GB **User's manual**

# KIT SUPERTRACKER 420RW

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CONTENTS

## ► General warnings

- The manual refers to the essential requirements set out in the directives, standards and provisions pertaining to use of the machine summarising the most significant points.
- In addition to the service instructions, the general rules of law and the binding rules regarding the prevention of accidents and protection of the environment must be observed.
- For all the work to be carried out with or on the machine, the following provisions must be complied with as well as the general safety regulations following the instructions.
- The user must ensure that the machine is always and only used in perfect condition taking into account the essential safety requirements and the applicable regulations.
- The machine must immediately be put out of service if any defects or malfunctioning is found.
- Only trustworthy persons may work with the machine; the user is responsible for ensuring that the persons assigned to the job are suitably qualified and trained.
- For any doubts about use and maintenance of the machine, consult this manual; if necessary, contact the authorised technical service centres.

## ► Precautions and instructions for safety, use and maintenance

- The data plate bearing the voltage and frequency data is affixed on the rear of the machine. **NEVER CONNECT THE MACHINE TO A VOLTAGE OR FREQUENCY OTHER THAN THOSE INDICATED.**
- The machine is equipped with a 3-wire plug with incorporated earth to be inserted only in an earthed socket. If it is not possible to fit the plug in a socket of this kind, please consult an electrician.
- Do not modify or improperly use the plug.
- This machine is not equipped with a manual power cutting device. To cut the power, pull out the plug or turn off the main switch positioned upstream.
- All the operations on live electrical parts must be performed after turning off the power switch on the electric cabinet.
- Do not remove or make unrecognizable the danger warning plates, adhesive labels and markings on the machine and
- make sure that they are always legible.
- All the maintenance and inspection operations must exclusively be carried out by qualified persons.
- Mechanical and electrical repairs as well as setting operations may only be carried out by qualified persons.
- Unauthorised persons must be prohibited from performing any work on the machines and equipment of the system.
- In the event of significant faults that may compromise the safety and/or reliability of the machine, it must be stopped and in any case not started before the faults have been corrected.
- It is prohibited to transform or make modifications to the electric system.
- The user will be held responsible for any damages as a result of such modifications. In case of doubt, please contact the manufacturer before making any modifications.
- Exclusively use original fuses with the specified capacity in ampere! In the event of electrical power supply faults, the machine must immediately be turned off.
- Defective fuses may not be repaired or deactivated, but must be replaced with fuses of the same type.
- Comply with the environmental protection regulations when disposing of waste substances or replaced parts.

The wheel aligner is a machine intended for measuring the characteristic angles of motor vehicles, in particular, the camber, toe-in and caster.

## ► Technical data

### Power supply and consumption

**Measuring cabinet**

| | |
|---|---|
| Power supply: | 230 VAC single-phase 50/60 Hz<br>115 VAC single-phase on request |
| Max power absorbed: | 0,46 kW |
| Max current absorbed: | 2 A - 230V<br>4 A - 115V |

**Measuring heads**

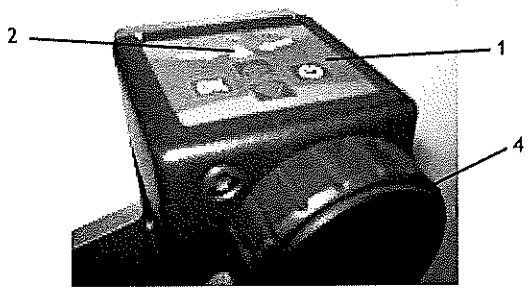
| | |
|---|---|
| Internal power supply: | 7.2 V rechargeable batteries (Li-Ion) |

## ► Components

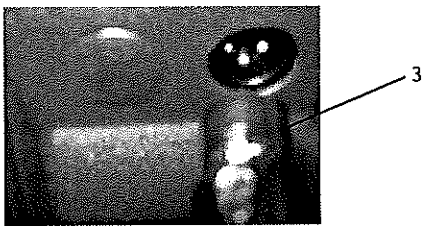
### Measuring heads

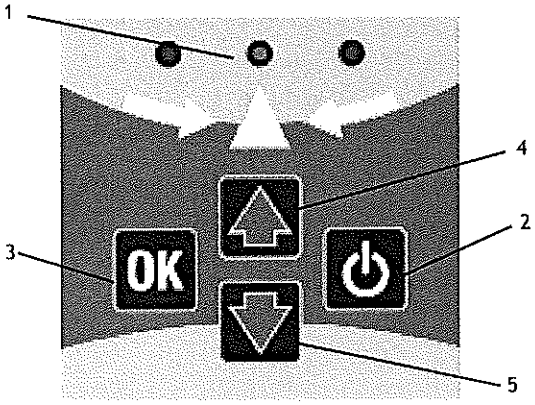
The measuring heads are made up of CCD transducers to measure the horizontal angles and accelerometers to measure the vertical angles. The power is supplied by rechargeable batteries; when the batteries are flat, measurements can still be made by connecting the battery charge cables - supplied as option and not included in the standard equipment - to the measuring heads.
To turn on the measuring heads press any key on the keypad.

*The measuring heads turn off automatically after about 15 minutes if no data is transmitted.*

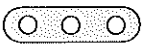



1. *Keyboard*
2. *3 LEDs for measuring head levelling*
3. *Connector for battery charge cable*
4. *Pin locking knob*

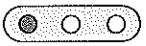


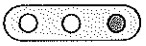

1. *Level indicator with red/green/red LED*



Measuring head level



Measuring head off level



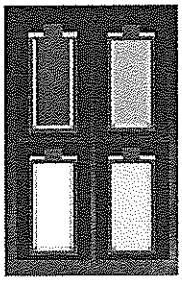
Measuring head off level

2. *Power on/off*
3. *OK*
4. *Next page*
5. *Previous page*

## ► 1.1 - Battery and communication status

On some pages battery icons are displayed, which indicate the status of the batteries and the communication between the computer and the measuring heads.

FRONT LH



FRONT RH

REAR LH

REAR RH

The colour of the battery icons indicates the status of the battery charge:

- Light blue: battery recharging or almost fully charged

- Green: battery charged

- Yellow: battery low; estimated operating time 60 minutes

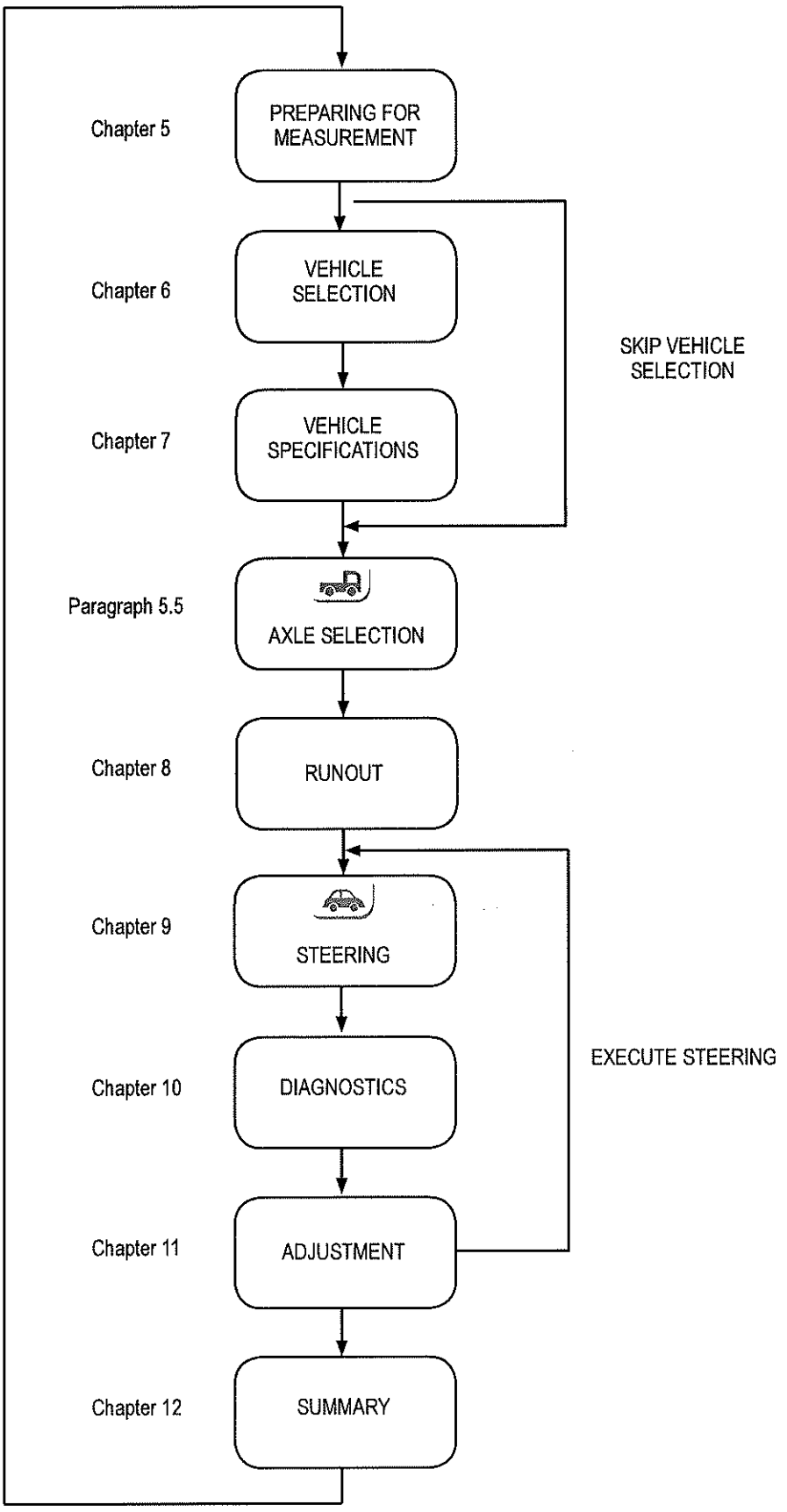
- Red: battery flat estimated operating time 30 minutes

- Grey: no communication

- Black: rear measuring head not used in the 2 measuring heads mode

# 2 - PROGRAM FLOW

The following flow chart schematizes the typical program flow for a car or truck with only two axles. In case of trucks with more axles certain operations must be repeated.



## ▸ 3.1 - Home page

The home page appears at the beginning of each alignment procedure.
From this page you can select:

- the car and truck alignment procedure (if enabled)
- the measuring mode with 2 or 4 measuring heads.

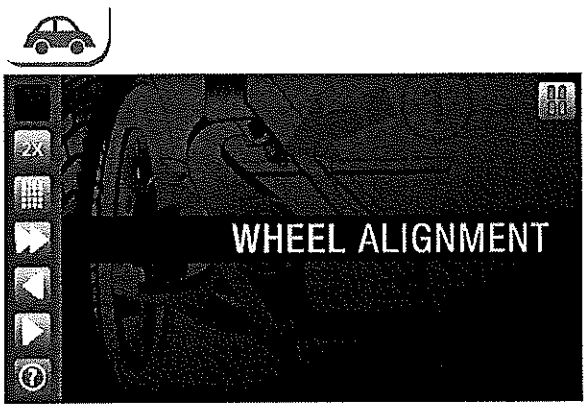
The measuring mode with 2 measuring heads allows measuring and adjusting only the toe-in and camber of the front axle. The measuring mode with 4 measuring heads is faster because you do not have to fit the rear measuring heads.

*It is recommended that only experts use the mode with 2 measuring heads as it is not guaranteed that the steering wheel stays straight.*

Generally, when the home page is displayed, the preliminary operations on the vehicle are performed.

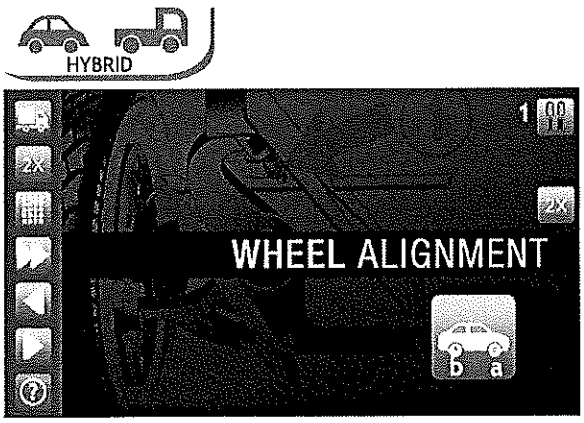
*To prepare for measurement:*

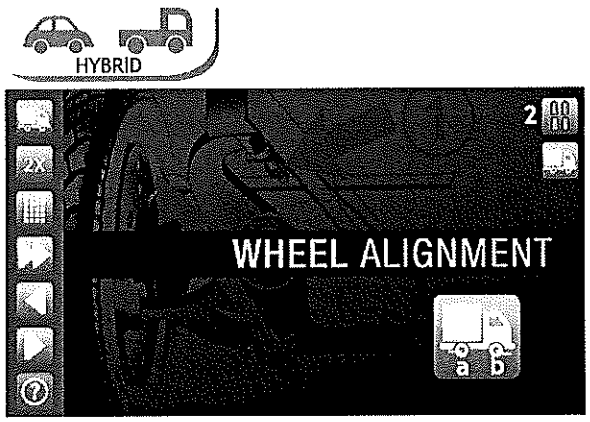
1. Position the vehicle on the turnplates
2. Mount the wheel clamp and the measuring heads on the vehicle wheels
3. Turn on the computer
4. Turn on the measuring heads





*If HYBRID mode is active:*



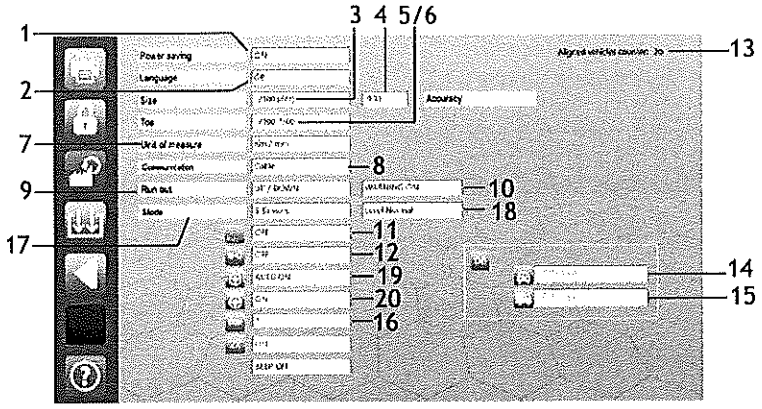




*Measuring heads positioning:*

a. Sensor type CAR
b. Sensor type TRUCK

## ▶ 3.2 - Settings

To access this page from the home page press F3 and then F1.




*The following parameters can be set:*

1. Time of inactivity after which the measuring heads go into standby to reduce battery consumption (infrared LEDs off).
2. Language
3. Format of the fractions of an angle
   - '/100 (dec) = hundredths of a degree (centesimal degrees)
   - °/60 (min) = sixtieth of a degree (sexagesimal degrees)
4. Angle resolution shown on the display (the actual resolution of the instrument does not change)
5. Toe-in format and resolution
   - '/100 °/60 = degrees, resolution specified in box 6
   - mm = millimetres, resolution specified in box 8
   - inch (dec) = inches, resolution in tenths of an inch
   - inch (1/4) = inches, resolution in fourths of an inch
   - inch (1/64) = inches, resolution in sixty-fourths of an inch
6. Toe-in resolution if expressed in millimetres or inches
7. Distance unit of measure
8. Type of communication between the measuring heads and the computer ('Cable' = via cable) 'BT' = Bluetooth; 'BT2' = Second generation Bluetooth)
9. Type of runout permitted ('UP/DOWN' = both lifted and on the ground; 'UP' = lifted only; 'Bypass' = runout execution not required)
10. Enables checks on correct runout execution
11. Help texts:
    - OFF: disabled
    - ON: displays on the screen buttons their name
    - ON+INF: displays the previous and pages titles
12. Settings page password ('ON' = password required to access the Settings page)
13. Number of alignments executed
14. Car database active
15. Truck database active
16. COM port setting ⚠ do not change (reserved for technical service).
17. In IBRIDA or HYBRID mode (*): measurements made with all the sensors (8 sensors) or disabling the rear toe-in sensors (6 sensors). This second setting is useful in order to be able to make a measurement also if the rear toe-in radius is interrupted. * The measurement execution mode requires the use of 2 CAR sensors and 2 TRUCK sensors.
18. ( ) Level sensor tolerance. Select the 'Normal' setting to optimise measurement accuracy. Use the 'Wide' setting only if you have difficulty keeping the measuring heads level, for example, when measuring with the engine on
19. Option to disable caster measurement:
    ON: steering required
    OFF: steering not required
20. Automatic next page for the brake pedal lock and steering lock positioning pages

    AUTO ON: the next page is automatically displayed after 15 seconds

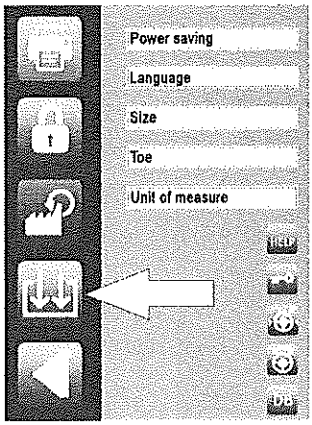
    AUTO OFF: you need to press F6 to go to the next page

## ▸ Data export setting

It is possible to save automatically and daily any single alignment anywhere in the network.
Any file contains the complete daily measurements before and after adjustment.

*How to set it:*

- Create a new folder where wished to save the data. Any accessible path in the network can be used.
- Enter the SET-UP page and select the DATA EXPORT icon (  )

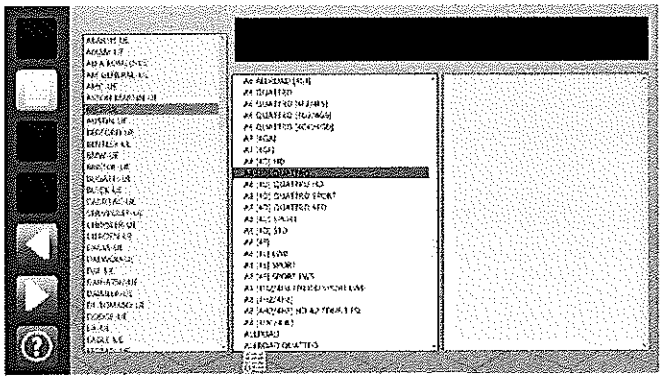



- Click on ENABLE (LED must be on)
- Browse to the folder previously created
- *Optional*: insert the aligner serial number. It will be saved with the data.

# 4 - VEHICLE SELECTION

## ► 4.1 - Selecting a vehicle

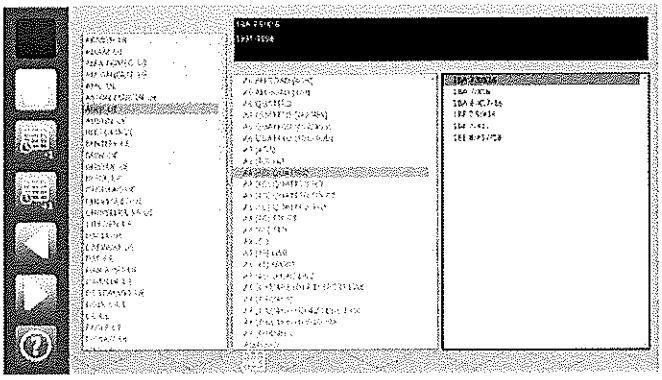
The Vehicle Selection page allows selecting a vehicle so that during adjustment you can compare the measurements with the manufacturer's specifications and display adjustment help images.
Select the vehicle first by manufacturer and then by model and sub-model. For faster selection of the model you can display only the models registered as of the year indicated.
You can also insert informations on a customer, which are saved in the customer databank together with the summary of the measurements so that they can be viewed and printed later.



F2 : to enter informations customer

A ... Z , ◄ / ► : to select the desired make

F6 / Enter : confirms the make of the vehicle selected



F2 : to insert customer informations

F3 F4 : decreases/increases the year of registration with which the models are filtered

A ... Z , ◄ / ► : model selection

F5 : previous page (vehicle make selection) .

F6 / Enter : confirms the model selected and goes to the database

F7 : help

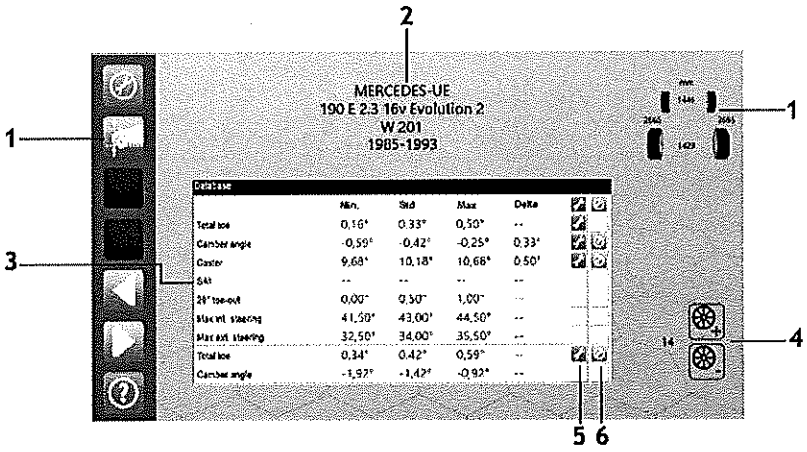
# 5 - VEHICLE SPECIFICATIONS

The "Vehicle Specifications" page allows analysing the manufacturer's specifications to decide which operations are to be performed.
In most cases the manufacturer specifies the minimum, standard and maximum values for the main angles: toe-in, camber and caster.

Nevertheless, in some cases the manufacturer might:

- Require to position loads in the vehicle or fill the tank before making the measurement and adjustment
- Specify angles normally ignored: SAI, TOOT or maximum steerings
- Specify the maximum values for the difference between the right and left wheel camber or caster
- (car only) Prescribe a special adjustment method, as the 'Toe-in curve'
- Give different specifications based on the measurements of the ride height or the inclinations of parts of the suspension.
- Check some vehicle measurements (e.g. ride height or component tightening torque) or apply special tools (e.g. toe-in bar) before making the measurement and adjustment

You can also set the rim diameter in order to correctly display the toe-in in millimetres or inches and customise the vehicle specifications.




1. ( ) *Wheelbase and track;* ( ) *Axles to which the specifications refer*
2. *Vehicle - make, model, sub-model or technical name, date of start and end of production.*
3. *Specifications. Minimum, standard and maximum values and maximum difference between the right and left wheels.*
4. *Rim diameter (inches)*
5. *If the wrench icon appears, the vehicle angle is definitely adjustable. If it does not appear, the angle might be adjustable any way.*
6. *If the camera icon appears during adjustment you can view the adjustment help images.*

*If you do not set the correct rim diameter when the toe-in is displayed in millimetres or inches, the measurement may differ from what is obtained when measuring the toe-in with a rule. Nevertheless, the rim diameter does not need to be set correctly in order to correctly adjust the vehicle; it is sufficient to position the indicator in the green zone during adjustment.*

F1 : displays any Adjustment Help Images 5.1

F2 : displays the ride height page 5.2

F3 : displays the weights and percentage fuel in the tank 5.3

Page Down +, F4 : allows creating a customised vehicle 5.4

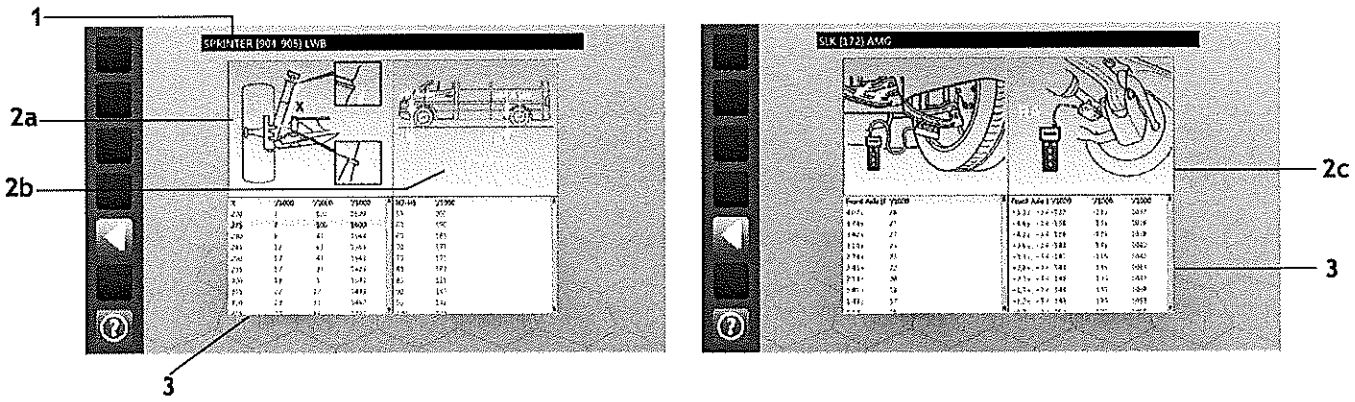
/ : decreases/increases the rim diameter

## ▸ 5.2 - Ride height

To access this page, press F2 from the Vehicle Specifications page

*The Ride Height page allows:*

- Viewing which measurements on the vehicle are required by the manufacturer (ride height or inclination of parts of the suspension) and if necessary enter the results.
- Viewing which measurements to check on the vehicle before making the measurement and the adjustment (e.g. chassis height or component tightening torque)
- Viewing which special tools to apply (e.g. toe-in bar)




1. *Vehicle*
2. *Images of the measurements to be made on the vehicle or the tools to be applied.*

   *Examples:*

   *a. Position the toe-in bar*

   *b. Measurements with rule*

   *c. Measurements with inclinometer*
3. *Tables*

Once the tools have been applied and the measurements made, consult the tables.

- If they indicate that you need to check that the measurement is within a certain tolerance interval and this is not the case, act on the vehicle adjustments to bring the measurements within tolerance.
- If they indicate that you need to enter the measurement made, select the row from the corresponding table. The vehicle specifications are modified as a result.

*You are advised to follow the manufacturer's indications; if it is required to set the measurement and this is not done, average values are used for the specifications.*

Tab / Shift + Tab : selects one of the two tables

: selects the value of the measurement made on the vehicle (used only for tables that indicate that the modification selected must be entered)

F5 : goes back to the Vehicle Specifications page, if necessary changing the values of the vehicle angles based on the measurements made

1. *Wheelbases and tracks*
2. *Manufacturer, model, sub-model or technical name, year of registration of the vehicle (enter in the format 'aaaa - bbbb'*
3. *Angle values. The first 3 columns indicate: Minimum/standard/maximum or standard/upper tolerance/lower tolerance depending on what was selected with* F1. *The fourth column indicates the maximum difference between the right and left wheels. The monkey spanner indicates whether the angle is adjustable (R = adjustable; N = not adjustable)*
4. *Rim diameter (inches)*
5. *Weights and percentage fuel in the tank*

F1 : selects the unit of measure and the format of the data to be entered (for the angles)
/60 = sexagesimal degrees (e.g. 1°55')
/100 = centesimal degrees (e.g. 1.55°)
min/std/max = data in the format minimum/standard/maximum/difference between right and left
std/toll+/toll- = data in the format standard/upper tolerance/lower tolerance/difference between right and left

F2 : saves the modifications (active only when modifying a customised vehicle created previously)

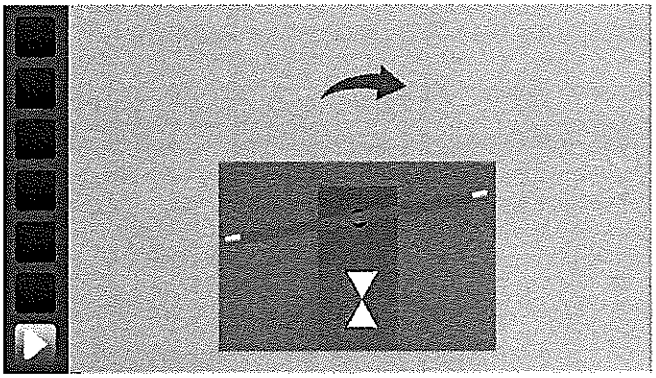
F3 : creates a new customised vehicle saving the data entered

F4 : deletes the customised vehicle (active only when modifying a customised vehicle created previously)

F5 : goes back to the Vehicle Specifications page selected previously

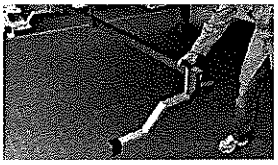
## ► ( ) 5.6 - Fit and align the bar on the fifth wheel pin

Only in the case of a semi-trailer, when you go to the next page you are asked to fit the front measuring heads on the fifth wheel pin adaptor.



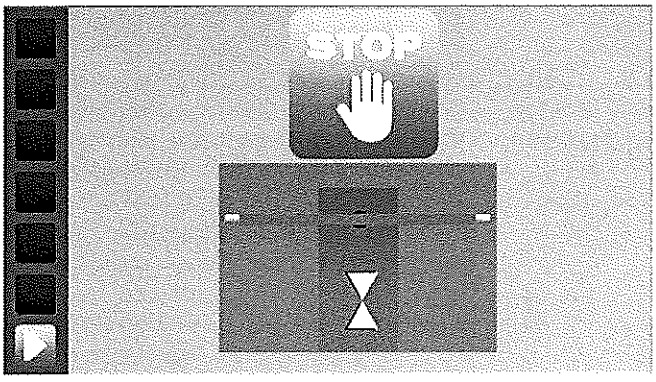
1

2

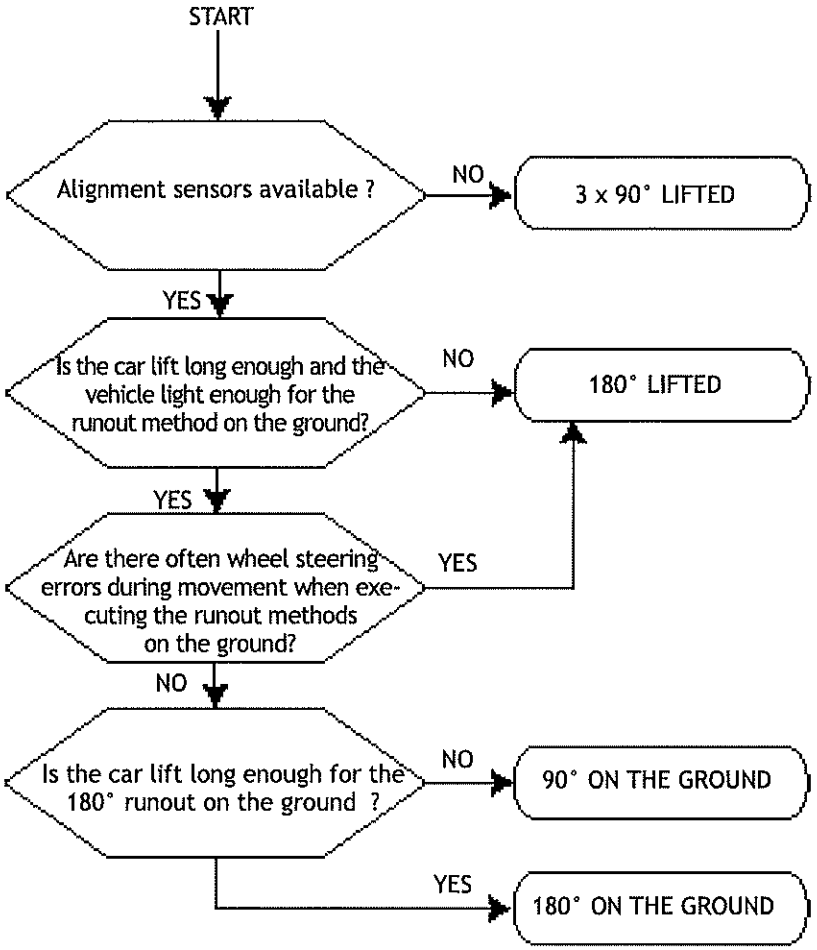


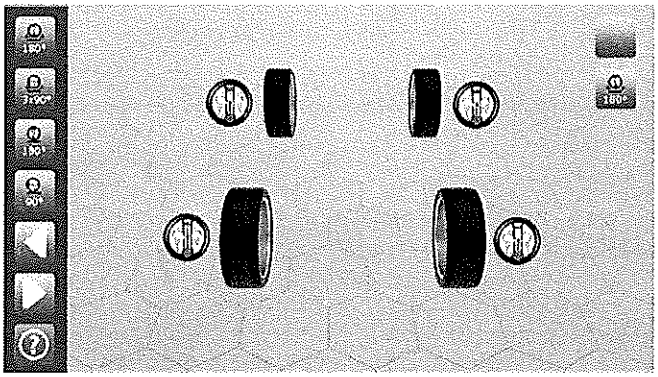
3

1. Position the bar on the pin and tighten the fastening knob
2. Fit and level the two front sensors on the bar
3. Straighten the bar aligning it following the on-screen instructions
4. Turn the adaptor as indicated until the word "**STOP**" appears.



*Scheme to follow to select the most suitable runout method:*



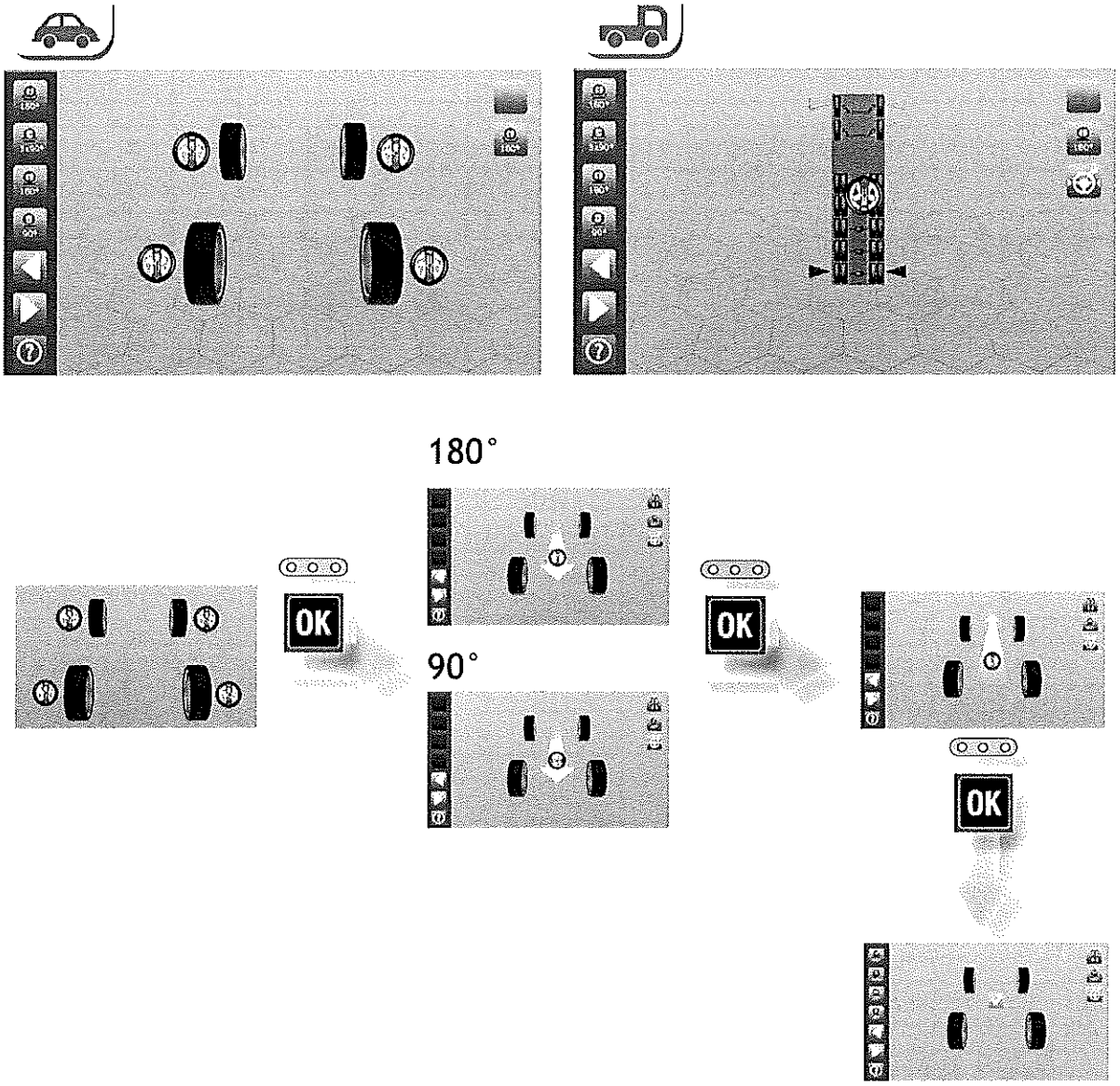
F1 : selects 180° runout lifted ☛ 6.3

F2 : selects 3x90° runout lifted ☛ 6.4

F3 : selects 180° runout on the ground ☛ 6.2

F4 : selects 90° runout on the ground ☛ 6.2

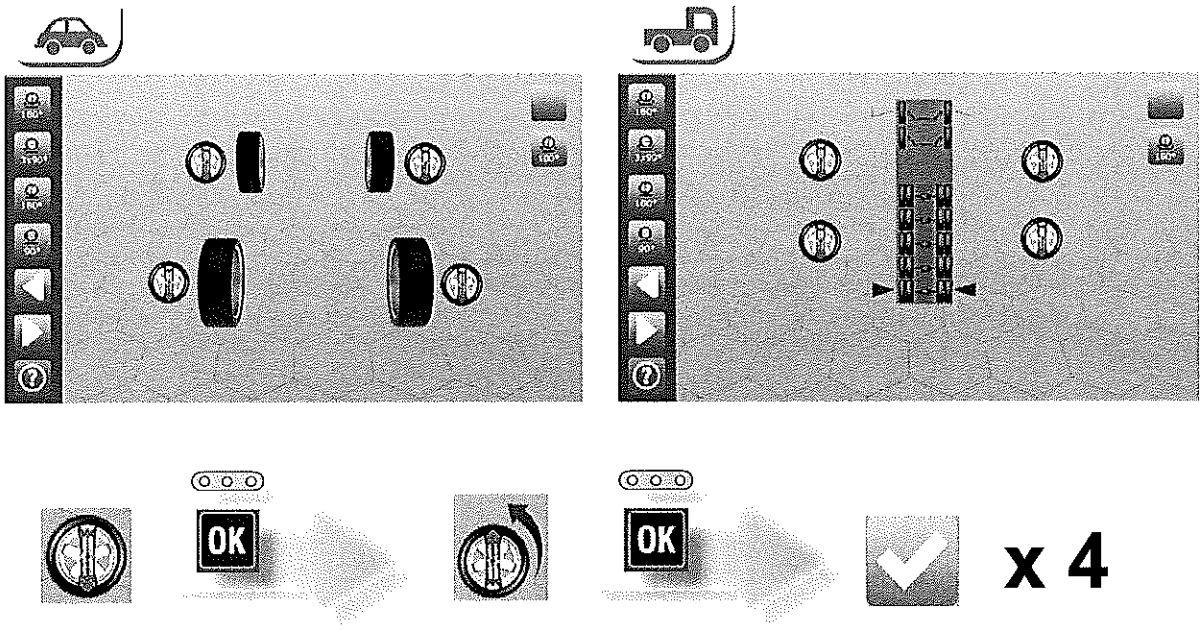
## ► 6.2 - 180° or 90° runout on the ground




1. Align the steering wheel and position the steering lock
2. Level the measuring heads (green LED) and press OK on the keypad of any one of the measuring heads
3. Push the vehicle backwards until the wheels have turned half a turn (180°) or a quarter turn (90°)
4. Level the measuring heads and press OK
5. Push the vehicle forwards until it is back in the starting position
6. Level the measuring heads, lock the handles and press OK
7. Release the front turn plates and rear slip plates

- *(90° method only): make sure that you turn the wheel with an angle within a smaller tolerance (+/-5°) than that required, otherwise the result might be inaccurate.*
- *Check that the front turn plates and the rear slip plates are locked, otherwise the result might be inaccurate.*

## ▶ 6.3 - 180° Runout lifted




1. Lift the vehicle so that the wheels are free to turn (you can also lift one wheel at a time)
2. Level all the measuring heads (green LED)
3. Turn a wheel to a reference position, for example, with the handle of the wheel clamp facing down, level the measuring head and press OK
4. Turn the same wheel by half a turn (180°) so that the knob of the wheel clamp faces up, level the measuring head and press OK
5. Repeat steps 3 and 4 for the other wheels
6. Release the front turn plates and the rear slip plates
7. Lower the vehicle
8. Settle the suspension by forcefully pushing on the vehicle so that it oscillates.

( )

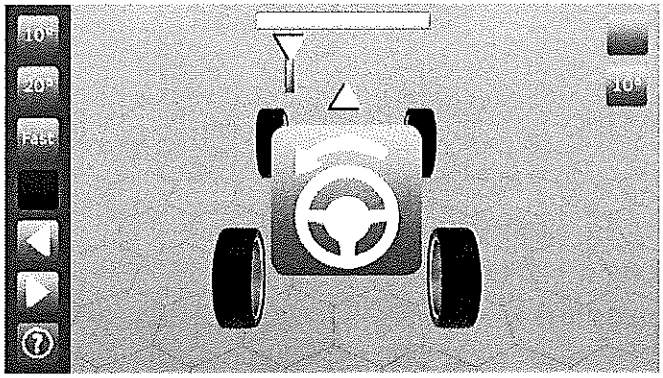
*To minimise alteration of the suspension settlement with respect to driving on he road, caused by lifting the vehicle, it is important to release the front turn plates and the rear slip plates and settle the suspension.*

# 7 - STEERING

The steering function allows measuring the characteristic steering angles: caster, SAI, TOOT.
It consists of making several measurements with the wheels steered at different steering angles.
You can select from three steering modes:

- FAST steering: recommended because it is fast to execute
- 10° steering: there is no technical reasons to use this method but it is available because many operators are accostumed to use it. It is advisable to execute fast steering instead as it is faster
- 20° steering: necessary to measure the TOOT and when imposed by the vehicle manufacturer

Press the key corresponding to the desired steering mode.



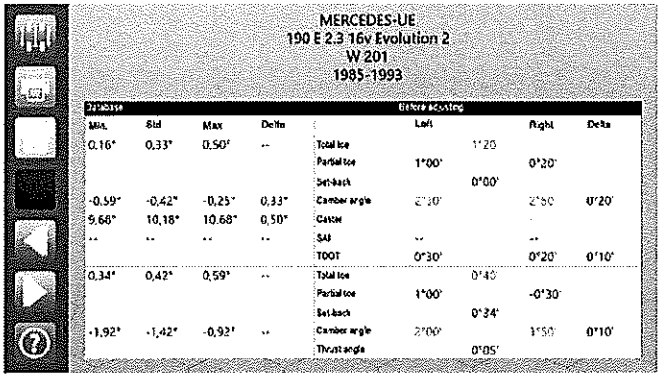

F1 : 10° steering 7.2

F2 : 20° steering 7.2

F3 : Fast steering 7.1

# 8 - DIAGNOSTICS

The Diagnostics page displays the measurements made on the vehicle before adjustment, next to the data-bank specifications. The measurements out-of-tolerance are displayed in red so that you can easily identify what to adjust.




F1 : displays the vehicle dimensions 10.1

F2 : prints the values measured

F3 : modifies the Customer Notes 4.2

## ► 9.1 - Adjustment procedures

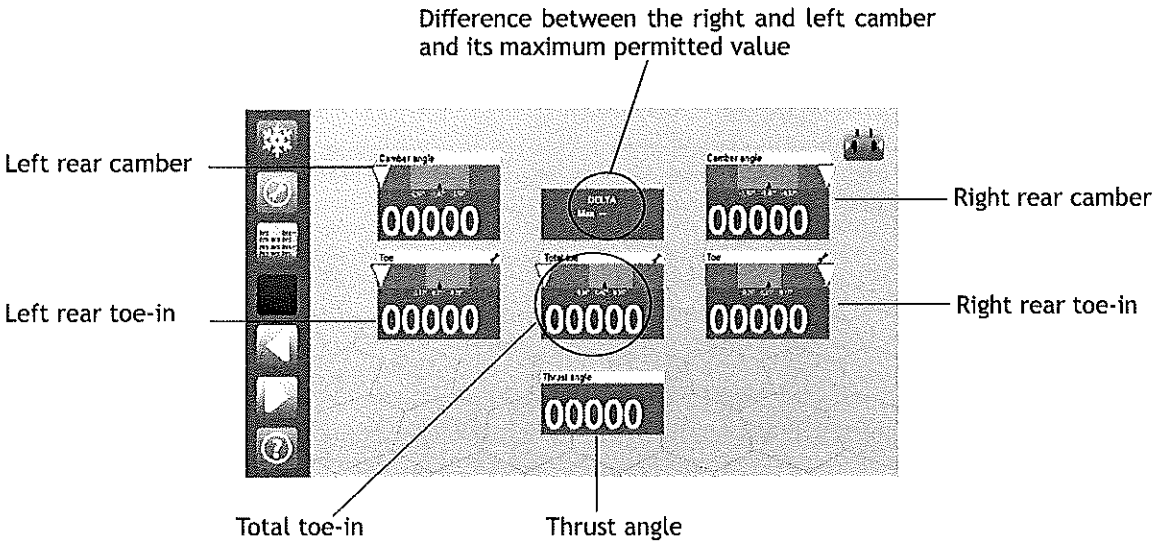
The adjustment procedure depends on the type of vehicle, the measuring mode and the manufacturer's specifications:

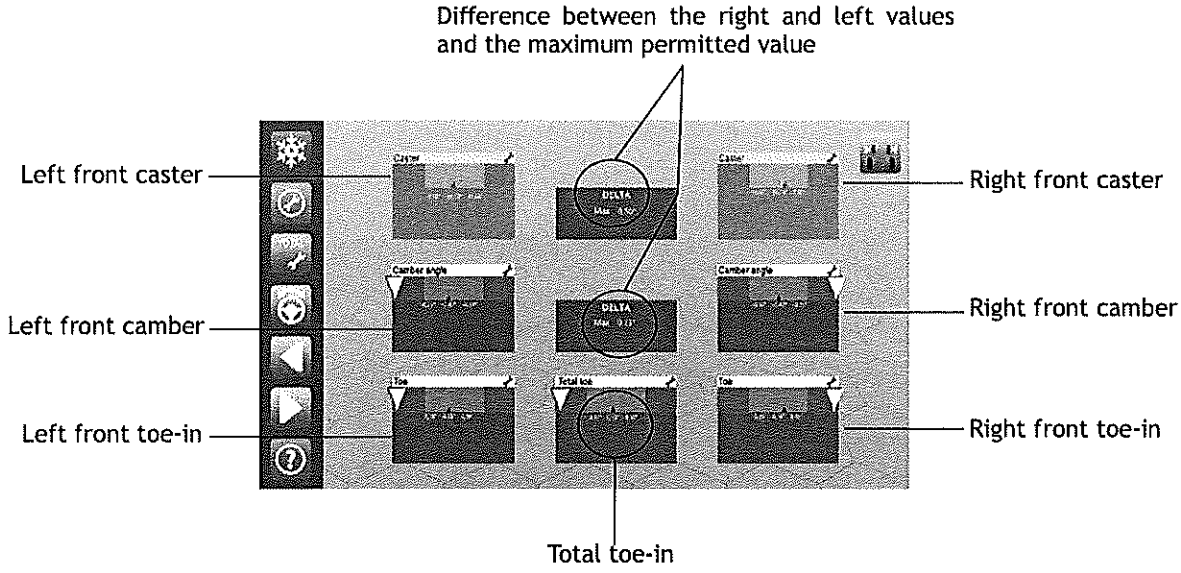
- **Adjustment procedure with two measuring heads**
  1. Front axle adjustment
- **Normal car adjustment procedure**
  1. Rear axle adjustment
  2. Front axle adjustment
- **VAS car adjustment procedure for vehicles equipped with Multilink suspension**
  1. (only in certain conditions established by the program) Front axle adjustment, except toe-in
  2. Rear axle adjustment
  3. (only in certain conditions established by the operator) Front toe-in adjustment with the vehicle resting on a support (toe-in curve)
  4. Front axle adjustment
- **Truck adjustment procedure**
  1. Rear reference axle adjustment
  2. First front axle adjustment
  3. Adjustment proceeding towards the rear of the intermediate axles
  4. If necessary, adjustment of the last rear steering axle (only if present)
  5. If necessary, adjustment of the parallelism between the two front steering axles (only if present)
- **Semi-trailer adjustment procedure**
  1. Adjusting the rear reference axle
  2. Adjusting the other rear axles
  3. Adjusting the last rear steering axle (only if present)

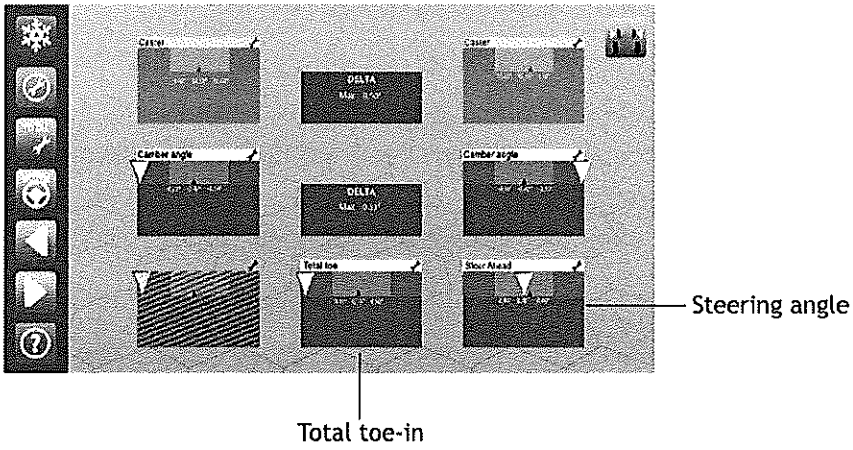
The software guides you through the adjustment procedure, one by one showing the phases to carry out. The possible phases are described in the following chapters.

## ► 9.2 - Adjusting a rear axle

The Rear Adjustment page displays the measurements and relative tolerances of the camber and partial toe-in of both wheels. It displays also the thrust angle and, in small font, the total toe-in, the difference between the left and right camber and its maximum permitted value.





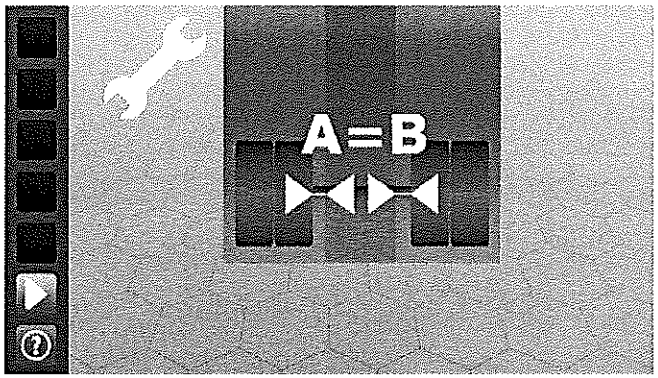

The differences between the right and left camber and caster and the relative tolerances are also displayed.
The display of the partial toe-in allows adjusting the toe-in of vehicles equipped with a suspension system that allows adjusting the two wheels independently; this is true for most cars. Vice versa, the display of the total toe-in and the steering angle allows adjusting vehicles equipped with a total toe-in adjustment bar, which does not allow adjusting the two wheels independently; this is true for all trucks and some off-road vehicles.
Adjust in order the caster, camber and toe-in of the wheels until the indicator is in the green zone

*For optimal adjustment follow the adjustment order: caster, camber, toe-in.*

From the Front Adjustment page you can go to the Steering page.
In the case of the truck procedure, if you wish to execute steering, you need to access it from this page.
In the case of the car procedure, it is advisable to repeat steering as a check if the caster is adjusted, since the caster measurement displayed on this page is necessarily an estimate.

## ► (  ) 9.4 - Adjusting a rear axle

Before the Rear Adjustment page, the Chassis Distance page appears to remind you to adjust the axle with respect to the chassis.

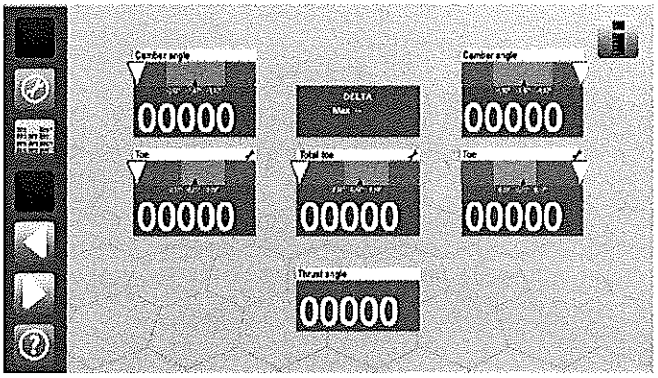



1. Check with a rule and if necessary adjust the distance between the wheels and the chassis so that it is the same for the right and left wheels
2. Press F6 or wait a few seconds for the Rear Adjustment page to appear

Even if the distance between the wheels and the chassis is not adjusted, the wheels will be aligned with each other at the end of the alignment procedure. Nonetheless, if the distances between the wheels and the chassis differ greatly for the reference axle, at the end of the procedure the wheels might not be aligned with respect to the chassis and the truck will thus move in "dog step" with the consequent aerodynamic problem.

*It is advisable to adjust the distance between the wheels and the chassis at least for the rear reference axle.*

The Rear Adjustment page is similar to that described in *paragraph 9.2*.

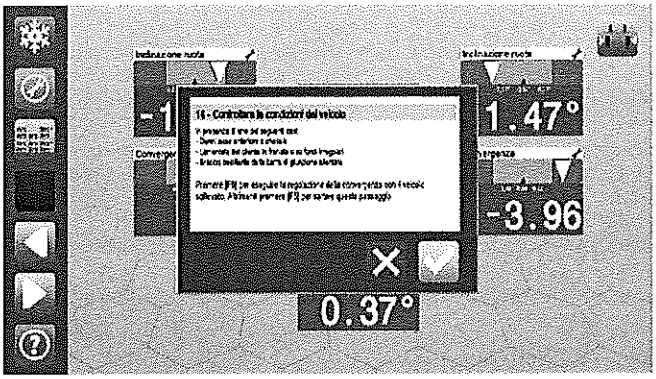



The meaning of the value displayed in the box depends on the axle being adjusted

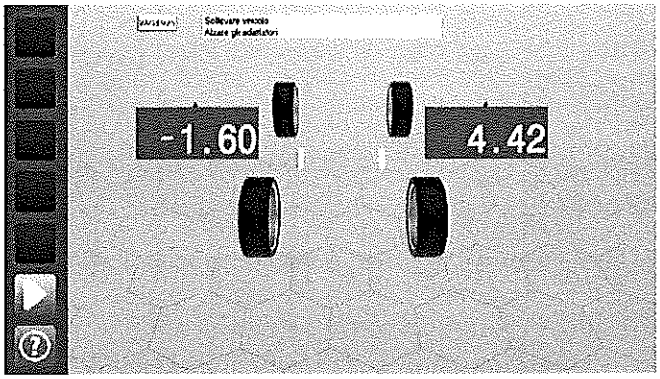
- Reference axle: thrust angle (angle between the axle direction and the truck symmetry)
- Other rear non-steering axles: scrub angle (angle between the axle direction and the thrust line).
- Rear steering axles: disabled

## ► ( ) 9.6 - Adjusting the front toe-in with the vehicle resting on a support (toe-in curve -VAS procedure)

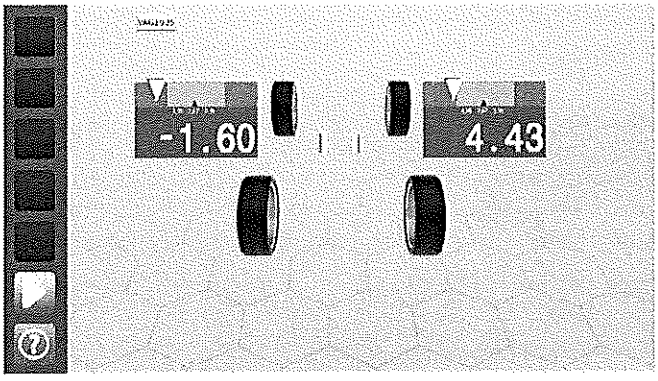
For vehicles for which the VAS procedure is required, when exiting the Rear Adjustment page, a message is displayed asking you to do some checks on the vehicle.




1. Check the vehicle conditions
   - If they do not fall within one of the cases contemplated in the message, press F5 to go directly to the Front Adjustment page
   - otherwise press F6 to continue. The following appears:




2. Lift the vehicle and position the VAS tool underneath the front axle
3. Move the adapters into "raised" position and position the vehicle on them lowering it slowly
4. Press F6. The following appears:



7. Lower the vehicle or straighten the wheels

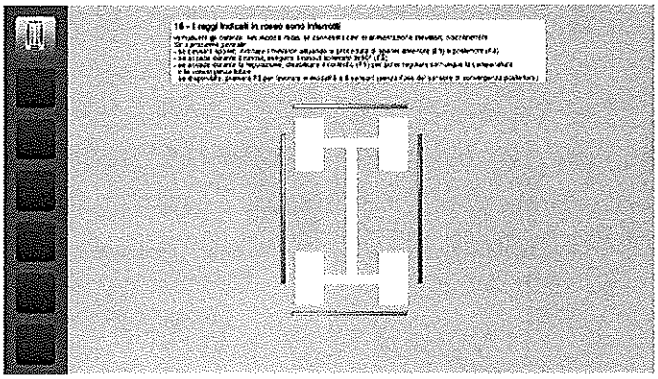
8. Press F1  to again unfreeze the measurements

If you go from the Rear Adjustment page to the Front Adjustment page with the vehicle lifted, for easier operation it is suggested to level the steering wheel and position the steering lock before lifting the vehicle.

## ► 9.8 - Adjustment in case of interruption of the infrared rays

If you are unable to adjust without standing between the optical sensors, and the warning that the rays are interrupted appears, you can disable the message in order to adjust the camber.

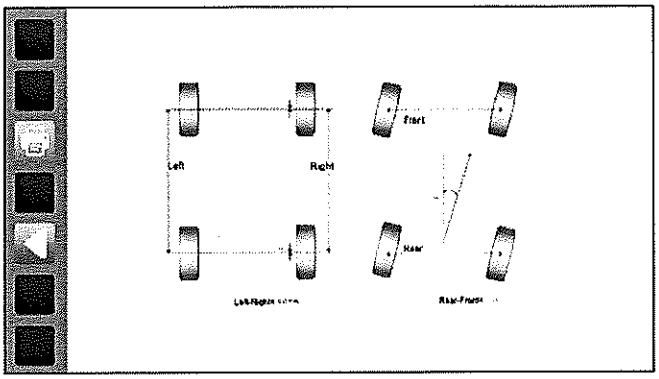
*From the page where the "rays interrupted" warning is shown:*



F1 : to disable the "rays interrupted" warning

## ► (  ) 10.1 - Vehicle dimensions

To access this page from the Summary page press F4 and then F5.
The vehicle dimensions are useful to check the symmetry and identify any damage to the suspension system or the chassis.

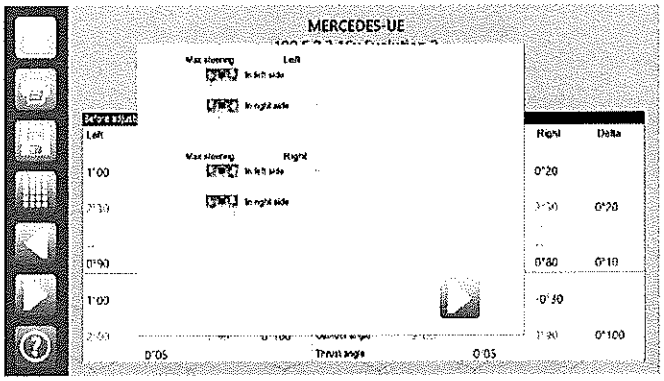



The page displays the thrust angles, axle deviation (set-back), wheelbase and track difference in value and in schematic form. These angles are displayed in degrees or in millimetres or inches according to the data available in the databank.

| | |
|---|---|
| F3 | : printing |

## ► 10.2 - Maximum steering

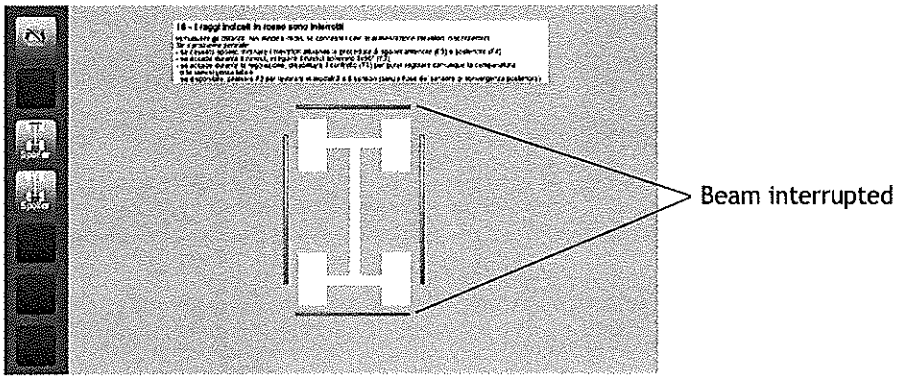
To access this page, from the Summary page press F4 and then F4.
Maximum steering allows checking correct centring of the steering box and all the directional devices connected to it. The maximum steering values are not measured by the instrument but must be physically read on the graduated scale on the mechanical turn plates.
On this page you can enter the maximum internal and external steering values for the right and left wheels so that they are shown in the printout




| | |
|---|---|
| Tab | : selects the box where to enter the respective steering value |
| 1 ... 9 | : enters the steering value read |
| F6 | : saves and exits |

# 12 - SPOILER

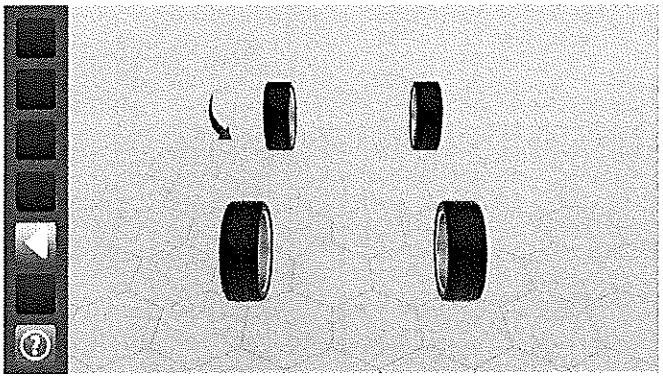
For some vehicles, especially if fitted with a spoiler, the vehicle body may get in the way of the optical toe-in sensor beam preventing measurement.




In this case, a message appears to warn you that the toe-in sensor beam has been interrupted.
In order to, in any case, make the measurement, you can start the Spoiler procedure, which consists of inclining the measuring heads that are unable to measure until the optical sensors can see each other. You can activate this procedure for the front or the rear measuring heads or both.

| | |
|---|---|
| F3 | : spoiler procedure for front axle |
| F4 | : spoiler procedure for rear axle |

1. Press F3 or F4 to activate the desired Spoiler procedure (in this example: front) The following appears:



2. Release the handle and incline the measuring head indicated by the arrow (in this example: left front) until the optical sensor can see the other side of the vehicle, then lock the handle

## ► 13.1 - Cleaning

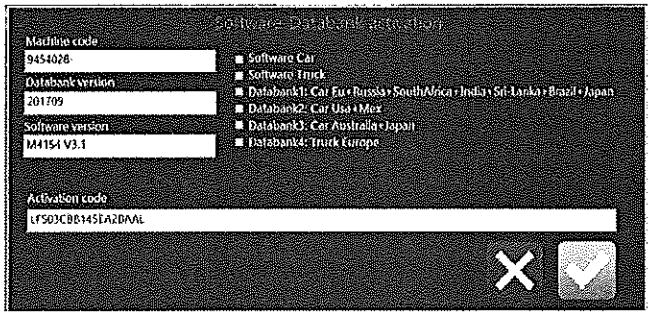
- Clean the display with a dry, soft and antistatic cloth; if it is particularly dirty, clean it with a moist cloth and then dry.
- Dust the PC keyboard with a soft brush. When not in use, it is advisable to cover the system to protect it against dust.
- Clean the optical units of the measuring heads using a moist cloth; do not use solvents.
- Cleaning, cartridge replacement and other operations relating to printer maintenance are described in the printer manual. Carefully read it before performing any maintenance operation on the printer.

## ► 13.2 - How to activate the databank and the software

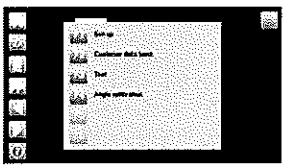
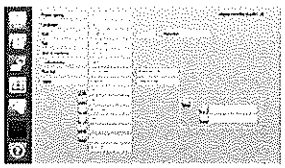
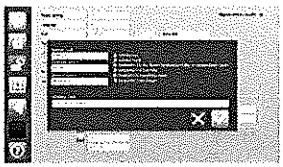
| | |
|---|---|
| **When to perform it** | • After updating the databank for which you do not have access rights (on the home page the activation window appears and the message "Invalid DB code").<br>• You wish to activate sections of the software not activated before (e.g. Truck program ). |
| **Prerequisites** | Databank and software update |

*To activate the databank and software you need to obtain the activation code from our customer service. You might not get an immediate response, therefore ask for the activation code well in advance.*

1. Display the databank and software Activation window

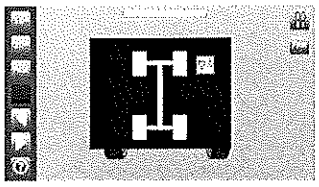



- The window automatically appears upon starting. Alternatively, starting from the Home page:
  a. Press F3 and then F1 to access the Settings page
  b. Press F2 to access the Activation window

# 14 - TROUBLESHOOTING

## ▸ 14.1 - Malfunctions

| | |
|---|---|
| **The computer does not turn on** | |
| No power supply | Check the mains socket and the connections<br>Press the computer power-on button |
| Display off | Turn on the display (button on display) |
| **The measuring head does not turn on or turns off unexpectedly** | |
| Batteries flat | Charge the batteries |
| **Battery recharging does not start** | |
| No power supply | Check the mains socket and the connections<br>Press the battery recharge button ☛ *1.2* |
| **The battery life is too short** | |
| Low ambient temperature | Normal phenomenon |
| Recharging not complete | Recharge the batteries for at least 5 hours |
| The battery has come to the end of its lifetime | Replace the battery |
| **This screen appears** |  |
| No communication | Check that all the measuring heads are on |
| **"Invalid DB Code" message or vehicle data not displayed** | |
| Databank not activated | Activate the databank ☛ *13.2* |
| **The software window is not displayed centred on the screen** | |
| Incorrect setting | Untick the option 'Always in the foreground' on the Windows application bar |

## ▸ 14.2 - Alignment problems

### The steering wheel remains askew

| | |
|---|---|
| Runout compensation not executed | • Repeat the measurement executing runout compensation<br>• If you do not intend to execute runout compensation, minimise the runout error by using 3-point wheel clamps or grippers designed to minimise the runout error of 4-point wheel clamps |
| Runout compensation executed inaccurately | Repeat the measurement and during runout pay attention to:<br>• Follow the instructions which may appear on the screen<br>• In the case of runout on the ground, fit the steering lock<br>• Turn the wheels with a small tolerance with respect to the required angles; especially for the 90° runout<br>• Release the turn plates and the rear slip plates and settle the suspension after lowering the vehicle in case of runout with the vehicle lifted |
| Alignment executed in the mode with 2 measuring heads | Repeat the measurement in the mode with 4 measuring heads |
| Steering wheel not aligned when requested | Repeat the measurement aligning the steering wheel when requested |
| Approximate adjustment of the alignment angles | Repeat the measurement adjusting the angles more accurately |
| Excessive play in the suspension | Replace the mechanical parts with play |

### Toe-in or camber not plausible

| | |
|---|---|
| Runout compensation not executed | Repeat the measurement executing runout compensation |
| Greatly different tyre pressures | Equalize the tyre pressures |

### Toe-in not plausible

| | |
|---|---|
| *Only for side-by-side car lifts*<br>CCD sensor disturbed by the LED of the measuring head on the adjacent car lift | Place a panel between the car lifts |
| CCD sensor disturbed by a reflection on the reflecting surface | Identify and darken the reflecting surfaces |

### The camber tends to always have the same sign

| | |
|---|---|
| Car lift or floor not sufficiently levelled | Level the car lift according to the following tolerances:<br>- Maximum difference in height between two wheels along the wheelbase or track of the vehicle: 1 mm<br>- Maximum difference in height between two wheels along the diagonal of the vehicle: 1.5 mm |

# 15 - STORING AND SCRAPPING

## ► 15.1 - Storing

In the event of long-term storage, disconnect the power supply and protect any parts which may be damaged by excessive accumulation of dust, such as the printer and the display. Grease parts which may be damaged if allowed to dry out.

## ► 15.2 - Scrapping

If the machine is no longer to be used, it must be made inoperational. Render harmless any parts which may constitute a source of danger. Assess the machine classification according to the degree of disposal. Take scrap metal to specific waste collection centres. If deemed special waste, dismantle and separate into homogeneous groups and dispose of in accordance with the laws in force.

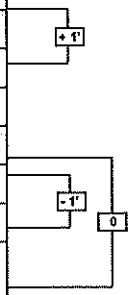
*The batteries must be collected separately at the end of their life cycle (in countries where differentiated waste collection is applied)*

## MEASUREMENT SHEET FOR MEASURING HEAD TEST

### Example:

| | |
|---|---|
| Company: | Device no.:<br>Year of construction:<br>Measurement made:<br>Date: |

| | MEASUREMENT I | COLUMN I | | MEASUREMENT II | COLUMN II | | COLUMN III | | COLUMN IV |
|---|---|---|---|---|---|---|---|---|---|
| ROW | IN DRIVING DIRECTION | Sign | Measurement value | IN REVERSE DRIVING DIRECTION | Sign | Measurement value | Sign | Difference | |
| | TOE-IN | | | TOE-IN | | | | | |
| 1 | Total front toe-in | _ | 3' | Total rear toe-in | + | 5' | + | 2' | |
| 2 | Total rear toe-in | + | 30' | Total front toe-in | _ | 27' | + | 3' | |
| | CAMBER | | | CAMBER | | | | | |
| 3 | Front left camber | _ | 41' | Rear right camber | _ | 40' | - | 1' | |
| 4 | Front right camber | _ | 36' | Rear left camber | _ | 33' | - | 3' | |
| 5 | Rear left camber | _ | 1°25' | Front right camber | _ | 1°27' | + | 2' | |
| 6 | Rear right camber | _ | 1°44' | Front left camber | _ | 1°45' | + | 1' | |



# Contents

## ► SUSPENSIONS

Suspensions are flexible units which link the wheels to the main body or chassis of the vehicle; their task is to absorb bumps caused by rough road and ensure constant adherence of the tyres to the road surface. The suspension system determines driving comfort, handling and road-holding.

## ► MOTOR VEHICLE WHEEL ALIGNMENT

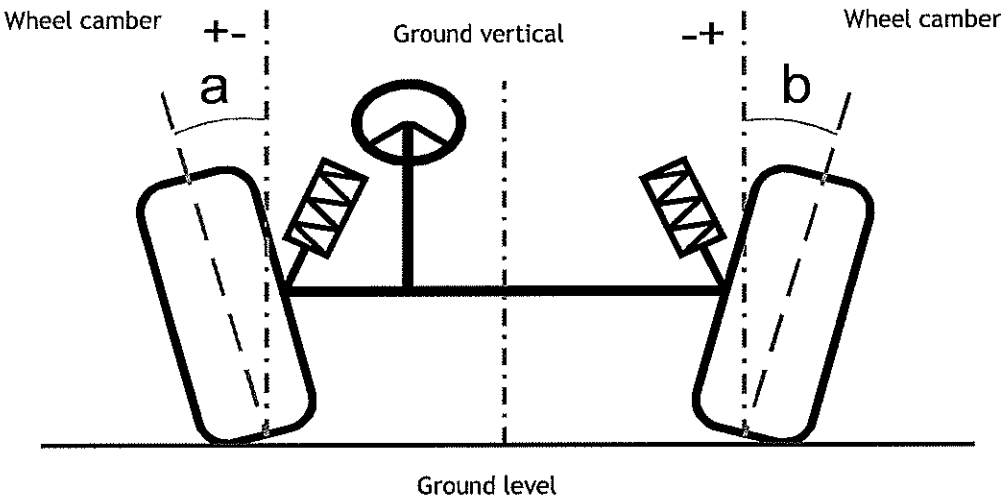
The term"MOTOR VEHICLEWHEELALIGNMENT"refersto the geometrical condition ofall the mechanical organs which help determine the position of the wheels on the ground, whether moving straight or around bends. The unit is able to control the wheel alignement of the motor vehicle only under static conditions, i.e. when the vehicle is at a standstill. Under dynamic conditions (i.e. vehicle moving), the wheel alignement varies in relation to a number of factors, such as: the loading conditions, the conditions of the suspensions, the structure of the mechanical organs, the tyre pressure, etc. The data provided by motor vehicle manufac-turers refer to static vehicle conditions, although they do also take some account of dynamic variations. It is also important to bear in mind that the vehicle may be used in different conditions: the driver alone, one or more passengers, mPTore or less heavy baggage, on generally straight roads or roads full of bends such as those in mountain areas. These factors, added to the fact that the mechanical organs have a "flexible" structure, do not allow for optimal wheel alignement adjustment for any and all conditions; it is therefore essentialthattheuserhasextensiveexperienceininterpretingthemeasurementstakenbytheunitinrelation to the tolerances indicated by the manufacturers.

## ► SPECIFIC ANGLES RELATING TO VEHICLE WHEEL ALIGNMENT

The angles in question for the front axle of a vehicle are:
- Wheel toe-in
- Wheel camber or camber angle
- Set-back -Caster angle
- King pin
- Included angle
- Max internal steering angle
- Max external steering angle
- Steering symmetry

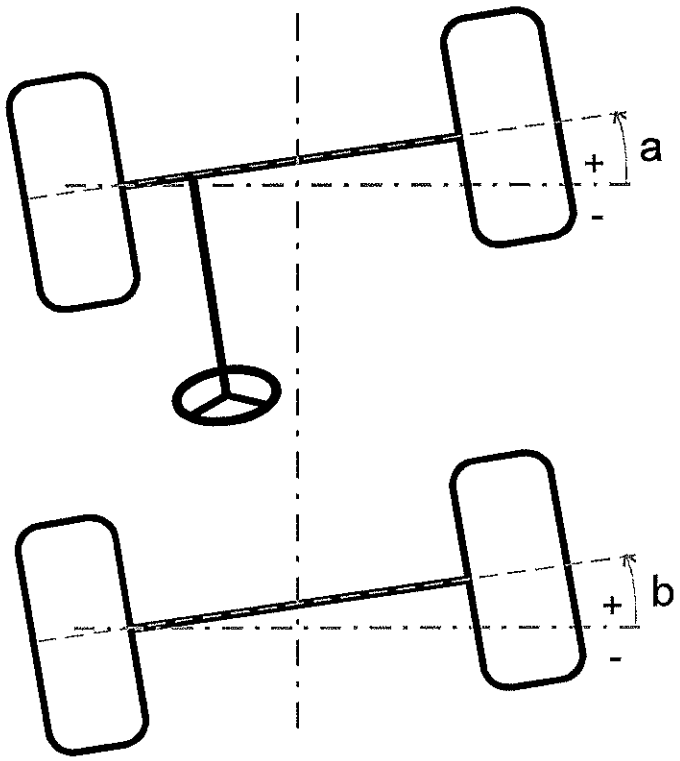
The angles relating to a rear vehicle axle are:
- Wheel toe-in
- Wheel camber or camber angle
- Set-back
- Thrust angle

## ► Wheel camber



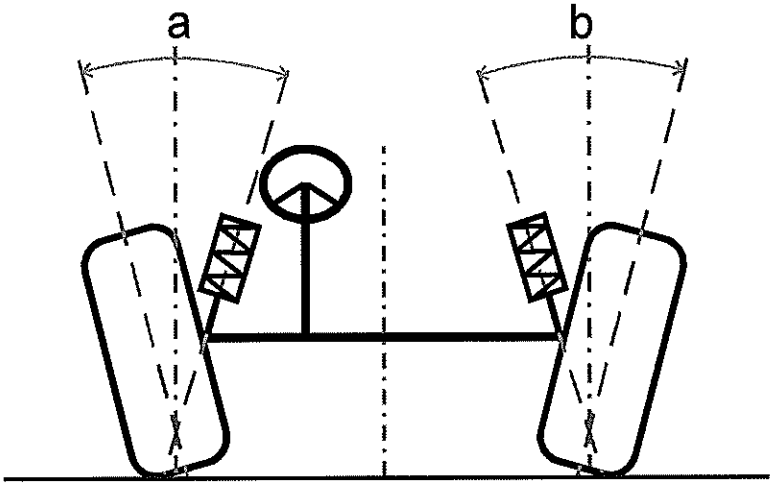

Wheel camber is the angle between the centre-line of the wheel and the ground vertical when observing the vehicle from the front.The camber is positive when the wheel leans out at the top. The camber is negative when the wheel leans in at the top.

## ► Set-back



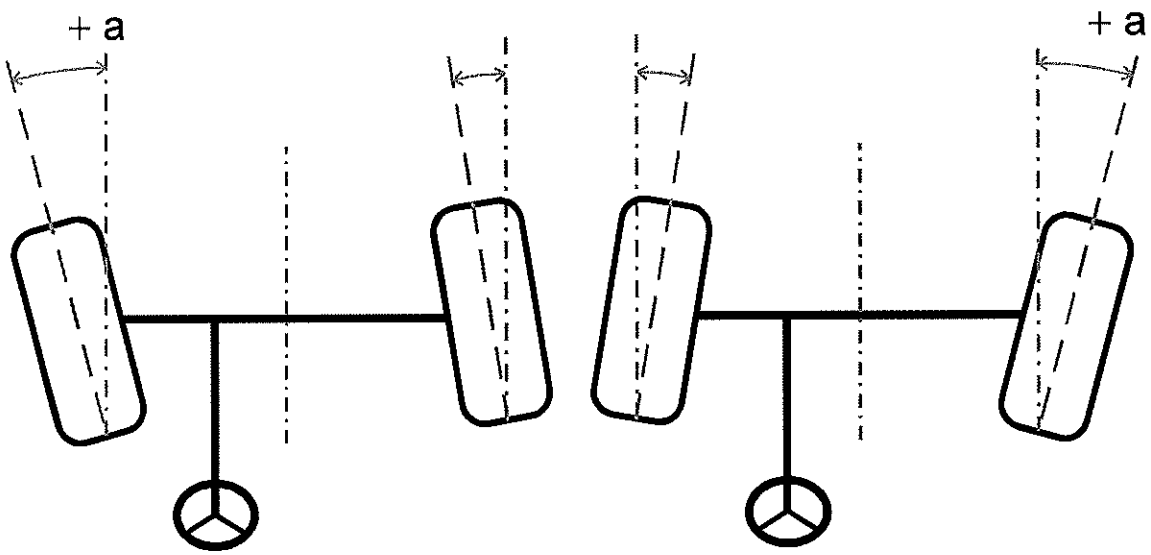

Set-back is the degree of asymmetry of a front or rear wheel in relation to the opposite wheel on the same axle. Set-back is positive when the right-hand wheel is further forwards (observing in the driving direction) than the left-hand wheel; set-back is negative when the right-hand wheel is further to the rear (observing in the driving direction) than the left-hand wheel. This value can also be expressed in millimetres.

## ► Included angle




The included angle is the angle between the centre-line of the wheel upright (steering knuckle axis) and the centre-line of the wheel. The included angle is simply the algebraic sum of the wheel camber and king pin angles.

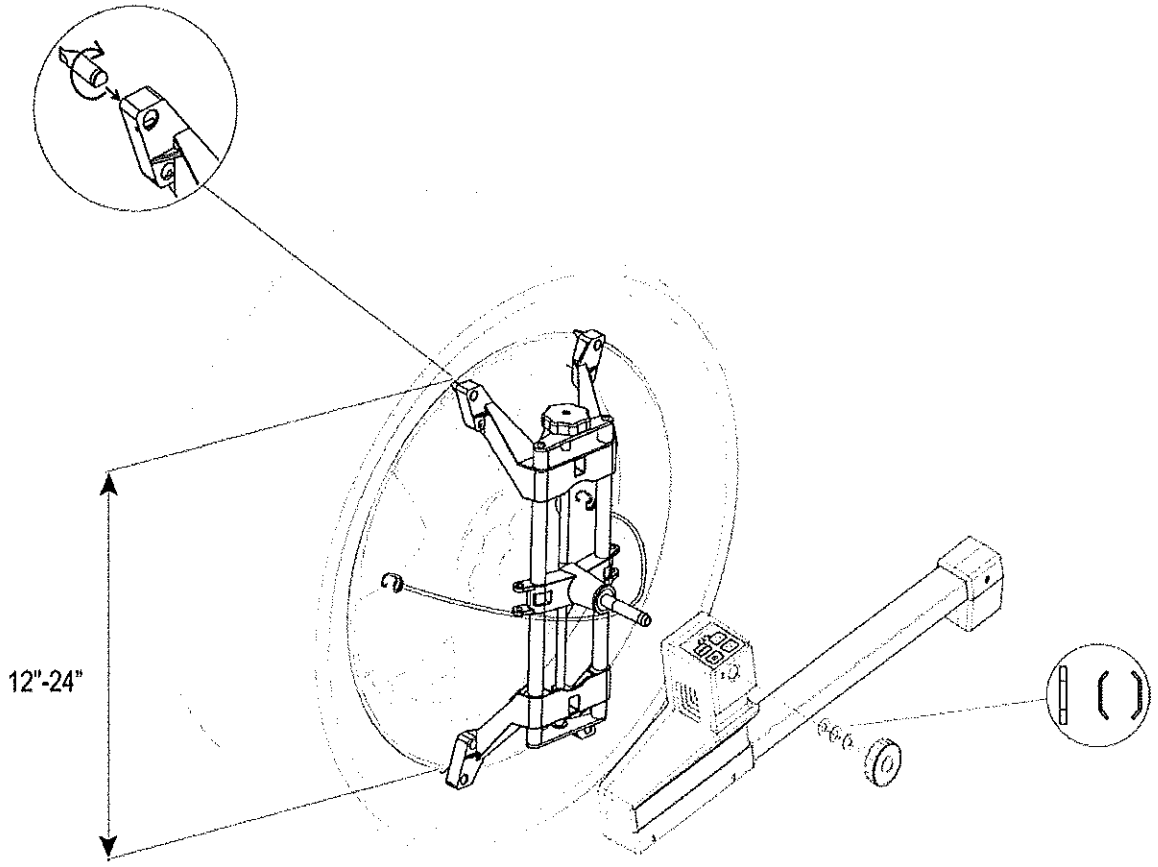
## ► Cornering divergence or steering symmetry




When a vehicle takes a corner, the wheels have different trajectories; consequently, the inner wheel has to steer more than the outer wheel; furthermore, this value should be symmetrical regardless of steering to the left or to the right. Cornering divergence is measured as follows: when steering to the left, the steering of the inner wheel is measured (left) when the outer wheel (right) steers by 20°. When steering to the right, the steering of the inner wheel is measured (right) when the outer wheel (left) steers by 20°. Steering boxes on vehicles are normally designed so that the inner wheel steers at least 1°÷1°30' more than the outer wheel when the latter steers by 20°. It is useful to assess the centring of the steering box.

# Clamps, grips and extensions for all rims and tyres

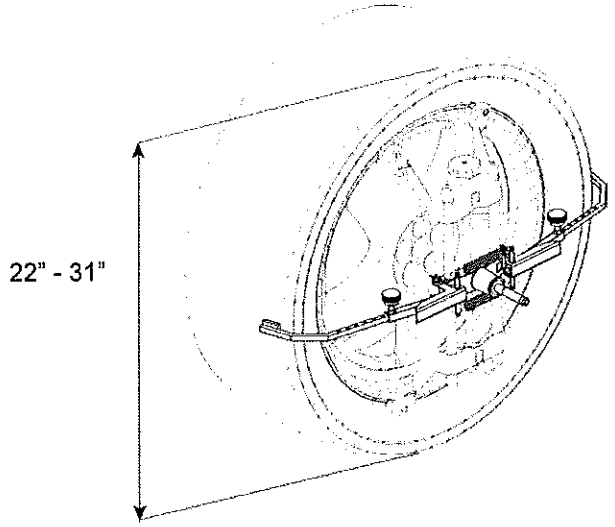
## 46DW66130 (4 for alignment) 4-points self-centering clamp with 12" - 24" operating diameter



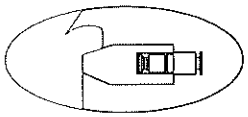
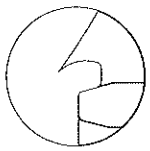
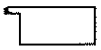
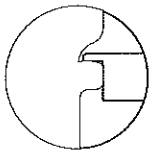
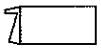
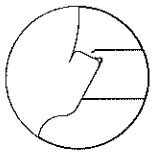
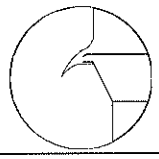
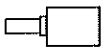
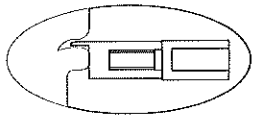

► **Complete with :**

21DW76363
Safety elastic band

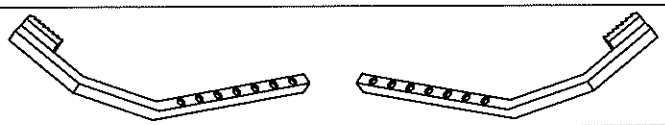
## ► Option 46DW75331 (4 for alignment) - Clamp supporting arms and set of tips for tyres with external diameter 22" - 31"



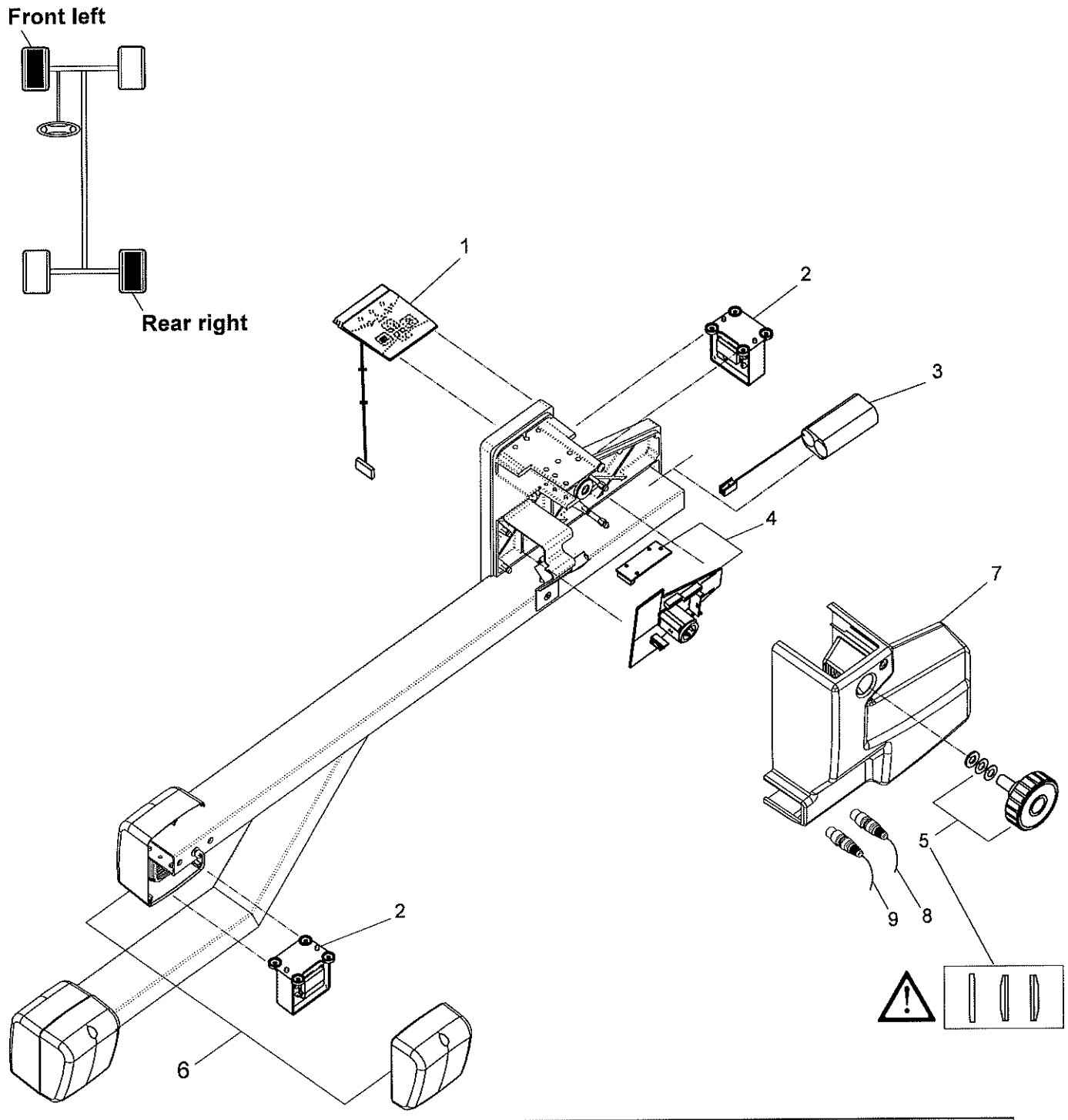

**► Complete with :**

| | | | |
|---|---|---|---|
| 46DW75330 (4 for alignment)<br>Set of 4 metal adapters<br>for plastic tips<br>(also useable as grips for<br>clamping on steel rims from the inside) |  | x 4 |  |
| 77F000383<br>Set of 4 plastic tips |  | x 4 |  |
| 77F002359<br>Set of 4 plastic tips |  | x 4 |  |
| 77F000381<br>Set of 4 plastic tips |  | x 4 |  |
| 77F000379<br>Set of 4 plastic tips suitable<br>for softline wheels |  | x 4 |  |
| 77F002897<br>Set of 4 extensions for<br>plastic tips (L = 35 mm) |  | x 4 |  |

**► OPTION**

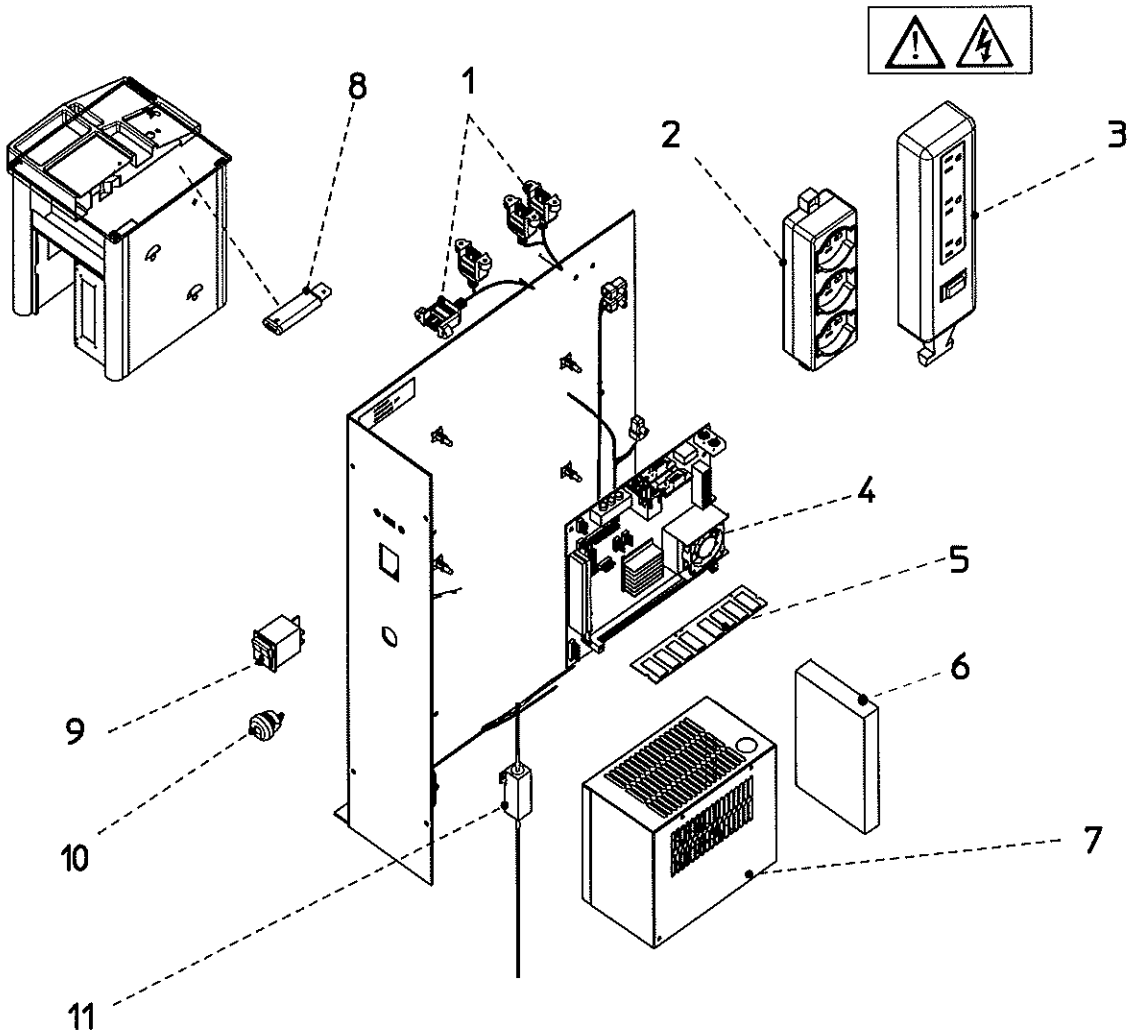
| | |
|---|---|
| 46DW76312 (4 for alignment)<br>Extended clamp supporting arms<br>for tyres up to 40". |  |
| 46DW91042 (4 for alignment)<br>Extended clamp supporting arms<br>for truck and bus tyres up to 50". |  |

# FRONT LEFT - REAR RIGHT MEASURING HEADS

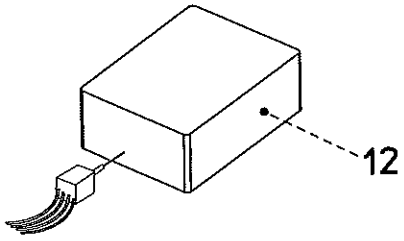



| ITEM | CODE | DENOMINATION |
|---|---|---|
| 1 | 05PRA0921 | KEYPAD |
| 2 | 86SB81712 | CAMERA (A VERSION) |
| 2 | 86SB94527 | CAMERA (B VERSION) |
| 3 | 730072100 | BATTERY (RADIO) |
| 4 | 8RSBA7698 | ACCELEROMETER + LOGIC BOARDS |
| 5 | 4RDW86038 | LOCKING HANDLE |
| 6 | 4RDWA7701 | PLASTIC CAP |
| 7 | 14DW77348 | PLASTIC COVER |
| 8 | 86SB56305 | CABLE INTERFACE FOR MEASURING HEAD (L=5m) |
| 9 | 86SB85932 | CABLE INTERFACE FOR MEASURING HEAD (L=12m) |

# POWER AND COMPUTING UNIT

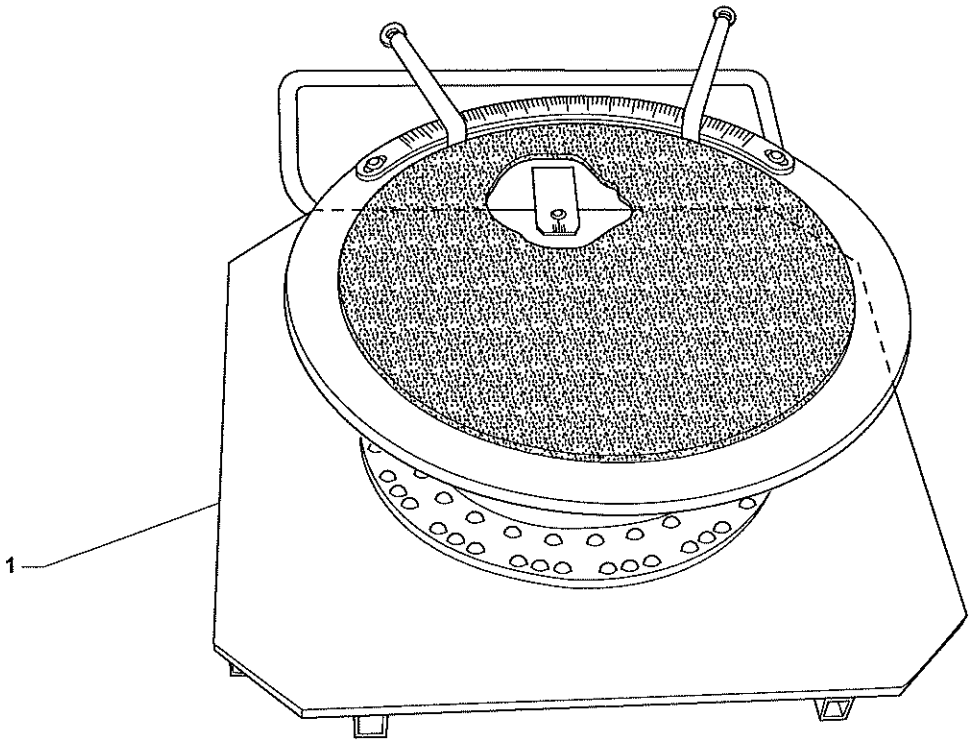



# LIGHT VERSION

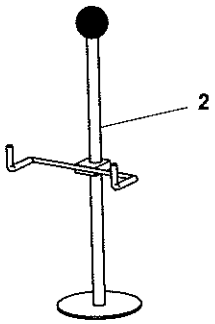



| ITEM | CODE | DENOMINATION |
|---|---|---|
| 1 | 658000212 | USB PORT |
| 2 | 86SBA9786 | SOCKET EU |
| 3 | 86SBA9787 | SOCKET USA |
| 4 | - | ASK TO YOUR DELEAR |
| 5 | - | ASK TO YOUR DELEAR |
| 6 | - | ASK TO YOUR DELEAR |
| 7 | 800300610 | POWER SUPPLY 230V |
| | 800300620 | POWER SUPPLY 115V |
| 8 | 800300413 | USB WIRELESS |
| 9 | 511242101 | SWITCH CABINET/BATTERY CHARGER |
| 10 | 526046633 | CABLE CIRCLIP |
| 11 | 86SBA9789 | LOAD RESISTANCE |
| 12 | 86SBA2557 | POWER SUPPLY LIGHT RADIO/CAVO |

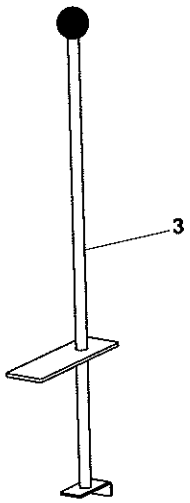
# ROTATING PLATE




## STEERING LOCK




## PRESS BRAKE




| ITEM | CODE | DENOMINATION |
|---|---|---|
| 1 | 74SC00170 | COMPLETE PLATE CAR |
| 1 | 77F204965 | COMPLETE PLATE TRUCK |
| 2 | 74A010478 | STEERING LOCK |
| 3 | 74A010479 | BRAKE PEDAL LOCK |