DORT Optical rotary torque transducers

STL 1a
Issue 2

with R.P.M.pick-off option

D7 Optical rotary torque transducer coupler

DORT Optical Rotary Torque Transducer.
The DORT Optical Rotary Torque provides an ideal means for precise measurement of rotary and static torque. Standard ranges cover 0-10mNm to 0-5000Nm in six frame sizes. Comparable ranges in Metric and Imperial calibration are standard (see table). An unusual and extensively developed measurement principle is used, in which the intensity of light beams is modulated by the applied torque. Light intensity is measured by means of photovoltaic detectors, and the electrical output is used to provide precise indication of the torque transmitted by the shaft.

The use of this technique results in a transducer having fast mechanical and electrical response low inertia and complete freedom from brushes or complex electronics. The absence of brush gear allows high speed operation up to 30,000 R.P.M. continuous rating on the smaller sizes (see table). For higher speeds special bearings can be specified: sealed bearings are also available. The torque shaft is of low compliance - torsional deflection being approx. 1/2° on the smaller sizes, and approx. 1/4° on the larger units at full scale deflection. The bulbs providing the light source are substantially underrated to ensure long life and high stability, the light intensity being automatically controlled by a monitor cell within the transducer body.

R.P.M. Pick-off Option.
An optical R.P.M. pick-off is optional on all transducers in the range, giving R.P.M.indication on the D6A/B Module if required. External dimensions of the transducer are not affected.

Cable Amplifier Option
The D7 Coupler is supplied with a standard 2 metre transducer lead. However, some applications require longer lead lengths. Up to 20 metres a standard or heavy duty extension lead of the required length may be used. Between 20 metres and a maximum of 120 metres a cable amplifier will be required. This is an inline amplifier box fitted as near as possible to the transducer and coupled direct to it. An extension lead of the required length can then be used. Longer lengths on application.

Accuracy. ±1% of full scale deflection. 0.5% to order.

Resolution. 0.1% of f.s.d.

Linearity. Within 0.5% span.

Hysterisis. 0.5% of f.s.d.

Repeatability. Within 0.25% span.

Bandwidth. External Display-Better than 1 millisec.* 0-100%.
Transducer Output -
Better than 100 microsec.0-100%.

Overload Capacity. 100% min.

Temperature Coefficient. Better than 0.1% per °C.

Operating Temperature Range 0 to 50°C standard. Other ranges consult factory.

Bearings. Deep groove shielded standard, high speed or sealed to order.

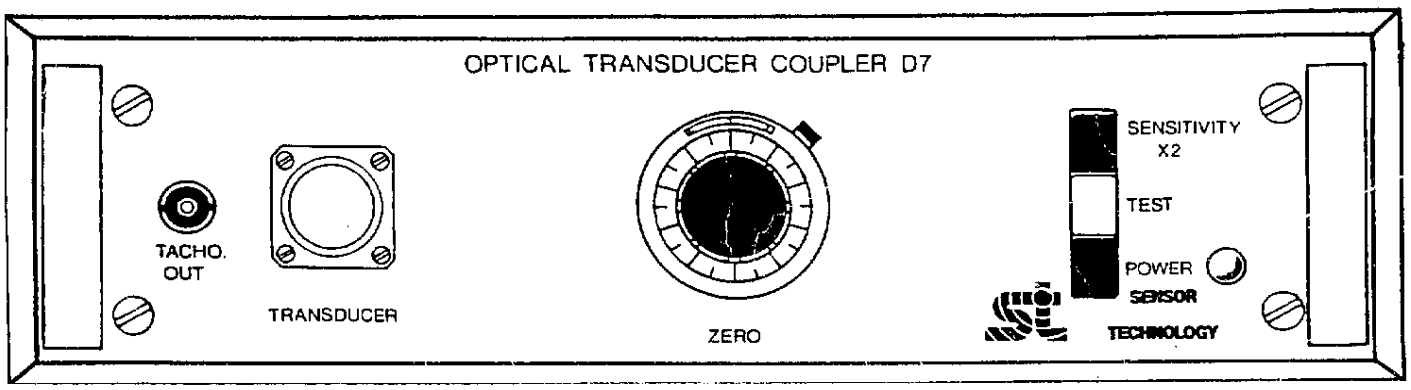
IP65 Sealing. The transducers can be supplied with sealing to IP65. Specify on order.

Input Power. Supplied by D3A/B via D7 Coupler Module.

Polarity of output signal is in accordance with direction of applied torque.

D7 Optical Rotary Torque Transducer Coupler.
Optical transducers are interfaced with the D3A/B Transducer Display Module by means of the D7 Optical Transducer Coupler Module. This unit regulates power from the D3A/B into a variety of special supplies required by the transducer, and matches its signal output to the D3A/B and D6A/B if used. Also incorporated are special lamp stabilising circuits, and provision for exact zero setting by means of a multi-turn potentiometer. A particular feature is the 'x2' button, which provides, if required, twice the sensitivity (or half the rated torque) for full scale deflection displayed on the D3A/B.

The D7 Module serves the entire range of optical Transducers. With its use, all transducers in the optical series are completely interchangeable.



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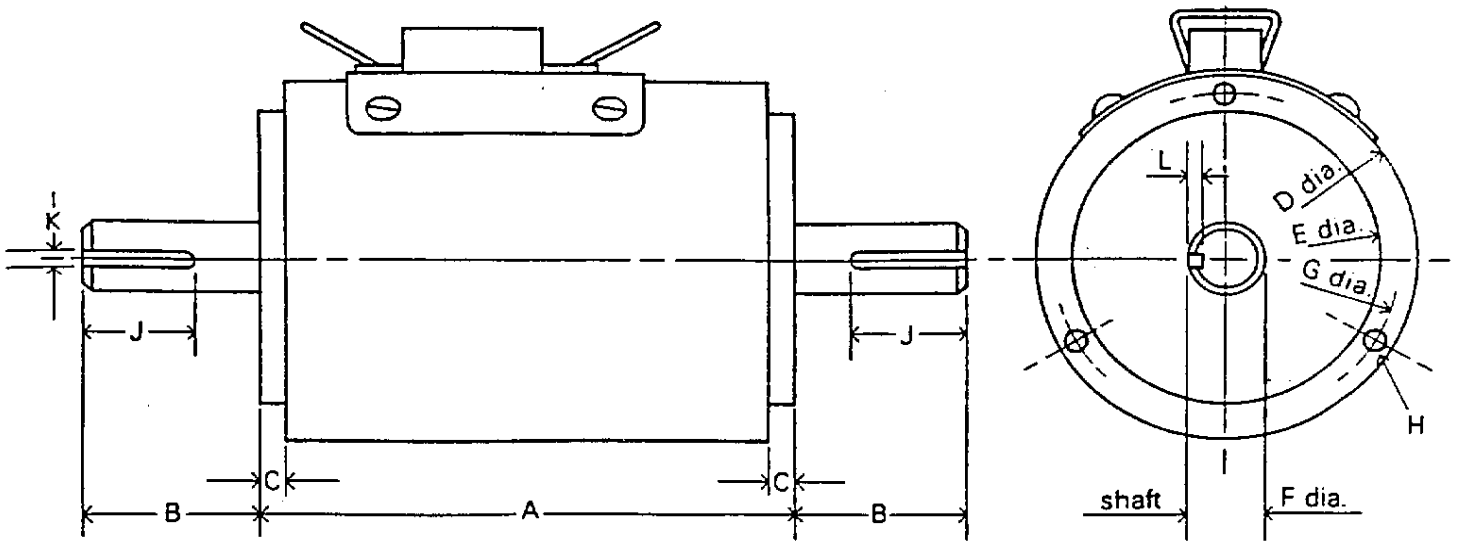

NOMINAL DIMENSIONS mm

Dimension	A	B	C	D	E	F	G	H depth	J	K	L
DORT 1-6	75	25.4	1.52	62	50	6.35	56	6 b.a. 5	19.05	Flat on shaft	0.813
DORT 7-10	105	38	1.52	62	50	12.7	56	6 b.a. 6.35	30.00	3.96	1.98
DORT 11,12	130.2	60	1.52	62	50	20	56	6 b.a. 11	53	6	3.5
DORT 13,14	135	60	4	88	70	30	80	4 b.a. 12.7	54	10	5
DORT 15,16	165	90	4	100	82	45	91	4 b.a. 21	75	14	5.5
DORT 17,18	265	62.5	10	150	130	75	139	2 b.a. 25.4	Spline	on	shaft

STANDARD RANGES:

DORT 1S	0-1	ozf.in.	0-100	gf.cm.	0-10	mNm.
DORT 2S	0-2	ozf.in.	0-200	gf.cm.	0-20	mNm.
DORT 1	0-5	ozf.in.	0-500	gf.cm.	0-50	mNm.
DORT 2	0-10	ozf.in.	0-1	kgf.cm.	0-100	mNm.
DORT 3	0-20	ozf.in.	0-2	kgf.cm.	0-200	mNm.
DORT 4	0-50	ozf.in.	0-5	kgf.cm.	0-500	mNm.
DORT 5	0-100	ozf.in.				
DORT 6	0-10	lbf.in.	0-10	kgf.cm.	0-1	Nm.
DORT 7	0-20	lbf.in.	0-20	kgf.cm.	0-2	Nm.
DORT 8	0-50	lbf.in.	0-50	kgf.cm.	0-5	Nm.
DORT 9	0-100	lbf.in.	0-100	kgf.cm.	0-10	Nm.
DORT 10	0-200	lbf.in.	0-200	kgf.cm.	0-20	Nm.
DORT 11	0-500	lbf.in.	0-500	kgf.cm.	0-50	Nm.
DORT 12	0-1000	lbf.in.	0-10	kgf.m.	0-100	Nm.
DORT 13	0-100	lbf.ft.	0-20	kgf.m.	0-200	Nm.
DORT 14	0-200	lbf.ft.	0-50	kgf.m.	0-500	Nm.
DORT 15	0-500	lbf.ft.				
DORT 16	0-1000	lbf.ft.	0-100	kgf.m.	0-1000	Nm.
DORT 17	0-2000	lbf.ft.	0-200	kgf.m.	0-2000	Nm.
DORT 18	0-5000	lbf.ft.	0-500	kgf.m.	0-5000	Nm.
DORT 19					0-10000	Nm.

Larger sizes and non-standard ranges to order.

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