




INSTALLATION & OPERATION MANUAL

Atlas Edge 701 Wireless 3D Alignment Machine



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SYMBOLS USED IN THE MANUAL

	SYMBOLS
	FORBIDDEN!
	Mandatory! Operations or jobs to be performed compulsorily
	Hazard! Be especially careful

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0 CAUTION

Any damage caused by failure to follow the instructions in this manual or improper machine use shall relieve Atlas of all liability.

0.1 Preliminary Safety Information



Before starting the machine:

- Read the instructions and the entire manual before using or working on the wheel aligner. This manual represents an integral part of the product and is intended to inform the user on how to use the 701 wheel aligner. Keep the manual for the entire life of the machine. Keep it in an easy to access place and refer to it every time the need arises. All machine operators must be able to read the manual.
- Make sure the power supply is in conformity with the specifications shown on the plate. Voltage and frequency data plate is positioned on machine back side. Please, read plate data. NEVER connect aligner to a voltage or frequency other than the specified ones.
- Duly arrange wheel aligner power cable. This product features a 3-wire plug with built-in grounding. It can be plugged into a socket with built-in grounding, only. Should a grounded socket not be available for machine connection, contact an electrician. Do not tamper with or misuse plug.

Upon machine switching off:

- Do not switch off the built-in PC by unplugging it or by turning PC switch to off, but follow the procedure set forth in par.6.2 on page15. PC wrong switching off could lead to HARD-DISK files "corruption".
- The switching off procedure set forth in par. 6.2 page 15 does not affect battery recharge supports, which continue being powered.

In emergency conditions and before performing any maintenance:

- Insulate the machine against any power source using the special master switch, and remove plug from power socket.
- Do not try to service this unit arbitrarily, as the opening or removal of machine doors could expose user to hazardous voltage. Maintenance operations shall be carried out by authorized service personnel, only.

Work environment and machine cleaning:

- The work environment must be kept clean and dry, and must not be exposed to atmospheric agents. It must also be well lit.
- Do not clean the machine using jets of water and compressed air.
To clean plastic panels or surfaces use a moist cloth (avoid using liquids containing solvents).


Atlas shall be entitled to make any changes to the models described in this manual at any time for reasons of a technical and commercial nature.

1 INTENDED USE

The 701 system is equipment designed for detection of all vehicle characteristic angles. Applications: double axle cars and light commercial vehicles with wheelbases ranging between 1800 mm (min.) and 4700 mm (max.).

Angles are detected by two sensors placed between the front and rear wheels, each fitted with two Megapixel cameras which detect the spatial position of 4 three-dimension targets on the wheels.

Infrared measurement of reciprocal angles between the sensors (no cable connection). Data

are transmitted from sensors to cabin VIA RADIO through modules  **Bluetooth**[®].
Machine operational temperature range: 0 to 40°C.

2 OPERATOR TRAINING

The machine must be used by specifically trained and authorized personnel, only. To ensure proper machine use and that measurements can be efficiently taken, operators must be correctly trained and acquire the skills consistent with the instructions provided by the manufacturer. For any questions on the use and maintenance of the machine, please read the instruction manual or the manuals supplied with the individual pieces of equipment (PC, monitor, printer, ...) and then, if such doubts persist, contact an authorized after-sales center or Atlas technical assistance directly.

2.1 General Preventive Measures



- During operation and maintenance of this machine, always abide by the safety and accident-prevention regulations in force.



- The machine must only be used by adequately trained and authorized persons.



- This machine must only be used for the purpose for which it was expressly intended. Atlas declines all liability for injury or damage to persons animals and things caused by improper machine use.



- Accessories and spare parts must be fitted by persons authorized by Atlas and only original spare parts and accessories must be used.



- The machine must only be operated in places where there is no danger of explosions or fire.



- Removal or changes made to safety devices, or warning signals on the machine can cause serious hazards and represent a violation of European safety regulations.



- Before doing any maintenance jobs on the system, always disconnect the power supply.

In case of doubt, do not interpret, but contact Atlas technical assistance in order to obtain instructions suitable for performing operations in total safety.



- Do not allow unauthorized personnel to come near the wheel aligner during use.

3 MACHINE COMPOSITION

3.1 Cabinet model 701

PC KEYPAD

Machine features a 102-key, PC-type command keyboard. Function keys allow using almost all machine functions. Vehicle general data, customer data, and vehicle database customization can also be entered via PC keyboard.

MANAGING PC UPPER COMPARTMENT

For PC characteristics
See par. 3.3 page 6

PRINTER CENTRAL COMPARTMENT

Results are printed with a inkjet color printer for A4 size sheets. Printer use and maintenance instructions can be found on the manual coming with the printer itself. Comply with these instructions.

MEASUREMENT CABIN

A measurement cabin is used for all measurement operations. This cabin also features the electronic components necessary for the processing and management of the measurements made by the sensors.

Power supply: 220 / 240 Vac single phase 50/60Hz
Max. absorbed power: 500w

MONITOR

All models feature high-definition, color monitor 22" 16/9. Use and maintenance instructions can be found on the manual coming with the monitor itself. Comply with these instructions.



**SHOCK HAZARD
POWER SOCKET**

MACHINE MASTER SWITCH



**LED indicating
battery under charge**

**Battery recharge support
(ONLY preset models)**



**4 supports for
housing the clamps
with target**



3.2 Managing PC

Software is installed on managing PC (personal computer), positioned inside cabin. EPIA managing PC M830 features:


- Processor VIA Nano 1.3GHz.
- RAM 1 Gb;
- Smart card reader
- 6 USB; 1 LAN Ethernet 10/100Mb;
- Windows XP Embedded Standard 2009™ operating system, English version
- 1366x768 Pixels HD Ready video output
- Hard Disk ≥ 160 Gb

The model 701 can be equipped with the EPIA M830 PC described above with keyboard and a 19" Monitor or with a Laptop PC with a 15.6" screen, a 2.0GHz processor and 2 GB RAM – O.S. Windows 7™ in English, 1366x768 Pixels and HD ≥ 250 GB

3.3 MEASURING HEADS

The measuring heads of the 701 do not need any cable or cord connection for angle measurement or data transmission.

Detecting units consist of 2 megapixel cameras for each measuring head. Each camera features a set of high efficiency infrared LED's, used to light the 3D targets fitted on the wheels of the vehicle.

Measuring heads communicate directly with the cabin. Data are transmitted VIA RADIO through modules  Bluetooth located inside heads and cabin.

Characteristic angles of both axles of the vehicle are controlled and compensated by 4 CCD sensors and 2 electronic inclinometers located inside the two measuring heads. Data transmission among infrared measuring heads is effective also under critical lighting conditions.

Power is supplied by the special cables coming from the cabin, which supply the 12V needed for operating the heads (see 3.4.1).

Such cables can be used in battery operated models as an emergency power unit or for recharging the batteries without removing them from their housing.

For measuring heads with rechargeable batteries, power supply and consumption data are the following:

Power supply	NiMH battery (NICKEL-METAL HYDRIDE) 12V- 4Ah
Average operation with fully effective and charged battery	Approx. 8 hours
Average recharge time	Approx. 12 hours

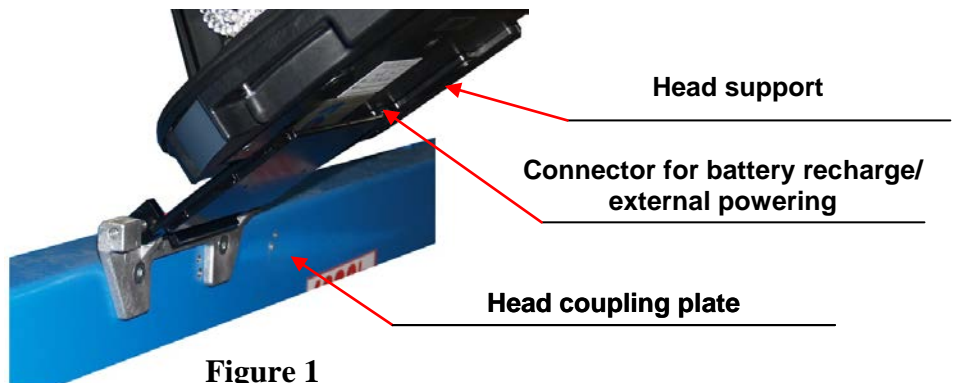
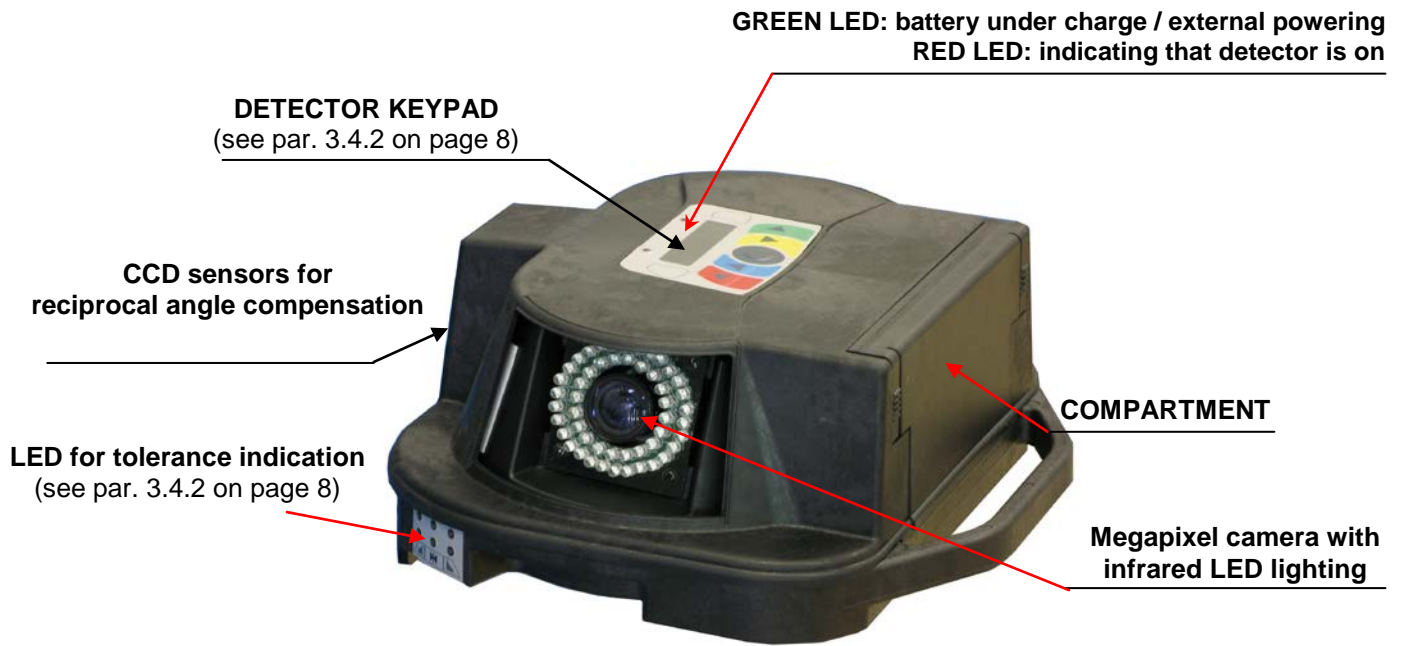


Figure 1




3.3.1 Power/recharge cables for measuring heads



3.3.2 Measuring head keypads



Figure 2

KEYS		DESCRIPTION
		Head switch-on key.
		When pressed simultaneously, they turn head manually off.

Legend of Figure 2:

- | | | |
|-----|---|--|
| A - | <ul style="list-style-type: none"> • Green LED on: | Power is supplied by the cable and the battery (if available) is being charged. |
| B - | <ul style="list-style-type: none"> • Red LED steady on: • Red LED flashing: | The measuring head is ON
Battery of measuring head is flat (when battery residual charge is lower than or equal to 30%); it will turn off after a few minutes |

3.3.3 LED indicating tolerance during adjustment

The measuring heads of (see par.3.4) feature LED tolerance indicators during adjustment.

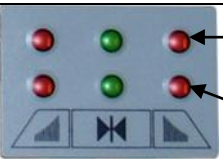
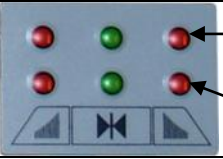
Tolerance indicator during adjustment

- GREEN LED flashing → measurement is within tolerance, exactly at the center
- RED LED flashing and GREEN LED steady on → measurement is within tolerance
- RED LED on → measurement is NOT within tolerance

NOTE: Toe-in tolerance is always indicated by the lower LED row.

During rear adjustment, camber is always indicated by the upper LED row

During front adjustment, both camber and caster can be indicated by the upper LED row. The "R" selection symbol should be set on the desired value (see 10.12 on page 34).

LED's on FRONT SIDE	
LED's on REAR SIDE	

3.4 Clamps with target

Three different types of clamps, a target must be fitted on them, as below described. They are all of self-centering type, with removable tabs.

4-point self-centering resting clamps, fitted with targets (for rims from 10" to 24")



Figure 3

They are marked as Front Left and Right and Rear Left and Right, according to the following table (see Figure 4):

FL = FRONT LEFT
FR = FRONT RIGHT
RL = REAR LEFT
RR = REAR RIGHT

Warning: the inclination of the target is determined at installation time, as described in the par. 5.2.3

Once the target is fixed, during the procedure, is only required to fasten the clamps, making sure to position them vertically (see figure above).

Each target features a barcode as well, describing the characteristics of the 3D object. Clamp + target calibration and progressive production number for traceability, are included also in the above code.

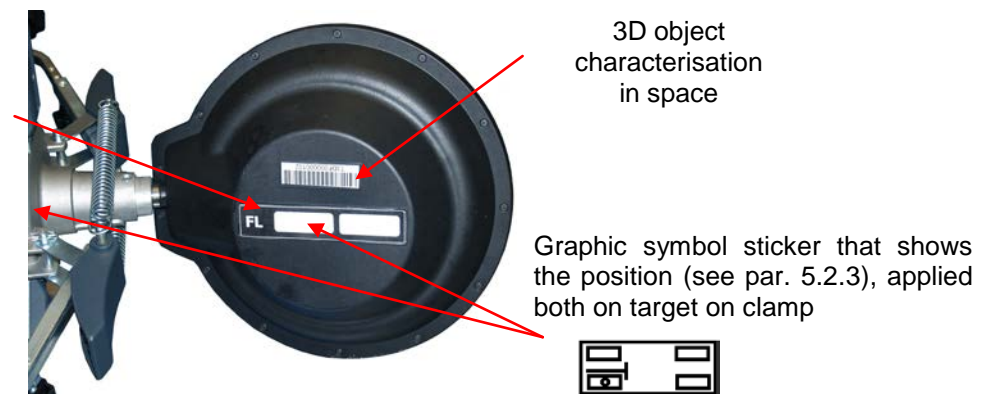


Figure 4

3.5 Rotating Plates

3.5.1 Rotating Plates

Turntables have a disc diameter of 360 mm.

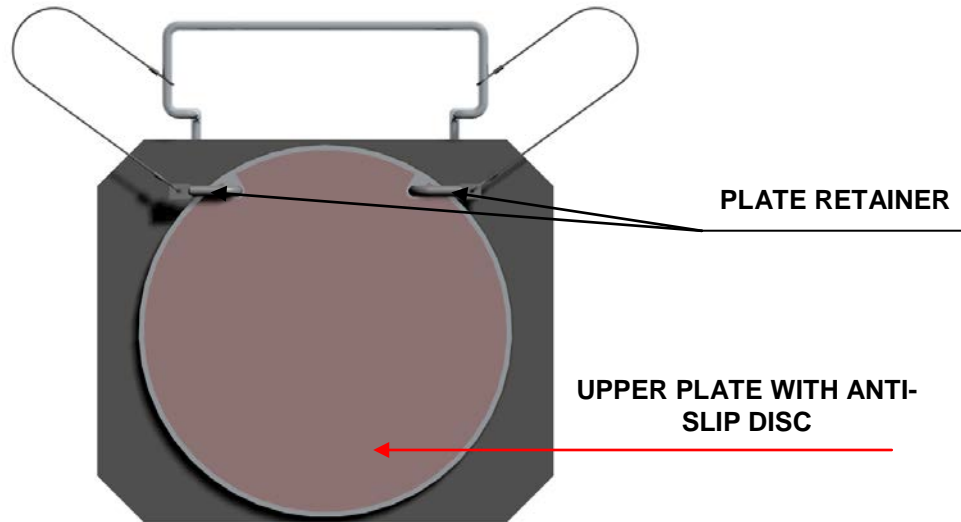


Figure 5

3.6 Pedal depressor

Is a tool used to lock brake pedal during measurement preliminary operations. It has to be used as shown in the instructions displayed during operation.



3.7 Steering lock

Is a tool used to keep vehicle steering in a fixed position. It is used before the adjustment procedure, as shown by the instructions displayed during operation.



4 SYSTEM FEATURES

4.1 Safety Devices

Wheel aligner features a safety device (master switch) positioned on the rear of the machine, see chap. 3.13.2 on page 5 and chap. 3.23.2 on page **Error! Bookmark not defined.**. Master switch cuts off machine power when set to “0”.

4.2 Measurement Range and Accuracy

Axle	Measurement	Accuracy	Measurement Range	Measurement Total Range
Front	Toe	± 2'	± 2°	± 20° x 2
	Partial toe	± 1'	± 1°	± 20°
	Set-back	± 2	± 2°	± 5°
	Camber	± 2'	± 3°	± 10°
	Caster	± 5'	± 10°	± 18°
	Kingpin	± 5'	± 10°	± 18°
Rear	Toe	± 2'	± 2°	± 20° x 2
	Partial toe	± 1'	± 1°	± 20°
	Set-back	± 2'	± 2°	± 5°
	Camber	± 2'	± 3°	± 10°
	Thrust angle	± 2'	± 2°	± 5°

4.3 Overall Dimensions

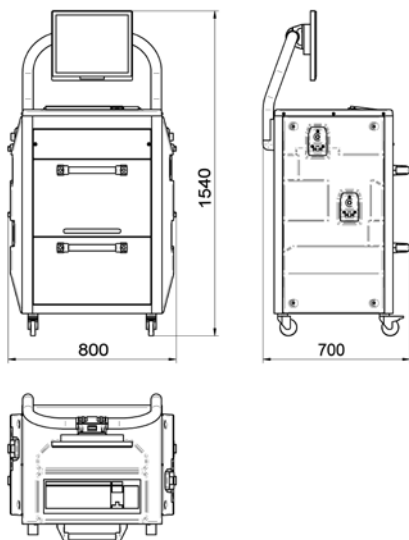


Figure 6

5 TRANSPORT AND INSTALLATION



5.1 Transport and unpacking

The machine is supplied packed in a box fastened to a pallet to facilitate transport. To transport the machine to the point where it is to be installed, use a lifting and transport mechanism such as a fork-lift truck or lift with forks.

The machine must be stored in its packaging, in a dry and ventilated environment (with a temperature between -25° $+55^{\circ}$ C).

Never overturn or position the packaging horizontally. The pallet must always rest on a flat and solid surface. Do not stack other packages on top of the packaging. Always position so the instructions can be easily read.

DURING UNPACKING, ALWAYS WEAR GLOVES TO PREVENT ANY INJURY CAUSED BY CONTACT WITH PACKAGING MATERIAL (NAILS, ETC.).

Make sure you have received all standard parts as previously listed.

The packaging material (plastic bags, polystyrene, nails, screws, wood, etc.) must be collected up and disposed of through authorised channels, except for the pallet, which could be used again for subsequent machine handling.

5.2 Installation

Install the machine in a dry, covered and well-lit place, possibly closed or protected against the elements.

Before positioning the machine, make sure the place chosen complies with applicable safety regulations and check the minimum distances from walls or other obstacles.

5.2.1 Power connections

Before connecting up the machine, carefully check:

- power line specifications correspond to machine requirements as shown on the machine plate;
- there is an earth lead and this is of suitable size (section greater or same as max section of the power cables).
- that all the component parts of the power line are in good condition;

Connect the machine up to the mains by means of the 3-pole plug provided (230 V single-phase) through the wall socket.

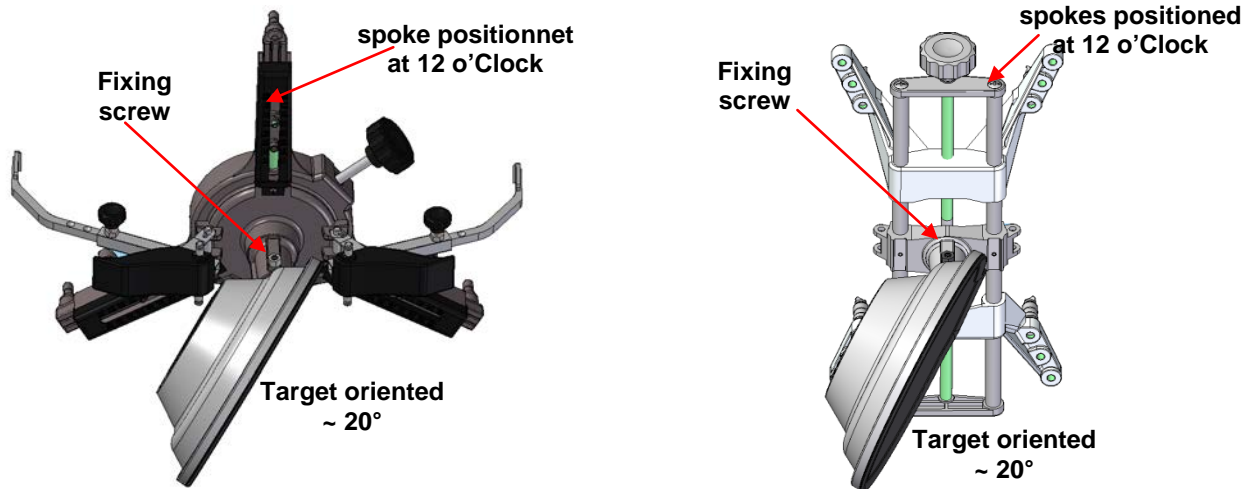
If the plug provided is not suitable for the wall socket, fit a plug that complies with local and applicable regulations. This operation must be performed by expert and professional personnel.

5.2.2 Cabinet mounting

The mounting is simply to fix the monitor and the positioning of the PC and printer in their housing (see chap.3.1).

5.2.3 Clamp/Target Mounting

Targets have to be mounted onto wheel clamps at an angle of 20°. To do this accurately, adopt the following procedure:



Mount targets onto wheel clamps at an angle of approximately 20°, as shown above, and fit them to the vehicle.

N.B. Make sure that wheel clamps are secured in place with the spokes positioned strictly vertically (12 o'clock), as shown above.

In the menu item "Configuration" select the option "target assembly".

As soon as targets are in place and have been optimised, the screen represented in the figure below will appear.

Carefully align the 4 targets by matching the arrows with the targets above. If one or more targets are not properly orientated, an "X" symbol will appear (see the rear-left wheel clamp in the example below). At the end of the alignment procedure block the grub screw with the lock nut.



Figure 7



Apply the two stickers provided for each wheel clamp/target combination which identify the front left (FL), front right (FR), rear left (RL) and right rear (RR) positions.

See the Figure 4 at page 9

5.2.4 Mounting the measurement head unit supports

In order to be able to fit the measurement head unit supports it is necessary to drill 3 M8 holes on each side of the vehicle lift. This should be done in such a way that the distance from the centers of the measurement head units to the centers of the turn plates is 1200mm. If you need to work on vehicles with long wheelbases, turn plates can be moved forward up to another 400 mm. The maximum distance from the rear wheels to the centers of the measurement head units is 3100 mm.

Note: Always engage the sensor heads in the position far from the turntables (1200mm)
Engage the sensor heads closer (1070mm) only in case of very short wheelbase (less than 2000 mm)

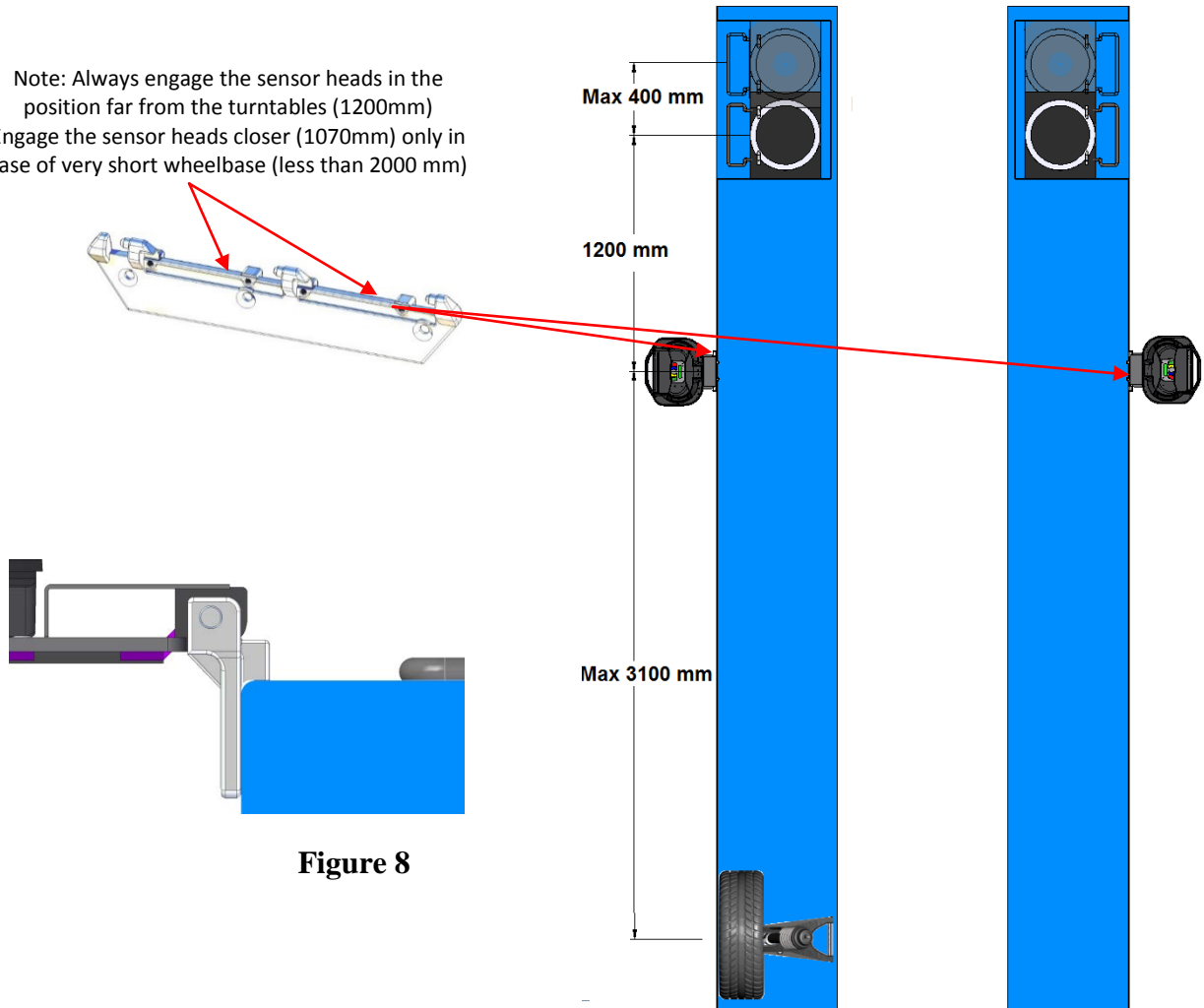
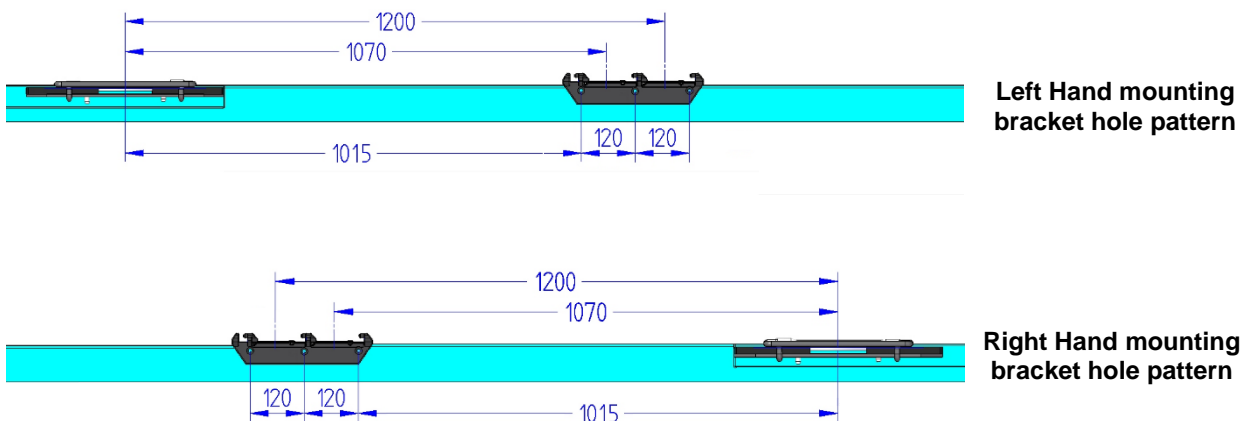


Figure 8

The figure below shows the left and right hand head unit mounting bracket hole patterns.



6 SWITCHING THE MACHINE ON AND OFF



WARNING: Before switching the machine on, make sure that the **SMART CARD** for program enabling and the database are in the special reader on PC front side.
See chap. 12.

6.1 Switching the Machine On

To switch the machine on and to gain access to the program, turn the special switch positioned on machine back side.

Once PC initialization is completed by Windows™ operating system, program will be automatically enabled and the introduction page will be displayed. From this page you can enable all machine functions (see par. 10 on page 21).



Figure 9

6.2 Switching the Machine Off

From the introduction page (see par. 10 on page 21) you can switch the machine off by selecting the corresponding key.










	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It enables machine switching off procedure request



Figure 10

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It cancels. It goes back to the introduction page. (par. 10 on page 21)
			Final confirmation of machine switching off

You have to wait for the following screen to be displayed:



Figure 11

Then turn the machine off with the switch positioned on machine back side.



WARNING:

The switching off procedure does not affect battery recharge supports, which continue being powered.

7 MEASURING HEAD AUTOMATIC SWITCHING OFF

The system makes the measuring heads switch off when the PC is switched off from the introduction page. Measuring heads will anyway automatically switch off after approx. 5 minutes if no data are received (ex. cabin is off).

Anyway, they can always be manually switched off (see par. 3.4.2 on page 8) when they are not used.

8 FLAT BATTERY INDICATION


System displays a flat battery warning signal (Figure 12).

This signal is also visible on the sensor itself through the flashing of start RED LED (see par. 3.4.2 on page 8).




Figure 12

When the residual charge is LOWER than or EQUAL to 30%, system displays the page of flat battery indication (Figure 12). The head will automatically switch off after a few minutes. Try not to reach this condition, and charge batteries as soon as possible.

To quit the signal page, press F1 .

9 PROGRAM CONFIGURATION

To proceed to program configuration, select F2  from the introduction page, as explained in par. 10.1 on page 21.

You will enter a configuration menu allowing editing the different program characteristics according to your needs.



Figure 13

Language selection: You can select your dialogue language among the many available ones.

Configuration: program will display the screen of Figure 14


You can edit system parameters, database profile, specify which parts are fitted on the machine, parts type, and make a Bluetooth search to couple measuring heads with cabin.

Print Menu: Print can be customized by entering workshop data, selecting the type of desired printout, and selecting the pre-set printer (if more than one printer is connected).

Backup / Restore: In order not to run the risk to lose any vehicle and customer database data, it is recommended to create a backup copy (data saving). We recommend using a "flash disc" USB key for this process.

Lost or deleted data can be restored if the backup operation has been carried out, thanks to the restore procedure.

Additional functions: program displays screen Figure 57, from which you can access TEST or sensor Calibration applications (reserved to skilled and authorized personnel), and the "DATABASE MANAGEMENT", see chap. 12

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to the introduction page. (par. 10.1 on page 21)
			It moves selection up.
			It moves selection down.
			It confirms selection.

9.1 DATABASE Groups Configuration

Select "GROUPS CONFIGURATION" from program configuration page, as explained in par. 9 on page 18.

You can edit system parameters, database profile, and specify which parts are fitted on the machine, and parts type as well.

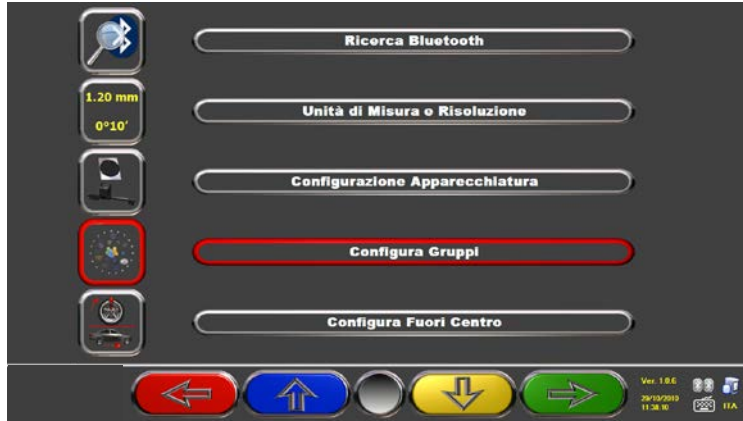

















Figure 14

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to the start configuration page. (par. 10.1 on page 21)
			It moves selection up.
			It moves selection down.
			It confirms selection.


Select "DATABASE" option, and confirm. The following screen will be displayed:



Figure 15

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to Figure 14
			It moves selection up.
			It hides/displays the different Database profiles.
			It moves selection up, displaying the following profiles.
			It confirms selection.

Page Figure 15 displays a list, with the different DATABASE profiles, including the MAKES of the vehicles circulating in the different countries and regions all over the world.

Using key F5 , you can hide and/or display any profile so as to manage Database according to your needs.

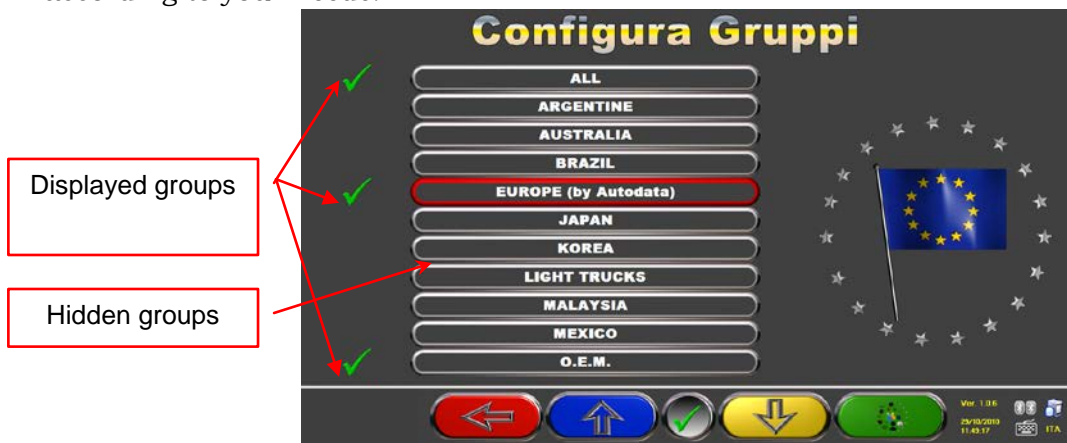




Figure 16

By selecting any group and pressing F4 , you can also customize your profile by hiding and/or displaying the available makes, with key F5 .

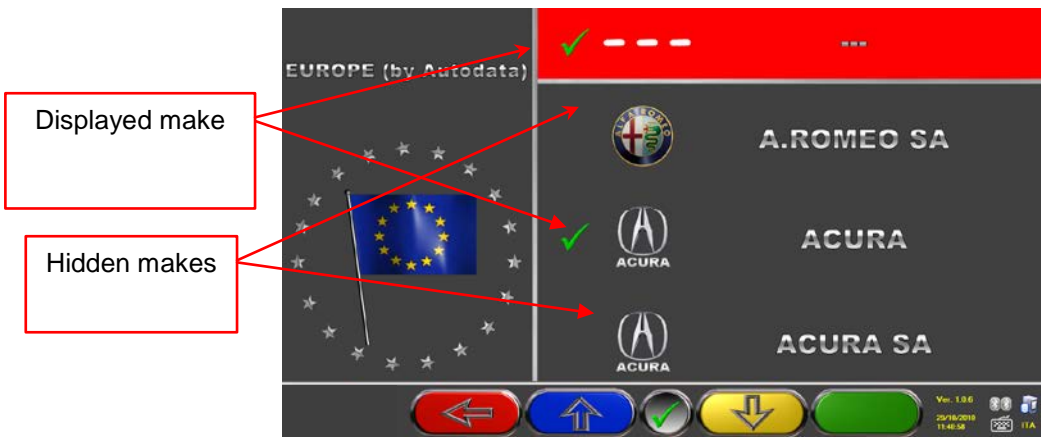


Figure 17













10 VEHICLE DIAGNOSIS AND ADJUSTMENT

10.1 Introduction Page

Upon machine switching on (see par. 6.1 on page 15), program start screen will be displayed. You can select different functions.



Figure 18

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It switches machine off (par.6.2 on page 15)
			Program configuration (par.9 on page 18)
			It accesses customer database
			It selects the list with different database profiles (par.9.1 on page 19)

Press F4  to continue.

10.2 Preliminary Operations

10.2.1 Vehicle Check Preliminary Operations

Before starting the check of vehicle geometrical alignment, the following checks shall be carried out:

- Check and, if necessary, eliminate any clearance on suspensions and on steering linkage
- Check and, if necessary, eliminate any hard spot or yielding of suspension spring parts.
- Adjust tire pressure to the values specified by the manufacturer.
- Position and distribute any load envisaged by the manufacturer.







10.2.2 Measurement Preliminary Operations

Before proceeding with the selection of the page showing the technical data of the vehicle (see par. 10.4 on page 26), you can start preparing the vehicle for measuring as described below:

- Properly place the vehicle with the front wheels on the rotating plates
- Fit clamps with the four targets onto wheels
- Connect and switch on (*) the 2 measuring heads on lift edges (see Figure 1)
- Lock rotating plates



Figure 19






	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to previous page
			It continues on next page (Selection of Make and Model) (par. 10.3 on page 23)

(*) It is recommended to mount the clamps with the targets and switch on the 2 measuring heads already in the preliminary stage, to enable the system to recognize and "connect" the 4 targets located on the wheels.

The time taken by the following phase for selecting make and model and for displaying technical data is therefore used by the system also for the recognition and optimization of the 4 targets.

(**) In this phase, the pictures showing the 2 batteries of the measuring heads are displayed with the relevant residual charge %. In the case of models which do not feature a battery and are therefore powered by cable, or when the recharge cable is connected, the charge % will always show 99%.

(***) The system takes some seconds to complete the correct target recognition. During this phase and during the following measuring phases, the symbols displayed on the bottom right side of the screen show the progress of the 4 target recognition. See legend below.

-  = Target NOT recognized (GREY symbol)
-  = Target recognized and in the process of being optimized (GREY symbol)
-  = Target recognized and optimized / invalid measures (YELLOW symbol)
-  = Target recognized and optimized / valid measures (GREEN symbol)
-  = Target not required in this phase (BLACK symbol)


ALWAYS take special care when positioning the vehicle on the lift. It should be as centered as possible to speed up and optimize both target search and connection and the following measuring operations.


10.3 Vehicle Make and Model Selection




List with different database profiles (par. 9.1 on page 19)

Figure 20

Press F4  to select vehicle make and model. Program shows the list of the makes of the selected group (see Figure 22),

Or press F5  **to start a search using keys (model/make/year) or the V.I.N number** (Vehicle Identification Number) which is a unique serial number used by the automobile industry to identify motor vehicles. V.I.N. consists of a 17-alphanumeric digit plate usually positioned inside engine compartment. See Figure 21.

Note: by pressing F5  you select the search mode: Through search keys such as Make name, model/year, or VIN (Figure 21) or through a manual selection (Figure 22).

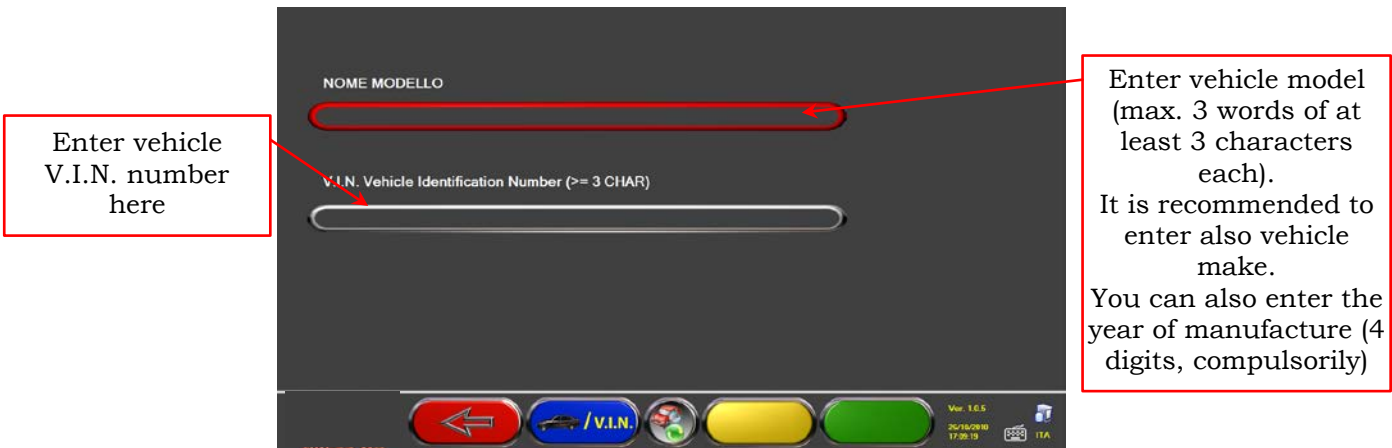




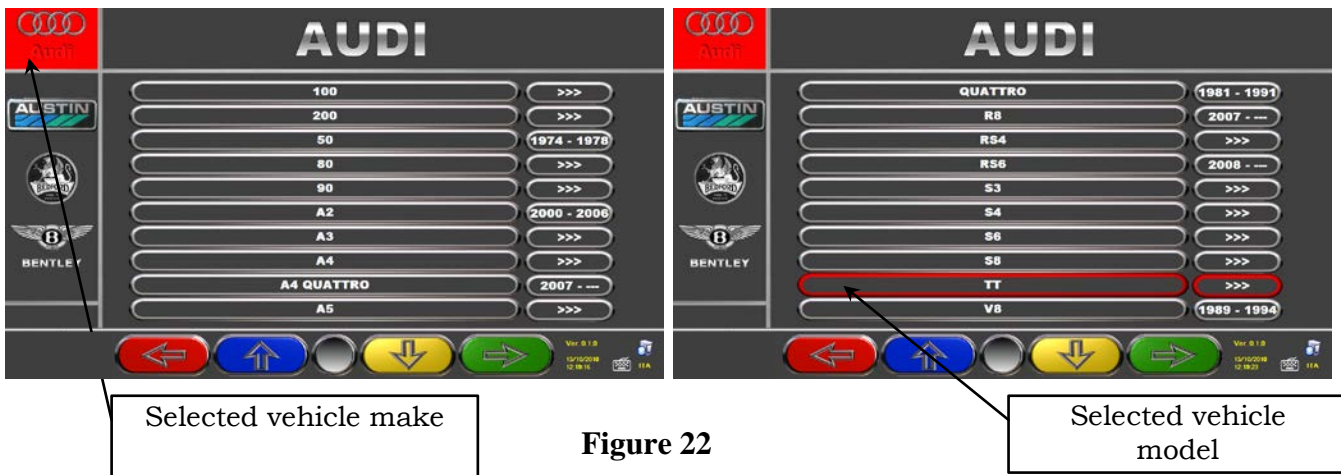
Figure 21

Press  to move cursor from "model name" to "V.I.N." entering field.

Press  to continue, and display the list of all the vehicles complying with the just-entered search criteria; then select the correct vehicle and display the page of the selected vehicle technical specifications (par. 10.4)

To select vehicle make and model, press  from the introduction page (Figure 18) or from the database profile page (Figure 20).

The program will display the following box:



















Selected vehicle make

Figure 22

Selected vehicle model

Make and model of the vehicle you are going to work on shall be compulsorily selected.

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to the introduction page (par. 10.1 on page 21)
			It moves selection up.
			It moves selection down.
			It confirms selection and goes to the following phase
			It moves selection up by one page.
			It moves selection down by one page.
			It moves selection to list top.
			It moves selection to list bottom.

NOTE: To speed up selection phase, you can type the name of vehicle make or model, or part of them, on the PC keyboard, and then scroll the list until finding the desired one.

10.4 Selected Vehicle Technical Specification Displaying

When selecting a vehicle (see par. 10.3 on page 23), a page showing the measurements and tolerances supplied by the manufacturer is displayed.



Figure 23

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to vehicle selection (par.10.3 on page 23)
			See (*) Key description
			It displays vehicle technical specifications next page, and any graphic animation See (*) Key description
			It changes rim diameter value
			It goes to out-of-center operations (par.10.5 on page 27)

(*) Key description

Possibility to enter chassis height or kingpin data, as envisaged by the manufacturer	Press F5 To display any graphic animation

10.5 Thrust Out-of-center with Automatic Acquisition

The out-of-center procedure proves useful to compensate for rims and clamps unbalance.

This procedure is not compulsory. Simply press F4.

This procedure can be enabled also after having diagnosed the vehicle, by selecting the special option from menu (see chap. 10.14 - Preliminary Operations).


To carry out the out-of-center procedure, you should have performed the preliminary operations, as explained in par. 10.2.2 on page 22.

The clamps must be positioned with the targets at approximately “12 o'clock”, so that during run-out they are always clearly visible to the cameras. If one or more positions are not acceptable, the error message screen indicated below appears, which shows an example of an improperly positioned rear right clamp. Simply position the clamp at “12 o'clock”: the program will proceed automatically.

If instead you press F1, the error is not considered. You may not be able to complete the procedure when performing the run-out.



Figure 24

Press F4  in the technical data display phase (see par. 10.4 on page 26). The following screen will be displayed:

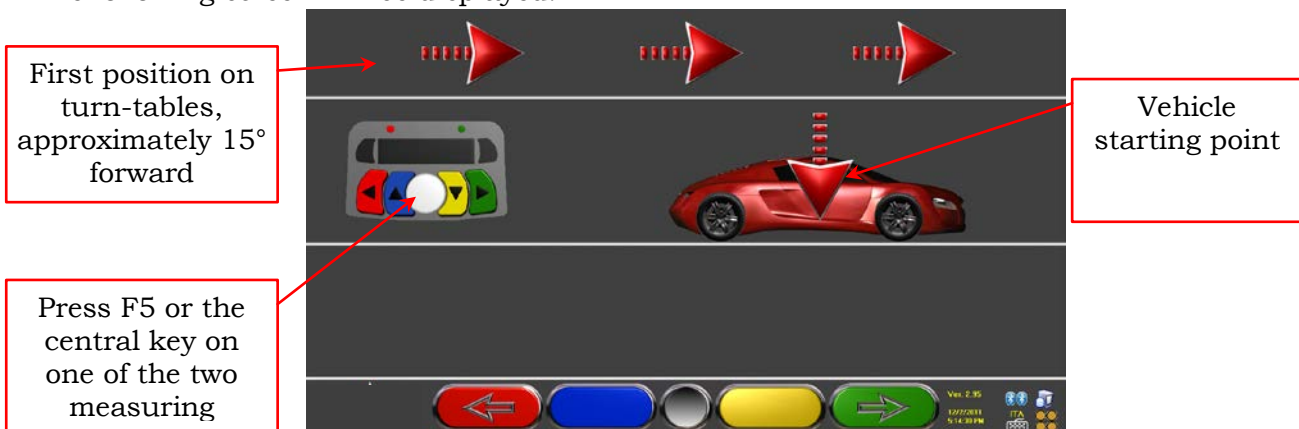


Figure 25

To carry out the thrust out-of-center operation, it is recommended to carefully follow the displayed instructions.

The starting point is acquired a little further ahead, so that it always remains inside the tables also on the second point, thus avoiding any small gaps.

When you are in first position (approximately 15° forward on turn-tables), press F5 or the central key on one of the two measuring heads.

“STOP” is displayed for about three seconds, i.e. the time needed by the program to take the measurements from the 1st point, after that, the program shows the following page the measurements from the 1st point, after that, the program shows the following page:

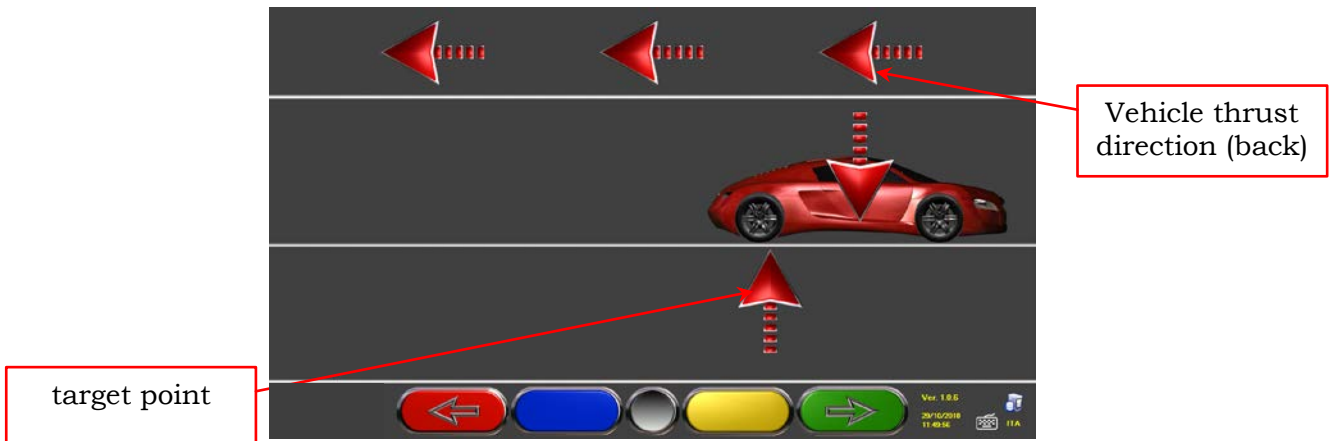


Figure 26

Start moving the vehicle backward, very slowly, until the vehicle arrow matches the target point.

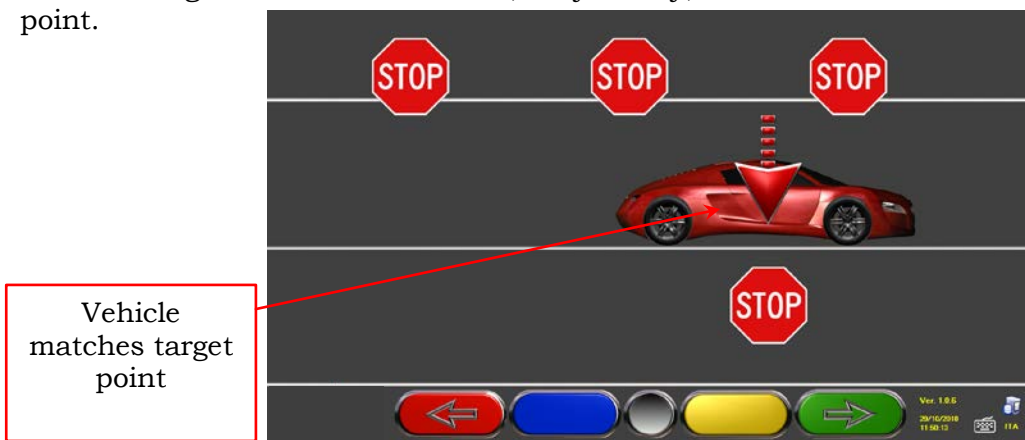


Figure 27

As soon as the vehicle matches the target point, “STOP” is displayed for about three seconds, i.e. the time needed by the program to take the measurements, after that, the program shows the following page:

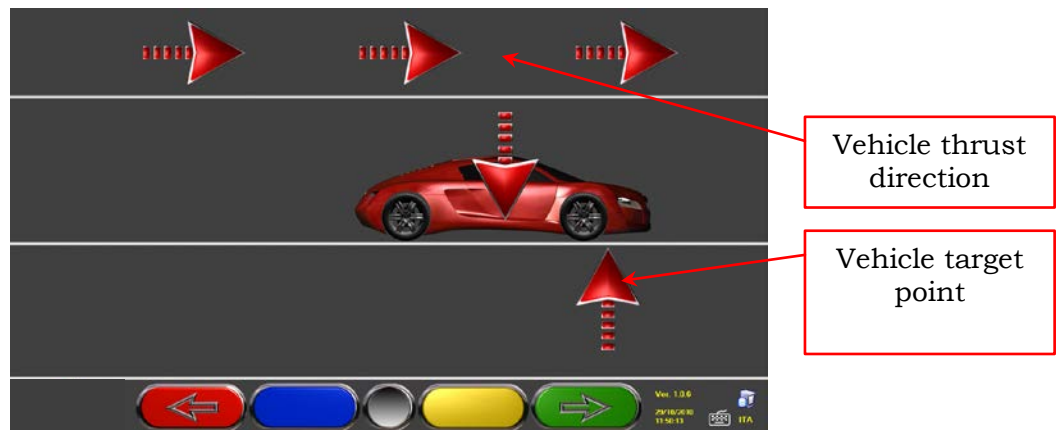


Figure 28

Move vehicle forward again, until vehicle arrow matches target point (final point). “STOP” will be displayed for approx. three seconds, and measurement readings acquired. The thrust out-of-center procedure has been completed.

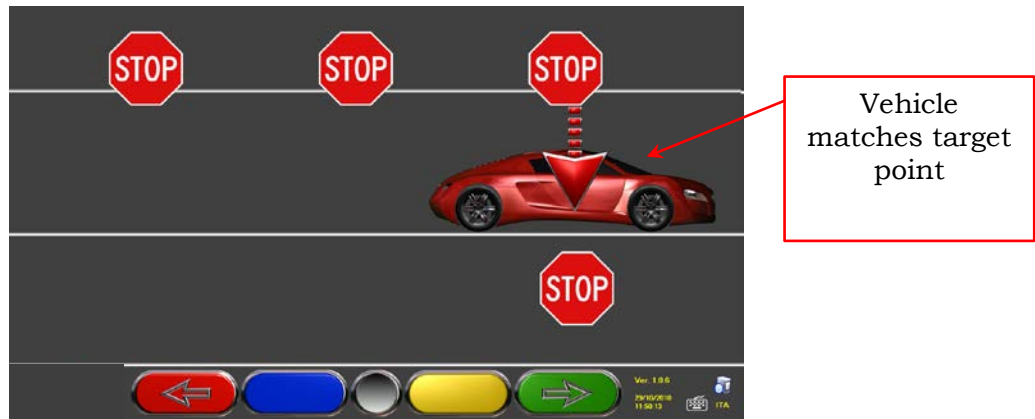


Figure 29

Should you be willing to repeat the operation once the program has already entered a following phase, you can go back to this page by pressing F1, and repeat the above procedure. Once the out-of-center procedure has been completed, program will automatically go to the next phase.

10.6 Measurement Preliminary Operations

After having carried out the out-of-center procedure as explained in par. 10.5 on page 27, it is necessary to prepare the vehicle for measurement operations. The following screen will be displayed:



Figure 30

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to out-of-center Out-of-center (par.10.5 on page 27)
			It continues to the alignment procedure (par. 10.7 on page 30)

- 1) Release front plates, and any rear platform
- 2) Brake wheels with hand brake, and lock brake pedal with the special tool (this operation is necessary when carrying out a steering for kingpin correct calculation).
- 3) Settle vehicle front and rear ends (necessary only if vehicle had been previously lifted and the suspensions unloaded).




Press to continue.

10.7 Vehicle alignment / direct measurement operations

To proceed to vehicle alignment and direct angle detection, you should have first carried out measurement preliminary operations, as explained in par. 10.6 on page 29 .



Figure 31

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to measurement preliminary operations. (par.10.6 on page 29)

When the alignment has been achieved, the “STOP” symbol is displayed, signaling that the program is taking the vehicle measurements. The program proceeds automatically only after the wheels have been aligned.

10.8 Steering Procedure

After wheels have been aligned (see par. 10.7 on page 30), the steering procedure can be carried out in order to define:

- Caster
- Kingpin
- Included angle

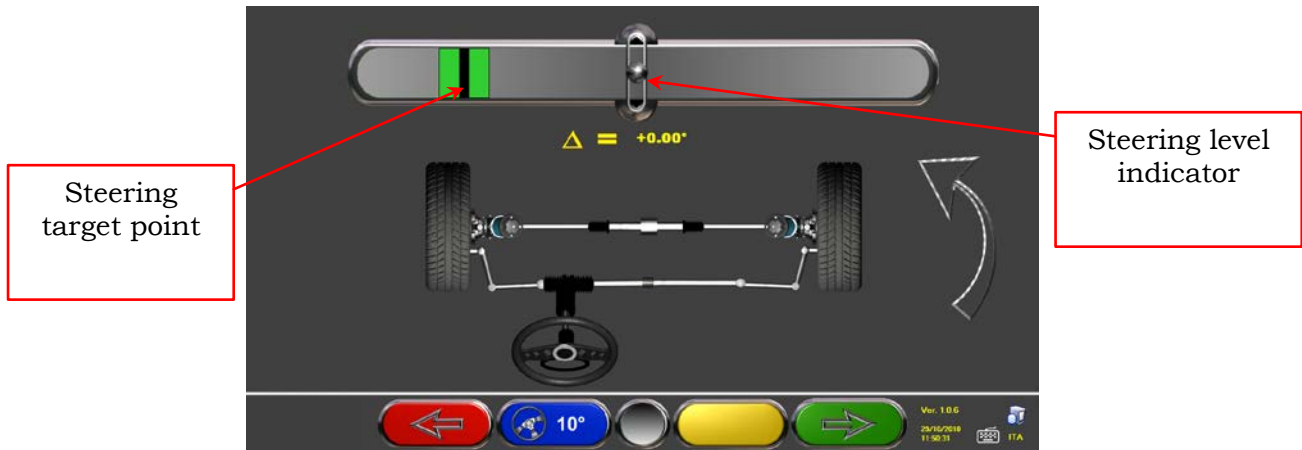


Figure 32

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			Repeat alignment and levelling procedure (par. 10.7 on page 30)
			Press this key to select the type of steering to be made. (*)
			It displays vehicle diagnosis page (par. 10.9 on page 32)

(*) Type of steering to be made:

- Steering at 20°
- ACK steering (at 20° with steering geometry)
- Steering at 10°
- Max. steering

Steering procedure can also be skipped: the values of the above-specified data measurements will not be available. To skip the procedure, press F4 to directly display vehicle diagnosis page.

Should the procedure not be carried out at this stage but only at the end of adjustments, you can select the corresponding option from the menu.

10.9 Vehicle Diagnosis

After carrying out the steering procedure (see par. 10.8 on page 31), a diagnosis page showing a summary of the operations carried out on vehicle rear axle (Figure 33) will be displayed.



Figure 33

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			Repeat steering procedure. (par. 10.8 on page 31)
			It changes values displaying layout
			Selection of diagnosis data display in 1 / 2 pages.
			It displays vehicle technical specifications (it may be changed, if needed). (par. 10.4 on page 26)
			It displays diagnosis page with a summary of front axle measurements (Figure 34)

Press F5 to change diagnosis data display preferences, i.e. on 1 or 2 pages (rear and front). The selection will be stored for the next diagnosis.

Press F4 to display the diagnosis page with a summary of front axle measurements (Figure 34). If you press F3 from here , program will allow the printout of diagnosis measurements. Press F4 to continue with data adjustment, program will display Figure 35, press F4 again to confirm.

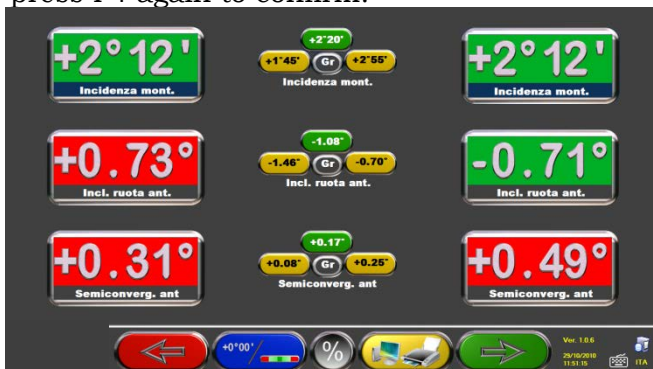


Figure 34

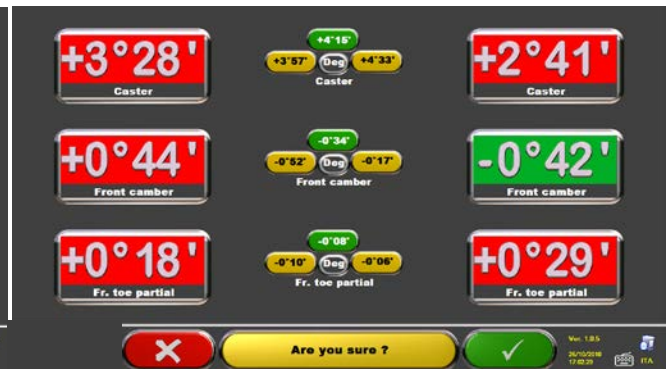


Figure 35

The vehicle can now be prepared for adjustment (see par. 10.10 on page 33), by pressing F4 to confirm (Figure 35).

10.10 Adjustment Preliminary Operations

By selecting F4 from Figure 35 (see par. 10.9 on page 32), it is necessary to carry out adjustment preliminary operations. Follow the displayed instructions to carry out adjustment preliminary operations. Press F4 to continue.

1. Place steering wheel in straight position.
2. Lock steering wheel with the special tool, and continue.



Figure 36

10.11 Rear Axle Adjustment

Rear axle adjustment procedure can be made by pressing F4 from Figure 36 after carrying out adjustment preliminary operations (par. 10.10 on page 33).

Proceed to adjustment, where allowed, as follows:

- Rear camber - Rear partial toe



Figure 37

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
		F2	It changes values displaying layout (large numbers/large cursors)
		F5	“Jack-Hold” procedure (adjustment with raised wheels)
		F3	It displays vehicle technical specification page. (par. 10.4 on page 26)
		F4 → ↵	It continues to front axle adjustment. (par. 10.12 on page 34)

10.12 Front Axle Adjustment

Front axle adjustment procedure is launched by selecting (Figure 42) in the rear axle adjustment page after carrying out adjustment preliminary operations (see par. 10.10 on page 33).

To adjust angles, the correct sequence is the following: CASTER – CAMBER – TOE.

WARNING: When entering this stage, caster values are “FROZEN”.

To “de-freeze” these values, you can press Shift+F6 at the same time. Or proceed to the summary (see par. 10.13) and press F1. The program will display an additional function menu page (see par.10.14), now select “Caster Adjustment”.

Once caster values have been adjusted or, even if they are not adjusted as they are deemed to be correct, it is recommended to “FREEZE” again these values.

To repeat this operation, press Shift+F6 at the same time. A grid will be displayed onto caster values, to indicate that they are “frozen”.

Then adjust front axle




Figure 38

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
		F1 ←	Repeat steering procedure. (par. 10.8 on page 31)
		F2	“Jack-Hold” procedure (adjustment with raised wheels)
		F5	Caster/camber selection: It displays tolerance on the LED for ARP3DATS/HP (see par.3.4.3)
		F3	It carries out toe-in adjustment with steered wheels. (See par. 10.12.1)
		F4 → ↶	It repeats adjustment operations (par. 10.11 on page 33)

(*) It is possible to display alternatively the partial and the total toe-ins by pressing Shift+F5 at the same time.

10.12.1 Front toe-in adjustment with steered wheels



Front toe-in adjustment procedure with steered wheels is started by pressing F3 from front adjustment page .

The following picture, requesting to steer left or right, will be shown. Press F5 to confirm.



Figure 39

Note: Steering level indicator is displayed only to give the operator a reference of the value, which should remain within the maximum alignment reading range (about 22÷24°).

After pressing F5, the page shown in Figure 40 will be displayed. "De-freeze" to enable carrying out of partial toe-ins. Use F2  (LH partial toe-in) or F3  (RH partial toe-in).









When adjustment has been completed, press F1  to return to front adjustment phase (par. 10.12). The program will request to steer back toward the center before the front adjustment page is displayed (Figure 38).



Figure 40

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
		F1 	It returns to front adjustment page display.
		F2	It de-freezes / freezes LH partial toe-in
		F3	It de-freezes / freezes RH partial toe-in

10.13 Summary of DIAGNOSIS and ADJUSTMENT data


This page is displayed when vehicle adjustment has been completed, after pressing F4 in the front adjustment phase, see Figure 38.



Figure 41

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It displays the additional function menu. See par. 10.14
			It displays vehicle technical specification page.
			Operations completed! Customer data entry and printout. See par. 10.15
			It returns to rear adjustment phase. See par. 10.11

10.14 Additional Functions Menu

To carry out some additional operations or to repeat some program phases, in case they have not given satisfactory outcomes or have not been carried out at all, select F1  from the summary page (see par. 10.13 on page 36).

You will access an additional function menu allowing carrying out the following procedures:

PRELIMINARY OPERATIONS: see par. 10.2.1 on page 22

TOE CURVE: Toe curve can be adjusted by following the displayed figures, as follows:

- Settle vehicle, press F4
- Position the special tool under front axle, press F4
- Adjust front partial toe, as recommended by the manufacturer, press F4
- Remove tool from axle, and press F4. Program will go back to the adjustment phase.



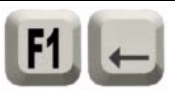









CHASSIS DIAGNOSIS: A graphic-geometrical representation of the axles of the vehicles you are working on can be displayed.

DATABASE: it enables to display the vehicle selection page (10.3 on page 23) and to select a different vehicle if necessary


CASTER ADJUSTMENT: see par. 10.12 on page 34.



Figure 42

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to front adjustment page (par. 10.12 on page 34)
			It moves selection up.
			It moves selection down.
			It confirms selection.

10.15 Printout of Measurements taken

By selecting the following key from the customer data entry page  , the following page will be displayed:

Registrazione

Cliente* Rossi Mario

Targa* AK253ML

N. telaio 120563

Km 15004

Note



















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 20/10/2010 15:52:56
 ITA

Vehicle and customer data entry

Figure 43

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			Repeat steering procedure. (par. 10.8 on page 31)
			It stores the carried out diagnosis inside a special “customer database” so as to allow test later displaying (par. 10.14 on page 37)
			It displays a print preview of the test carried out (par. 10.15 on page 38)
			It goes back to start page without storing test



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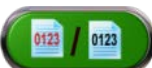


Cliente: ROSSI MARIO		Data: 04/10/2010 15:42	
Targa: AK253ML		Modello: A3 SPORTBACK (PS-IBAE11) (2009-...)	
Marca: AUDI		Diam. cerchio: 19"	
Km: 22065			
Asse anteriore	Valori nominali	Diagnosi	Registrazione
			
Controllo ca.	Gr. -0.11° -0.20° -0.30°	-0.11°	-0.20° -0.30°
Servosterzo att.	Gr. -0.00° -0.10° -0.15°	-0.00°	-0.10° -0.15°
IMC FRONT. DR.	Gr. -0.20° -0.30° -0.32°	-0.20°	-0.30° -0.32°
Inclinazione esteri.	Gr. ....	...	...
Acc. inesterno	Gr. ....	...	...
Angolo in fuori	Gr. ....	...	...
Orizz. di sterzo (DPS)	Gr. -1.10° -1.40° -2.10°	...	...
Servosterzo	Gr. -0.70° -0.70° -0.70°	...	...
Servosterzo	Gr. -0.70° -0.70° -0.70°	...	...
Asse posteriore	Valori nominali	Diagnosi	Registrazione
			
Controllo ca.	Gr. -0.11° -0.20° -0.30°	-0.11°	-0.20° -0.30°
Servosterzo pass.	Gr. -0.00° -0.10° -0.15°	-0.00°	-0.10° -0.15°
Inclinazione post.	Gr. -0.20° -0.30° -0.32°	-0.20°	-0.30° -0.32°
Angolo in fuori	Gr. -0.20° -0.30° -0.32°	-0.20°	-0.30° -0.32°



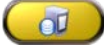



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 20/10/2010 15:52:53
 ITA

Figure 44

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to “vehicle data entry” phase of Figure 43
			It allows selecting a printer different from the pre-set one
			It sends print report to printer
			It allows defining colours on the printout of out-of-tolerance data (Red to highlight them or Black NOT to highlight them)

A report on the performed test is printed with customer data, vehicle data before and after adjustment, vehicle technical specifications supplied by manufacturer, and any other remarks for the customer.

To access the data contained inside customer database, press F3  from the start page (see Figure 18)

Legend of the printout example shown in the previous page (Figure 45).

- 1 - Logo of the manufacturer
- 2 - Space dedicated to workshop data customization
- 3 - Test date and time
- 4 - Vehicle being tested and vehicle owner data
- 5 - Vehicle being tested manufacturing data
- 6 - Vehicle being tested diagnosis data
- 7 - Vehicle being tested data after adjustment
- 8 - Front axle data table
- 9 - Rear axle data table
- 10 - Space devoted to manual remarks

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1







2

3

4







8

Cliente : ROSSI MARIO
 Targa : BJ073LM
 Marca : AUDI
 Km : 22305
 Data : 04/10/2010 13:42
 Modello : A5 SPORTBACK (PR=IBA/E/L) (2009 - ----)
 Diam. cerchio 19"

Asse anteriore	Valori nominali			Diagnosi	Registrazione
					
Convergenza tot.	+0°10'	+0°20'	+0°30'	+1°01'	+0°58'
Semitconverg. ant	+0°05'	+0°10'	+0°15'	+0°34'	+0°29'
Incl. ruota ant.	-1°28'	-1°05'	-0°42'	+0°44'	-1°12'
Incidenza mont.	*****	*****	*****	*****	*****
Incl. montante	Gr	*****	*****	***	***
Angolo incluso	Gr	*****	*****	***	***
Diverg. in curva (20°)	+1°19'	+1°49'	+2°19'	***	***
Sterzata interna	+7°36'	+39°36'	+41°06'	*****	*****
Sterzata esterna	+1°12'	+33°12'	+34°42'	***	***

9

10

Asse posteriore	Valori nominali			Diagnosi	Registrazione
					
Convergenza tot.	+0°10'	+0°20'	+0°30'	+0°22'	+0°19'
Semitconverg. post	+0°05'	+0°10'	+0°15'	+0°17'	+0°10'
Incl. ruota post.	-1°45'	-1°20'	-0°55'	-0°04'	+0°37'
Angolo di spinta	+0°15'	+0°00'	+0°15'	+0°01'	+0°00'

7

6

5

Figure 45

11 DATABASE CUSTOMISATION

Vehicle database can be customized by creating customized groups and vehicles.

11.1 New Group Entry

To create customized groups and store them inside database, it is necessary to display the group configuration page (see par. 9.1 on page 19).

Press “Ins” on the keyboard.

The following screen will be displayed:




Figure 46

Type the name of the new profile (the example Figure 46 shows “ITALIA”), and press F4 to confirm.



Figure 47

Now press F4 to enter the new “ITALIA” group and display the available makes with F5 , as specified in Figure 17. Then display profile, always pressing F5, as described here below in Figure 48.

Press F1 to quit.



Figure 48

11.2 New Group Deletion


You have to display the group configuration (see par. 9.1 on page 19), select the customized group you want to delete, then press "delete"  : press F4 to confirm.



Figure 49

Warning: If a customized group is deleted, it will no longer be possible to restore it, unless you have a database backup copy.

11.3 New Vehicle Entry

To create customized vehicles and store them inside the database, you shall first of all display the page of the measurements and tolerances supplied by the manufacturer of an already-existing vehicle (see par. 10.4 on page 26).

Press “Ins” on the keyboard:
The following screen will be displayed:



Figure 50

As you can see in Figure 50 on the highlighted point, the make of the selected vehicle is highlighted by a red background.

You can enter or confirm the name of the make of the vehicle you want to create.

Then, select and enter:

- Vehicle model and submodel name
- Manufacturing start date
- Manufacturing end date
- Rim diameter
- Front track
- Rear track
- Left wheelbase
- Right wheelbase
- Load conditions
- Tank conditions

Use the following keys for data selection:

	Move selection to the following datum.
	Move selection to the previous datum.

After data entry, you can delete them using the following keys:

	It deletes the whole selected element
	It deletes the last character of the selected element

Once the manufacture end date has been entered and you move on the next datum, the following screen relating to load conditions will be displayed



Figure 51

After having selected rim diameter, the following data to be entered are vehicle track and wheelbase, in the following screen:



Figure 52

Then enter tank and load conditions
Now the screen will look as follows:

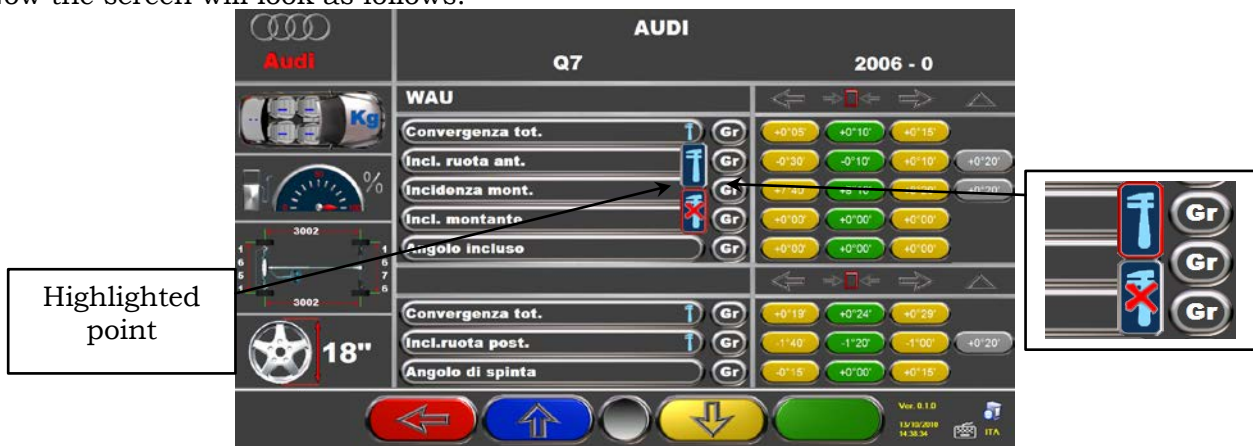
















Figure 53

	DETECTOR KEYPAD	PC KEYPAD	DESCRIPTION
			It goes back to the introduction page. (see cap. 10 on page 21)
			It moves selection up.
			It moves selection down.

As you can see from the zoom on the right side of Figure 53, you will have to specify if the point datum refers to can be adjusted or not.

	The point to which the data refer can be adjusted. To define it as not-adjustable, press:	
	The point to which the data refer cannot be adjusted. To define it as adjustable, press:	
Once the desired option has been selected, press:		

Once angle “adjustability” has been specified, you can enter the **graphic animations**.

Select the correct image or animation with keys  , then press "Enter" to confirm 

Now you shall enter vehicle standard tolerance values as for:

FRONT AXLE:	REAR AXLE
<ul style="list-style-type: none"> • Toe • Camber • Caster • Kingpin • Included angle • Max. steering 	<ul style="list-style-type: none"> • Toe • Camber • Thrust angle

Select data as described above, and enter values.

Warning: To separate whole values from decimals, try using a “dot”




or a “comma”



When you have completed values entering, the following screen will be displayed. You will have to select an option:



Figure 54

Press F4  to confirm and create the customized vehicle.

If vehicle database is displayed, you can observe that also the just-created customized vehicle is present; it is listed under a separate make, in alphabetical order, written in italic.



Using the same procedure, you can edit the values of a customized vehicle without having to create a new one. The final screen will be like the one of Figure 54 with the additional item:

“Edit customized vehicle”

Select this option to edit vehicle data.

11.4 Customized Vehicle Deletion

You have to display vehicle database, and select the customized vehicle you wish to delete,

then press Ctrl + Canc:  + 

Warning: If a customized vehicle is deleted, it will no longer be possible to restore it, unless you have a database backup copy.

12 PROGRAM AND DATABASE PROTECTION SMART CARD

This features a PC with SMART CARD reader. This SMART CARD, inserted inside reader, allows program operation, and enables access to vehicle DATABASE.

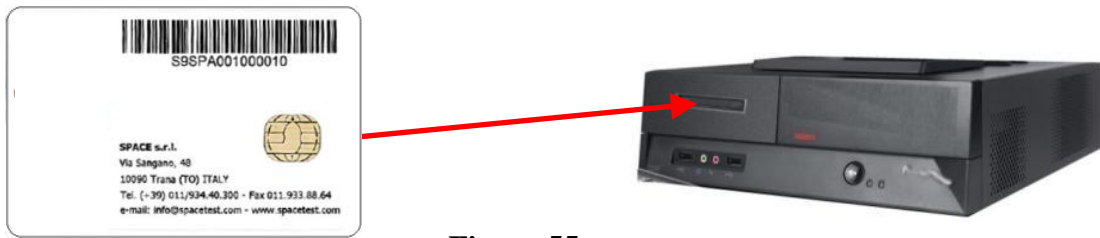


Figure 55

Every machine has its own unique SMARTCARD that cannot be replaced with the SMARTCARD of another machine for whatever reason. Should this SMARTCARD be removed or replaced, program will display an error message, such as Figure 56, and will not give the authorization to continue.



Figure 56

Database can be updated by downloading files from Internet. Contact your retailer for further details on the download from the manufacturer's web site.

12.1 DATABASE Management

To update database, proceed as follows:
Select "Database Management" option from program configuration menu (see chap. 9) as specified in Figure 57, and press F4 to continue.

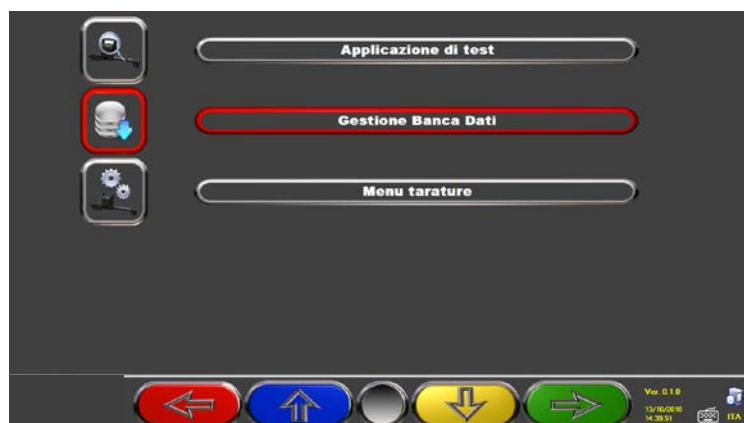


Figure 57



Figure 58



When a USB flash disc key is inserted (such as the one supplied with the machine, and containing system Back-Up), the keys for database management are displayed, as shown in Figure 59.



Figure 59



F2 EXPORT CERTIFICATE → It exports certificate on USB flash disc. Customer shall send it to the manufacturer so that a release key can be prepared (as an alternative to the communication of customer's SMARTCARD serial number).



F3 IMPORT TOKEN → Manufacturer sends the release code (called Token) to the customer after having checked the fulfillment of requirements (such as payment of the new Database). Copy "Token" file into folder AS9 of USB flash disc (e.g. E:\AS9\Token_S9SPA00100014_Main_XXXXXX.ENC) and, by selecting this key, the Token will be imported by the PC through the right path so that the new database is released.



F4 → It allows copying in the correct path the DATABASE file previously downloaded from internet and copied into folder AS9 of USB flash disc. (e.g. E:\AS9\STDA110.zip). Updated databases shall then be released through "Token" import.

13 ERRORS DURING MEASUREMENT

13.1 Data transmission/reception error from measuring heads / failed target identification.

During data transmission/reception between measuring heads and cabin, the following page may be displayed:



Figure 60

This may mean that there is a transmission/reception failure due to one or several of the following problems:

- Failure or radio interference in the transmission system with measuring heads.
- Measuring head/s is/are broken or off.



NO communication

If one or both symbols are GREY, it means that there is a transmission/reception failure.



Communication OK

Check that the Bluetooth communication of measuring heads becomes active (both symbols should be BLUE).

If both symbols are BLUE, the error in Figure 60 may signal a failed identification of the target/s, caused by one or more of the problems listed below

- Camera covered (cap on).
- Obstruction between target and camera.
- Target not mounted or not in the correct position (see par. 10.2.2)
- Camera broken

If the cause of failure is eliminated (ex. obstruction between target and camera is removed) the error page will immediately disappear, and the measurement page will be displayed again. If the problem continues, check system hardware by switching machine off. Of course, it is not recommended to abruptly power cabin off; follow the correct switching off procedure:

- Press “Esc” on keyboard to go back to the introduction page (chap.10 on page 21).
- Switch machine off following the usual procedure (see par.6.2 on page 15).

14 TROUBLES

Some of the most common problems that could arise on wheel aligners are listed here below. Atlas declines all liability for injury or damage to persons, animals and properties caused by the intervention of unauthorized personnel, and by the use of non-original spare parts.

Before doing any operation on the system, always disconnect the power supply.

In case of doubt, do not interpret, but contact Atlas technical assistance in order to obtain instructions suitable for performing operations in total safety.

TROUBLE	CAUSE	REMEDY
NO OPERATION	- No mains voltage - Interrupted protection fuses	- Check mains voltage - Check protection fuses
Monitor does not work	- No supply voltage - No video signal	- Check power cable connection - Check video signal cable connection between PC and monitor
PC cannot be switched on	- No supply voltage	- Check PC ON/OFF switch - Check power cable connection
Printer does not work (see also printer user's manual)	- No supply voltage - No signal	- Check ON/OFF voltage - Check power cable connection - Check printer signal cable connection with PC

15 MAINTENANCE

WARNING! Before doing any maintenance job, the machine will have to be disconnected from the power mains.

To clean plastic panels or surfaces use alcohol (AVOID USING LIQUIDS CONTAINING SOLVENTS).

DISPLAY shall be cleaned with a dry cloth; if very dirty, clean it with a moist cloth, then dry it.

Do not spray the alcohol directly on the control panel and do not clean using strong jets of compressed air.

Keep optical unit methacrylate filters clean using a slightly moist cloth, do not use solvents;

Printer cleaning, cartridge replacement and any other maintenance operation on printer are described in the manual supplied with the printer itself. Always refer to this manual before carrying out any maintenance operation on printer.

16 STORAGE AND SCRAPPING

Storage - If the machine has to be stored for a long period of time, disconnect all supply lines and protect the display screen, which could be damaged by excessive dust.

Grease any parts liable to be damaged by dryness.

Scrapping - If the machine is to be no longer used, it must be made inoperative:

All those parts that could represent a potential hazard risk must be correctly disposed of. Dispose of parts according to category.

Scrap as iron scrap through authorized channels.

Parts considered as special waste must be removed and split up according to type and then disposed of through authorized channels according to applicable regulations.



In order to inform the users regarding the correct disposal of batteries and accumulators, please take note of the following: the meaning of the symbol with the crossed-out wheeled bin marked on the accumulator is that the product cannot be disposed of in municipal solid waste (i.e. together with "mixed waste").

It must be handled separately with the purpose of performing specific operations for its reuse or treatments for eliminating and disposing safely of any substances that could be dangerous for the environment and extract and recycle the raw materials that may be reused. For further detailed information on the end-of-life treatment of batteries and accumulators, please contact the After-sales department of Atlas.

17 MACHINE IDENTIFICATION DATA

A → SPACE Via Sangano, 48 - 10090 TRANA (TO) Tel +39 (011) 93440300 Fax +39(011) 9338864 e-mail: info@spacetest.com www.spacetest.com		MODEL ARP3D NRC SERIAL N°	MODEL ARP3D NRC SERIAL N°	YEAR 2011 CE

C →
D →
E →

A) Manufacturer
 B) Model
 C) Machine weight
 D) Serial number
 E) Year of manufacture

WARNING: It is strictly forbidden to tamper with, notch, somehow alter or even remove machine identification plate; do not cover it with temporary panels, etc... as it shall always be clearly visible.

Said plate must always be kept clean.

CAUTION: Should the plate be accidentally damaged (removed from the machine damaged or even partially illegible) inform immediately the manufacturer.