



For Testing
Electric, Hydraulic,
Pneumatic Motors,
Gas Engines,
Gearboxes and
Pumps



- Hysteresis, Eddy-Current and Powder Absorption Dynamometers
- Torque Transducers
- High Performance Dynamometer Controllers
- Power Analyzers
- Motor Testing Software
- Custom Motor Test Systems

TORQUE-SPEED-POWER

TORQUE TRANSDUCERS

TM, TMHS & TMB In-Line Transducers

Magtrol's In-Line Torque Transducers deliver precise torque and speed measurement over a very broad range. Each model has an integrated conditioning electronic module providing 0 to ±10 VDC torque output and an open collector speed output.

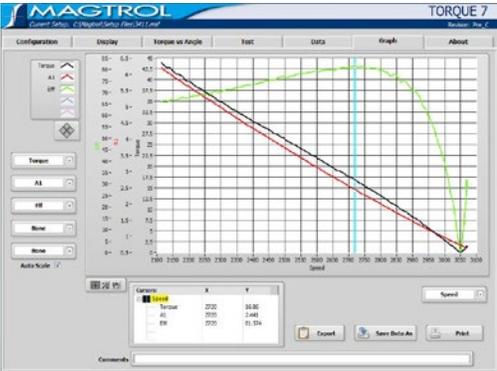


TF Torque Flange Sensors

Based on strain-gauge technology, the TF Sensor's precise telemetry system enables highly accurate signal transmission between its measuring flange, HF transmitter and receiver/conditioner. Special designs available on request.

TORQUE TRANSDUCER RATINGS											
Model		Nominal Rated Torque		TMB Series <i>Basic Accuracy</i>		TM Series <i>High Accuracy</i>		TMHS Series <i>High Speed & Accuracy</i>		TF Series <i>Torque Flange Sensor</i>	
TM	TF	N·m	lb·ft	Accuracy Class	Max. Speed rpm	Accuracy Class	Max. Speed rpm	Accuracy Class	Max. Speed rpm	Accuracy Class	Max. Speed* rpm
301	---	0.1	0.07		N/A	0.2%	20,000		N/A		N/A
302	---	0.2	0.15		N/A	< 0.1%	20,000		N/A		N/A
303	---	0.5	0.37	< 0.1%	6,000	< 0.1%	20,000	< 0.1%	40,000		N/A
304	---	1	0.7	< 0.1%	6,000	< 0.1%	20,000	< 0.1%	50,000		N/A
305	---	2	1.5	< 0.1%	6,000	< 0.1%	20,000	< 0.1%	50,000		N/A
306	---	5	3.7	< 0.1%	6,000	< 0.1%	20,000	< 0.1%	50,000		N/A
307	---	10	7.4	< 0.1%	6,000	< 0.1%	20,000	< 0.1%	50,000		N/A
308	---	20	15	< 0.1%	6,000	< 0.1%	20,000	< 0.1%	50,000		N/A
309	309	20	15	< 0.1%	4,000	< 0.1%	10,000	< 0.1%	32,000	< 0.1%	17,000
310	310	50	37	< 0.1%	4,000	< 0.1%	10,000	< 0.1%	32,000	< 0.1%	17,000
311	311	100	74	< 0.1%	4,000	< 0.1%	10,000	< 0.1%	32,000	< 0.1%	17,000
312	312	200	148	< 0.1%	4,000	< 0.1%	10,000	< 0.1%	24,000	< 0.1%	17,000
313	213	500	369	< 0.1%	4,000	< 0.1%	10,000	< 0.1%	24,000	< 0.1%	13,000
314	214	1,000	738		N/A	< 0.1%	7,000	< 0.1%	16,000	< 0.1%	13,000
315	215	2,000	1,475		N/A	< 0.1%	7,000	< 0.1%	16,000	< 0.1%	10,000
316	216	5,000	3,688		N/A	< 0.1%	5,000	< 0.1%	12,000	< 0.1%	8,000
317	217	10,000	7,375		N/A	< 0.15%	5,000	< 0.15%	12,000	< 0.1%	8,000
---	218	20,000	14,751		N/A		N/A		N/A	< 0.25%	3,000
---	219	50,000	36,878		N/A		N/A		N/A	< 0.25%	3,000
---	220	100,000	73,756		N/A		N/A		N/A	< 0.30%	3,000

* High speed and higher torque versions available on request.



Data Graph

Torque 7 Software

Magtrol's Torque 7 Software is an easy-to-use Windows® executable program, used to automatically collect torque, speed and mechanical power data. The data can be printed, displayed graphically or quickly saved as a Microsoft® Excel spreadsheet.

Torque Transducer Displays

Magtrol offers two different torque displays: Model 3411 for all TM/TMHS/TMB and TF Transducers and Model 6400 (for TM series only). Both units supply power to the transducer and display torque, speed and mechanical power.



Model 3411

Reaction Torque Sensor RT

With its compact and maintenance-free design, the RT Torque Meter has been designed to perform static torque measurement and small dynamic rotation (with limited angle) in both clockwise and counterclockwise direction. Main field applications include actuator and valve testing, fastener testing and automotive braking.



REACTION TORQUE SENSORS		
RT Model	Nominal Rated Torque N·m	Accuracy Class
112	200	< 0.03%
113	500	< 0.03%
114	1,000	< 0.1%
115	2,000	< 0.1%
116	5,000	< 0.1%
117	10,000	< 0.15%
118	20,000	< 0.20%
119	50,000	< 0.25%
120	100,000	< 0.25%
201	0.1	< 0.05%

MICRO DYNE

Micro Dyne System

Magtrol's Micro Dyne, capable of measuring extremely low torques (2.0 mN·m can be resolved to 0.0004 mN·m), is designed exclusively for testing miniature and micro (low-torque) motors.



WB23/WB27 DYNAMOMETER

1WB23 and 1WB27 Eddy-Current Dynamometers

Magtrol's 1WB23 and 1WB27 Eddy-Current Brake Dynamometer is designed for very-high-speed motor testing applications up to 100,000 rpm.



CUSTOM MOTOR TEST SYSTEMS

Magtrol's Customized Motor Test Systems (CMTS) are PC-based, turnkey systems custom designed and built to meet your specific motor testing requirements. By integrating Magtrol's motor test equipment with power supplies, adaptable fixtures, custom tables/cabinets, printers, etc., Magtrol's engineering team can customize PC-based, turnkey systems and modular test benches for almost any motor test application..

CMTS Component Options

- Custom Test Stand, Table or Cabinet
- One or More Dynamometers
- Programmable Dynamometer Controller
- Power Analyzer
- Customized Software
- Motor Power Supply (AC and/or DC)
- Personal Computer and Printer
- GPIB Cards & Cables
- Motor Fixturing
- Safety Guards
- Multiple Point Temperature Measurement
- Cooling System



4 Quadrant Dynamometer System

The Magtrol 4 Quadrant Dynamometer System is not only capable of absorbing energy (like a typical dynamometer), it can also deliver energy. Speed, position and torque control modes allow for testing that would be difficult or impossible with a traditional dynamometer. It is available in a variety of torque ratings ranging from 1 N·m up to 20 N·m, with speed ratings up to 5000 RPM. Control software and data acquisition packages can be tailored to meet the customer's needs.

DYNAMOMETERS

HYSTERESIS DYNAMOMETERS

Model	Maximum Torque Range		Power Ratings		Maximum Speed* rpm
			5 minutes	continuous	
	English	SI	W	W	
MICRO DYNE	0.57 oz-in or 0.28 oz-in	4 or 2 mN-m	4	4	100,000
HD-106	2.5 oz-in	18 mN-m	35	7	30,000
HD-100	11 oz-in	80 mN-m	75	20	25,000
HD-400	40 oz-in	280 mN-m	200	55	25,000
HD-500	120 oz-in	850 mN-m	400	80	25,000
HD-510	120 oz-in	850 mN-m	750	375	25,000
HD-505	240 oz-in	1.7 N-m	800	160	25,000
HD-515	240 oz-in	1.7 N-m	1,500	900	25,000
HD-700	440 oz-in	3.1 N-m	700	150	25,000
HD-710	440 oz-in	3.1 N-m	1,500	935	25,000
HD-705	55 lb-in	6.2 N-m	1,400	300	25,000
HD-715	55 lb-in	6.2 N-m	3,400	3,000	25,000
HD-800	125 lb-in	14.0 N-m	2,800	1,800	12,000
HD-810	125 lb-in	14.0 N-m	3,500	3,000	12,000
HD-805	250 lb-in	28.0 N-m	5,300	3,000	12,000
HD-815	250 lb-in	28.0 N-m	7,000	6,000	12,000
HD-825	500 lb-in	56.5 N-m	14,000	12,000	8,000

* Higher speeds available on request.

Eddy-Current Brake Dynamometers (WB)

Eddy-Current Brake Dynamometers (*WB series*) are ideal for applications requiring high speeds and also when operating in the middle to high power range. Eddy-Current Brakes provide increasing torque as the speed increases, reaching peak torque at rated speed. The Dynamometers have low inertia as a result of small rotor diameter. Brake cooling is provided by a water circulation system, which passes inside the stator to dissipate heat generated by the braking power.



2 WB 43
Dynamometer

Hysteresis Brake Dynamometers (HD)

Hysteresis Brake Dynamometers (*HD series*) are versatile and ideal for testing in the low to middle power range (max. 14 kW intermittent duty). Hysteresis Brakes **do not** require speed to create torque, and therefore can provide a full motor ramp from free-run to locked rotor. Brake cooling is provided by convection (no external source) or by air (compressed air or dedicated blower) depending on the model.



Magtrol
HD-100
Dynamometer
shown with
Adjustable Motor
Fixture, and PT 25
Base Plate

EDDY-CURRENT DYNAMOMETERS

Model	Rated Torque	Rated Speed	Rated Power	Maximum Speed rpm	
	N-m	rpm	kW	standard version	high-speed version (HS)
1 WB 23	0.08	20,000	0.30	100,000	
1 WB 27	0.15	20,000	0.30	100,000	
2 WB 2.7	0.3	15,915	0.50	50,000	N/A
3 WB 2.7	0.45	15,915	0.75	50,000	N/A
4 WB 2.7	0.6	15,915	1.00	50,000	N/A
1 WB 43	1.5	9,550	1.50	50,000	65,000
2 WB 43	3	9,550	3	50,000	65,000
1 WB 65	10	5,730	6	30,000	50,000
2 WB 65	20	5,730	12	30,000	50,000
1 WB 115	50	2,865	15	18,000	22,000
2 WB 115	100	2,865	30	18,000	22,000
1 WB 15	140	2,390	35	7,500	N/A
2 WB 15	280	2,390	70	7,500	N/A
3 WB 15	420	2,390	105	7,500	N/A
4 WB 15	560	2,390	140	7,500	N/A

POWDER DYNAMOMETERS

Model	Rated Torque	Rated Speed	Rated Power	Maximum Speed
	N-m	rpm	kW	rpm
1 PB 2.7-8	0.6	320	0.02	3,000
2 PB 2.7-8	1.2	320	0.04	3,000
4 PB 2.7-8	2.4	320	0.08	3,000
1 PB 2.7-8K	0.6	2390	0.15	10,000
2 PB 2.7-8K	1.2	2390	0.30	10,000
4 PB 2.7-8K	2.4	2390	0.60	10,000
1 PB 43	5	955	0.50	4,000
2 PB 43	10	955	1.00	4,000
1 PB 65	25	570	1.50	3,000
2 PB 65	50	570	3	3,000
1 PB 115	100	480	5	3,000
2 PB 115	200	480	10	3,000
1 PB 15	300	382	12	2,000
2 PB 15	600	382	24	2,000
4 PB 15	1200	382	48	2,000

Powder Brake Dynamometers (PB)

Powder Brake Dynamometers (*PB series*) are ideal for applications operating in the low to middle speed range or when operating in the middle to high torque range. Like Hysteresis Brakes, Powder Brakes provide full torque at zero speed. Like the Eddy-Current Brake Dynamometers, the PB series is water-cooled, allowing for power ratings up to 48 kW.

Tandem Dynamometer

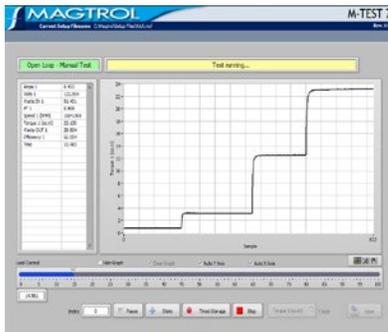
Magtrol offers Eddy-Current and Powder Dynamometers mounted in tandem. In tandem, the unique features of each type of dynamometer brake are utilized, allowing nominal braking torque to be applied to the unit under test from zero speed to maximum rotation.

MOTOR TESTING SOFTWARE

M-TEST 7

Magtrol's new M-TEST 7 is a state-of-the-art motor testing program for data acquisition. Used with a Magtrol Programmable Dynamometer Controller, M-TEST 7 works with any Magtrol Dynamometer or In-Line Torque Transducer to help determine the performance characteristics of a motor under test. Up to 63 parameters are calculated and displayed utilizing M-TEST 7's feature-rich testing and graphing capabilities. Written in LabVIEW™, M-TEST 7 has the flexibility to test a variety of motors in a multitude of configurations. Magtrol can also make custom modifications to the software to meet additional motor testing requirements.

In addition to M-TEST 7, Magtrol offers EM-TEST 2.0 specifically designed for endurance motor testing and DUAL-TEST 7 fully independent dual channel control software.



Manual test



Typical motor curve

Standard Features

- Graphical User Interface with tabbed pages for quick navigation.
- Optional Analog and Digital I/O.
- DSP7000 Programmable Controller Support.
- Expanded power analyzer and power supply selections.
- Additional test choices (coast and overload to trip).
- Two page report generates a five-axis graph on second page.

DYNAMOMETER CONTROLLER

DSP7000 High-Speed Programmable Controller

Magtrol's Model DSP7000 High-Speed Programmable Dynamometer Controller employs state-of-the-art Digital Signal Processing Technology to provide superior motor testing capabilities. Designed for use with any Magtrol Hysteresis, Eddy-Current or Powder Brake Dynamometer, Magtrol In-Line Torque Transducer or auxiliary instrumentation, the DSP7000 can provide complete PC control via IEEE-488 or USB interface.



Standard Features

- DSP7001 Single Channel: Easy to use plug & play solution
- DSP7002 Dual Channel: Enables the support of two testing instruments with independent or tandem configurations and two fully independent control loops
- Built-in Alarm System
- Speed & Torque Operating Modes
- Programmable Digital PID Values
- Built-in Current-Regulated Supply
- Adjustable Torque Units

POWER ANALYZERS

Models 6510e and 6530 High-Speed Power Analyzers

- Data transfer rates up to 100 per second
- Bandwidth: DC to 100 KHz
- Maximum current: 20 A
- Standard IEEE-488 (GPIB) and RS-232C interfaces
- Single phase (6510e) or three phase (6530)

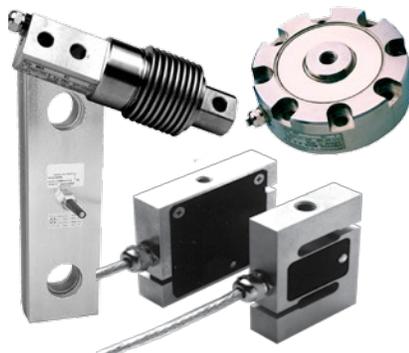


6530 Power Analyzer

OTHER MAGTROL PRODUCTS

Load-Force-Weight Measurement

- Nominal value : up to 2,500 kN
- Accuracy class : < 0.5%
- Overload at rupture : up to 500%
- Test and certificate for component to CE standards and material certificate on request
- Signal conditioner :
 - Analog or digital
 - Inputs : up to 2 channels
 - Outputs : 0 to 10 V, 4 to 20 mA or bus interface
- Digital display



Brakes and Clutches

Hysteresis

- Torque : up to 26 N·m
- Speed : up to 25,000 rpm
- Power : up to 5,300 W (AHB)
- Air-cooled version (AHB) available for basic motor test rig configuration
- Standard or customized brakes and clutches available
- Power supplies, matched brakes, torque curves



Powder

- Highest Torque per Volume
- Available Torque: 5, 10, 25 N·m
- Braking Power: up to 110 W
- Stable Braking Torque
- Low Moment of Inertia
- Low Residual Torque

Displacement Transducers

- Accuracy : 0.3%
- Range : 50 mm to 1 m
- High shock and vibration resistance
- Ability to withstand pressure up to 450 bar
- Operating temperature :
 - 40 °C to +80 °C with active temperature compensation
- High temperature version, up to 200 °C, available



Due to the continual development of our products, we reserve the right to modify specifications without forewarning.

For more information, contact your local sales agent:

TSP-US www.10/15



For over 60 years, Magtrol Inc and Magtrol SA have been providing customers with high quality products to test, measure and control torque-speed-power, load-force-weight, tension and displacement. Magtrol Inc, headquartered in the USA, is a leading manufacturer of motor test equipment and hysteresis brakes and clutches. Magtrol SA, located in Switzerland, also offers motor test equipment as well as transducers to measure, monitor and control load, force, weight and displacement. Magtrol offers customers a wide array of test and measurement solutions, combined with excellent worldwide sales and service.

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