Mercedes-Benz Fahrwerkvermessung

Introduction

This manual illustrates certain procedures which must be carried out when measuring the setup of Mercedes Benz vehicles. They apply only to Mercedes Benz and they must be followed scrupulously when controlling and adjusting the setup.

This integration refers only to procedures applied exclusively to Mercedes-Benz vehicles.

Refer to the main instructions manual, which can be accessed by pressing “F1” in the main menu or by clicking on the question mark on the top left, for the standard operations and instructions on using the software. Select the desired topic from the contents to view further explanations.

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Checking the software installed and the active databank

Click on F12 in the tool bar of the main menu to display the information shown here.
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In the example the software version is PRO42 3.0 and the active databank is V2.04

Romess inclination measuring instrument connected

From the Home Screen select “Grundeinstellungen” (Features) From the side Carousel bar. Then select “Einstellungen der Peripheriegerate” (Connectivity Option) to open the screen shown here. Activate “Romess Inclinometer” by clicking on the toggle switch.

The inclination measurement instrument is now activated (see yellow arrow).

System configuration

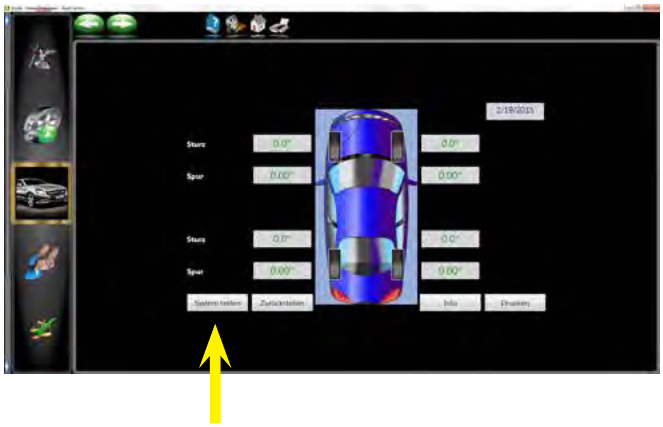
- This screen is used to configure the cameras, and if a control camera is installed subsequently.
- Select the wheel clamps to used during the alignment.
- Select if a ride height target is to be used.

Measuring points check system (MKS)

When the aligner is switched on the measuring point and work station control procedure is displayed automatically.

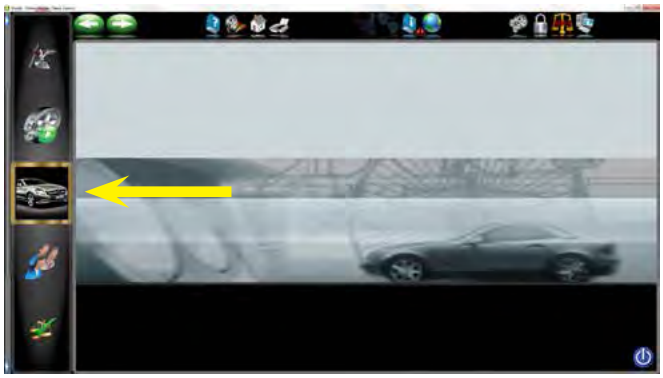
Follow the on-screen instructions.

If all the values of the control screen are green, the system and the work station are setup correctly.
If they are not, check the aligner and the work station.



The aligner can be checked with the software function. Click on

“System testen” (system test) (see yellow arrow) and follow the on-screen instructions.



Main menu

From the main menu the operator can start a Mercedes-Benz measurement

or

a measurement for other manufacturers vehicles.

Selection

In this window the operator can proceed with the setup measurement or access the measuring points control system (MKS), at any stage.

Client data

This screen is used to enter the client data, the operator name, the reason for the measurement, the vehicle type approval and the mileage.
This data is saved in a databank and they can be accessed at any time, e.g. when the vehicle must be measured again.

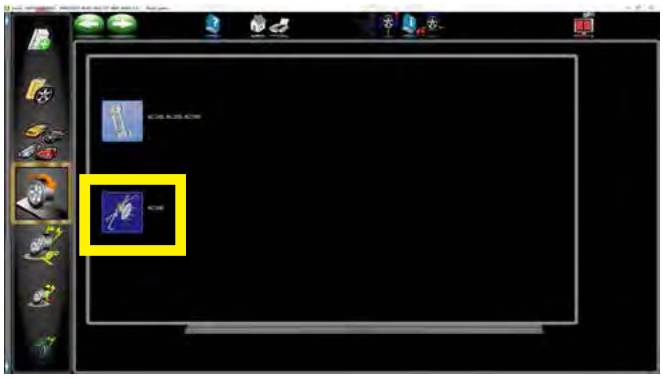
If the mileage is updated, the measurement can be performed with the previous data.
The old record can be printed at any time

Mercedes tyres information
This screen is used to document the current state of all the tyres fitted on the vehicle during the measurement.
Obviously this information will also appear in the measurement sheet.

Vehicle selection Make
The following vehicle manufacturers can be selected in this screen: MAYBACH, MERCEDES-BENZ, SMART or TRANSPORTER

After having selected the manufacturer, the operator must select the model (series).

Vehicle selection Model
After selecting the manufacturer and model, the operator must select the sub-model.



Claw selection
Use the MB quick release claws for all Mercedes vehicles with original tyres.
This is the only way to guarantee that the measurement can be performed correctly in compliance with the applicable standards.

An exception may have to be made with a Sprinter or a Mercedes vehicle with alloy rims. In such cases the operator must select the standard claw and perform a positioning.

Preparing the initial measurement
To start the initial measurement the operator must install the brake lock.

The front rotating plates and the rear rotating/ mobile plates must be released.

This sequence must be strictly followed!

Camber measurement with zero toe-in
At the beginning of the steering procedure the camber is measured on the front axis with zero toe-in.

Follow the on-screen instructions.

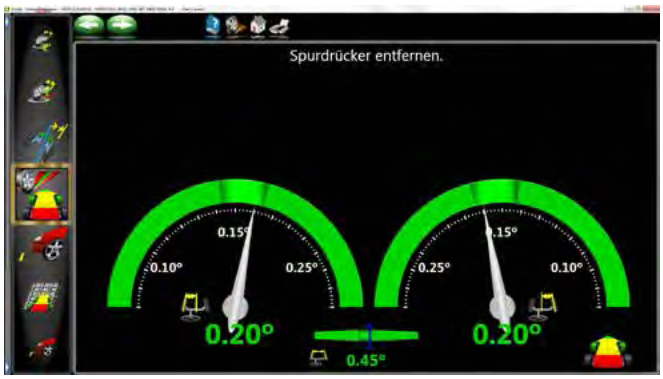
Measuring the caster / inclination of the kingpin / track difference
At the end of the camber measurement with zero toe-in, the steering procedure is performed to measure the caster, the inclination of the kingpin and the track difference.
This is performed by turning the front wheels left once, and turning them right once.

Follow the on-screen instructions.

Steering wheel alignment and blockage
At the end of the steering procedure, the steering wheel must be aligned and blocked with the steering lock.
A steering wheel alignment tool is available from Romess.

Checking the steering control and the front axis

After having installed the steering lock, fit the toe-in bar between the front wheels.
The toe-in bar is used to move the front wheels towards the toe-out. This is to check if the steering control and the front axis have any excess play.



Checking the steering control and the front axis

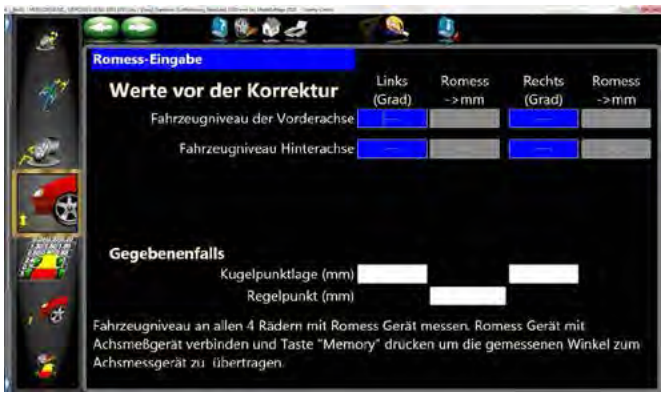
If the screen shown on the left is displayed, remove the toe-in bar once again.

The screens shown here are used to check if the toe-in bar and the front axis have any excess play.
Any excess play is shown on the screen.

Determining the setup

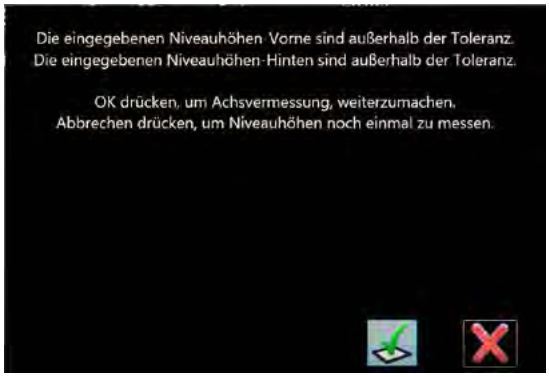
The setup is calculated with the Romess inclination measurement instrument.
The setup must be measured on the four halves of the axes.

The calculation of the setup is used to check if the vehicle is in a condition to allow a measurement and in order to use the setup measurement to calculate the relevant nominal values.



Determining the setup

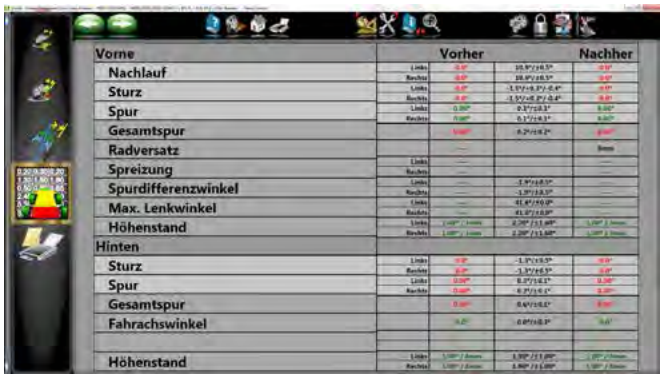
At the end of the setup measurement, the inclination measurement instrument is connected to the aligner computer in order to transfer the values measured.
The position of the balls must be measured only in older vehicles with recirculating balls steering.
The adjustment point must also be measured only in older vehicles; this is to check the operation of the setup adjustment system on the rear axis.



Determining the setup

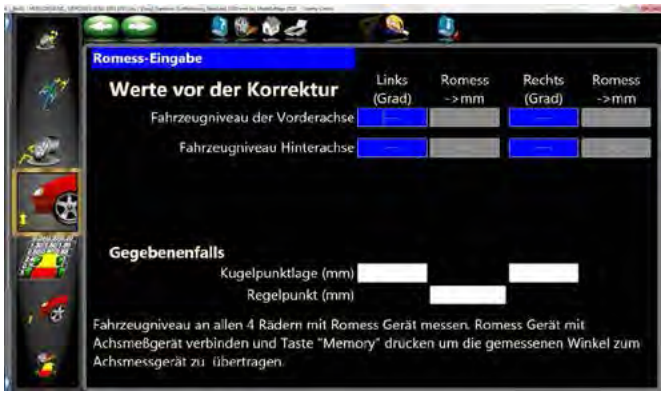
The software checks, based on the databank installed, if the vehicle being measured complies with the standards. If it does not, the corresponding error message is automatically displayed.

The operator can eliminate the error or errors with a repair or other.



Results of the initial measurement

After having completed the steering procedure, the steering check, checking the play of the front axis joint and having calculated the vehicle setup based on the applicable standards, the following screen is displayed “Anzeige aller Meßwerte” (display all values measured).
The “Vorher” (prima) column lists the results of the initial measurement. The column between “Vorher” (initial) and “Nachher” (final) provides information on the corresponding nominal values, including relative tolerances. Most of the measured values are displayed in colour, that is if the values measured are within the allowed tolerance, they are in green. If they are not within the allowed tolerance, they are in red.



Determining/controlling the setup

If the initial measurement analysis reveals that due to incorrect heights the actual values are beyond the allowed tolerances, the operator can perform the necessary repairs here.

If the setup did not have to be corrected, the software automatically extracts the data from the initial measurement of the setup.

If a correction is performed, obviously the setup changes and the operator can now perform a second measurement to continue working with the updated values.

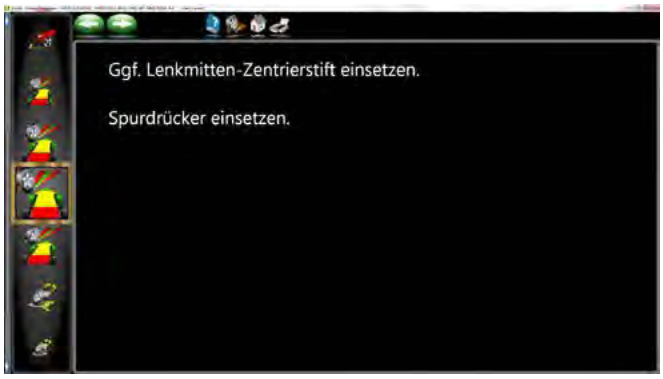
Displaying the rear measurements
After having performed the initial measurement and having calculated the correct setup, the comparators for the rear axis are displayed.
All the values are shown “live”.
The upper comparators provide information on the rear camber, the central comparators provide information on the rear toe-in and the lower comparator information on the geometric thrust angle.
This screen is used to perform the settings required for the rear axis.
Logically the camber is set first, followed by the toe-in.

The left rear camber comparator in detail.

The upper line displays the theoretical value (here -1.3°), the minimum theoretical value (here -0.8°) and the maximum theoretical value (here -1.8°). The actual value is -1.3°

If the actual value is displayed with a green background, it is within the tolerance window.

Displaying the front measurements
If the rear axis has been adjusted successfully, the front comparators are displayed.
The upper comparators provide information on the front caster, the central comparators provide information on the front camber and the lower comparators provide information on the front toe-in.
As the caster values are displayed “live”, the caster and/or the camber can be set in this screen.
Here the nominal values with tolerances are not displayed for the toe-in.
Just ensure that the caster and/or the camber are set with “zero” toe-in.
Furthermore what was set out earlier applies here too.



Preparing the front toe-in setting
In older vehicles with recirculating balls steering, fit the centring pin for the central position of the steering control.

In all vehicles use the toe-in bar according to the indications.

Setting the front toe-in

This screen is used to set the front axis toe-in:

Nominal values are also displayed with the relative tolerances inside (Innen) the comparator.

Concluding the front toe-in setting
If the front axis toe-in has been set correctly, remove the toe-in bar and the centring pin (in older vehicles).

Preparing the final measurement
Remove the steering lock.
In order to start the final measurement, install the brake lock.
Furthermore the front rotating plates and the rear rotating/mobile plates must be released.

This sequence must be strictly followed!

Camber measurement with zero toe-in
At the beginning of the steering procedure the camber is measured on the front axis with zero toe-in.

Follow the on-screen instructions.

Measuring the caster / inclination of the kingpin / track difference

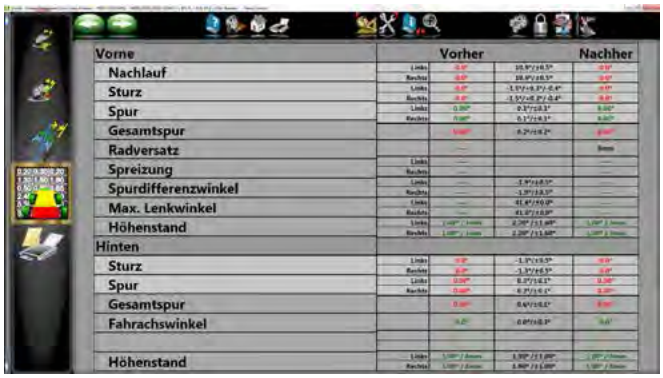
At the end of the camber measurement with zero toe-in, the steering procedure is performed to measure the caster, the inclination of the kingpin and the track difference.
This is performed by turning the front wheels left once, and turning them right once

Follow the on-screen instructions.

Measuring the caster / inclination of the kingpin / track difference

The screen on the left shows that the steering to the left has been completed and the steering to the right is partially complete.

Note: The software requires a maximum steering angle only for vehicles with nominal values for the maximum steering angle and nominal values for the relative tolerances!



Results of the initial and final measurement
This screen “Anzeige aller Messwerte” (display all values measured) displays, in the “Vorher” (initial) column the result of the initial measurement and in the “Nachher” (final) column the result of the final measurement.
The nominal values with the relative tolerances are shown between the two columns.
If all the setting operations have been performed successfully, all the values measured will be displayed in green in the “Nachher“ (final) column.

Print measurement sheet / record

At the end of the measurement and the setting, the operation is concluded by printing the measurement sheet.
Click on the printer icon to print.
Click on OK to go back to the main menu.

The measurement sheet

Meßblatt für Fahrwerksvermessung

Niederlassung/Vertretung - Betriebs-Nr.:

Kunde:

VIN: Auftrags-Nr.:

Techniker: Datum: 1/22/2015 4:08 PM

Kennzeichen: Erstzulassung: Tachometerstand (Km/meilen):

Typ: MERCEDES-BENZ, 2004, 171 (R171 / SLK) ECE / USA Normal

Beanstandung bzw. Grund der Vermessung:

Reifenfabrikat: Reifenbezeichnung: Reifenlaufleistung: (Km/Meilen):

VA
HA

Reifen-Luftdruck (kalte Reifen) bar/psi		vorne links	vorne rechts	hinten links	hinten rechts
Reifen-Profiltiefe (mm)	Außen				
	Mitte				
	Innen				

			Vor der Korrektur	SOLLWERTE	Nach der Korrektur
Fahrzeugniveau der Vorderachse fahrbereit		Links	1.00° / 3mm X ed	11mm /±10mm	1.00° / 3mm X ed
		Rechts	1.00° / 3mm X ed	2.22° /+1.63°/-1.58°	1.00° / 3mm X ed
Kugelpunktlage		Links			
		Rechts			
Fahrzeugniveau Hinterachse fahrbereit		Links	1.00° / 8mm ed	17mm /±10mm	1.00° / 8mm ed
		Rechts	1.00° / 8mm ed	1.92° /±0.99°	1.00° / 8mm ed
Regelpunkt bei Niveauregulierung					
Hinterachse	Sturz	Links	0.0° X	-1.3° ± 0.5°	0.0° X
		Rechts	0.0° X	-1.3° ± 0.5°	0.0° X
	Nachlauf	Links			
		Rechts			
	Spur	Gesamt	0.00° X	0.55° ± 0.10°	0.00° X
		Links	0.00° X	0.30° ± 0.10°	0.00° X
		Rechts	0.00° X	0.30° ± 0.10°	0.00° X
	Fahrachswinkel		0.0°	0.0° ± 0.3°	0.0°
Vorderachse	Sturz	Links	0.0° X	-1.5° + 0.3° / - 0.4°	0.0° X
		Rechts	0.0° X	-1.5° + 0.3° / - 0.4°	0.0° X
	Nachlauf	Links	0.0° X	10.9° ± 0.5°	0.0° X
		Rechts	0.0° X	10.9° ± 0.5°	0.0° X
	Spurdifferenzwinkel	Links		-1.9° ± 0.5°	
		Rechts		-1.9° ± 0.5°	
	Radversatz				
	ungedrückt	Gesamt	0.00° X		0.00° X
		Gesamt	0.00° X	0.20° ± 0.15°	0.00° X
	Spur	Links	0.00° X	0.10° ± 0.10°	0.00° X
		Rechts	0.00° X	0.10° ± 0.10°	0.00° X
	Maximaler Lenkwinkel am kurveninneren Rad	Links		41.6° ± 0.0°	
		Rechts		41.6° ± 0.0°	

ed = Manuelle Eingabe **D = Links/Rechts Unterschied** **X - Istwerte außerhalb der Toleranz**

Systemtyp: JBC V3400 MB Software-Version MB 3.0 Alpha Datenbank-Version V2.04