

# HYSTERESIS DYNAMOMETERS & CONTROLLERS

MHDM-Series

## Introduction:

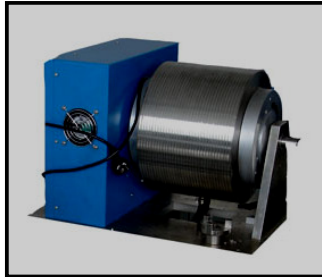
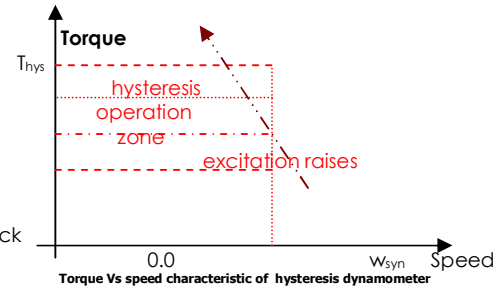
MHDM series of hysteresis coupling/dynamometers are available in more than 100 different models (0.01 to 100.0 kilo watts), virtually offering solutions to speed to torque/power, control/characterization in paper, machine-tools, plastic/yarn, milk/brewery plant, petrochemical industry, organic/inorganic chemical, rubber, sugar, textiles, water management/treatment, heavy electrical/mechanical industries, research and development organizations and many defence applications. Special machine design ensures better efficiency and enhanced torque transmission.

## Operating Principle:

Hysteresis dynamometers are of absorption type and exploit the hysteresis characteristic of magnetic material. These dynamometers generate constant hysteresis retarding torque irrespective of angular speed. The primary element of a hysteresis dynamometer is a metal rotor with special magnetic/electrical properties with high resistivity rotating under the influence uniformly distributed magnetic field by virtue of which there develops retarding hysteresis torque space domain without any stray eddy current torque. Hysteresis torque is generated by stable magnetic field produced by the high frequency feedback controlled chopper.

Power and torque developed by the dynamometer/ coupling is as under...

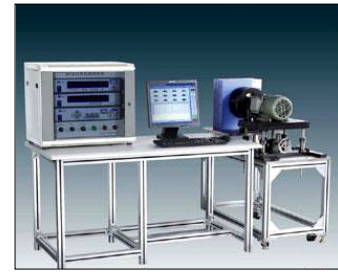
$$P = 0.438I_r^{1.6-1.8} \times N \text{ and } T = 0.438 \times I_r^{1.6-1.8} \text{ (approx)}$$



MHDM-40003



MHDM-00150



MHDM-00515

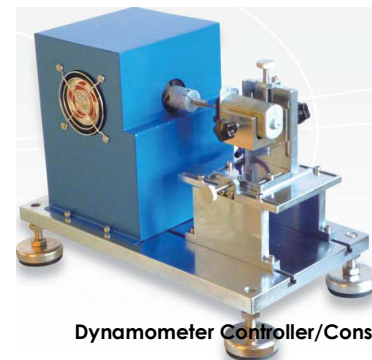
## Specifications of Hysteresis Dynamometers:

0.01 watt &lt; P &lt; 10.0 K.Watts

Model	Power Wattsx10 <sup>-2</sup>	RPM X1000	T <sub>slip</sub> N.cm.10 <sup>-2</sup>	T <sub>max</sub> °C	Cool	Model	Power Watts	RPM X1000	T <sub>slip</sub> N.m	T <sub>max</sub> °C	Cool
MHDM-00150	0.010	50	0.19	90	Air	MHDM-005005	50.0	05	955.4	90	Air
MHDM-00240	0.020	40	0.47	90	Air	MHDM-006004	60.0	04	1432.5	90	Air
MHDM-00420	0.040	20	1.9	90	Air	MHDM-010003	100.0	03	3183.3	90	Air
MHDM-00710	0.070	10	6.6	90	Air	MHDM-020003	200.0	03	6366.6	90	Air
MHDM-01010	00.10	10	9.5	90	Air	MHDM-040003	400.0	03	12733.2	90	Oil
MHDM-02510	00.25	10	23.8	90	Air	MHDM-080003	800.0	03	25466.4	90	Oil
MHDM-05010	00.50	10	47.6	90	Air	MHDM-0100003	1000.0	03	31514.9	90	Oil
MHDM-10080	010.0	10	95.2	90	Air	MHDM-0200003	2000.0	03	31514.9	90	Oil
MHDA-02010	020.0	10	191.0	90	Air	MHDM-0400003	4000.0	03	31514.9	90	Oil
MHDM-04006	040.0	06	636.6	90	Air	MHDM-0800003	8000.0	03	31514.9	90	Oil

## Hysteresis Dynamometer Controllers/Console Specification:

Operating voltage 220 volts/110volts D.C.  
 Absorbed power: in various model from 10 -10,000 Watts  
 Excitation current 0.0- 50.0 amps (max)  
 Rpm: upto 25,000 rpm  
 Nominal torque: as above .  
 Loading power repeatability: 99% of loading  
 Loading torque repeatability : 99% of load torque  
 Loading power/torque accuracy: 99% of set point  
 Loading power/torque resolution: **10<sup>-1</sup>/10<sup>-4</sup>/10<sup>-5</sup> watt or 10<sup>-1</sup>/10<sup>-3</sup>/10<sup>-5</sup> N.m**  
 Load control: cascade mode feed back control (constant power/torque)  
 Overload: 25% for 15 min  
 Frame O.D. : 3" to 18"/Frame length: 20 inch  
 Shaft diameter: 0.5" - 3"  
 Coupling: star  
 Soft start: 0.1-10 second adjustable  
 Display: Power/torque/rpm/Temperature/rpm/volt/amps/fuel flow ... (3-1/2 digit)  
 Accessories: 1. Common base with anti vibration pad 2. coupling and guard 3. volt/ampere meter, 4. RPM /Torque/power meter 5. Temperature indicators including one differential Temperature Sensor) 6. Torque transducer 7. Vibration dampers  
 Switch gear/protection: 1. MCB 2. 3. Main line/ output power indication with field failure Protection (provision of main supply to be made at IIT end)  
 Additional: desired indication/switching provision



Dynamometer Controller/Console

## Dynamometer Controller Size:

MHDC-00150	08X06X06	MHDC-02010	14X12X12	MHDC-00420	12X10X10	MHDC-10003	20X18X18
MHDC-00240	10X06X06	MHDC-04006	16X14X14	MHDC-00515	12X10X10	MHDC-20003	20X18X18
MHDC-00330	12X08X08	MHDC-05005	18X16X16	MHDC-00710	12X10X10	MHDC-40003	20X18X18
MHDC-01080	12X10X10	MHDC-80003	20X18X18				

Three numerals x 100 after MHDM indicates power of Hysteresis dynamometer and Last two digit indicate R.P.M.X1000. Hysteresis dynamometer/coupling with tailor made specification are also available.

## MOTORON SEMICONDUCTORS CORPORATION

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# HYSTERESIS DYNAMOMETERS & CONTROLLERS

Application/Utility

MHDM-Series



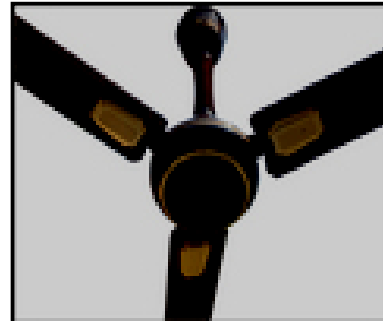
Ball bearing chareterization



Coupling power transmissioin chareterization



Blower fan motor chareterization



Ceiling fan motor/blade chareterization



Food Processor chareterization



Tyre power chareterization



Gear box/lube oil Tribology



Hydraulic motor charecterization



Brake Lining

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