

Torque Sensor

Rotating, Non-Contact Transfer

Model 8645 with round shafts

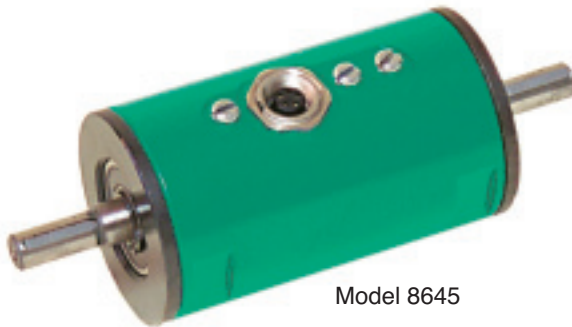
Model 8646 with square ends

Code:	8645 E
Manufacturer:	burster
Delivery:	ex stock
Warranty:	24 months
Issue:	1.4.2005

CAD data in 3D/2D available on
POWERPARTS by web2CAD
Info: data sheet 80-CD-ROM-E



Model 8646



Model 8645

- Very low price
- New, patented measuring technology
- Measuring ranges from 0 ... 2.5 Nm to 0 ... 500 Nm
- Speed up to 5000 rpm
- Maintenance free due to non-contact transfer

Application

With its new EMD-technology this sensor can measure static and dynamic torque from non-rotation up to permanent high speed.

The reliability and, above all, the very low price opens up new possibilities next to the present applications for torque measurement sensors.

Examples: Automotive (steering, gearing, motors)
Drilling systems
Bolting tools
Textile machines
Torque stands
Printing systems
Pumps
Mechanical conveying and handling

Description

A new, patented technology (EMD-technology) is used to create the electrical voltage from the applied torque.

The nickeliferous steel shaft is impregnated with a permanent magnetic pattern. Torque changes this pattern as well as the magnetic field. As a result, the sensor delivers a torque-dependent but less speed-dependent measurement signal for the evaluation by EMD-electronic of the stator.

The function derives only from a magnetization of the shaft (no strain gauges, no wiring).

An ASIC for signal extension gives the user a torque-proportional electrical voltage.

Technical Data

Model 8645, round ends

Variation in dimensions acc. ISO 2768-f

Order code	Measuring range	Dimensions [mm]														Inertia moment [g/cm ²]	Weight of sensor [g]
		A	B	C	øD	E	F	G	H	K	L	M	N	P	S		
8645-5002.5	0 ... ± 2.5 Nm	125	70	27.5	9	40	-	8	5	-	23	43.9	15	37	1.5	4.86	400
8645-5005	0 ... ± 5 Nm	125	70	27.5	9	40	-	8	5	-	23	43.9	15	37	1.5	5.12	400
8645-5007.5	0 ... ± 7.5 Nm	125	70	27.5	9	40	-	8	5	-	23	43.9	15	37	1.5	5.53	400
8645-5017.5	0 ... ± 17.5 Nm	125	70	27.5	9	40	-	8	5	-	23	43.9	15	37	1.5	8.15	450
8645-5075	0 ... ± 75 Nm	139	70	34.5	14	50	-	8	5	-	30	43.9	18	47	1.5	46.4	700
8645-5175	0 ... ± 175 Nm	179	70	54.5	19	50	-	8	5	-	50	43.9	18	47	1.5	180	850
8645-5250	0 ... ± 250 Nm	179	70	54.5	19	50	-	8	5	-	50	43.9	18	47	1.5	188	900

Model 8646, square ends

Order code	Measuring range	Dimensions [mm]														Inertia moment [g/cm ²]	Weight of sensor [g]
		A	B	C	square	E	F	G	H	K	L	M	N	P	S		
8646-5002.5	0 ... ± 2.5 Nm	95.5	70	9.5	1/4"	40	16	8	5	12	-	43.9	15	37	1.5	2.53	400
8646-5005	0 ... ± 5 Nm	95.5	70	9.5	1/4"	40	16	8	5	12	-	43.9	15	37	1.5	2.79	400
8646-5007.5	0 ... ± 7.5 Nm	95.5	70	9.5	1/4"	40	16	8	5	12	-	43.9	15	37	1.5	3.20	400
8646-5017.5	0 ... ± 17.5 Nm	95.5	70	9.5	1/4"	40	16	8	5	12	-	43.9	15	37	1.5	5.82	450
8646-5075	0 ... ± 75 Nm	107	70	13.0	3/8"	50	24	8	5	18	-	43.9	18	47	1.5	30.2	700
8646-5175	0 ... ± 175 Nm	123.5	70	18.5	1/2"	50	35	8	5	24	-	43.9	18	47	1.5	100	800
8646-5250	0 ... ± 250 Nm	123.5	70	18.5	1/2"	50	35	8	5	24	-	43.9	18	47	1.5	102	800
8646-5500	0 ... ± 500 Nm	146	87	29.6	3/4"	60	29.6	10.5	2	33.5	-	61.4	19	57	1.5	563	1500

Electrical

Excitation voltage: 9 ... 12 V DC
 Excitation current: < 10 mA
 Signal output at 0 Nm (adjustable): 2.5 V DC
 Analog output signal (max. left to max. right torque): 2.5 V ± 1 V nominal
 Output resistance: 50 Ω
 Signal bandwidth (-3 db): 1 kHz

Environmental

Storage temperature: - 20 ... 100 °C
 Temperature operating: 0 ... 70 °C
 Temperature effect zero: < ± 0.1 % F.S./K
 Do not apply torque sensor within dynamic magnetic fields.

Mechanical

Linearity and hysteresis failure and signal variation during rotation:
 Measuring ranges up to 250 Nm < ± 1 % F.S.
 Measuring range 0 ... 500 Nm < ± 2 % F.S.
 Repeatability: < ± 0.1 % F.S.
 Resolution: 0.1 % F.S.
 Speed: Model 8645 (permanent up to 3000) max. 5000 min⁻¹
 Model 8646 max. 1000 min⁻¹
 Degree of protection (acc. EN 60529): IP 50
 Static overload safe:
 ranges up to 175 Nm 200 % over capacity
 ranges 250 Nm and 500 Nm 150 % over capacity
 Maximum axial load (all ranges): Influence < 1 % F.S. 40 N
 between shaft and housing
 Maximum radial load (all ranges): Influence < 1 % F.S. 50 N
 Durability of bearings at max. speed: 40,000 h
 Shaft material housing: Ni Cr Ni 14
 Electrical connection: 5 pin connector, mating connector mounted on cable, length 2 m (incl. in standard)

Mechanical connection:
 Model 8645 both shaft ends with one keyway acc. DIN 748 and DIN 6885-1A
 Model 8646 square, male and female, acc. to DIN 3121

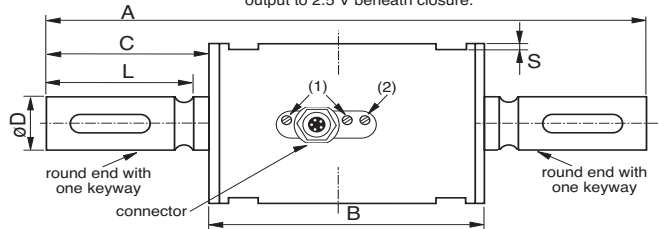
Wiring code cable	wiring code	connector
Excitation	+ white	1
Signal output	+ brown	2
Excitation/signal GND	- black	3
free		4
Reference voltage	V _{ref} (2,5 V) grey	5

To avoid function error pls. use cable on sensor delivery only.

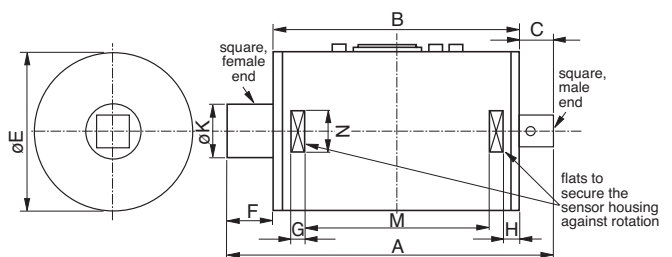
Dimensions

Model 8645

- (1) Do not fasten/unfasten neither the mounting screws nor the connector nut.
- (2) Potentiometer for offset adjustment of signal output to 2.5 V beneath closure.



Model 8646



Accessories

- Mating connector** Model 9941
to all burster instrumentation in table housing
- Mounting of mating connector to conductor cable** Model 99004
- Connecting cable**, length 1.5 m, one end free Model 8645-Z001
(one included on sensor delivery)
length 3 m, one end free Model 8645-Z002
- Holder for 8645 and 8646**,
ranges up to 17.5 Nm Model 8645-Z003
ranges 75 Nm up to 500 Nm Model 8645-Z004

Amplifiers, process indicators like e.g. digital displays 9180, 9162
 (please refer to product section 9 of catalog)

Order Information

Torque Sensor, round ends, Measuring range 0 ... ± 5 Nm,
 (cable 1.5 m included) **Model 8645-5005**

Mounting Instructions

During use and storage the sensor must not be exposed to electrical and magnetical fields.
 For mounting of the sensor it should be respected that the shafts are arranged exactly in line to the connecting shafts. There should not exist any axial and radial load. To avoid that please use flexible shaft couplings, torsionally stiff.