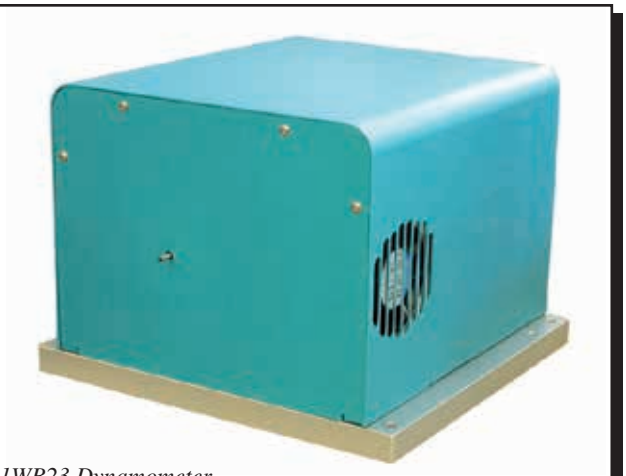
1WB23 & 1WB27 High-Speed Eddy-Current Dynamometers

FEATURES

- Torque: 80 mN·m and 150 mN·m
- Speed: up to 100,000 rpm
- Power: 250 W continuous; up to 500W(1WB23) or 1000W (1WB27) intermittent
- Low inertia
- Very low residual torque
- Stable braking torque, without blows
- Measuring system with air-bearing
- Data acquisition via DSP7000 Controller and M-TEST 7 Software
- Built-in electronics with Torque and Speed measurement



1WB23 Dynamometer

DESCRIPTION

Magtrol's 1WB23 and 1WB27 Eddy-Current Dynamometers are designed for very-high-speed motors and turbines testing applications. By providing a braking torque that is proportional to the rotational speed, rated torque is reached at the rated speed.

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

A PT temperature sensor continuously monitors the brake temperature and alarms the DSP7000 Controller to stop the brake excitation current in order to protect the dynamometer from overheating.

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.

Torque is measured by a reaction-force transducer placed on the stator. The dynamometer has a torque measuring accuracy rating of ±0.5% full scale. The speed is measured by an optical sensor and a 2-bit encoder. This sensor measures speeds between 10,000 and 100,000 rpm with a full scale accuracy of ± 0.06 % (using a DSP7000).

COMPLETE PC CONTROL

Magtrol's M-TEST 7 Software is a state-of-the-art motor testing program for Windows®-based data acquisition. Used with a Magtrol DSP7000 Programmable Dynamometer Controller, Magtrol M-TEST 7 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.

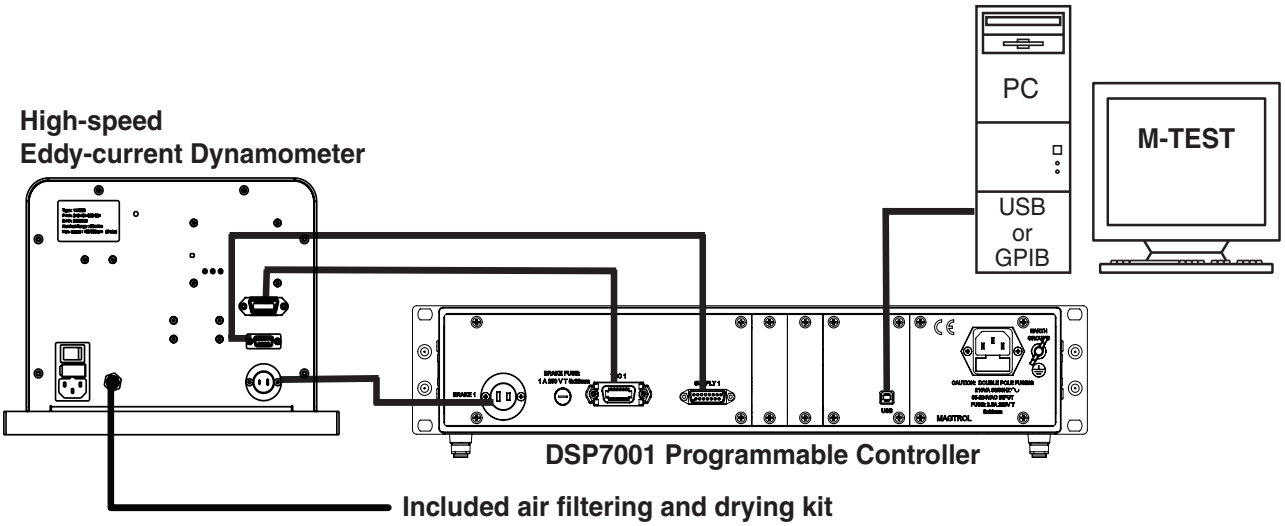
Written in LabVIEW™, M-TEST 7 has the flexibility to test a majority of motor types in a variety of ways. Because of LabVIEW's versatility, obtaining data from other sources (e.g. thermo torques), controlling motor power and providing audio/visual indicators is relatively easy.

Magtrol's M-TEST 7 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.

SYSTEM CONFIGURATION

The 1WB23 and 1WB27 Dynamometers should be used with a Magtrol DSP7000 Programmable Dynamometer Controller in order to supply the necessary excitation current and closed-loop control of the test system. In addition, the DSP7000 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.



OPERATING PRINCIPLES

The 1WB23 and 1WB27 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-bits optical speed encoder, the system is not adapted to accurate close loop control below 10'000 rpm.

The dynamometer integrats 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.

RATINGS

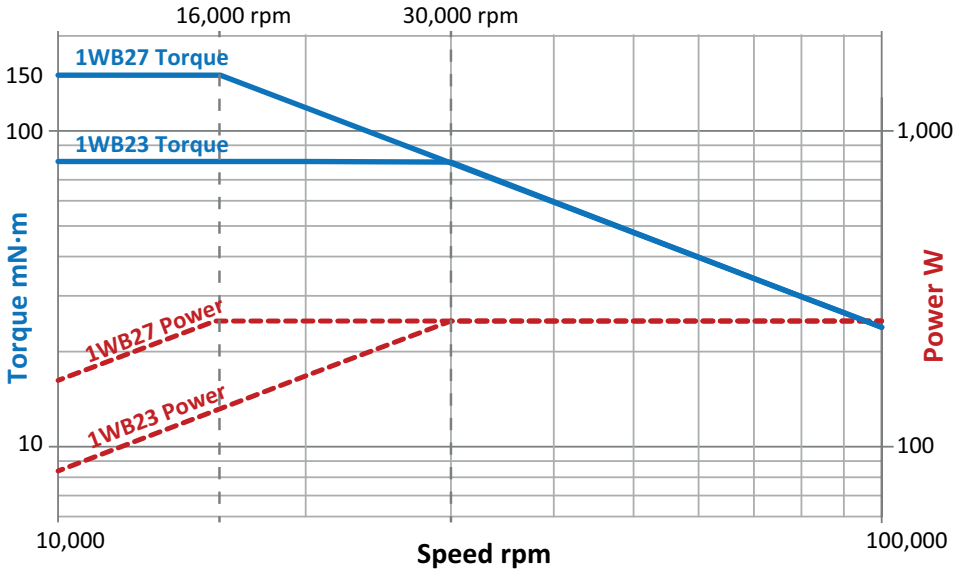
Model	Rated Power	Duration at Rated Power	Guaranteed Torque	Rated Speed	Maximum Speed	Drag Torque De-energized at 100,000 rpm	Nominal Input Inertia	Excitation Current max.
	W	*s*	*mN·m*	*rpm*	*rpm*	*mN·m*	*kgm²*	*A*
1WB23	250	steady operation	80	30,000	100,000	2	3.2×10^{-6}	0.8
	400	180	80	50,000				
	500	120	80	60,000				
1WB27	250	steady operation	150	16,000	100,000	2	8.75×10^{-6}	0.5
	500	180	150	32,000				
	1000	45	150	63,000				

Weight: 18 kg with short base plate / 21 kg with long base plate

Continous

Brake	1WB23
Power	250 W
Test duration	Permanent
Rated Torque	80 mN·m
Rated Speed	30,000 rpm

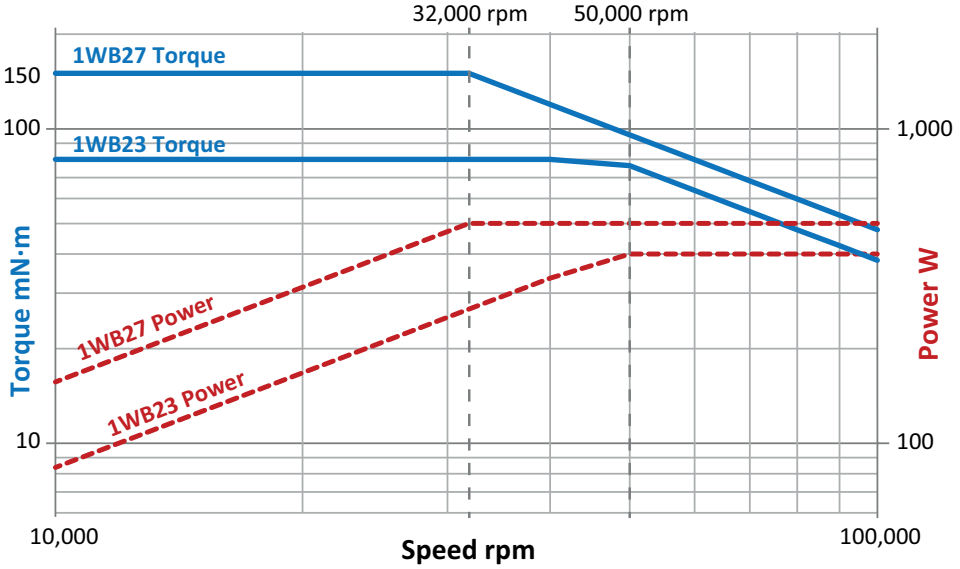
Brake	1WB27
Power	250 W
Test duration	Permanent
Rated Torque	150 mN·m
Rated Speed	16,000 rpm



Short terms

Brake	1WB23
Power	400 W
Test duration	180 s
Rated Torque	80 mN·m
Rated Speed	50,000 rpm

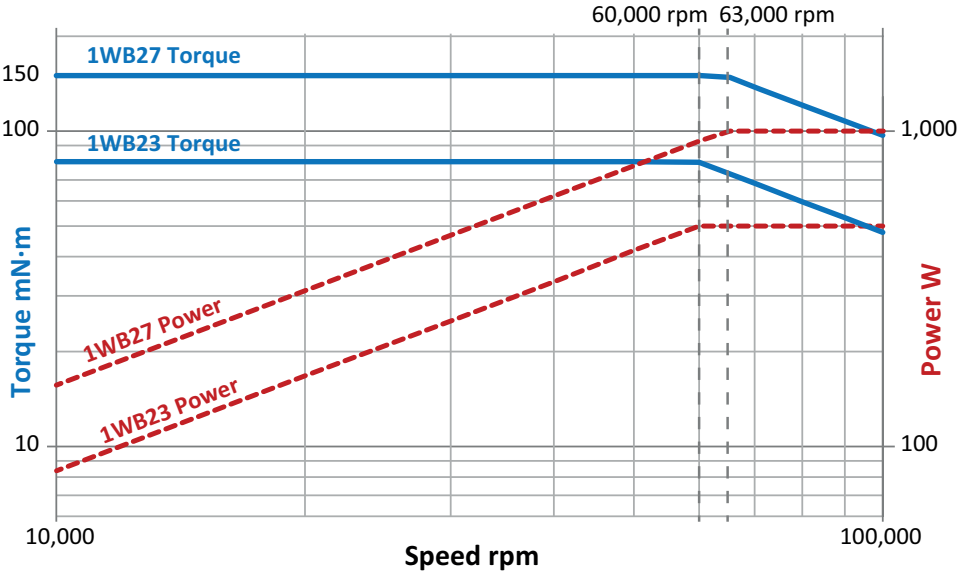
Brake	1WB27
Power	500 W
Test duration	180 s
Rated Torque	150 mN·m
Rated Speed	32,000 rpm



Intermittent

Brake	1WB23
Power	500 W
Test duration	120 s
Rated Torque	80 mN·m
Rated Speed	60,000 rpm

Brake	1WB27
Power	1000 W
Test duration	45 s
Rated Torque	150 mN·m
Rated Speed	63,000 rpm

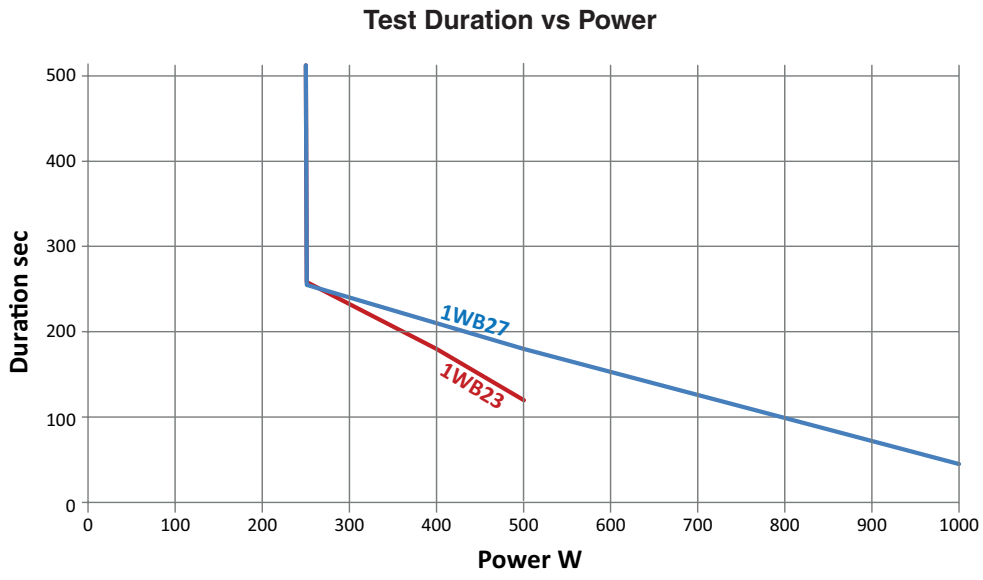


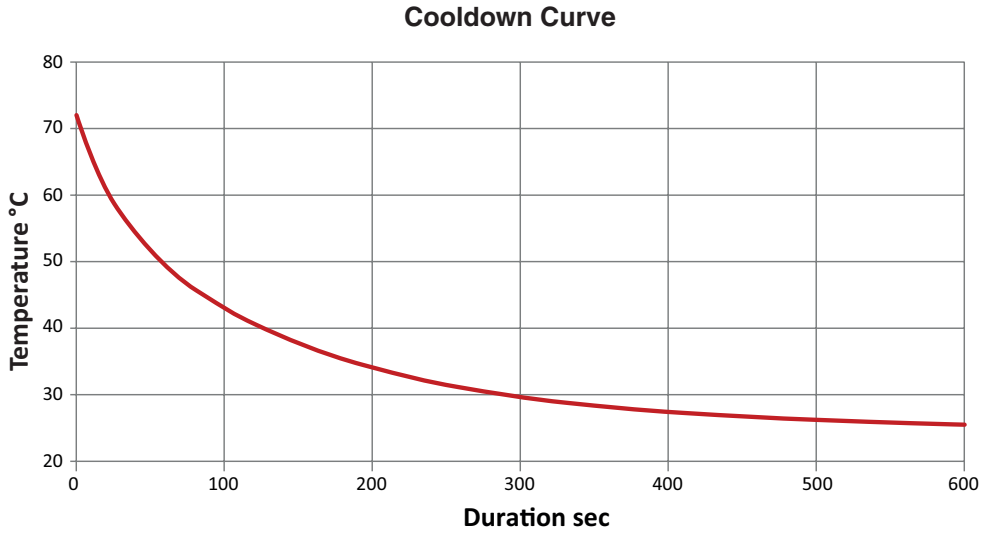
1WB23

Power [W]	Time [s]
500	120
400	180
250	Permanent

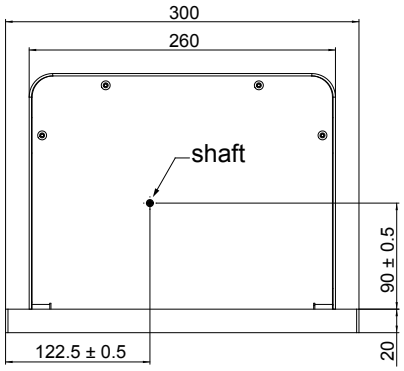
1WB27

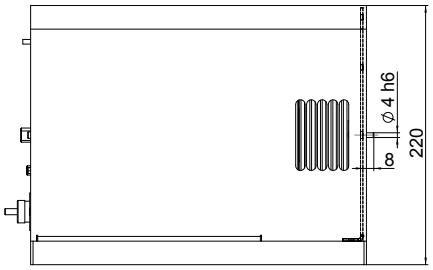
Power [W]	Time [s]
1000	45
500	180
250	Permanent

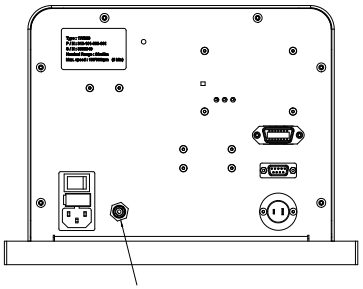




1WB23 & 1WB27 WITH SHORT BASE PLATE

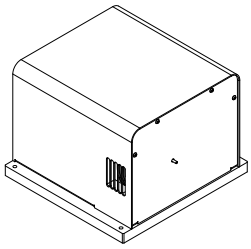


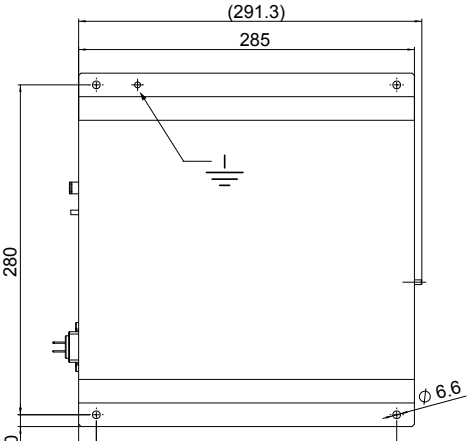


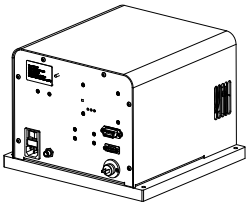


Air inlet for tube Ø6mm
Recommended air quality
ISO 8573.1 classe 3
Air flow: 7-10 l/min
Pressure: 4-5 bar (max. 6bar)

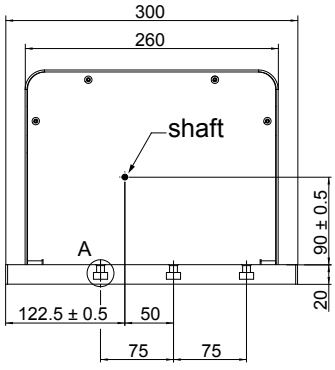
Filtering and drying kit included

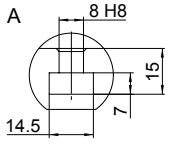




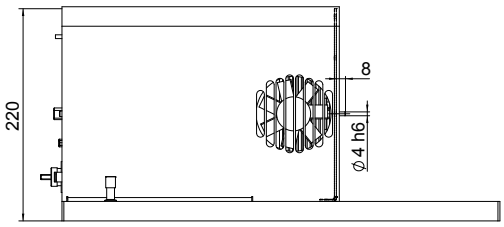


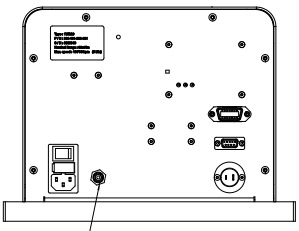
1WB23 & 1WB27 WITH LONG BASE PLATE





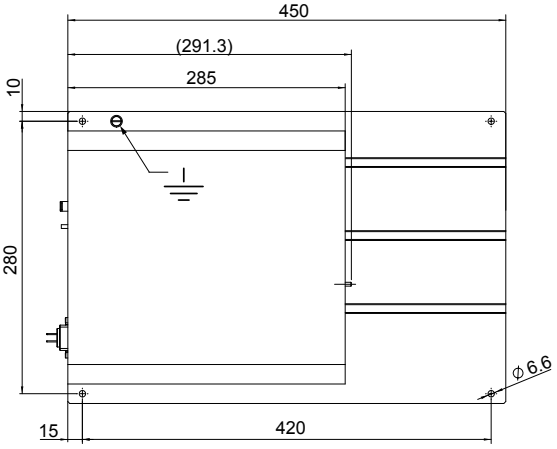
T-Slot DIN650 8H8

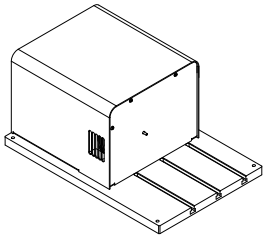




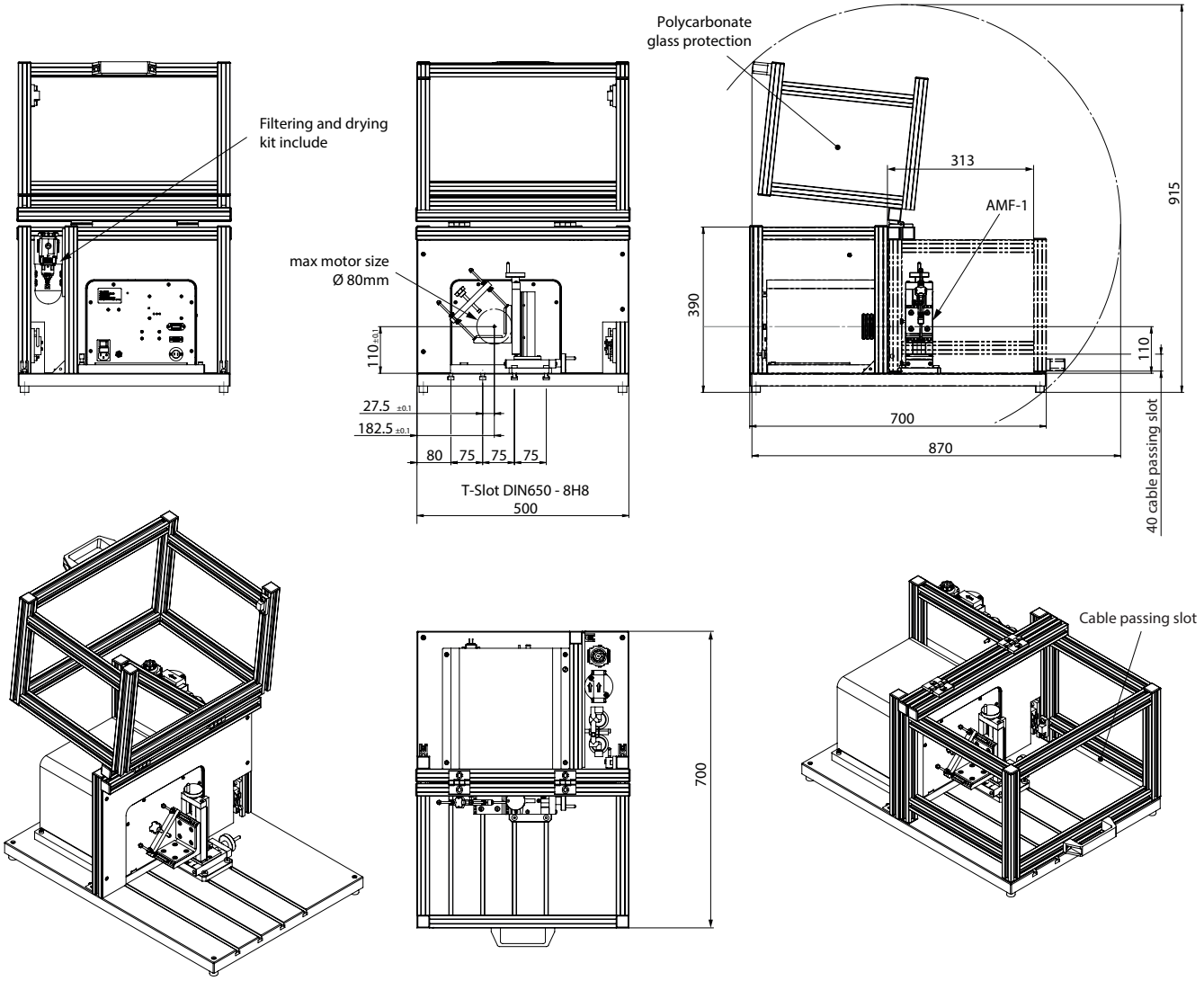
Air inlet for tube Ø6mm
Recommended air quality
ISO 8573.1 classe 3
Air flow: 7-10 l/min
Pressure: 4-5 bar (max. 6bar)

Filtering and drying kit included





1WB23 & 1WB27 WITH PROTECTION COVER



ORDERING INFORMATION

DESCRIPTION	MODEL / PART #
1WB23 with short base plate	316-102-000-011
1WB23 with long base plate	316-103-000-011
1WB27 with short base plate	316-202-000-011
1WB27 with long base plate	316-203-000-011
1WB23 or 1WB27 with protection cover, base plate and motor fixture AMF-1	853-125-000-xxx

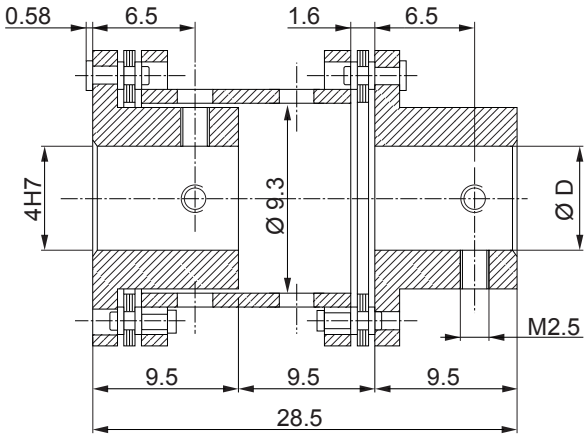
SYSTEM OPTIONS AND ACCESSORIES

CATEGORY	DESCRIPTION	MODEL / PART #
CONTROLLERS	High-Speed Programmable Dynamometer Controller	DSP7000
POWER ANALYZERS	High-Speed Single-Phase Power Analyzer	6510*e*
	High-Speed Three-Phase Power Analyzer	6530
SOFTWARE*	M-TEST 7 Motor Testing Software	M-TEST 7
	Temperature Testing Hardware	HW-TTEST-FP
MOUNTING	Adjustable Motor Fixture	AMF-1
	Miniature coupling (nominal torque 180 mN·m)	MIC-1-0018

* *For more information regarding software and temperature testing hardware options, refer to the M-TEST 7 data sheet.*

Coupling MIC-1-0018

- Nominal torque: 180 mN·m
- ØD : min 1.98 mm, max 6.36 mm H7.
- As request :with balancing option for high speed



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

MAGTROL INC
70 Gardenville Parkway
Buffalo, New York 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/Fribourg, Switzerland
Phone: +41 (0)26 407 3000
Fax: +41 (0)26 407 3001
E-mail: magtrol@magtrol.ch

Subsidiaries in:
Germany • France
China • India
Worldwide Network of Sales Agents

ISO 9001 BUREAU VERITAS Certification

WB23-27 - US - 01/2016