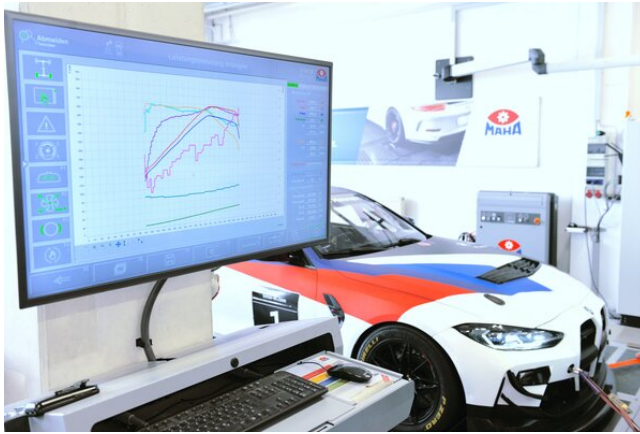


PERFORMANCE MEASUREMENT TECHNOLOGY DYNAMOMETERS

MSR 3000/4
VP 230050



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MSR3000/4 – Maximum control, maximum performance

Innovative technology for unparalleled test results: The MSR3000/4 takes power measurement for all-wheel drive vehicles to the next level. With two eddy current brakes per axle and one electric motor per roller set, it ensures optimal vehicle behaviour and reliable synchronisation across all modern drivetrain types. Combustion engine, hybrid or electric – this dynamometer is the perfect choice for demanding tuning, diagnostics, and development tasks. Rely on maximum control in every testing scenario.

PRODUCT DETAILS/ACCESSORIES

4WD Single roller dynamometer for passenger cars with two eddy current brakes on the rear axle with E-motor and two eddy current brakes on the front axle with E-motor. Suitable for tuning, diagnostic and development work for especially modern single-axle as well as 4WD drive systems of internal combustion and electric vehicles.

Product advantages:

- Test speed up to 300 km/h (optional 350 km/h).
- Fast, precise and powerful control of the eddy current brake through high-performance current controller for vehicles of all performance classes
- Electronically controlled 4WD synchronization through modern 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 flexing work
- Simple tensioning device for quick vehicle fixation (optional)

Description Measuring programs:

High flexibility of use due to extensive operating modes which comprehensively cover all fields of application:

- Power measurement dynamic with adjustable acceleration
- Static power measurement with several measuring points
- Trailing power measurement for 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 tires 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 standardized cycles
- Optional storage of programmed profiles in the database

Description 4WD Roller Set:

- Electronically controlled synchronization of the speed of the front and rear roller set
- Two eddy current brakes front roller set
- Two eddy current brakes rear roller set
- Covering and shifting plates
- Hydraulic power unit with self-locking cylinder
- Adjustment of the center distance by means of MSR Remote Panel by shifting the rear roller set
- Painting high quality powder coating: anthracite gray, RAL 7016 (frame, cover and shifting plates)

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 display screens freely configurable for control of important parameters during power measurement
- Determination of wheel power, power loss, engine power and torque
- Standardized extrapolation of engine power for internal combustion vehicles according to DIN 70020, EWG 80/1269, ISO 1585, JIS D 1001 and SAEJ 1349 (depending on equipment)
- Power measurement for electric vehicles
- For electric vehicles, special test bench settings
- For electric vehicles, 2 speed inputs for independent power measurement of front and rear axle
- Freely configurable display of all input values in the available measurement screens
- Comfortable operation via wired MSR Remote Panel incl.

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- emergency stop
- Symbols and icons for more clarity and intuitive understanding
- Voice prompts for the operator to control the test stand (optional)
- Modern user interface and color scheme with highlighted cursor position for easy orientation
- Database for storage of measurement results
- Storage of vehicle-specific settings (as well as all determined data including read-out OBD data)

Description of the SIEMENS SPS control system:

- Standardized proven control electronics from the industry always on the latest state of the art
- High-resolution input signals, highprocessor performance, fast and precise control of the actuators with a specially developed current controller with highest performance in the millisecond range
- Profi-Net bus communication of the SPS control system and components.

Description Interface box:

- Standard with environmental module to record ambient

temperature and intake air temperature

- Expandable for recording additional data (Analog Input Module, Rotation speed, OBD interface, oil temperature)

Standard scope of delivery:

- Self-supporting closed roller set with two eddy current brakes for the front axle with E-machine
- Self-supporting closed roller set with two eddy current brakes for the rear axle with E-machine
- Hydraulic roller set adjustment with shifting plate set for 4WD floor assembly
- Roller coating Ni/Cr
- Switch cabinet for control of the test stand
- Test bench 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. 4800 kg
Rotating mass per roller set	approx. 280 kg
Min. track	850 mm
Max. track	2200 mm
Roller diameter	502 mm
Roller set dimensions (L x W x H)	1095 x 4100 x 512 mm
Dynamometer	
dimensions (L x W x H)	4300 - 5400 x 4100 x 690 mm
Max. air pressure	8 bar
Max. test speed	300 km/h
Max. test speed (optional)	350 km/h
Max. (static) rear axle wheel power	520 kW
(dynamic) peak	> 1500 kW
Max. (static) front axle wheel power	520 kW
(dynamic) peak	> 1500 kW
Max. rear axle tractive force	14000 N
Max. front axle tractive force	14000 N
Tractive force of electric motor frontaxle max.	1240 N
Tractive force electric motor rear axle max.	1240 N
Measuring accuracy Motor power P-Mot max. static	+/- 2%

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ROLLER SET TECHNICAL SPECIFICATIONS

Repeat accuracy Motor power P-Mot max. static	+/- 1%
Two 30 kW electric motors with a rated power via	
Siemens Smart Line inverter of	36 kW each
Trailing axle: maximum speed approx.	240 km/h
Trailing axle: maximum acceleration	1.5 m/s ²
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 935353	Package -PerformanceIncrease in max. speed 350 km/h	VZ 910200	PC Flat screen 24 VGA/DVI/HDMI, (TFT standard) -NET PRICE-
VZ 935268	Set of Ground Sleeves 140 mm for Vehicle Restraint System	VZ 910192	LED simultaneous display unit 43 incl. pedestal, HDMI -NET PRICE-
VZ 935267	Set of Ground Sleeves 190 mm for Vehicle Restraint System	VZ 955244	Rotatable & Folding Wall Holder f. TFT Industrial- or TV Flat Screens (up to 47)
VZ 935191	Standard Vehicle Restraint System	VZ 910179	HDMI Cable 15 m -NET PRICE-
VZ 911456	OBD-interface	VZ 910180	HDMI Cable 30 m -NET PRICE-
VZ 911457	Analog input module (power)	VZ 910181	HDMI Splitter, 4-port incl. 2 m cable -NET PRICE
VZ 911458	Analog input module (voltage) for acquisition of up to 8 analog signals	VZ 911459	Software module load simulation
VZ 990509	RPM module in interface box	VZ 911460	Software module speedometer control
VZ 990510	RPM detection (laser) with reflex mark, 5 m connection cable	VZ 911461	Software module driving cycle
VZ 911479	Connection module Emission Tester/Lambda-Module	VZ 911462	Software module mass evaluation
VZ 990533	Oil temperature sensor Connection to environmental module via M12-plug	VZ 911463	Language notes for operating the test stand
VZ 990511	Interface Box -2(Empty casing)	VZ 975652	Calibration Device LPS R50/R100/R 200 universal (Telma CC 160, CC 330)
VZ 990528	Control Power Unit	VP 930132	Metal Pit Casing for MSR 5000, 3000/4, 3000/2 with Preparation for 3./4. Brake
VZ 990512	Fan control digital, air fan depending on the roller speed controllable	SUPPLEMENTARY CHARGES	
VZ 990534	Preparation Display cooling air speed Sensor provided by customer	VT 998181	Internal transport -SOUTHMSR Car 4WD
VZ 990513	Wheelbase adjustment automatically via software input	VT 998182	Internal transport -NORTHMSR Car 4WD
VZ 955317	Control panel integrated in C_MCD universal console	VM 996165	Installation costs MSR with initial start-up and basic instruction -at cost-
VZ 910052	PC Keyboard and Mouse -NET PRICE	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