

# A.C. TRANSIENT DYNAMOMETERS & CONTROLLERS

(Swinging type/programmable)/Energy Efficient

**Application:**

MTDM series of low time constant transient Dynamometers are available in more than 10 different models (10 to 1000 kilo watts/ 500 to 50,000 rpm) including some tailor made models practically offering ready-made solution in measurement, testing /diagnostic of any principal parameter like power, rpm and torque as well as other inferential parameter like rated power/torque capacity, overload power/torque capacity, efficiency, plotting torque/speed and power/speed curve, desired phase trajectories of any diesel/gases /petrol engine/automobile ( low/high rpm). These fast responding dynamometers has ability to detect fast variation in engine parameters on account of its ultra low constant due to low mechanical time constant, windage losses, least rheological problem, mechanical black-lash/ dead band, and exhibits a repeatable and hysteresis less Torque/Power vs Excitation current characteristics which guarantees accurate identification of parameters during steady state/transient conditions.

**Operating Principle:**

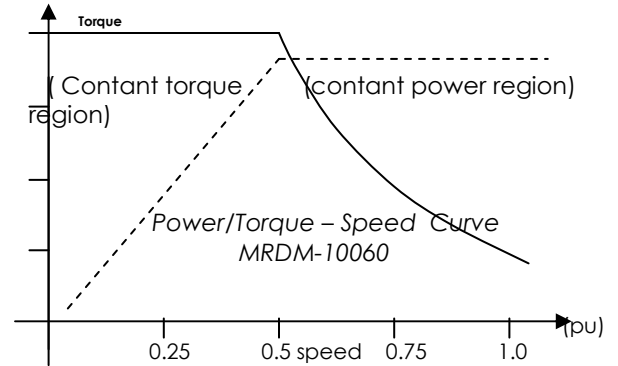
These transient dynamometer can operate in both absorbing mode as well in motoring mode with smooth transition between each mode. While performing in regenerative mode, power is transferred into electricity main. with this type of dynamometer an infinitely variable load can be applied at constant speed or set to a constant load with a variable speed. It offers linear/stable torque/speed behaviour, especially at lower speed range with speed holding with in +0.1% of full speed. These dynamometers can also be used to estimate internal losses in engine while working in motoring mode Torque speed behaviour of dynamometer is as under.....

$$w = K_1.V/If - K_2.T/If$$

(Maximum torque varies between 0.3 lbs-ft to 1000.0 lbs-ft)  
Feedback controlled power supply ensure fine resolution in loading i.e. 0.1% of torque/power at any time, with a very high degree of stability and repeatability.

**General Technical specifications of dynamometer controller:**

- Operating Power supply 220 volts/50 hz
- Loading mode: resistive load bank/grid interactive
- Loading Torque/Power pulsation 100 ppm
- Rpm: as in data sheet( 3000-45,000 rpm)
- Conversion frequency of chopper 50 Hz/50 kHz
- Power/Torque loading resolution: 99% of set point
- Power/Torque loading accuracy: 99%
- Power/Torque loading repeatability: 100%
- Power/torque loading accuracy: 99% of set point
- Response time 0.5 –1.1 mill-seconds
- Interface Signal 0.0-12.0 volts D.C./4.0-20.0 milli amps
- Power factor/harmonics 0.95(lagg)/ less than 3% of first harmonics
- Control cascade feedback control with soft start
- Display power/torque/RPM in 3½/3½/ red glow LED display
- Protection over voltage/short ckt & inline surge protection.
- Interface: RS-232



Dynamometer loading machine

**Technical specifications and selection chart (MTDM series) P<2000.0 kilo.watts**

Model	Power (kilo watts)	Rated Torque N.m	Non excited torque % R.T.	RPM other rpm option	Cooling Water/Air	Thermal rise °C (an hour)
MTDM150003	1500.0	4700	0.5(may vary)	300	Liquid	65
MTDM80005	1000.0	1900	0.5(may vary)	500	Liquid	65
MTDM75010	750.0	7160	0.5(may vary)	1000	Air	65
MTDM50015	500.0	3180	0.5(may vary)	1500	Air	65
MTDM25030	250.0	790	0.5(may vary)	3000	Air	65
MTDM10060	100.0	160	0.5(may vary)	6000	Air	65
MTDM50120	50.0	38.9	0.5(may vary)	12000	Air	65
MTDM20150	20.0	12.7	0.5(may vary)	15000	Air	65
MTDM10200	10.0	7.9	0.5(may vary)	20000	Air	65
MTDM05300	5.0	1.6	0.5(may vary)	30000	Air	65
MTDM02300	2.0	0.63	0.5(may vary)	30000	Air	65
MTDM02300	1.0	0.31	0.5(may vary)	30000	Air	65

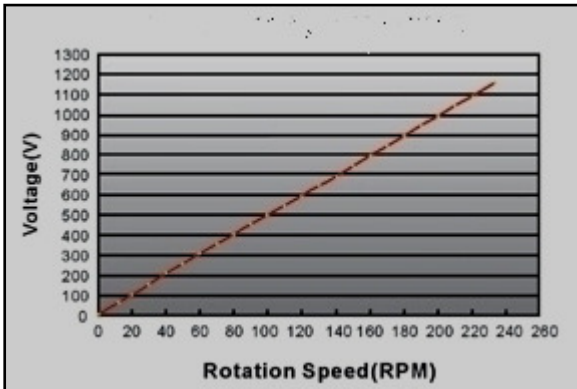
**MOTORON SEMICONDUCTORS CORPORATION**

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motoron@hotmail.com

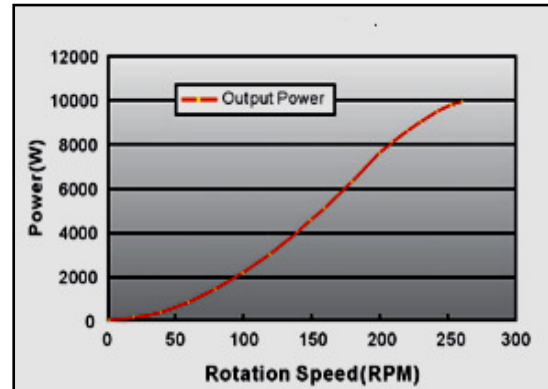
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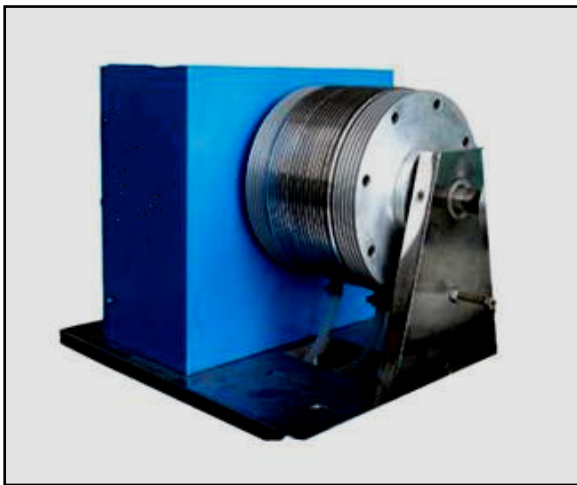
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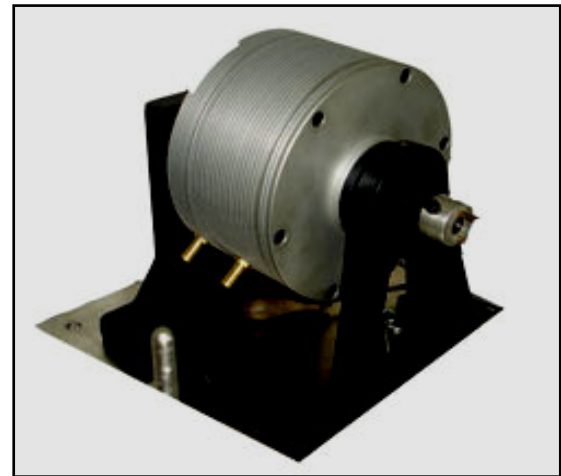
VOLTAGE VS RPM CHARECTERISTIC OF DYNAMOMETER



POWER VS RPM CHARECTERISTIC OF DYNAMOMETER



MTDM020150



MTDM010100



MTDM02300



MTDM01200

## Electrical specification of A.C. Transient Dynamometer:

MTDM15003	72x36x36	MTDM50015	38x28x28	MTDM20150	32x22x22	MTDM07120	20x15x15
MTDM80005	60x32x32	MTDM25060	36x28x28	MTDM15200	32x20x20	MTDM05300	18x15x15
MTDM75010	48x32x32	MTDM10060	32x28x28	MTDM12150	28x20x20	MTDM02300	15x12x12
MTDM60008	42x36x36	MTDM05080	32x24x24	MTDM10120	24x20x20	MTDM01200	12x10x10

Three numeral after MTDM indicates powerx100 k.w and remaining indicates rpmx100.

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