Contents

Caution!

This manual forms an integral part of the product and provides instructions for use of the wheel aligner. Carefully read the manual before using the wheel aligner and each time you need to operate on the machine; keep it in an accessible place for the entire operating lifetime of the machine.
Any damage arising from inobservance of the instructions contained in this manual and from improper use of the machine relieves the manufacturer from all responsibility.

General warnings

- The manual refers to essential aspects of the directives, standards and regulations relating to use of the machine summarising the most significant points.
- In addition to the instructions for use the general rules of law and the binding rules regarding accident prevention and environmental protection must be complied with.
- For all the operations to be carried out with or on the machine, the following rules must be complied with as well as the general accident-prevention rules.
- The user must assure that the machine is always and exclusively used in perfect working conditions and consult the essential safety requirements and the relevant regulations.
- In the event of faults or malfunctioning, the machine must be placed out of service immediately.
- Only trustworthy personnel may work with the machine; the user is responsible for assuring the necessary level of education and training of the qualified personnel.
- If in any doubt over the 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 is located on the rear of the machine. **NEVER CONNECT THE MACHINE TO A VOLTAGE OR FREQUENCY OTHER THAN THOSE INDICATED.**
- This machine is equipped with a 3-pin plug with incorporated ground, which may be inserted in a grounded socket only. If it is not possible to fit the plug in a socket of this kind, consult an electrician. Do not modify the plug or utilise it improperly.
- This machine is not fitted with a manual power cutting device; To cut the power, pull the plug out of the socket or operate the main switch positioned upstream.
- All the operations and repairs on live electrical parts must be carried out after having switched off the main power switch on the electric panel.
- The warning and danger signs in the form of plates, adhesive labels and markings must not be removed or made unrecognisable.
- The warning and danger signs fixed on the machine must be maintained legible.
- All the maintenance and inspection operations must be carried out exclusively by qualified personnel.
- Mechanical and electrical repairs as well as setting operations must be carried out by qualified personnel only.
- Unauthorized persons must not be allowed to work on the machines and equipment of the system.
- In the event of faults that pose a risk to safety and/or reliability of the machine, it must be stopped or in any case not started.
- The electrical system may not be modified or transformed in any way.
- The user will be held responsible for such modifications and the consequences deriving therefrom. In case of doubt, contact the manufacturer before making any modifications.
- Use exclusively original fuses with the prescribed amperage! In the event of electrical power failures, the machine must be switched off immediately.
- Defective fuses must not be repaired or excluded but replaced with fuses of the same type.
- Observe the environmental protection regulations when disposing of waste material and replaced parts.

Intended use

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

Technical data

Power supply and consumption

Measuring cabinet

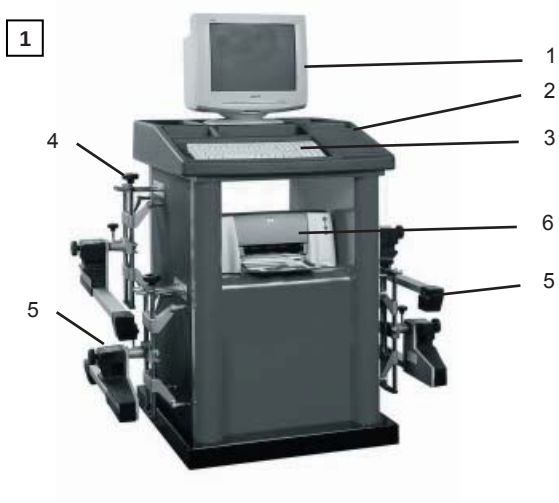
Power supply:	230 VAC single-phase 50/60 Hz
	110 VAC single-phase on request
Max. power absorbed:	500 W
Max. current absorbed:	2,17 A

Sensors

Internal power supply :	7.2 V rechargeable batteries (NimH)
External power supply:	12 V (via cable)

Machine description

Measuring cabinet



1. Monitor
2. Tool tray
3. Keyboard
4. Claw/measuring head holders
5. Measuring heads
6. Printer

NOTE:
The image is only an example of the parts. The actual shapes of the cabinet, monitor and printer may differ from the image.

Measuring heads

The measuring heads are composed of CCD transducers to measure the horizontal angles and an accelerometer to measure the vertical angles. In the cable version, both the power supply and data transmission is via cable.
In the radio version, the power is supplied via rechargeable batteries and, if the batteries are flat, via cable. Data transmission is via radio.

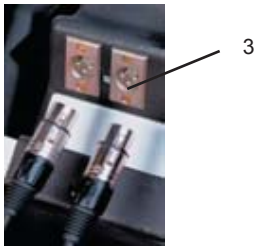
To switch on the measuring heads, press any key on the keypad; to switch them off, hold OK down for about 5 seconds.

NOTE:
The measuring heads automatically switch off after about 15 minutes if no data is transmitted or when the cabinet is switched off.

2

1. Soft-touch control keyboard.
2. Set of 3 signalling LEDs for measuring head levelling.
3. Connectors for emergency power supply or battery charger extension cable

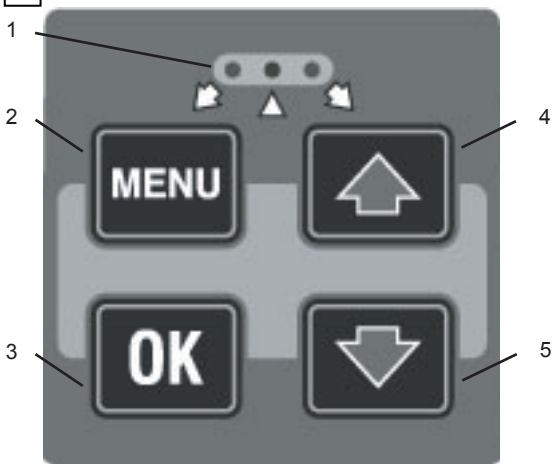
3



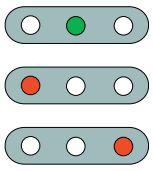
4. Pin locking knob.

Measuring head keypad

4



1. Level indicator with red/green/red LEDs



Measuring head level

Measuring head not level

Measuring head not level

2. The menu page is accessed (where present)
3. Confirms the option selected
4. In the menu, it moves the selection to the top/goes back to the previous page
5. In the menu, it moves the selection to the bottom/ goes to the next page

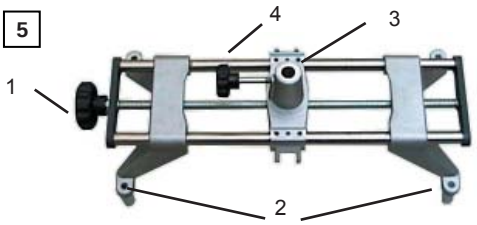
2;3;4;5 Press any key to switch on each head

NOTE:
When switching on a measuring head, one, two or three LEDs come on for about 1 second, depending on the battery charge level.

Wheel clamps

Wheel clamps type 4-point for 10” to 19” steel and alloy rims. The removable metal claws are included.

5

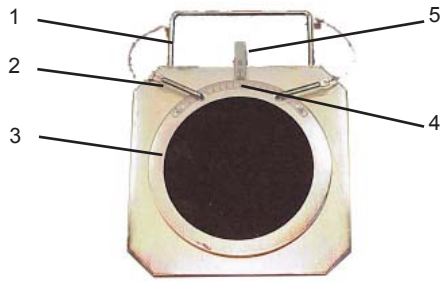


1. Knob
2. Claw attachment pin
3. Measuring head coupling flange
4. Measuring pin locking knob

Turntables

310 mm in diameter; capacity of 1000 kg each.

6

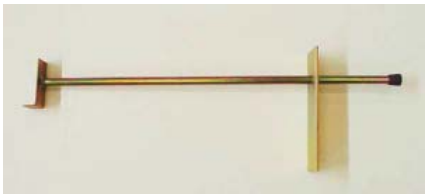


1. Handle
2. Stops
3. Upper plate with non-slip disc
4. Graduated rod
5. Gradual indicator

Brake pedal lock

The brake pedal lock is a tool used to lock the brake pedal when preparing to make measurements.

7



Steering lock

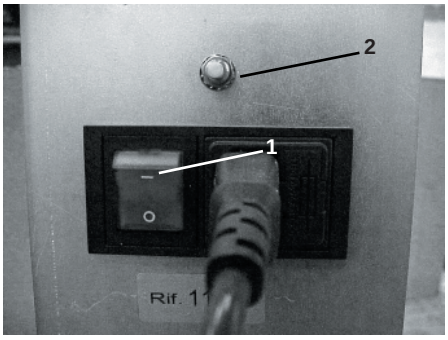
The steering lock is a tool used to hold the steering wheel in a fixed position; it is positioned before carrying out the vehicle adjustment operations.

8

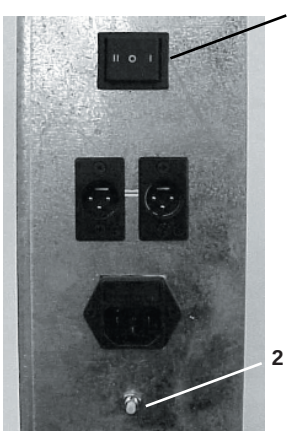
1 - Switching the machine on and off

Locate the power switch and the reset button on the rear of the cabinet.
There are two different power switch versions.

9



9a



• *To turn on:*

1. Set the power switch (1) to ON (I)

2. If the computer does not turn on automatically, press the reset button (2)

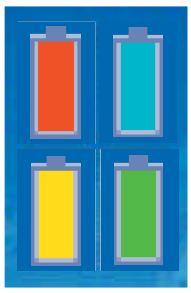
• *To turn off:* set the power switch (1) to OFF (O)

• [*only if position (II) is present (figure 9a)*] *To charge the arm batteries* even when the computer is off, set the power switch (1) to “battery” (II).

2 - Measuring head battery charger (radio version only)

The measuring heads are powered by rechargeable batteries whose charge is displayed on the home page.

LH FRONT



RH FRONT

LH REAR

RH REAR

The LED graphic bar indicates the power supply voltage and the 4 indicators show the measuring heads in the respective working positions. If one or more graphic bars are “grey”  , it means that the respective measuring head is not connected to the BLUE TOOTH receiver.

LIGHT BLUE INDICATOR: BATTERY RECHARGING (or recharging just completed)

GREEN INDICATOR: GOOD CHARGE

YELLOW INDICATOR: SUFFICIENT CHARGE to complete the measurement in progress

CAUTION!
Connect the power cable leading from the cabinet to the measuring head as soon as possible.

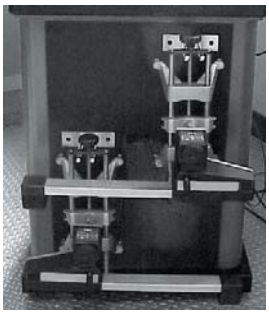
RED INDICATOR: INSUFFICIENT CHARGE

CAUTION!
Connect the power cable leading from the cabinet to the measuring head before continuing with the measurement.

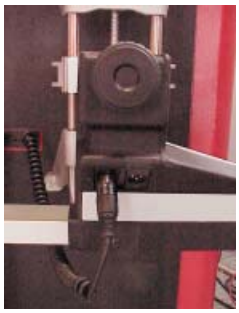
When connecting the power cable leading from the cabinet to a measuring head, the head is powered and the batteries charged.
An alignment measurement can be carried out at any time even when the recharge cable is connected to one or more measuring heads.
For a full recharge:
- position the wheel clamp/measuring head on the housing on the side of the cabinet (*Fig. 9b*)
- connect an extension cable for the battery charger (*Fig. 9c*).

CAUTION!
In order to charge the batteries, the cabinet and the measuring heads must be switched on while the software can be active in any phase (e.g. on the home page).

9b



9c



To terminate recharging:
- turn off the cabinet with the ON/OFF switch
- or disconnect the measuring head power cable.

CAUTION:
Correct recharging of the batteries is represented by the blue battery indicator or by flashing in sequence of the level indicator LEDs when the measuring heads have been non-operational for a few minutes (e.g. SCREEN-SAVER).

To save the batteries, the measuring heads automatically switch off after a certain time of inactivity. At the same time, the screen goes black.
To prevent automatic switch-off or to change the time before switch-off *chapter 5.2.1*.
To reactivate the system:
1. Switch on all the measuring heads (wait about 5 sec. between one and the next)
2. Press any key on the keyboard

2.1 - Improving the life of the measuring head batteries

Applicable to	All radio models, all series
Addressed to	All
Related topics	How to replace the battery of a measuring head (☛ *17.3*)

Start here

The battery charge duration in normal conditions is one working day with full-time use or a few working days when occasionally used.
The battery life, if properly managed, is 2-3 years of operation.
Too frequently recharging the batteries or not fully recharging them may compromise the battery life and the charge duration.

To improve the charge duration and life of the measuring head batteries, follow these guidelines:

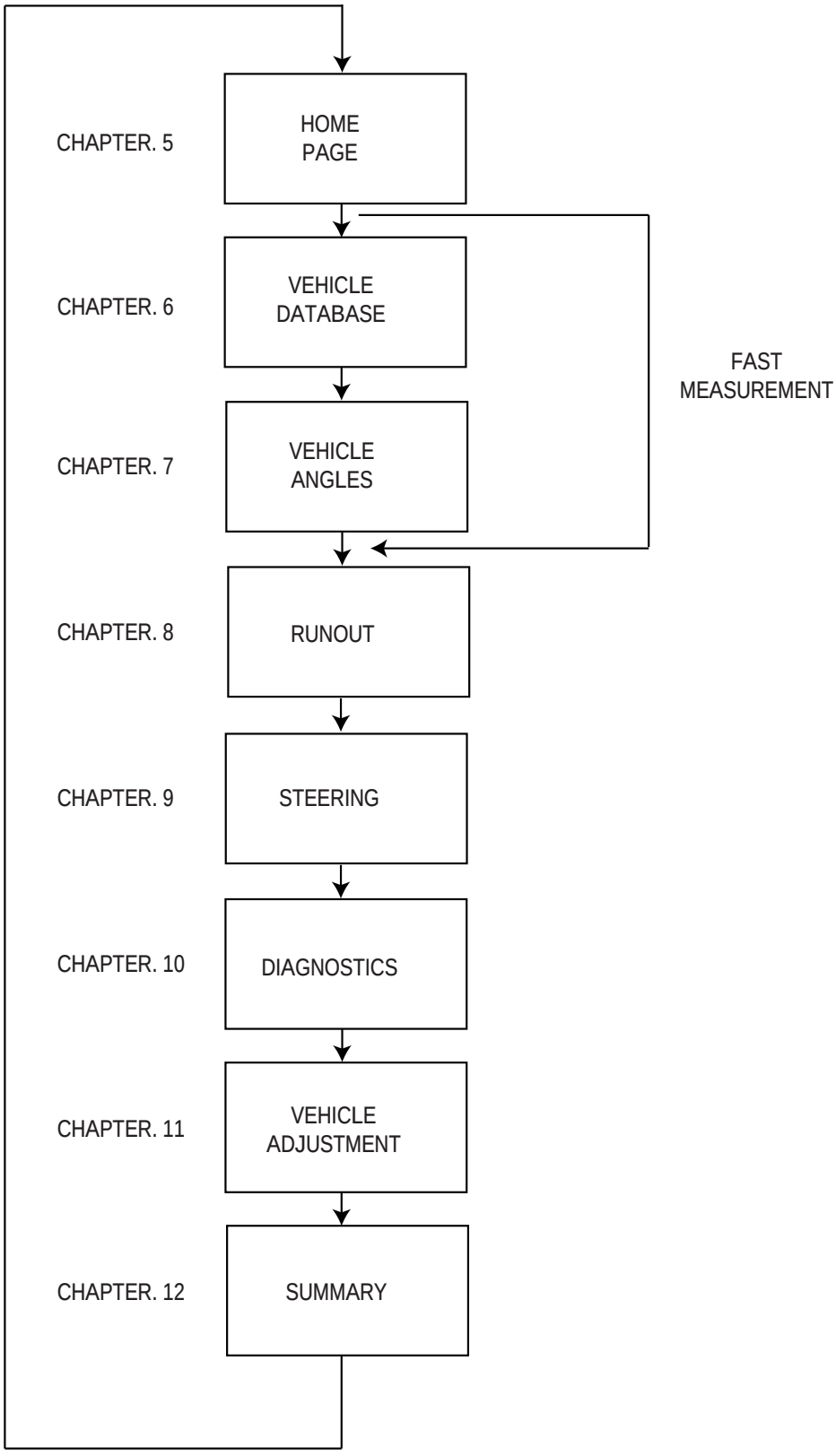
- Recharge the batteries for at least 4 hours, for example overnight, to assure that they are fully recharged.
- Recharge the batteries when the charge indicator on the screen is yellow. If you wait until the indicator turns red, you do not ruin the batteries, but you risk the measuring heads turning off during operation.
- Do not recharge the batteries when the indicator is green in order not to compromise the battery life.

Other useful tips:

- If you recharge overnight, make sure that the mains switch is not turned off
- Keeping the batteries connected to the power supply when they are fully charged does NOT ruin the batteries. The measuring heads automatically suspend the recharge when it has been completed.
- Remember that to recharge the batteries:
  - [cabinets with 2-state power button (0,I)] Set the button to I. To recharge the batteries, the computer must remain on.
  - [cabinets with 3-state power button (0,I,II)] Set the button I or II. In the second case, in spite of the batteries charging, the computer remains off in order to reduce consumption and wear. We recommend this option for overnight recharging.
- If after a full recharge the batteries are unable to last through a working day with occasional use, they should be replaced How to replace the battery of a measuring head (☛ *17.3*)

3 - Program flow

The program is made up of 8 main pages; to go to the next or previous page, press F6, F5 respectively.



4 - Setting up for measurement

To prepare for measurement:

1. Position the vehicle

2. Mount the wheel clamp and the measuring heads on the vehicle wheels

3. Press any key to turn on the 4 measuring heads

NOTE:
Wait about 5 sec. between turning on one measuring head and the next one.

4 Turn on the computer. The following appears:

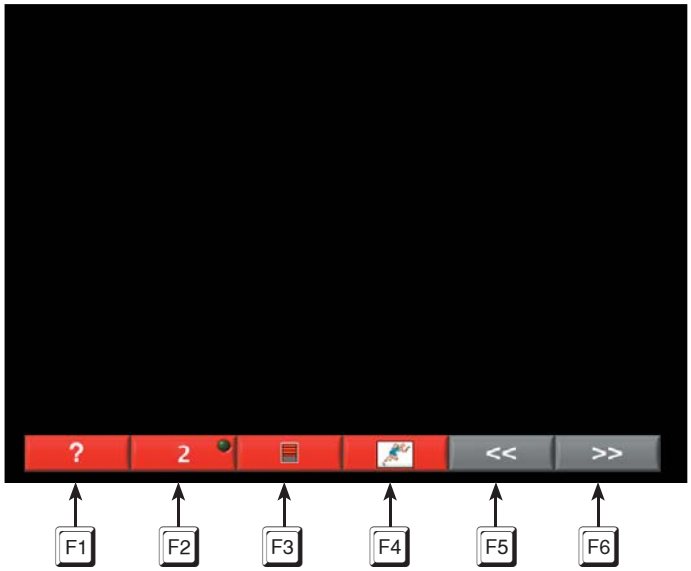
10

5. Press any key on the keyboard

NOTE:
The measuring heads must be switched on before pressing a key on the keyboard.

5 - Home page

11



NOTE:

The on-screen buttons can be activated with the mouse and with the F1,....F6 on the keyboard.

F1 : Help

F2 : Measurement with two arms

F3 : Menu

F4 : goes directly to measurement without vehicle selection (*chapter 8*)

F5 : previous page

F6 : next page (vehicle make and model selection) (*chapter 6*)

5.1 - Measurement with 2 measuring heads

To save measuring time, the measurement can be made by mounting only the front measuring heads.
This method can be used if the front toe-in and camber measurements are sufficient and the steering wheel does not have to be held straight; for example, for small commercial vehicles.

Operate as follows:

1. On the home page press F2. The ball on the screen turns green (*Fig. 3*)

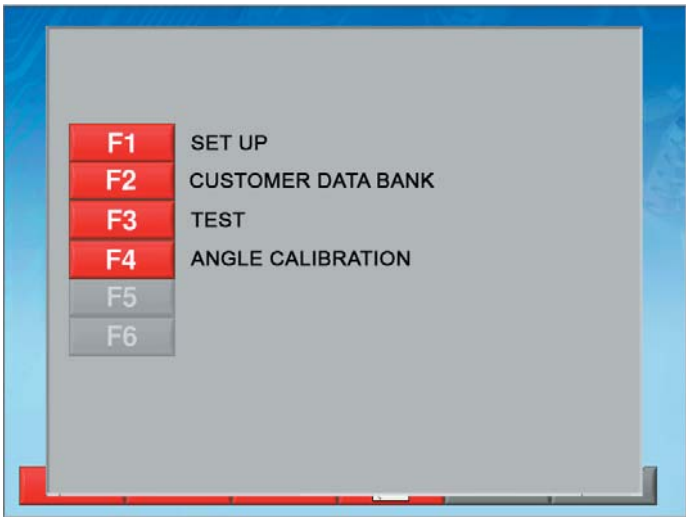
2. Press F6 and continue as normal with the measurement

NOTE:
Using this method, the following will not be executed: runout for the rear wheels, steering, rear adjustment and caster.

5.2 - MENU F3

Pressing F3 the following menu appears:

12

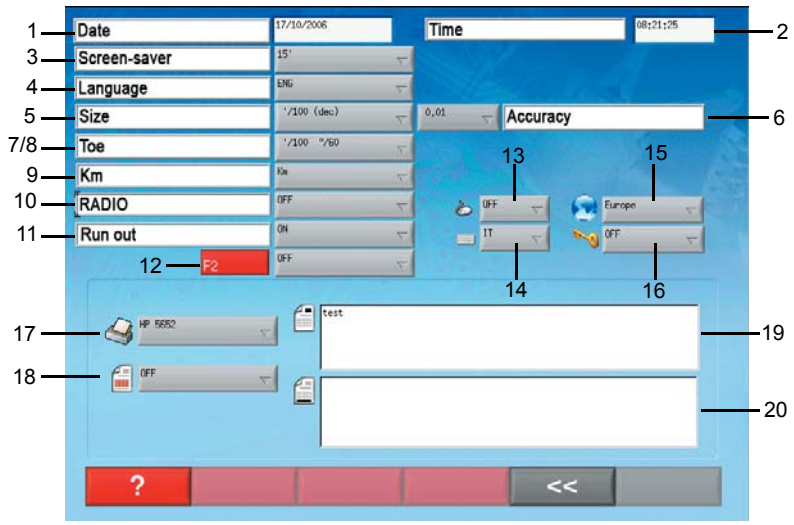


F1	: set up machine
F2	: client database
F3	: TEST (reserved for technical service)
F4	: angle calibration (reserved for technical service)

5.2.1 - Set-up

Pressing F1, the following SETUP page is accessed

13



The following parameters can be modified on this page :

1• DATE
2• TIME
3• INACTIVITY TIME BEFORE THE BATTERIES AUTOMATICALLY SWITCH OFF
4• LANGUAGE
5• ANGLE FORMAT (centesimal/sexagesimal)
6• ANGLE RESOLUTION
7• TOE-IN FORMAT (expressed in degrees / mm / inches)
8• TOE-IN RESOLUTION
9• KM or MILES (for printing)
10• DATA TRANSMISSION VIA RADIO (on/off)
11• RUNOUT (on / bypass= the runout page is automatically skipped)
12• "F1,..,F7" DISPLAY ON KEYS (on/off)
13• MOUSE (on/off)
14• KEYBOARD TYPE
15• DATABASE
16• SETUP PAGE PASSWORD
17• PRINTER MODEL
18• PRINT OUT-OF-TOLERANCE VALUES IN RED (on/off)
19• PRINT HEADER
20• PRINT FOOTER

F1 : Help

F5 : saves the settings and exits from setup

Tab : selects the next parameter

Shift + Tab : selects the previous parameter

↓ / ↑ : scrolls the values of the parameter selected

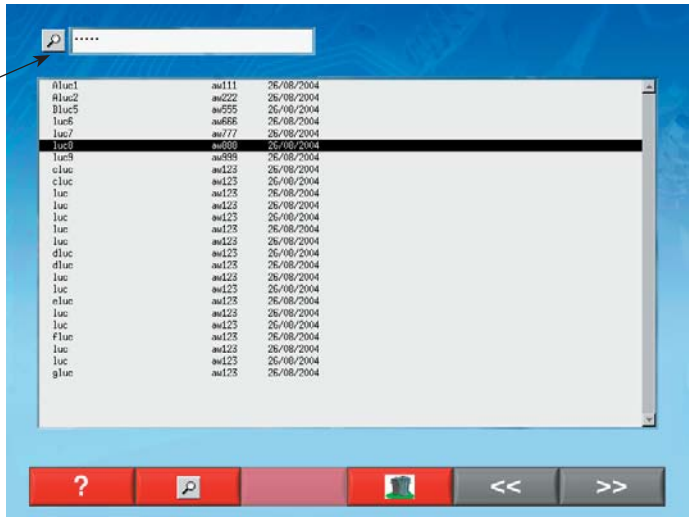
Space bar : displays the possible values of the selected parameter

(confirm with Enter)

5.2.2 - Client database

When F2 is pressed, the client database page as shown in *Figure 14* is accessed

14



F1 : Help

Tab : selects the search box or the table

F2 : after entering the customer's name or vehicle number plate, the search is started

F4 : deletes the selected "customer test" folder

F5 : returns to the initial screen

↓ / ↑ : selects the desired customer

G : positions on the first customer whose name starts with the letter entered

F6 : confirms and displays the data relating to the selected customer

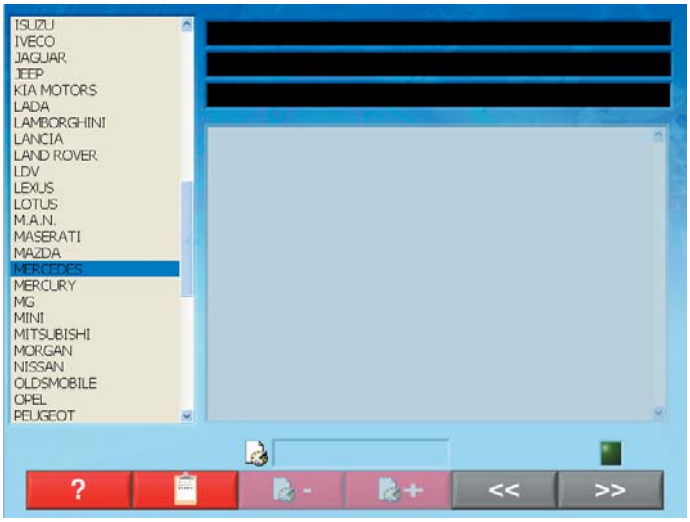
After selecting the stored test, press F6 to view the data and the following screen appears:

14a

6 - Vehicle database

6.1 - Selecting the vehicle make

15

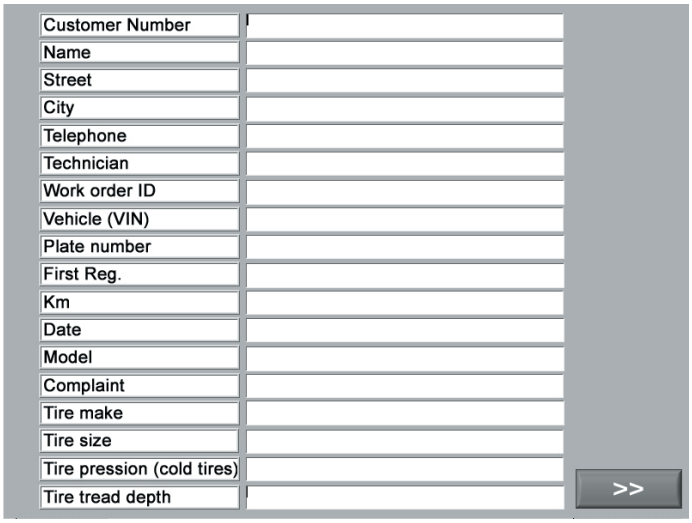


F1	: Help
F2	: to enter notes on the customer
↓ / ↑ / F	: to select the desired make
F5	: previous page.
F6 / Enter	: to confirm the vehicle make selected

6.2 - Entering notes on the client

When F2 is pressed the customer and other details can be entered.

15a



Tab	: selects the next note
Shift + Tab	: selects the previous note
F6	: saves the notes and exits

6.3 - Selecting the vehicle model

16

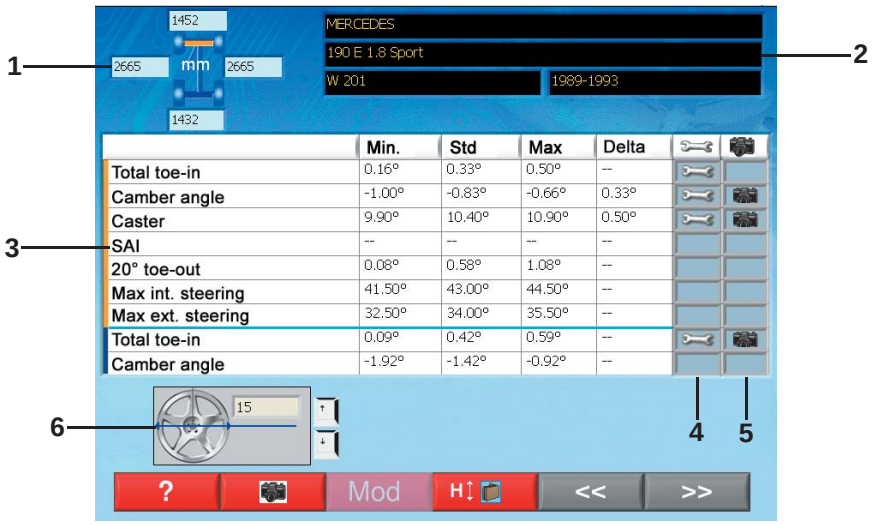
NOTE:
If the model name is preceded by the symbol ◇ , it belongs to the customised database.

F1	: Help
F2	: to enter notes on the customer
F3	: model search by year of registration (results in decreasing order)
F4	: like above, but results in increasing order
↓ / ↑ / F	: model selection
F5	: previous page (vehicle make selection)
F6 / Enter	: confirms the model selected and goes to the database

Do you have any feedback? Please write to ***manuals@enet.it*** *specifying the code I 0587-GB*

7 - Displaying the technical data of the vehicle selected

17

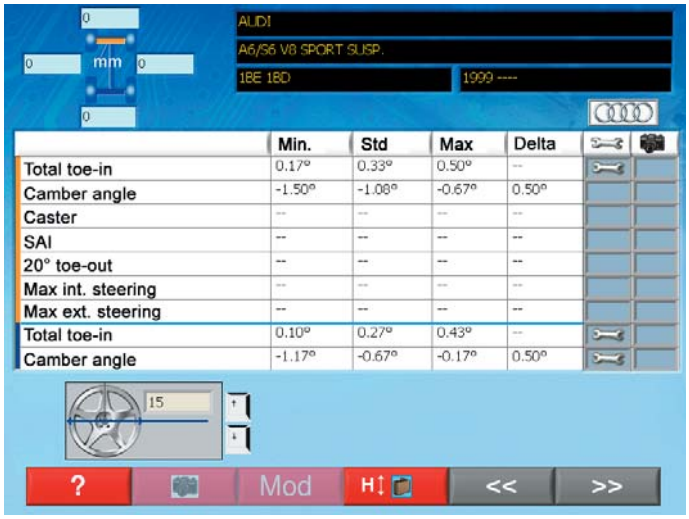


The screen shows the following technical data of the vehicle:

1. Pitch and track measurements.
2. Brand, model, technical name, date of start and end of production.
3. Characteristic angles: minimum/standard/maximum value and difference between right-hand and left-hand wheel. The angles next to the vertical orange line refer to the front wheels while those next to the blue line refer to the rear wheels.
4. If the monkey spanner symbol appears, you can adjust the angle on the vehicle.
5. If the camera symbol appears, you can view explanatory images of the adjustment.
6. Diameter of the rim.

NOTE:
for some vehicles (e.g. some AUDIs, the toe-in curve data may be present. In this case, the "AUDI" symbol is displayed on the screen (11.2).

18



F1	: Help
F2	: to display any images relating to the adjustment points
pag↓ +, F3	: creating a customised database
F4	: sets the chassis height and displays any additional information

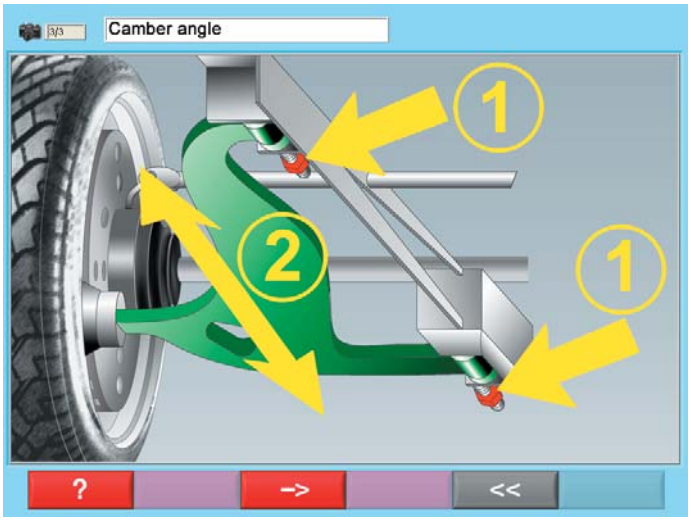
F5	: previous page (vehicle model selection)
F6 / Enter	: next page
↓ / ↑	: changes the diameter of the rim of the vehicle measured (obligatory if the toe-in is expressed in mm or inch)

NOTE:
if the toe-in is expressed in mm or inch, it is essential to set the correct rim diameter.

7.1 - Images of the adjustment points F2

When selecting this option (F2 / [camera]) the screen shown in *Figure 19* is displayed:

19



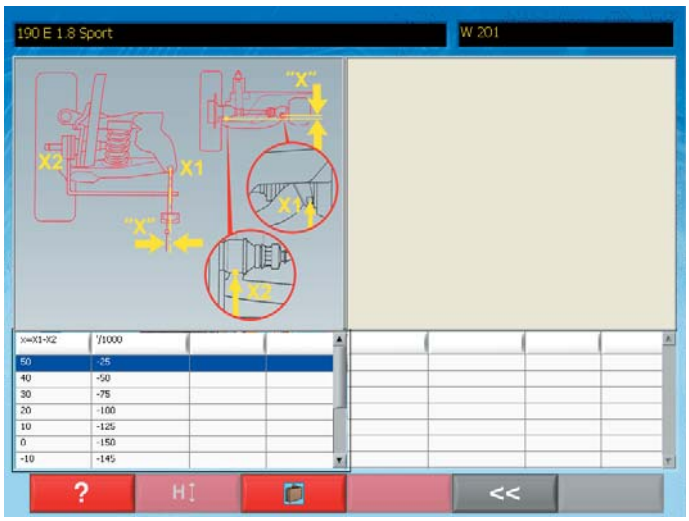
F1	: Help
F3	: displays the image relating to the next adjustment point (if present)
F5	: previous page

7.2 - Chassis height F4

This option allows setting some parameters to perfect vehicle diagnostics. It is active only for some vehicles.

1. Selecting (F4 / H↕) ; the following appears:

20



2. With reference to the figure, select the correct chassis height in the table

F1 : Help

F3 : shows the data related to the percentage fuel level and positioning of the vehicle load weights

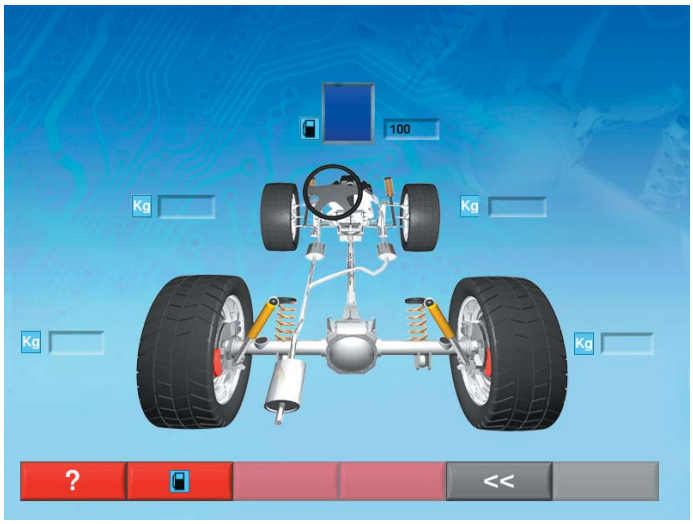
Tab / Shift+Tab : to activate the selection in the table

↓ / ↑ : to select the correct chassis height

F5 : confirm the data and returns to the vehicle database page

3. Press F3; the following appears:

20a



4. Enter the percentage fuel level and any weight in the passenger and luggage compartments

F1 : Help

F2 : returns to the chassis height table

F5 : returns to the vehicle database page

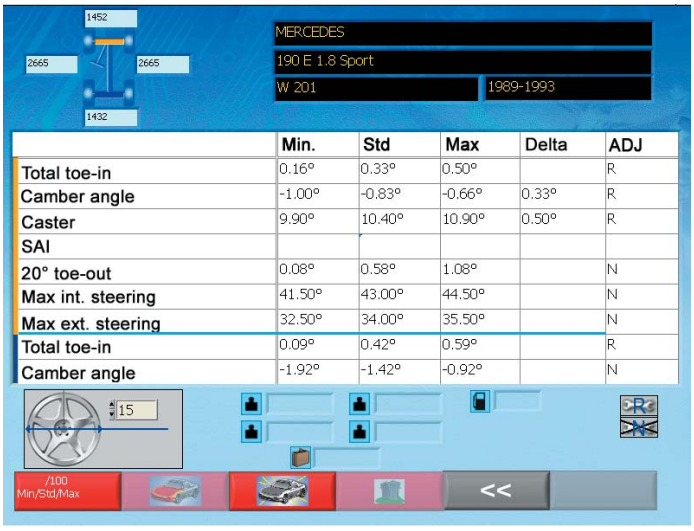
7.3 - Customising the vehicle database F3

Customised vehicles can be created; to access this function, display the data page of a make and a vehicle already in the database:

20b

pag + F3 : in sequence press the keys to access a page dedicated to creating a customised data base

20c



Tab : (moves forward) Selects the parameter to be customised. Use the keyboard to enter the data relating to the new vehicle to be customised

Shift + Tab : (moves back) Selects the parameter to be customised. Use the keyboard to enter the data relating to the new vehicle to be customised

F1 : selects the desired unit of measure and the tolerance indication (for data input)
/60 degrees displayed in sexagesimal format (e.g. 1° 55')
/100 degrees displayed in centesimal format (e.g. 1.90°)
min/std/max = data in minimum/standard/maximum format
std/toll+/toll- = data in standard/upper tolerance/lower tolerance format

F2 : saves the modifications made to the customised vehicle (active only when working in a database of a customised vehicle)

F3 : saves the new vehicle model in the customised database

F4 : deletes the database of a customised vehicle (active only when working in a database of a customised vehicle)

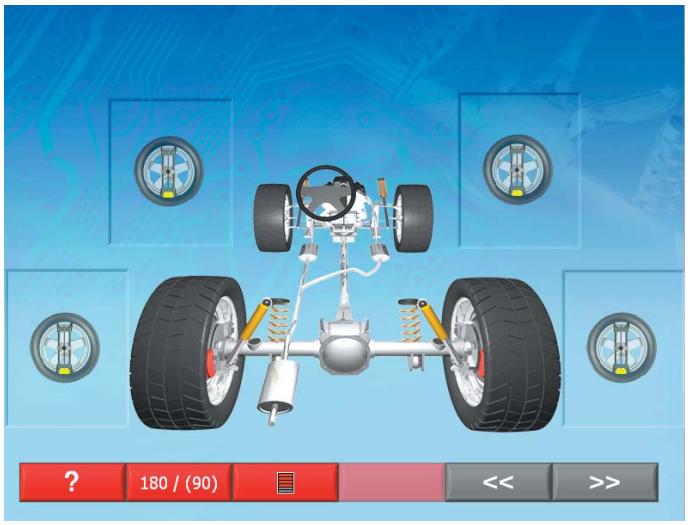
F5 : returns to the previous page

Esc : after saving the entries in the database, returns to the initial page

8 - Runout

The runout procedure is useful to compensate for possible errors in rim/wheel clamp coupling. This procedure can also be skipped going directly to the measuring phase.

21



F1 : Help

F2 : choice between runout with 90° or 180° rotation between the two measurements. The yellow indicator on the drawing represents the knob position

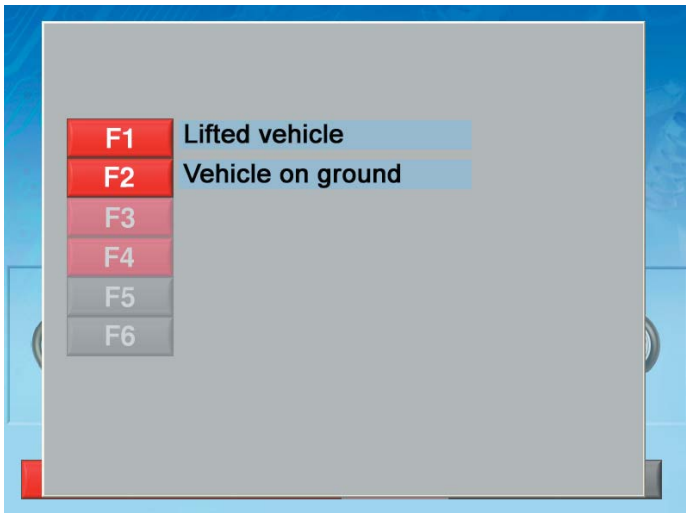
F3 : choice between measuring the runout with the vehicle lifted or on the ground

F5 : to return to the previous page

F6 : to skip the runout operation and go to the next page

To change and set the type of runout, press F3 as said previously and the screen shown in *Figure 22* will appear:

22



F1 : runout with vehicle jacked up

F2 : runout with vehicle on the ground

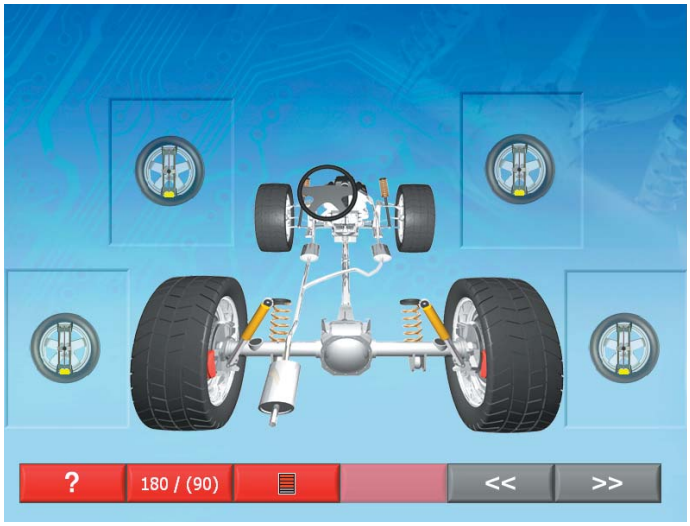
NOTE:
During the runout measurements, secure the measuring heads in horizontal position.

NOTE:
90° rotation must be backward (clockwise for the left-hand wheels and counterclockwise for the right hand wheels); 180° rotation may be in both directions.

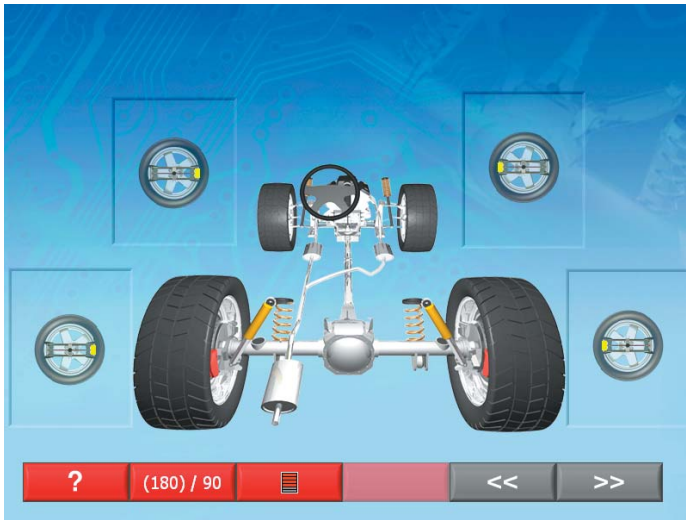
8.1 - Runout with vehicle jacked up

1. Before measuring this type of runout, the wheel clamps with the measuring heads must have been fitted on the wheels, the vehicle lifted and the plates released.
2. Starting from any measuring head (the right-hand front in this example), turn the wheel until the wheel clamp knob is in the position suggested on the screen: down for 180° runout (*Fig. 23*),or 90° towards the rear of the vehicle for 90° runout (*Fig. 23a*).

23



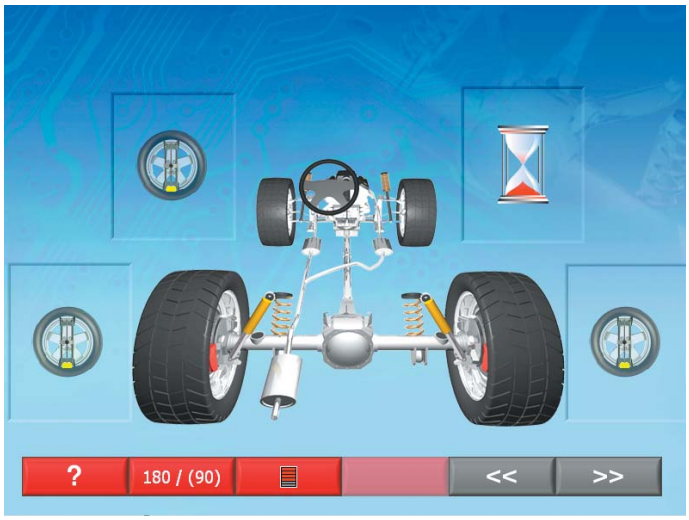
23a



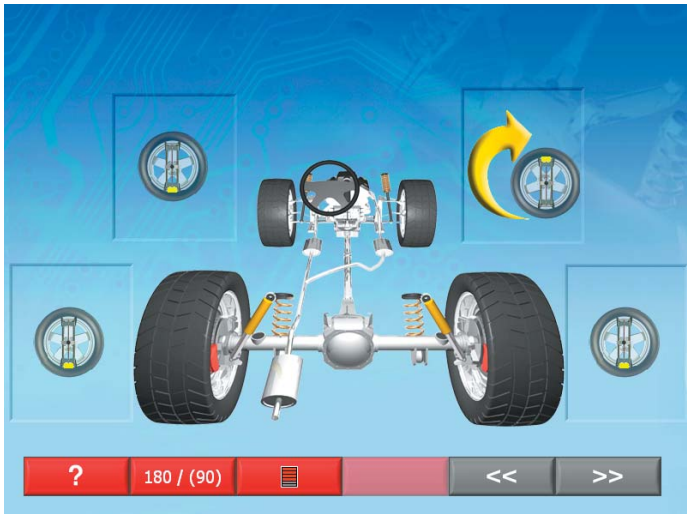
NOTE: The wheel clamp knob is yellow coloured on the screen.

3. Level the measuring head and press the keypad OK on it; the following appear in succession:

24



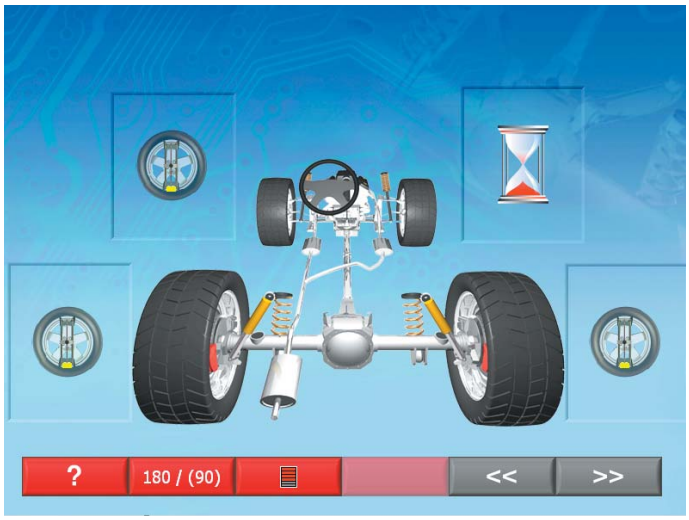
25



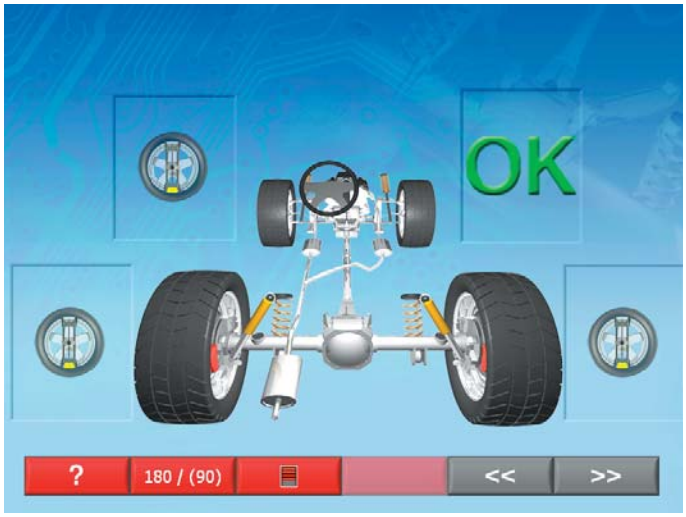
4. Turn the wheel 90° or 180° so that the wheel clamp knob moves upward as suggested on the screen.

5. Level the measuring head and press again the keypad OK on it; the following appear in succession:

25a



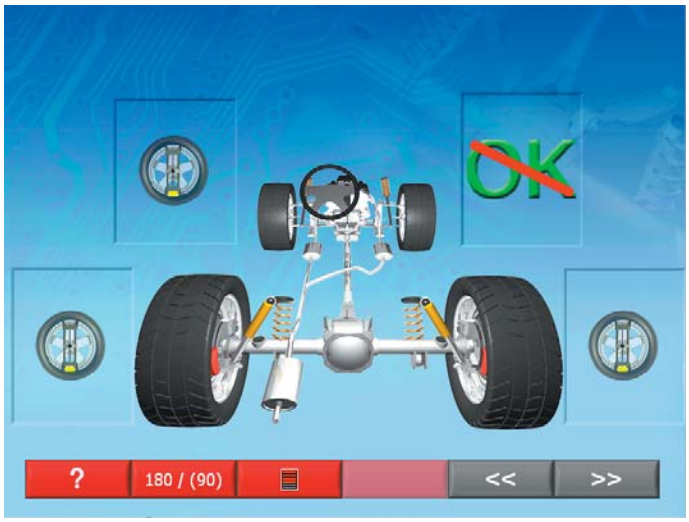
26



6. Carry out the same operations on the other wheels (if necessary, they can be repeated)
7. lower the vehicle, bed in the suspensions and position the brake pedal lock.

NOTE:
If the system detects an excessive error during the runout phase, the following screen will be displayed:

26a



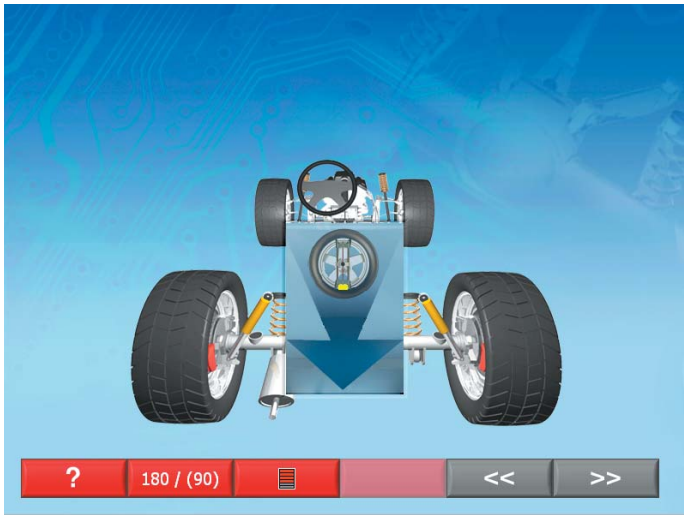
Check mounting of the wheel clamps and that they are properly coupled to the measuring heads.

Proceed by following the instructions in *paragraph 8.3.*

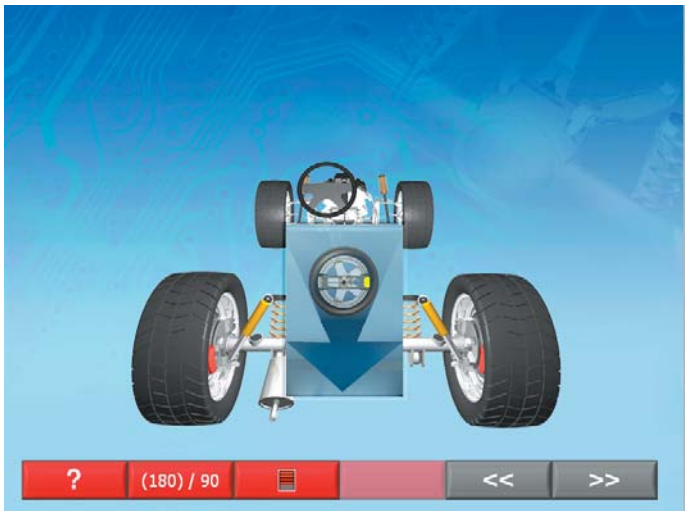
8.2 - Runout with vehicle on the ground

1. Before doing this type of runout, the wheel clamps with the measuring heads should already have been mounted on the wheels and the vehicle positioned in proximity of the locked turntables (half a wheel turn) like described:
- 180° in front of or behind the turntables (*fig. 27*)
- 90° behind the turntables (*fig. 27a*)

27

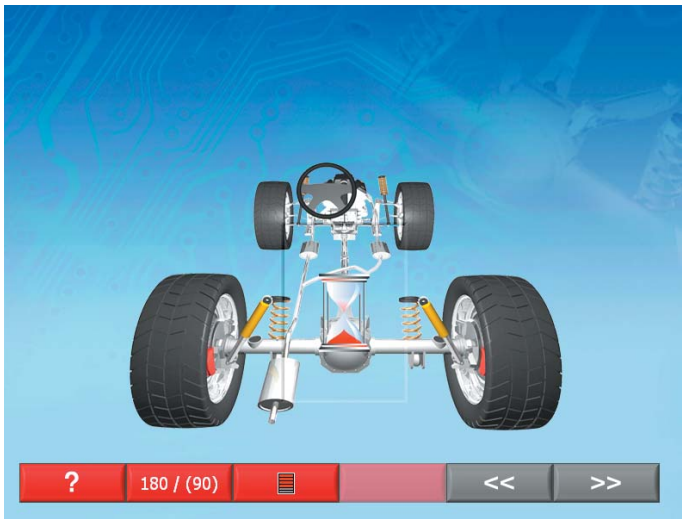


27a

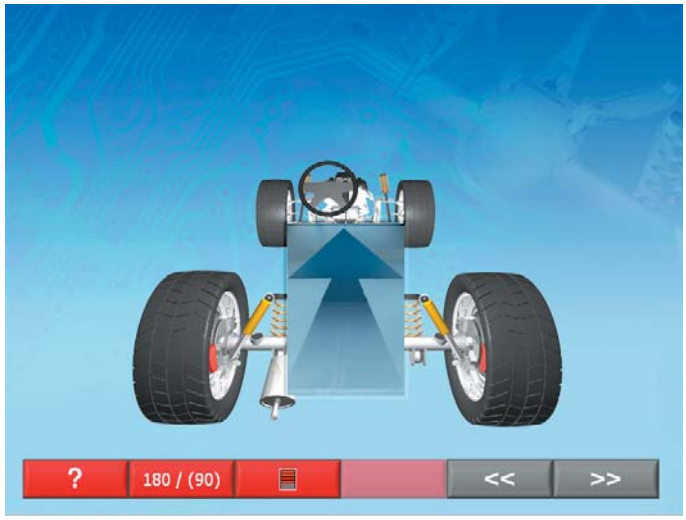


2. Press OK on the keypad of any measuring head; the following appear in succession:

28



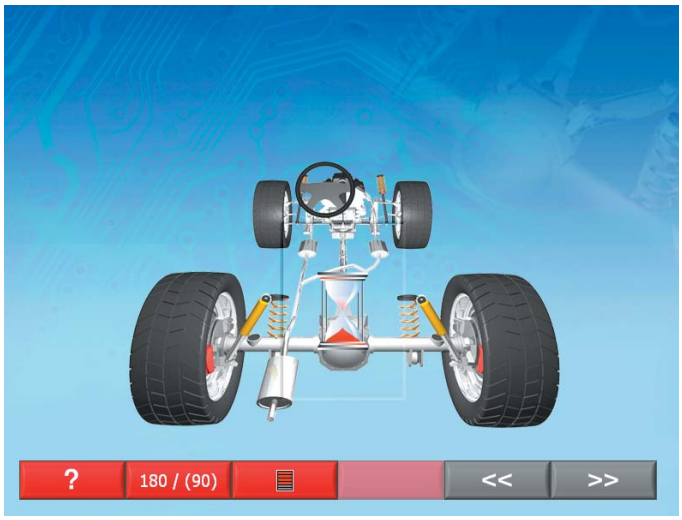
29



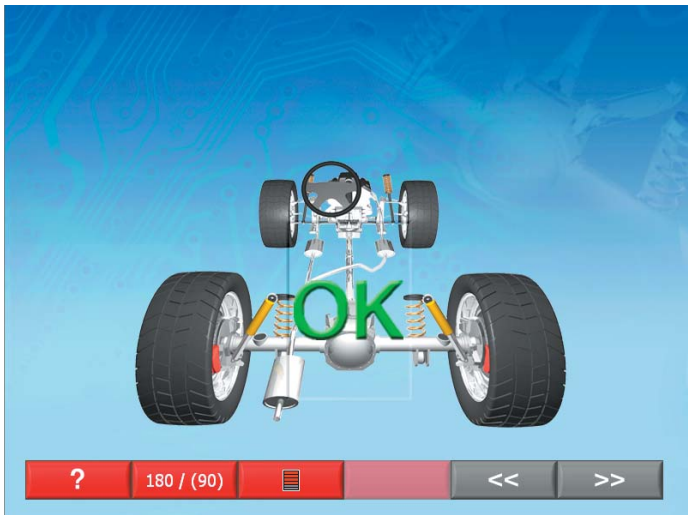
3. Push the vehicle by a half or quarter wheel turn until it is positioned above the plates.

4. Press again OK on the measuring head keypad. the following appear in succession:

30

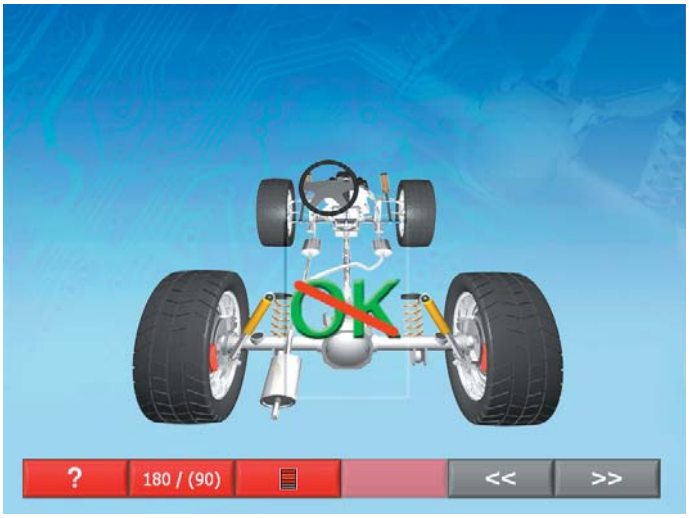


31



NOTE:
If the system detects an excessive error during the runout phase, the following screen will be displayed:

32



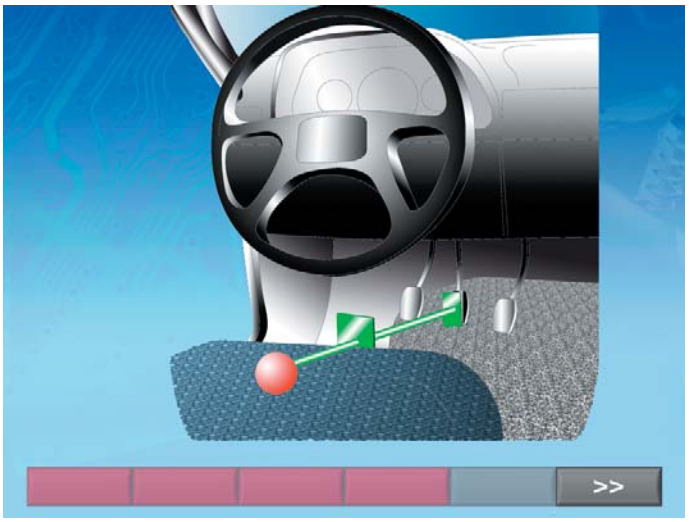
Check mounting of the wheel clamps and that they are properly coupled to the measuring heads.

8.3 - Final operations

Having finished the runout measurements, both with the vehicle lifted and on the ground:

1. Press F6; the following appears:

32a



2. Release the plates, fit the brake lock and align the vehicle suspension.

After about 15 seconds, it automatically goes to the next phase.

F6 : goes to the next phase before the 15 seconds have elapsed

9 - Steering

The steering function allows measuring the characteristic steering angles: caster, upright inclination, angle included, cornering toe-out.
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° or 20° steering: required only to measure the cornering toe-out or to comply with a procedure of the vehicle manufacturer

To select the type of steering, on the steering page:

1. Press F3, to access the menu

33

2. Press the key corresponding to the desired steering mode

F1	: 10° steering *Par. 9.2*
F2	: 20° steering *Par. 9.2*
F3	: Fast steering *Next Par.*

9.1 - Fast steering

Fast steering allows reducing the time required to execute steering compared to the classic 10° or 20° steering.

To execute fast steering, follow the on-screen instructions:

34

1. Steer to the left until the word '**STOP**' appears

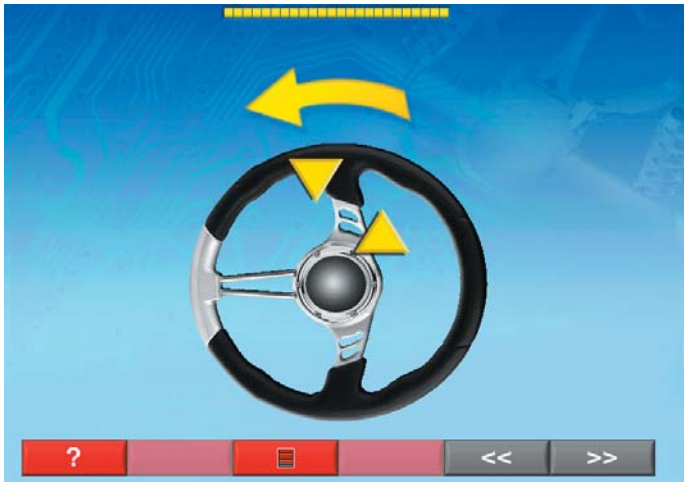
35

2. Without moving the steering wheel, wait for the word '**STOP**' to disappear

36

3. Steer to the left until the word 'STOP' appears again
4. Without moving the steering wheel, wait for the word '**STOP**' to disappear
5. Steer to the left until a pair of yellow triangles appears

37



6. Steer until the triangles are aligned. The word '**STOP**' appears again.

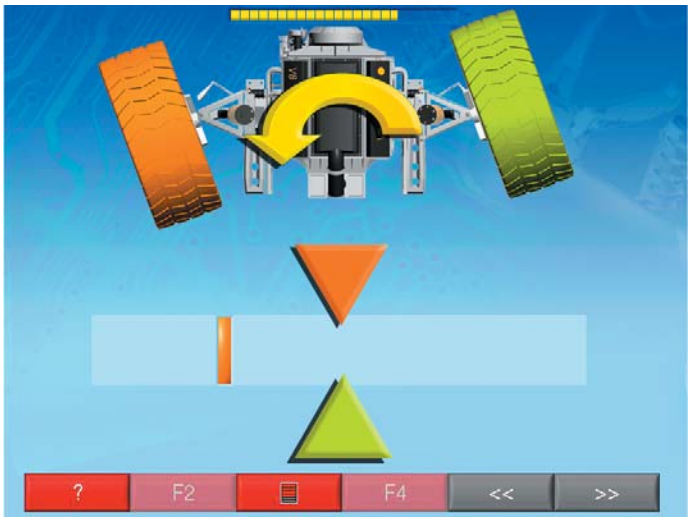
38

7. Without moving the steering wheel, wait a few seconds.
The vehicle diagnostics screen appears *Chap. 10.* Otherwise, steering has been completed.

9.2 - 10° or 20° steering

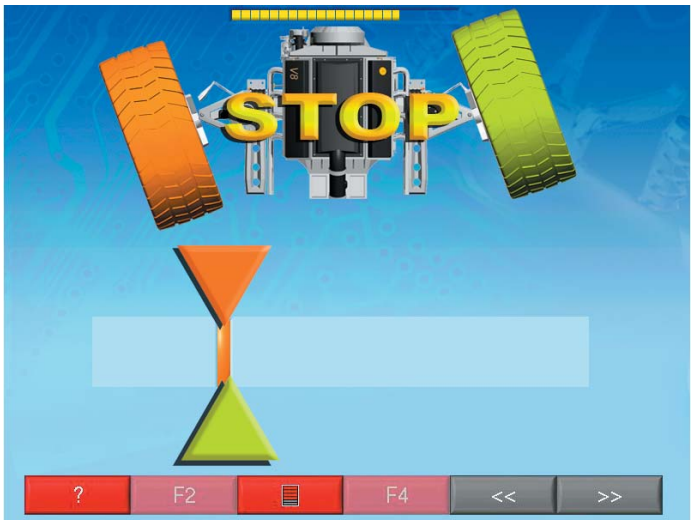
10° or 20° steering is required to measure the cornering toe-out or to comply with a procedure of the vehicle manufacturer. In other cases, it is recommended to use fast steering.
To execute 10° or 20° steering, follow the on-screen instructions:

39



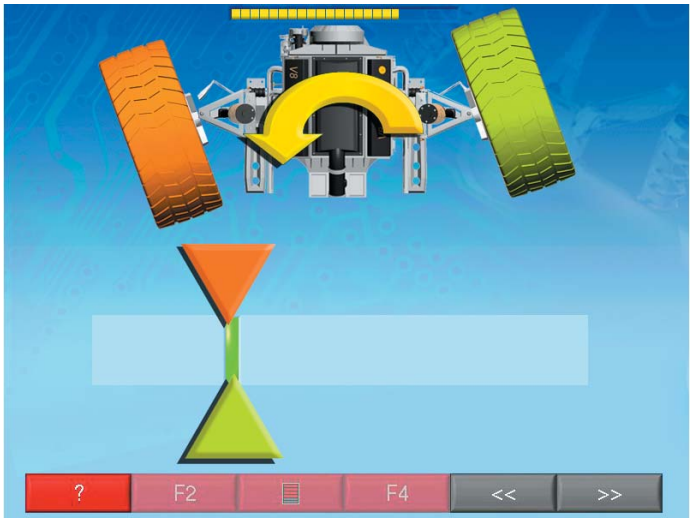
1. Turn the steering wheel to the left until the orange triangle lines up with the vertical bar. The word **STOP** appears:

40



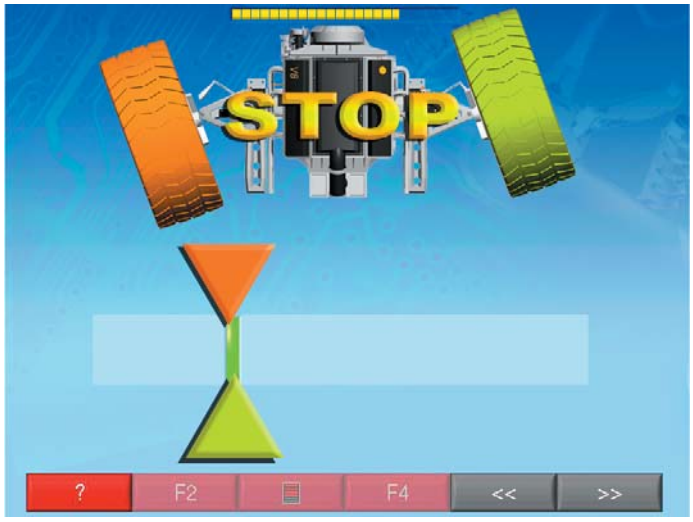
2. Without moving the steering wheel, wait for the word **STOP** to disappear. Depending on the case, the following screen may appear or directly the one shown in Fig. 42a.

41



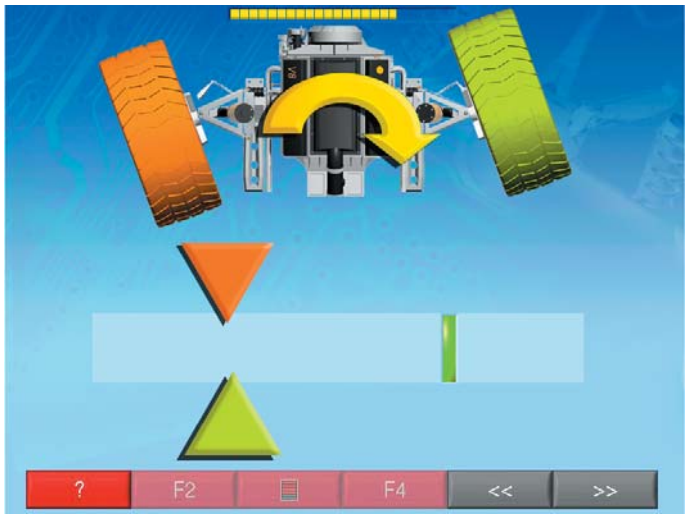
3. If the above screen appears, turn the steering wheel until the green triangle lines up with the vertical bar. The word **STOP** appears

42



4. Without moving the steering wheel, wait for the word **STOP** to disappear. The following appears:

42a

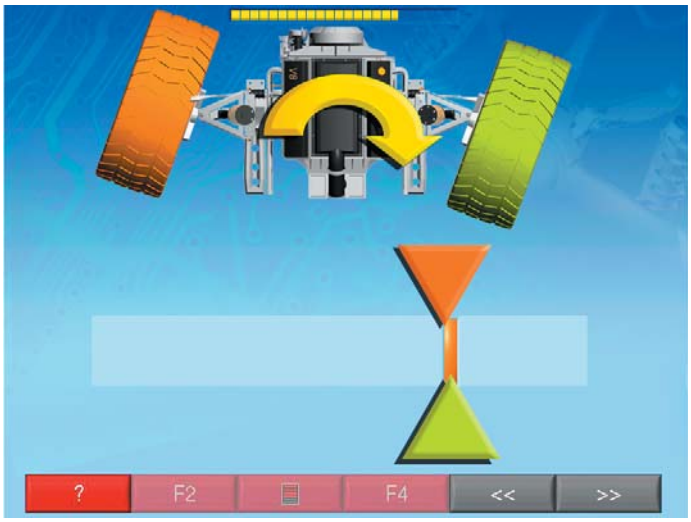


5. Turn the steering wheel to the right until the green triangle lines up with the vertical bar. The word **STOP** appears

42b

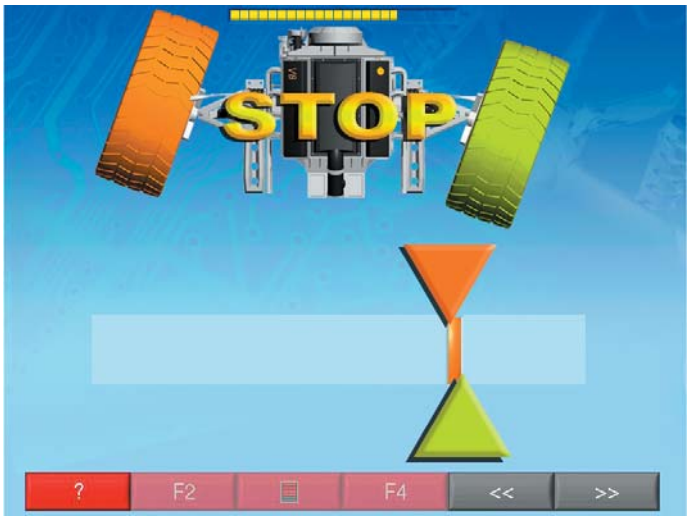
6. Without moving the steering wheel, wait for the word **STOP** to disappear. Depending on the case, the following screen may appear or directly the one shown in Fig. 43.

42c



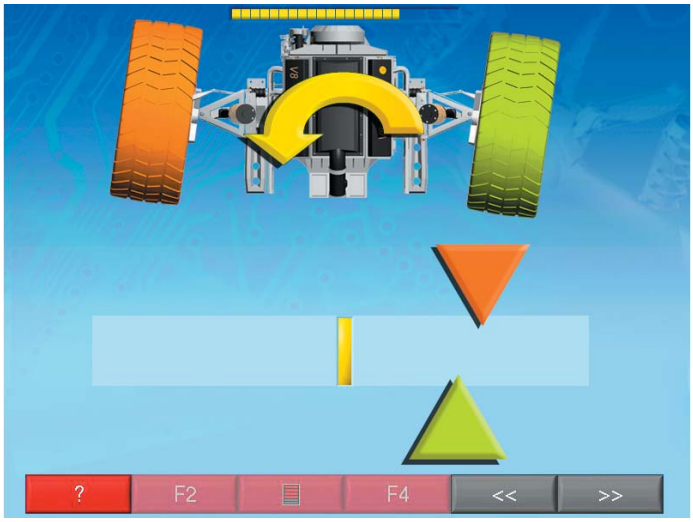
7. If the above screen appears, turn the steering wheel until the orange triangle lines up with the vertical bar. The word **STOP** appears

42d



8. Without moving the steering wheel, wait for the word **STOP** to disappear. The following appears:

43



9. Turn the steering wheel to the left until both triangles line up with the vertical bar. The word **STOP** appears

44

10. Without moving the steering wheel, wait for the word **STOP** to disappear. The vehicle diagnostics screen appears (☛ *next chapter*).

☛ *Do you have any feedback? Please write to* ***manuals@enet.it*** *specifying the code I 0587-GB*

10 - Vehicle diagnostics

After having carried out the steering procedure, the diagnostics page is displayed, which summarizes the measurements made on the vehicle.

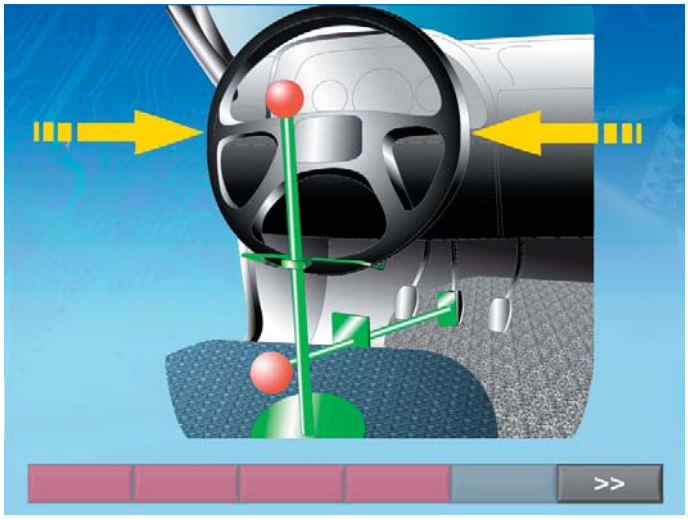
45

F1	: Help
F2	: notes on client can be entered
F5	: previous page (steering)
F6	: next page (vehicle adjustment - rear axle)

11 - Vehicle adjustment

The following screen appears:

45a



After about 15 seconds, it automatically goes to the next phase.

F6	: goes to the next phase before the 15 seconds have elapsed

NOTE:
Before proceeding with vehicle adjustment position the steering wheel straight using the steering lock.

There are two procedures to adjust the vehicle:

1. "Normal" procedure

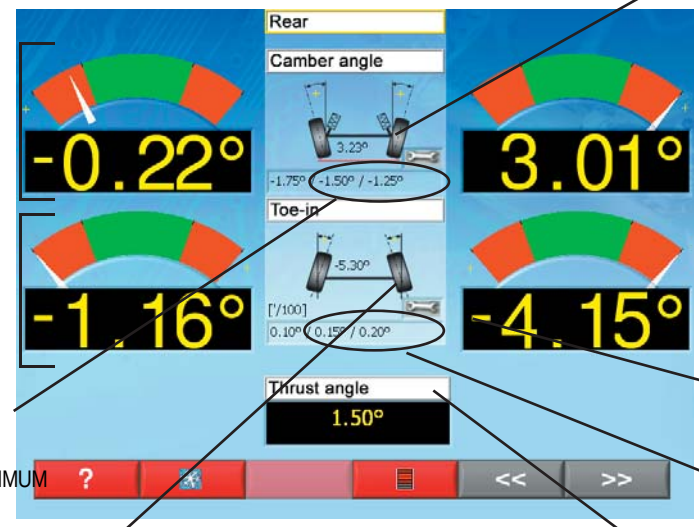
2. "Audi" procedure

The software automatically selects the correct procedure for the vehicle.

11.1 - Normal procedure

A screen appears indicating the camber angle, toe-in and thrust angle for the rear wheels:

46



DIFFERENCE BETWEEN LH AND RH VALUES

LEFT REAR CAMBER ANGLE

RIGHT REAR CAMBER ANGLE

LEFT REAR TOE-IN

RIGHT REAR TOE-IN

MONKEY SPANNER: INDICATES THAT THE ANGLE IS ADJUSTABLE

PERMISSIBLE CAMBER ANGLE VALUES: MINIMUM/STANDARD/MAXIMUM

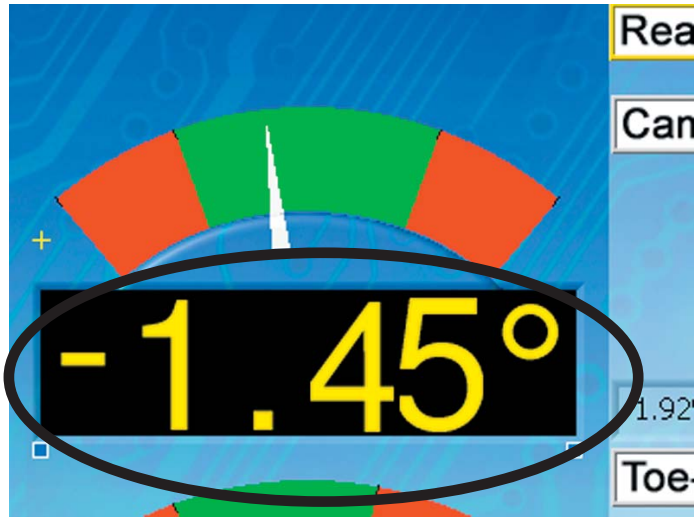
PERMISSIBLE TOE-IN ANGLE VALUES: MINIMUM/STANDARD/MAXIMUM

TOTAL TOE-IN

THRUST ANGLE

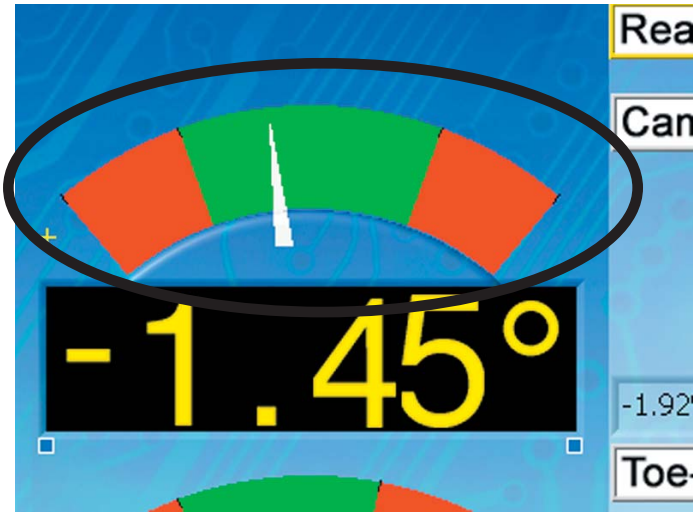
Each angle is shown both as a value

46a



and in graphic form by means of a white pointer on a green and red scale:

46b



1. Adjust the vehicle in such a way that the white pointer is on the green area. The green area of the scale represents the angles within tolerance and the red one the angles out of tolerance.

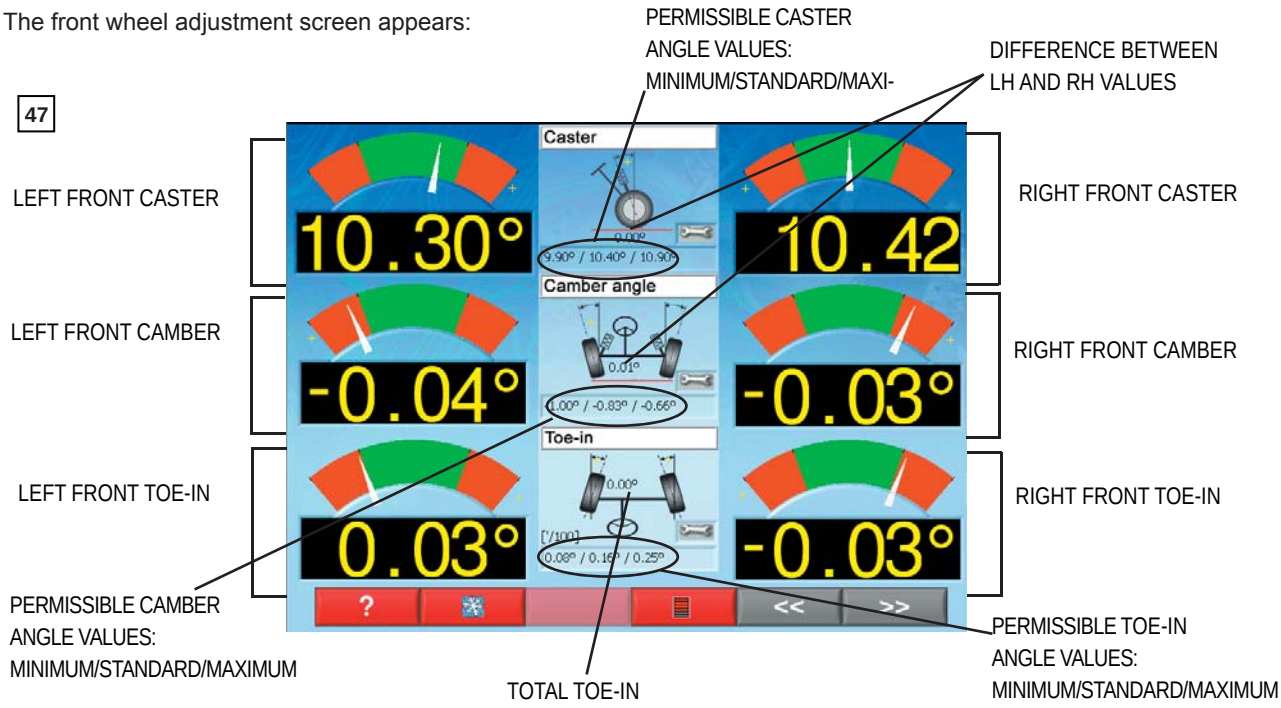
N.B.: ***If the red and green scales are difficult to see, they can be enlarged (par. 11.3)***

N.B.: ***if it is necessary to lift the wheels off the ground to adjust the vehicle, carry out the freeze procedure (par. 11.4)***

2. Press F6

The front wheel adjustment screen appears:

47



3. Adjust the camber angle, caster and toe-in of the front wheels until the white pointers are on the green areas.

4. Press F6 .

11.2 - Audi procedure

In certain conditions, but not always, a screen appears for adjustment of the camber angle and caster (not toe-in) of the front wheels.

48

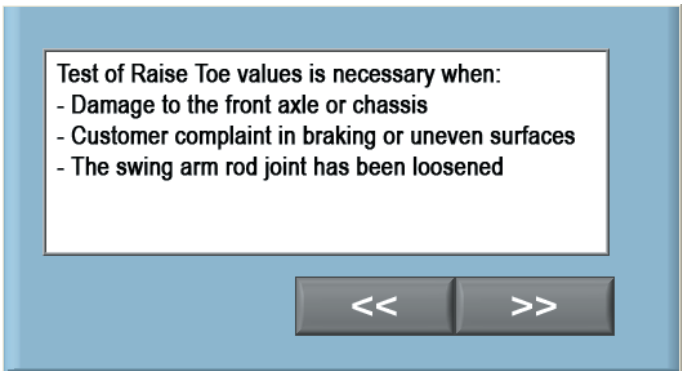
1. Adjust and press F6

The rear adjustment screen appears (similar to *Fig. 46*).

2. Adjust and press F6

The following message appears:

49



If the vehicle falls within one of the cases contemplated in the message, press F6 and jump to point 4. Otherwise, press F5 and go to the next point.

3. The front adjustment screen appears (*Fig. 47*)

Adjust and press F6. The procedure has now been completed.

4. The following appears:

49a

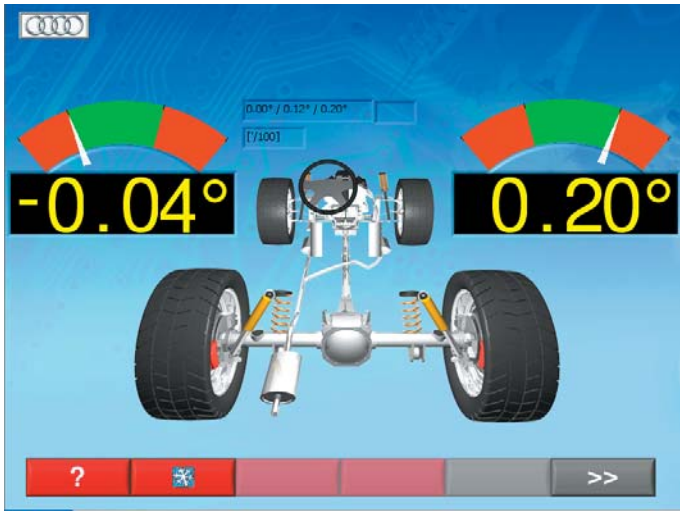
Lift the vehicle

5. Fit the adapters to the Audi type chassis

6. Press F6

The following appears:

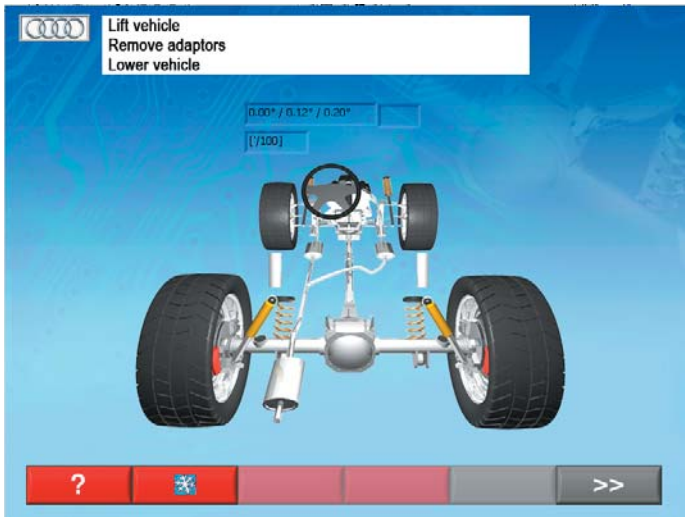
49b



7. Adjust the toe-in.

8. Press F6; the following appears:

49c



9. Lift the vehicle and remove the adapters, then lower the vehicle

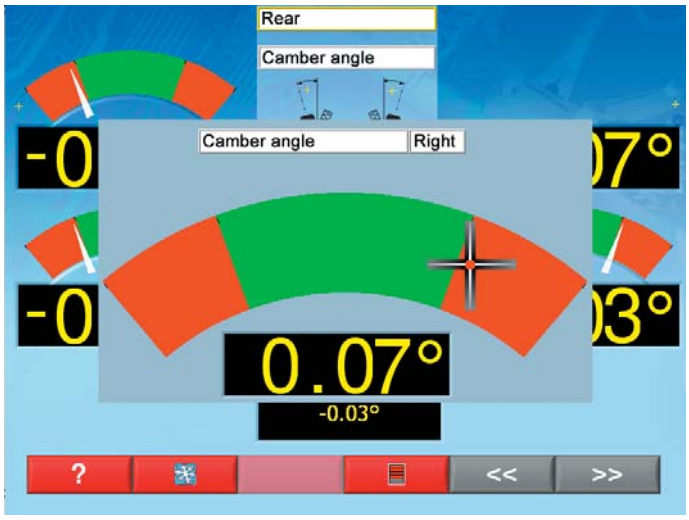
10. Press F6. The procedure has now been completed.

11.3 - Zoom

From any adjustment screen:

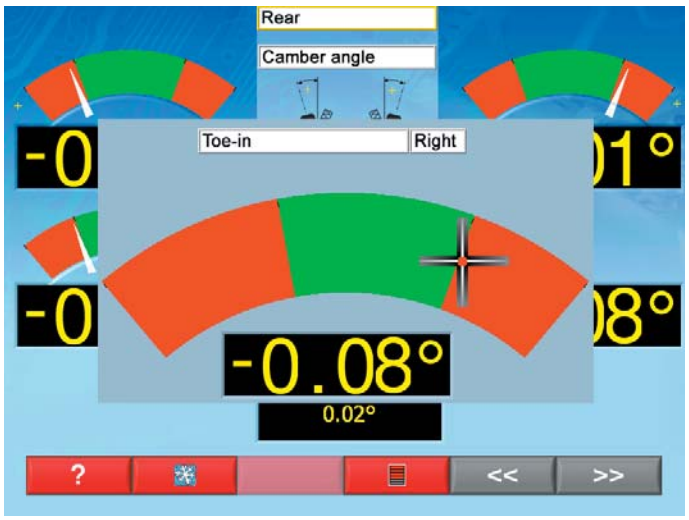
1. Press once OK to enlarge the camber angle

50



2. Press again OK to enlarge the toe-in

50a



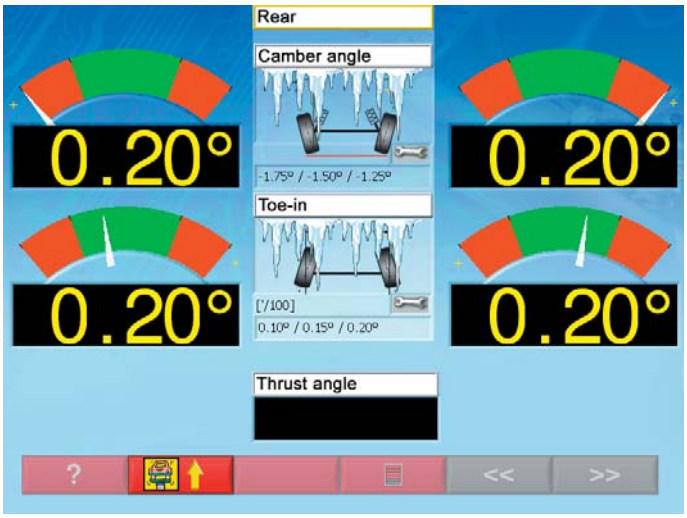
Press OK a third time to return to normal display.

11.4 - Freezing

The measurement freeze function is useful if needing to lift the wheels off the ground to allow adjustment.

1. Press F2 or click on  to freeze the angles. The following appears:
2. Lift the vehicle

51



3. Press F2 or click on  to unfreeze the angles
4. Adjust the rear
5. Press F6 to go to front adjustment
6. Adjust the front
7. Press F2 or click on  to refreeze the angles
8. Lower the vehicle
9. Press F2 or click on  , unfreeze the angles and finish.

12 - Summary of diagnostics and adjustment data

Once the front and rear axles have been adjusted, the following appears:

52

F1	: Help
F2	: to enter client notes (*par. 6.2*)
F3	: final menu page
F4	: entering the maximum steering values
F5	: previous page (rear axle measurements)
F6	: the next page (initial page)

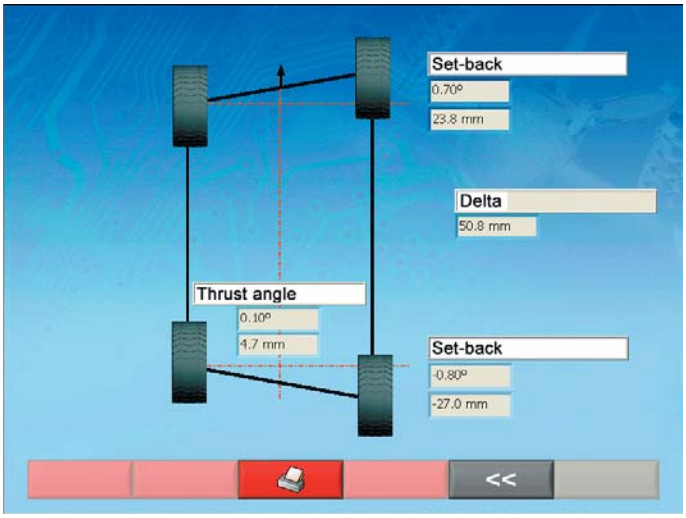
12.1 - Final menu

When F3 is pressed, the final menu is accessed.

53

Press F5 to display the extra measurements (*Fig. 54*) with an indication of the axial deviation values, thrust axle and pitch delta in degrees and in mm (the values in mm are present only if the pitch and track values appear in the vehicle database).

54



F1 : to return to the preliminary operations (*Chapter 8*)

F2 : to return to the steering procedure (*Chapter 9*)

F3 : to print the test done

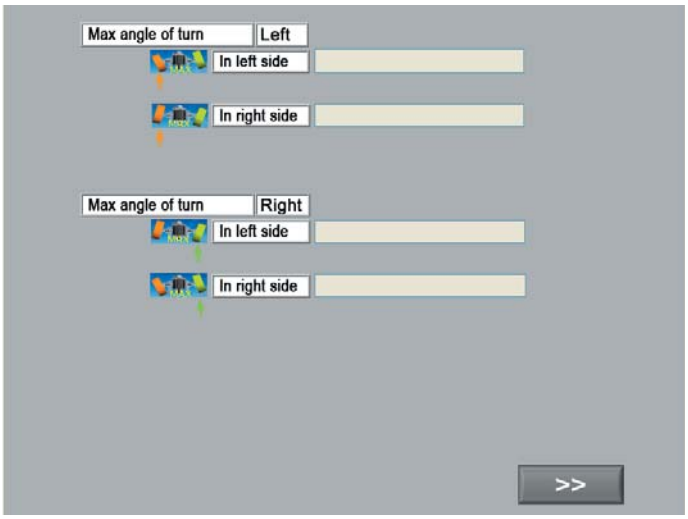
F4 : to save the test done

F5 : to display the vehicle extra measurements

12.2 - Max steering

Pressing F2 you can enter the maximum internal and external steering values for the RH and LH wheels. The values entered appear in the printout:

55

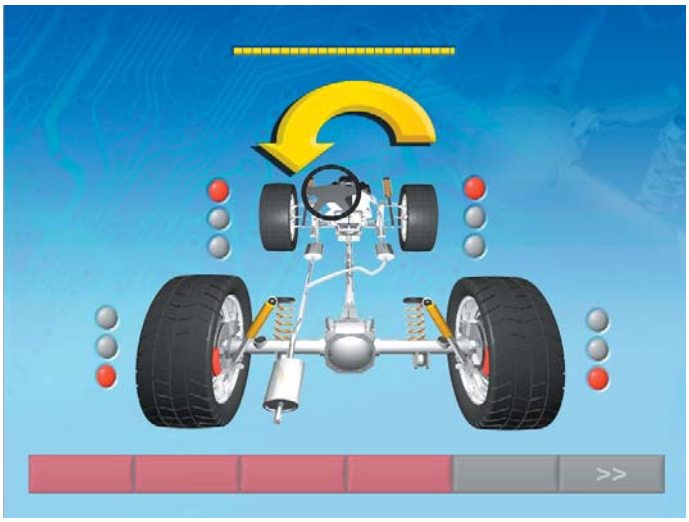


Do you have any feedback? Please write to ***manuals@enet.it*** *specifying the code I 0587-GB*

13 - Aligning and levelling the measuring heads

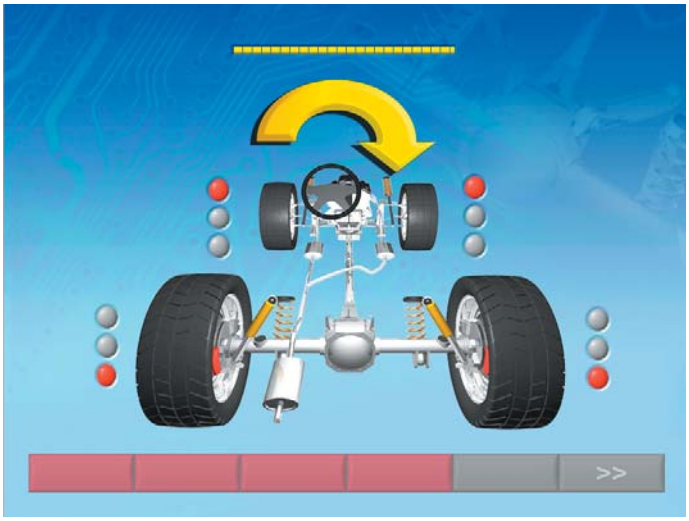
Before the steering and adjustment procedures, check steering wheel alignment and the level of the measuring heads. Turn the steering wheel to the right or left until the wheels are aligned

56



The wheels are not aligned, steer left (*Fig. 57*)

57

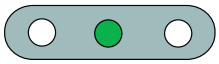
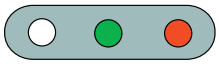
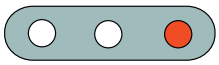
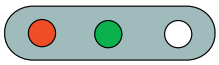
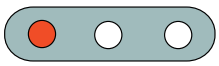


The wheels are not aligned, steer right (*Fig. 58*)

58

THE WHEELS ARE ALIGNED, DO NOT STEER.
Position the measuring heads horizontally until the green LED comes on and lock the knob.

59

	**green LED on fixed**	**YES**	**MEASURING HEAD LEVEL**
	green LED on fixed RH red LED on fixed	NO	MEASURING HEAD NOT LEVEL
	RH red LED on fixed	NO	MEASURING HEAD NOT LEVEL
	green LED on fixed LH red LED on fixed	NO	MEASURING HEAD NOT LEVEL
	LH red LED on fixed	NO	MEASURING HEAD NOT LEVEL

This operation must be carried out for all the measuring heads displayed.

After aligning and levelling the measuring heads, the program takes a few seconds to acquire the measurements of the vehicle angles,

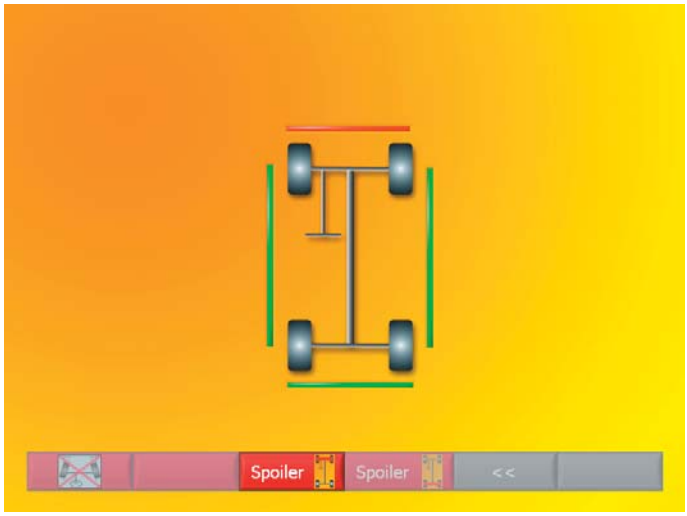
60

and then automatically goes to the next phase.

14 - SPOILER procedure

The SPOILER procedure consists of lowering two measuring heads to allow the infrared rays to avoid the obstacle it poses.

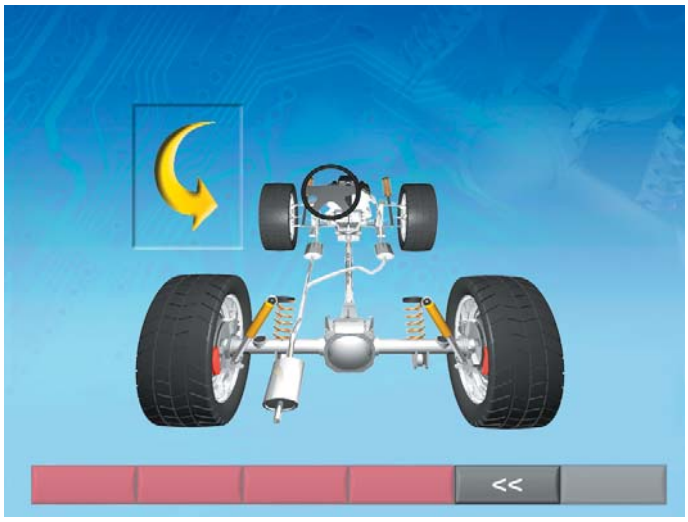
61



F3 / F4	: activate the Spoiler procedure for the front/rear axle
F5	: to return to the previous page

When F4 is pressed, the procedure is activated and the following screen is displayed:

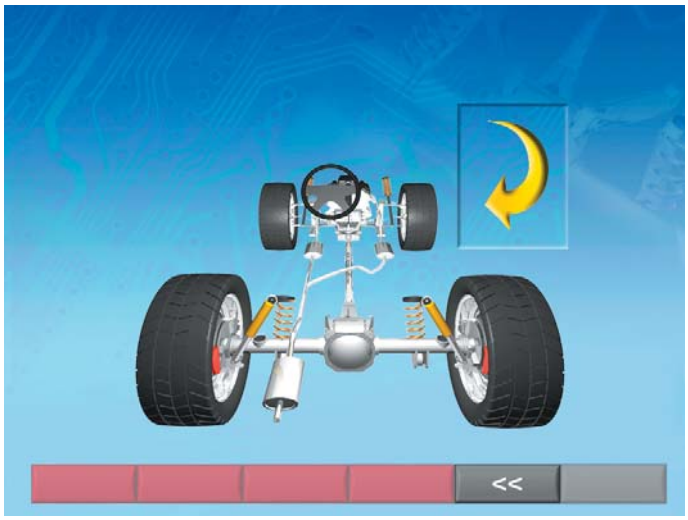
62



Release and lower the left front measuring head until the transducer on the end of the arm is under the spoiler.

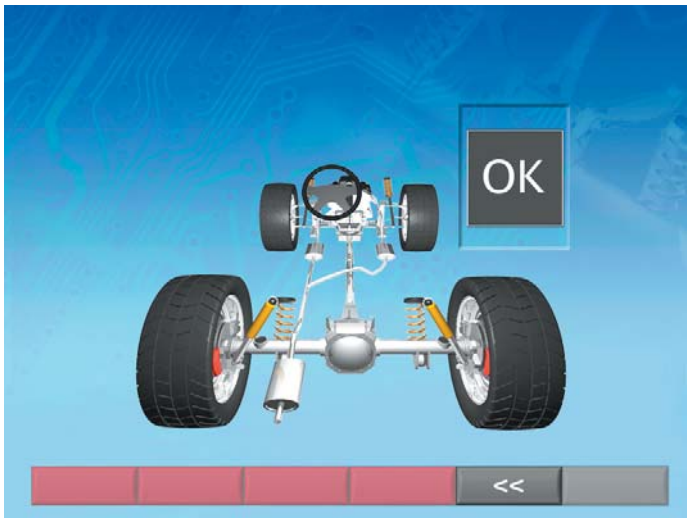
Press OK on the keypad and the level indicator will turn green to signal the new level threshold.

63



Lower the right front measuring head until it communicates with the left front measuring head and the level indicator will turn green;

64



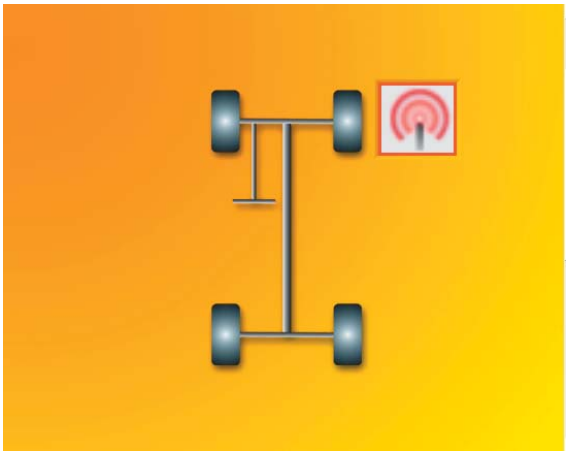
Press OK on the keypad of the right detector.

15 - Error messages

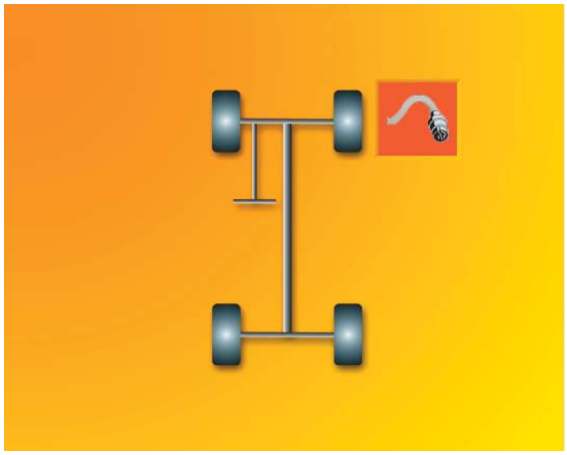
15.1 - Data transmission error

During normal operation the following screen may appear:

65 - RADIO version



65a - CABLE version



It indicates that a data transmission error has occurred or an error of one or more measuring heads (indicated by the red square).

To restore data transmission, carry out one of the following operations:

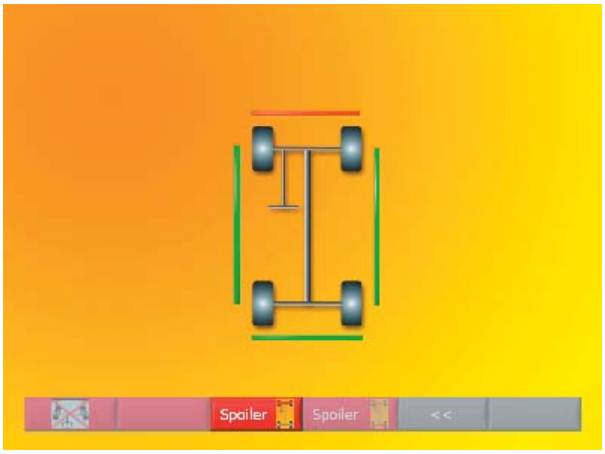
for CABLE versions:
- check that the measuring head is on (level LED on)
- disconnect and reconnect the power cable

for RADIO versions:
- check that the measuring head is on (level LED on)
- check the battery charge level and, if necessary, connect the recharging cable
- turn the measuring head off and on again
- press “ESC” to return to the presentation page; press F11 to reset radio communication
- carry out a new power on procedure (*chapter 4*)

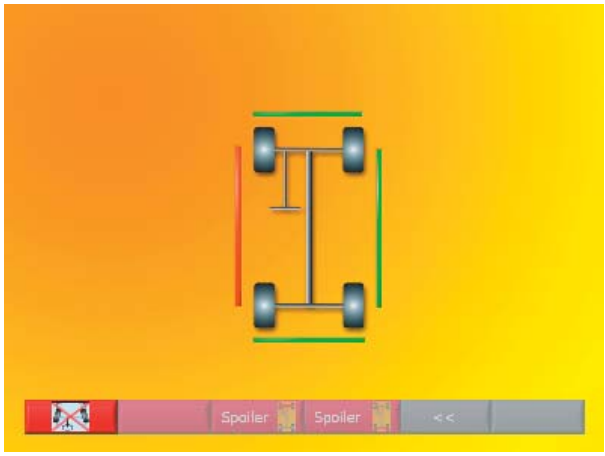
15.2 - Infrared rays break

During normal operation the following screen may appear:

66



66a



It indicates that the infrared ray between two measuring heads has encountered an obstacle:

- check for the presence of an obstacle and remove it
- if the obstacle is the spoiler of the vehicle, press F4 or F5 to activate the “SPOILER procedure” (*chap. 14*)
- If an infrared ray is interrupted between the front and rear heads, the F1 key allows continuing the adjustment front or rear) disabling the toe-in calculation.

16 - Storage and scrapping

Storage

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

Scrapping

If you decide not to use the machine any longer, it is advisable to make it inoperational. It is advisable to render harmless any parts which may constitute a source of risk. Assess the classification of the system in relation to disposal-recycling criteria. Dispose of as scrap metal through specific waste collection centres. If considered special waste, dismantle and separate into uniform groups and dispose of in accordance with the laws in force.

17 - Maintenance

17.1 - Cleaning

- Clean the monitor 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 used, it is advisable to cover it with a dust sheet.
- Clean the optical units of the measuring heads using a moist cloth; do not use solvents.
- Cleaning, cartridge replacement and other operations concerning printer maintenance are described in the manual provided. Consult it carefully before carrying out any maintenance work on the printer.

CAUTION!

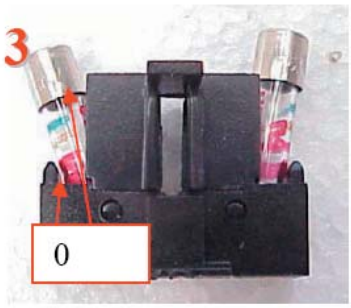
Any other maintenance operation not described above (for example, testing calibration) is described in the specific installation and calibration manual; these operations should only be performed by specialist and authorised personnel.

17.2 - How to check and replace the power fuses

When to replace it	The computer cabinet does not switch on despite the power being on.
Instrument required	Tester (ohm)
Recommended spareparts	5x20 6.3A 250V fuses

1. Identify the power socket on the rear of the cabinet

2. Disconnect the power socket



3. Using a screwdriver, remove the two fuses housed just below the power plug

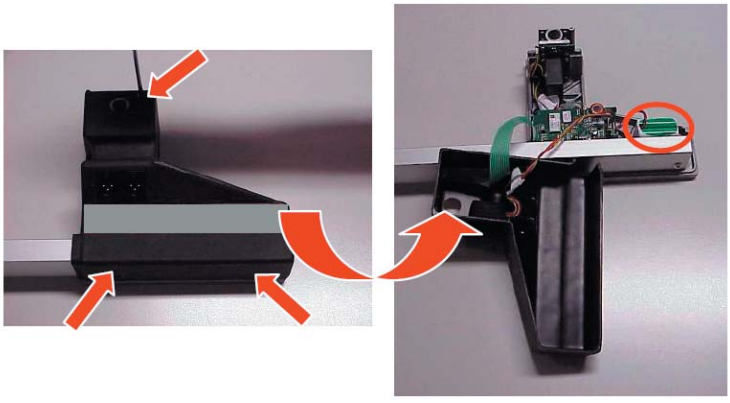
4. Check that the resistance of both fuses is around 0 Ohm
   • If so, the fuses are intact; refit them; the fault lies elsewhere
   • Otherwise, the fuses are faulty. Replace them with 5x20 6.3A 250V fuses.

17.3 - How to replace a measuring head battery

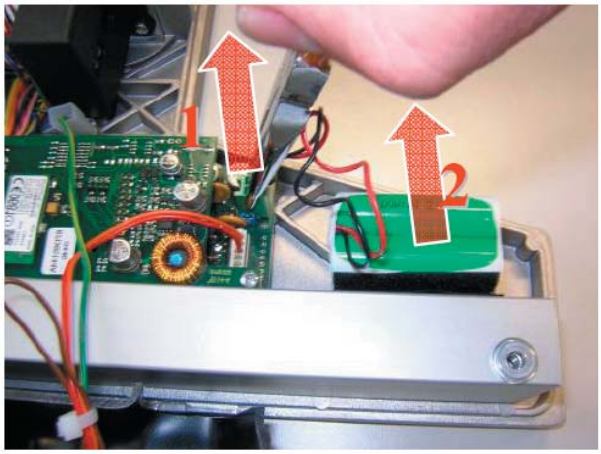
When to replace it	When the battery does not maintain the charge for long enough (one working day with fulltime use or a few working days when occasionally use) *If a measuring head does not maintain the charge for long enough it does not necessarily mean that the battery is the cause. Before deciding to replace it try other solutions to this problem* ☛ *Troubleshooting Section TS*
Recommended spare parts	Original spare battery (Spare part code ☛ Section E) or 6-pack of NiMh 1.2V format AA, 2000mAh batteries, available on the market

1. Remove the cover from the measuring head by undoing the 3 screws shown in the figure.

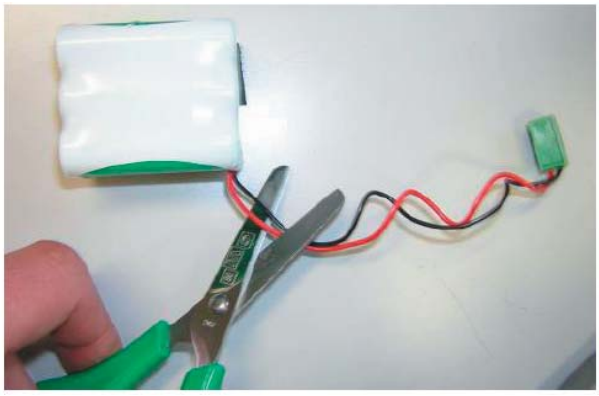
Do not pull the cover with force as you may damage the connections



2. Gently remove the battery connector from the board, if necessary with the aid of pliers, and then disconnect the battery



3. If you have a 6-pack of NiMh 1.2V, format AA, 2000mAh batteries available, connect it to the connector of the battery to be replaced
   a. Cut the cables of the battery to be replaced near the battery itself



   b. Connect the cables to the new battery, carefully insulating the contact
   c. Remove the Velcro from the battery to be replaced and attach it to the new battery, using some glue if necessary

4. Position the new battery (figure under point 2)
5. Refit the cover on the measuring head (figure under point 1)
6. Dispose of the old battery in a proper manner in accordance with the regulations in force. The procedure is now complete.

Related topics *Par. 2.1 - Improving the life of the measuring head batteries*

17.4 - How to activate the vehicle database

When to do it	The message “Invalid DB code” appears on the initial page i.e. you do not have the right to access the data
Prerequisites	Obtain the vehicle data activation code from your dealer

1. Turn on the system and access the initial page

2. Access the test page

a. Click F3, and again F3. The password prompt appears

b. Click on the white input box and enter the password 2 4 6 7

c. Click Enter to confirm. The test page appears.

3. Click F12. A box appears in which to enter the activation code (1)

The box (2) contains the machine code. You might need this to request the activation code from your distributor

4. Click on the box (1) and type in the activation code

The letters must be in lower case

5. Click F5 to save the activation code

6. Turn the system off and on. Access the initial page

- If the message “Invalid DB code” reappears, it means that you have incorrectly entered the activation code. Repeat the procedure from point 2.
- If the message “Invalid DB code” does not reappear, you have the right to access the data. The procedure is now complete.