Comparison of Dual Range Ultra-Precise Torque Sensors with Bearingless Types and Earlier Shaft Models

		Shaft Type			Bearingless Type		
		MCRT® 79800V Series	MCRT® 79700V Series	MCRT® 79000V Series	MCRT® 84700V Series	MCRT® 81708V Series	MCRT® 88700V Series
Specifications	Torque Ratings (lbf-in)	200 to 375,000	200 to 375,000	200 to 375,000	500 to 100,000	10 kNm to 25 kNm	300,000 to 8,850,000
	Overload (% of Rating)	200	200	200	200	200	200
	Maximum Speed Rating (rpm) - Code N	15,000 to 3,600	15,000 to 3,600	15,000 to 3,600	8,500 to 6,000	6,000	5,000 to 750
	Maximum Speed Rating (rpm) - Code H*	Not Available	Not Available	Not Available	15,000 to 10,000	8,500	Not Available
	Balance Grade per ISO 1940/1	Not Specified	Not Specified	Not Specified	2.5	2.5	2.5
	Hi Range Combined Error (% of Rating) - Code N	≤±0.03%	≤±0.1%	≤±0.12%	≤±0.03%	≤±0.1%	≤±0.1%
	Hi Range Combined Error (% of Rating) - Code C*	Not Available	Not Available	Not Available	Not Available	≤±0.05%	Not Available
	Hi Range Nonrepeatability (% of Rating) - Code N	≤±0.01	≤±0.025%	≤±0.05	≤±0.01	≤±0.01	≤±0.02
	Hi Range Nonrepeatability (% of Rating) - Code C*	Not Available	Not Available	Not Available	Not Available	≤±0.01	≤±0.02
	Accuracy Class (% of Rating) - Code N	0.036	0.1	0.12	0.036	0.1	0.1
	Accuracy Class (% of Rating) - Code C*	Not Available	Not Available	Not Available	Not Available	0.05	Not Available
	Hi Range Zero Drift (% of Rating/deg. F) - Code N	≤±0.0006	≤±0.001	≤±0.0025	≤±0.0006	≤±0.0004	≤±0.001
	Hi Range Zero Drift (% of Rating/deg. F) - Code C*	Not Available	Not Available	Not Available	Not Available	≤±0.0004	Not Available
	Hi Range Span Drift (% of Reading/deg. F) - Code N	≤±0.002	≤±0.001	≤±0.0025	≤±0.002	≤±0.002	≤±0.002
	Hi range Span Drift (% of Reading/deg. F) - Code C*	Not Available	Not Available	Not Available	Not Available	≤±0.002	Not Available
	Hi Range 48 Hour Drift (% of Rating) - Code N	≤±0.01 (24 Hr. Drift)	Not Specified	Not Specified	≤±0.01	≤±0.02	≤±0.02
	Hi range 48 Hour Drift (% of Rating) - Code C*	Not Available	Not Available	Not Specified	Not Available	≤±0.02	Not Available
Outputs	Power Calculations* (Calculations/Second)	7,800	50	Not Available	Not Available	Not Available	Not Available
	Torque Analog Out (Volt)	±10 or ±5	±10 or ±5	±5	±10 or ±5	±10 or ±5	±10 or ±5
	Torque Frequency Output (kHz)	Not Available	Not Available	Not Available	10 ±5 to 40 ±20	10 ±5 to 40 ±20	10 ±5 to 40 ±20
	Speed* Analog Out (Volt)	+10 or +5	+10 or +5	Pulse Train Only*	Pulse Train Only*	Pulse Train Only*	Pulse Train Only*
	Power* Analog Out (Volt)	±10 or ±5	±10 or ±5	Not Available	Not Available	Not Available	Not Available
	Torque, Speed* Power* Digital Output	RS232/422/485	RS232	Not Available	Not Available	Not Available	Not Available
	Overrange (% of Range)	150	150	133	150	300	300
	Max/Min Capture Time (µS)	128	2000	Not Available	5	5	5
	Signal Filters	13: 0.1 to 1,000 Hz	11: 0.1 to 200 Hz	2: 1 & 500 Hz	14: .1 to 3,000 Hz	14: .1 to 3,000 Hz	14: .1 to 3,000 Hz
Features	Shunt Calibration of Active torque Bridge	Yes	No	No	Yes	Yes	Yes
	Bipolar Calibration Circuitry	Yes	Yes	No	Yes	Yes	Yes
	Selectable Units of Measure without Re-calibration	Yes	Yes	Not Available	Yes	Yes	Yes
	Classify User Settable Limits	Yes	Not Available	Not Available	Yes	Yes	Yes
	Tare Function	Yes	Yes	Not Available	Yes	Yes	Yes
	Remote Zero Function	Yes	No	No	Yes	Yes	Yes
Mechanical Characteristics	Style	Shaft	Shaft	Shaft	Bearingless Disc	Bearingless Disc	Bearingless Disc
	Length Overall (Inch)	8.5 to 23	8.5 to 23	8.5 to 23	2.5 to 4.58	4.57	5.5 to 10.8
	Through Bore (Inch)	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
	Axial Misalignment Rotor-to-Stator (Inch)	Not Applicable	Not Applicable	Not Applicable	±0.4 axial	±0.2 axial	±0.25 axial
	Radial Misalignment Rotor-to-Stator (Inch)	Not Applicable	Not Applicable	Not Applicable	0.3 radial	0.2 radial	0.2 radial
	Foot Mount - Option F*	Yes	Yes	Yes	Not Available	Not Available	Not Available
	Stiffness (lbf-in/rad)	13,0000 to 31,500,000	5,590 to 36,000,000	5,590 to 36,000,000	528,000 to 145,000,000	73,100,000 to 175,800,000	451E06 to 1.673E10
	Rotating Inertia (ozf-in s^2)	0.0148 to 12.96	0.035 to 11.7	0.035 to 11.7	0.634 to 29.7	46.2 to 46.4	63.0 to 10,240
	Allowable Bending (lbf-in)	Not Specified	Not Specified	Not Specified	250 to 12,500	29,500 to 73,730	100,000 to 1,770,000
	Allowable Thrust (lbf)	Note 1	Note 1	Note 1	500 to25,000	17,700 to 44,250	15,000 to 719,000
	Sensor Material	Plated Alloy Steel	Plated Alloy Steel	Plated Alloy Steel	Plated Alloy Steel	Plated Alloy Steel	Plated Alloy Steel
	Weight (lb.)	12.5 to 172.2	11 to 150	11 to 150	5 to 44.1	60.8 to 61.9	62.2 to 1,020
	Provision for Customers' Accelerometer	No	No	No	No	No	No
	Provision for Customers' Thermocouple	No	No	No	No	No	No
	Provision to Drain Customers' Oil	No	No	No	No	No	No
	Specification	Bulletin 7509	Bulletin 7705	Bulletin 7700	Bulletin 8707R	Bulletin 8003	Bulletins 8801H and 8704E

Notes:
* Denotes an Optional Feature
1. The thrust capacity of a bearing supported sensor is dependent on its installation. If it is installed as a floating shaft its thrust capacity in lbs. is one half its torque rating in lbf-in. When it is foot mounted, its allowable thrust is determined by bearing loads; refer to the applicable instruction manual for more information.
2. Specifications for all models Code J including Combined Error, Hi Range Nonrepeatability, Accuracy Class, Hi Range Zero Drift, Hi Range Span Drift, and Hi Range 48 Hour Drift are Not Available or Not Specified.

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