WB 23 & WB 27

HIGH-SPEED EDDY-CURRENT DYNAMOMETERS

MAGTROL offers 3 types of dynamometer brakes to absorb load: Hysteresis (**HD Series**), Eddy-Current (**WB Series**) and Magnetic Powder (**PB Series**). 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 standard models to choose from, Magtrol Sales professionals are readily available to assist in selecting the proper Dynamometer to meet your testing needs.

FEATURES

- Torque: 80 mN·m and 150 mN·m
- Speed: up to 100 000 rpm
- Power: 250 W continuous; up to 500 W (WB 23) or 1 kW (WB 27) intermittent
- Low inertia
- Very low residual torque
- Stable and smooth braking torque
- Measuring system with air-bearing
- Data acquisition via DSP 7000 Controller and M-TEST Software
- Built-in electronics with Torque & Speed measurement

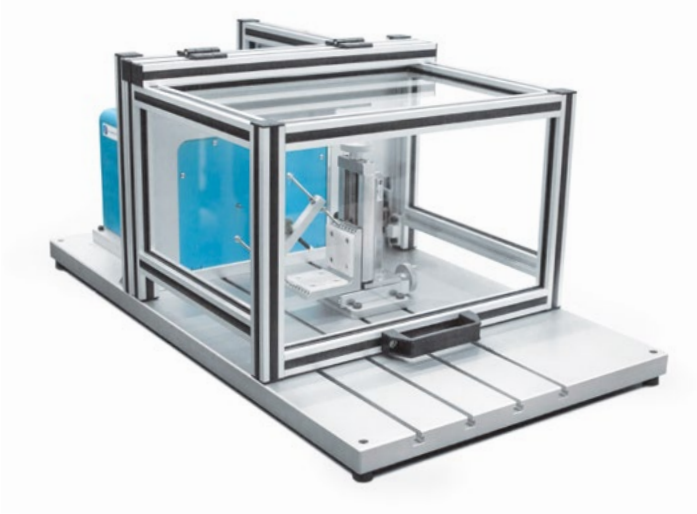


Fig. 1: WB 23 Eddy-current Dynamometer with AMF-1 (Adjustable Motor Fixture optional) and protection cover (optional)

DESCRIPTION

Magtrol's WB 23 and WB 27 Eddy-Current Dynamometers are designed for very-high-speed motors and dental or surgical tool testing applications. By providing a braking torque that is proportional to the rotational speed, rated torque is reached at the rated speed.

The Dynamometers feature a low level of inertia, due to small rotor dimensions, and brake cooling is provided by air flow inside the dynamometer housing.

A PT temperature sensor continuously monitors the brake temperature and alarms the DSP 7000 Controller to stop the brake excitation current in order to protect the dynamometer from overheating.

Torque is measured by a reaction torque transducer placed on the stator. The dynamometer has a torque measuring accuracy rating of ±0.2 % full scale. The speed is measured by an optical sensor and a 2 PPR (Pulses Per Revolution) encoder. This sensor measures speeds between 10 000 rpm and 100 000 rpm with a full scale accuracy of ±0.06 % (using a DSP 7000).

OPERATING PRINCIPLES

The WB 23 and WB 27 Eddy-current Dynamometer provides their full braking power at high speed. This type of brake has been specially designed to test motors rotating at speeds up to 100 000 rpm, with the braking torque dependent upon the rotation speed. Due to its 2 PPR encoder, the system is not adapted to accurate close loop control below 10 000 rpm.

The dynamometer include air bearings for minimizing friction and assuring best possible torque reading accuracy. It is mandatory to connect the air input through the air filtering and drying kit (included).

M-TEST MOTOR TESTING SOFTWARE

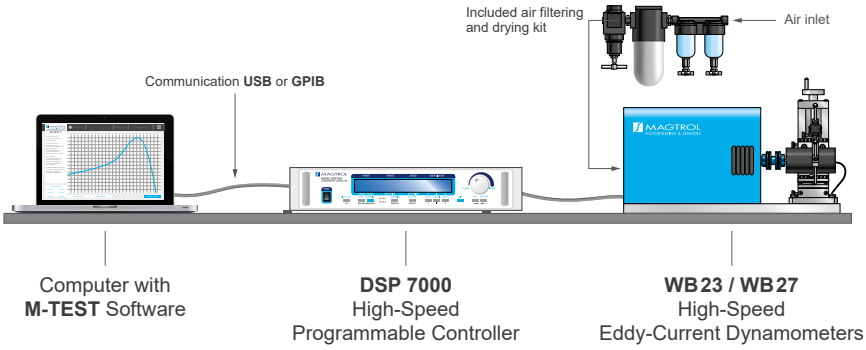
Magtrol M-TEST is an advanced motor testing software (Windows® based) for data acquisition. Used with a Magtrol Programmable Dynamometer Controller (i.e. DSP 7000), M-TEST works with any Magtrol Dynamometer or In-Line Torque Transducer to help determine the performance characteristics of a motor under test. Up to 63 parameters are calculated and displayed utilizing M-TEST's feature-rich testing and graphing capabilities.

An integral component of any Magtrol Motor Test System, M-TEST performs ramp, curve, manual, pass/fail, coast and overload to trip tests in a manner best suited to the overall efficiency of the test rig. Written in LabVIEW™, M-TEST has the flexibility to test a variety of motors in a multitude of configurations. The data generated from this user-friendly program can be stored, displayed and printed in tabular or graphical formats, and is easily imported into a spreadsheet.

To meet additional engine testing requirements or specific needs, Magtrol can also make custom modifications to the software.

SYSTEM CONFIGURATION

The WB 23 and WB 27 Dynamometers should be used with a Magtrol DSP 7000 Programmable Dynamometer Controller in order to supply the necessary excitation current and closed-loop control of the test system. In addition, the DSP 7000 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.



SPECIFICATIONS

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.
	W	s	mN·m	rpm	rpm	mN·m	kg·m²	A
WB 23	250	steady operation	80	30 000	100 000	2	3.2×10^{-6}	0.8
	400	180		50 000				
	500	120		60 000				
WB 27	250	steady operation	150	16 000	100 000	2	8.75×10^{-6}	0.5
	500	180		32 000				
	1 000	45		63 000				

MECHANICAL & ELECTRICAL CHARACTERISTICS

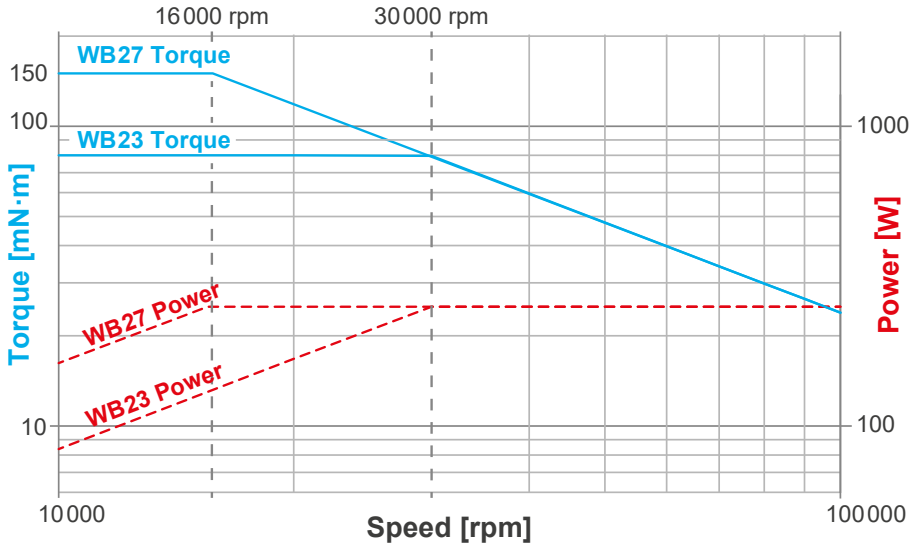
Weight	~ 18 kg (short base plate) / ~ 21 kg (long base plate)
Air supply	Recommended air quality ISO 8573.1 Class 3 | Air flow: 7-10 l / min | Pressure: 4-5 bar (max. 6 bar)
Power supply	90 - 230 VAC

TORQUE-SPEED-POWER CURVES

CONTINOUS

MODEL	WB23
Power	250 W
Test duration	Permanent
Rated Torque	80 mN·m
Rated Speed	30 000 rpm

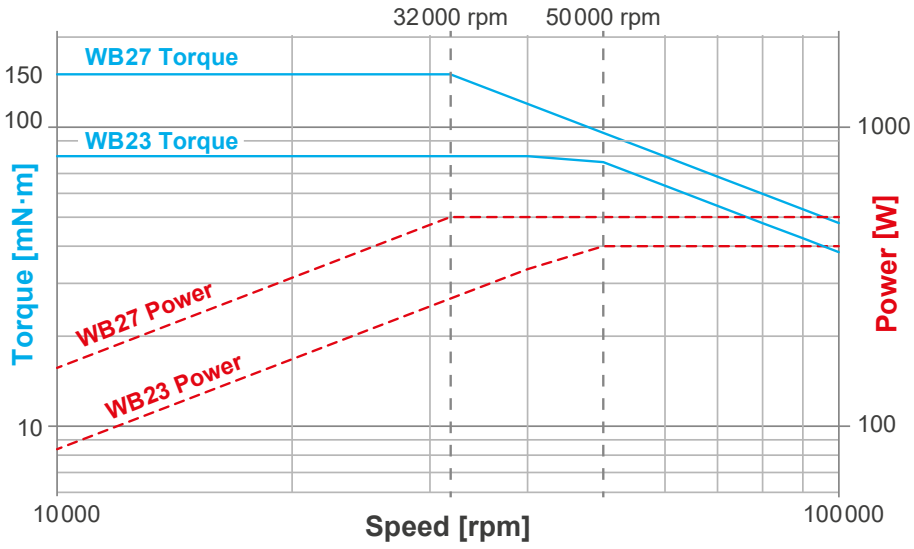
MODEL	WB27
Power	250 W
Test duration	Permanent
Rated Torque	150 mN·m
Rated Speed	16 000 rpm



SHORT TERMS

MODEL	WB23
Power	400 W
Test duration	180 s
Rated Torque	80 mN·m
Rated Speed	50 000 rpm

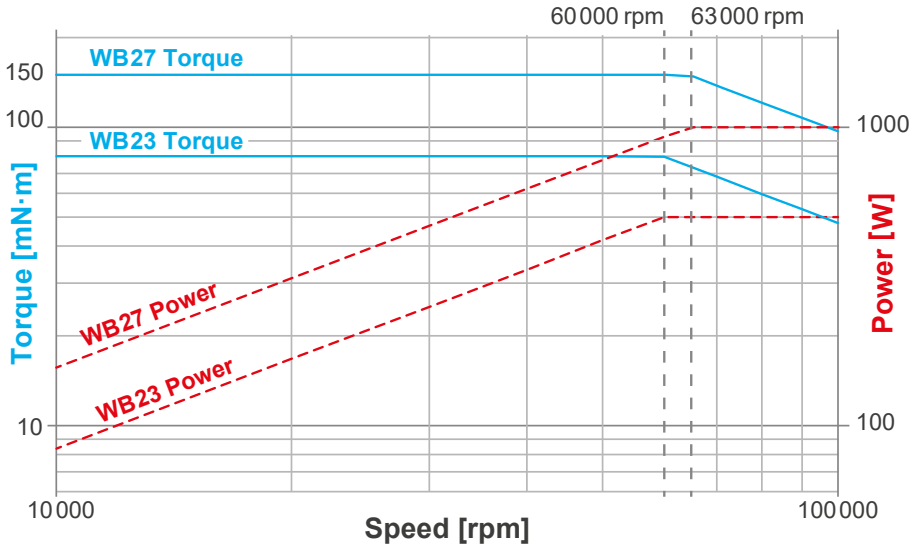
MODEL	WB27
Power	500 W
Test duration	180 s
Rated Torque	150 mN·m
Rated Speed	32 000 rpm



INTERMITTENT

MODEL	WB23
Power	500 W
Test duration	120 s
Rated Torque	80 mN·m
Rated Speed	60 000 rpm

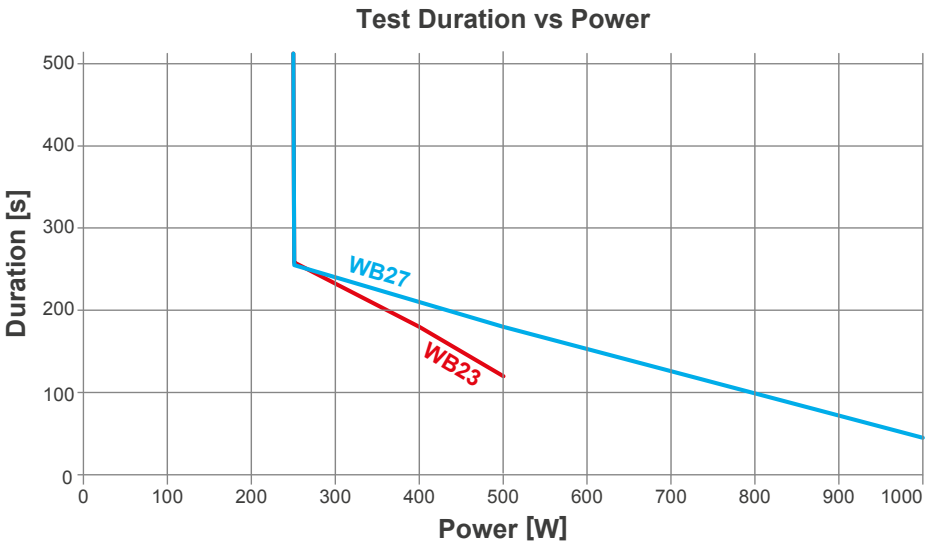
MODEL	WB27
Power	1 000 W
Test duration	45 s
Rated Torque	150 mN·m
Rated Speed	63 000 rpm

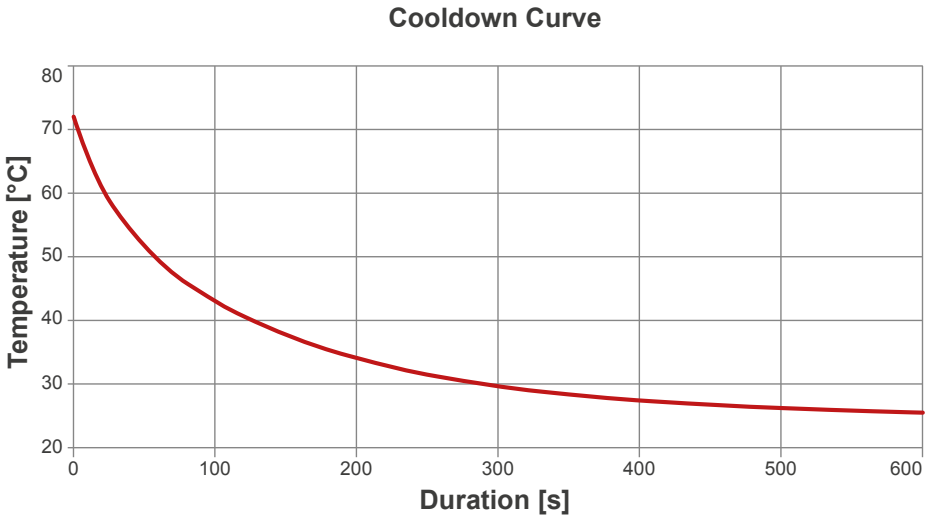


DURATION & TEMPERATURE CURVES

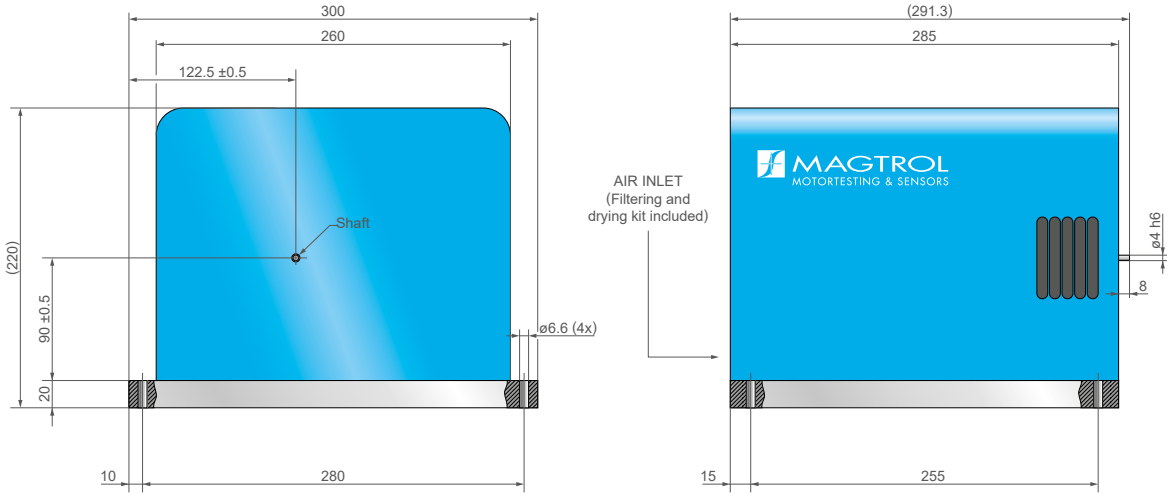
MODEL WB23	
POWER [W]	**TIME [S]**
500 W	120 s
400 W	180 s
250 W	Permanent

MODEL WB27	
POWER [W]	**TIME [S]**
1 000 W	45 s
500 W	180 s
250 W	Permanent

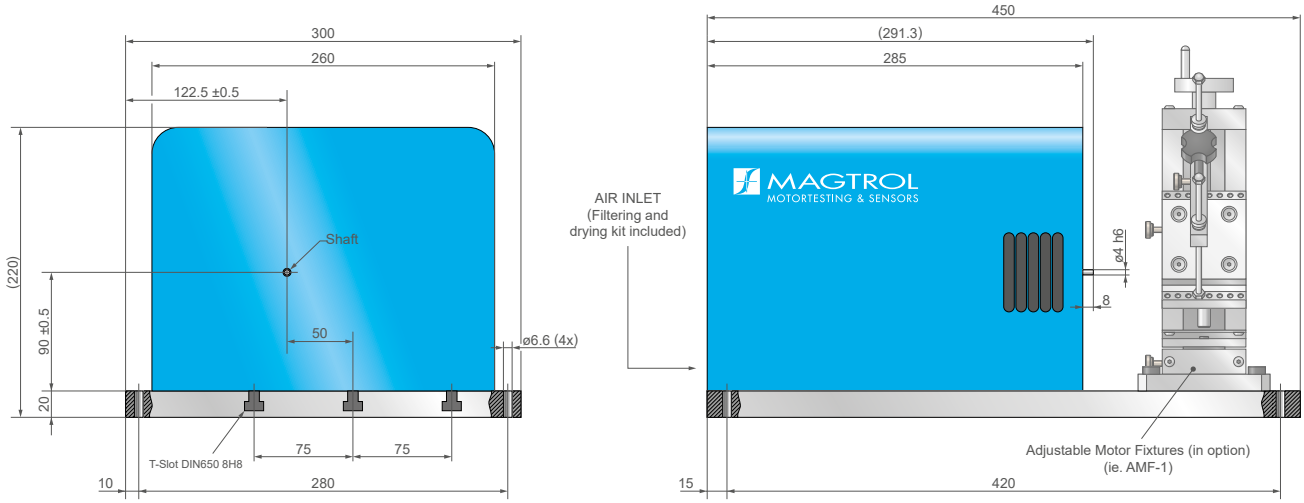




WB 23 & WB 27 WITH SHORT BASE PLATE

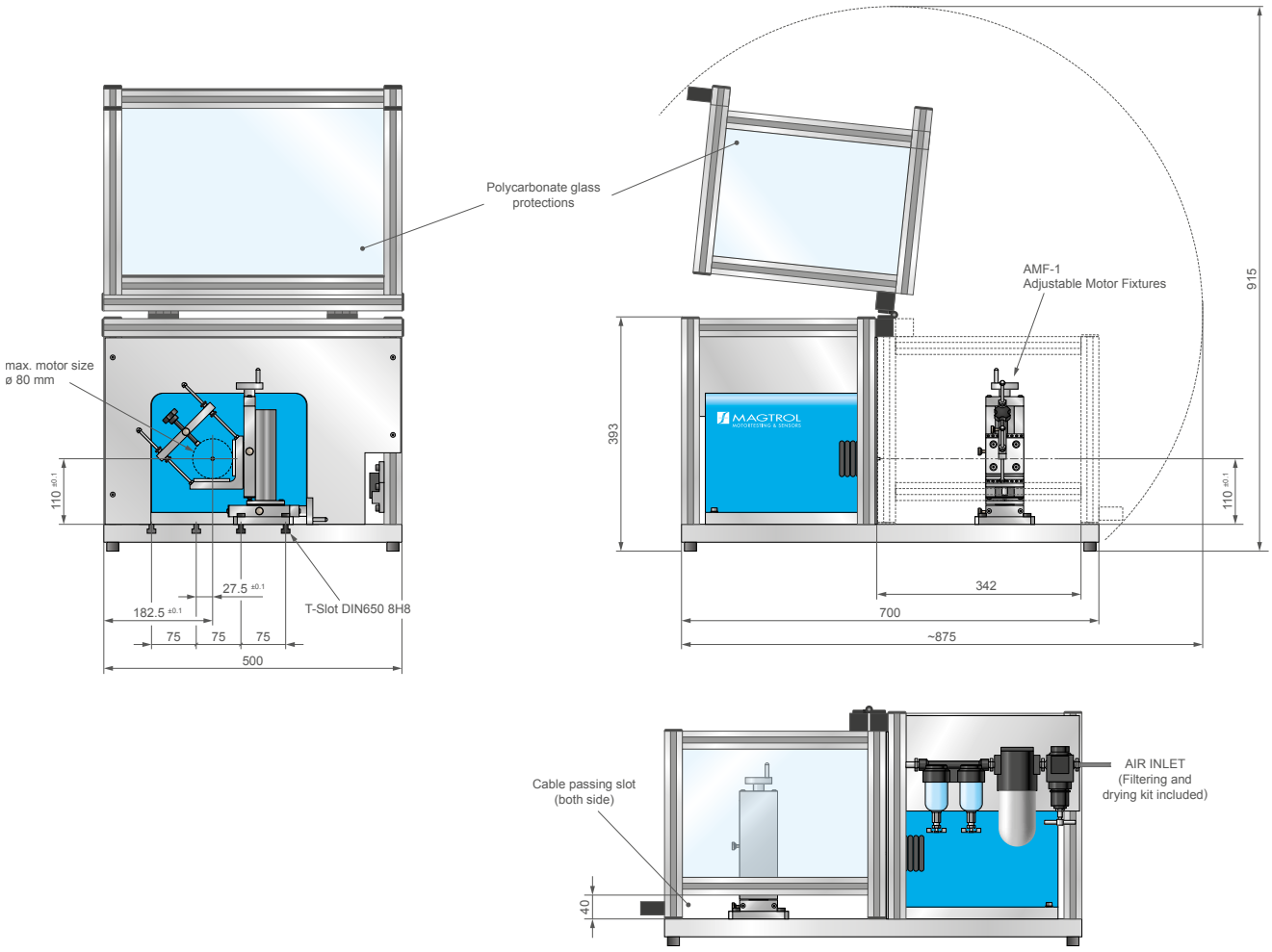


WB 23 & WB 27 WITH LONG BASE PLATE



NOTE: 3D STEP files of most of our products are available on our website: www.magtrol.com ; other files are available on request

WB 23 & WB 27 WITH PROTECTION COVER



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ORDERING INFORMATION

ORDERING NUMBER	316 -	_	0	_	- 000 - XXX

1 : WB 23
2 : WB 27

2 : Short Base Plate
3 : Long Base Plate

WB 23 or WB 27 with protection cover, base plate with/without motor fixture AMF-1	853 - 125 - 000 - XXX

Example: WB 23 Eddy-Current Dynamometer with short base plate would be ordered as : **316-102-000-XXX**.

SYSTEM OPTIONS AND ACCESSORIES

DSP 7000 - HIGH-SPEED PROGRAMMABLE DYNAMOMETER CONTROLLERS

Magtrol's Model DSP 7000 High Speed Programmable Dynamometer Controller employs state-of-the-art Digital Signal Processing Technology to provide superior motor testing capabilities. Designed for use with any Magtrol Hysteresis, Eddy-Current or Powder Dynamometer, Magtrol In-Line Torque Transducer or auxiliary instrumentation, the DSP 7000 can provide complete PC control via the USB or optional IEEE-488 or RS-232 interface. With up to 500 readings per second, the DSP 7000 is ideally suited for both the test lab and the production line.

Fig. 2: DSP 7001 | Programmable Dynamometer Controllers

7500 SERIES - POWER ANALYZERS

The Magtrol 7500 Series Power Analyzer is an easy-to-use instrument ideal for numerous power measurement applications. From DC to 80 kHz AC, the 7500 Series measures volts, amps, watts, volt-amps, frequency, crest factor, Vpeak, Apeak and power factor in one convenient display. They may be used either as stand-alone instruments or in conjunction with any Magtrol Hysteresis, Eddy-Current or Powder Brake Dynamometer; any Magtrol Dynamometer Controller and M-TEST Software for more demanding motor test applications.

Fig. 4: 7500 Series | Power Analyzers

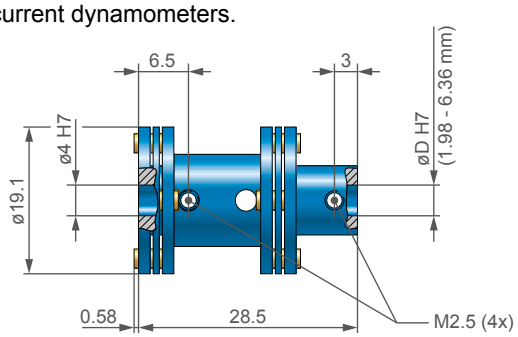
AMF SERIES - ADJUSTABLE MOTOR FIXTURE

Magtrol's AMF Series Adjustable Motor Fixtures are used to secure small to medium-sized motors in place while running any test. These extremely versatile fixtures also enable easy motor centering for testing. These accommodate motors up to 101 mm (4") in diameter.

Fig. 3: Custom Motor Test System with WB brake

COUPLINGS

Owing to the features and the dimensions of WB 23 & WB 27, MAGTROL advise you to use the coupling MIC-1-0018. This coupling is especially dedicated to be use with our high speed eddy-current dynamometers.



FEATURES:

- Nominal torque: 180 mN·m
- As request :with balancing option for high speed
- øD diameter range: 1.98 - 6.36 mm; tolerance H7.

Magtrol provides a wide range of couplings suitable for torqueŸmeasurement applications and can assist you in choosing the right coupling for your application.

CMTS - CUSTOM MOTOR TEST SYSTEMS

MAGTROL provides motor testing components to turnkey solutions for all your motor testing needs. Typical test benches include: dynamometers, 4-quadrant loading motors, tables, fixtures, control racks, power supplies, power analyzers, ohmmeters, temperature measurment and dedicated M-TEST software. Other sensors can be integrated upon request.

MAGTROL INC
70 Gardenville Parkway
Buffalo NY 14224 | USA
phone +1 716 668 5555
fax +1 716 668 8705
e-mail magtrol@magtrol.com
MAGTROL SA
Route de Montena 77
1728 Rossens | Switzerland
phone +41 26 407 30 00
fax +41 26 407 30 01
e-mail magtrol@magtrol.ch
Offices in: Germany
France - China - India
Worldwide Distribution Network
ISO 9001 BUREAU VERITAS Certification