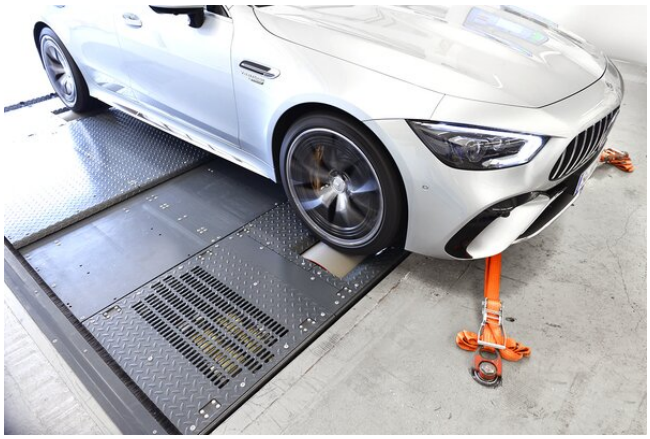
PERFORMANCE MEASUREMENT TECHNOLOGY **DYNAMOMETERS**

MSR 3000/2
VP 230049



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MSR3000/2 – The gateway to high-performance power measurement

The MSR3000/2 is the ideal all-wheel drive roller dynamometer for those who demand excellence in tuning, diagnostics, and the development of modern drivetrain systems. Equipped with an eddy current brake and an electric motor per roller set, this test bench enables accurate power measurement and realistic testing scenarios for all-wheel drive vehicles, whether combustion, hybrid, or electric. With the MSR3000/2, you rely on cutting-edge testing technology and dependable performance.

PRODUCT DETAILS/ACCESSORIES

4WD Single roller dynamometer for passenger cars
with one eddy current brake and one E-motor per roller set.
Suitable for tuning, diagnostic and development work for
particularly modern single-axle as well as 4WD drive systems,
of combustion engines and electric vehicles

Product advantages:
- Test speed up to 300 km/h
- Fast, precise and powerful control of the eddy current brake through high-performance current controller for vehicles of all performance classes
- Electronic, controlled 4WD synchronisation through SPS control system for modern and future drive concepts with active power distribution
- Particularly suitable for testing of the most electric vehicles, due to the intelligent 4WD control technology
- Automatic mass determination (rotating mass of the vehicle) separately for each vehicle axle
- Smooth-running, low-vibration roller set for high-precision measurement results
- High-quality, low-wear and low-maintenance design: Made in Germany
- Rolling and slippage behavior of the tire as realistically as possible thanks to the crown roller principle in conjunction with intelligent control technology
- Tire-protecting, due to low flexingwork
- Simple tensioning device for quick vehicle fixation (optional)

Description of measuring programmes:
High flexibility of use due to extensive operating modes
which comprehensively cover all fields of application:
- Dynamic powermeasurement with adjustable acceleration
- Static power measurement with several measuring points
- Trailing power measurement for the highest accuracy in power measurement. The parasitic losses of the test bench, of the vehicle's drivetrain and the friction and flexing losses of the tyres to the roller, are determined with high precision.
- Automatic mass determination (rotating mass of the vehicle) separately for each vehicle axle
- Load simulation static at constant rotation speed
- Load simulation static at constant speed
- Load simulation static at constant tractive force
- Load simulation static at constant acceleration
- Optional tachometer test with up to 10 freely selectable measuring points
- Optional distance measurement
- Optional driving simulation with freely programmable speed profiles
- Optional driving cycle - running of standardised cycles
- Optional storage of the programmed profiles in the database

Description 4WD Roller Set:
- Electronically controlled synchronisation of the speed of the front and rear roller sets
- One eddy current brake on the right, per roller set
- Cover and shifting plates
- Hydraulic power unit with self-locking cylinder
- Adjustment of the axle spacing by means of MSR Remote Panel by shifting the rear roller set
- Paintwork high quality powder coating: anthracite grey, RAL 7016 (frame, cover and sliding panels)

Description Software:
Professional, intuitive software:
- Display of the speed of both axes in each mask available
- In addition to the current power measurement, insertion of up to three stored measurements in the background incl. additional values; for optimal comparison possibilities during tuning work
- Three freely configurable displays for checking important parameters during the power measurement
- Determination of wheel power, power loss, engine power and torque
- Standardised extrapolation of engine power for internal combustion according to DIN 70020, EWG 80/1269, ISO 1585, JIS D 1001 and SAE J 1349 (depending on equipment)
- Power measurement for electric vehicles
- For electric vehicles, special test bench settings
- For electric vehicles, 2 speed inputs for independent front and rear axle power measurement
- Freely configurable display of all input values in the available measurement screens
- Convenient operation via wired MSR Remote Panel incl. emergency stop
- Symbols and icons for greater clarity and intuitive understanding

- Voice prompts for the operator to control the test stand (optional)
- Modern user interface and colour scheme with highlighted cursor position cursor position for easy orientation
- Database for storage of test results
- Storage of vehicle-specific settings (as well as all determined data including read-out OBD data)

Description of the SIEMENS SPS control system:
- Standardised proven control electronics from the always state of the art
- High-resolution input signals, high processor performance, fast and precise control of the actuators with a specially developed current controller with the highest performance in the millisecond range
- Profi-Net bus communication of the SPS control system and components

Description Interface box:
- Environmental module as standard for recording ambient pressure, ambient temperature and intake air temperature
- Expandable for recording additional data (analogue input module, engine speed, OBD interface, oil temperature)

Standard scope of delivery:
- Self-supporting closed roller set with one eddy current brake for the front axle with E-machine
- Self-supporting closed roller set with one eddy current brake for the rear axle with E-machine
- Hydraulic roller set adjustment with shifting plate set for 4WD floor assembly
- Roller coating wet painted
- Switch cabinet for control of the test stand
- Test stand PC
- MSR Remote Panel cable-connected for control of the test stand
- Interface box with environmental module

Please contact our sales specialists (sales@maha.de).
We will be happy to prepare a project-related offer for you.

ROLLER SET TECHNICAL SPECIFICATIONS

Axle load	2500 kg
Weight	approx. 4200 kg
Rotating mass per roller set	approx. 260 kg
Min. track	850 mm
Max. track	2200 mm
Roller diameter	502 mm
Roller set dimensions (L x W x H)	1095 x 3360 x 512 mm
Dynamometer	
dimensions (L x W x H)	4300 - 5400 x 3360 x 690 mm
Max. air pressure	8 bar
Max. test speed	300 km/h
Max. (static) rear axle wheel power	260 kW
(dynamic) peak	>1000 kW
Max. (static) front axle wheel power	260 kW
(dynamic) peak	> 1000 kW
Max. rear axle tractive force	7000 N
Max. front axle tractive force	7000 N
Tractive force of electric motor front axle max.	1240 N
Tractive force electric motor rear axle max.	1240 N
Measuring accuracy Motor power P-Mot max. static	+/- 2%
Repeat accuracy Motor powerP-Mot max. static	+/- 1%
Two 30 kW electric motors with a rated power via	

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ROLLER SET TECHNICAL SPECIFICATIONS

Siemens Smart Line inverter of	36 kW each
Trailing axle: maximum speed approx.	240 km/h
Trailing axle: maximum acceleration	1.5 m/s²
Min. axle distance	2200 mm
Max. axle distance	3400 mm
Adjustment track	1200 mm
Fuse protection	63 A
Power supply	3/N/PE 400 V 50/60 Hz
Dimensions switch cabinet	1600 x 2200 x 600 mm

ACCESSORIES

VZ 935215	Ni/Cr Coating for Running Rollers (4WD Dynamometer requires 2x VZ 935215)
VZ 935371	Preparation for 3./4. Eddy Current Brake for MSR 3000/2
VZ 935216	Additional Eddy Current Brake for Retrofitting Dynamometers of the MSR Series
VZ 935268	Set of Ground Sleeves 140 mm for Vehicle Restraint System
VZ 935267	Set of Ground Sleeves 190 mm for Vehicle Restraint System
VZ 935191	Standard Vehicle Restraint System
VZ 911456	OBD-interface
VZ 911457	Analog input module (power)
VZ 911458	Analog input module (voltage) for acquisition of up to 8 analog signals
VZ 990509	RPM module in interface box
VZ 990510	RPM detection (laser) with reflex mark, 5 m connection cable
VZ 911479	Connection module Emission Tester/Lambda-Module
VZ 990533	Oil temperature sensor Connection to environmental module via M12-plug
VZ 990511	Interface Box -2(Empty casing)
VZ 990528	Control Power Unit
VZ 990512	Fan control digital, air fan depending on the roller speed controllable
VZ 990534	Preparation Display cooling air speed Sensor provided by customer
VZ 990513	Wheelbase adjustment automatically via software input
VZ 955317	Control panel integrated in C_MCD universal console
VZ 910052	PC Keyboard and Mouse -NET PRICE
VZ 910200	PC Flat screen 24 VGA/DVI/HDMI, (TFT standard) -NET PRICE-
VZ 910192	LED simultaneous display unit 43 incl. pedestal, HDMI -NET PRICE-
VZ 955244	Rotatable & Folding Wall Holder f. TFT Industrial- or TV Flat Screens (up to 47)
VZ 910179	HDMI Cable 15 m -NET PRICE-
VZ 910180	HDMI Cable 30 m -NET PRICE-
VZ 910181	HDMI Splitter, 4-port incl. 2 m cable -NET PRICE
VZ 911459	Software module load simulation
VZ 911460	Software module speedometer control
VZ 911461	Software module driving cycle
VZ 911462	Software module mass evaluation
VZ 911463	Language notes for operating the test stand
VZ 975652	Calibration Device LPS R50/R100/R 200 universal (Telma CC 160, CC 330)
VP 930133	Metal Pit Casing for MSR 3000/2
VP 930132	Metal Pit Casing for MSR 5000, 3000/4, 3000/2 with Preparation for 3./4. Brake

SUPPLEMENTARY CHARGES

VT 998181	Internal transport -SOUTHMSR Car 4WD
VT 998182	Internal transport -NORTHMSR Car 4WD
VM 996165	Installation costs MSR with initial start-up and basic instruction -at cost-
VV 997607	Packing Charges MSR 4WD with 2 Eddy-current brakes
VV 997608	Packing Charges MSR 4WD with 3 / 4 Eddy-current brakes
VT 998249	Internal transport -SOUTHFoundation formwork
VT 998250	Internal transport -NORTHFoundation formwork
VV 997609	Packing Charges Pit Casing MSR