Wir im Allgäu.

Emission, Function and Performance Dynamometers

Models: ASM • FPS • LPS • MSR • MZW

The line of MAHA performance dynamometers. The optimum dynamometer for any application. From motorcycles to heavy-duty vehicles.

Dynamometer / Emission Tester

DIN EN ISO 9001:2008
ISO 14001:2004

MADE IN GERMANY

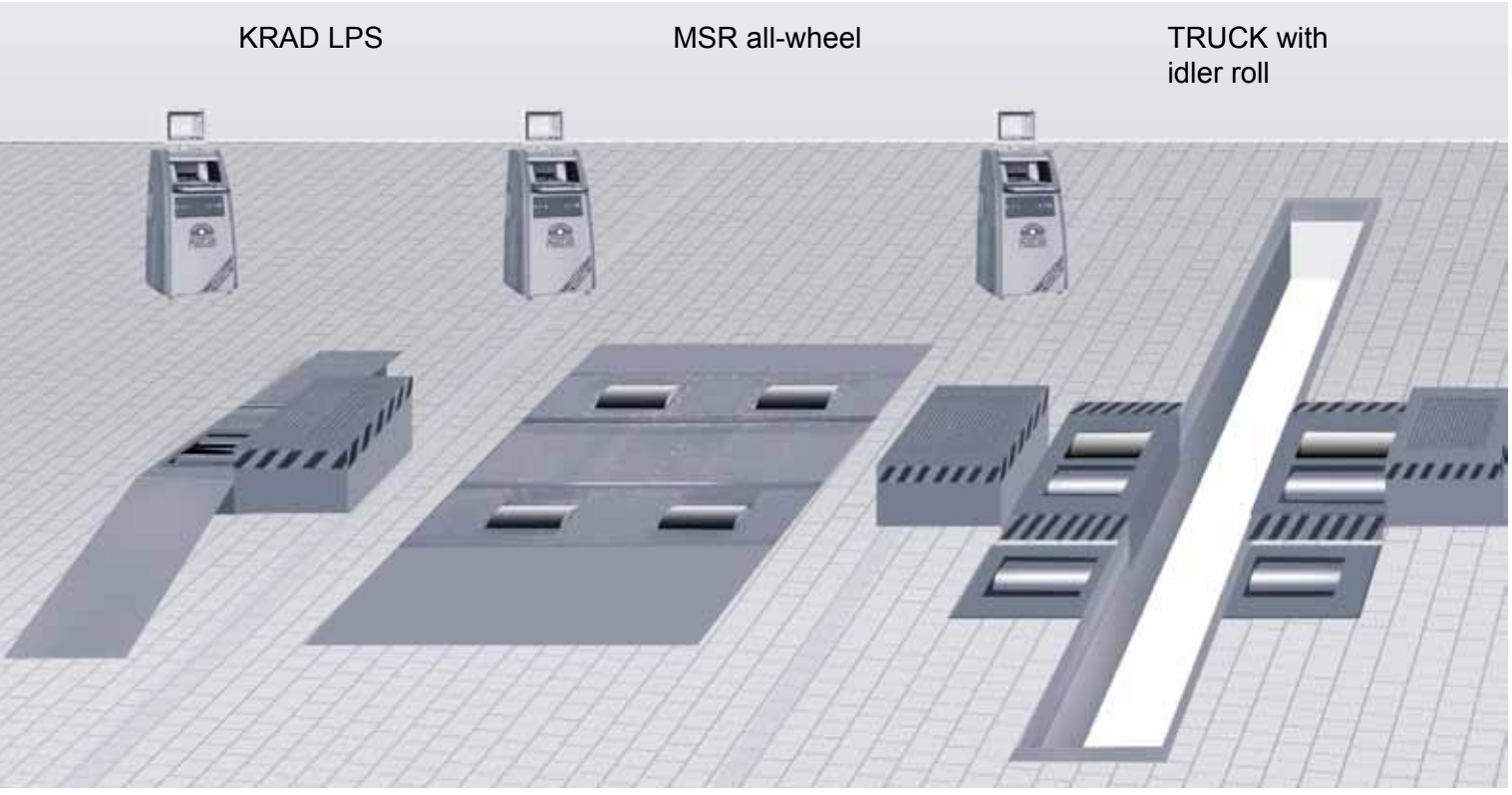
SINCE 1969

- ► Emission, function and performance dynamometers for motorcycles, passenger vehicles, trucks and tractors
- ► Digital recording and saving of measurement data
- ► From the single axle dynamometer to the high-tech top roller dynamometer for all-wheel vehicles
- ► Rugged, service-friendly technology
- ► Precision measurement instrumentation, reliable, reproducible measurement results

Premium Workshop Equipment

The Line of MAHA Performance Dynamometers.
The optimum dynamometer for any application. From motorcycles to heavy duty-vehicles.

Function and performance dynamometers for any kind of application.
From mopeds, motorcycles, passenger vehicles, trucks or tractors, regardless – MAHA offers for all vehicles and applications the right kind of function and performance dynamometer.



The Line of MAHA Performance Dynamometers.
The optimum dynamometer for any application. From motorcycles to heavy duty-vehicles.

LPS 25, MFP 250
Function dynamometer for small vehicles up to 10 kW.

The dynamometers from the LPS 25 and MFP 250 lines serve the purpose of testing small 2, 3 and 4 wheel vehicles. While the dynamometer simulates the driving resistance, the following data can be recorded and analysed automatically through the operator software: speed, power, distance and measurement time. When connecting a MTG gas tester, then also emission data can be recorded. The measurement data is analysed automatically. The results of the vehicle test can be saved to the database of the dynamometer.

ASM
The emission dynamometer for passenger vehicles and light-weight trucks.

The emission dynamometers of the ASM line are used worldwide for emission measurements under load conditions, and thousands of units have proven their capabilities under sustained operating conditions of the inspection organisations. Whether emission measurements under constant load, emission measurements under variable load conditions or emission measurements during driving cycles, regardless – with the ASM dynamometer you can subject all vehicles (Diesel engine or gasoline engine) to a dynamic emission measurement. The dynamometers of the ASM line are available as under floor and above floor models, as single axle or all-wheel dynamometers.

FPS 2700 / 5500
The cost-effective function and performance dynamometer for passenger vehicles and light-weight trucks.

The function dynamometers of the FPS line are your rolling road in the workshop. Whether test drives, dynamic engine diagnosis, power measurements or components tests, regardless – the FPS is available as above floor[1] and as under floor models, as single axle or all-wheel dynamometer[2] for any kind of application.

[1] FPS 2700 only
[2] “Constant speed” load simulation

LPS 3000
The classic double roller performance dynamometer for motorcycles, passenger vehicles and trucks.

The function and performance dynamometer LPS 3000 does not leave anything to be desired in any areas. When running performance measurements, the LPS 3000 delivers precise, reproducible results for engine power and torque. The projection of these measurement data to standardised values in accordance with international standards is performed automatically. Moreover, the LPS 3000 offers through its load simulation programs the ideal basis for vehicle diagnosis under load conditions. The option of being able to connect external measurement equipment like fuel consumption meters, emission testing units etc. perfect the range of possible applications in industry, workshop or motor sports / tuning. This classic among the performance dynamometers has proven its capabilities over many years regarding its rugged and accurate measurement instrumentation. Depending on the type of version, the LPS 3000 is available for above floor or under floor installation, as single axle or as all-wheel dynamometer for any kind of application.

MSR
The high-tech top roller performance and function dynamometer for passenger vehicles.

The MSR is the premium dynamometer of the line of function and performance dynamometers from MAHA addressing through its well proven all-wheel technology professionals from the area of industrial test rig installation, who intend to perform in-depth measurements under constant load conditions for the purpose of modifying vehicles. This is pure dynamometer technology. The use of electric motors to drive the rollers in combination with high-performance eddy current brakes allows the MSR 1000/1050 to perfectly synchronise the front and the rear axle. Thus vehicles with widely different all-wheel drive systems but also vehicles driven by a single axle can be tested without problems and very efficiently. The MSR is available by way of above floor and under floor models as single or all-wheel dynamometer for any kind of application.

MZW
The function and performance dynamometer for tractors.

Special requirements require special technology. The power take-off shaft performance dynamometer MZW 300/500 has been adapted precisely to the requirements of modern agricultural vehicles. The wireless link which is unique on the market between operating unit and dynamometer offers in the course of daily work significant benefits compared to the otherwise commonly used wire connection. The MAHA power take-off performance dynamometer supplies precise measurement data and excels through its rugged construction and simple operation. The MZW power take-off shaft dynamometers are the mobile all-rounders amongst the dynamometers for tractors of all performance categories.

Function Dynamometer for 2, 3 and 4 Wheel Vehicles
Models: LPS 25 / LPS 25-3L / MFP 250

Description for models LPS 25 (VP 630005)/LPS 25-3L (VP 630007)/MFP 250 (VP 630009)
The dynamometers from the LPS 25, MFP 250 lines serve the purpose of testing 2,3 and 4 wheel small vehicles. When the dynamometer simulates the driving resistance, the following data can be recorded and analysed automatically through the operator software: speed, power, distance and measurement time. When connecting a MGT 5 gas tester, also emissions can be recorded.
The measurement data is analysed automatically. The results of the vehicle test can be saved to the database of the dynamometer.

Scope of Delivery
- Dynamometer for small vehicles (with 2 wheels LPS 25, with 3 or 4 wheels LPS 25-3L, MFP 250)
- Painting powder coating RAL 5010
- Simulation of driving resistance through a 10 kW eddy current brake
- In connection with a 4/5 gas tester, model MGT 5, emission measurements under load conditions are possible

Software
- Driving resistance simulation
- Determination of top speed
- Wheel power at test speed
- Display of speed
- Display of distance
- Analysis of the measurement results
- DIN A 4 printout
- Customer and vehicle database

External Measurement Data
- Connection option for a MAHA 4/5 gas tester MGT 5

Applications


MFP 250


MFP 250


LPS 25

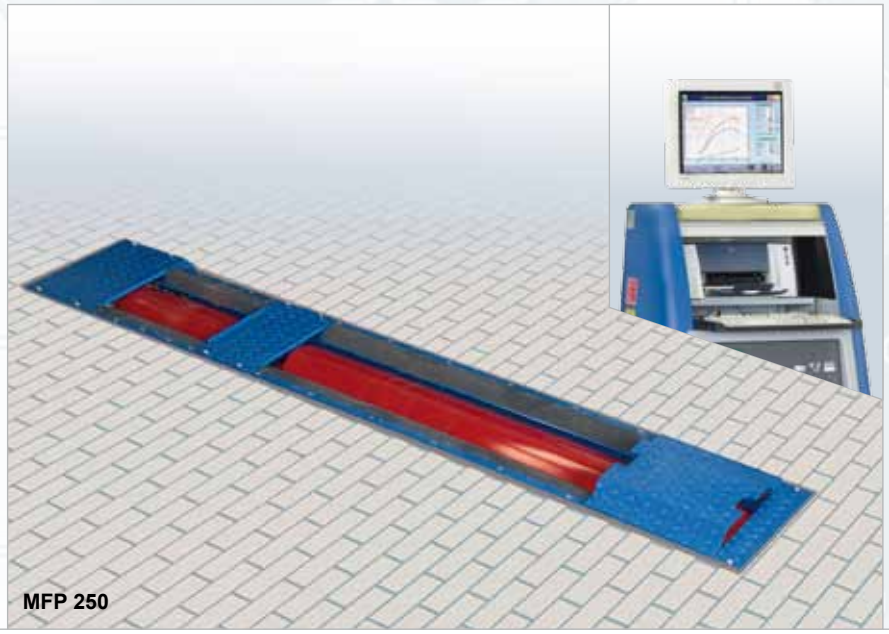
The Technology

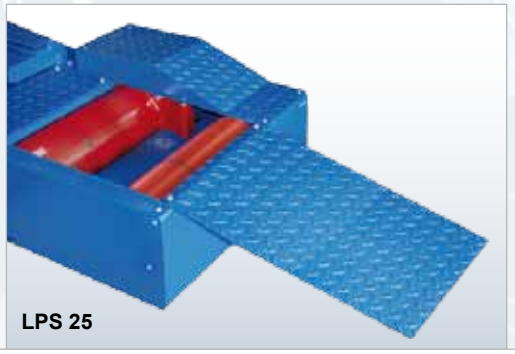
Top speed measurement.

Test speed measurement.

Emission measurement.

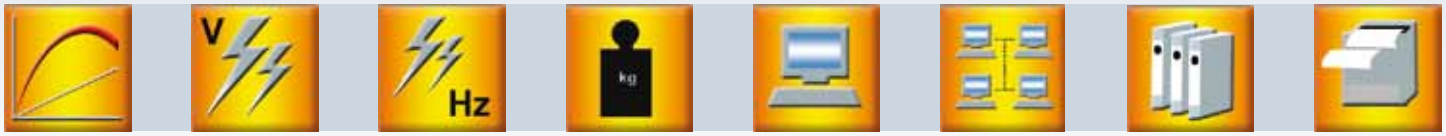
When connecting an emission tester of the type “MTG 5“ the function dynamometer may also be used as an emission dynamometer.
By measuring the emission levels (O_2, CO, CO_2, HC, NO_x) it is possible to reliably assess the emission characteristics under road-like conditions.


MFP 250


LPS 25

Technical Data

1.5 t | 500 mm | 1630 mm | 125 km/h | 10 Inches



10 kW max. | 230 V / 16A | 50 Hz

LPS 25: 200 kg
LPS 25: 3L 300 kg
MFP: 452 kg

Roller Performance Dynamometer for Motorcycles
Model: LPS 3000 / R50

Description for Model LPS 3000/R50 motorcycle (VP 186010/VP 630004)
The function and performance dynamometer LPS 3000/R50 for motorcycles leaves nothing to be desired in any areas. Besides the classic performance measurement where engine power, torque, engine speed and speed are recorded, the LPS 3000 offers in its load simulation mode comprehensive diagnosing possibilities. The ability to connect external measurement instrumentation like the emission tester MTG 5, for example, perfects the application scope of this dynamometer. The clearly structured presentation of the measurement data and operation in line with practical requirements are typical for the software of the LPS 3000. This classic amongst the performance dynamometers has proven its rugged and precise measurement capabilities over many years. The LPS 3000/R50 for motorcycles is available in versions for above floor and under floor installation.

Scope of Delivery
- Performance dynamometer LPS 3000/R50 for motorcycles with communication desk and roller set R50
- Wireless remote control
- Paintwork powder coating RAL 5010

Software
- Continuous (dynamic) and discrete (static) power measurement
- Load simulation at constant RPM, speed and traction force
- Graphic and numerical display of wheel power, power loss, engine power and torque
- Presentation of three performance curves in the background
- Individually selectable curves
- Display of speed, RPM, and oil temperature during the performance measurement
- Projection of engine power in accordance with DIN 70020, EWG 80/1269, ISO 1585, JIS D 1001, SAE J 1349 (optional)
- Load simulation at constant RPM, speed and traction force
- Driving simulation
- Possibility of running driving cycles (optional)
- Analysis of performance diagrams through cursor function
- Graphic display of the measurement values, comparative measurements possible in the background
- Stop clock for acceleration measurements between selectable speed marks
- Saving and loading of performance diagrams
- Importing and exporting of data
- Freely programmable load simulation profiles
- Clearly arranged DIN A 4 printout (diagram and table)

External Measurement Data
- Comprehensive possibilities of recording externally measured values from the vehicle: pressures, temperatures, voltages/currents
- Connection facility for MAHA emission meter

Applications

Interface box

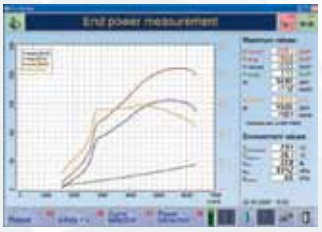
Pneumatic clamping facility for motorcycles (optional)

The Technology

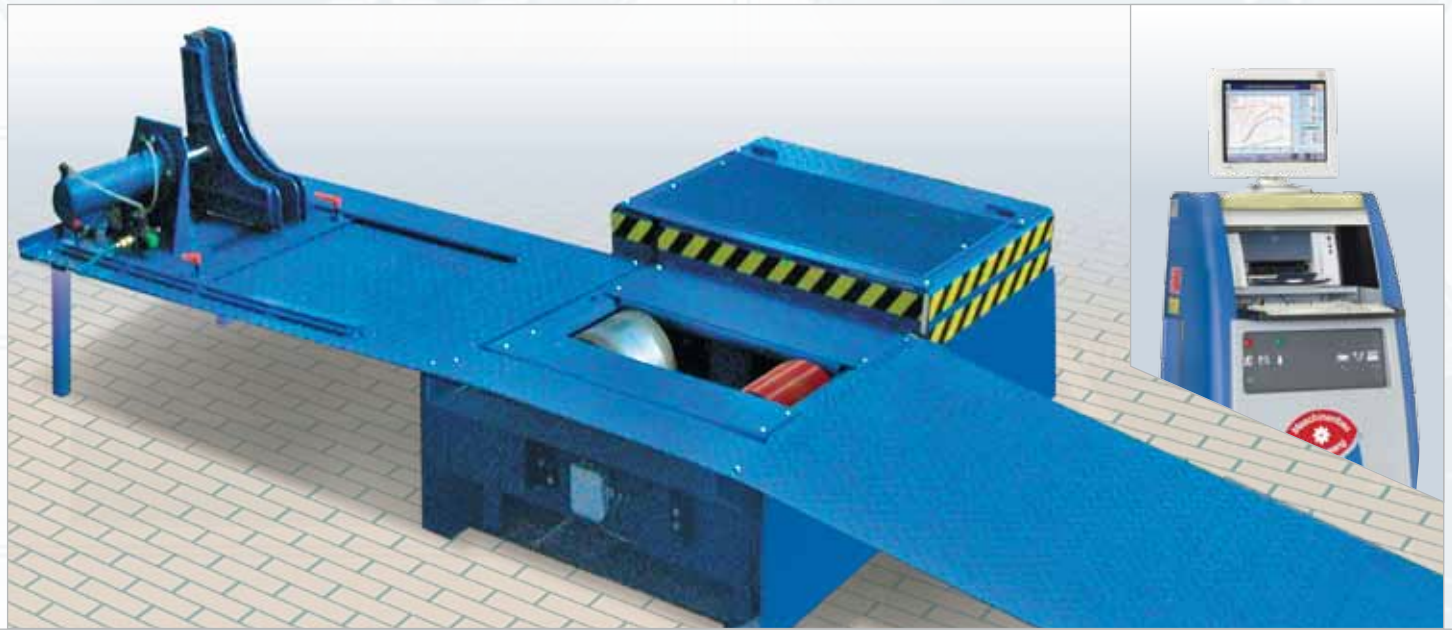
Easy operation of the dynamometer through a clearly arranged, self explanatory menu.

In the load simulation mode the user himself may define which measured values shall be displayed analogue, numerically or graphically.

Simple acquiring of the vehicle data through the entry menu.



The cursor function allows for optimum analysis of the performance diagram.
At the cursor position the measured values are shown numerically.



Technical Data

260 kW max.

230 V / 16A

50 / 60 Hz

12 inches

300 km/h

6 kN

450 kg

1.5 t

Roller Emission Dynamometer for Passenger Cars and Lightweight Trucks
Models: ASM BF / ASM AF / ASM P / ASM P+

Description for ASM BF (VP 230009)/ASM AF (VP 230010)/ASM P (VP 230015)/ASM P+ (VP 230018)
The emission dynamometers of the ASM line are used worldwide for emission measurements under load conditions, and thousands of units have proven their capabilities under sustained operating conditions of the inspection organisations. Whether emission measurements under constant load, emission measurements under variable load conditions or emission measurements during driving cycles, regardless – with the ASM dynamometer you can subject all vehicles (Diesel engine or gasoline engine) to a dynamic emission measurement. The dynamometers of the ASM line are available as under floor and above floor models, as single axle or all-wheel dynamometers.

Scope of Delivery
- Roller emission dynamometer ASM
- Self-supporting enclosed roller set frame
  Depending on the model, version for under floor (ASM BF, ASM P, ASM P+), or above floor (ASM AF, ASM P) installation
- Pneumatic lifting bar
- Electric eddy current brake with integrated flywheel
- Belt connection between rollers and eddy current brake
- Paintwork powder coating RAL 5010/RAL 7016

Software
- Driving resistance simulation for emission testing ASM-5015 and ASM 2525
  (Acceleration Simulation Mode) in accordance with specifications BAR `97
- Driving resistance simulation for transient emission tests for all common driving cycles (not available for ASM all-wheel model)
  (vehicle mass simulation is limited to 900 kg for push operation)
- Determination and compensation of inherent dynamometer losses (parasitic losses) in accordance with BAR `97 specifications.
  Acceleration of the roller set with built-in electric motor to 50 km/h with subsequent coast down runs
- Power measurement (wheel power in the operating modes
  constant speed (single axle and all-wheel models
  constant traction force (single axle model)
- Operating the dynamometer through the serial interface RS232
  (for example, emission measurement instrumentation in acc. with BAR `97 specifications, respectively external PC)
- For the ASM P/ASM P+ an optional software module
  “standard performance measurement” is available
- Clearly arranged DIN-A-4 printout (diagram and table)

External Measurement Data
- Connection facility for MAHA emission measuring instrumentation

MGT5, 4/5-gas tester

Applications

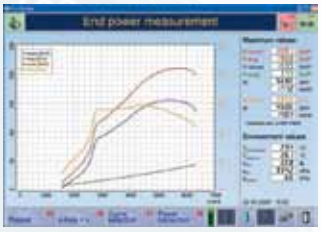
ASM all-wheel version

MDO2 LON, exhaust opacity meter

Holding in place through side restricting rollers (pluggable)

The Technology

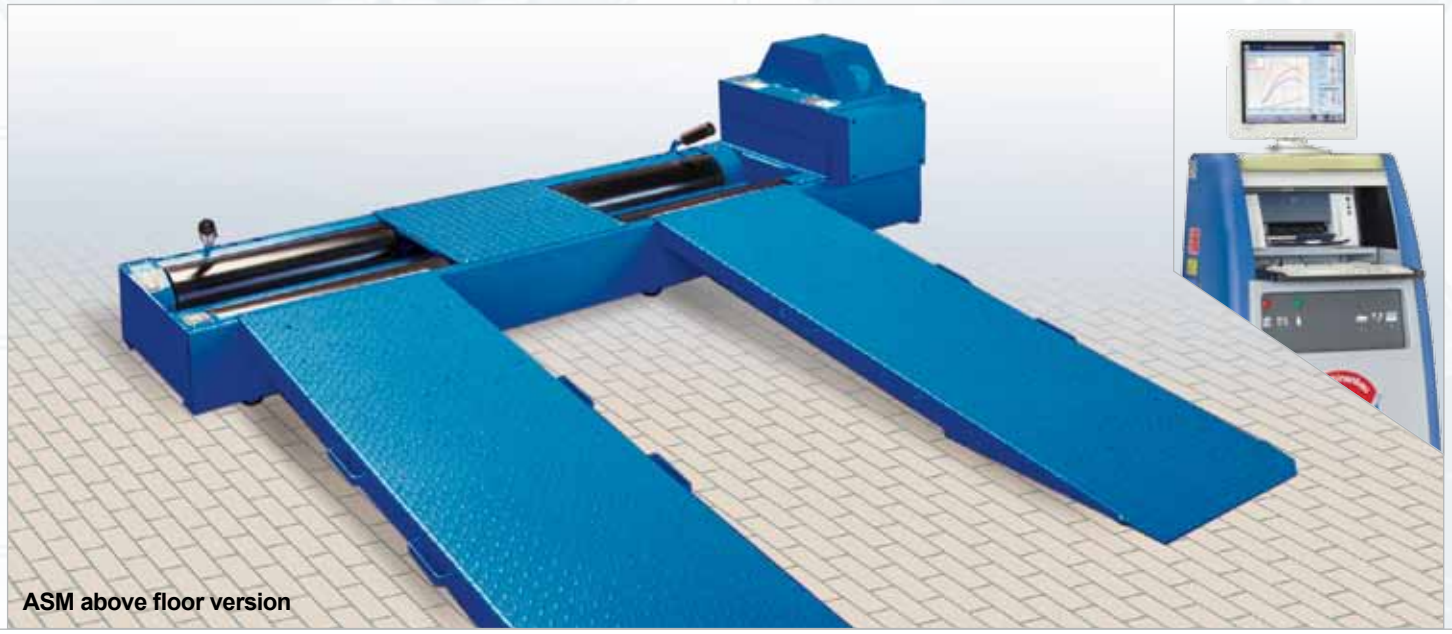
Main menu.



Engine powers up to 260 kW can be handled with the software module “Standard performance measurement”.

Simulation of road-like conditions including time graphics.

Driving cycles
Reconstruction of different cycles is possible (NEFZ, ECE ...) with the software module “Standard performance measurement”.



ASM above floor version

Technical Data

2.7 t
5.5 t

736 mm -
750 mm

2438 mm -
2450 mm

160 km/h

3 kN - 8kN

230 V / 20A

50 / 60 Hz

13 inches

850 kg -
1120 kg

Roller Function Dynamometer for Passenger Vehicles up to 2.7 t / Trucks up to 5.5 t
Models: FPS 2700 / FPS 5500

Description for Model FPS 2700 (VP 230020)/FPS 5500 (VP 230021)
The function dynamometers of the FPS line are your rolling road in the workshop. Whether test drives, dynamic engine diagnosis, power measurements or components tests, regardless – the FPS is available as above floor[1] and as under floor models, as single axle or all-wheel dynamometer[2] for any kind of application.

[1] FPS 2700 only
[2] "Constant speed" load simulation

Scope of Delivery
- Function dynamometer FPS for passenger vehicles, delivery vans and trucks up to 5.5 t
  Roller set with built in measurement and control instrumentation
- Paintwork powder coating RAL 5010

Software
- Continuous (dynamic) and discrete (static, via speed) performance measurement
- Graphic and numerical display of wheel power, power loss, engine power and torque
- Display of three performance curves in the background
- Projection of engine power in accordance with DIN 70020, EWG 80/1269, ISO 1585, JIS D 1001, SAE J 1349
  (manual entry of the environment data)
- Test program for speedometer indication
- Load simulation at constant speed and traction force
- Driving simulation
- Possibility of running driving cycles (optional)
- Analysis of the performance diagrams through cursor function
- 5x zoom function for assessing the curves
- Graphic display of the measured values
- Stop clock for acceleration measurements between selectable speed marks
- Saving and loading of performance diagrams
- Importing and exporting of data
- Freely programmable load simulation profiles
- Clearly laid out DIN A4 printout (diagram and table))
- Under floor or above floor installation (FPS 2700 only).

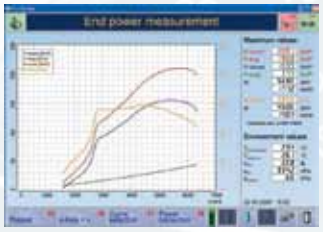
External Measurement Data
- Connection facility for MAHA emission measuring instrumentation

Applications

Holding the vehicle in place through tension belts.

By connecting an emission tester model "MGT 5" and/or MDO2 LON the function dynamometer can also be used as an emission testing dynamometer.

The Technology

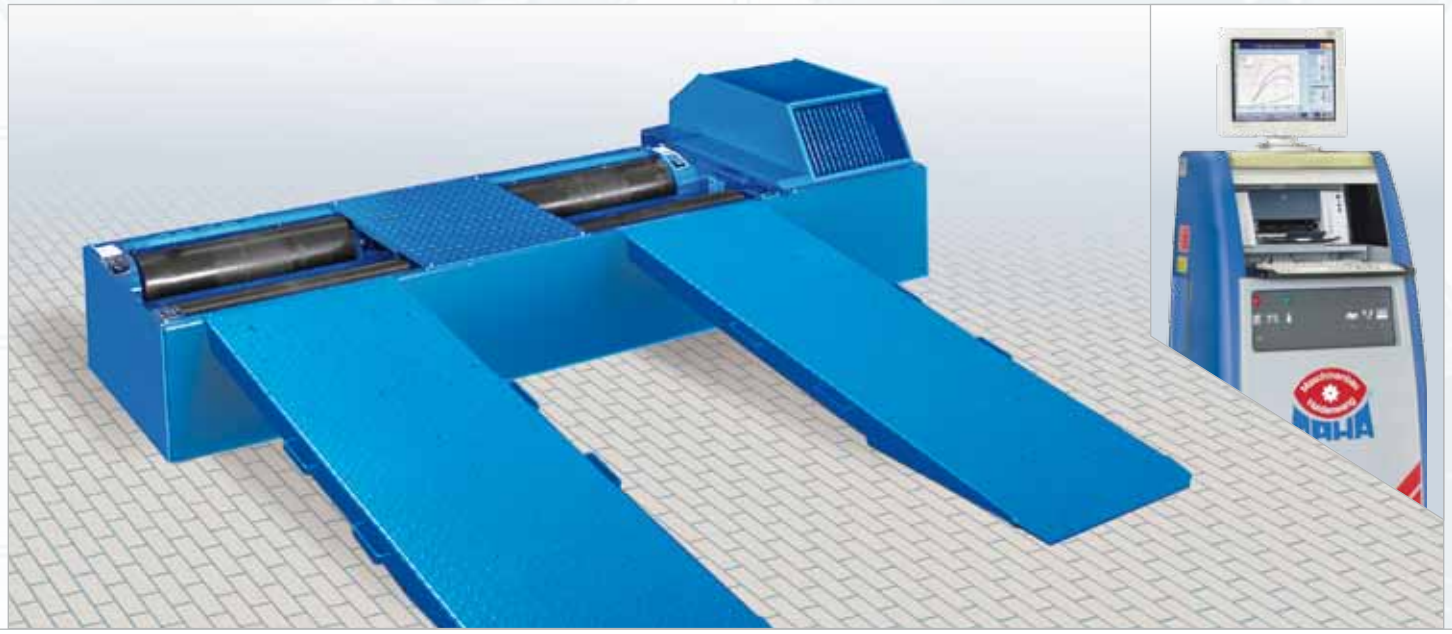


Engine powers up to 260 kW can be handled.

Simulation of the road-like conditions, including time graphics.

Driving cycles
Reconstruction of different cycles is possible (NEFZ, ECE ...) (Optional add-on driving cycle package).

Speedometer test.



Technical Data

		2.7 t 5.5 t	736 mm	2438 mm	200 km/h	6 kN		
	2WD 230 V/20A 4WD 3x400 V/40A	50 / 60 Hz	13 inches	FPS 2700 :1250 kg FPS 5500: 1350 kg	260 kW max.			

Roller Performance Dynamometer for Passenger Vehicles
Models: LPS 3000 / R100

Description for Model LPS 3000/R100 PKW (VP 186010/VP 230002)
The function and performance dynamometer LPS 3000/R100 for passenger vehicles does not leave anything to be desired in any areas. Besides classic performance measurements with recording of engine power, torque, engine speed and speed, the LPS 3000 offers in its load simulation mode comprehensive diagnostic possibilities. The ability to connect external measurement equipment like emission tester MGT 5 or a fuel consumption meter perfects the range of possible applications for this dynamometer. The clearly structured presentation of the measurement data and operation in line with practical requirements is characteristic for the software of the LPS 3000. This classic among the performance dynamometers has proven its capabilities over many years regarding its rugged and accurate measurement instrumentation in industry, workshop and motor sports. The LPS 3000/R100 for passenger vehicles is available as single axle and as all-wheel versions for wheel powers from 260 kW to 1040 kW max.

Scope of Delivery
- Performance dynamometer LPS 3000/R100 for passenger vehicles with communication desk and roller set R100
- Wireless remote control
- Paintwork powder coating RAL 5010

Software
- Continuous (dynamic) and discrete (static) performance measurement
- Graphic and numerical display of wheel power, power loss, engine power and torque
- Projection of engine power in accordance with DIN 70020, EWG 80/1269, ISO 1585, JIS D 1001, SAE J 1349 (optional)
- Test program for speedometer indication
- Load simulation at constant RPM, speed and traction force
- Driving simulation
- Possibility of running driving cycles (optional)
- Motorcycle performance measurements on passenger vehicle roller set (optional)
- Analysis of the performance diagrams through cursor function
- Graphic display of the measured values, comparative measurement in the background
- Stop clock for acceleration measurements between selectable speed marks
- Saving and loading of performance diagrams
- Importing and exporting of data
- Freely programmable load simulation profiles
- Clearly laid out DIN A4 printout (diagram and table)

External Measurement Data
- Comprehensive possibilities for recording external measurement data from vehicles: pressures, temperatures, OBD, voltages / currents…
- Connection facility for MAHA emission measuring instrumentation
- Connection facility for AIC consumption measurement instrumentation

Applications

Interface box

Additional blower for components

The Technology

Easy operation of the dynamometer through a clearly arranged, self explanatory menu.

In the load simulation mode the user himself may define which measured values shall be displayed analogue, numerically or graphically.

Checking the indication of the vehicle's speedometer.

The cursor function allows for optimum analysis of the performance diagram.
At the cursor position the measured values are shown numerically.

Technical Data

2.5 t

800 mm

2300 mm

260 km/h

6 kN - 12 kN

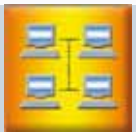
2WD: 230 V/20A
4WD: 3x400 V/30-50A

50 / 60 Hz

12 inches

1400 kg

260 kW -
1040 kW max.



Roller Performance Dynamometer for Trucks
Model: LPS 3000 / R200

Description for Model LPS 3000/R200 LKW (VP 186010/VP 430004)
The function and performance dynamometer LPS 3000/R200 for trucks up to 660 kW wheel power does not leave anything to be desired in any areas. Besides classic performance measurements with recording of engine power, torque, engine speed and speed, the LPS 3000 offers in its load simulation mode comprehensive diagnostic possibilities. The ability to connect external measurement equipment like the Diesel emission tester MDO 2 LON or a fuel consumption meter, perfects the range of possible applications for this dynamometer. The clearly structured presentation of the measurement data and operation in line with practical requirements is characteristic for the software of the LPS 3000. This classic among the performance dynamometers has proven its capabilities over many years regarding its rugged and accurate measurement instrumentation in industry and workshop. The LPS 3000/R200 for trucks is available with closed and split roller set for fitting in installation pits. The optionally available set of idler rollers permits testing of trucks with 2 driven axles. The hydraulic pulldown facility (optional) ensures optimum traction of the wheels on the rollers.

Scope of Delivery
- Performance dynamometer LPS 3000/R200 for trucks, with communication desk and roller set R200
- Wireless remote control
- Paintwork powder coating RAL 5010

Software
- Continuous (dynamic) and discrete (static) performance measurement
- Graphic and numerical display of wheel power, power loss, engine power and torque
- Projection of engine power in accordance with DIN 70020, EWG 80/1269, ISO 1585, JIS D 1001, SAE J 1349 (optional)
- Test program for speedometer indication
- Load simulation at constant RPM, speed and traction force
- Driving simulation
- Possibility of running driving cycles (optional)
- Passenger vehicle performance measurement on truck roller set is possible with many passenger vehicles
- Analysis of the performance diagrams through cursor function
- 5x zoom function for assessing the curves
- Graphic display of the measured values
- Stop clock for acceleration measurements between selectable speed marks
- Saving and loading of performance diagrams
- Importing and exporting of data
- Freely programmable load simulation profiles
- Clearly laid out DIN A4 printout (diagram and table)

External Measurement Data
- Comprehensive possibilities for recording external measurement data from vehicles: pressures, temperatures, OBD, voltages/currents…
- Connection facility for MAHA emission measuring instrumentation
- Connection facility for AIC consumption measurement instrumentation

Applications

Diesel exhaust opacity meter MDO2 LON

Fuel consumption meter

Interface box►

The Technology

asy operation of the dynamometer through a clearly arranged, self explanatory menu.

In the load simulation mode the user himself may define which measured values shall be displayed analogue, numerically or graphically.

The cursor function allows for optimum analysis of the performance diagram.
At the cursor position the measured values are shown numerically.

Determination of the rotating mass by a second coast down run = very accurate effective power (MAHA patent).

Technical Data

15 t

820 mm -
950 mm

2620 mm
2750 mm

200 km/h

15 kN-25 kN

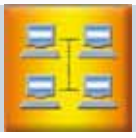
400 V / 63 A

50 / 60 Hz

12 inch

2500 kg

400 kW -
660 kW max.



Top Roller Performance Dynamometer
Models: MSR 800 / 830 / 850 / 930 / 1000 / 1050

Description for Model MSR
The MSR is the premium dynamometer of line of function and performance dynamometers from MAHA addressing through its well proven all-wheel technology professionals from the area of industrial test rig installation, who intend to perform in-depth measurements under constant load conditions for the purpose of modifying vehicles. This is pure dynamometer technology. The use of electric motors to drive the rollers in combination with high-performance eddy current brakes allows the MSR 1000/1050 to perfectly synchronise the front and the rear axle. Thus vehicles with widely different all-wheel drive systems but also vehicles driven by a single axle can be tested without problems and very efficiently. Moreover, the dynamometer is suited for testing of hybrid vehicles. The MSR is available by way of above floor and under floor models as single or all-wheel dynamometer for any kind of application. This type of dynamometer is especially well-suited for endurance tests and high-power vehicles.

Scope of Delivery
- Top roller performance dynamometer MSR with communication desk and roller set
- Wireless remote control
- One, respectively two roller sets with 700 mm top rollers depending on the model
- Hydraulic roller set adjustment through set of adjustment panels (for all-wheel dynamometer)
- Paintwork powder coating RAL 5010

Software
- Continuous (dynamic) and discrete (static) performance measurement[1]
- Load simulation[1] for constant RPM, speed and traction force
- Graphic and numerical display of wheel power, power loss, engine power and torque
- Projection of engine power in accordance with DIN 70020, EWG 80/1269, ISO 1585, JIS D 1001, SAE J 1349 (optional)
- Test program for speedometer indication
- Driving simulation[1]
- Possibility of running driving cycles (optional)[1]
- Analysis of the performance diagrams through cursor function
- 5x zoom function for assessing the curves
- Graphic display of the measured values, comparative measurements in the background
- Stop clock for acceleration measurements between selectable speed marks[1]
- Saving and loading of performance diagrams
- Importing and exporting of data
- Freely programmable load simulation profiles
- Clearly laid out DIN A4 printout (diagram and table)

External Measurement Data
- Comprehensive possibilities for recording external measurement data from vehicles: pressures, temperatures, OBD, voltages / currents…
- Connection facility for MAHA emission measuring instrumentation
- Connection facility for AIC consumption measurement instrumentation

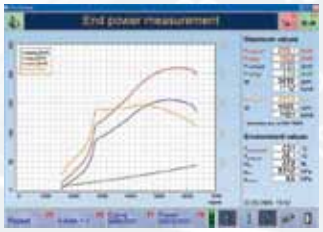
[1] not for MSR 800

Available models

Equipment	MSR 800	MSR 830	MSR 850	MSR 930	MSR 1000	MSR 1050
Eddy current brakes	no	1	2	2	2	3
Electric drive	no	no	no	no	2	2
All-wheel dynamometer	no	no	no	yes	yes	yes

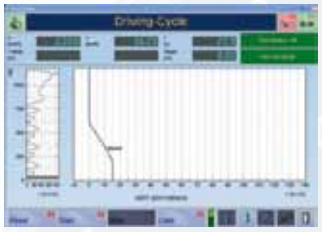
Applications

The Technology



Engine powers over 1000 kW can be handled.

Simulation of the road-like conditions, including time graphics.



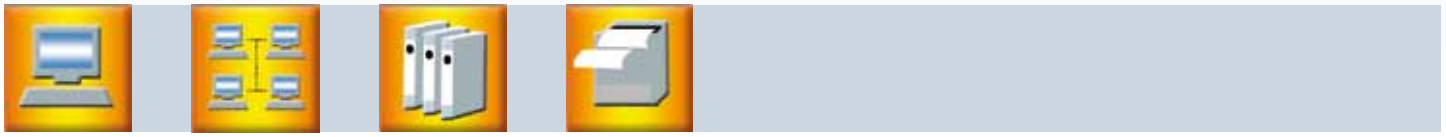
Driving cycles
Reconstruction of different cycles as possible (NEFZ, ECE ...) (driving cycle expansion pack option).

Speedometer test.

Technical Data

2.5 t | 900 mm | 2200 mm | 320 km/h | 8.5 kN

3 x 400 V / 63 A | 4500 kg | over 1000 kW



Power Take-Off Performance Dynamometer
Model: MZW 300

Description for Model MZW 300 (VP 531010)
Special requirements require special technology. The power take-off performance dynamometer MZW 300 has been adapted precisely to the requirements of modern agricultural vehicles. The wireless link which is unique on the market between operating unit and dynamometer offers in the course of daily work significant benefits compared to the otherwise commonly used wire connection. The MAHA power take-off performance dynamometer supplies precise measurement data and excels through its rugged construction and simple operation. The MZW 300 is the mobile all-rounder amongst the power take-off performance dynamometers for tractors of the medium performance category.

Scope of Delivery
- Power take-off dynamometer on passenger vehicle trailer
- Radio hand-held terminal for operating the dynamometer
- Paintwork powder coating RAL 7040

Software (with manual desk)
- Measurement of engine power, torque and RPM at the power take-off shaft
- Load simulation for vehicle diagnosis
- Program controlled operation through radio hand-held desk with strip printer
- Optional PC analysis software for performance diagram and DIN A4 printout with database administration
- Stationary (discrete) performance measurement:
  starting/final RPM, step width and holding time are freely selectable
  Fully automatic measurements
- Measurements in the power take-off mode are possible (determination of power demanded by additional units)
- Two directions of rotation (front/rear shaft)

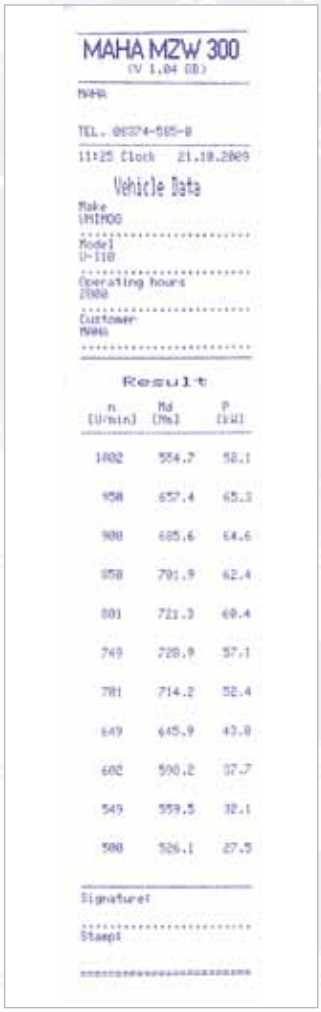
External Measurement Data
- Connecting a fuel consumption meter is possible

Applications

Radio hand-held terminal

Fuel consumption meter

The Technology



MAHA MZW 300
(V 1.04 GB)

MAHA

TEL. 06374-585-0

11:25 Clock 21.10.2009

Vehicle Data

Make
UNIMOG

Model
U-110

Operating hours
2850

Customer
MAHA

Result

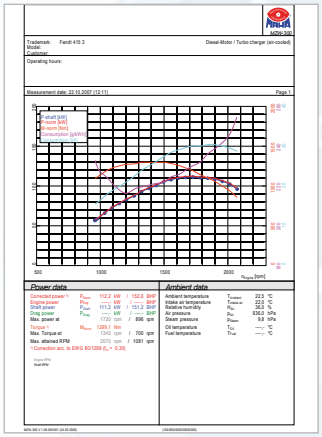
n [U/min]	Md [Nm]	P [kW]
1002	554.7	58.1
950	657.4	65.3
900	685.6	64.6
850	791.9	62.4
801	721.3	60.4
749	728.9	57.1
701	714.2	52.4
649	645.9	43.8
602	598.2	37.7
549	559.5	32.1
500	526.1	27.5

Signature

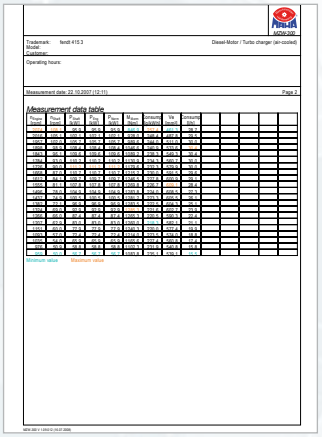
Stamp

Performance table hand-held.

Analysis through PC (optional)..



Performance diagram PC.



Analysis software table printout.

Technical Data

850 kg | 220 kW | 3 x 400 V / 16 A | 50 Hz

Power Take-Off Performance Dynamometer
Model: ZW 500

Description for Model ZW 500 (VP 531008)
Special requirements require special technology. The power take-off performance dynamometer ZW 500 has been adapted precisely to the requirements of modern agricultural vehicles. The wireless link which is unique on the market between operating unit and dynamometer offers in the course of daily work significant benefits compared to the otherwise commonly used wire connection. The MAHA power take-off performance dynamometer supplies precise measurement data and excels through its rugged construction and simple operation. The ZW 500 is the mobile all-rounder amongst the power take-off dynamometers for tractors of the top performance category.

Scope of Delivery
- Power take-off dynamometer on passenger vehicle trailer
- Radio hand-held terminal for operating the dynamometer
- Paintwork powder coating RAL 7040

Software with Hand-held Terminal
- Measurement of engine power, torque and RPM at the power take-off shaft
- Load simulation for vehicle diagnostics
- Program controlled operation through radio hand-held terminal with strip printout
- Optional PC analysis software for performance diagram and DIN A4 printout with database administration
- Stationary (discrete) performance measurement: starting/final RPM, step width and holding time freely selectable Fully automatic measurements
- Measurements in the power take-off mode are possible (determination of power demanded by additional units)
- Two directions of rotation (front/rear shaft)

Software with PC
- Measurement of engine power, torque and RPM at the power take-off shaft
- Load simulation for vehicle diagnostics
- Program controlled operation through PC with control software
- Performance diagram and DIN A4 printout
- Database administration
- Stationary (discrete) performance measurement: starting/final RPM, step width and holding time freely selectable Fully automatic measurements
- Measurements in the power take-off mode are possible (determination of power demanded by additional units)
- Two directions of rotation (front/rear shaft)
- Messung im Durchtrieb möglich (Ermittlung der Leistungsaufnahme von Zusatzaggregaten).
- Zwei Drehrichtungen (Front- / Heckwelle).

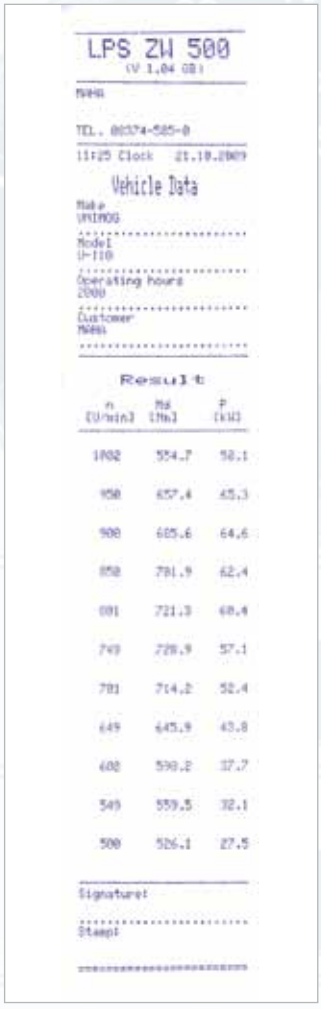
External Measurement Data
- Connecting a fuel consumption meter is possible
- Connecting an opacity meter is possible

Applications

MDO2 LON, Opazimeter

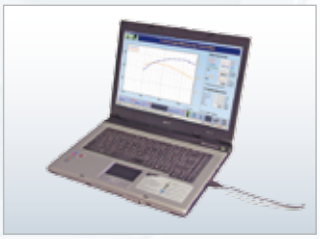
Fuel consumption meter

The Technology

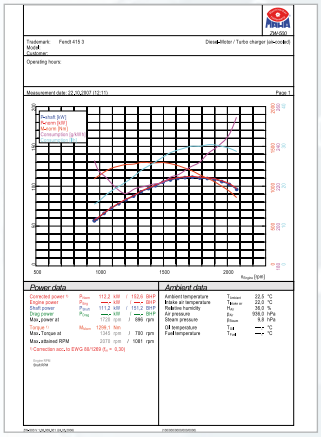

LPS ZW 500
(V 1.04 GB)
MAHA
TEL. 06074-585-0
11:25 Clock 21.10.2009
Vehicle Data
Make
VW/MOG
Model
T-III
Operating hours
2000
Customer
MAHA
Result
n [1/min] Md [Nm] P [kW]
1002 554.7 58.1
950 457.4 45.3
900 685.6 64.6
850 781.9 62.4
801 721.3 60.4
749 728.9 57.1
701 714.2 52.4
649 645.9 43.8
602 590.2 37.7
549 559.5 32.1
500 526.1 27.5
Signature:
Stamp:

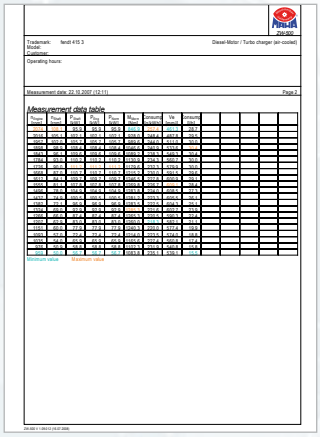
Performance table hand-held.

Radio hand-held terminal with LCD display and a strip printer.



Connection to LAPTOP.

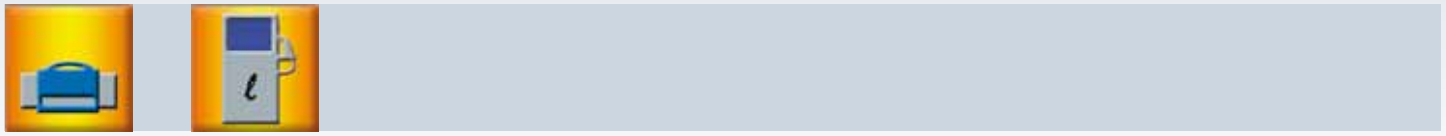




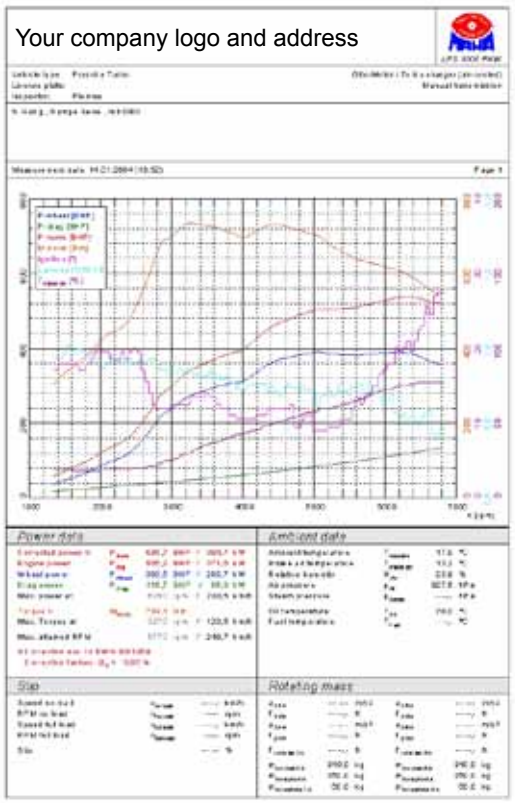
Performance diagram printout with table through analysis software or control software.

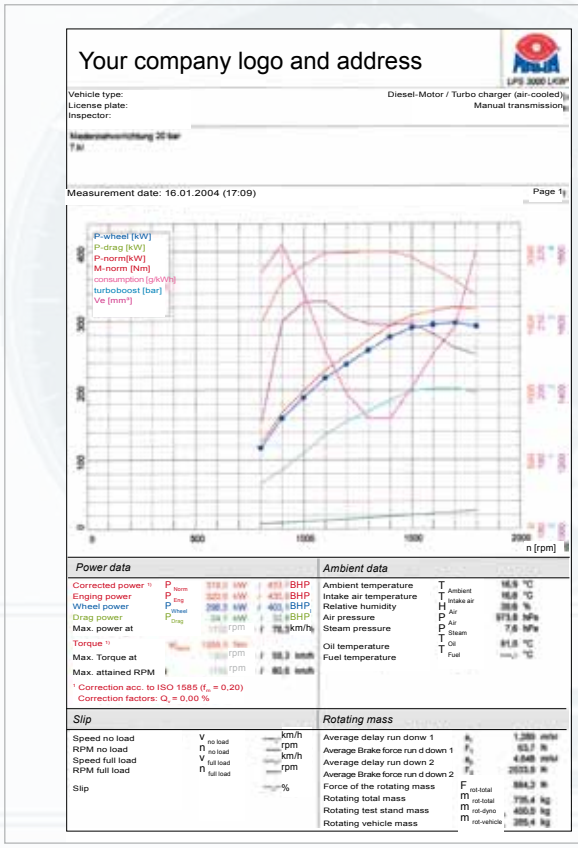
Technical Data

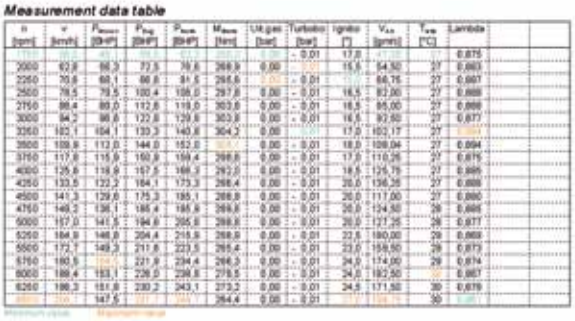
1300 kg | 500 kW | 3 x 400 V / 16 A | 50 Hz

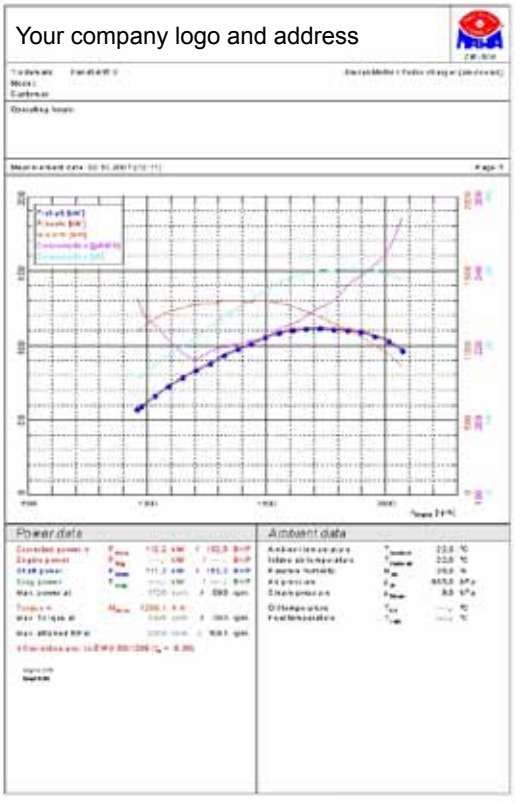


Performance Diagrams
Reduced (DIN A4) Printouts



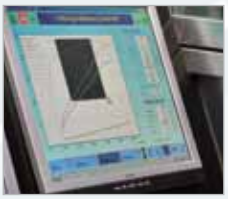






MAHA Reference Systems

MSR 1000



Custom equipment with soundproofing cabin, ventilation system including cooling blower and suction facility for the company Abt Sportsline GmbH

LPS 3000

Custom equipment with soundproofing cabin, ventilation system including cooling blower and suction facility for the company Hamann GmbH

Further Technical Data of the Dynamometers

LPS 25/25-3L	Unit	LPS 25	LPS 25-3L	MFP
Roller set dimensions (LxWxH)	mm	710x710x420	1945x710x425	2340x555x425
Roller length	mm	400	730/400	1400/400
Pneumatic lifting bar	bar	n.a.	4 to 6	-
Roller diameter	mm	200	200	400
Roller wheelbase	mm	385	385	-
Measurement system		Strain gauge	Strain gauge	Strain gauge
Max. power during simulation	KW	4	4	4
Meas. accuracy wheel power +/-	%	2	2	2

LPS 3000/R50 Motorcycle		LPS 3000/R50
Desk dimensions	mm	800x1400x670
RPM	RPM	0 to 20,000
Meas. accuracy wheel power +/-	%	2 of the measured value
Roller set dimensions	mm	1420x1100x625
Measurement system		Strain gauge
Roller diameter	mm	318
Roller wheelbase	mm	560
Roller length	mm	300

ASM		ASM BF	ASM AF	ASM P/ASM P Plus
Roller set dimensions (LxWxH)	mm	3275x720x270/700	3275x720x270/570	3539x718/930x450/725
Roller length	mm	850	850	850
Roller diameter	mm	217	217	217
Roller wheelbase	mm	444	444	444
Flywheel mass mech.	kg	900	900	900
Compressed air lifting bar	bar	6 to 10	6 to 10	6 to 10
Driving direction		Bidirectional	Bidirectional	One driving direction
Max. wheel power	kW	50	50	200
Sim. vehicle mass push operation	kg	900	900	900
Sim. vehicle mass acceleration	kg	2700	2700	2700

FPS		FPS 2700	FPS 5500
Model		Above and under floor	Under floor
Roller set dimensions	mm	3539x718/930x450/725	3539x718/930x450/725
Roller length	mm	850	850
Roller diameter	mm	217	217
Roller wheelbase	mm	444	444
Compressed air lifting bar	bar	6 to 10	6 to 10
Measurement system		Strain gauge	Strain gauge
Driving direction		One driving direction	One driving direction
Meas. accuracy wheel power +/-	%	3	3

LPS 3000/R100 Passenger vehicle		
Desk dimensions	mm	800x1400x670
RPM	RPM	0 to 10000
Meas. accuracy wheel power +/-	%	2 of measured value
Measurement system		Strain gauge
Roller set dimensions	mm	3345x1100x625
Roller diameter	mm	318
Roller wheelbase	mm	540
Roller banking	mm	45
All-wheel wheelbase	mm	2360 - 3360
Lifting bar		Pneumatic

Further Technical Data of the Dynamometers

LPS 3000/R 200 Truck		R200/1	R200/2
Desk dimensions	mm	800x1400x670	800x1400x670
RPM	RPM	0 to 10000	0 to 10000
Meas. accuracy wheel power +/-	%	2 of measured value	2 of measured value
Measurement system		Strain gauge	Strain gauge
Roller set dimensions (LxWxH)	mm	4550x1100x625	2260x1100x865
Roller diameter	mm	318	318
Roller wheelbase	mm	565	565
Lifting bar		Hydraulic	Hydraulic
Pulldown facility		Hydraulic	Hydraulic
Idle roller set wheelbase	mm	1350 +/- 50	1350 +/- 50

MSR Line		
Desk dimensions	mm	800x1400x670
RPM	RPM	0 to 20000
Meas. accuracy wheel power +/-	%	2 of measured value (MSR 800:3)
Measurement system		Strain gauge
Roller set dimensions (LxWxH)	mm	4400-5400x4100x890
Roller diameter	mm	762
Roller length	mm	700
Pneumatic brake	bar	7 max.
Wheelbase	mm	2000 - 3400 (MSR 930/1000/1050)

MZW 300		
RPM max.	RPM	2500
Torque max.	Nm	3200
Measurement system		Strain gauge
Spline shaft profile		1 3/4" 6 sections
Dimensions (WxHxL)	mm	1000x775x1845
LCD display		2 x 16 digits
Hand-held terminal dim. (WxHxD)	mm	65x120x245
Hand-held terminal weight	kg	1.1
ZW 500		
RPM max.	RPM	2500
Torque max.	Nm	6600
Measurement system		Strain gauge
Spline shaft profile		1 3/4" 6 sections
Dimensions (WxHxL)	mm	2110x1420x3580
LCD Display		2 x 16 digits
Hand-held terminal dim. (WxHxD)	mm	65x120x245
Hand-held terminal weight	kg	1.1

Note:
All dynamometers provide for one driving direction only. Exceptions LPS 3 L, MFP 250, ASM BF/ASM AF!

Pictogram Explanations

	Connection to emission measuring instrumentation **A**		Permissible driveover load per axle **B**		Use for mopeds **B**		Dynamometer cover **B,SD**		Force at the spindle **H**
	Measurement range absorption coefficient/ turbidity **A**		Engine power, respectively drive power **B**		Use for tractors **B**		Radio hand-held lamp **B,SD,S**		RPM **H**
	Resolution **A**		Testing speed **B**		Single axle measurement **B**		Maximum wheel weight **B,S**		Carrying load per column **H**
	Warming up time **A**		Measurement range **B**		Pit protection **B**		Carrying load **H**		Weight per column **H**
	Power supply voltage **A**		Minimum gauge **B**		All-wheel capable **B**		Minimum height **H**		Maximum wheelbase **H,S**
	Power supply voltage **A**		Maximum gauge **B**		Maximum gauge **B,H**		Lifting height **H**		Axle play tester **H,S**
	EOBD capability **A**		Pedal force measurement is possible **B**		Engine power **B,H,SD**		Inner width betw. tracks outer driving track width **H**		Axle play tester for several axles **H,S**
	Measurement gases **A**		Wireless pressure transmission **B**		ASA network compatible **B,L,SD**		Driving track length **H**		Measurable light intensity **L**
	Mobile use **A**		Pressure transmission from brake system **B**		Remote control **B,SD**		Lifting time **H**		Light adjustment equipment **L**
	Power supply voltage **A,B,SD**		Measurable delay **B**		Weighing facility **B,SD**		Lowering time **H**		PC operation **PC**
	Self-weight **A,H,S**		Use for passenger vehicles **B**		Permissible driveover load per wheel **B,SD**		Short carrying arm length a Long carrying arm length b **H**		Network capable **PC**
	Mains voltage **A,B,H,PC,SD**		Use for trucks **B**		Automatic operation **B,SD**		Minimum receiving height **H**		Printer **PC**
	Frequency **A,B,H,PC,SD**		Use for motorcycles **B**		Manual operation **B,SD**		Total width **H**		Database **PC**

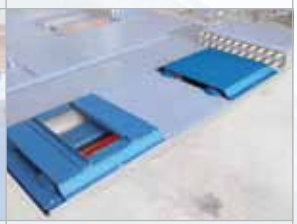
	TFT screen PC		Headwind blower S		Rim diameter S		Container width S		Pulldown facility BS
	Data transfer by cable PC		Performance measurement S		Rim width S		Container height S		
	PC linking is possible PC		Speed measurement S		Clamping of the rim from outside S		Container length S		
	Axle damping analysis SD		Filling S		Clamping of the rim from inside S		Container weight S		
	Noise search SD		Refrigerant S		Maximum wheel with S		Maximum vehicle width S		
	Axle damping dynamometer SD		Analogue diagnostic tools S		Rotatable mounting arm S		Maximum vehicle height S		
	Measurement range for wheel alignment S		Speed simulation S		Mounting arm pneumatically tiltable S		Measurement time S		
	Distance measurement S		Pressure range S		Force at the puller S		Wheel alignment tester S		
	Right-hand, left-hand driving S		Link to EUROSYSTEM S		Automatically carryover from rim width S		Speed measurement range S		
	Laser adjustment unit S		Integrated in brake dynamometer S		Operating pressure S		Fuel consumption measurement S		
	Temperature range S		Laser measurement unit S		Minimum wheel width S		Analogue input S		
	Rechargeable battery operation S		Wheel RPM S		Maximum wheel diameter S				
	Measurement range S		LED display S		Minimum rim diameter S				

A	-	Emissions
B	-	Brake
H	-	Lifting technology
L	-	Light
PC	-	PC
SD	-	Shock absorbers
S	-	Miscellaneous

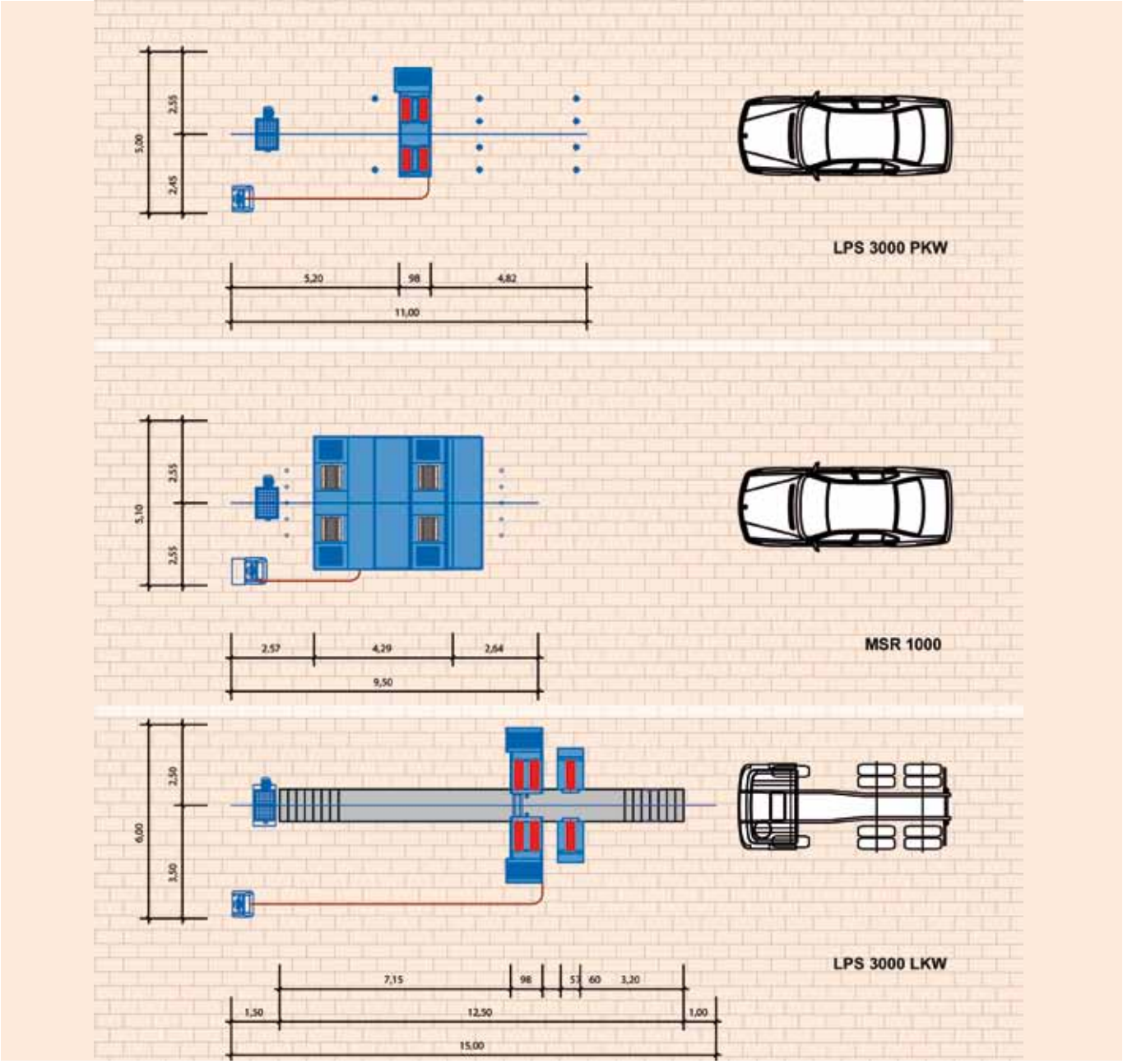
Accessory Matrix
Roller Emission, Function and Performance Dynamometers
ASM, FPS, LPS, MSR, MZW

Bezeichnung	Artikel-Nr.	LPS 25	LPS 3000 bikes	ASM BF	ASM AF	ASM P	ASM P+	FPS 2700	FPS 5500	LPS 3000 cars	LPS 3000 trucks	MSR all models	MZW 300	M W 500
PC-Unit	VZ 910125	X	X	X	X	X	X	X	X	X	X	X	X	X
PC-Keyboard	VZ 910052	X	X	X	X	X	X	X	X	X	X	X	X	X
PC-Flatscreen 19`	VZ 910144	X	X	X	X	X	X	X	X	X	X	X	X	X
Ink Jet Colour Printer	VZ 910091	X	X	X	X	X	X	X	X	X	X	X	X	X
Interface Box 1	VZ 990274	-	X	-	-	-	-	-	-	X	X	X	-	-
Pressure Temperature Module	VZ 911145	-	X	-	-	-	-	-	-	X	X	X	-	-
OBD Module	VZ 911146	-	-	-	-	-	-	-	-	X	-	X	-	-
Analogue Input Module	VZ 911240	-	X	-	-	-	-	-	-	X	X	X	-	-
RPM Light Signal Sensor	VZ 990221	-	-	-	-	-	-	-	-	X	X	X	-	-
RPM Trigger Clamp	VZ 990211	-	X	-	-	-	-	-	-	X	-	X	-	-
Oil Temperature Sensor	VZ 990225	-	X	-	-	-	-	-	-	X	X	X	-	-
Software Module Standard Eng. Power Projection for Cars	VZ 911148	-	X	-	-	-	-	-	-	X	-	X	-	-
Software Module Standard Eng. Power Projection for Trucks	VZ 911149	-	-	-	-	-	-	-	-	X	X	-	-	-
Thermostat-Controlled Fan	VZ 935054	-	-	-	-	-	-	-	-	X	X	-	-	-
Restraining Straps with Tie Plates	VZ 935041	-	-	X	X	X	X	X	X	X	X	-	-	-
Standard Vehicle Fixing Device MSR	VZ 935191	-	-	-	-	-	-	-	-	-	-	X	-	-
Side Restraining Rollers for Front Wheel Drive	VZ 935042	-	-	-	-	-	-	-	-	X	X	-	-	-
Reinforced Eddy Current Brakes for Trucks	VZ 935111	-	-	-	-	-	-	-	-	-	X	-	-	-
Hydraulic Load Simulator for Trucks R200/2	VZ 935051	-	-	-	-	-	-	-	-	-	X	-	-	-
Vehicle Fixing Device for Trucks VZ 935102	-	-	-	-	-	-	-	-	-	X	-	-	-	
Idle Roller Set for Trucks with Twin-Axle Drive	VZ 930021	-	-	-	-	-	-	-	-	-	X	-	-	-
Motorcycle Power Measurement via Roller Set for Cars	VZ 990277	-	-	-	-	-	-	-	-	X	-	-	-	-
Mechanical Holding Device for Motorcycle	VZ 975011	X	X	-	-	-	-	-	-	X	-	-	-	-
Roller Cover Plates R 100 Motorcycle	VZ 975134	-	-	-	-	-	-	-	-	X	-	-	-	-
Axial Cooling Fan AIR 2	VP 160002	X	X	-	-	-	-	-	-	-	X	-	-	-
Radial Cooling Fan AIR 7/2	VP 160006	-	-	X	X	X	X	X	X	X	X	-	-	-
Radial Cooling Fan AIR 7/2 for Trucks	VP 160011	-	-	-	-	-	-	-	-	-	X	-	-	-
Additional Cooling Fan	VP160009	X	X	X	X	X	X	X	X	X	X	X	X	X
Fuel Consumption Meter for Cars	VP 994013	-	-	-	-	-	-	-	-	X	-	X	-	-
Fuel Consumption Meter for Trucks	VP 994010	-	-	-	-	-	-	-	-	-	X	-	-	-
“Agricultural” Fuel Consumption	VP 994015	-	-	-	-	-	-	-	-	-	-	-	X	X
Software Module Eval. Software on PC/Laptop ZW/MZW	VZ 911256	-	-	-	-	-	-	-	-	-	-	-	X	X
Connection Package PC/Laptop ZW	VZ 911257	-	-	-	-	-	-	-	-	-	-	-	-	X
USB/RS 232 Converter	VZ 910140	-	O	X	X	X	X	X	X	-	-	-	-	-
Communication Desk 3000	VZ 950043	X	O	X	X	X	X	X	X	O	O	O	-	-
Wireless Remote Control		-	O	-	-	-	-	-	-	O	O	O	-	-
ASM-P Software Module Standard Power Measurement	VZ 911224	-	-	-	-	X	X	-	-	-	-	-	-	-
Driving Cycle Expansion Kit FPS	VZ 935166	-	-	-	-	-	-	X	X	-	-	-	-	-
Side-Restraining Rollers FPS/ASM	VZ 975081	-	-	X	X	X	X	X	X	-	-	-	-	-
Set of Sliding Side-Restraining Rollers ASM	VZ 975156	-	-	X	X	X	X	X	X	-	-	-	-	-
Set of Approach Ramps 2.3 m	VZ 975218	-	-	-	X	X	-	X	-	-	-	-	-	-
Überfahrrampen	VZ 975155	-	-	-	X	X	-	X	-	-	-	-	-	-
Weighing Cells Static ASM	VZ 975139	-	-	X	X	X	X	-	-	-	-	-	-	-
Mobility Kit ASM	VZ 975140	-	-	-	X	X	X	-	-	-	-	-	-	-
Set of Drive-On Ramps 1.5 m ASM	VZ 975141	-	-	X	-	-	-	-	-	-	-	-	-	-
Official Approval for Road Service (StVZO Germany)	VM 996016	-	-	-	-	-	-	-	-	-	-	-	X	X
Special Coating upon Request														

Erklärung:
X = Option
O = Serie
- = nicht lieferbar

				
Interface Box 1 VZ 955252	Pressure Temperature Module VZ 911145	OBD Module VZ 911146	Analogue Input Module VZ 911240	RPM Light Signal Sensor VZ 990221
				
RPM Trigger Clamp VZ 990211	Oil Temperature Sensor VZ 990225	Thermostat-Controlled Fan VZ 935054	Restraining Straps with Tie Plates VZ 935041	Standard Vehicle Fixing Device MSR VZ 935191
				
Side Restraining Rollers VZ 935042	Reinforced Eddy Current Brakes VZ 935111	Hydraulic Load Simulator for Trucks R200/2 VZ 935051	Idle Roller Set for Trucks with twin-axle drive VZ 930021	Roller cover plates R 100 Motorcycle VZ 975134
				
Mechanical Holding Device for Motorcycle VZ 975011	Axial Cooling Fan AIR 2 VZ 910152	Radial Cooling Fan AIR 7/2 VP 160006	Radial Cooling Fan AIR 7/2 for Trucks VP 160011	Additional Cooling Fan VP160009
				
Communication Desk 3000 VZ 950043	Wireless Remote Control	Approach Ramps 2.3 m VZ 975218	Fuel Consumption Meter for Cars VZ 994013	Fuel Consumption Meter for Trucks VZ 994010

MAHA Performance Dynamometer Concepts



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Testing Technology for Cars, Trucks, Motorcycles, Tractors, Forklifts, Aircraft · Roller Brake Testers · Platform Brake Testers · Shock Absorber and Suspension Testers · Side-Slip Testers · Play Detectors · Roller Dynamometers for Performance and Function Testing · Speedometer Testers · Tachograph and Taximeter Testers · Axle and Wheel Load Scales · Scissors Lifts · Two- and Four-Post Lifts · In-Ground Lifts · Pit Jacks · Axle and Transmission Jacks · Mobile Column Lifts · Headlight Testers · Diesel Smoke Meters · Emission Testers for Petrol and Gas Engines · Sound Level Meters · Air Conditioning Service Equipment · Decelerometers · Closing Force Meters · Brake Fluid Testers · Complete Test Lanes for Cars and Trucks · Mobile Test Containers · Wheel Alignment Analysers · Wheel Balancers · Tire Changers.
Additional Services: Workshop Design and Planning · Training Seminars for Users and Service Technicians

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