

ABSOLUTE ENCODER



- Standard encoder 58mm with canopen/can interface
- Precision ball bearings with sealing flange
- Code disc made of unbreakable and durable plastic
- High protection level IP65, IP67 option with a sealing flange
- Mechanical memorisation of the number of turns by gears
- High resolutions available:18Bits ,Turn counting up tp 18Bits.
- High performances in temperature -40°C to 85°C
- Polarity inversion and short circuit protection



ELECTRICAL CHARACTERISTICS

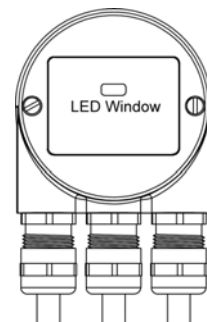
Power supply	10 – 30Vdc
Interface	Transceiver according to ISO 11898, galvanically isolated by opto-couplers
Transmission rate	Max. 1 Mbaud
Device addressing	Adjustable by rotary switches in connection cap
Current consumption	Multiturn: max.230mA with 10 V DC,max.100mA with 24 V DC Singletturn: max.100mA with 10 V DC,max.60mA with 24 V DC
Power consumption	Max 2.5W
Step frequency LSB	800 kHz
Precision	± 1/2 LSB (up to 12 Bit), ± 2 LSB (at 16 Bit)
EMC	EN61000-6-4,emitted interference ,EN 61000-6-2,nosie immunity
Electrical lifetime	> 10 ⁵ h

MECHANICAL CHARACTERISTICS

Housing	Aluminium,optional stainless steel
Lifetime	Dependent on shaft version and shaft load
RPM (continuous operation)	Singleturn:max.12 000 rpm, Multiturn:max.6 000 rpm
Shaft inertia	≤ 30 g.cm ²
Starting Torque	≤ 3 N.cm
Maximum load permitted on shaft	Axial 40 N, Radial 110 N
Protection	Cover: IP 65, Shaft: IP 64
Operating Temperature	-40...+85° C
Storage Temperature	-40...+85° C
Humidity	98 % (without liquid state)
Shock resistance	≤ 100 g (during 6 ms) (IEC 68-2-27)
Vibration resistance	≤10 g (10... 2 000 Hz) (IEC 68-2-6)
Weight	Singleturn:500 g, Multiturn: 800 g

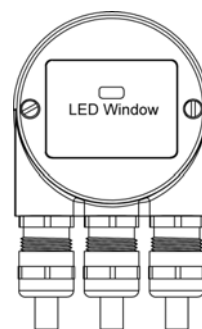
Status indication with two LED' s in the connection cap

CAN Run LED	State	Description
On	Operational	The device is in state operational
Flicking	Auto Bitrate	The auto-bitrate detection is in progress
Blinking	Preoperational	The device is in state preoperational
Single flash	Stopped	The device is in state stopped
Double flash	/	Reserved for further use
Triple flash	Program Firmware download	A software download is running on the device



ABSOLUTE ENCODER

ERR LED	State	Description
On	Bus off	The CAN controller is bus off
Off	No error	The device is in working condition
Blinking	Invalid Configuration	General configuration error
Single flash	Warning limit reached	At least one of the error counters of the CAN controller has reached or exceeded the warning level
Double flash	/	Reserved for further use
Triple flash	Program Firmware download	A software download is running on the device



CONFIGURATION

Configuration

The standard configuration of the encoder is: node number 32 and baudrate 20 KBAud . For adapting the encoder for a respective application the customer could SDO telegrams. Valid baudrate range is 20 KBAud up to 1 MBAud and for the node number from 0 to 89.

Remark: The encoder adds internal 1 to the adjusted device address.

	9 pin D-Sub	5 pin M12
Signal	Pin	Pin
(CAN Ground)	3	1
24 V power supply	9	2
0 V power supply	6	3
CAN High	7	4
CAN Low	2	5

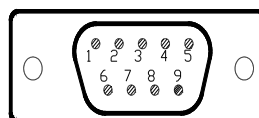
Electrical Interface

There are various electrical connecting options like 5 pin M12 connector. The encoder can be connected in the following versions:

- 5 pin M12 male connector and one 5 pin M12 male
- 5 pin M12 connector and venting element
- 9 pin D -Sub connector or cable exit

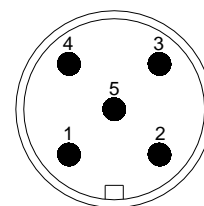
Bus in

9 pin D-Sub connector



Bus in

5 pin M12 connector Female



CONNECTION

Connection cap with round connector

This connection cap type has one or two 5 pin round connectors in M12 version. All other cable glands are replaced by blind caps. Following table indicates pinning of the micro style connector:

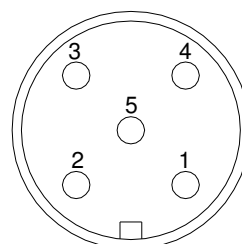
Pin number	Signal
1	(CAN Ground)
2	10...30 V Supply voltage
3	0 V Supply voltage
4	CAN High
5	CAN Low

Bus In

5 pin circular connector M12
Pinning (Male)

Bus Out

5 pin circular connector M12
Pinning (Female)

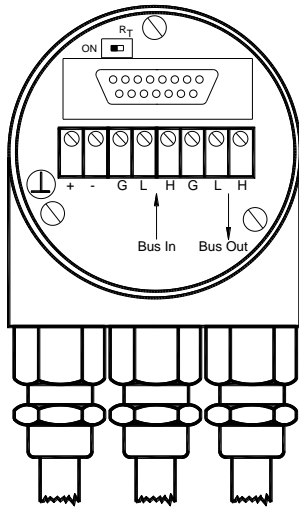


ABSOLUTE ENCODER

CONNECTION

Installation connection cap

The rotary encoder is connected with two or three cables depending on whether the power supply is integrated into the bus cable or connected separately. If the power supply is integrated into the bus cable, one of the cable glands can be fitted with a plug. The cable glands are suitable for cable diameters from 6.5 mm up to 9 mm.

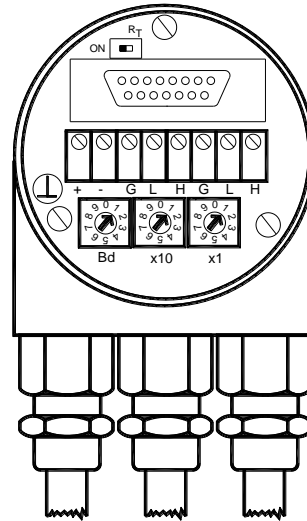


The rotary encoder is connected with two or three cables depend-

Clamp	Description
⊥	Ground
+	10..30 V Supply voltage
-	0 V Supply voltage
G (left)	CAN Ground (Bus In)
L (left)	CAN Low (Bus In)
H (left)	CAN High (Bus In)
G (right)	CAN Ground (Bus Out)
L (right)	CAN Low (Bus Out)
H (right)	CAN High (Bus Out)

Configuration connection cap

The setting of the node number is achieved by 2 turn-switches in the connection cap. Possible addresses lie between 0 and 89 whereby every address can only be used once. Inside the encoder the defined address is increased by one. The connection cap can easily be opened for installation by removing the one two cap screws.



The setting of the node number is achieved by 2 turn-switches

A termination resistor is integrated in the connection cap. The resistor must be switched on if the encoder is connected at the end or at the beginning of the bus, Separation of Bus In and Bus Out signals if termination resistor is activated.

Resistor:



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INTERFACE

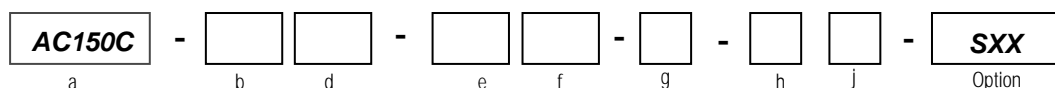
Programmable Encoder - Parameter

Operating Parameters	This parameter determines the counting direction, in which the output code increases or decreases. As an important operating parameter the sequence (complement) can be programmed.
Resolution per Revolution	The parameter resolution per revolution is used to program the desired number of steps per revolution.
Total Resolution	This parameter is used to program the desired number of measuring units over the total the measuring range. This value may not exceed the total resolution of the absolute rotary encoder. If the encoder is used in a continuous measuring application, certain rules for the setting of this parameter must be followed. These rules are outlined in the manual.
Preset Value	The preset value is the desired position value, which should be reached at a certain physical position of the axis. The position value process value is set to the desired process value by the parameters pre-set.
Limit Switch, Min. and Max.	Two position values can be programmed as limit switches. By reaching these value one bit of the 32-bit process value is set to high.
Cam	Eight position values can be programmed as cams. By reaching these values bits in object 6300h Cam state register are set.

Programmable CAN Transmission Modes

Polled Mode	By a remote-transmission-request telegram the connected host calls for the current process value. The absolute rotary encoder reads the current position value, calculates eventually set-parameters and back the obtained process value by the same identifier.
Cyclic Mode	The absolute rotary encoder transmits cyclically - without being called by the host-the current process value. The cycle time can be programmed in milli-seconds for values between 1 ms and 655 36 ms.
Sync Mode	After receiving a sync telegram by the host, the absolute rotary encoder answers with the current process value. If more than one node number (encoder) shall answer after receiving a sync telegram, the answer telegrams of the nodes will be receiving by the host in order of their node should not answer after each sync telegram on the CAN network, the parameter sync counter can be programmed to skip a certain number of sync telegrams before answering again.

ORDERING CODE



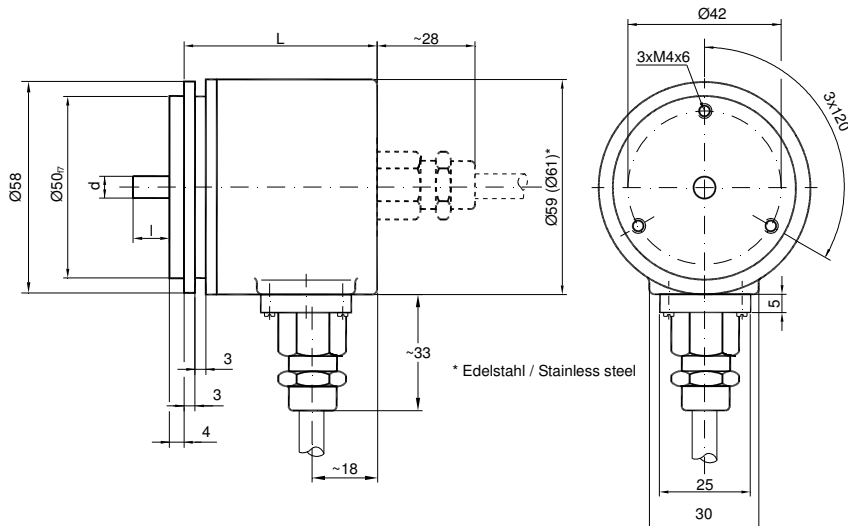
- | | |
|---|--|
| <p>a Series
Absolute Encoder</p> <p>b Shaft Type/ Flange
2C=Solid shaft, Clamp
2S=Solid shaft, Synchro
5B=Blind Hollow shaft
5H=Hollow shaft</p> <p>d Shaft size
Solid Shaft: 6,8,10 mm
Blind Hollow shaft: 15 mm
Hollow shaft: 8,10,12 mm</p> <p>e Power Supply
5 = 5-30 V</p> | <p>f Interface
CB = CANopen, Binary</p> <p>g Nb of Turns / Resolution
0010 0013 1213
0012 1212 Option</p> <p>h Connector Location
1=Axial
2=Radial</p> <p>j Connection
6 = cable exit 2m
8 = with connection cap,
2 = Connector exit, 5 pin male M12</p> |
|---|--|

ABSOLUTE ENCODER

MECHANICAL DRAWINGS

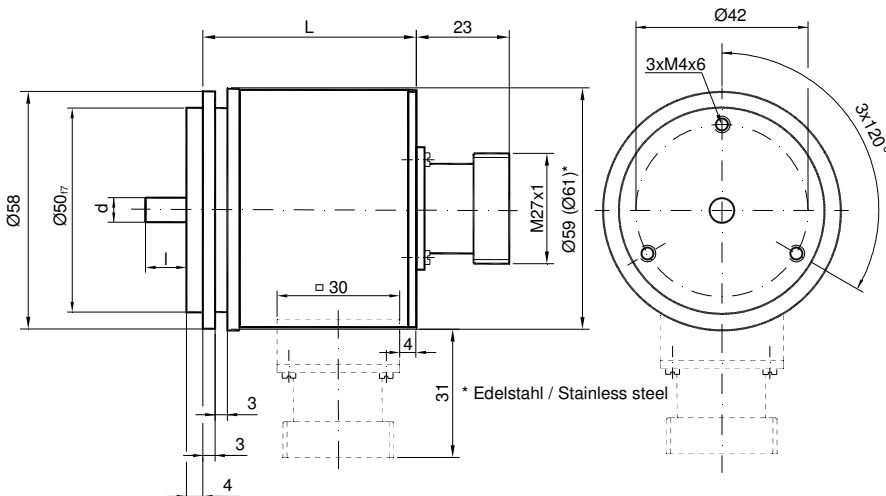
Synchro Flang (s) , Cable exit 1m

Synchro Flange	d / mm	l / mm
Version S06	6 _{f6}	10
Version S10	10 _{h8}	20



Synchro Flang (s) , Connector exit

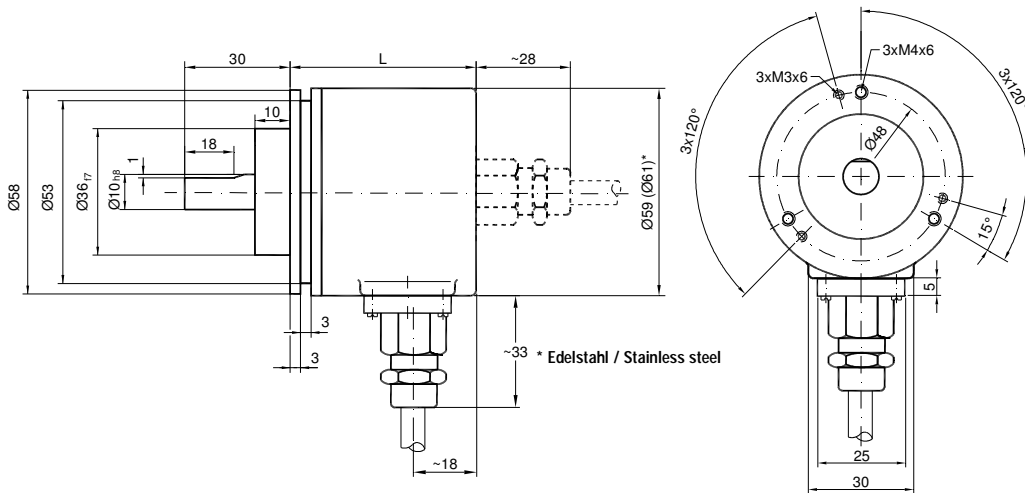
	L	
Cable exit		62
Connector	axial	62
	radial	78



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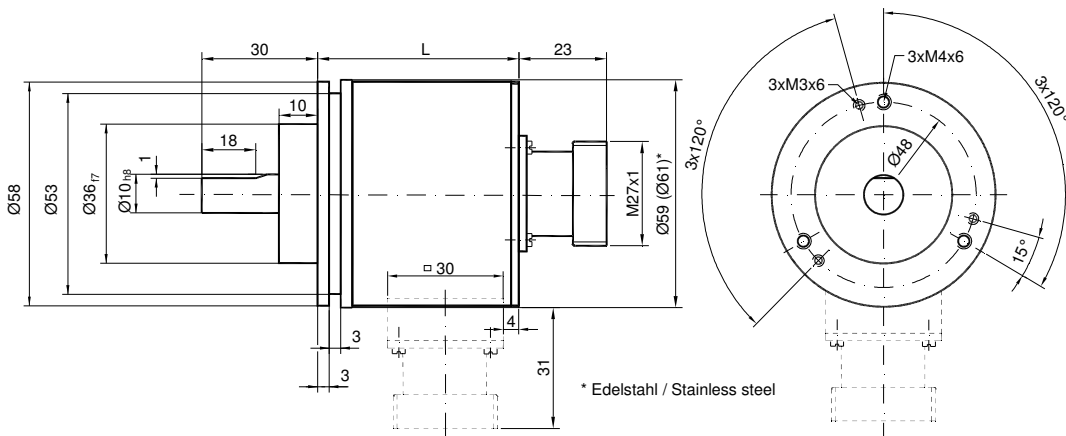
MECHANICAL DRAWINGS

Clamp Flang (C) , Cable exit 1m



Clamp Flang (C) , Connector exit

L		
Cable exit		62
Connector	axial	62
	radial	78

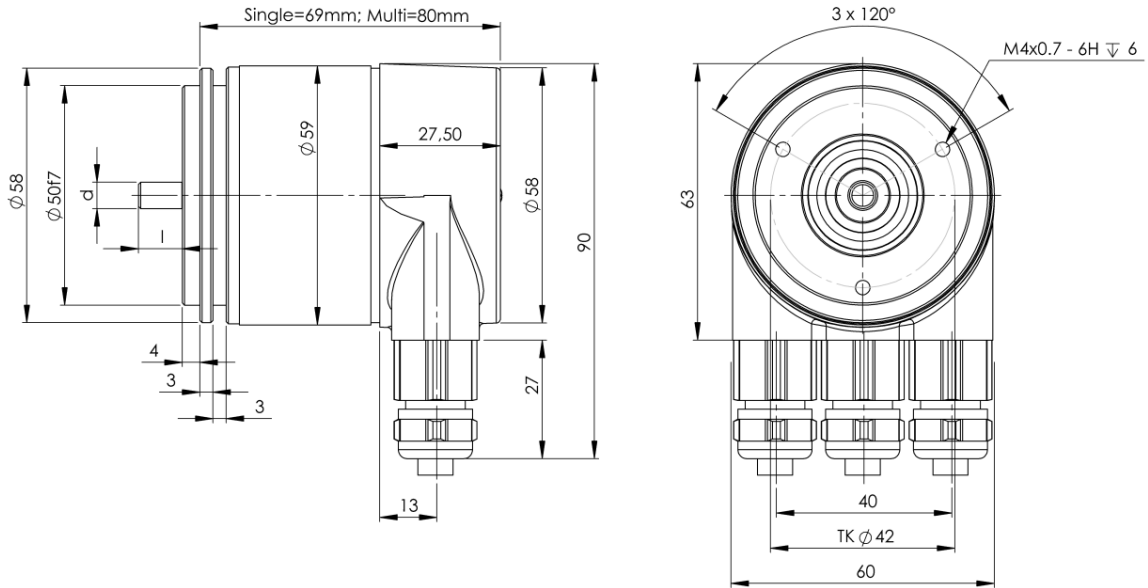


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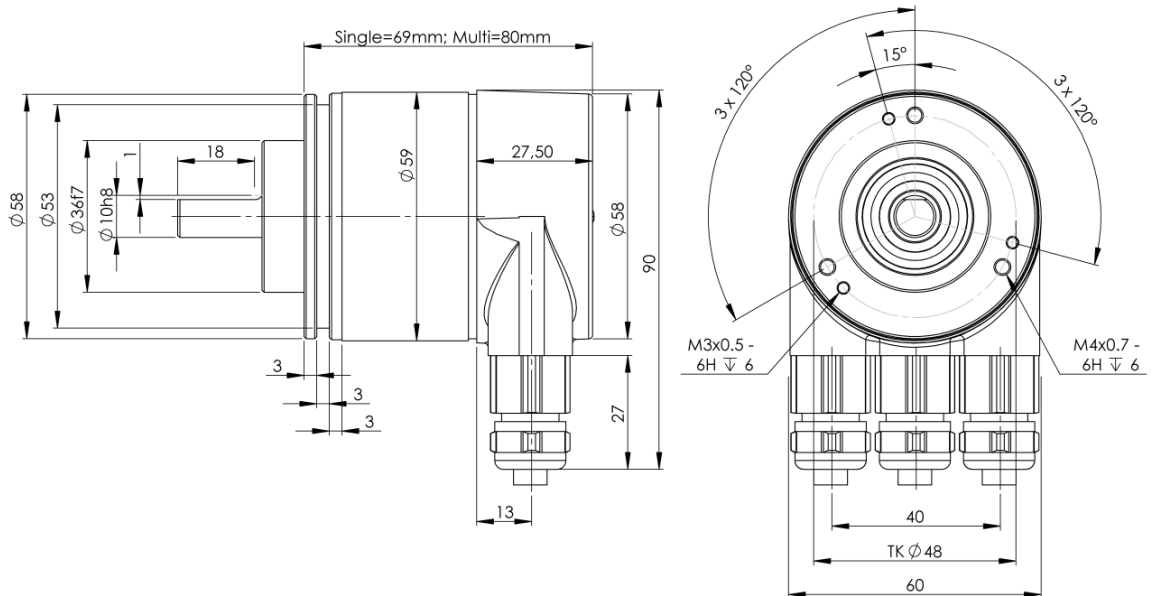
MECHANICAL DRAWINGS

Synchro flange, with connection cap

Synchro flange	d / mm	l / mm
Version S06	6 _{f6}	10
Version S10	10 _{h8}	20



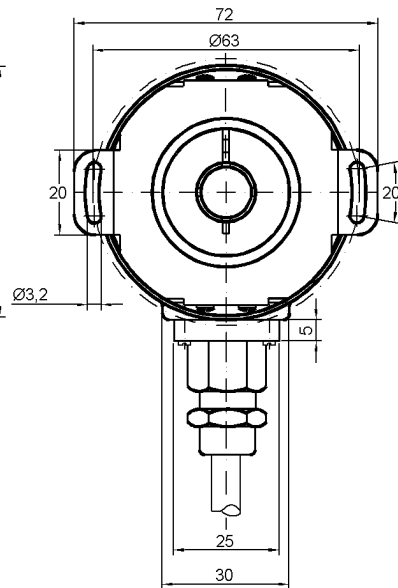
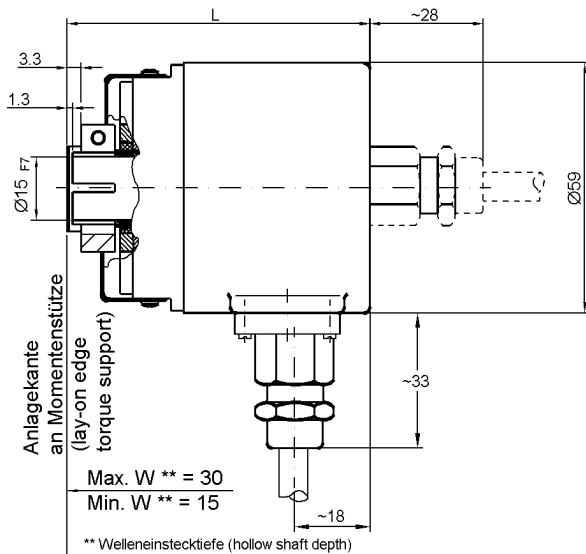
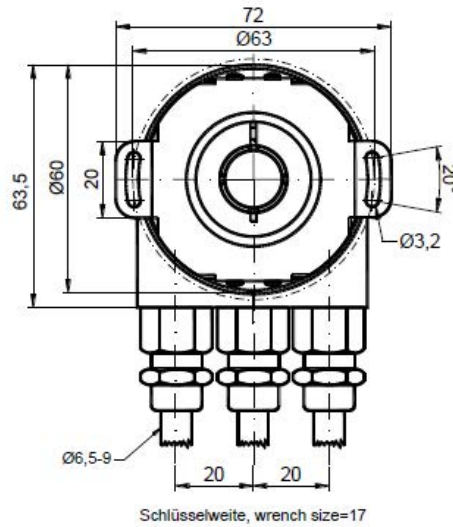
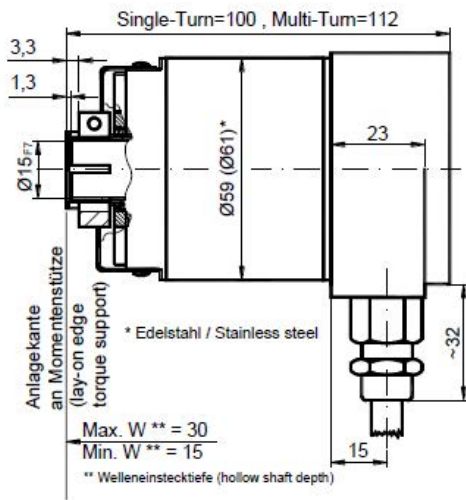
Clamp flange, with connection cap



ABSOLUTE ENCODER

MECHANICAL DRAWINGS

Blind Hollow shaft (B)



The clamp ring may only be tightened if the shaft of the driving element is in the hollow shaft. The diameter of the hollow shaft can be reduced to 12, 10 or 8mm by using an adapter (this reducing adapter can be pushed into hollow shaft). Maximum shaft movements of the drive element are listed in the table

	axial	radial
static	± 0.3 mm	± 0.5 mm
dynamic	± 0.1 mm	± 0.2 mm

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MECHANICAL DRAWINGS

Through Hollow shaft (B)

