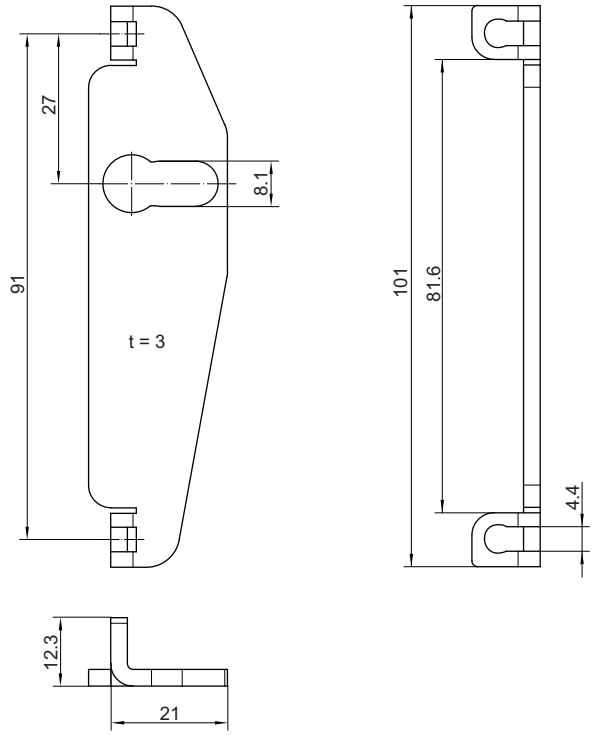
Note: Application point for the torque support always on the side of the clamp coupling.

Nominal torque	**Housing size**	**Option** Torque support	**Dimensions**					
			L1	**L2**	**L6**	**L3**	**L4**	**L5**
05, **07**	**K**	**L, R**	170	153	190.3	145	178.5	187
10	**L**	**L, R**	190	173	210.3	165	198.5	207
Nominal torque	**Housing size**	**Option** Spacing bolt				**Dimensions with accessories kit**		
			L1	**L2**	**L6**	**L3**	**L4**	**L5**
05, **07**	**K**	**0**	170	153	190.3	158.5	192	200.5
10	**L**	**0**	190	173	210.3	178.5	212	220.5
05, **07**	**K**	**1** (with holding brake)	195	178	215.3	183.5	217	225.5
10	**L**	**1** (with holding brake)	215	198	235.3	203.5	237	245.5

All dimensions stated in mm (≈ approximate dimension); General tolerance DIN ISO 2768 medium

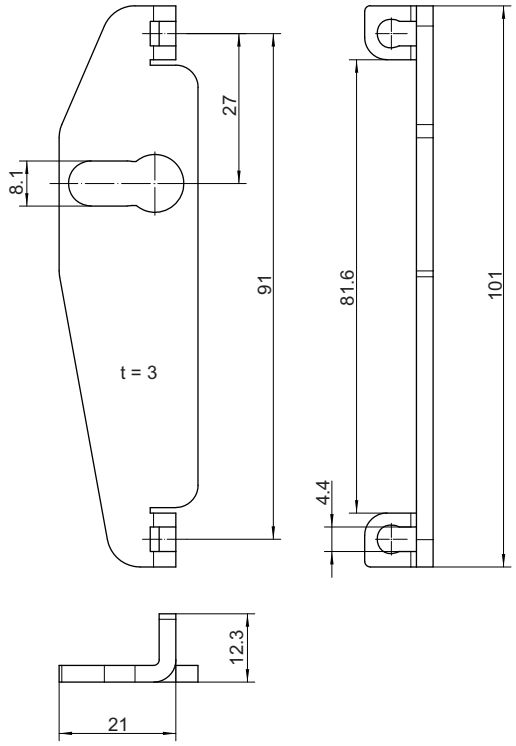
Dimensional drawings

Torque support left, GZ1168 (part of option L and accessories kit ZB6113L01)



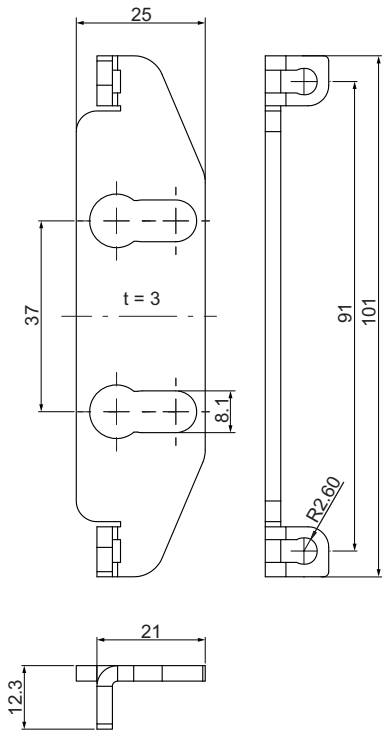
All dimensions stated in mm (≈ approximate dimension)
General tolerance DIN ISO 2768 medium

Torque support right, GZ1167 (part of option R and accessories kit ZB6113R01)



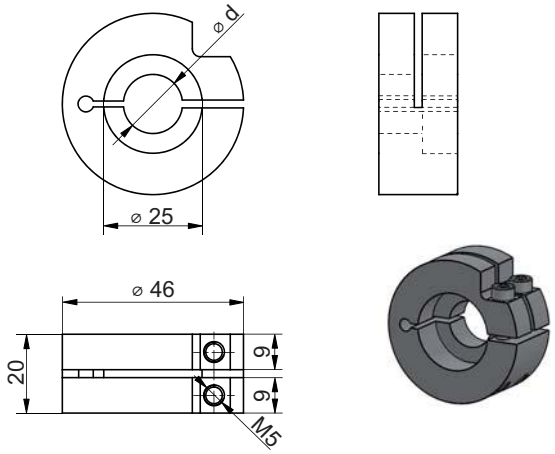
All dimensions stated in mm (≈ approximate dimension)
General tolerance DIN ISO 2768 medium

Torque support left and right, GZ1169 (part of accessories kit ZB6113LR1)



All dimensions stated in mm (≈ approximate dimension)
General tolerance DIN ISO 2768 medium

Clamp coupling (mechanical accessories)



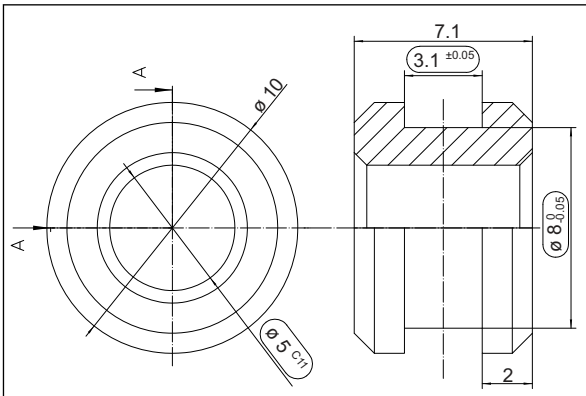
For shaft diameter d from 15 mm to 20 mm

	MZ1351	MZ1335	MZ1354	MZ1356	MZ1355	MZ1339
d [mm]	15^{H9}	16^{H9}	17^{H9}	18^{H9}	19^{H9}	20^{H9}
Screws ISO 14579 Torx	M5	M5	M5	M5	M5	M5

All dimensions stated in mm (≈ approximate dimension)
General tolerance DIN ISO 2768 medium

Dimensional drawings

Plain bearing OG0001 (part of option L and R and accessories kit ZB6113L01, ZB6113R01 and ZB6113LR1)



Section A-A

All dimensions stated in mm (≈ approximate dimension)
General tolerance DIN ISO 2768 medium

Type code GEL 6113

	Communication interface								
	CO CANopen CiA 402								
	DP PROFIBUS-DP V0/V1								
	EC EtherCAT								
	IP EtherNet/IP								
	MB Modbus/TCP								
	PL POWERLINK								
	RT PROFINET IO / RT								
	SC Sercos III								
		Nominal torque							
		05 5 Nm							
		07 7 Nm							
		10 10 Nm							
			Shaft in mm						
			U 20 mm through hollow shaft						
				Housing material					
				A Aluminium AlMgSi					
					Housing size				
					K Short				
					L Long				
						Type of connection			
						ST Connector (standard: M12 fieldbus, M23 supply)			
						HS M17 panel-mounting socket with pin contacts			
						S1 30 cm hybrid cable and M17 coupling with pin contacts			
						S2 50 cm hybrid cable and M17 coupling with pin contacts			
						S3 100 cm hybrid cable and M17 coupling with pin contacts			
						H1 30 cm hybrid cable and M23 coupling with pin contacts			
						H2 50 cm hybrid cable and M23 coupling with pin contacts			
						H3 100 cm hybrid cable and M23 coupling with pin contacts			
						Vx Hybrid cable pre-assembled with connection terminals for SeGMo-Box, Cable length V**1** = 1 m; V**2** = 3 m; V**3** = 5 m; V**4** = 8 m; V**5** = 10 m; V**6** = 13 m; V**7** = 15 m; V**8** = 18 m; V**9** = 20 m			
						xx xx m hybrid cable with flying lead, length in m (xx = 01…20; standard: 3 m)			
							Design		
							0 Standard		
							1 Separate fuse protection		
							C cULus recognised component		
								Option	
								0 Without torque support, with spacing bolt, without holding brake	
								1 Without torque support, with spacing bolt, with holding brake	
								L Torque support standard left (GZ1168 and plain bearing OG0001), without holding brake	
								R Torque support standard right (GZ1167 and plain bearing OG0001), without holding brake	
									Degree of protection
									3 IP 67 (with shaft sealing ring and protection against humidity), design **C**: additionally UL protection class type 1
6113	_ _	_ _	_	_	_	_ _	_	_	_

Type code

Instructions for the type of connection

Type of connection ST

The positioning drive can be connected directly to a plant control system.

Type of connection HS / H1 / H2 / H3 / S1 / S2 / S3 / xx / Vx

The positioning drive is supplied with SeGMo-Connect (hybrid cable) and connected via the SeGMo-Box with the plant control system.

Restrictions

Type of connection

The types of connection **HS / H1 / H2 / H3 / S1 / S2 / S3 / xx / Vx** are only available with communication interface **CO** (CANopen).
Type of connection **ST**:

- Communication interfaces **CO**, **DP**: only available with design **0**
- Communication interfaces **EC**, **IP**, **MB**, **PL**, **RT**, **SC**: only available with design **0** or **1**

Housing sizes/nominal torques/options

Nominal torque		Housing size	Length of housing	
			Option **0, L, R** (without holding brake)	Option **1** (with holding brake)
05	5 Nm at 55 min^{-1}	**K**	170 mm	195 mm
07	7 Nm at 55 min^{-1}	**K**	170 mm	195 mm
10	10 Nm at 55 min^{-1}	**L**	190 mm	215 mm

Design

The cULus component recognition (E196161) requires for the usage of the positioning drives in design **C** the usage of the SeGMo-Box (E483619) GEL6505A_____C or GEL6505B_____C in combination with SeGMo-Connect BZK_____. Usage is also limited to the application area in "NFPA 79 - Electrical Standard for Industrial Machinery".