

Dynamometers & Test Benches, to test ...

◆ ENGINES

- * Petrol Engines
- * Diesel Engine
- * Gasoline Engines
- * Kerosene Engine



◆ GEARBOXES

- * Automotive Gears & Gear Boxes
- * Industrial Gears & Gear boxes
- * Transmissions



◆ MOTORS

- * AC Motors
- * DC Motors
- * Pneumatic Motors
- * Hydraulic Motors
- * BLDC Motors



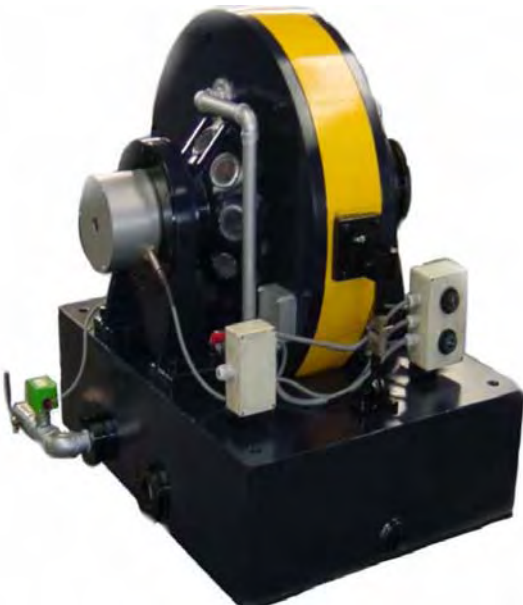
◆ SHAFT & AXLES Etc...



Dynamometers employed to test Engines are:

◆ **Eddy Current dynamometers:**

Water Cooled - in wide Torque rating range from tiny 1 Nm to massive 5000 Nm. In self cooled & Water/coolant cooled version depends on Power rating. Speeds upto 30000 RPM.



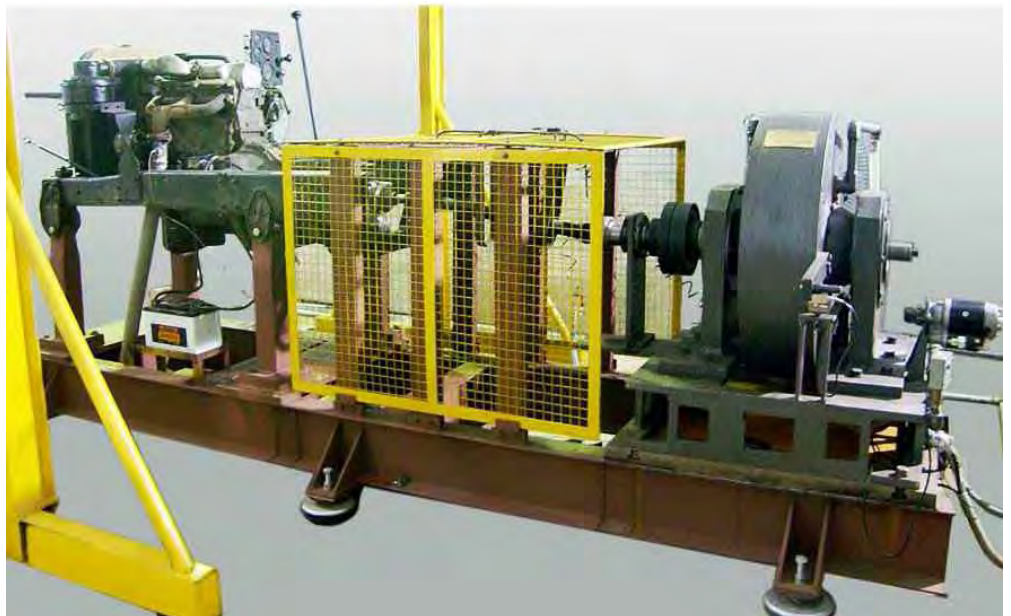
Eddy current dynamometer, A simple dynamic load system for accurate testing of all type of Electric Motors, Air Motors, Hydraulic Motors, Engines and other rotating machinery's. It provides the ideal solution for accurate analysis of Power, Torque, Speed, Fuel and Lubrication consumption and quick pass / fail testing of all type of Electric Motors, Engines, Gears and other Rotating Machineries.

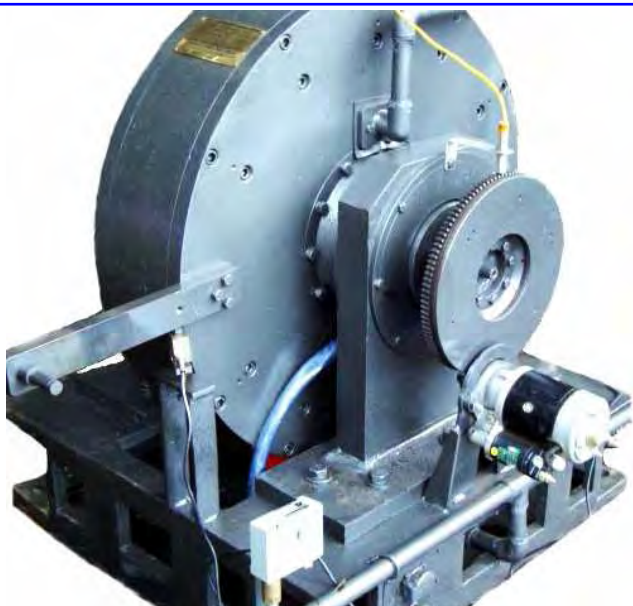


Eddy current dynamometer absorbs power & measures Torque and Speed characteristics with a unique braking system, which provides frictionless torque loading (0% to 100%) constant / variable torque load, independent of shaft speed. Torque is transmitted by a magnetic field with out friction or wear. It eliminates mechanical loading to the prime mover, providing longer life. In Eddy Current Dynamometers torque increases as the speed increases, reaching peak torque at rated speed. EC dynamometers have low inertia as a result of small rotor diameter and a low residual torque of 1%.



Cooling is provided by a water circulation system, which passes inside the stator to dissipate heat generated by the braking power. The water cooling in the EC Dynamometer provides high continuous power ratings & has typical accuracy ratings of $\pm 0.3\%$ to $\pm 0.5\%$ full scale, depending on size and system configuration and a very long lifetime. Mounting orientation of Eddy Current Dynamometers is in any direction, Horizontal, Vertical or inclined.





Eddy Current Dynamometer is Bi-directional, Dry-gap Type. Being Dry operation, the only resistance to movement of the rotor is bearing friction and the minimal windage effect. With zero excitation, an almost no-load condition is achieved over the entire speed range

- **High Accuracy** strain gauge load cell for Torque measurement.
- **Precise Control** even at low loads and rapid changes in demands.
- **Bi-directional operation.**
- **Low Inertia rotor.**
- **Balanced Rotor shaft** assembly on precision bearings ensures **smooth operation.**
- Single excitation coil, molded in epoxy.
- **High Reliability in extreme conditions.**
Electroless nickel plating of cooling passages ensures **corrosion free operation.**
- **'O' ring pipe** connection to **minimize error in torque calibration** due to variation in water supply pressure.

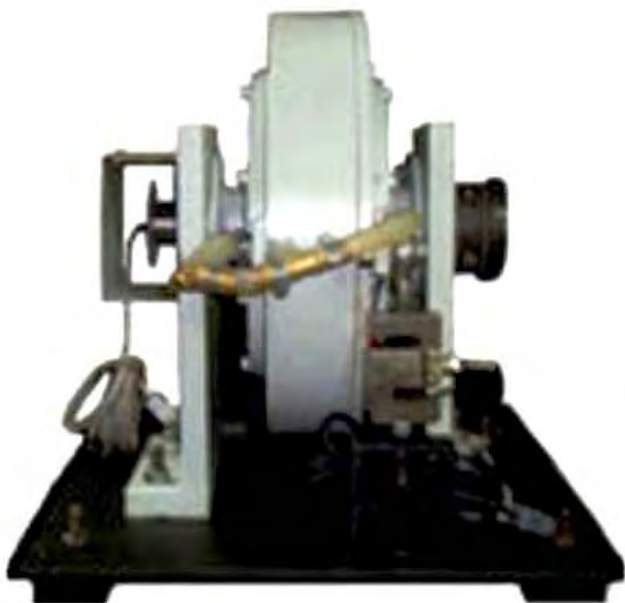
SPECIFICATIONS

- Power range 50 Watts ~ 1000 Kw
- Torque range 1 ~ 5000 Nm
- Speed range 0 ~ 15000 r/min
- Cooling: Water / Coolant
- Cooling Water Pressure: 1– 2 Bar
- Water Outlet temperature Max 65°C.
- Torque measurement accuracy 0.5% FS, resolution 0.1 Nm.
- Speed measurement accuracy 1r/min

APPLICATIONS

For Torque, Speed, Power, Performance & Endurance testing of:

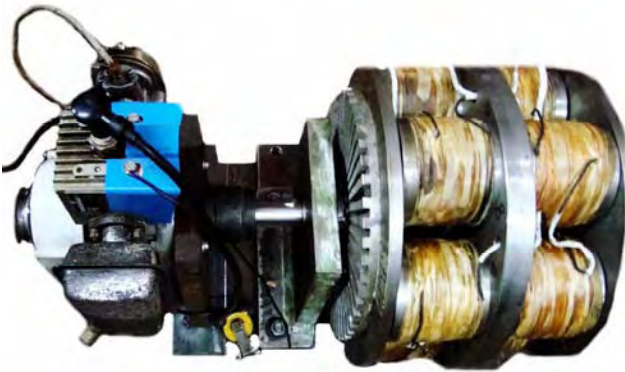
- Electric Motors, Hydraulic Motors, Pneumatic Motors,
- Internal Combustion Engine, Diesel Engines, Gasoline Engines, Kerosene Engines,
- Transmission, Differential Gear Boxes,
- Gear Box—Automotive & Industrial Gear Boxes,
- Turbines—Gas, Steam,
- Pumps,
- Shafts, Axles,
- Agricultural Machinery
- Mining Machinery
- Petroleum drilling





◆ **EDDY CURRENT RETARDER Type DYNAMOMETER** Torque range 5 Nm (0.5 KgM) to 3000 Nm (300) KgM Torque range, in self cooled & fan Cooled version, to avoid Water cooling hassles.

Eddy Current Brake Retarder to apply non friction brake to reduce Speed from full speed to lower speed in controlled fraction

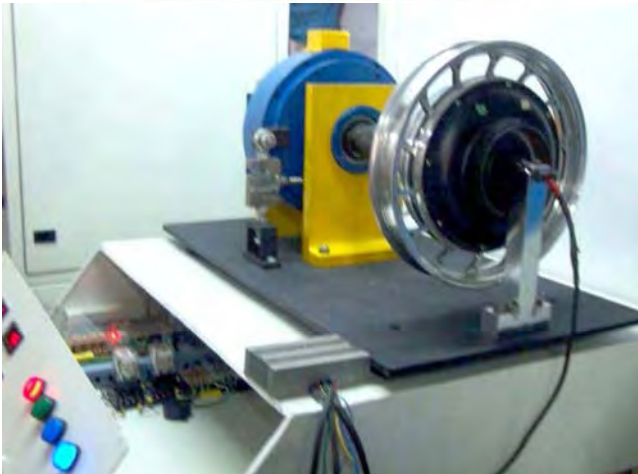


Eddy Current Retarder Brakes are designed to apply non contact friction less braking, for retarding Vehicle, machine speed from full speeds (upto 30000 RPM) to minimum speed of 300 RPM in sudden or decelerated manner.

Eddy Current Retarders are manufactured from 5Nm (0.5KgM) torque to massive 3000 Nm (300 KgM), in Self Cooled & Fan Cooled Version.



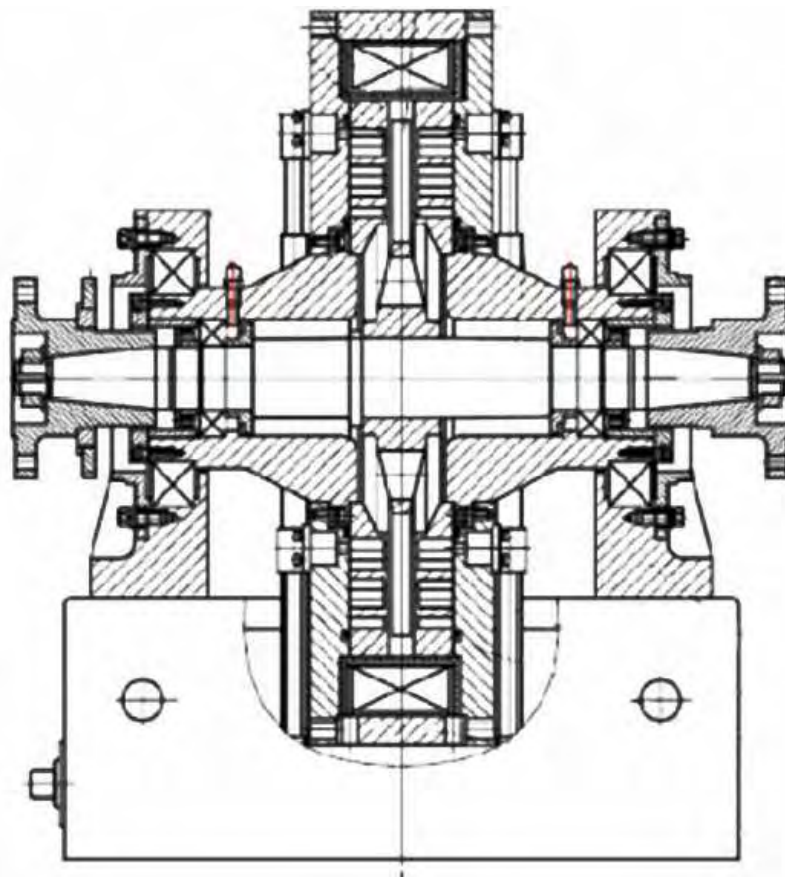
Eddy Current Retarder Brakes are used as dynamometers to test Engine, Chassis, Motors & other rotating devices, In Machine tools applications.



Eddy Current Brake Retarders are virtually maintenance Free.



Model	Rated Power		Rated Torque	Rated Speed	Max Speed	Moment of Inertia	Water Flow	Weight Approx.
	KW	HP	Nm	RPM	RPM	KgM ²	Ltr/Hr	Kg
WED-00125	0.125	0.17	1	1200	14000	0.0004	6	28
WED-0125	1.25	1.7	8	1500	14000	0.0008	40	35
WED-022	2.2	3	15	1500	14000	0.0017	85	55
WED-038	3.8	5	24	1500	14000	0.0026	110	70
WED-06	6	8	35	1500	13000	0.055	220	100
WED-11	11	15	50	1500	13000	0.068	440	180
WED-15	15	20	70	1500	12000	0.073	600	160
WED-38	38	50	170	2000	11000	0.095	1400	240
WED-55	55	75	260	2000	9000	0.10	2000	260
WED-75	75	100	320	2000	9000	0.12	3000	270
WED-110	110	150	400	2000	9000	0.18	4200	270
WED-150	150	200	540	2000	8500	0.26	5700	350
WED-192	192	250	680	2000	8000	0.41	7000	560
WED-220	220	300	960	2000	8000	0.45	8200	600
WED-300	300	400	1400	2000	6000	0.95	11000	880
WED-375	375	500	1920	1800	6000	1,82	14000	1275
WED-450	450	600	2700	1800	5500	3.28	16000	1400
WED-650	650	900	4000	1800	4000	9.95	22000	2290
WED-750	750	1000	5000	1800	4000	15.86	27000	2350



Our Proprietary APPSYS ENGINE TEST software developed for Engine test to monitor & display Engine mechanical Power, Toque, Speed, Temperature parameters, Pressure parameters, Crank Angle position detection etc.

PC Auto & PC Manual mode selector Soft push button switch on Monitor screen. In PC Auto mode, Data is captured on predetermined (Site settable) time & Torque Loading in 100 steps (independently settable), whereas in PC Manual mode – Data is captured manually by pressing data capture soft button on screen. Captured data is exported to MS Excel in Table forms & in Graphs form to show Torque-Speed characteristics, Speed-Power characteristics, Fuel consumption—Torque characteristics. Torque-Speed Oscillations at steady state Torque at different temperatures, Temp measurements etc. & custom characteristics required by clients.

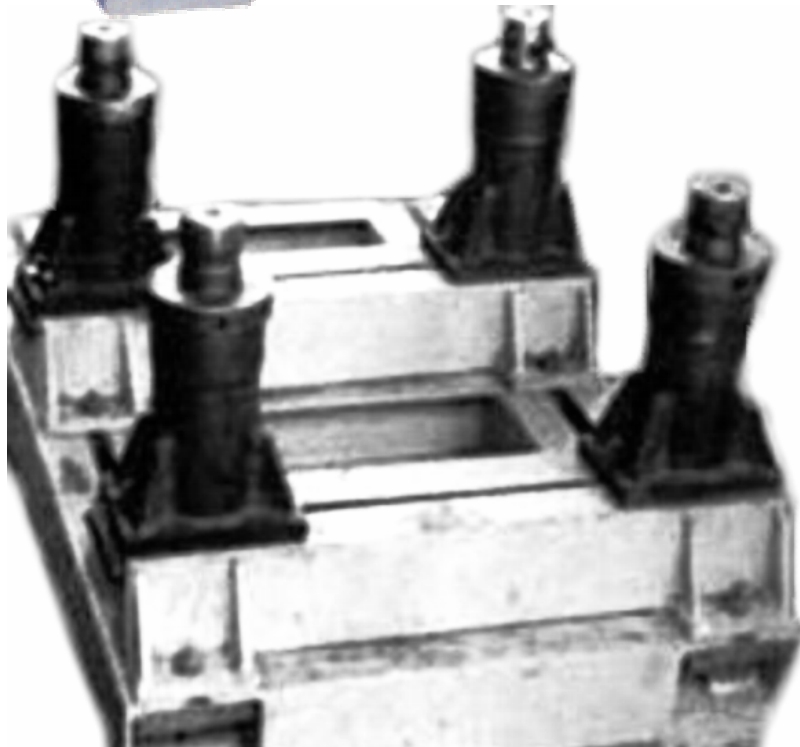
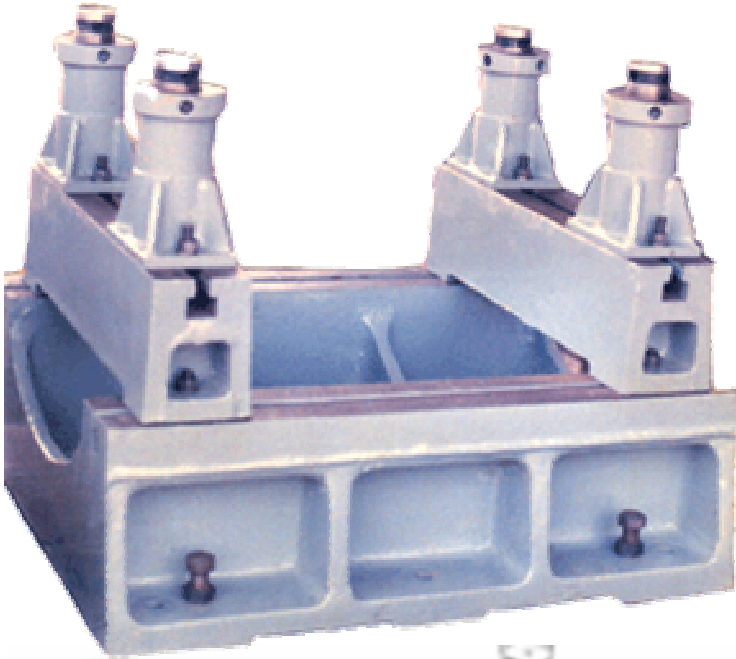


My Test Data Table (from middle screenshot):

Time	Speed	Torque	BHP	Engine Temp	Dyno Temp	Lube Temp	Exhaust Temp
Sat, Oct 23, 2010 :: 6:47:58 AM	526	68.00	4.98	32.00	32.00	37.00	113.00
Sat, Oct 23, 2010 :: 6:48:04 AM	542	101.00	7.69	32.00	31.00	37.00	119.00
Sat, Oct 23, 2010 :: 6:48:13 AM	547	167.00	12.84	32.00	31.00	37.00	130.00
Sat, Oct 23, 2010 :: 6:48:21 AM	543	227.00	17.31	32.00	32.00	37.00	141.00
Sat, Oct 23, 2010 :: 6:48:34 AM	538	328.00	24.79	32.00	31.00	37.00	160.00
Sat, Oct 23, 2010 :: 6:48:35 AM	537	331.00	24.99	32.00	31.00	37.00	161.00
Sat, Oct 23, 2010 :: 6:48:43 AM	535	377.00	28.37	31.00	31.00	37.00	173.00
Sat, Oct 23, 2010 :: 6:48:51 AM	532	414.00	30.95	31.00	31.00	37.00	183.00
Sat, Oct 23, 2010 :: 6:48:59 AM	530	441.00	32.78	31.00	31.00	37.00	191.00
Sat, Oct 23, 2010 :: 6:49:15 AM	530	484.00	36.00	31.00	31.00	37.00	205.00
Sat, Oct 23, 2010 :: 6:49:31 AM	529	500.00	37.11	32.00	31.00	37.00	216.00

My Test Data Table (from bottom screenshot):

Date Time	Speed (RPM)	Torque (Nm)	Power (BHP)	Engine Temp (deg C)	Dyno Temp (deg C)	Lube Temp (deg C)	Exhaust Temp (deg C)
Sat, Oct 23, 2010 :: 6:47:58 AM	526	68.00	4.98	32.00	32.00	37.00	113.00
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Engine Test Stands, Mounting Bed with T- slots having X, Y & Z adjustment for Length, Width & Height adjustments with mechanical / hydraulic jacks or scissor type lift platform with raise / lower lever & position lock, is supplied for Engine mounting with Cardan / Propeller shaft & adaptors between Engine and the loading device (Dynamometer) and necessary transducers. The test bench, being rigidly supported on four anti-vibration mounts.

Accessories such as Fuel consumption & Flow measurement, Engine starting system, Throttle actuator, Shut down actuator, Temperature measurements with RTD sensors, Pressure measurements, Crank angle position detection, are also offered along with engine testing dynamometer.



APPLICATION SYSTEMS

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