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## **WB 23 High-Speed Eddy-Current Dynamometer**

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### **FEATURES**

- Torque: 80 mN·m
- Speed: up to 100,000 rpm
- Power: 120 W continuous; 400 W intermittent
- Low inertia
- Very low residual torque
- Stable braking torque, without blows
- Measuring system with air-bearing
- Protection guard included
- Data acquisition via DSP6001 Controller and M-TEST Software
- Built-in electronics with Torque and Speed measurement
- Optional motor fixture available (AMF)

### **DESCRIPTION**

Magtrol's new WB 23 Eddy-Current Brake Dynamometer is designed for very-high-speed motor and engine testing applications. By providing a braking torque that is proportional to the rotational speed, rated torque is reached at the rated speed of 23,000 rpm.

The WB 23 Dynamometer features a low level of inertia, due to small rotor dimensions, and brake cooling is provided by an air passage inside the dynamometer housing. This results in the dynamometer's ability to dissipate 120 watts of power (continuous duty), 300 watts for a maximum of 180 seconds or 400 watts for a maximum of 120 seconds.

A PT 500 temperature sensor continuously monitors the brake temperature and alarms the DSP6001 Controller to stop the brake excitation current in order to protect the dynamometer from overheating.

Torque is measured by a reaction-force transducer placed on the stator. The dynamometer has a torque measuring accuracy rating of  $\pm 1\%$  full scale. The speed is measured by an optical sensor and a 6-bit encoder disc. This sensor measures engine/motor speeds between 10 and 100,000 rpm with a full scale accuracy of  $\pm 0.06\%$  (using a DSP6001).

Magtrol offers three types of dynamometer brakes to absorb load: Hysteresis, Eddy-Current and Magnetic Powder. Each type of Dynamometer has advantages and limitations and choosing the correct one will depend largely on the type of testing to be performed. With over 50 models to choose from, Magtrol Sales professionals are readily available to assist in selecting the proper Dynamometer to meet your testing needs.



*WB 23 Dynamometer*

### **COMPLETE PC CONTROL**

Magtrol's M-TEST 5.0 Software is a state-of-the-art motor testing program for Windows®-based data acquisition. Used with a Magtrol DSP6001 Programmable Dynamometer Controller, Magtrol M-TEST 5.0 Software provides the control of any Magtrol Eddy-Current or Powder Brake Dynamometer and runs test sequences in a manner best suited to the overall accuracy and efficiency of the Magtrol Motor Test System. The data that is generated by Magtrol's Motor Testing Software can be stored, displayed and printed in tabular or graphic formats, and can be easily imported into a spreadsheet.

Written in LabVIEW™, M-TEST 5.0 has the flexibility to test a majority of motor types in a variety of ways.

Because of LabVIEW's versatility,

obtaining data from other sources (e.g. thermo torques), controlling motor power and providing audio/visual indicators is relatively easy.

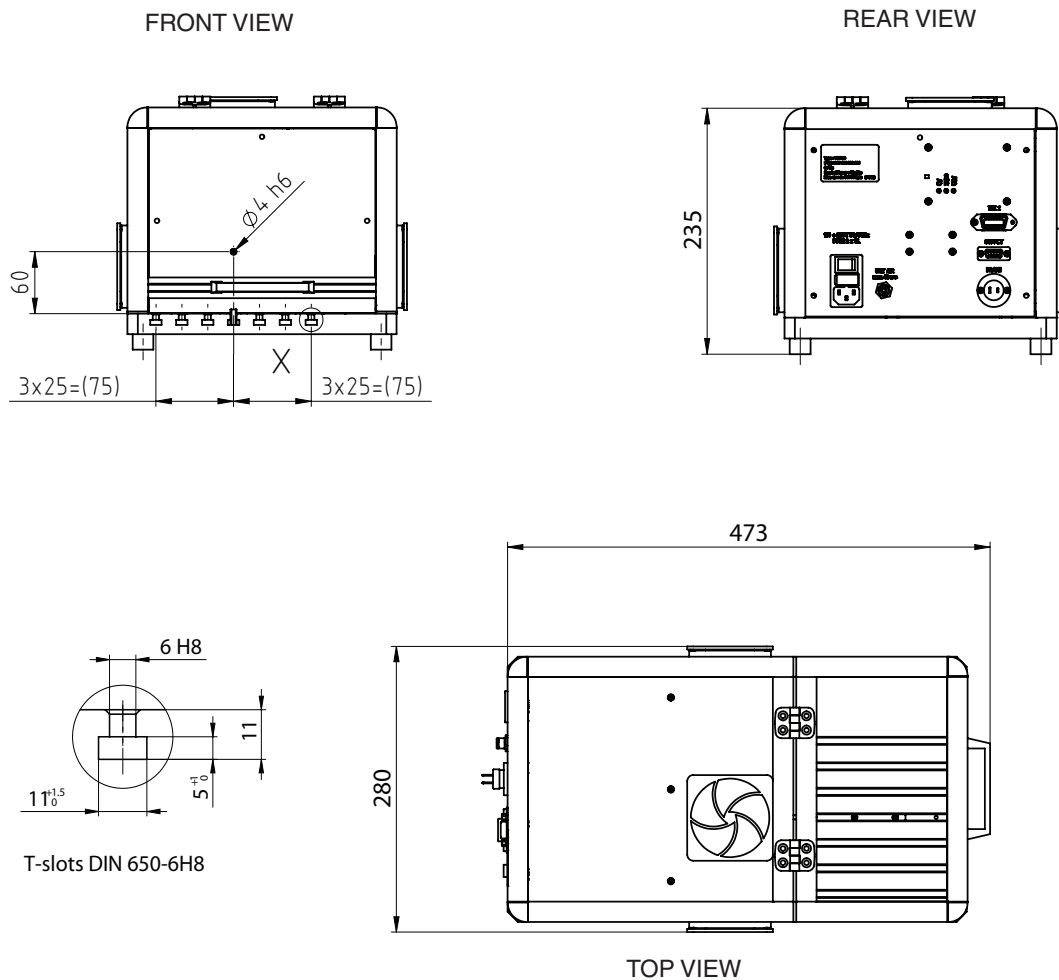
Magtrol's M-TEST 5.0 Software is ideal for simulating loads, cycling the unit under test and motor ramping. Because it is easy to gather data and duplicate tests, the software is ideal for use in engineering labs. Tests can be programmed to run on their own and saved for future use allowing for valuable time savings in production testing and incoming/outgoing inspection.

**RATINGS**

| Model | Rated Power | Duration at Rated Power | Guaranteed Torque | Rated Speed | Maximum Speed | Drag Torque De-energized at 100,000 rpm | Nominal Input Inertia  | Excitation Current max. |
|-------|-------------|-------------------------|-------------------|-------------|---------------|---|------------------------|-------------------------|
|       | <i>W</i>    | <i>s</i>                | <i>mNm</i>        | <i>rpm</i>  | <i>rpm</i>    | <i>mNm</i>                              | <i>kgm<sup>2</sup></i> | <i>A</i>                |
| WB 23 | 120         | steady operation        | 70                | 16'500      | 100,000       | 2                                       | $3.2 \times 10^{-6}$   | 0.8                     |
|       | 300         | 180                     | 80                | 36'000      |               |   |                        |                         |
|       | 400         | 120                     | 80                | 48'000      |               |   |                        |                         |

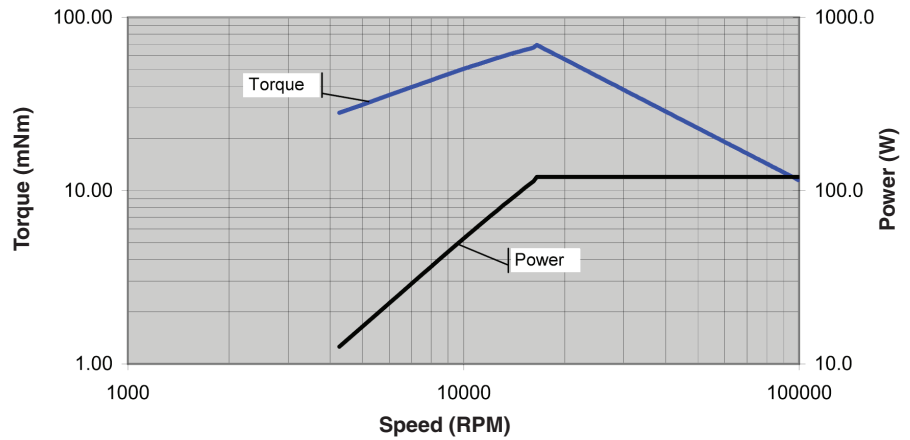
Weight: 19 kg

**DIMENSIONS**



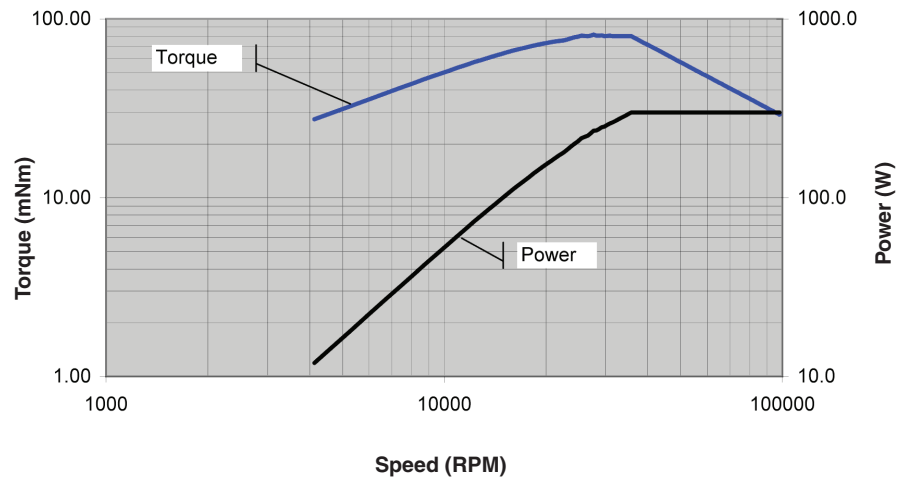
|                      |            |
|----------------------|------------|
| <b>Power</b>         | 120 W      |
| <b>Test duration</b> | Permanent  |
| <b>Rated Torque</b>  | 70 mNm     |
| <b>Rated Speed</b>   | 16'500 rpm |

Torque-Speed-Power 120 W Permanent



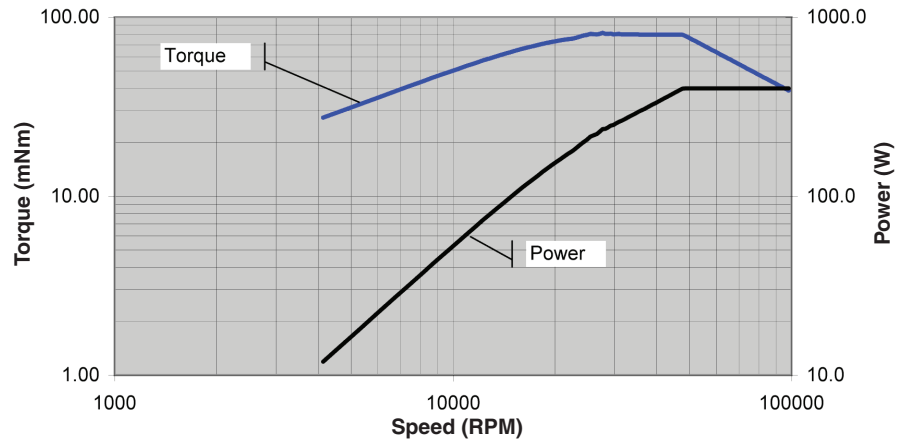
|                      |            |
|----------------------|------------|
| <b>Power</b>         | 300 W      |
| <b>Test duration</b> | 180 s      |
| <b>Rated Torque</b>  | 80 mNm     |
| <b>Rated Speed</b>   | 36'000 rpm |

Torque-Speed-Power 300 W / 180s



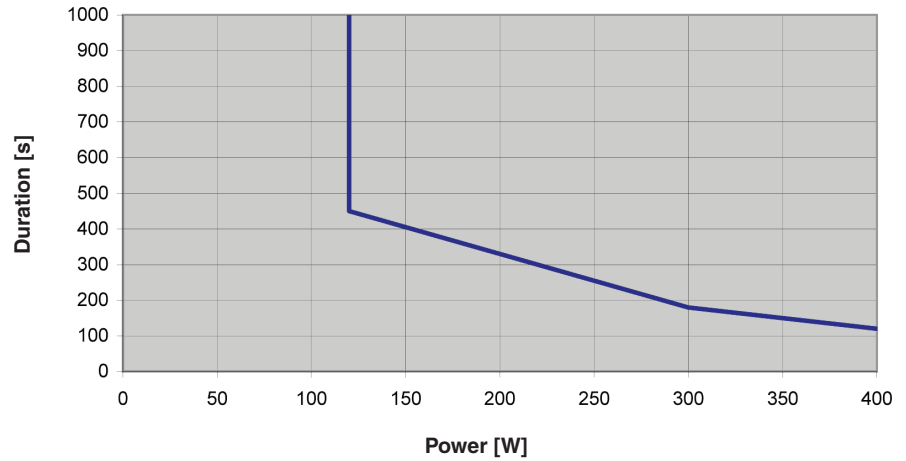
|                      |            |
|----------------------|------------|
| <b>Power</b>         | 400 W      |
| <b>Test duration</b> | 120 s      |
| <b>Rated Torque</b>  | 80 mNm     |
| <b>Rated Speed</b>   | 48'000 rpm |

Torque-Speed-Power 400 W / 120s



Test Duration vs Power

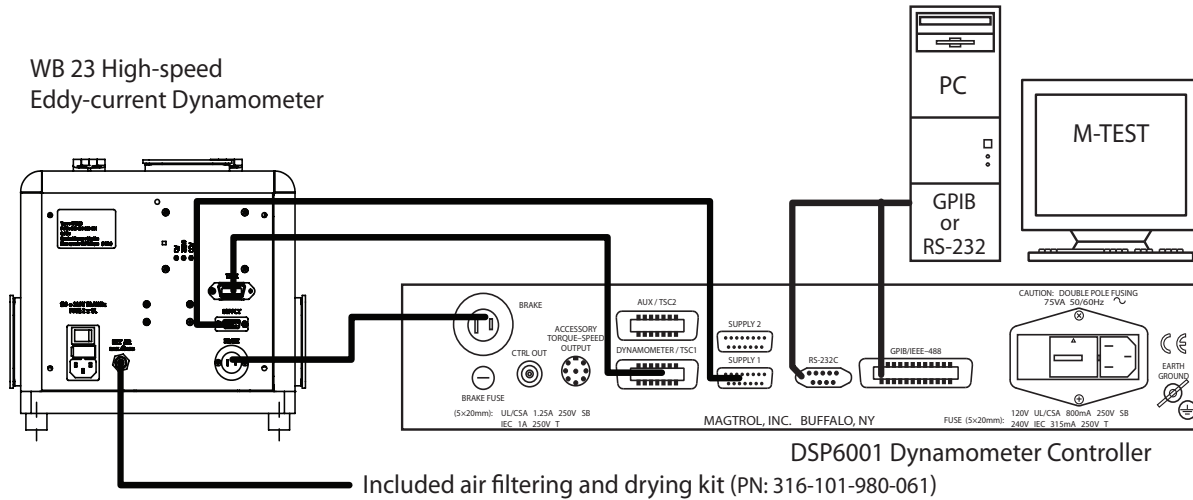
| Power [W] | Time [s]  |
|-----------|-----------|
| 400       | 120       |
| 300       | 180       |
| 120       | Permanent |



## SYSTEM CONFIGURATION

The WB 23 Dynamometer must be used with a Magtrol DSP6001 Programmable Dynamometer Controller in order to supply the necessary excitation current and closed-loop control of the test system. In addition, the DSP6001 displays the measured torque, rotation speed and mechanical power of the motor under test and features a built-in alarm system for user-defined limits.

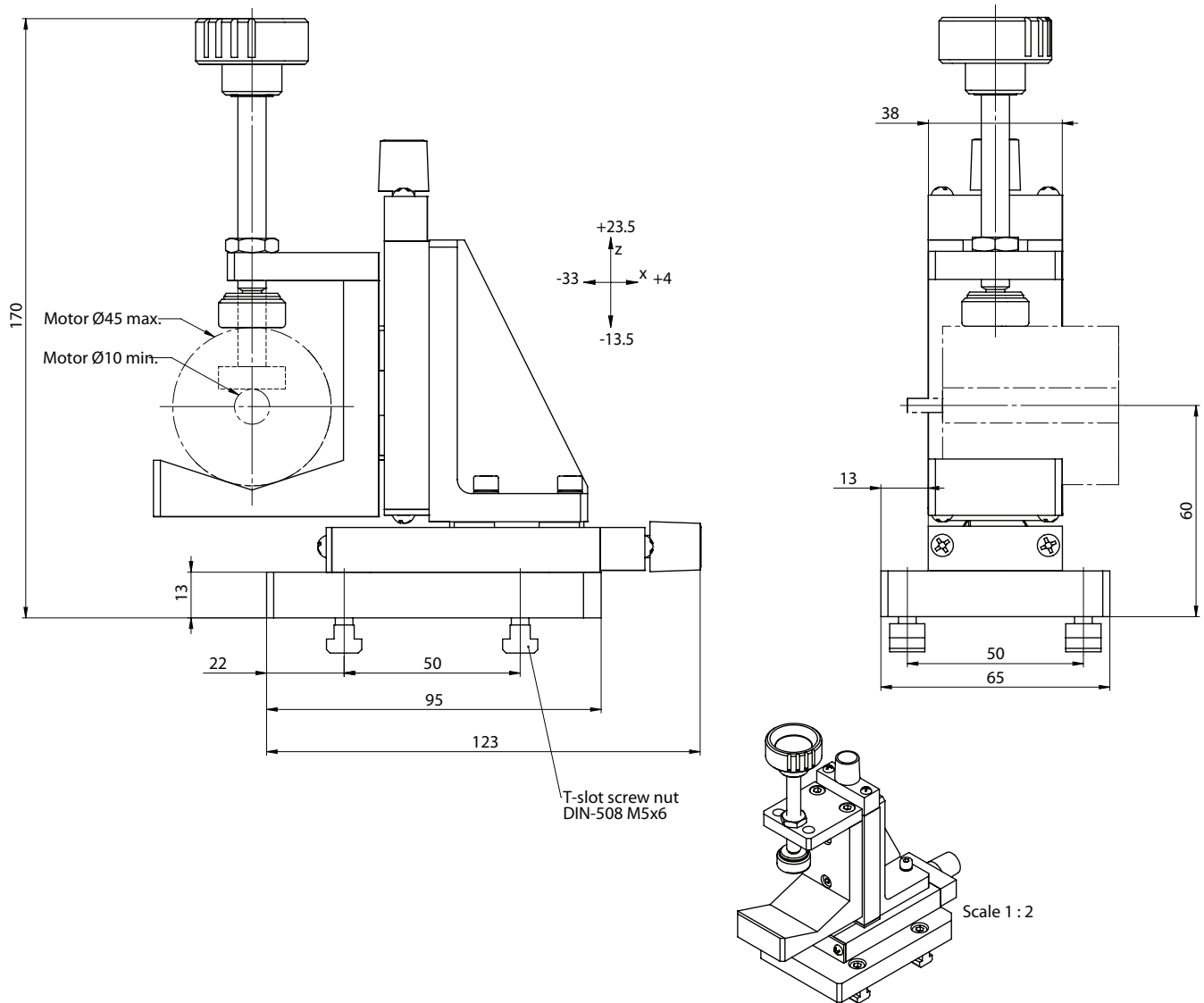
A Single or Three-phase Power Analyzer, a required component in a test system measuring motor efficiency, can be integrated into this system as well as Magtrol's Temperature Testing Hardware.



## SYSTEM OPTIONS AND ACCESSORIES

| CATEGORY        | DESCRIPTION  | MODEL / PART #    |
|-----------------|--|-------------------|
| CONTROLLERS     | High-Speed Programmable Dynamometer Controller                 | DSP6001           |
| POWER ANALYZERS | High-Speed Single-Phase Power Analyzer                         | 6510 <sub>e</sub> |
|                 | High-Speed Three-Phase Power Analyzer                          | 6530              |
| SOFTWARE*       | M-TEST 5.0 Motor Testing Software                              | SW-M-TEST5.0-WE   |
|                 | Temperature Testing Hardware                                   | HW-TTEST-FP       |
| MOUNTING        | Adjustable Motor Fixture                                       | AMF-23            |
| CALIBRATION     | Calibration Beam Assemblies and Calibration Weights (included) | 316-101-96x-0x1   |

\* For more information regarding software and temperature testing hardware options, refer to the M-TEST 5.0 data sheet.



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



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