



DFS60

HIGH RESOLUTION, PROGRAMMABLE ENCODERS
FOR SOPHISTICATED APPLICATIONS

Incremental encoder

SICK
Sensor Intelligence.



DFS60 – THE FLEXIBLE ALL-ROUNDER

Connects anywhere

Thanks to the plug-in cable connection and broad portfolio of matching adapter cables, the DFS60 incremental encoder can be adapted to fit a wide variety of electrical connection types. Cables of various lengths and with different plug connectors offer the user a wide range of connection options.



An array of program options

Resolution, counting direction and zero pulse are only a few examples of settings that the user can program individually with the DFS60. Both the compact PGT-10-Pro hand-held programming device and the PGT-08-S PC-based tool are available for this purpose.



Mechanical flexibility

The hollow shaft version of the DFS60 can be adapted to different shaft diameters using collets. In addition to metal collets, plastic inserts can also be used to achieve an insulated shaft connection.

For rough environments

The DFS60 incremental encoder with enclosure rating IP 65 is resistant to dust and humidity and operates reliably even at temperatures ranging from -40 °C to +100 °C.

HIGH-RESOLUTION, PROGRAMMABLE ENCODER FOR SOPHISTICATED APPLICATIONS



Product description

The DFS60 is a high-resolution incremental encoder with a diameter of 60mm. It offers a wide variety of mechanical and electric interfaces and can also be programmed by the customer if required. Programming of the output signal and zero pulse is a unique feature

for the market. The high enclosure rating, wide temperature range and large ball bearing distance ensure extreme robustness, making the DFS60 the ideal encoder for industrial applications in harsh environments

At a glance

- Compact installation depth
- High resolution up to 16 bits
- Optionally programmable: Output voltage, zero pulse position, zero pulse width and number of pulses
- Connection: Radial or axial cable outlet, M23 or M12 connector, axial or radial
- Electrical interfaces: 5V & 24V TTL/RS-422, 24 V HTL/push pull
- Mechanical interfaces: face mount or servo flange, blind or through hollow shaft
- Remote zero set possible

Your benefits

- Reduced storage costs and downtime due to customer-specific programming
- Variety of different mechanical and electrical interfaces enable the encoder to be optimally adjusted to fit the installation situation
- Excellent concentricity even at high speeds
- High resolution of up to 16 bits ensures precise measurements
- Permanent and safe operation due to a high enclosure rating, temperature resistance and a long bearing lifetime
- Programmability via the PGT-08 programming software and the PGT-10-Pro display programming tool allow the encoder to be adapted flexibly and quickly according to customer needs
- Programmable zero pulse position simplifies installation



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→ www.sick.com/DFS60

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



Fields of application

- Applications in factory and logistics automation for measuring of position, speed and distance: e.g. in printing machines, textile machines, wood processing, packaging machinery

Detailed technical data

Performance

	Eco	Basic	Advanced
Pulses per revolution	100 ... 2048 ¹⁾ (depending on type)	1 ... 10000 ¹⁾ (depending on type)	1 ... 65536 ¹⁾ (depending on type)
Pulses per revolution Sin/Cos 1,0 V_{PP}	–	1024	–
Measuring step	90° electronically/ppr		
Measuring step deviation at non binary number of lines			
Pulses 1 ... 99	–	± 0.08°	± 0.04°
Pulses 100 ... 10,000	± 0.2°	± 0.01°	± 0.008°
Pulses > 10,000	–		± 0.002°
Measuring step deviation at binary number of lines			
Pulses 1 ... 64	–	± 0.05°	± 0.03°
Pulses 128 ... 8,192	± 0.15°	± 0.008°	± 0.008°
Pulses 16,384 ... 65,536	–		± 0.0015°
Error limits	± 0.3°	± 0.05°	± 0.03°

¹⁾ See maximum revolution range.

Electrical data

	Eco	Basic	Advanced
Electrical interface	4,5 V ... 5,5 V, TTL/RS422, 10 V ... 32 V HTL/Push pull, 10 V ... 32 V, TTL/RS422 – –	4,5 V ... 32 V, HTL/Push pull, 0-SET 4,5 V ... 32 V, TTL/RS422, 0-SET 4,5 V ... 32 V, TTL/HTL programmable ¹⁾ 4,5 V ... 32 V, TTL/HTL programmable, 0-SET ¹⁾ 4,5 V ... 5,5 V, Sin/Cos 1,0 V _{SS}	–
Initialization time			
4.5 V ... 5.5 V, TTL/RS422	40 ms		
10 V ... 32 V, HTL/Push pull	40 ms		
10 V ... 32 V, TTL/RS422	40 ms		
4.5 V ... 32 V, HTL/Push pull, 0-SET	30 ms		
4.5 V ... 5.5 V, TTL/RS422, 0-SET	30 ms		
4.5 V ... 32 V, TTL/RS422, 0-SET	30 ms		
4.5 V ... 32 V, TTL/HTL programmable	–	32 ms ²⁾ 30 ms	
4.5 V ... 32 V, TTL/HTL programmable, 0-SET	–	32 ms ²⁾ 30 ms	
4,5 V ... 5,5 V, Sin/Cos 1,0 V _{PP}	–	40 ms	–
0-SET function	–	H-active (L = 0 - 3 V, H = 4,0 - U _S)	

	Eco	Basic	Advanced
Connection type	Cable, 8-wire, universal, 1.5 m Cable, 8-wire, universal, 3 m Cable, 8-wire, universal, 5 m Cable, 8-wire, universal, 10 m Male connector, M12, 8-pin, radial Male connector, M12, 8-pin, axial Male connector, M23, 12-pin, radial Male connector, M23, 12-pin, axial		
Operating current	40 mA (without load)		
Power consumption			
4.5 V ... 5.5 V, TTL/RS422	≤ 0.5 W (without load)		
10 V ... 32 V, HTL/Push pull	≤ 0.5 W (without load)		
10 V ... 32 V, TTL/RS422	≤ 0.5 W (without load)		
4.5 V ... 32 V, HTL/Push pull, 0-SET		≤ 0.7 W (without load)	
4.5 V ... 5.5 V, TTL/RS422, 0-SET		≤ 0.7 W (without load)	
4.5 V ... 32 V, TTL/RS422, 0-SET		≤ 0.7 W (without load)	
4.5 V ... 32 V, TTL/HTL programmable	–	≤ 0.7 W (without load)	
4.5 V ... 32 V, TTL/HTL programmable, 0-SET	–	≤ 0.7 W (without load)	
Load resistance			
4.5 V ... 5.5 V, Sin/Cos 1.0 V _{pp}	–	≤ 120 Ω	
Load current	≤ 30 mA		
Output frequency			
TTL/RS422	≤ 300 kHz	≤ 600 kHz	≤ 820 kHz
HTL/Push pull	≤ 300 kHz	≤ 600 kHz	≤ 820 kHz
HTL/Push pull, 0-SET	≤ 300 kHz	≤ 600 kHz	≤ 820 kHz
TTL/RS422, 0-SET	≤ 300 kHz	≤ 600 kHz	≤ 820 kHz
TTL/HTL programmable	–	≤ 600 kHz	≤ 820 kHz
TTL/HTL programmable, 0-SET	–	≤ 600 kHz	≤ 820 kHz
Sin/Cos 1,0 V _{pp}	–	≤ 200 kHz	–
Reference signal, number	1		
Reference signal, position	90°, electric, logically gated with A and B	90°, electric, logically gated with A and B 90°, electronically, gated with Sinus and Cosinus	90°, electric, logically gated with A and B
Reverse polarity protection			
4.5 V ... 5.5 V, TTL/RS422	–		
10 V ... 32 V, HTL/Push pull	✓		
10 V ... 32 V, TTL/RS422	✓		
4.5 V ... 32 V, HTL/Push pull, 0-SET	–	✓	
4.5 V ... 32 V, TTL/RS422, 0-SET	–	✓	
4.5 V ... 32 V, TTL/HTL programmable	–	–	–
4.5 V ... 5.5 V, Sin/Cos 1.0 V _{pp}	–	✓	
4.5 V ... 32 V, TTL/HTL programmable, 0-SET	–	✓	
Short-circuit protection of the outputs			
4.5 V ... 5.5 V, TTL/RS422	✓ ³⁾		
10 V ... 32 V, HTL/Push pull	✓ ³⁾		
10 V ... 32 V, TTL/RS422	✓ ⁴⁾		
4.5 V ... 32 V, HTL/Push pull, 0-SET	✓ ³⁾		
4.5 V ... 32 V, TTL/RS422, 0-SET	✓ ⁴⁾		

	Eco	Basic	Advanced
4.5 V ... 32 V, TTL/HTL programmable	–	✓ ^{5) 6)}	
4.5 V ... 5.5 V, Sin/Cos 1.0 V _{pp}	–	✓ ³⁾	–
4.5 V ... 32 V, TTL/HTL programmable, 0-SET	–	✓ ^{5) 6)}	
MTTFd: mean time to dangerous failure	300 years (EN ISO 13849-1) ⁷⁾		

¹⁾ Only with devices with M23 connector in connection with electrical interfaces M, U, V and W.

²⁾ With mechanical zero pulse width.

³⁾ Short-circuit opposite to another channel, US or GND permissible for maximum 30 s.

⁴⁾ Short-circuit opposite to another channel or GND permissible for maximum 30 s.

⁵⁾ Programming TTL with ≥ 5.5 V: short-circuit opposite to another channel or GND permissible for maximum 30 s.

⁶⁾ Programming HTL or TTL with < 5.5 V: short-circuit opposite to another channel, US or GND permissible for maximum 30 s.

⁷⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Mechanical data

	Eco	Basic	Advanced
Mechanical interface	Solid shaft, face mount flange Solid shaft, Servo flange Blind hollow shaft Through hollow shaft		
Shaft diameter			
Solid shaft, face mount flange	10 mm x 19 mm		
Solid shaft, Servo flange	6 mm x 10 mm		
Blind hollow shaft, Through hollow shaft	6 mm 8 mm 3/8" 10 mm 12 mm 1/2" 14 mm 15 mm 5/8"		
Weight			
Blind hollow shaft, Through hollow shaft	0.2 kg		
Solid shaft	0.3 kg		
Shaft material	Stainless steel		
Flange material	Aluminum		
Housing material	Aluminum die cast		
Start up torque			
Blind hollow shaft, Through hollow shaft	0.8 Ncm (+20 °C)		
Solid shaft	0.5 Ncm (+20 °C)		
Operating torque			
Blind hollow shaft, Through hollow shaft	0.6 Ncm (+20 °C)		
Solid shaft	0.3 Ncm (+20 °C)		
Permissible shaft movement, axial static/dynamic			
Blind hollow shaft, Through hollow shaft	± 0.5 mm / ± 0.2 mm		± 0.5 mm / ± 0.01 mm
Permissible shaft movement, radial static/dynamic			
Blind hollow shaft, Through hollow shaft	± 0.3 mm / ± 0.1 mm		± 0.3 mm / ± 0.05 mm
Permissible shaft loading radial/axial			

	Eco	Basic	Advanced
Solid shaft	80 N (radial) 40 N (axial)		
Operating speed			
Blind hollow shaft, Through hollow shaft	$\leq 6,000 \text{ min}^{-1}$ ¹⁾		
Solid shaft	$\leq 9,000 \text{ min}^{-1}$ ¹⁾		
Moment of inertia of the rotor	40 gcm ² / 6.2 gcm ² (depending on type)		40 gcm ² / 6.2 gcm ² (depending on type)
Bearing lifetime	3.6×10^{10} revolutions		
Angular acceleration	$\leq 500,000 \text{ rad/s}^2$		

¹⁾ Take into account self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

Ambient data

	Eco	Basic	Advanced
EMC			
4,5 V ... 5,5 V, TTL/RS422	According to EN 61000-6-2 and EN 61000-6-3		
10 V ... 32 V, HTL/Push pull	According to61000-6-2 and EN 61000-6-4		
10 V ... 32 V, TTL/RS422	According to EN 61000-6-2 and EN 61000-6-4		
4,5 V ... 32 V, HTL/Push pull, 0-SET	–	According to EN 61000-6-2 and EN 61000-6-3	
4,5 V ... 32 V, TTL/RS422, 0-SET	–	According to EN 61000-6-2 and EN 61000-6-3	
4,5 V ... 32 V, TTL/HTL programmierbar	–	According to EN 61000-6-2 and EN 61000-6-3	
4,5 V ... 5,5 V, Sin/Cos 1,0 V _{SS}	–	According to EN 61000-6-2 and EN 61000-6-3	–
4,5 V ... 32 V, TTL/HTL programmierbar, 0-SET	–	According to EN 61000-6-2 and EN 61000-6-3	
Enclosure rating			
shaft side	IP65		
Housing side, connector outlet	IP67, Through hollow shaft IP65 (according to IEC 60529)		
Housing side, cable outlet	IP67, Through hollow shaft IP65 (according to IEC 60529)		
Permissible relative humidity	90 % (condensation of the optical scanning not permitted)		
Operating temperature range			
	0 °C ... +85 °C	–40 °C ... +100 °C ²⁾ –30 °C ... +100 °C ³⁾	
Storage temperature range	–40 °C ... +100 °C, without package		
Resistance to shocks	50 g, 6 ms (according to EN 60068-2-27)	70 g, 6 ms (according to EN 60068-2-27)	100 g, 6 ms (according to EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz ... 2,000 Hz (ac-cording to EN 60068-2-6)	30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)	

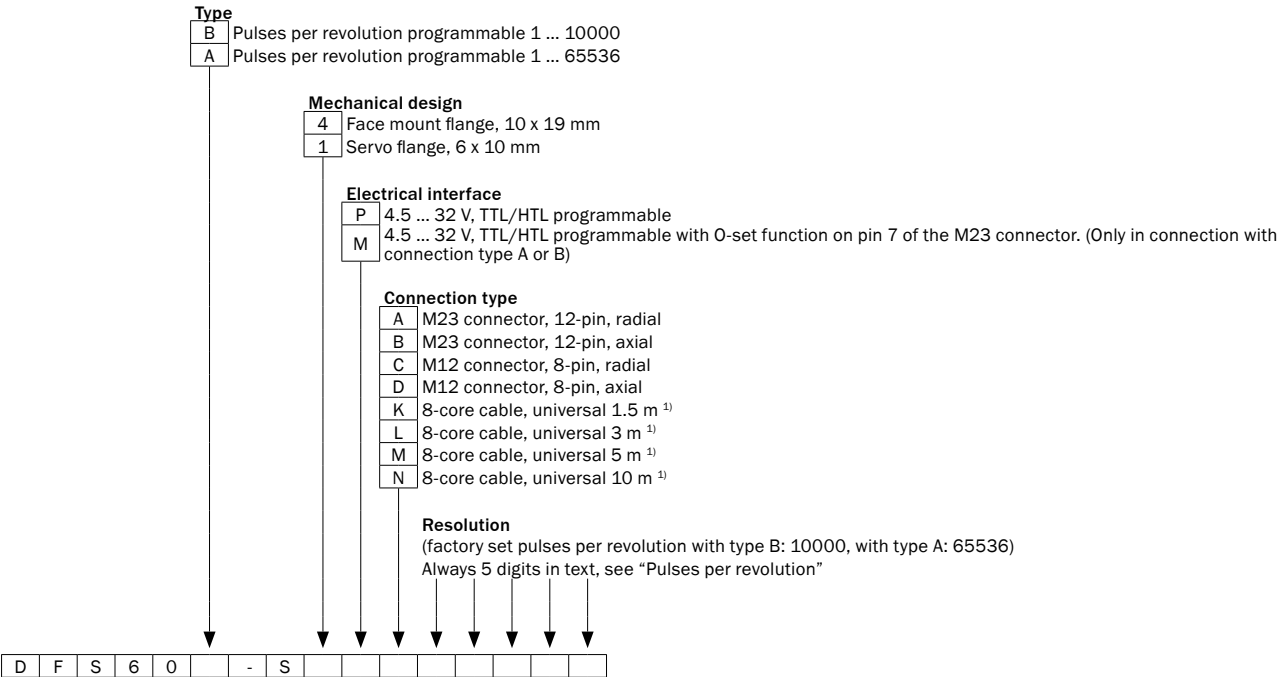
¹⁾ With mating connector fitted.

²⁾ Stationary position of the cable.

³⁾ Flexible position of the cable.

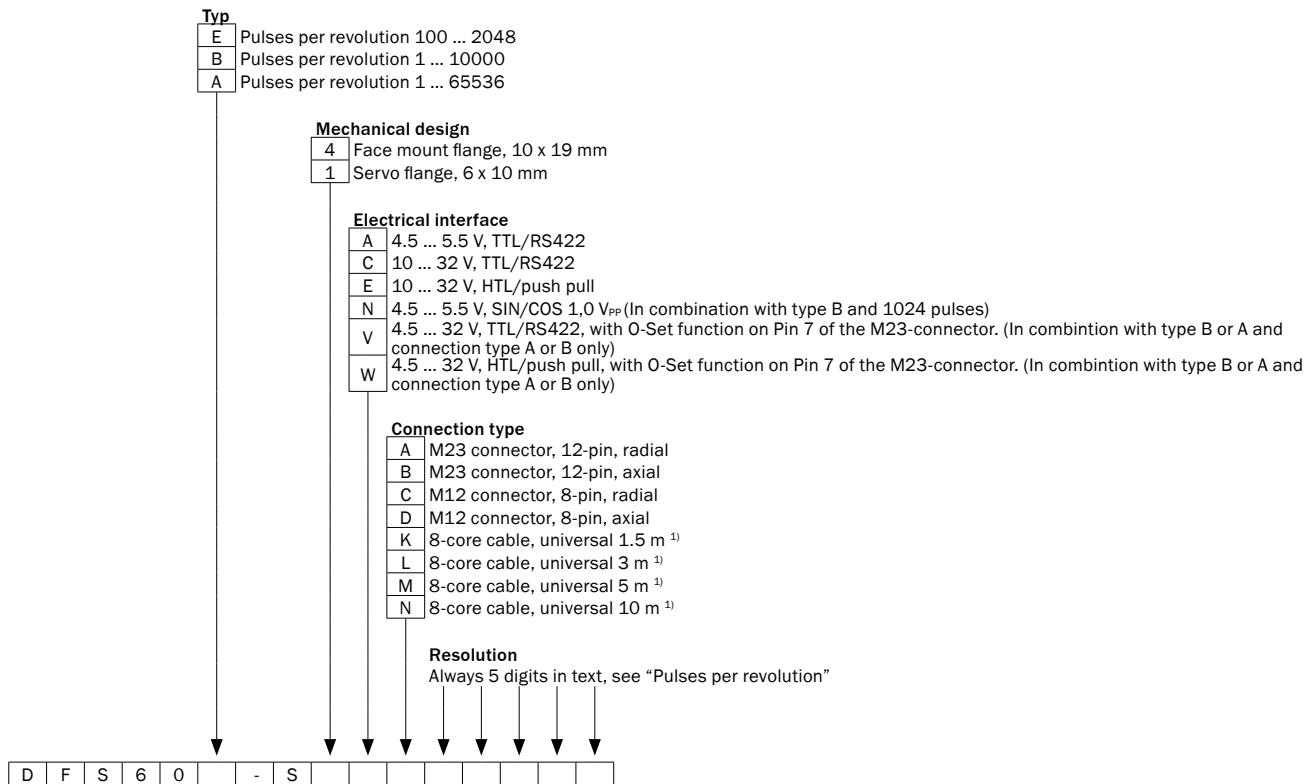
Type code

Solid shaft, programmable



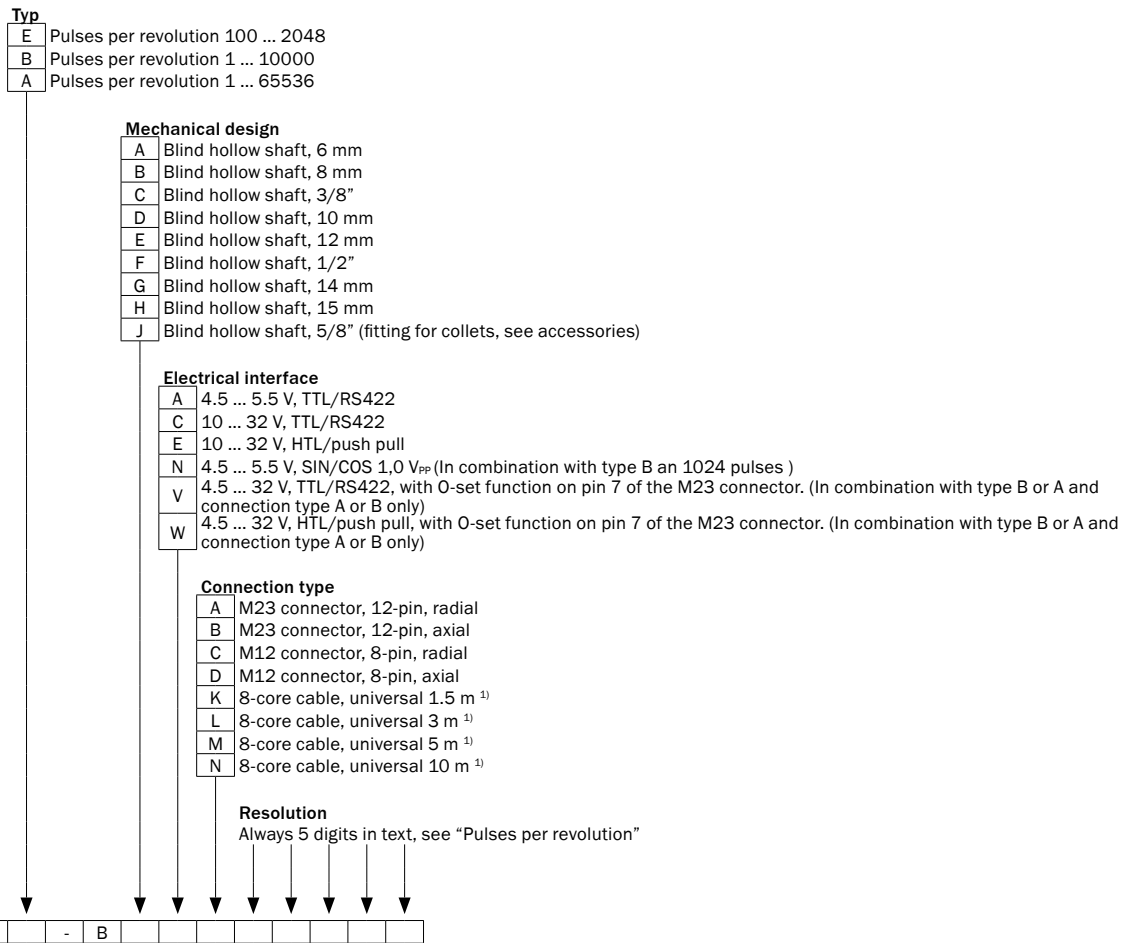
¹⁾ The universal cable outlet is positioned in such a way that knick-free laying in radial or axial direction is possible.

Solid shaft, not programmable



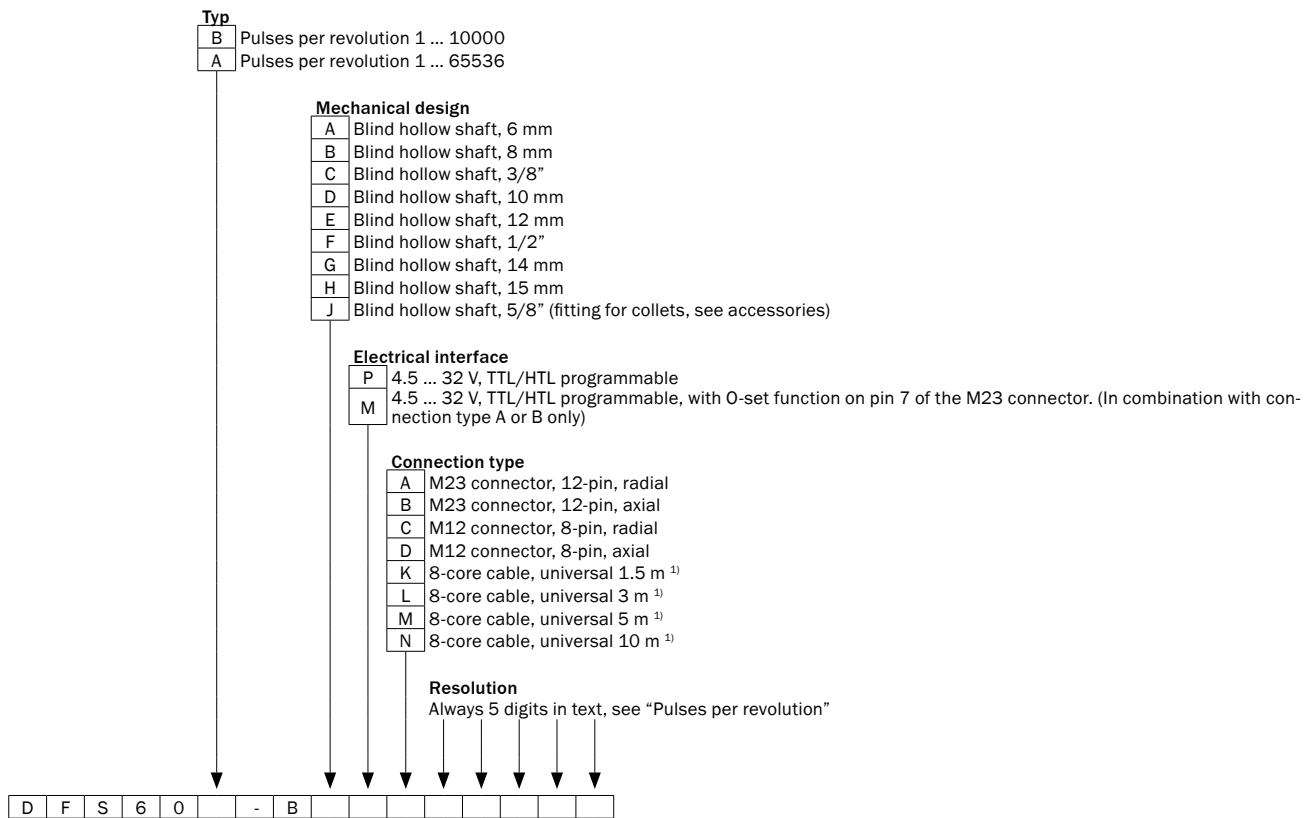
¹⁾ The universal cable outlet is positioned in such a way that kink-free laying in radial or axial direction is possible.

Blind hollow shaft, not programmable



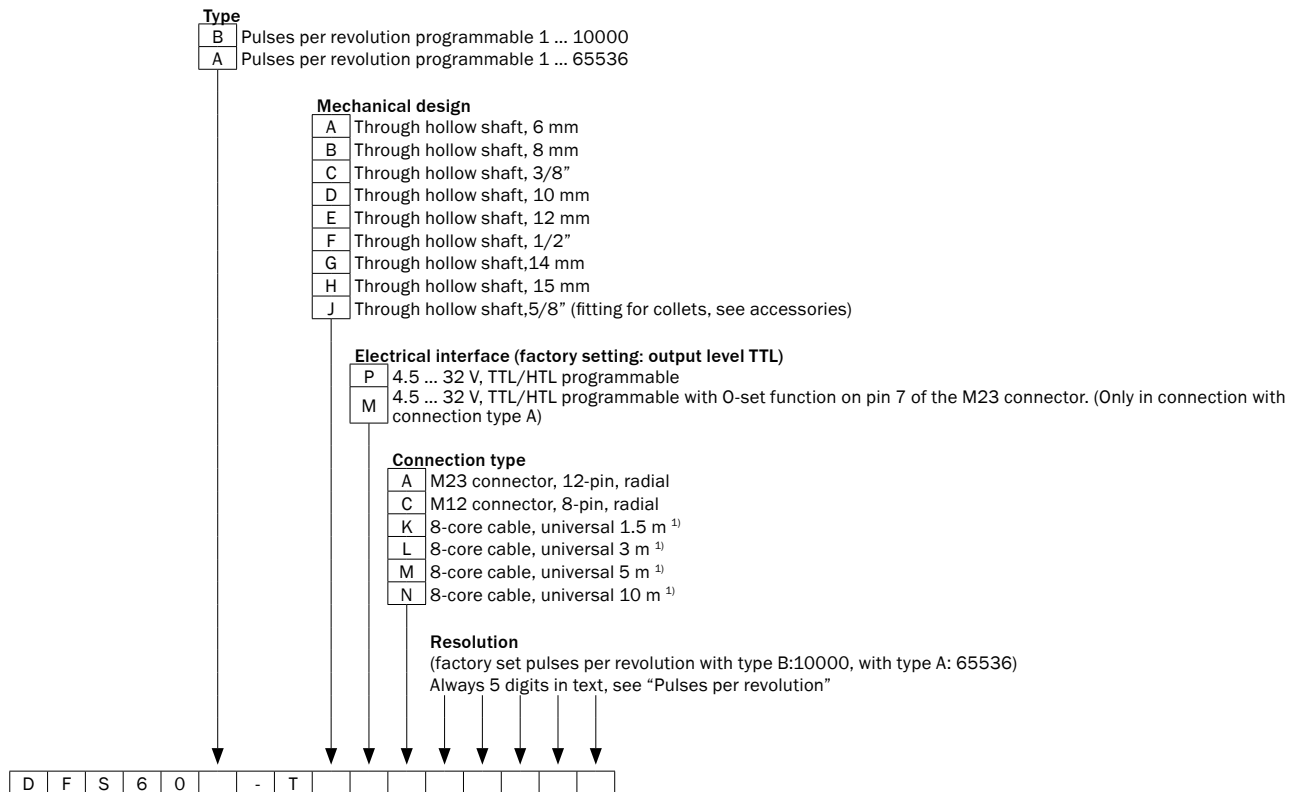
¹⁾ The universal cable outlet is positioned in such a way that kink-free laying in radial or axial direction is possible.

Blind hollow shaft, programmable



¹⁾ The universal cable outlet is positioned in such a way that kink-free laying in radial or axial direction is possible.

Through hollow shaft, programmable



¹⁾ The universal cable outlet is positioned in such a way that kink-free laying in radial or axial direction is possible.

Pulses per revolution¹⁾

	E	B ²⁾	A ²⁾
Pulses per revolution	00100	00100	00100
	00200	00200	00200
	00250	00250	00250
	00256	00300	00300
	00314	00314	00314
	00360	00360	00360
	00500	00500	00500
	00512	00512	00512
	00720	00720	00720
	01000	01000	01000
	01024	01024	01024
	01250	01250	01250
	02000	02000	02000
	02048	02048	02048
		02500	02500
		03600	03600
		04000	04000
		04096	04096
		05000	05000
		07200	07200
		08192	08192
		10000	10000
			16384
			32768
			65536

¹⁾The electrical interface N (Sin/Cos 1.0 V_{pp}) can only be ordered with 1024 pulses per revolution.

²⁾others on request

Programmable functions

Pulses per revolution from 1 ... 65536 using programming tools PGT-08-S or PGT-10-Pro

Zero pulse width electrically 90°, 180°, 270° using programming tools PGT-08-S or PGT-10-Pro

Zero pulse width mechanically 1° ... 359° using programming tool PGT-10-Pro

Level of the output voltage TTL/HTL using programming tools PGT-08-S or PGT-10-Pro

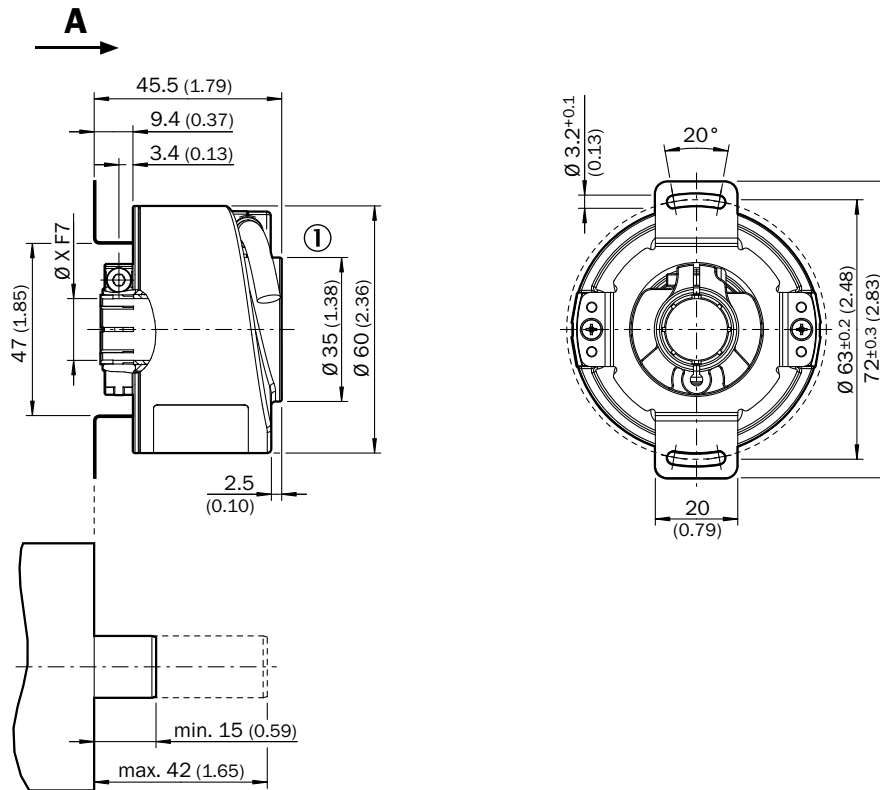
Counting direction CW/CCW using Programming-Tools PGT -08-S or PGT -10-Pro

0-SET function using programming tools PGT-08-S or PGT-10-Pro

0-SET function via PIN 7 of the M23 connector by applying U_s for at least 250 ms.

Dimensional drawings (Dimensions in mm (inch))

Blind hollow shaft, cable outlet

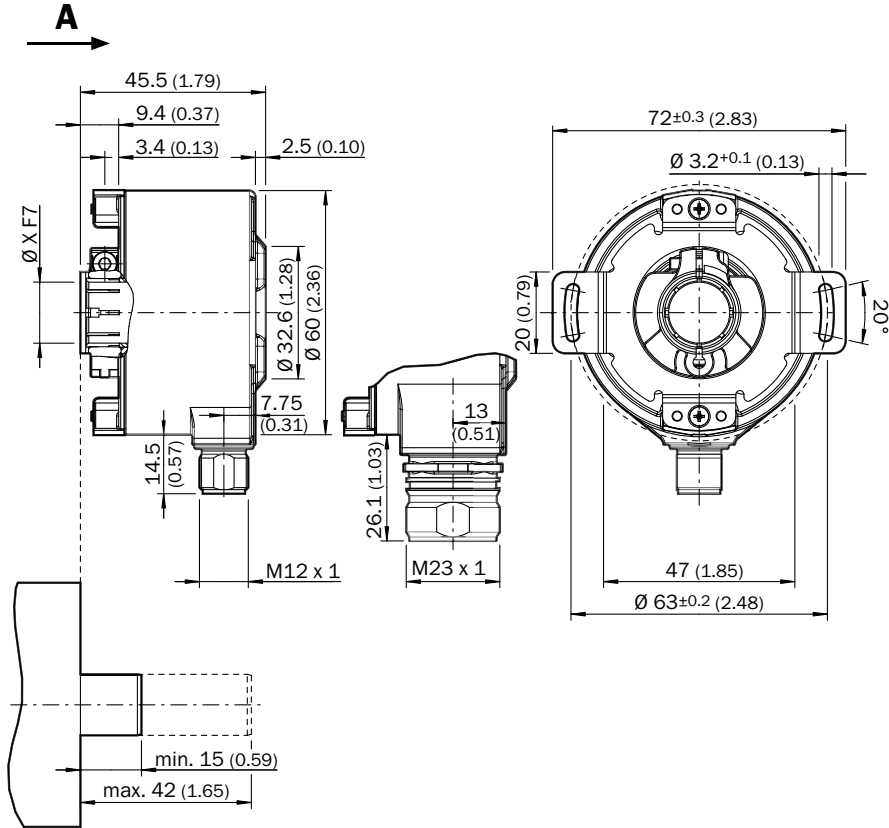


General tolerances according to DIN ISO 2768-mk

① Cable diameter = 5.6 mm +/- 0.2 mm bend radius = 30 mm

Type	Shaft diameter XF7	Shaft diameter xj7
Blind hollow shaft		
DFS60x-BAxxxxxxxx	6 mm	Provided by customer
DFS60x-BBxxxxxxxx	8 mm	
DFS60x-BCxxxxxxxx	3/8"	
DFS60x-BDxxxxxxxx	10 mm	
DFS60x-BExxxxxxxx	12 mm	
DFS60x-BFxxxxxxxx	1/2"	
DFS60x-BGxxxxxxxx	14 mm	
DFS60x-BHxxxxxxxx	15 mm	
DFS60x-BJxxxxxxxx	5/8"	

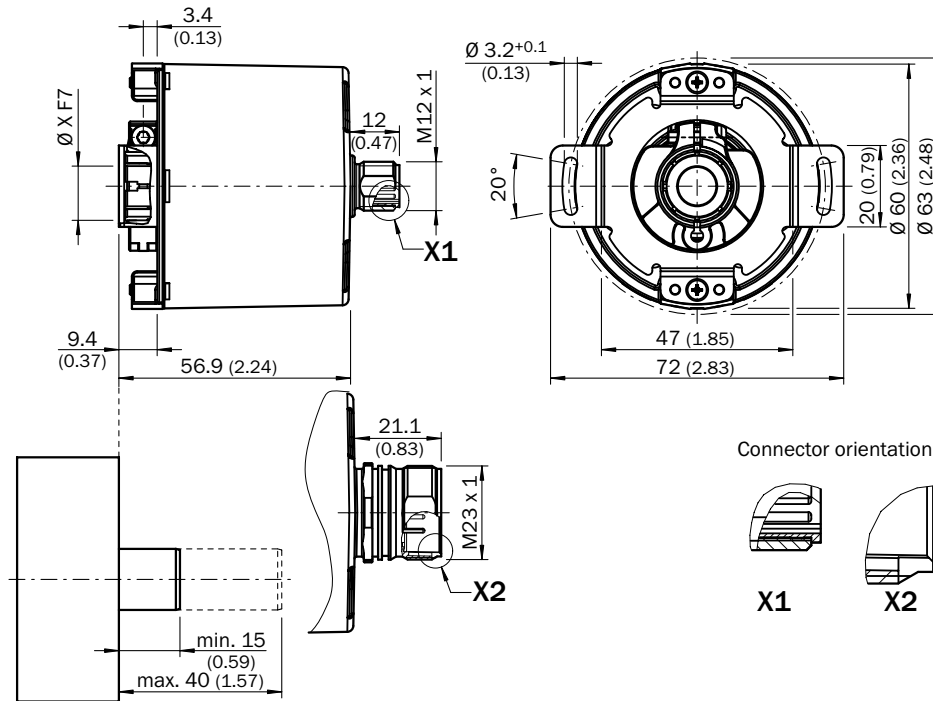
Blind hollow shaft, radial connector outlet M12 and M23



General tolerances according to DIN ISO 2768-mk

Type Blind hollow shaft	Shaft diameter XF7	Shaft diameter xj7
DFS60x-BAxxxxxxx	6 mm	Provided by customer
DFS60x-BBxxxxxxx	8 mm	
DFS60x-BCxxxxxxx	3/8"	
DFS60x-BDxxxxxxx	10 mm	
DFS60x-BExxxxxxx	12 mm	
DFS60x-BFxxxxxxx	1/2"	
DFS60x-BGxxxxxxx	14 mm	
DFS60x-BHxxxxxxx	15 mm	
DFS60x-BJxxxxxxx	5/8"	

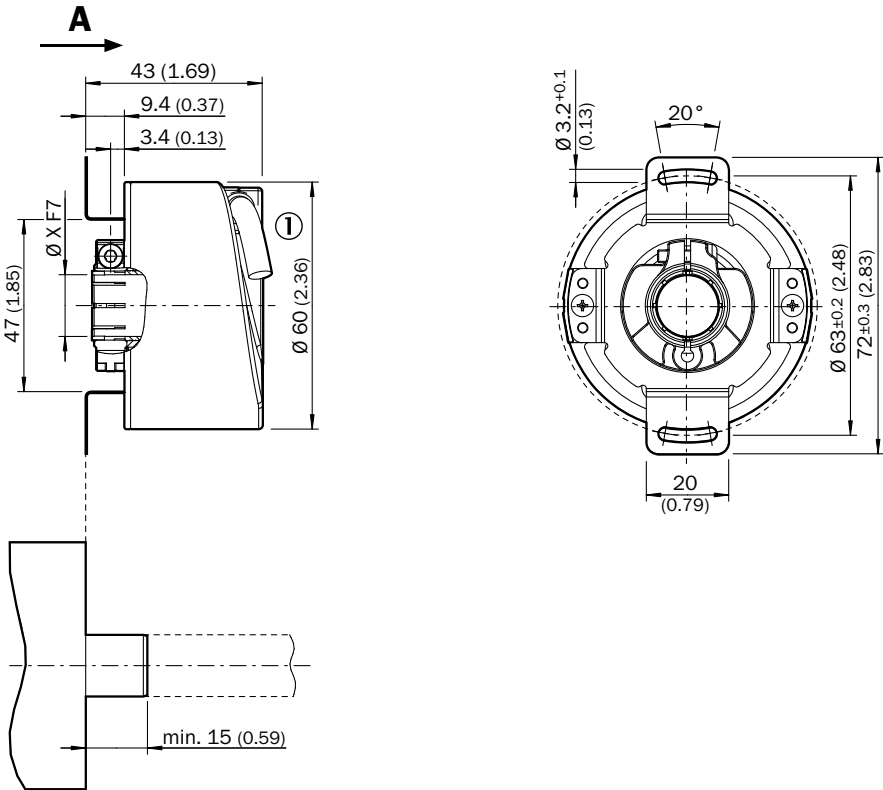
Blind hollow shaft, axial connector outlet M12 and M23



General tolerances according to DIN ISO 2768-mk

Type	Shaft diameter XF7	Shaft diameter xj7
Blind hollow shaft		
DFS60x-BAxxxxxxx	6 mm	Provided by customer
DFS60x-BBxxxxxxx	8 mm	
DFS60x-BCxxxxxxx	3/8"	
DFS60x-BDxxxxxxx	10 mm	
DFS60x-BExxxxxxx	12 mm	
DFS60x-BFxxxxxxx	1/2"	
DFS60x-BGxxxxxxx	14 mm	
DFS60x-BHxxxxxxx	15 mm	
DFS60x-BJxxxxxxx	5/8"	

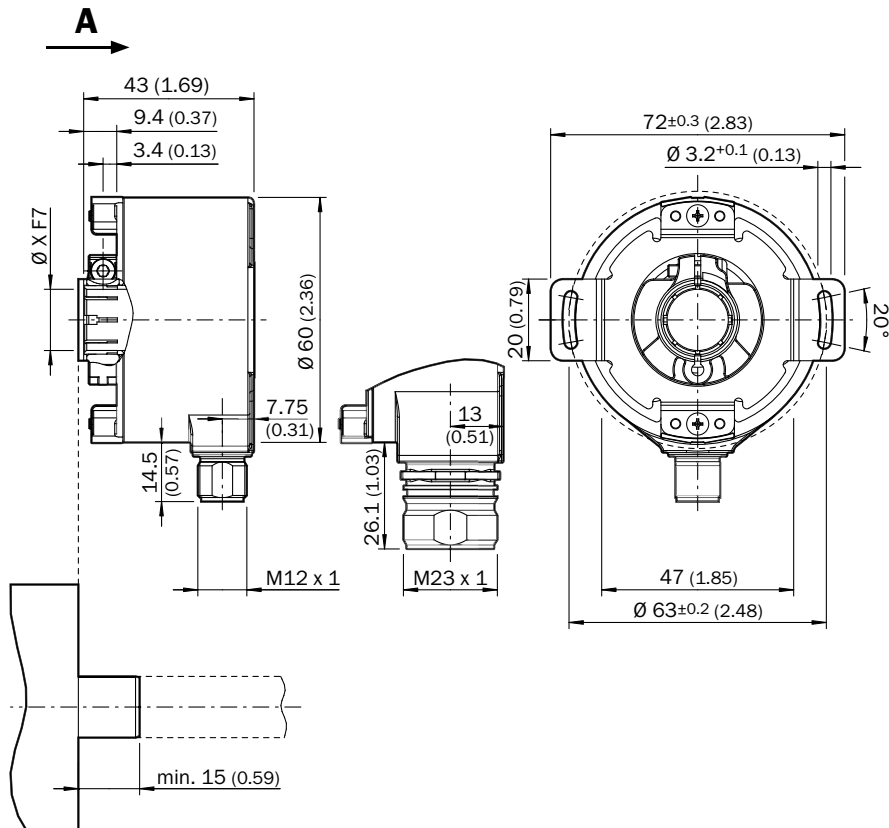
Through hollow shaft, cable outlet



General tolerances according to DIN ISO 2768-mk
① Cable diameter = 5.6 mm +/- 0.2 mm bend radius = 30 mm

Type Through hollow shaft	Shaft diameter XF7	Shaft diameter xj7
DFS60x-TAxxxxxxx	6 mm	Provided by customer
DFS60x-TBxxxxxxx	8 mm	
DFS60x-TCxxxxxxx	3/8"	
DFS60x-TDxxxxxxx	10 mm	
DFS60x-TExxxxxxx	12 mm	
DFS60x-TFxxxxxxx	1/2"	
DFS60x-TGxxxxxxx	14 mm	
DFS60x-THxxxxxxx	15 mm	
DFS60x-TJxxxxxxx	5/8"	

Through hollow shaft, radial connector outlet M12 and M23

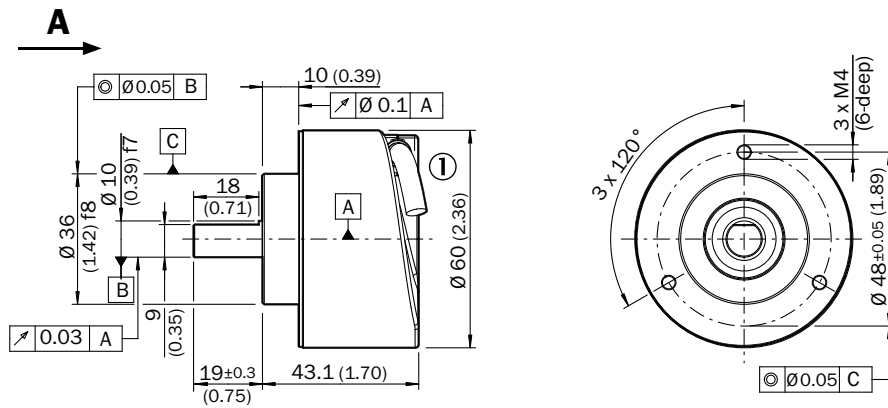


General tolerances according to DIN ISO 2768-mk

① Cable diameter = 5.6 mm +/- 0.2 mm bend radius = 30 mm

Type Through hollow shaft	Shaft diameter XF7	Shaft diameter xj7
DFS60x-TAxxxxxxx	6 mm	Provided by customer
DFS60x-TBxxxxxxx	8 mm	
DFS60x-TCxxxxxxx	3/8"	
DFS60x-TDxxxxxxx	10 mm	
DFS60x-TExxxxxxx	12 mm	
DFS60x-TFxxxxxxx	1/2"	
DFS60x-TGxxxxxxx	14 mm	
DFS60x-THxxxxxxx	15 mm	
DFS60x-TJxxxxxxx	5/8"	

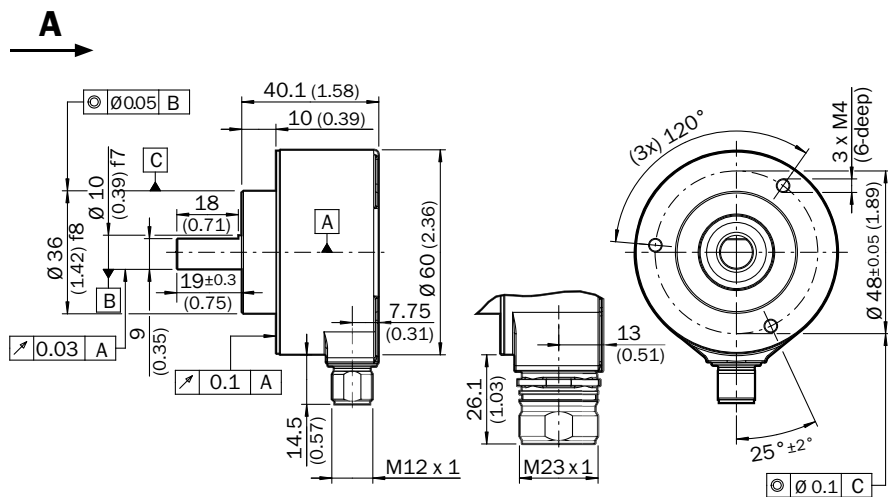
Face mount flange, cable outlet



General tolerances according to DIN ISO 2768-mk

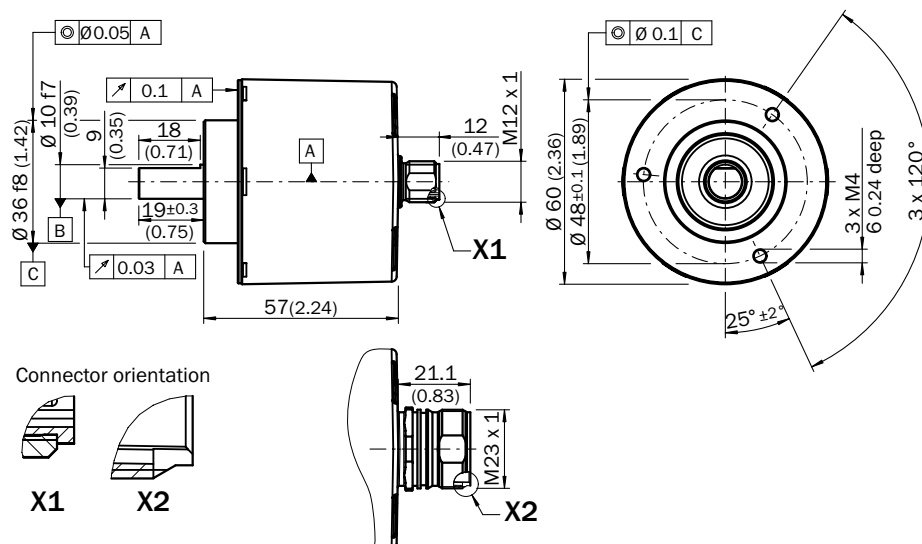
① Cable diameter = 5.6 mm +/- 0.2 mm bend radius = 30 mm

Face mount flange, radial connector outlet M12 and M23



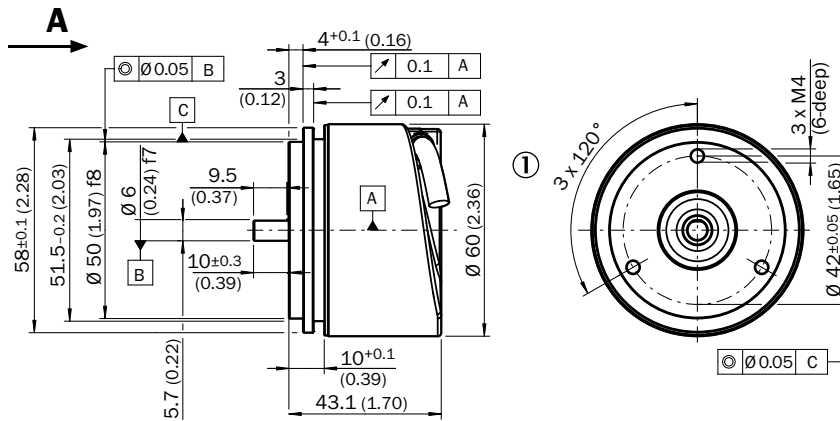
General tolerances according to DIN ISO 2768-mk

Face mount flange, axial connector outlet M12 and M23



General tolerances according to DIN ISO 2768-mk

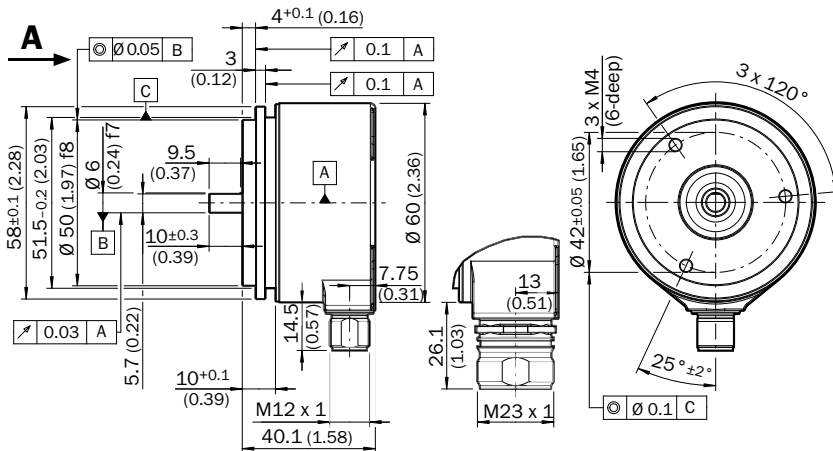
Servo flange, cable outlet



General tolerances according to DIN ISO 2768-mk

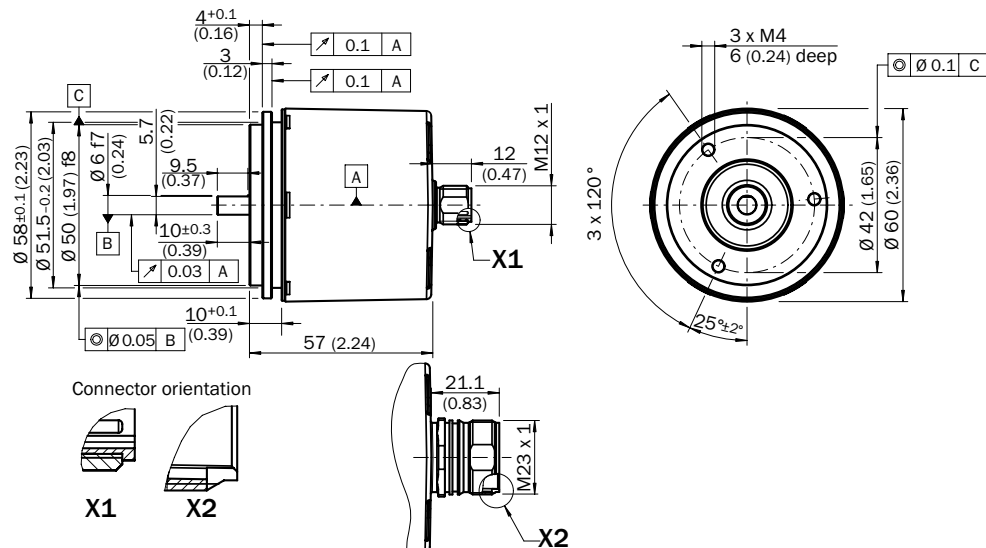
① Cable diameter = 5.6 mm +/- 0.2 mm bend radius = 30 mm

Servo flange, radial connector outlet M12 and M23



General tolerances according to DIN ISO 2768-mk

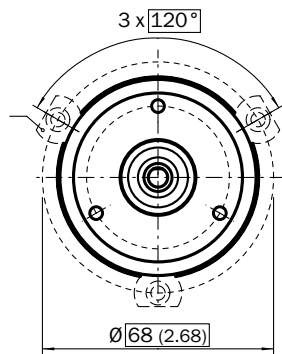
Servo flange, axial connector outlet M12 and M23



General tolerances according to DIN ISO 2768-mk

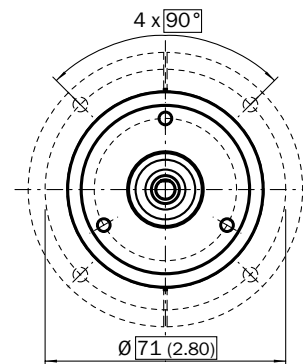
Proposed fitting

Proposed customer fitting for servo clamp small (part no. 2029166)



All dimensions in mm (inch)

Proposed customer fitting for servo clamp half-shell (part no. 2029165)

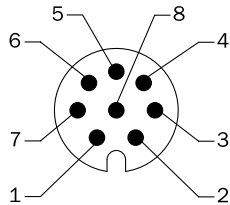


All dimensions in mm (inch)

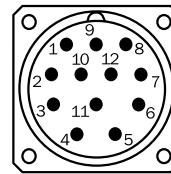
PIN assignment

Cable, 8-wire

View of M12 male device connector on encoder



View of M23 male device connector on encoder

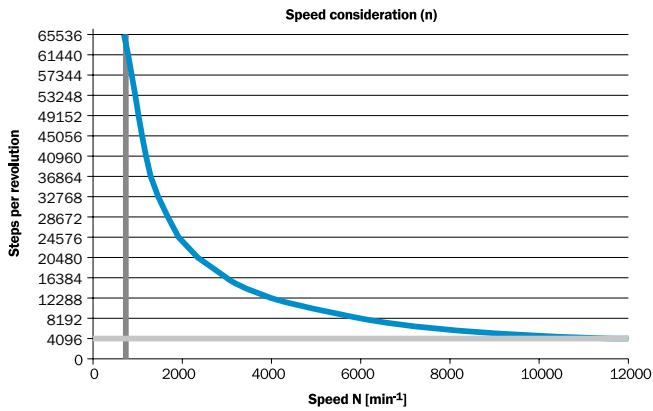


PIN, 8-pin, M12 male connector	PIN, 12-pin, M23 male connector	Color of the wires for encoders with cable outlet	TTL/HTL signal	Sin/cos 1.0 V _{SS}	Explanation
1	6	Brown	$\bar{A}$	COS-	Signal wire
2	5	White	A	COS+	Signal wire
3	1	Black	$\bar{B}$	SIN-	Signal wire
4	8	Pink	B	SIN+	Signal wire
5	4	Yellow	$\bar{Z}$	$\bar{Z}$	Signal wire
6	3	Violet	Z	Z	Signal wire
7	10	Blue	GND	GND	Ground connection of the encoder
8	12	Red	+U _s	+U _s	Supply voltage (volt-free to housing)
-	9	-	n.c.	n.c.	Not assigned
-	2	-	n.c.	n.c.	Not assigned
-	11	-	n.c.	n.c.	Not assigned
-	7 ¹⁾	-	O-SET ¹⁾	n.c.	Set zero pulse ¹⁾
Screen	Screen	Screen	Screen	Screen	Screen connected to housing on encoder side. Connected to ground on control side.

¹⁾ For electrical interfaces only: M, U, V, W with O-SET function on PIN 7 on M23 male connector. The O-SET input is used to set the zero pulse on the current shaft position. If the O-SET input is connected to U_s for longer than 250 ms after it had previously been unassigned for at least 1,000 ms or had been connected to the GND, the current position of the shaft is assigned to the zero pulse signal "Z".

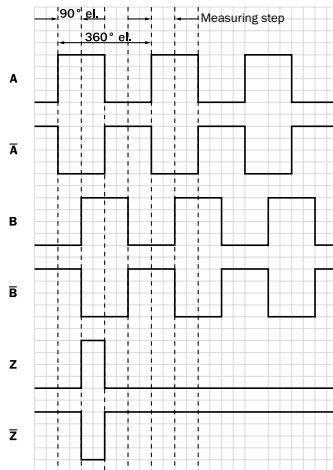
Maximum revolution range

Maximum revolution range



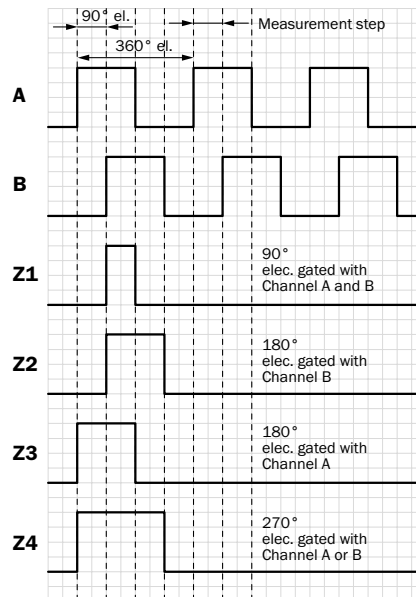
Signal outputs

Signal outputs



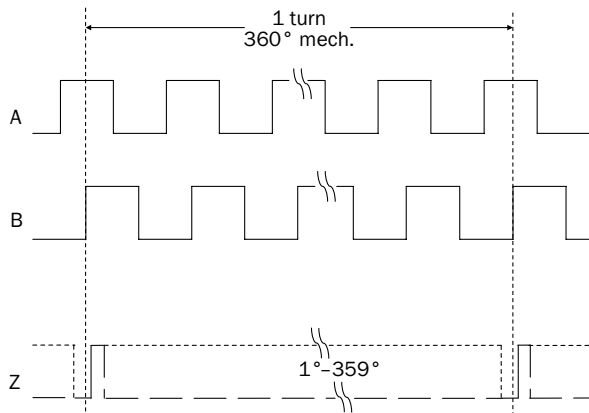
CW with view on the encoder shaft in direction "A", compare dimensional drawing.

Electrical zero pulse width can be configured to 90°, 180°, or 270°. Width of the zero pulse in relation to a pulse period.

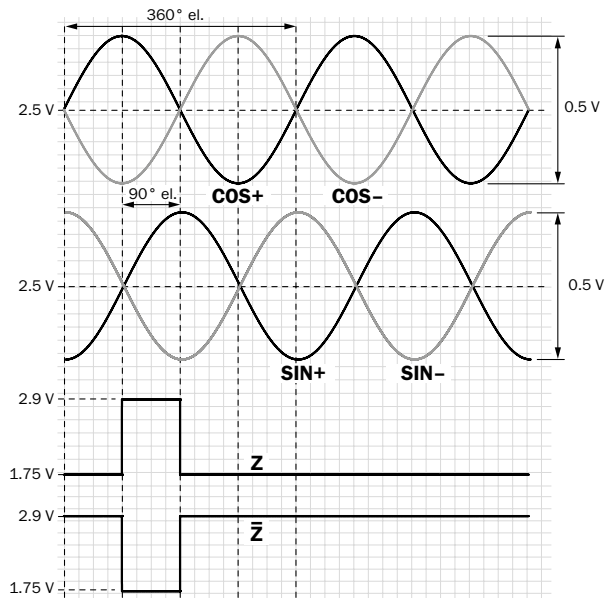


Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

Mechanical zero pulse width 1° to 359° programmable. Width of the zero pulse in relation to a mechanical revolution of the shaft.

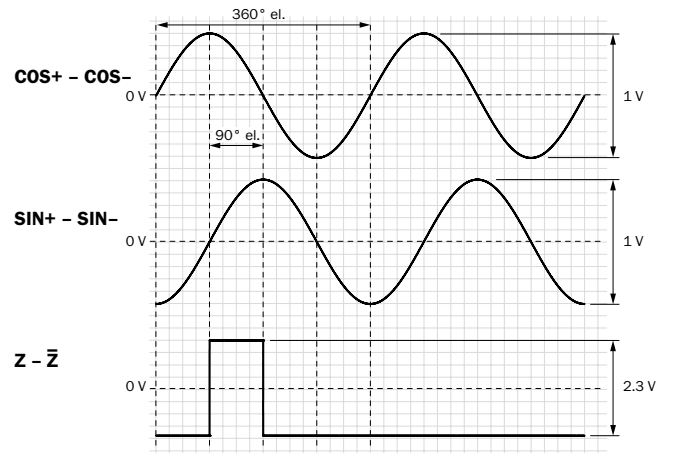


Signal SIN/COS before differential generation



For clockwise shaft rotation, looking in direction "A" (see dimensional drawing)

Signal SIN/COS after differential generation



For clockwise shaft rotation, looking in direction "A" (see dimensional drawing)

Accessories

Mounting systems

Flanges

Flange plates

Figure	Brief description	Type	Part no.
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 100 mm servo flange with 60 mm centering hub, aluminum, Aluminum	BEF-FA-036-100	2029161
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 50 mm servo flange, aluminum, including 3 flat head screws M4 x 10, Aluminum, including 3 countersunk screws M4 x 10	BEF-FA-036-050	2029160
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 58 mm square mounting plate with shock absorbers, aluminum, Aluminum	BEF-FA-036-060RSA	2029163
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 60 mm square mounting plate, aluminum, including 3 flat head screws M4 x 10, Aluminum, including 3 countersunk screws M4 x 10	BEF-FA-036-060REC	2029162
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 63 mm square mounting plate, aluminum, including 3 flat head screws M4 x 10, Aluminum, including 3 countersunk screws M4 x 10	BEF-FA-036-063REC	2034225
	One-sided stator coupling, slot, slot radius 32.25 mm to 141.75 mm, slot width 5.1 mm	BEF-DS02DFS/VFS	2047430
	One-sided stator coupling, slot, slot radius 33 mm to 211.9 mm, slot width 5.1 mm	BEF-DS03DFS/VFS	2047431
	One-sided stator coupling, slot, slot radius 33 mm to 48.5 mm, slot width 5.1 mm	BEF-DS01DFS/VFS	2047428
	Standard stator coupling	BEF-DS00XFX	2056812
	Stator coupling with hole circle diameter 63 mm	BEF-DS07XFX	2059368
	Stator coupling, 16.5 mm high	BEF-DS05XFX	2057423

Dimensional drawings → [page 35](#)

Mounting brackets and plates

Mounting brackets

Figure	Brief description	Type	Part no.
	Mounting bracket for encoder with spigot 36 mm for face mount flange, mounting kit included	BEF-WF-36	2029164
	Mounting angle spring-loaded, for flange with centerring collar 36 mm, working temperature range -40° ... +120°C, Aluminum	BEF-WF36F	4084775

Dimensional drawings → [page 40](#)

Other mounting accessories

Measuring wheels and measuring wheel systems

Figure	Brief description	Type	Part no.
	Aluminium measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 200 mm	BEF-MR010020R	2055224
	Aluminium measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 300 mm	BEF-MR010030R	2049278
	Aluminium measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 200 mm	BEF-MR006020R	2055222
	Aluminium measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 500 mm	BEF-MR006050R	2055225
	Measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 500 mm	BEF-MR010050R	2055227
	Measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 300 mm	BEF-MR006030R	2055634
	Aluminum measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 200 mm	BEF-MR10200AK	4084737
	Aluminum measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 500 mm	BEF-MR10500AK	4084733
	Aluminum measuring wheel with cross-knurled surface for 6 mm solid shaft, circumference 200 mm	BEF-MR06200AK	4084745
	Aluminum measuring wheel with ridged polyurethane surface for 10 mm solid shaft, circumference 200 mm	BEF-MR10200APG	4084740
	Aluminum measuring wheel with ridged polyurethane surface for 10 mm solid shaft, circumference 500 mm	BEF-MR10500APG	4084736
	Aluminum measuring wheel with ridged polyurethane surface for 6 mm solid shaft, circumference 200 mm	BEF-MR06200APG	4084748
	Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 200 mm	BEF-MR10200AP	4084738
	Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 500 mm	BEF-MR10500AP	4084734
	Aluminum measuring wheel with smooth polyurethane surface for 6 mm solid shaft, circumference 200 mm	BEF-MR06200AP	4084746
	Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 200 mm	BEF-MR10200APN	4084739
	Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 500 mm	BEF-MR10500APN	4084735
	Aluminum measuring wheel with studded polyurethane surface for 6 mm solid shaft, circumference 200 mm	BEF-MR06200APN	4084747
	Measuring wheel with ridged plastic surface (Hytrel) for 10 mm solid shaft, circumference 200 mm	BEF-MR-010020G	5318678
	Plastic measuring wheel with smooth plastic surface (Hytrel) for 10 mm solid shaft, circumference 500 mm	BEF-MR-010050	5312989
	Plastic measuring wheel with smooth plastic surface (Hytrel), for 10 mm solid shaft, circumference 200 mm	BEF-MR-010020	5312988

Figure	Brief description	Type	Part no.
	O-ring for measuring wheels (circumference 200 mm)	BEF-OR-053-040	2064061
	O-ring for measuring wheels (circumference 300 mm)	BEF-OR-083-050	2064076
	O-ring for measuring wheels (circumference 500 mm)	BEF-OR-145-050	2064074

Dimensional drawings → [page 40](#)

Modular measuring wheel system

Figure	Brief description	Type	Part no.
	SICK modular measuring wheel system for face mount flange encoder with S4 mechanical design (10 x 19 mm solid shaft), e.g., DFS60-S4	BEF-MRS-10-U	2085714

Dimensional drawings → [page 40](#)

Mounting bells

Figure	Brief description	Type	Part no.
	Mounting bell for encoder with servo flange, 50 mm spigot, mounting kit included	BEF-MG-50	5312987

Dimensional drawings → [page 40](#)

Others

Figure	Brief description	Type	Part no.
	Bearing block for servo and face mount flange encoder. The heavy-duty bearing block is used to absorb very large radial and axial shaft loads. Particularly when using belt pulleys, chain sprockets, friction wheels.	BEF-FA-LB1210	2044591
	Bearing bracket for hollow shaft encoders, fastening screws included. The Bearing Block is intended for very large radial and axial shaft loads. Particularly for application on: Belt pulleys, Chain pinions, Friction wheels. It is designed this way to enable fitting of encoder with blind hollow shaft with Ø 12 mm., fastening screws included.	BEF-FA-B12-010	2042728
	Clamping ring for metal hollow shaft, metal	BEF-KR-M	2064709
	Flange adapter (adapts size 60 face mount flange encoder to bearing block with part. no. 2044591)	BEF-FA-036-050-019	2063378
	Mounting kit for servo flange encoder on the bearing block, 1 bar coupling SKPS 1520 06/06 1 hexagon socket wrench SW1.5 DIN 911, 3 mounting eccentric BEMN 1242 49 3 screws M4 x 10 DIN 912, 1 hexagon socket wrench SW3 DIN 911, 1 bar coupling SKPS 1520 06/06 1 hexagon socket wrench SW1.5 DIN 911, 3 mounting eccentric BEMN 1242 49 3 screws M4 x 10 DIN 912, 1 hexagon socket wrench SW3 DIN 911	BEF-MK-LB	5320872

Dimensional drawings → [page 40](#)

Servo clamps

Figure	Brief description	Type	Part no.
	Half-shell servo clamps (2 pcs.) for servo flanges with a 50 mm centering hub	BEF-WG-SF050	2029165
	Servo clamps, large, for servo flanges (clamps, eccentric fastener), 3 pcs., without mounting material, without mounting hardware	BEF-WK-SF	2029166

Dimensional drawings → [page 40](#)

Shaft adaptation

Collets and clamping rings

Figure	Brief description	Type	Part no.
	Collet metal for hollow shaft, shaft diameter 1/2" (12.7 mm), outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-12Z-M	2076225
	Collet metal for hollow shaft, shaft diameter 10 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-010-M	2076220
	Collet metal for hollow shaft, shaft diameter 12 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-012-M	2076221
	Collet metal for hollow shaft, shaft diameter 14 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-014-M	2076222
	Collet metal for hollow shaft, shaft diameter 3/8" (9.525 mm), outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-38Z-M	2076224
	Collet metal for hollow shaft, shaft diameter 8 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-008-M	2076219
	Collet plastic insulated for hollow shaft, shaft diameter 1/2" (12.7 mm), outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-12Z-P	2076227
	Collet metal for hollow shaft, shaft diameter 15 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-015-M	2076223
	Collet plastic insulated for hollow shaft, shaft diameter 10 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-010-P	2076230
	Collet plastic insulated for hollow shaft, shaft diameter 12 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-012-P	2076231
	Collet plastic insulated for hollow shaft, shaft diameter 3/8" (9.525 mm), outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-38Z-P	2076226
	Collet plastic insulated for hollow shaft, shaft diameter 6 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-006-P	2076228
	Collet plastic insulated for hollow shaft, shaft diameter 8 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-008-P	2076229
	Collet plastic insulated for hollow shaft, shaft diameter 14 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-014-P	2076232
	Collet plastic insulated for hollow shaft, shaft diameter 15 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-015-P	2076233
	PEEK conductor insulation (shaft diameter 1/2" (12.7 mm), outer diameter 15 mm)	PEEK CONDUCTOR INSULATION	2064572
	PEEK conductor insulation (shaft diameter 10 mm, outer diameter 12 mm)	PEEK CONDUCTOR INSULATION	2064571
	PEEK conductor insulation (shaft diameter 11 mm, outer diameter 12.7 mm)	PEEK CONDUCTOR INSULATION	2077319
	PEEK conductor insulation (shaft diameter 12 mm, outer diameter 14 mm)	PEEK CONDUCTOR INSULATION	2064573
	PEEK conductor insulation (shaft diameter 8 mm, outer diameter 10 mm)	PEEK CONDUCTOR INSULATION	2065642

Dimensional drawings → [page 44](#)

Shaft couplings

Figure	Brief description	Type	Part no.
	Bar coupling, shaft diameter 10 mm / 10 mm; maximum shaft offset: radial ± 0.3 mm, axial ± 0.2 mm, angular $\pm 3^\circ$; speed 10,000 rpm, -10° to $+80^\circ$ Celsius, max. torque 80 Ncm; material: glass fiber-reinforced polyamide, aluminum hub	KUP-1010-S	2056408
	Bar coupling, shaft diameter 6 mm / 10 mm, max. shaft offset: radial ± 0.3 mm, axial ± 0.3 mm, angular $\pm 3^\circ$; max. speed 10,000 rpm, -10° to $+80^\circ$ °C, max. torque: 80 Ncm, material: fiber-glass reinforced polyamide, aluminum hub	KUP-0610-S	2056407
	Bar coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial ± 0.3 mm, axial ± 0.2 mm, angle $\pm 3^\circ$; max. speed 10,000 rpm, -10° to $+80^\circ$ °C, max. torque 80 Ncm; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0606-S	2056406
	Bar coupling, shaft diameter 6 mm / 8 mm, maximum shaft offset radial ± 0.3 mm, axial ± 0.2 mm, angle $\pm 3^\circ$, max. speed 10,000 rpm, torsion spring rigidity 38 Nm/wheel; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0608-S	5314179
	Bar coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radial ± 0.3 mm, axial ± 0.3 mm, angular $\pm 3^\circ$; max. speed 10,000 rpm, -10° to $+80^\circ$ °C, max. torque: 80 Ncm, material: fiber-glass reinforced polyamide, aluminum hub	KUP-0810-S	5314178
	Bellows coupling, shaft diameter 10 mm/10 mm; maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. revolutions 10,000 rpm, -30° to $+120^\circ$ °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum clamping hubs	KUP-1010-B	5312983
	Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. speed 10,000 rpm, -30° °C to $+120^\circ$ °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum hub	KUP-0610-B	5312982
	Bellows coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. speed 10,000 rpm, -30° °C to $+120^\circ$ °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum hub	KUP-0606-B	5312981
	Bellows coupling, shaft diameter 10 mm / 12 mm; maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. revolutions 10,000 rpm, -30° to $+120^\circ$ °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum clamping hubs	KUP-1012-B	5312984
	Double loop coupling, shaft diameter 10 mm / 10 mm, Maximum shaft offset: radial ± 2.5 mm, axial ± 3 mm, angular $\pm 10^\circ$; max. speed 3,000 rpm, -30° to $+80^\circ$ °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange	KUP-1010-D	5326703
	Double loop coupling, shaft diameter 10 mm / 12 mm, Maximum shaft offset: radial ± 2.5 mm, axial ± 3 mm, angular $\pm 10^\circ$; max. speed 3,000 rpm, -30° to $+80^\circ$ °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange	KUP-1012-D	5326702
	Double loop coupling, shaft diameter 6 mm / 10 mm, max. shaft offset: radially ± 2.5 mm, axially ± 3 mm, angle ± 10 degrees; max. speed 3,000 rpm, -30 to $+80$ degrees Celsius, torsional spring stiffness of 25 Nm/rad	KUP-0610-D	5326697
	Double loop coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radially ± 0.25 mm, axially ± 0.4 mm, angle ± 4 degrees; max. speed 10,000 rpm, -30 to $+120$ degrees Celsius, torsional spring stiffness of 150 Nm/rad	KUP-0810-D	5326704
	Spring washer coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset, radial ± 0.3 mm, axial ± 0.4 mm, angle $\pm 2.5^\circ$, torsion spring stiffness 30 Nm/rad; material: aluminum flange, glass-fiber reinforced polyamide membrane and hardened steel coupling pin	KUP-1010-F	5312986
	Spring washer coupling, shaft diameter 6 mm / 10 mm, Maximum shaft offset: radial ± 0.3 mm, axial ± 0.4 mm, angular $\pm 2.5^\circ$; max. speed 12,000 rpm, -10° to $+80^\circ$ °C, max. torque 60 Ncm; material: aluminum flange, glass fiber-reinforced polyamide membrane and hardened steel coupling pin	KUP-0610-F	5312985
	Spring washer coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset, radial ± 1.5 mm, axial ± 1.0 mm, angle $\pm 5^\circ$, max. speed 3,000 rpm, -30° to $+120^\circ$ °C, max. torque 150 Ncm; material: spring steel, clamping: zinc die cast	KUP-1010-W	5319914

Dimensional drawings → [page 44](#)

Connection systems

Plug connectors and cables

Cables (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: cable Head B: cable Cable: SSI, drag chain use, PUR, halogen-free, shielded, 4 x 2 x 0.15 mm ² , Ø 5.6 mm	LTG-2308-MWENC	6027529
	Head A: cable Head B: cable Cable: SSI, PUR, shielded, 4 x 2 x 0.15 mm ² + 2 x 0.5mm ² + 1 x 0.14mm ² , Ø 7.5 mm	LTG-2411-MW	6027530
	Head A: cable Head B: cable Cable: SSI, drag chain use, PUR, halogen-free, shielded, 4 x 2 x 0.25 mm ² + 2 x 0.5 mm ² + 2 x 0.14 mm ² , Ø 7.8 mm	LTG-2512-MW	6027531
	Head A: cable Head B: cable Cable: SSI, drag chain use, PUR, halogen-free, shielded, 4 x 2 x 0.25 mm ² + 2 x 0.5 mm ² + 2 x 0.14 mm ² , Ø 7.8 mm, UV and saltwater-resistant	LTG-2612-MW	6028516

Connecting cables with female connector

Figure	Brief description	Cable length	Type	Part no.
	Head A: female connector, JST, 8-pin, straight Head B: cable Cable: SSI, Incremental, drag chain use, PUR, halogen-free, shielded, 4 x 2 x 0.15 mm ² , Ø 5.6 mm	0.5 m	DOL-0J08-G0M5AA3	2046873
		1.5 m	DOL-0J08-G1M5AA6	2048590
		3 m	DOL-0J08-G3M0AA6	2048591
		5 m	DOL-0J08-G05MAA3	2046876
		10 m	DOL-0J08-G10MAA3	2046877
	Head A: female connector, M12, 8-pin, straight Head B: cable Cable: drag chain use, PUR, halogen-free, shielded, 4 x 2 x 0.25 mm ² , Ø 7 mm	2 m	DOL-1208-G02MAC1	6032866
		5 m	DOL-1208-G05MAC1	6032867
		10 m	DOL-1208-G10MAC1	6032868
		20 m	DOL-1208-G20MAC1	6032869
	Head A: female connector, M23, 12-pin, straight Head B: cable Cable: Incremental, PUR, shielded, 4 x 2 x 0.25 mm ² + 2 x 0.5 mm ² + 1 x 0.14 mm ² , Ø 7.5 mm	2 m	DOL-2312-G02MLA3	2030682
			DOL-2312-G02MLD1	2062202
		7 m	DOL-2312-G07MLA3	2030685
			DOL-2312-G07MLD1	2062203
		10 m	DOL-2312-G10MLA3	2030688
			DOL-2312-G10MLD1	2062204
		15 m	DOL-2312-G15MLA3	2030692
			DOL-2312-G15MLD1	2062205
		20 m	DOL-2312-G20MLA3	2030695
			DOL-2312-G20MLD1	2062206
		25 m	DOL-2312-G25MLA3	2030699
			DOL-2312-G25MLD1	2062207
		30 m	DOL-2312-G30MLA3	2030702
			DOL-2312-G30MLD1	2062208

Figure	Brief description	Cable length	Type	Part no.
	Head A: female connector, M23, 12-pin, straight Head B: cable Cable: Incremental, drag chain use, PUR, shielded, 4 x 2 x 0.25 mm ² + 2 x 0.5 mm ² + 2 x 0.14 mm ² , Ø 7.8 mm	1.5 m	DOL-2312-G1M5MA3	2029212
			DOL-2312-G1M-5MD1	2062240
		3 m	DOL-2312-G03M-MA3	2029213
			DOL-2312-G03M-MD1	2062243
		5 m	DOL-2312-G05M-MA3	2029214
			DOL-2312-G05M-MD1	2062244
		10 m	DOL-2312-G10MMA3	2029215
			DOL-2312-G10M-MD1	2062245
		20 m	DOL-2312-G20M-MA3	2029216
			DOL-2312-G20M-MD1	2062246
		30 m	DOL-2312-G30M-MA3	2029217
			DOL-2312-G30M-MD1	2062247

Dimensional drawings → [page 46](#)

Connection cables with female connector and male connector

Figure	Brief description	Cable length	Type	Part no.
	Head A: female connector, plug-in system, 8-pin, straight Head B: male connector, D-Sub, 9-pin, straight Cable: Incremental, PVC, shielded	0.5 m	DSL-0D04-G0M0AC3	2078403
			DSL-0D08-G0M5AC3	2061739
	Head A: female connector, M12, 8-pin, straight Head B: male connector, D-Sub, 9-pin, straight Cable: Incremental, shielded, 4 x 2 x 0.08 mm ²	0.5 m	DSL-2D08-G0M5AC3	2046579
	Head A: female connector, M23, 12-pin, straight Head B: male connector, D-Sub, 9-pin, straight Cable: Incremental, shielded, 4 x 2 x 0.08 mm ²	0.5 m	DSL-3D08-G0M5AC3	2046580
	Head A: female connector, JST, 8-pin, straight Head B: male connector, M23, 12-pin, straight Cable: Incremental, drag chain use, PUR, halogen-free, shielded, 4 x 2 x 0.15 mm ² , Ø 5.6 mm	1 m	STL-2312-G01MAA3	2061622
		2 m	STL-2312-G02MAA3	2061504
		0.35 m	STL-2312-GM35AA3	2061621

Dimensional drawings → [page 46](#)

Female connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 8-pin, straight, A-coding Head B: - Cable: Incremental, SSI, shielded, CAT5, CAT5e	DOS-1208-GA01	6045001

Figure	Brief description	Type	Part no.
	Head A: female connector, M23, 12-pin, straight Head B: - Cable: HIPERFACE®, SSI, Incremental, shielded	DOS-2312-G	6027538
	Head A: female connector, M23, 12-pin, straight Head B: - Cable: HIPERFACE®, SSI, Incremental, PBT UL 94-V0, shielded	DOS-2312-G02	2077057
	Head A: female connector, M23, 12-pin, angled Head B: - Cable: HIPERFACE®, SSI, Incremental, shielded	DOS-2312-W01	2072580

Dimensional drawings → [page 46](#)

Male connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: male connector, M12, 8-pin, straight, A-coding Head B: - Cable: Incremental, shielded, CAT5, CAT5e	STE-1208-GA01	6044892
	Head A: male connector, M23, 12-pin, straight Head B: - Cable: HIPERFACE®, SSI, Incremental, RS-422, shielded	STE-2312-G	6027537
	Head A: male connector, M23, 12-pin, straight Head B: - Cable: HIPERFACE®, SSI, Incremental, PBT UL 94-V0, shielded	STE-2312-G01	2077273
	Head A: male connector, M23, 12-pin, straight Head B: - Cable: HIPERFACE®, SSI, Incremental, shielded	STE-2312-GX	6028548

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Further accessories

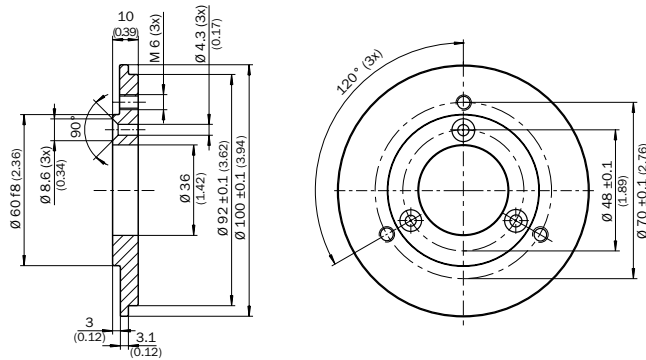
Programming and configuration tools

Figure	Brief description	Type	Part no.
	USB programming unit, for programmable SICK encoders AFS60, AFM60, DFS60, VFS60, DFV60 and wire draw encoders with programmable encoders	PGT-08-S	1036616
	Programming unit display for programmable SICK DFS60, DFV60, AFS/AFM60, AHS/AHM36 encoders, and wire draw encoder with DFS60, AFS/AFM60 and AHS/AHM36. Compact dimensions, low weight, and intuitive operation.	PGT-10-PRO-S01	1087462
		PGT-10-Pro	1072254

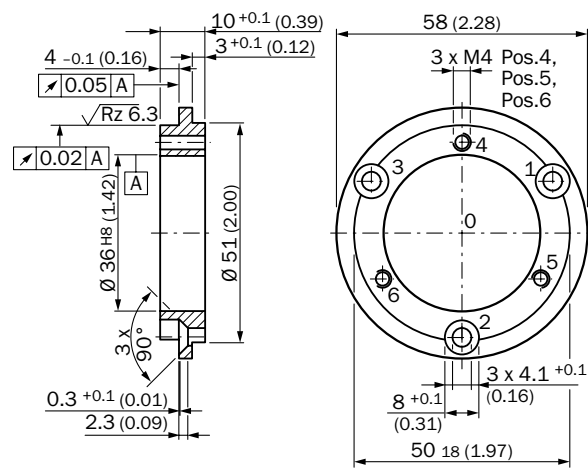
Dimensional drawings for accessories (Dimensions in mm (inch))

Flanges

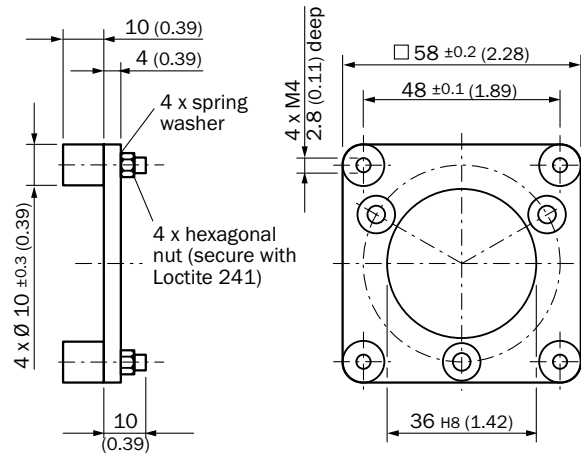
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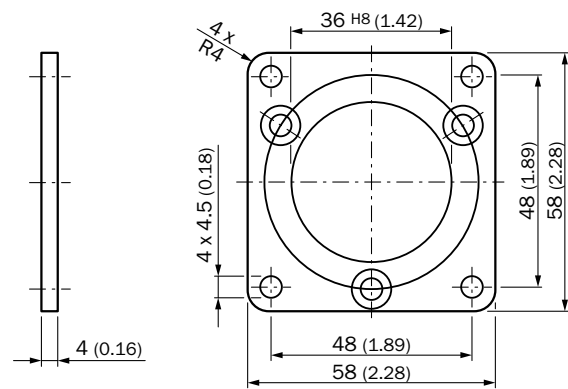
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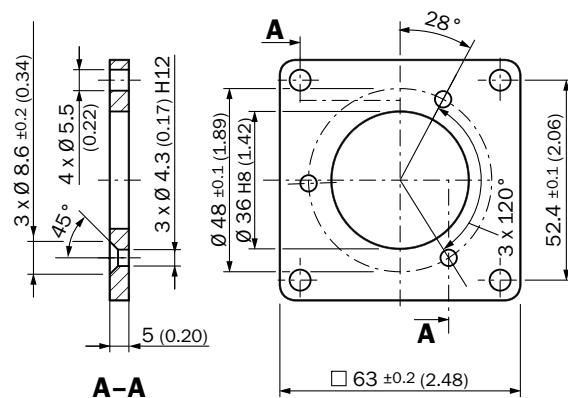
BEF-FA-036-060RSA



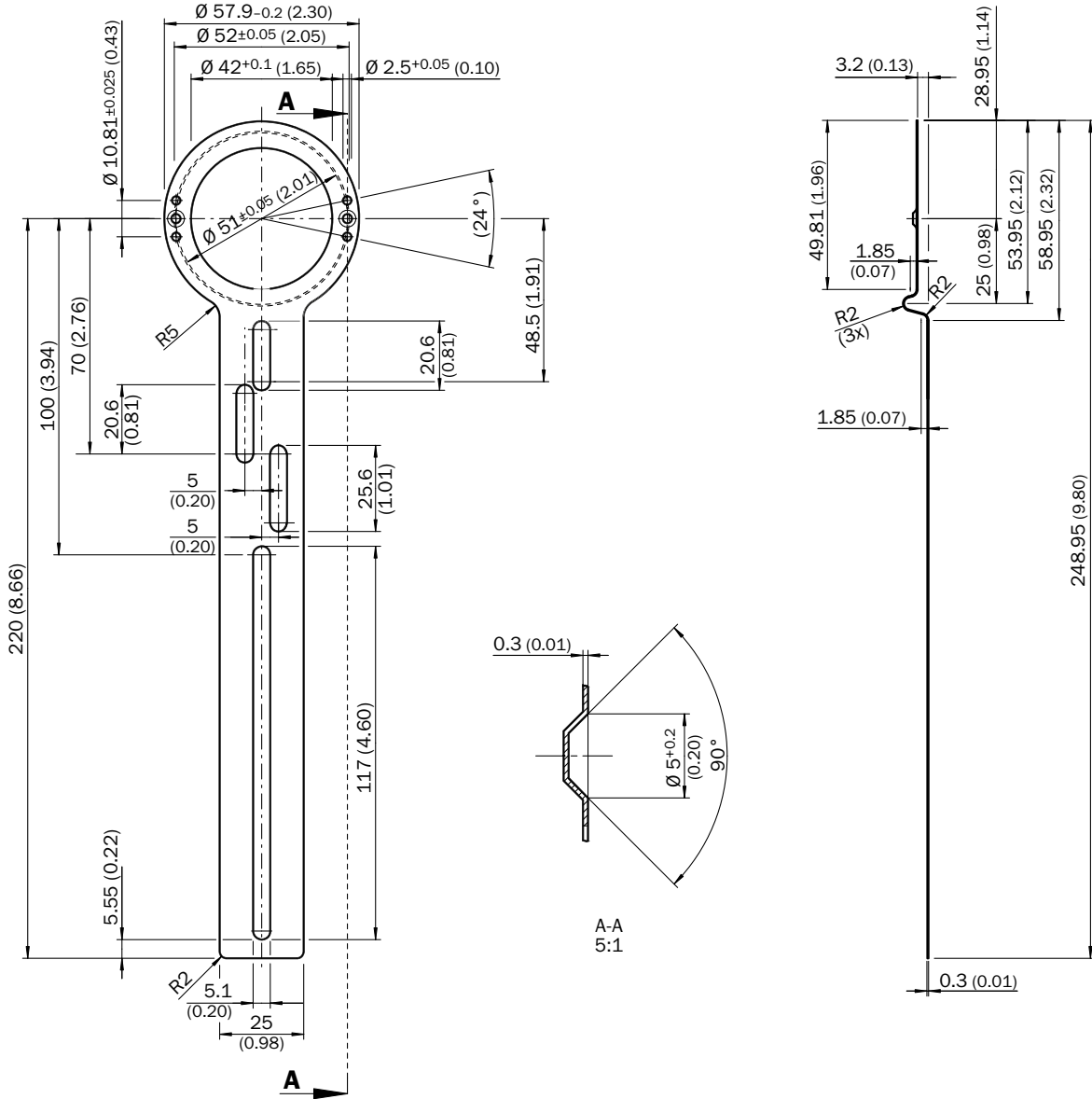
BEF-FA-036-060REC



BEF-FA-036-063REC



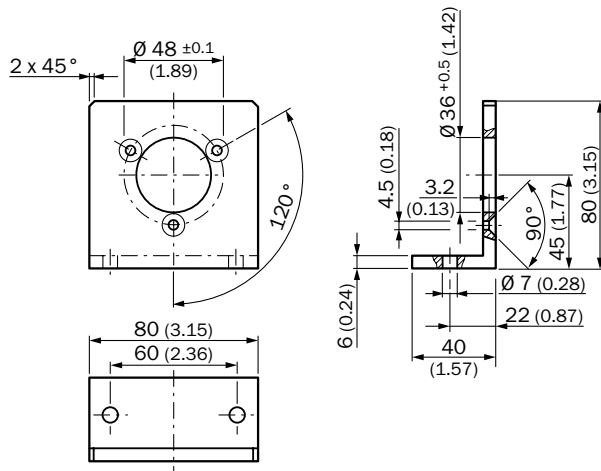
BEF-DS03DFS/VFS



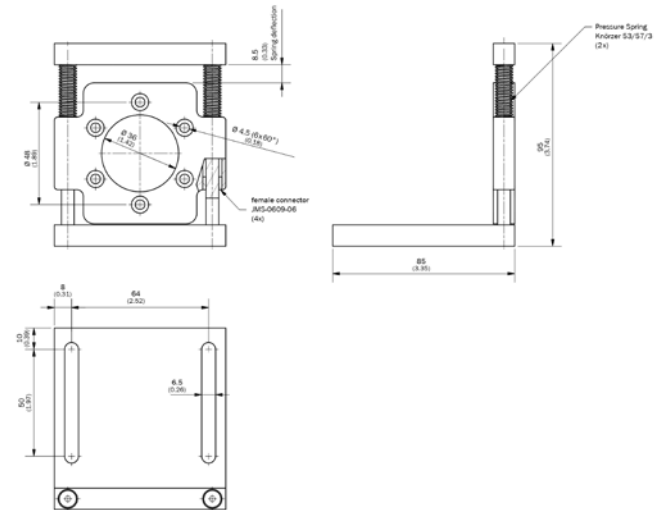


Mounting brackets and plates

BEF-WF-36

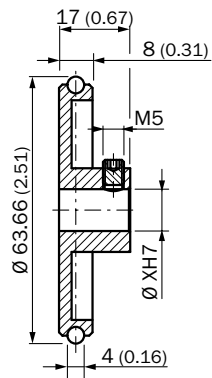


BEF-WF36F

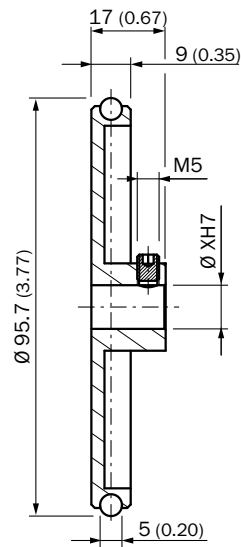


Other mounting accessories

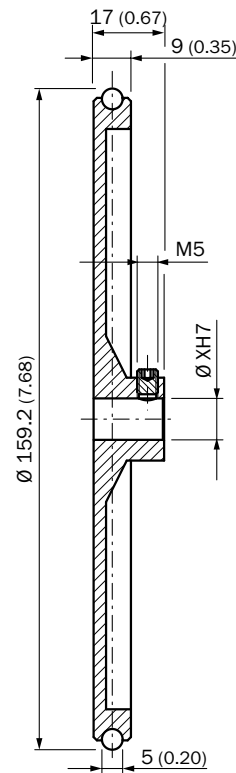
BEF-MR0xx020R



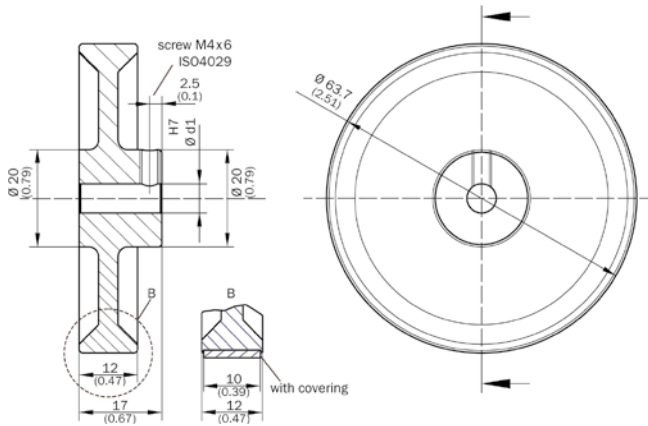
BEF-MR0xx030R



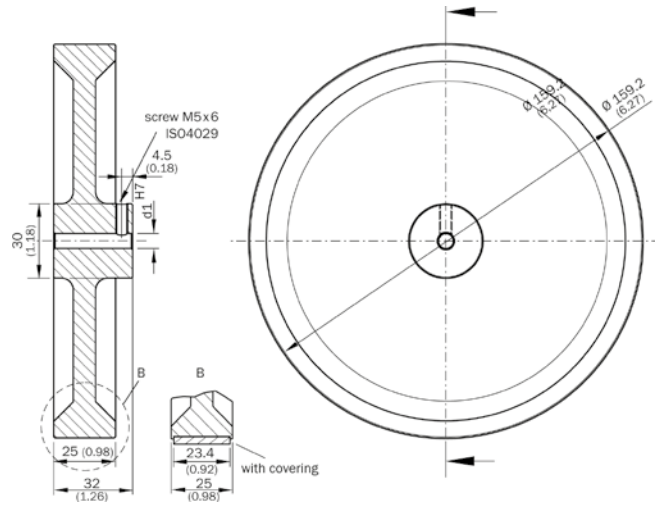
BEF-MR0xx050R



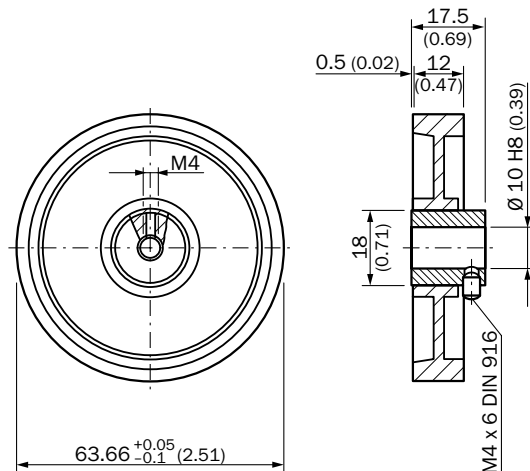
BEF-MR10200AK, BEF-MR06200AK, BEF-MR10200APG,
BEF-MR06200APG, BEF-MR10200AP, BEF-MR06200AP, BEF-
MR10200APN, BEF-MR06200APN



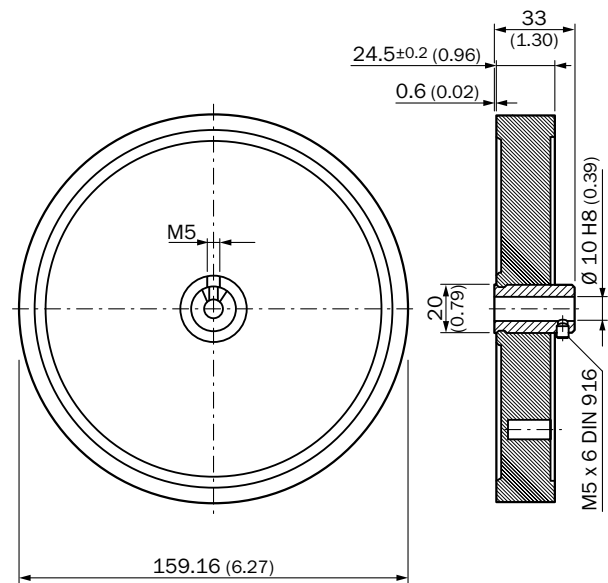
BEF-MR10500AK
BEF-MR10500APG
BEF-MR10500AP
BEF-MR10500APN



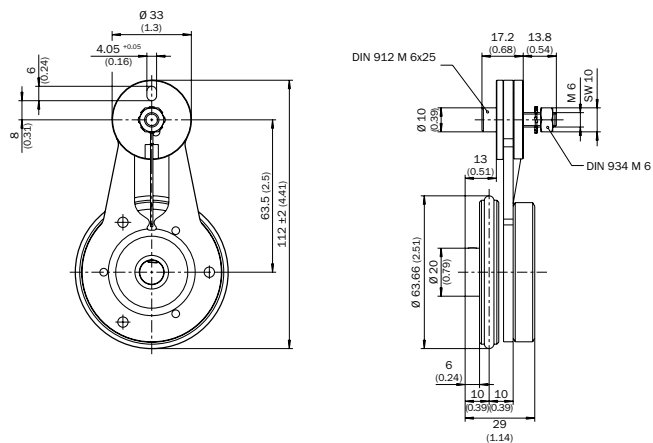
BEF-MR-010020G
BEF-MR-010020



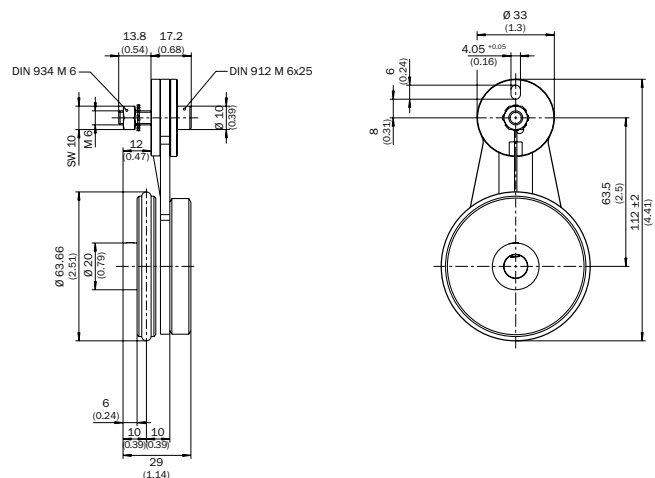
BEF-MR-010050



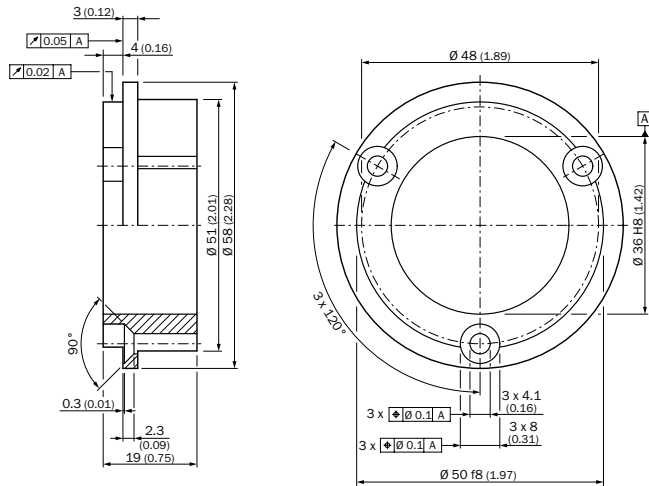
BEF-MRS-10-1



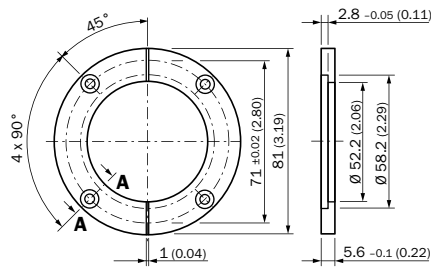
BEF-MRS-10-2



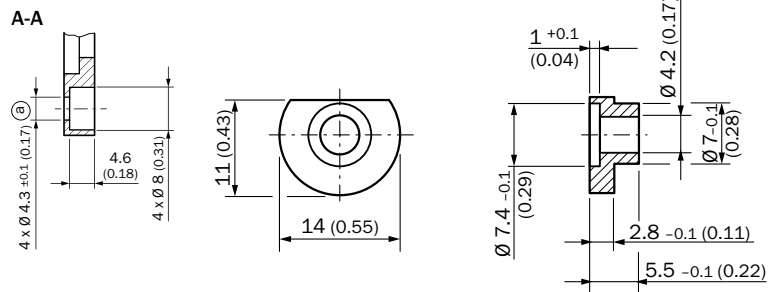
BEF-FA-036-050-019



BEF-WG-SF050

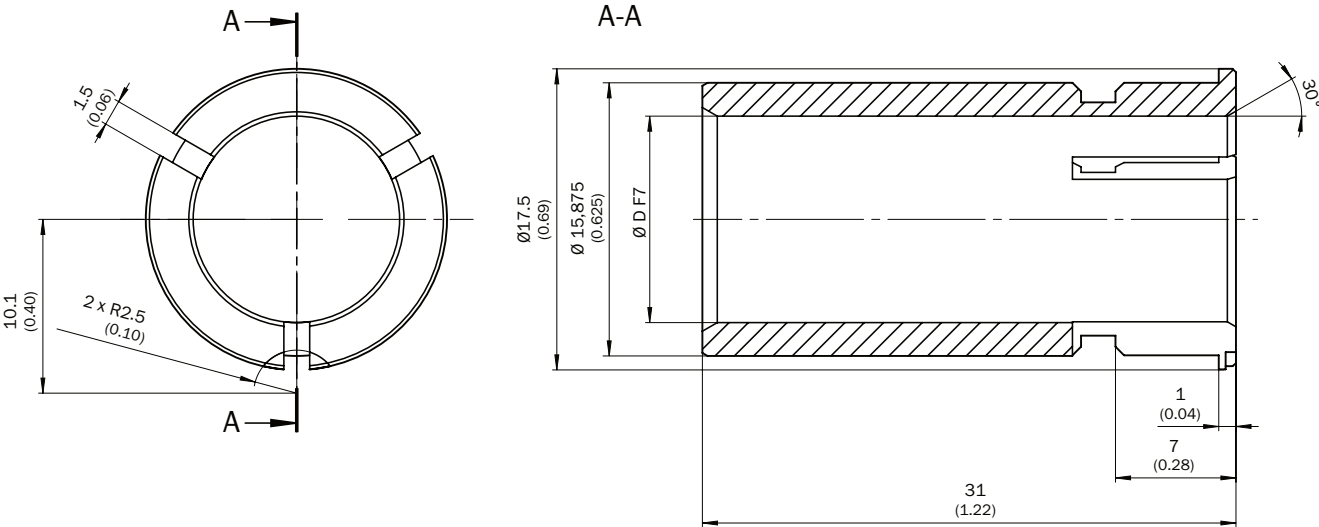


BEF-WK-SF



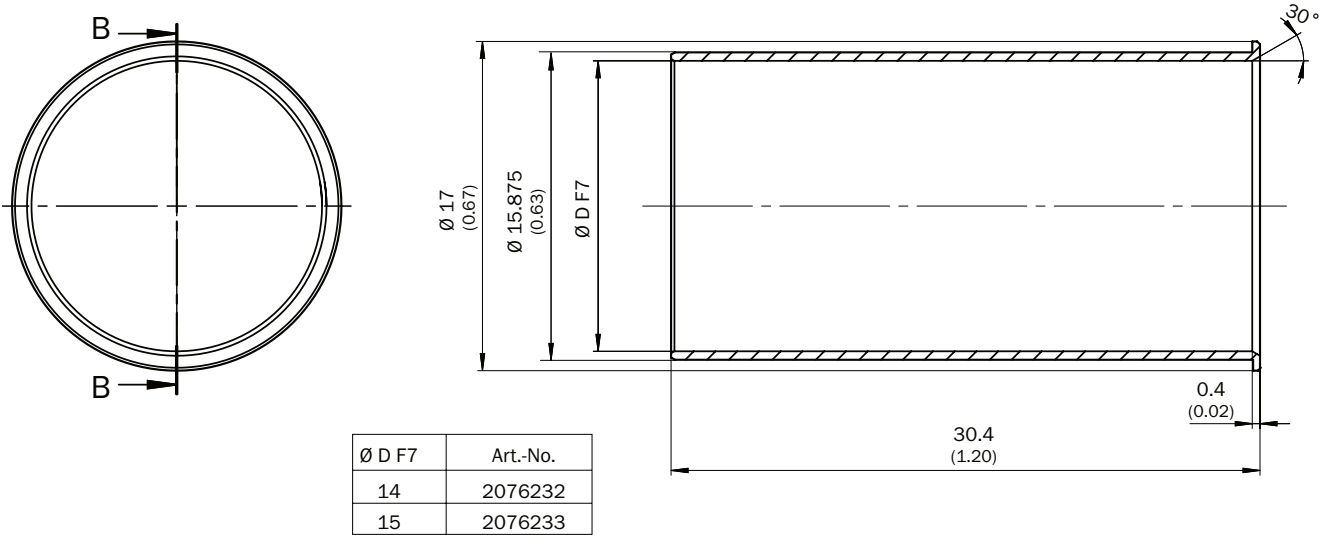
Shaft adaptation

SPZ-58Z-xxx-M



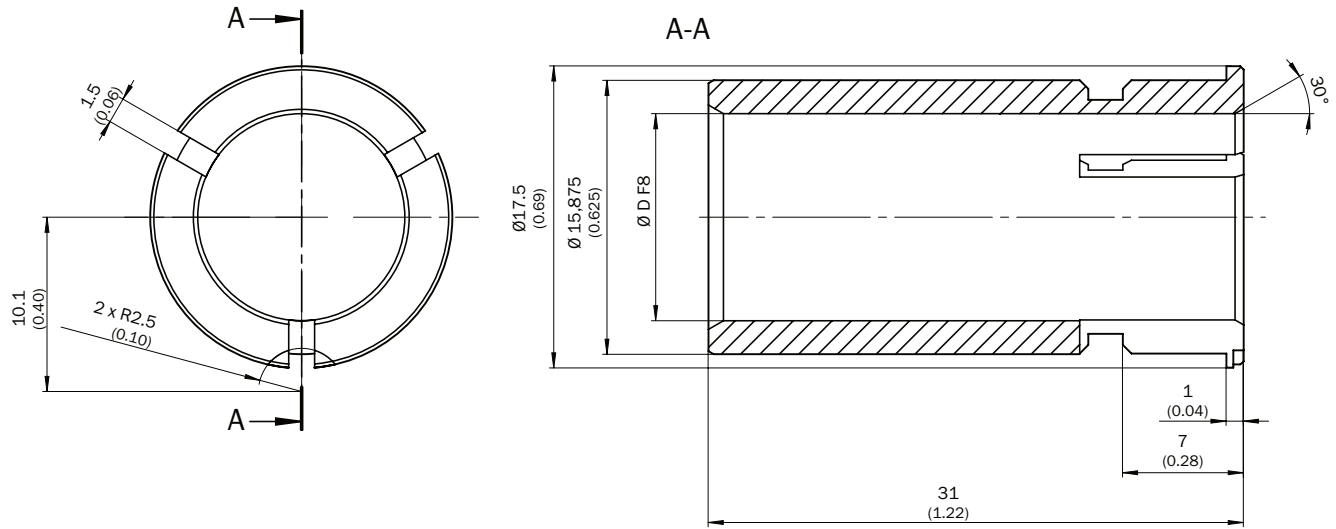
$\varnothing D F7$	Art.-No.
8	2076219
3/8" (9.525)	2076224
10	2076220
12	2076221
1/2" (12.7)	2076225
14	2076222

SPZ-58Z-015-M



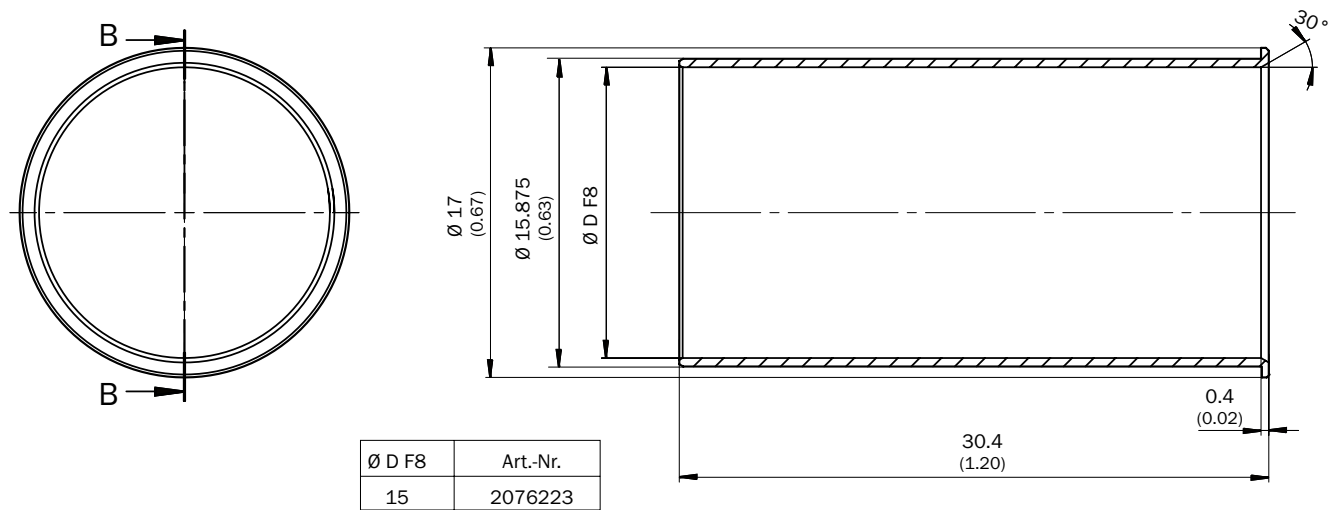
$\varnothing D F7$	Art.-No.
14	2076232
15	2076233

SPZ-58Z-xxx-P



Ø D F8	Art.-No.
6	2076228
8	2076229
3/8" (9.525)	2076226
10	2076230
12	2076231
1/2" (12.7)	2076227

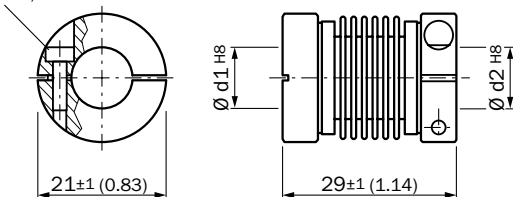
SPZ-58Z-01x-P



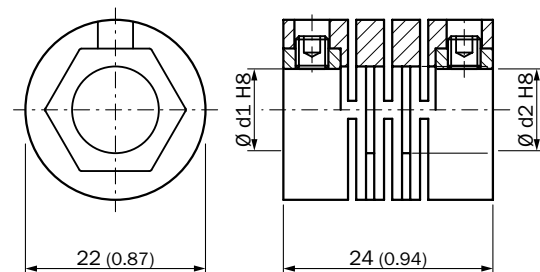
Ø D F8	Art.-Nr.
15	2076223

KUP-xxxx-B

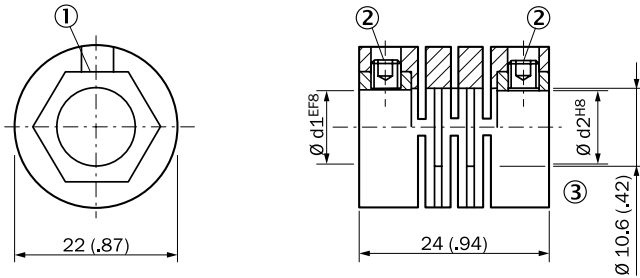
Cheese-head screw
M2.5 x 8, DIN 912 A2



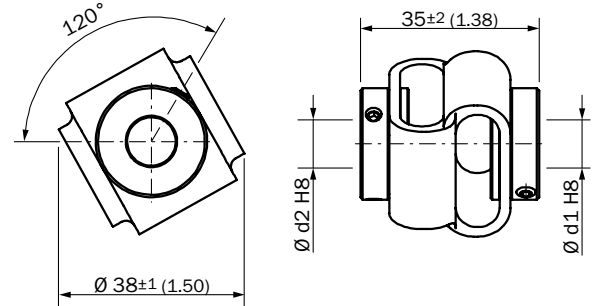
KUP-xxxx-S



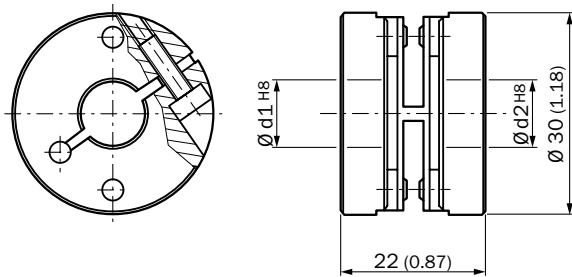
KUP-0xxx-S



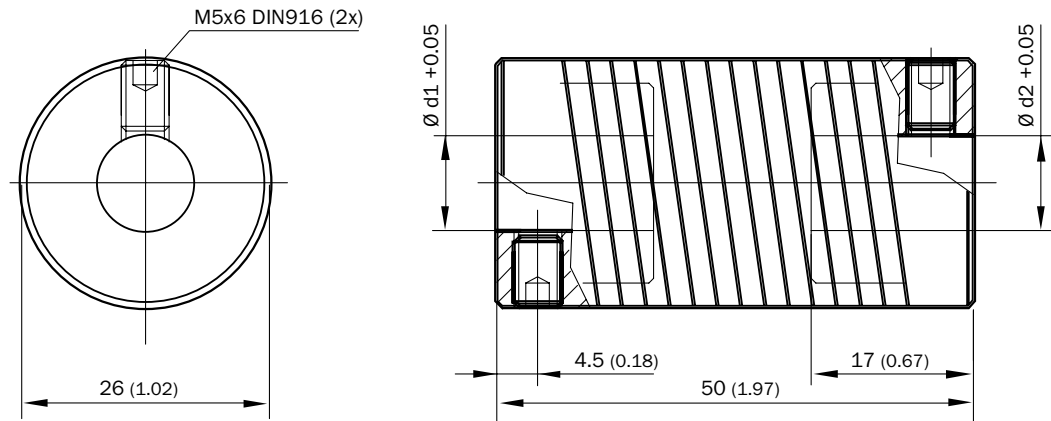
KUP-xx1x-D



KUP-xx10-F

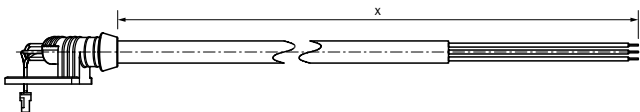


KUP-1010-W

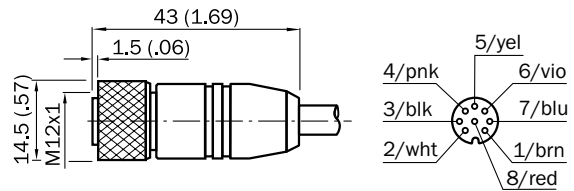


Plug connectors and cables

DOL-0J08-GxxxAAx

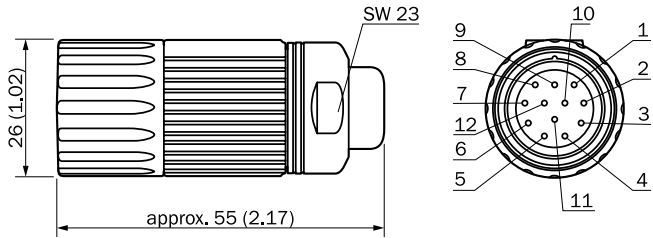


DOL-1208-GxxMAC1



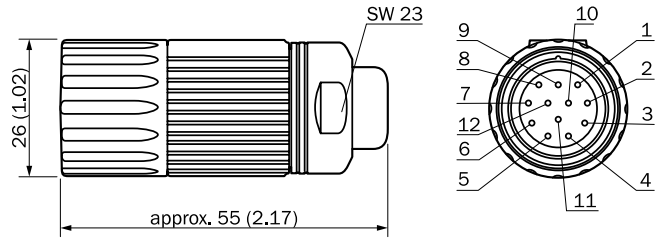
All dimensions in mm (inch)

DOL-2312-Gxxxxx3



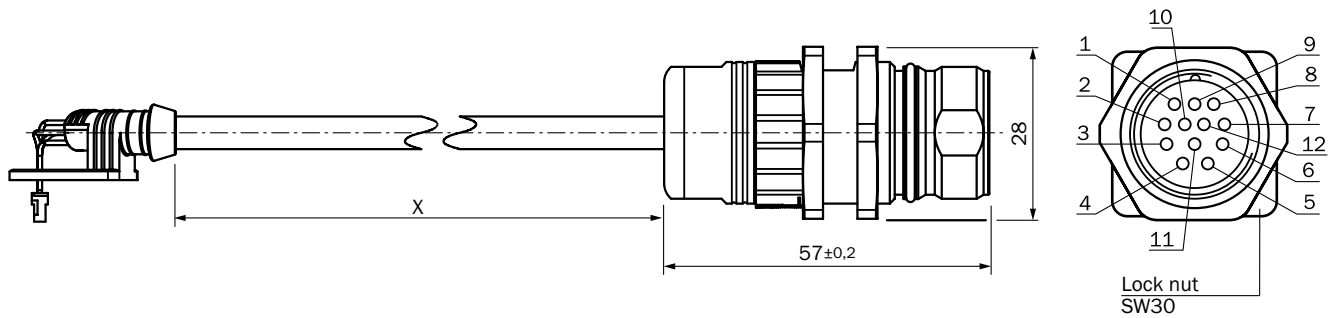
- ① Black
- ② Gray
- ③ Purple
- ④ Yellow
- ⑤ White
- ⑥ Brown
- ⑧ Pink
- ⑨ Screen
- ⑩ Blue
- ⑪ Green
- ⑫ Red

DOL-2312-Gxxxxx1

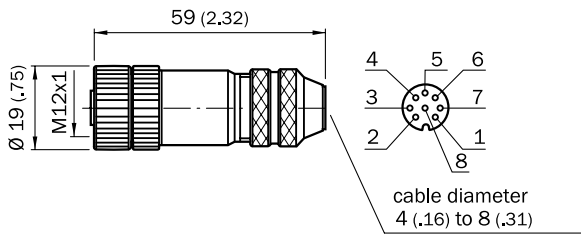


- ① Black
- ② Gray
- ③ Purple
- ④ Yellow
- ⑤ White
- ⑥ Brown
- ⑦ Orange
- ⑧ Pink
- ⑨ Screen
- ⑩ Blue
- ⑪ Green
- ⑫ Red

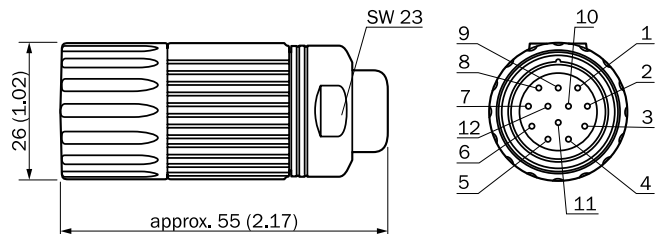
STL-2312-GxxxAA3



DOS-1208-GA01

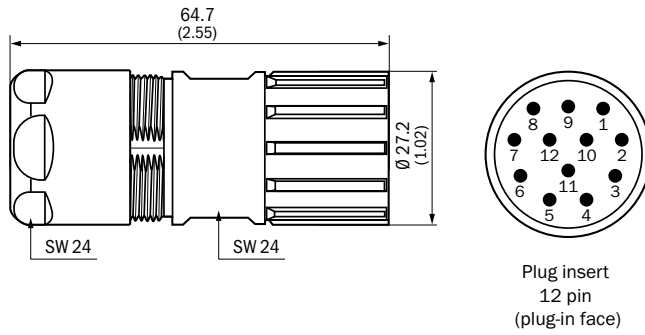


DOS-2312-G

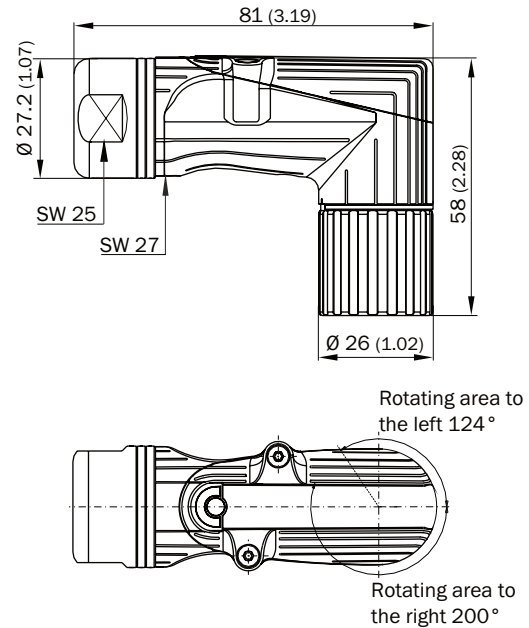


- ① Blue
- ② White
- ③ Yellow
- ④ Gray
- ⑤ Green
- ⑥ Pink
- ⑦ Black
- ⑧ Red
- ⑨ Orange
- ⑩ Brown
- ⑪ Purple
- ⑫ Orange/black

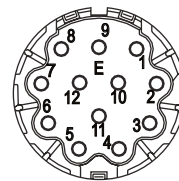
DOS-2312-G02



DOS-2312-W01

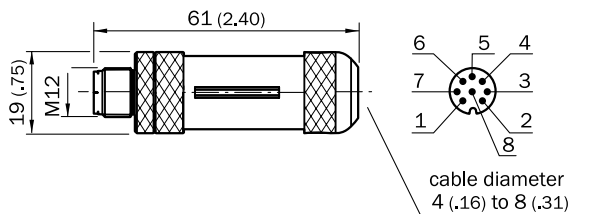


Main dimensions
Plug

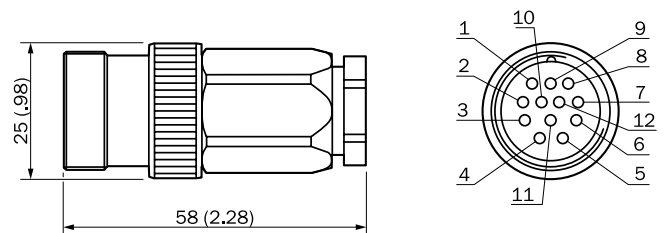


Contact arrangement
Mating view

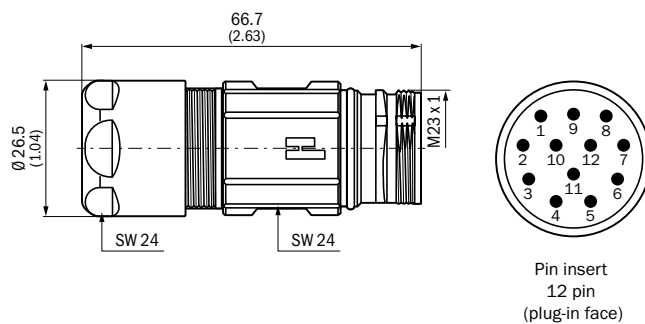
STE-1208-GA01



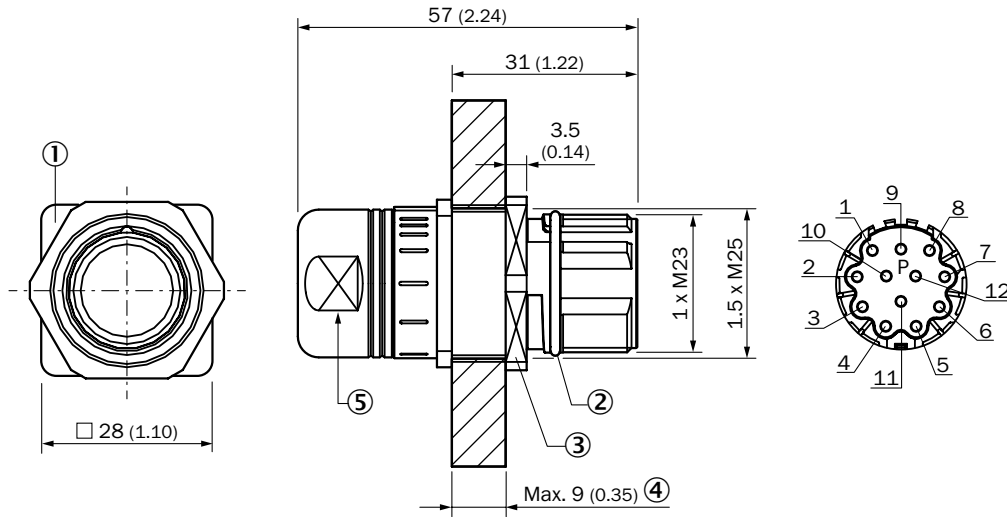
STE-2312-G



STE-2312-G01



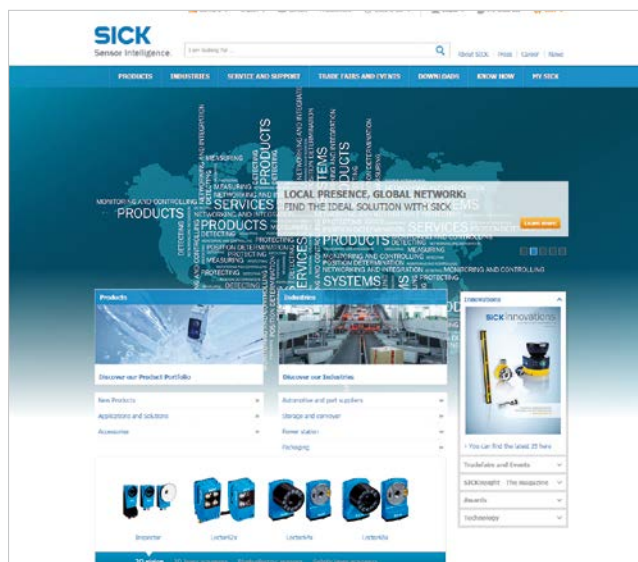
STE-2312-GX



- ① Fixed stop position
- ② Vibration protection
- ③ Fixing nut SW30
- ④ Max. wall thickness
- ⑤ SW23

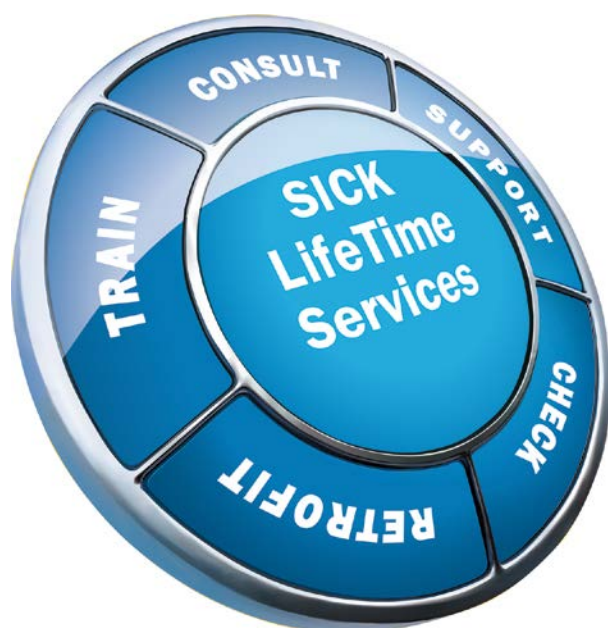
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