

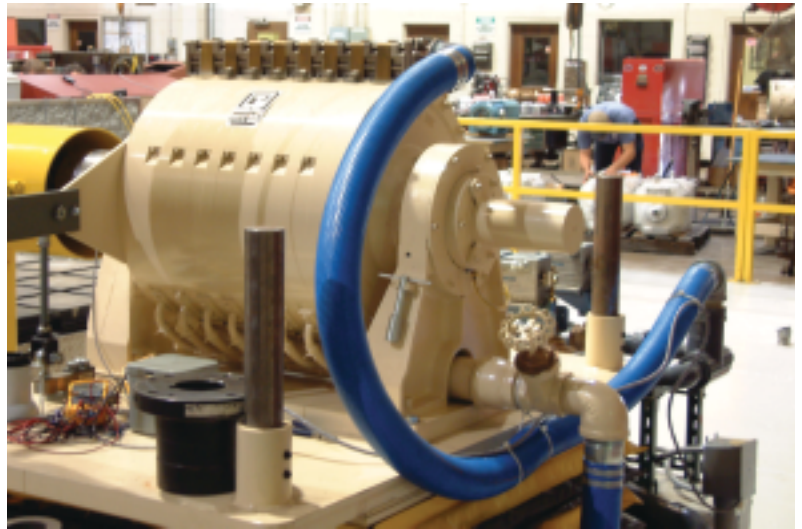


## WATER-BRAKE DYNAMOMETERS

PHENIX Technologies, long known for technically advanced Motor Test Systems, is proud to announce the addition of complete Water Brake Dynamometer Systems to complement our vast product offering. Whether you need a complete Motor Testing Package with power supply and dynamometer, or a dynamometer alone with a dedicated control, we have a solution for you!

These affordable Water-Brake Dynamometers are proven durable designs which use water flowing through the absorber to create a load on the motor. Only the amount of water necessary to provide the load is required. Sufficient internal clearances within the absorber body eliminates the need for cooling water and thermal overload protection, unlike typical industry offerings. If the water overheats under test and vaporizes, then the dynamometer simply stops absorbing the load.

With equal absorption in both CW and CCW directions, operator set up is reduced. Precise load



**Model PTD-45X10 Dynamometer**

control of the dynamometer is as simple as increasing or decreasing water volume flowing through the dynamometer absorption body. With different control options available, motor load remains stable throughout the duration of the test cycle. Torque, horsepower, RPM, and water temperature are displayed on highly accurate digital instrumentation.

PHENIX can also customize your system with special water cooling system options, adjustable lift tables, drive shafts with shaft guards, and custom controls and instrumentation. These systems can be set up for simple, manual operation or more sophisticated computer controlled operation.

With all of the available options for motor load testing, the PHENIX Technologies Water Brake Dynamometer offers the most economical, durable, precise motor load testing option available today.



**MTS1250R-900 Motor Test System with PTD-45X10**

# DYNAMOMETER FEATURES

PHENIX Technologies has been supplying Electric Motor Test Systems for over 25 years. We have built a reputation as a manufacturer of custom-built test equipment and we strive to design and build systems that meet our customer's exact needs. We have developed expertise in the field of high voltage, high current, and high power.

## Operation Theory

Water brake dynamometers utilize water flow proportional to the applied load to create resistance to the motor. A controlled flow of water through the inlet manifold is directed at the center of the rotor in each absorption section. This water is then expelled towards the outside of the dynamometer body by centrifugal force. As it is directed outward, the water is accelerated into pockets on the stationary stator plates where it is decelerated. This continuous acceleration/deceleration of the water creates the applied load to the motor. Through this transfer of energy, the water is heated and discharged.

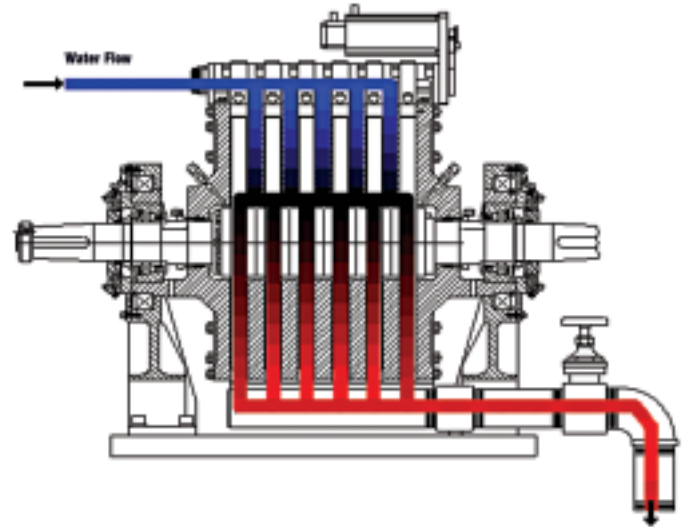
## Applications

Water brake dynamometers can be used in any application where a load brake is required on a rotational load. In the motor industry, dynamometers are used in conjunction with a power source and instrumentation to determine motor HP, Torque, and Efficiency ratings with a high degree of accuracy. Other characteristics of an operating motor can only be determined with a dynamometer, such as: heat rise, bearing performance, winding design rating, insulation integrity, harmonic distortion, rotor bar looseness, DC brush contact, variable frequency drive influences, and motor slip characteristics.

### Typical users of dynamometers:

- Motor and Generator Service Shops
- Motor Manufacturers
- Research Facilities
- Independent Test Labs
- Industrial E & I Departments
- Utility Plant Maintenance Shops
- and many more applications

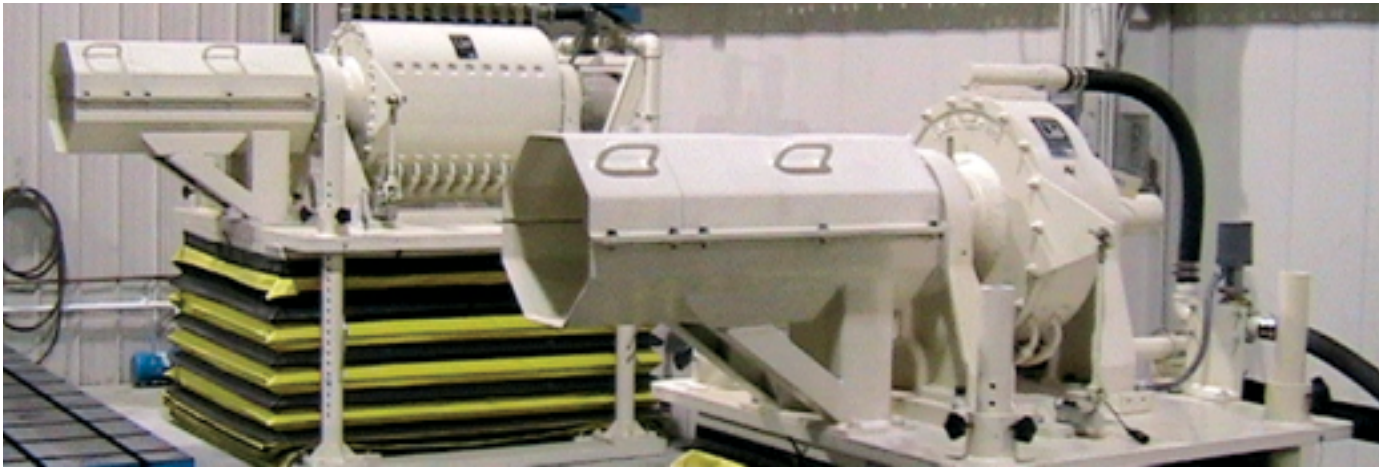
PHENIX Technologies now offers a complete line of Dynamometers with power ratings to meet all testing requirements. We offer superior reliability and versatility for years of extended service life. Our ISO 9001 Certification ensures the highest in-house quality controls in both the design and manufacturing process.



## Timeless Design

- Trunnion-mounted fixed base design
- Multiple absorption sections
- Precise metered inlet manifolds
- Readily available bearings and seals, cartridge mounted and readily accessible for field servicing
- Equal absorption in both CW and CCW directions
- Water flow requirement for loading typically is less than 6 GPM per each 100 HP of load applied.
- No additional water required for cooling
- Maximum recommended water discharge temperature is 160°F-controlled by discharge valve position.

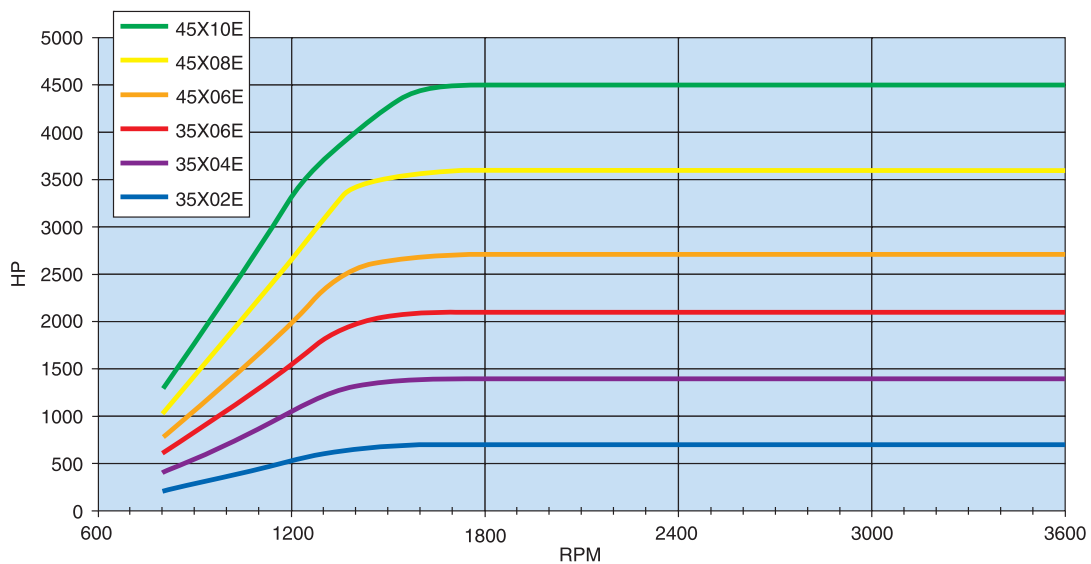
# STANDARD DYNAMOMETER SIZES



PHENIX Technologies offers water brake dynamometers in 6 standard sizes with custom sizes and configurations available for any motor testing requirement:

Model No.	3600 RPM	1800 RPM	1200 RPM	900 RPM
<b>PTD-45X10E</b>	4,500 HP	4,500 HP	3,312 HP	1,750 HP
<b>PTD-45X08E</b>	3,600 HP	3,600 HP	2,650 HP	1,400 HP
<b>PTD-45X06E</b>	2,700 HP	2,700 HP	1,987 HP	1,050 HP
<b>PTD-35X06E</b>	2,100 HP	2,094 HP	1,546 HP	800 HP
<b>PTD-35X04E</b>	1,400 HP	1,396 HP	1,030 HP	550 HP
<b>PTD-35X02E</b>	700 HP	698 HP	515 HP	275 HP

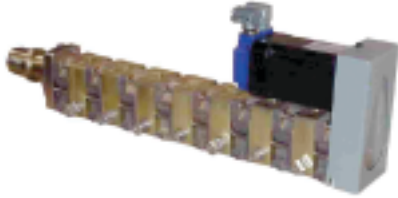
## Dynamometer Absorption Curves



Specifications are subject to change without notice.

# DYNAMOMETER OPTIONS

## Water Control Features



- High Precision Inlet Manifold (shown w/optional servo motor) to accurately meter water evenly to each absorber chamber.
- Ball valve on intake to adjust water flow to manifold to apply load to absorber.
- Ball valve on discharge to restrict water flow and control water temperature.

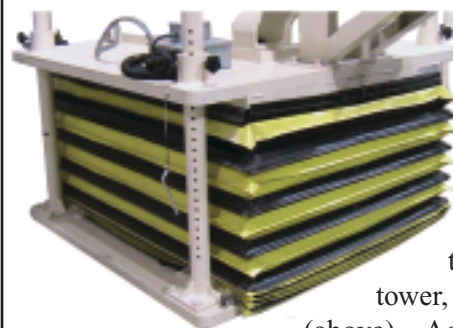
## Additional Optional Features



DYNAMOMETER CONTROL can be upgraded to either the motorized valve with pushbutton operator (left) or a servo motor control (right) for automated computer control. With the motorized valve option, one (1) valve is used with the 35X series dynamometers while two (2) are used with the 45X series. Additionally, remote control pushbuttons can be installed in a PHENIX Motor Test Panel for operator convenience.



METERING OPTIONS include interface into a PLC Motor Test System Control with Panelview Display (for existing and new PHENIX test systems only); or, stand-alone basic instrumentation shown above (for use with other power supplies). Standard instrumentation includes RPM, HP, Torque and Water Temperature display. A load cell and linkage kit along with a tachometer gear kit are included with either system above. Test reports can be printed using the PHENIX WINMTS software or on an optional serial printer.



Other Options include Drive Shafts (above left), Shaft Guards (left), Adjustable Lift Tables (below left), and Water Containment Systems with bulk water storage tanks, evaporative cooling tower, and pumps with controls (above). Additional options include sub-bases, flange couplings, speed increaser gearboxes, and motor mounting options (not shown).

Your Local Representative is:



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