



SUSPENSION TECHNOLOGY

For passenger cars, vans and commercial vehicles

- ◆ Side-Slip Tester
- ◆ Axle Play Detector
- ◆ Axle Damping Tester



SIDE-SLIP TESTER

MODEL: MINC PROFI / MINC I / MINC II

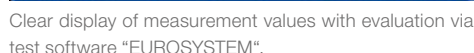


For trucks, passenger cars and motorcycles

- ◆ Instant checking of axle geometry
- ◆ Easiest possible handling with fully automatic measurement
- ◆ Display, evaluation and documentation of measurement values via existing brake tester display



The MINC series side-slip tester inspect the respective axle geometry on the vehicle simply by driving over it. As an evaluation a flush-floor installed test plate is pressed either to the left or the right at drive-over depending on the respective wheel side-slip. The tracking display is presented either on the existing brake tester display or on an additional display "analogue or digital". Problems are indicated as messages or color graphics on the screen. The operator receives instant evidence about the straight ahead driving behavior of the vehicle and decision assistance about the necessity for a suspension measurement or alignment.



The test results can be documented with a print out and presented to the customer.

Axle Load	2000 kg	3000 kg	15000 kg
Measurement range	+/- 20 m/km	+/- 20 m/km	+/- 20 m/km
Track plate width	400 mm	400 mm	700 mm
Floor grouping dimensions (L x W x H)	1020 x 460 x 80 mm	1020 x 460 x 80 mm	1020 x 770 x 135 mm
Power supply			230 V / AC, 50 – 60 Hz

AXLE PLAY DETECTOR

MODEL: PMS / LMS



For passenger cars, vans, buses and trucks up to a max. axle load of 20 t

- ♦ Fast determination of faults and wear at steering parts, wheel bearings, spring systems and mounting suspensions
- ♦ Single man operation
- ♦ Check the wheel bearing clearance without lifting the vehicle
- ♦ Extremely robust self-supporting design
- ♦ Two test plates integrated in the base at ground level
- ♦ Powerful even movement using a hydraulic drive
- ♦ Low-maintenance
- ♦ Low noise oil-submerged unit (over-oil unit, optional)



PMS, model 3/X can be integrated in an installation pit or in a lift, e.g. DUO. We recommend the other models for the installation pit.



The axle play detector is operated via LED radio hand lamp (supplied as standard, except for PMS 101 / LMS 101)



Models PMS 101 / LMS 101 can be operated via cable hand lamp only. This is also suitable as an alternative to the LED radio hand lamp in combination with the other models.



Two test plates at ground level integrated in the base

LED radio hand lamp for axle play detector:

- Small size for excellent handling L x W x H = 190 x 60 x 36 mm, low weight and ergonomic form as well as anti-slip, rubber surface
- Shatter resistant casing
- LED lighting with intense lighting power and low electrical consumption
- Battery 3.6 VDC / 2100 mAh with high capacity (approx. 7 h constant light with fully charged battery possible, recharging time approx. 6 h with completely discharged battery)
- Various fixing and storage possibilities via loop, clip and (removable) magnet
- Rugged, mechanical transmit key
- Rugged foil keypad as function keys

TECHNICAL DATA

	PMS 101	LMS 101	PMS 3 / 2, PMS 3 / X-PIT	LMS 20 / 2	PMS 3 / X, PMS 3 / XL
	Plates guided on maintenance-free Teflon rail, manual switching of crosswise and longitudinal movement		Plates guided by hard chrome-plated round guide in friction bearings. All crosswise and longitudinal movements can be controlled by the inspection lamp.		For installation in MAHA lifts
Max. axle load	3500 kg	18000 kg	3500 kg	20000 kg	3500 kg
Movement of test plate	100 mm	104 mm	100 mm	104 mm	75 mm
Hydraulic oil filling level	15 l	15 l	15 l	15 l / 20 l *	dependent on lift
Test plate dimensions (L x W x T)	625 x 625 x 150 mm	740 x 740 x 232 mm	625 x 625 x 150 mm	740 x 740 x 232 mm	500 x 500 x 120 mm
Movement speed (for standard movement)	70 mm/s	30 mm/s	145 mm/s	30 mm/s / 58 mm/s *	145 mm/s
Max. thrust for each side	11 kN	30 kN	11 kN	30 kN / 31 kN *	11 kN
Hydraulic pressure	120 bar	120 bar	120 bar	120 bar / 130 bar *	120 bar
Motor of hydraulic unit	2.5 kW	2.5 kW	2.5 kW	2.5 kW	dependent on lift
Voltage supply / fuse	3 x 400 V / 16 A	3 x 400 V / 16 A	3 x 400 V / 16 A	3 x 400 V / 16 A	

* Country-specific design (not standard)

AXLE DAMPING TESTER

MODEL: MSD 3000



For passenger cars and vans

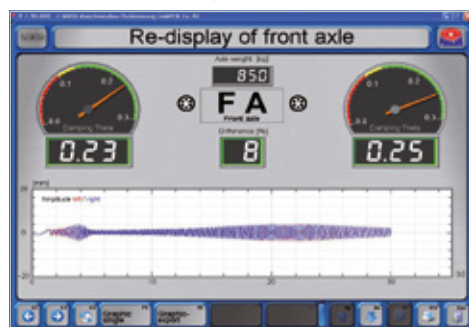
- ♦ Fast, physical inspection of axle damping
- ♦ Assessment according to damping factor "D"
- ♦ Automatic tester type after loading both test plates
- ♦ Fully automatic test sequence
- ♦ Automatic determination of the axle and vehicle weight
- ♦ Prepared for frequency-controlled noise detection

The MSD 3000 – Simple use with a high significance

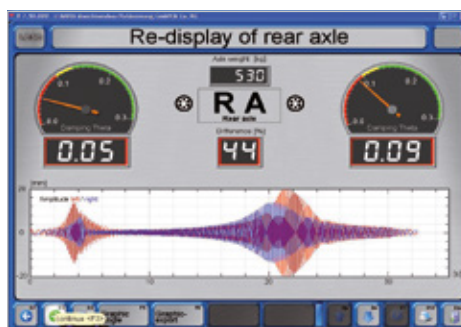
Extremely easy handling is guaranteed using the fully automatic test sequence. The customer can be presented with a substantial document with a print-out of the measured values with date and company address. The comprehensive graphic representation of the waveform using the EUROSYSYSTEM software eases the assessment even more. A comparative measurement with previous measurements can be conducted with measurements of the same or same type of vehicles. In this way, the motor vehicle specialist is given a useful supporting aid when dealing with customers.

There are also further advantages for motor vehicle workshops:

- ♦ Image revaluation as a specialist operation using a professional chassis service
- ♦ Increase in workshop utilisation and parts sales as a result of repair orders



Digital and graphic representation of measured values using the EUROSYSYSTEM software



Signifi cant representation of defective axle damping (example)



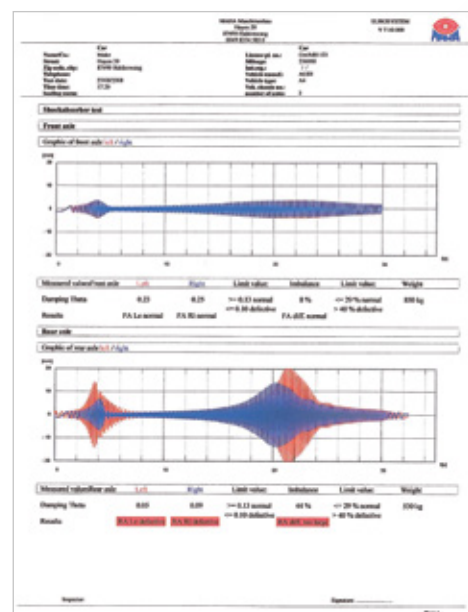
Separate representation of measured values for clear assessment

Assessment with the MSD 3000 – The new axle damping tester from MAHA

The MSD 3000 from MAHA can quickly and clearly test and assess axle damping as it makes a determination on a physical basis. The MSD 3000 operates according to the resonance method and analyses the resonance frequency of the energy present at the vibration system during resonance (wheels, axle and car body). The dimensional damping factor (also known as damping factor "D") can be determined by an additional physical assessment. This measurement principle is considered to be the most precise and was already confirmed by extensive serial examinations and comparative tests.

$$D = \frac{d}{2\sqrt{k * m}}$$

$$d(\delta) = \frac{(C_{Ges} * r)}{2\pi * f_{Messung} * X_1} - d_{Prüfstand}$$



Print-out

The test result can be documented and presented to the customer when the measured values are printed out.

The MSD 3000 – The noise detection option for test drives in the workshop

Further development of motor vehicles also brings about a reduction in interior vehicle noises. The noise level has been drastically reduced especially in passenger vehicles. As a result, customers are considerably more sensitive to unexpected ambient noises. The detection of noise sources is often associated with time-consuming test drives and this is not always successful. To solve this problem, MAHA has developed this new simulation option.

The controller enables individual switching of test plates as well as simultaneous activation of both plates. In addition, the frequency can be changed independently at each side by the operator. Due to extremely quiet operation of the tester, noises that arise during the simulation process can be detected and localised without problem. After the fault is rectified, the success of the work can be checked by the same simulation.



TECHNICAL DATA

FLOOR GROUP

Testable axle load	2200 kg
Drivable axle load	2500 kg / 13000 kg (option)
Driving power	(2 x) 1.1 kW
Excitation stroke	6,5 mm
Excitation frequency (controlled)	2 – 10 Hz
Maximum plate stroke approx.	70 mm
Track width min. / max.	880 / 2200 mm
Measurement range for damping factor "D"	0.02 – 0.3 (no units)
Voltage supply / fuse	230 V, 1 phase, 50/60 Hz / 16 A (time delay)
Start of tester	Automatic with load on both sides with more than 60 kg (adjustable)
Display accuracy	2% of measurement range value, 2 % difference between left and right side
Floor group dimensions (L x W x H)	2320 x 800 x 280 mm
Packaging height (L x W x H)	2400 x 1000 x 700 mm
Total weight approx.	650 kg

DISPLAY / CONTROLLER

Display unit	Analogue via pointer representation
Controller	Fully automatic via LON controller
Measured values	Damping factor "D", difference right/left
Display unit dimensions (H x W x D)	Analogue display for passenger cars 630/910 x 870 x 240/300 mm

LON

EUROSYSTEM	Digital via screen
	Fully automatic via communication panel
	Damping factor "D", difference right/left, graphic representation, result, axle weight
	Communication panel MCD 2000 1230 x 860 x 350 mm

GLOBAL PLAYER

... in more than 150 countries worldwide

Subsidiaries

Australia	France	New Zealand	Spain	
Canada	India	Poland	South Africa	
Chile	Ireland	Russia	UK	
China	Japan	Singapore	USA	UAE
				Vietnam

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