

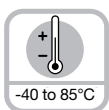
Sendix incremental type 5000 (shaft) / 5020 (hollow shaft)



Safety-Lock™



High rotational speed



Temperature
-40 to 85°C



High IP



High shaft load capacity



Shock/vibration resistant



Magnetic field proof



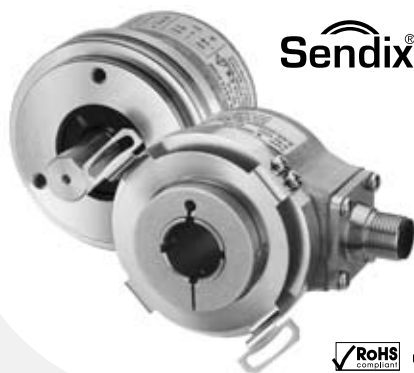
Short-circuit proof



Reverse polarity protection

Versatile

- **The right connection for every application:** Cable, M12 connector, M23 connector, and MIL Spec Connectors.
- **Wide variety of standard industrial mounting options:** Servo, square, clamping flanges.
- **Standardized designs for worldwide use:** Compatible with US and European standards; 5-30 V supplies; Various output options; Up to 5,000 ppr.



Sendix[®] incremental



Compact

- **Small footprint:**
Outer diameter 2" x 2"
Can utilize 2" or 2.5" flanges.

Rugged and Tough

- **High tolerance to vibration, shock and alignment issues:**
Sturdy double bearing
"Safety Lock Design".
- **Environmentally protected design:**
Die-cast housings; butyl rubber shaft seals and o-rings; robust stainless steel hubs, flanges, and disc tables. Ratings up to IP67.
- **Wide temperature range:**
-40 to +185°F (-40 to +85°C)
- Also available in seawater resistant version, certified acc. to salt-spray test IEC 68-2-11 ≥ 672 hours

Mechanical characteristics:

Speed IP65 ¹⁾ :	max. 12,000 RPM
Speed IP67 ²⁾ :	max. 6,000 RPM
Rotor moment of inertia:	Shaft: approx. 0.098 oz-in ² (1.8 x 10 ⁻⁶ kgm ²)
	Hollow shaft: approx. 0.328 oz-in ² (6.0 x 10 ⁻⁶ kgm ²)
Starting torque:	< 1.4 oz-in (< 0.01 Nm), IP65 < 7 oz-in (< 0.05 Nm), IP67
Radial load capacity of the shaft:	40 lbs (178 N)
Axial load capacity of the shaft:	40 lbs (178 N)

¹⁾ For continuous operation 6000 RPM

²⁾ For continuous operation max. 3000 RPM

³⁾ With connector: -40°F (-40°C), cable fixed: -22°F (-30°C), cable moved: -4°F (-20°C)

Weight:	approx. 0.9 lbs (0.4 kg)
Protection acc. to EN 60 529 without shaft sealing:	IP65
Protection acc. to EN 60 529 with shaft sealing:	IP67
Ex approval for hazardous areas:	optional zone 2 and 22
Working temperature:	-40 to +185°F (-40 ³⁾ to +85°C)
Shaft:	stainless steel
Shock resistance acc. to DIN-IEC 68-2-27:	250 g (2,500 m/s ²), 6 ms
Vibration resistance to DIN-IEC 68-2-6:	10 g (100 m/s ²), 10-2,000 Hz

Electrical characteristics:

Output circuit:	RS 422 (TTL compatible)	RS 422 (TTL compatible)	Push-pull (IC-DL)	Push-pull (7272) ³⁾
Supply voltage:	5-30 VDC	5 V ±5%	10-30 V DC	5-30 V DC
Power consumption (no load):	typ. 40 mA max. 90 mA	typ. 40 mA max. 90 mA	typ. 50 mA max. 100 mA	typ. 50 mA max. 100 mA
Permissible load/channel:	max. ±20 mA	max. ±20 mA	max. ±30 mA	max. ±20 mA
Pulse frequency:	max. 300 kHz	max. 300 kHz	max. 300 kHz	max. 300 kHz
Signal level high:	min. 2.5 V	min. 2.5 V	min. +V -1.0 V	min. +V -2.0 V
Signal level low:	max. 0.5 V	max. 0.5 V	max. 0.5 V	max. 0.5 V
Rise time t _r :	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Fall time t _f :	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Short-circuit proof outputs ¹⁾ :	yes ²⁾ ⁴⁾	yes ²⁾ ⁴⁾	yes	yes ²⁾ ⁴⁾
Reverse connection protection at +V:	yes	no	yes	no

UL certified: File 224618

Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3

RoHS compliant acc. to EU guideline 2002/95/EG

¹⁾ If supply voltage correctly applied

²⁾ Only one channel allowed to be shorted-out:
(If +V=5 V, short-circuit to channel, 0 V, or +V is permitted.)
(If +V=5-30 V, short-circuit to channel or 0 V is permitted.)

³⁾ Max. recommended cable length 30 m

⁴⁾ Approximately one minute

Sendix incremental type 5000 (shaft) / 5020 (hollow shaft)

Standard wiring / pin configuration: ^{1) 2)}

Connection Type	Case Ground	Common (0V)	+V	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	N/C	N/C	0V ¹⁾ Sens	+V ²⁾ Sens
M23 <i>multifast</i> ®	Coupling nut	10	12	5	6	8	1	3	4	-	-	11	2
MS 6-pin	-	A	B	E	-	D	-	C	-	-	-		
MS 7-pin	G	F	D	A	-	B	-	C	-	-	-		E
MS 10-pin	J	F	D	A	G	B	H	C	I	-	-		E
M12 <i>eurofast</i> ®	Coupling nut	1	2	3	4	5	6	7	8	-	-		
Cable	Shield/drain	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	GY/PK	RD/BU

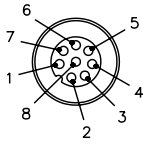
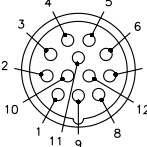
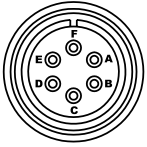
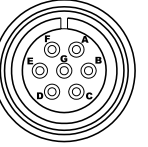
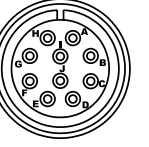
¹⁾ The sensor cables are connected to the supply voltage internally, if long feeder cables are involved they can be used to adjust or control the voltage at the encoder.

²⁾ Isolate unused outputs before initial startup.

Special connector pin configuration:

		Connection Type	Case Ground	Common (0V)	+V	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$
Wiring Code	7	M12 <i>eurofast</i>	Coupling nut	7	2	1	3	4	5	6	8
	1	MS 6-pin	-	A, F	B	D	-	E	-	C	-
	4	MS 7-pin	G	F	D	A	C	B	E	-	-
	6	MS 10-pin	G	F	D	A	H	B	I	C	J

Wiring diagrams:

Male Encoder View				
				
M12 <i>eurofast</i> pinout	M23 <i>multifast</i> pinout	MS pinout (6-pin)	MS pinout (7-pin)	MS pinout (10-pin)
Mating cordset: E-RKC 8T-930-*	Mating cordset: E-CKM 12-931-*	Mating cordset: E-MK 6-930-*	Mating cordset: E-MK 7-930-*	Mating cordset: E-MK 10-931-*

* Length in meters.

Sendix incremental type 5000 (shaft) / 5020 (hollow shaft)

Part number key: 5000 shaft version

T8.5000.XXXX.XXXX.PXXXX.XXXX

Options for special output only.

Type	Optional Cable Length 0050 = 5 meters ¹⁾
Flange - 2" (50 mm) 1 = servo flange w/shaft seal (IP67) 2 = servo flange 3 = square flange w/shaft seal (IP67) 4 = square flange	Special Connector Pin Configuration See page C15
Flange - 58 mm 7 = clamping flange w/shaft seal (IP67) 8 = clamping flange A = servo flange w/shaft seal (IP67) B = servo flange	Capacitor 0 = standard A = no bypass capacitor (vector motor) (only valid with output codes 1, 3, 4, 5)
Flange - 2.5" (63.5 mm) C = square flange w/shaft seal (IP67) D = square flange E = servo flange w/shaft seal (IP67) F = servo flange	Special Output Signal Formats See page C42
Shaft Options for 2" Flange 1 = Ø 6 mm x 10 mm 2 = Ø 1/4" x 5/8" 3 = Ø 10 mm x 20 mm 4 = Ø 3/8" x 5/8" 5 = Ø 12 mm x 20 mm 6 = Ø 8 mm x 15 mm	Pulse Rate See below
Shaft Options for 58 mm and 2.5" Flange 1 = Ø 6 mm x 10 mm 3 = Ø 10 mm x 20 mm 4 = Ø 3/8" x 5/8" 5 = Ø 12 mm x 20 mm 6 = Ø 8 mm x 15 mm 7 = Ø 1/4" x 7/8" 8 = Ø 3/8" x 7/8"	Connection Type 1 = axial cable (1 meter) 2 = radial cable (1 meter) 3 = axial 8-pin M12 euromast ® connector 4 = radial 8-pin M12 euromast connector 7 = axial 12-pin M23 multifast ® connector 8 = radial 12-pin M23 multifast connector 9 = radial MS, 6-pin W = radial MS, 7-pin Y = radial MS, 10-pin A = optional axial cable length B = optional radial cable length
	Input / Output Circuit 1 = 5-30 VDC, TTL (26C31) 3 = 5-30 VDC, open collector (7273) 4 = 5 VDC, TTL (26C31) 5 = 10-30 VDC, line driver (IC-DL) 8 = 5-30 VDC, line driver (7272 without bypass capacitor)

¹⁾ Available with connection type A only.

Part number key: 5020 hollow shaft version

T8.5020.XXXX.XXXX.PXXXX.XXXX

Options for special output only.

Type	Optional Cable Length 0050 = 5 meters ¹⁾
Flange - 2" 1 = torque stop w/shaft seal (IP67)* 2 = torque stop (IP65)* 3 = single point tether w/shaft seal (IP67) 4 = single point tether (IP65) 5 = flex mount w/shaft seal, pitch circle Ø 57.2 mm (IP67) 6 = flex mount, pitch circle Ø 57.2 mm (IP65) 7 = flex mount w/shaft seal, pitch circle Ø 65 mm (IP67) 8 = flex mount, pitch circle Ø 65 mm (IP65) C = slotted flex mount w/shaft seal, pitch circle Ø 63 mm (IP67) D = slotted flex mount, pitch circle Ø 63 mm (IP65)	Special Connector Pin Configuration See page C15
Bore 1 = Ø 6 mm 2 = Ø 1/4" 3 = Ø 10 mm 4 = Ø 3/8" 5 = Ø 12 mm 6 = Ø 1/2" 7 = Ø 5/8" 8 = Ø 15 mm 9 = Ø 8 mm A = Ø 14 mm	Capacitor 0 = standard A = no bypass capacitor (vector motor) (only valid with output codes 1, 3, 4, 5)
Input / Output Circuit 1 = 5-30 VDC, TTL (26C31) 3 = 5-30 VDC, open collector (7273) 4 = 5 VDC, TTL (26C31) 5 = 10-30 VDC, line driver (IC-DL) 8 = 5-30 VDC, line driver (7272 without bypass capacitor)	Special Output Signal Formats See page C42
	Pulse Rate See below
	Connection Type 1 = radial cable (1 meter) 2 = radial 8-pin M12 euromast connector 4 = radial 12-pin M23 multifast connector 5 = radial MS, 6-pin 6 = radial MS, 7-pin 7 = radial MS, 10-pin A = optional radial cable length E = tangential cable (1 Meter)

* Requires 4 mm torque pin

¹⁾ Available with connection type A only.

Standard Pulse Rates (PPR):

Metal: 1, 4, 5, 10, 12, 25, 30, 36, 50, 60, 80, 100, 125, 150, 180, 200, 240, 250, 256, 300, 342, 360, 375, 400, 500, 512, 600, 625, 720, 800, 900, 1000, 1024
All 5000 series encoders, 1024 and below assembled in the USA
Glass: 1200, 1250, 2000, 2048, 2500, 3000, 3600, 4096, 5000 (Built in Germany)

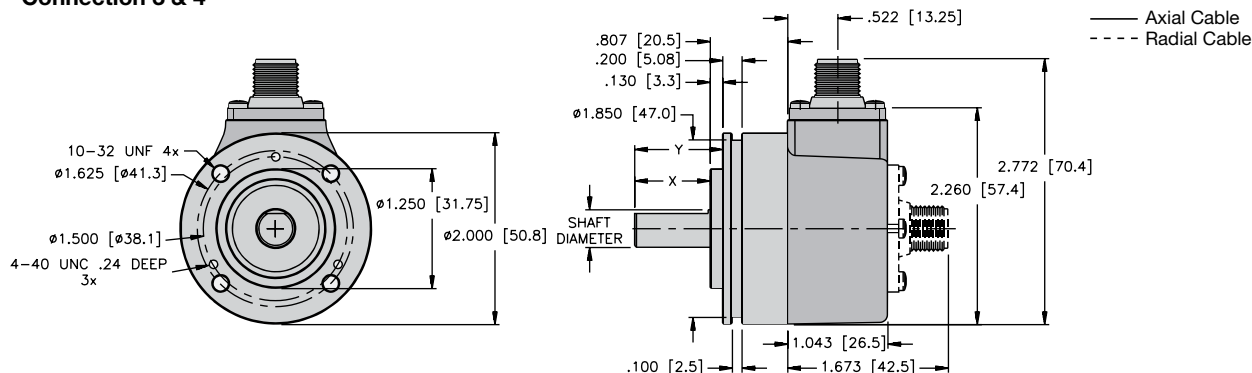
Accessories:

- See page J1, Connectivity, for cables and connectors
- See page E1, Accessories, for mounting attachments and couplings

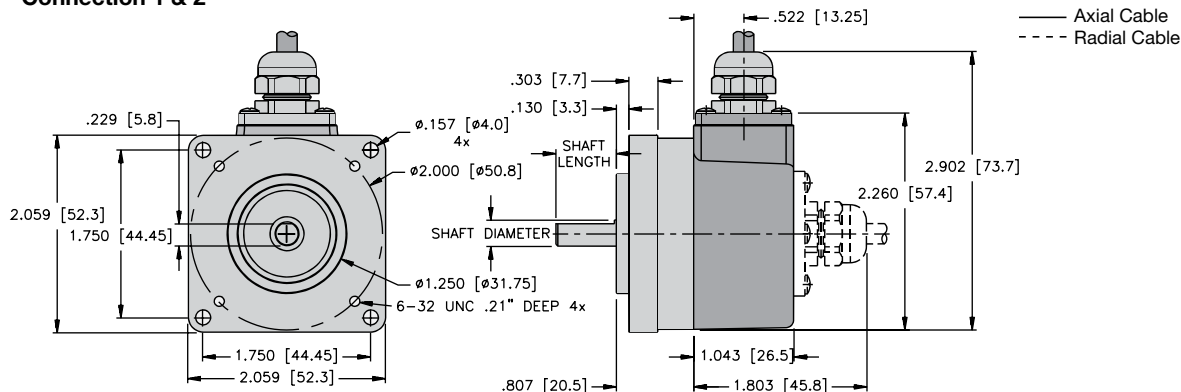
Sendix incremental type 5000 (shaft) / 5020 (hollow shaft)

Dimensions: 5000 shaft version

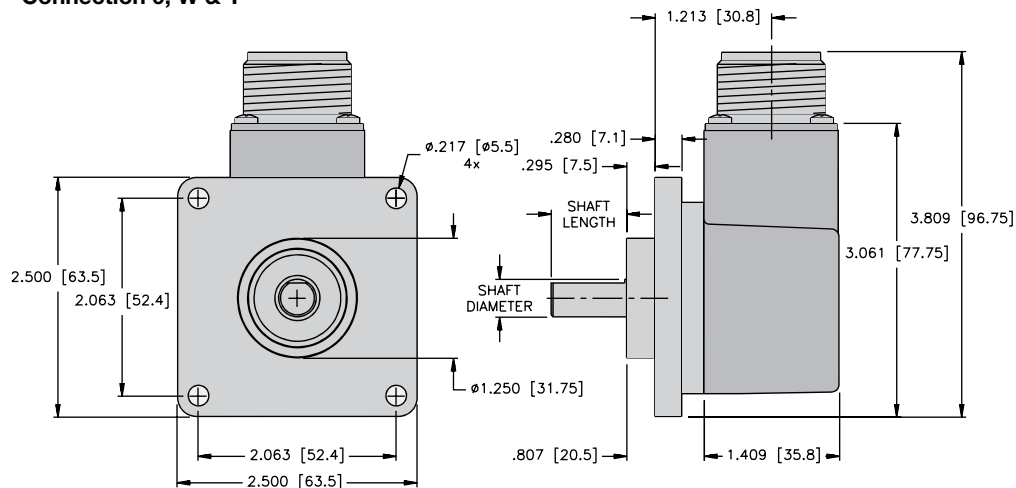
5000 flange 1 & 2 Connection 3 & 4



5000 flange 3 & 4 Connection 1 & 2



5000 flange C & D Connection 9, W & Y



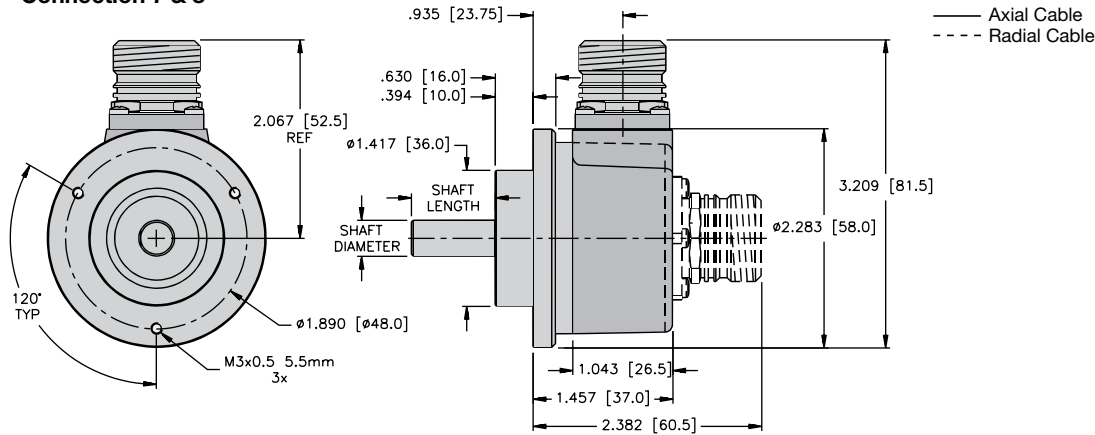
Mounting advice:

The flanges and shafts of the encoder and drive should not be rigidly coupled together at the same time. We recommend the use of suitable couplings (see page E1, Accessories).

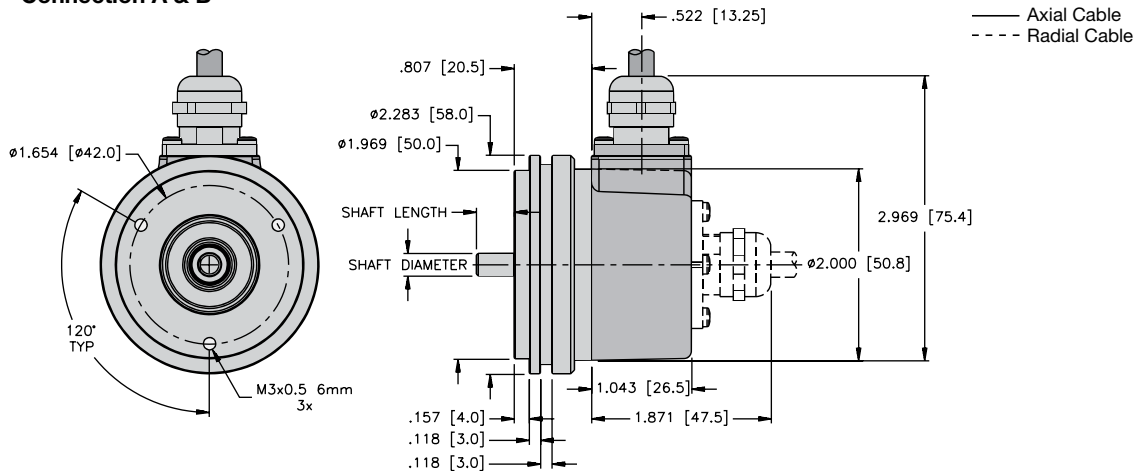
Sendix incremental type 5000 (shaft) / 5020 (hollow shaft)

Dimensions: 5000 shaft version

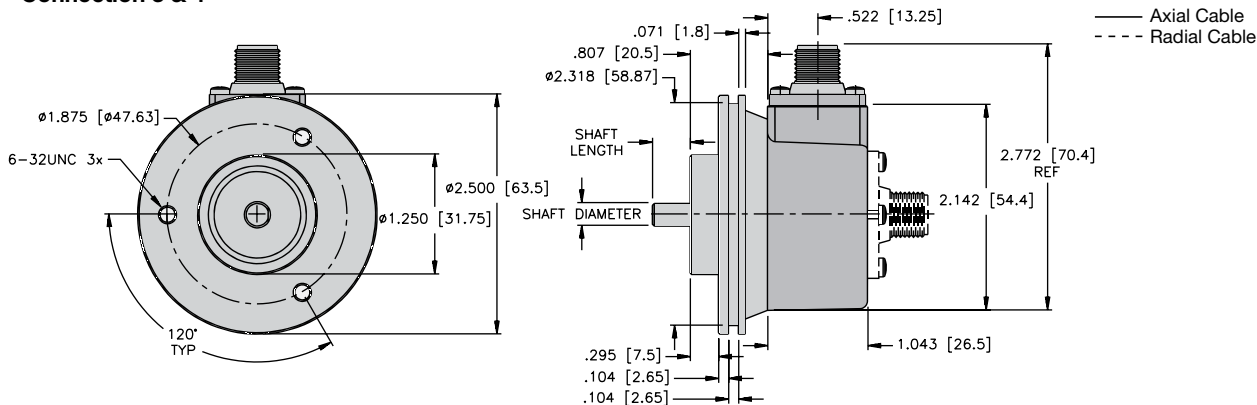
5000 flange 7 & 8 Connection 7 & 8



5000 flange A & B Connection A & B



5000 flange E & F Connection 3 & 4



Mounting advice:

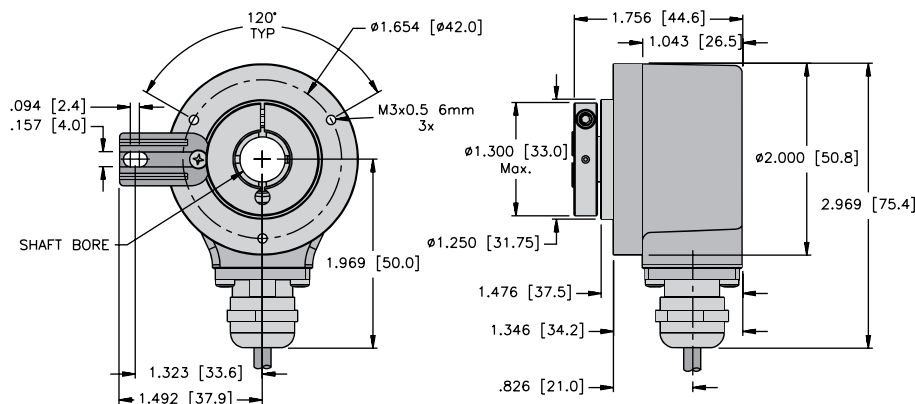
The flanges and shafts of the encoder and drive should not be rigidly coupled together at the same time. We recommend the use of suitable couplings (see page E1, Accessories).

Sendix incremental type 5000 (shaft) / 5020 (hollow shaft)

Dimensions: 5020 hollow shaft version

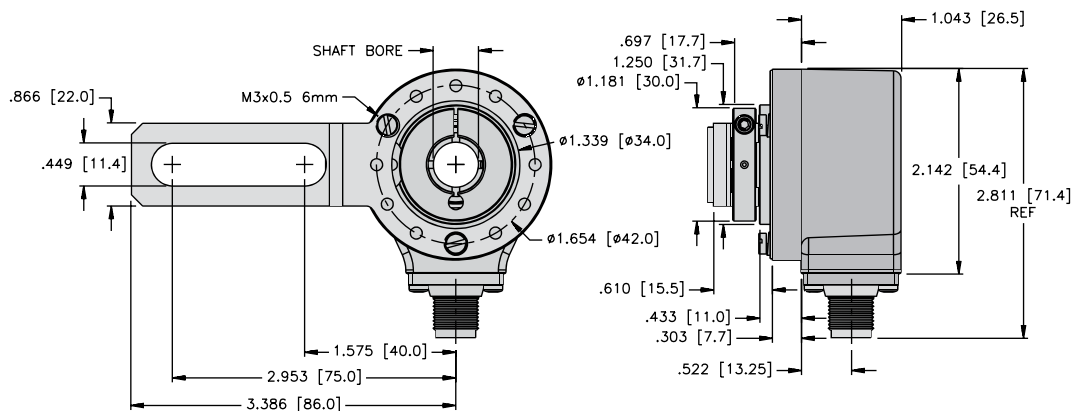
5020 flange 1 & 2

Connection 1



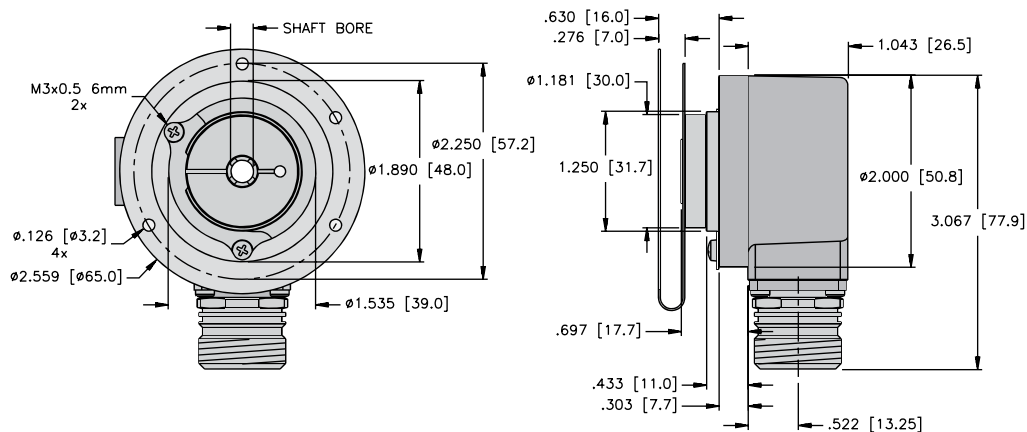
5020 flange 3 & 4

Connection 2



5020 flange 5 & 6

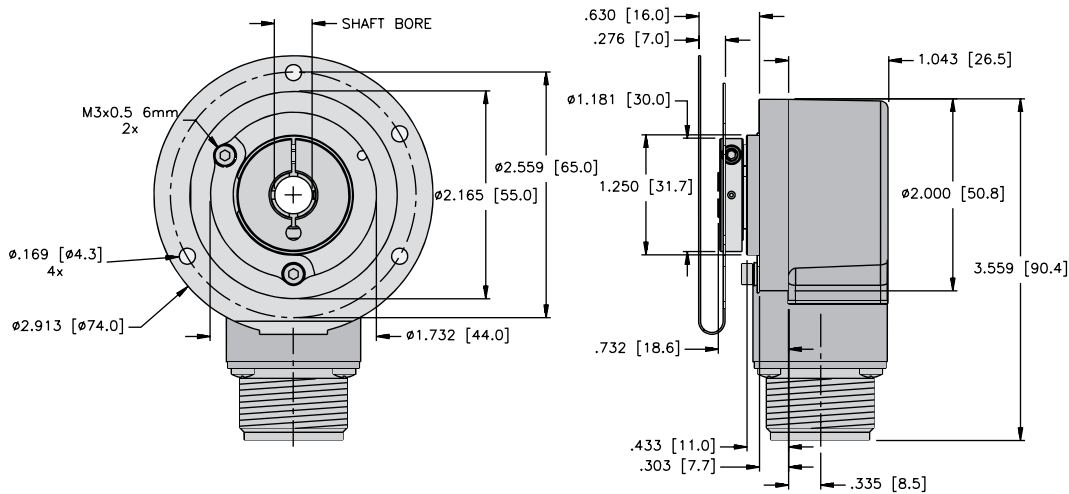
Connection 4



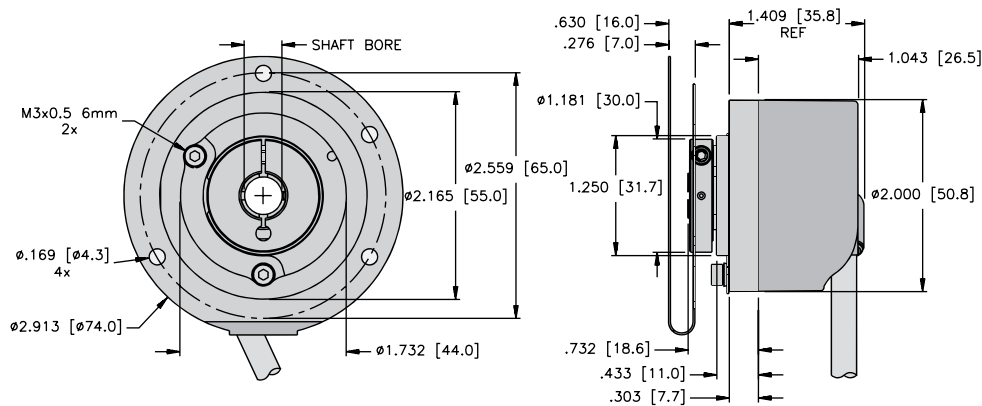
Sendix incremental type 5000 (shaft) / 5020 (hollow shaft)

Dimensions: 5020 hollow shaft version

5020 flange 7 & 8
Connection 5, 6 & 7



5020 flange 7 & 8
Connection E



5020 flange C & D
Connection 2

