



EXACT 7

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English

Operator's manual

TRANSLATION OF ORIGINAL INSTRUCTIONS (ITALIAN)

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INTRODUCTION

The purpose of this manual is to furnish the owner and operator of this equipment with a set of practical and safe instructions for the use and maintenance of the wheel aligner.

Follow all the instructions carefully and your equipment will assist you in your work and give lasting, efficient service in keeping with Corghi traditions.

The following points define the levels of danger regarding the equipment, associated with the warning captions found in this manual:

DANGER

Refers to immediate dangers with the risk of serious injury or death.

WARNING

Dangers or unsafe procedures that can cause serious injury or death.

WARNING

Dangers or unsafe procedures that can cause minor injuries or damage to property.

Read these instructions carefully before powering up the equipment. Conserve this manual and all illustrative material supplied with the equipment in a folder near the equipment where it is readily accessible for consultation by the operators.

The technical documentation supplied is an integral part of the machine, and must always accompany the equipment if it is sold or transferred to a new owner.

The manual is applicable exclusively to the machine model and serial number indicated on the data plate affixed to it.



WARNING

Adhere to the contents of this manual: the operator is to be held responsible for any operation not specifically described in this manual.

NB

Some of the illustrations in this manual have been taken from photographs of prototypes; the standard production models may differ slightly in certain details.

These instructions are intended for people with a fair level of mechanical knowledge. We have therefore condensed the descriptions of each operation by omitting detailed instructions regarding, for example, how to loosen or tighten fixing devices. Do not attempt to perform operations unless properly qualified and with suitable experience. If assistance is required, contact an authorised service centre.



WARNING

The aligner is a measuring tool, as a result the prompts for the adjustments to be made on the vehicle (animations or fixed help messages) are purely indicative only. The operator must always have read and understood the instructions or guidelines provided by the manufacturer before carrying out any work on the vehicle, and carry out said adjustments in compliance with these instructions.

The manufacturer declines all responsibility for the actual implementation and consequences of the aforementioned adjustments.

TRANSPORT, STORAGE AND HANDLING

Machine transport conditions

The aligner must be shipped in its original packaging and stowed in the position indicated on the outside.

Ambient conditions for machine storage

Relative humidity 20% - 80%

Temperature range -10° - +60°C.



WARNING

Do not stack other items on top of the packing or damage may result.

Handling

To move the packing, insert the tines of a fork-lift truck into the slots on the base (pallet) (Fig. 1).

Remove the three fixing brackets (A, Fig. 1)

To move the equipment, use the wheels of the aligner; to lift it, insert the tines of a fork-lift truck under the lower base of the cabinet, keeping them close to the wheels of the aligner (Fig. 2). Take care not to break the door.



WARNING

Keep the original packaging materials so that the machine can be safely shipped at a later date if necessary.

The warranties on the monitor, personal computer and printer are no longer valid if the original packaging is missing.

UK

INSTALLATION AND SET-UP



WARNING

Carry out the unpacking, assembly, lifting and installation operations described with care. Failure to comply with these instructions could damage the machine and put the operator at risk.

Assembling the equipment

- Unpack the equipment, placing the crate as indicated above.
- Remove the rear panel of the cabinet.
- Remove the PC from the crate.
- Place the computer on the centre shelf (Fig. 7) via the front hatch.

For correct positioning, place the front part of the computer level with the front of the shelf.

- Remove the monitor from its packaging (Fig. 3).
- Place the monitor on top of the cabinet and connect the video cable to the PC (B, Fig. 9).

- **Installing the electrical connector panel (concentrator board):** Install the electrical connector panel at the bottom of the cabinet (A, Fig. 8). The electrical connector panel must be connected to the HDD power cables leading out of the back of the PC and to the Hard Lock device with a USB cable (G, F, Fig. 9).

- **Installing the Hard Lock device:** Insert the tip of a pen into the hole at the side to open the SIM holder.
- Remove the wheel aligner SIM card (Fig. 50) from its punched backing card (keep the backing card with the serial number for future queries) and insert in the SIM holder (Fig. 51), with the gold contacts facing upward. Push the SIM holder in.

Fix the Hard Lock device (B, Fig. 5) and the 2 charging cable retainer brackets (A, Fig. 5) onto the back of the cabinet with the relative fastener screws. Connect the 2 USB cables to the Hard Lock device. Connect the first cable to a free USB port on the PC. Connect the second cable to the USB port on the electrical connector panel (concentrator board) (E, F, Fig. 9).

Connect the 4 sensor charging cables (with RJ45 connectors) to the electrical connector panel (A, Fig. 8) and fasten them into the 2 charging

cable retainer brackets (A, Fig. 5) at the back of the cabinet.

- Remove the printer from its packaging, place inside the cabinet and connect the power and USB cables.
- Remove the keypad from its packaging and connect to one of the free USB ports at the back of the PC (D, Fig. 9).

Connect the power cables to the multiple connector on the electrical connector panel (B, Fig. 8).

- Connect the cables with the aid of the wiring diagram (Fig. 52); all the plugs are clearly indicated on their respective PC sockets. Push the plugs in completely without straining and, where applicable, tighten the lock screws

- The wheel aligner is factory set to operate with a 230 V AC power supply. The wheel aligner may, however, be configured to operate with 115 V AC mains voltage. If present, set the PC voltage setting switch for the correct mains voltage.

- Refit the rear cover.
- Connect the power supply cable to the plug provided; first read the "Electrical Hook-up" section.
- Power up the PC, the monitor and the printer with the switches provided.
- Update the wheel aligner software if necessary, "Updating the Wheel Aligner Software" section, and install any optional kits, "Installing Additional Functions" section.

WARNING

For additional information about the technical characteristics, warnings, maintenance and any other data about the monitor or the printer, read the relative operator's manuals supplied with machine documentation.

Upgrading the wheel aligner software

The wheel aligner is supplied with the software already installed and with an installation DVD-ROM.

After installing the aligner, switch the machine on and locate the initial screen.

Press the keys \uparrow + F12 (shift + F12) simultaneously to display the software version at the top left of the screen, under the Corghi logo.

Compare the software release version (indicated

as "SW STD ...") with the version indicated on the installation DVD-ROM supplied with the aligner. If the DVD-ROM release is more recent than the release installed, update the aligner software. Detailed information concerning the software update procedure is given in the leaflet accompanying the DVD-ROM.

Enabling extra wheel aligner functions

Extra wheel aligner functions are enabled by upgrading the main protection SIM CARD (identified with



the symbol).

Upgrading is performed with the "Upgrade SIM CARD" obtained by ordering the relative accessory kit.

Upgrade cards carry specific identification symbols; detailed information on upgrade identification is supplied in the leaflets which accompany them.

To upgrade the main protection card, run the relative procedure with the icons



and



and follow the on-screen prompts. You will be asked to remove the main Hard Lock SIM CARD and insert the upgrade SIM CARD. After the procedure, the main SIM CARD must be reinserted.

The upgrade SIM CARD cannot be reused. However, keep it for use if it becomes necessary to reprogram the main card of the wheel aligner for which it was used the first time.



The icons display the system configuration:

CARD: card number 1 is the wheel aligner's main card; card number 2 (if any) is an update card.

HEADER: "MAS" aligner main card, "AGC" update card.

SERIAL: card serial number. For main cards this number is unique. For update cards the number is 0 when they are new, while after use it becomes the same as that of the main card that has been updated.

DATE: card creation date.

REN: "ON" RENAULT programme on, "OFF" programme off The RENAULT programme reverses the toe signs for RENAULT vehicles only.

ANIM: "ALL" display of alignment adjustment help

animations on, "FIN" display of non-moving alignment adjustment help diagrams, "OFF" alignment adjustment help graphics off.

ROMESS: "ON" ROMESS CM-09606 inclinometer automatic connection programme on, "OFF" programme off.

CUSTOM: type of wheel aligner customisation

BD YEAR: year of the latest databank update, if "DEMO" the aligner card has not been inserted or is not functioning correctly.

Installation clearances



WARNING

Choose the place of installation in strict observance of local regulations regarding safety in the workplace.

The floor must be able to withstand a load equal to the sum of the weight of the equipment itself and the maximum payload, bearing in mind the lift support surface area and anchor fixtures used.

Place the aligner in the designated work position and make sure that the rear panel of the equipment is at least 10cm away from the nearest wall.

IMPORTANT: for correct, safe use of the equipment, users must ensure a lighting level of at least 300 lux in the place of use.



WARNING

Make sure that there are no permanent magnets, electromagnets or sources of heat in the vicinity of the machine as these could cause irreparable damage (they might irreparably damage the programme disk and the Personal Computer).

Work environment conditions

Relative humidity 20% - 80%.

Temperature range 0°C - 40°C.



WARNING

The machine must not be operated in potentially explosive atmosphere.



ELECTRICAL HOOK-UP

The manufacturer pre-sets the aligner to operate with a power supply of 230V AC. To change this setting, refer to the "installation" section.



WARNING

Any connections to the workshop electrical board are the customer's responsibility, and must be made by staff qualified in accordance with the relevant legal requirements.

- The electric hook-up must be performed according to:
 - the machine input power, specified on the machine data plate;
 - the distance between the equipment and the electric hook-up point, so that voltage drops under full load do not exceed 4% (10% during start-up) below the rated voltage specified on the dataplate.
- The user must:
 - fit a power plug in compliance with the current regulations on the power supply lead;
 - connect the equipment to its own electrical connection having a specific automatic differential circuit-breaker, with sensitivity 30 mA;
 - fit protection fuses to protect the power supply line, rated in accordance with the instructions provided in the general wiring diagram in this manual;
 - provide the workshop's electrical system with a grounding circuit in good working order.
- Prevent unauthorised use of the machine, always disconnect the power supply plug when the machine is not used (switched off) for extended periods of time.
- If the machine is connected directly to the mains via the main electrical panel without a plug, a key-operated switch or a padlockable switch must be installed in the power line to prevent use of the machine by unauthorised persons.



WARNING

For correct and safe operation of the machine it must be connected to an efficient ground connection.

NEVER connect the earth wire to a gas or water pipe, telephone wire or any other unsuitable objects.



WARNING

Before connecting the power supply plug to the power panel make sure that the line voltage is the same as indicated on the data plate of the machine.

SAFETY REGULATIONS

The equipment is intended for professional use only.



WARNING

Only one operator may work on the equipment at a time.



WARNING

Failure to comply with the instructions and danger warnings may cause serious injury to operators and to others in the vicinity. Before starting up the equipment, always ensure you have read and understood all the danger/warning signs in this manual.

This machine must be used only by qualified and authorised personnel. A qualified operator is considered to be a person who has read and understood the manufacturer's instructions, suitably trained, and confident with safety and adjustment procedures to be adhered to during operations.

Operators must not use the equipment under the influence of alcohol or drugs which may affect their capacity. In all cases, it is essential to:

- Be able to read and understand all the information in this manual.
- Have a thorough knowledge of the capabilities and features of this machine.
- Keep unauthorised persons well clear of the area of operations.
- Make sure that the equipment has been installed in compliance with all the relevant legislation and standards.
- Make sure that all system operators are suitably trained, that they are capable of using the equipment correctly and safely and that they are adequately supervised during their work.
- Do not touch power lines or electrical equipment without first making sure that the power supply has been disconnected.

- Read this manual carefully and learn how to use the machine correctly and safely.
- Keep this manual at all times in an easily accessible location. Always consult this manual for any procedure or queries.



WARNING

Do not remove or deface the Attention, Warning or Instruction decals. Replace any missing or illegible decals. Missing or damaged decals can be obtained at your nearest Corghi dealer.

- When using and carrying out maintenance on the equipment, observe the standardised industrial accident prevention regulations.
- Any unauthorised modification to the machine releases the manufacturer of all liability in the event of damage or personal injury resulting from said modification. Specifically, tampering with or removal of the machine safety devices is a breach of the regulations relating to Safety at Work.



WARNING

During work and maintenance operations, always tie up long hair and do not wear loose or floppy clothing, ties, necklaces, wristwatches or any other items that may get caught up in the moving parts.

MAIN FEATURES

- Angle reading with infrared CMOS
- 0.01 degree data display
- Databank on hard disk
- User databank and jobs archive
- Guide to vehicle adjustment with stationary or animated images
- 17" and 19" LCD colour monitors.
- Colour INKJET printer.
- Professional alphanumeric keypad
- Exceptional operating freedom, the user can switch between adjustments at will
- Run-out compensation modes: once-round ROC, push mode ROC
- Repetition of compensation on a single wheel (single-wheel ROC).
- Steering angle measured automatically and directly by the sensors; no need for electronic turntables
- Steering angle measurement even for 4WS cars

- Data displayed in degrees, grades, millimetres and inches
- Graphic comparison between the data read and the databank values
- Vehicle chassis diagnostics
- 10", 19" or 10"-26" self-centring clamp with built-in spoiler adapter
- Remote control (optional).

TECHNICAL DATA

- Measuring ranges:

toe	± 10°
camber	± 10°
caster	± 30°
king pin	± 30°
setback	± 10°
thrust angle	± 10°
steering angle.....	± 10°

- Power supply:

central unit	
110-230V AC (50-60 Hz) single-phase	
central unit power consumption	0.4 kW
radio sensor head batteries.....	
Rechargeable 1.2V AA(2000-3000) mA/h	
(NiMH) 4 x sensor	

Radio Devices:

Frequency band	2400-2483,5 MHz
Maximum power	10 mW (+ 10dBm)

- Dimensions (LxWxH):

central unit (without sensors and 17" monitor).....	800x630x1,710m
central unit (sensor heads - brackets - 17" monitor).....	1,350x1,320x1,710 mm
sensor heads	800x135x210 mm

- Weight:

central unit	130 kg
sensor heads	30 kg
electric/electronic components	26 kg

- Ambient conditions for storing the equipment:

relative humidity	20% to 80%
temperature range	-10° to +60°C.



- **Ambient conditions in the place of operation:**
relative humidity20% to 80%
temperature range (LCD monitor and INKJET printer)5°C to 40°C
- **Noise level when operating:**.....
<70 dB(A)

NOTE:

Use only 1.2 V AA NiMH batteries with a capacity between 2,000 and 3,000 mA/h/.

- **When fully charged, new batteries with a capacity of 2,600 mA/h will ensure 8 hours of continuous operation.**

EQUIPMENT

- Pedal depressor device
- Steering wheel clamp device
- DVD-ROM with programme
- Operator's Manual
- Spare parts handbook
- Original accessories handbook

OPTIONAL ACCESSORIES

For the full list of optional accessories available for the wheel aligner, see the "ORIGINAL ACCESSORIES" booklet accompanying the aligner itself. For the function enabling kits and databank update kits, refer to your dealer's price list.

WHAT A WHEEL ALIGNER IS

An aligner or wheel aligner is defined as an instrument for measuring characteristic alignment angles of a vehicle (see the "Characteristic angles" section).

A wheel aligner consists of a central unit and four measuring sensors for application to the wheels of the vehicle.

CHARACTERISTIC ANGLES

1) ROC (Run Out Compensation). Off-centre and plane error compensation.

ROC renders the angle measurements independent of geometrical errors in the rim and/or

wheel mounting.

This procedure should be performed on all wheels.

2) Toe.

Angle formed by the equatorial plane of the wheel and the axis of symmetry or thrust axis of the vehicle (figs.10 and 11).

The axis of symmetry of the vehicle is the imaginary line which divides the vehicle in half lengthways, while the thrust axis is the travel direction established by the rear axle.

The units of measurement of toe are the degree and the millimetre.

3) Camber or Inclination.

The angle formed by the equatorial plane of the wheel and the vertical plane (Fig. 12): camber is positive when the top of the wheel tilts outward.

The unit of measurement for camber values is degrees.

4) Caster.

The angle formed between the vertical and the projection of the steering axis onto the longitudinal plane of the vehicle (Fig. 13).

The caster is measured with the wheels turned.

The unit of measurement is degrees.

5) King pin angle.

The angle formed between the vertical and the projection of the steering axis onto the transverse plane of the vehicle (Fig. 14).

The king pin angle is measured with the wheels turned.

The unit of measurement is degrees.

6) Steering angle difference.

Difference in steering angle between the front wheels (Fig. 15).

The unit of measurement is degrees.

7) Misalignment of wheels on the same axle or Set-Back.

The measurement of the difference in position of one wheel in relation to the other, referred to the perpendicular of the vehicle's longitudinal axis (Fig. 16).

There are both front set-back and rear set-back; the latter is not to be confused with the thrust angle.

The unit of measurement is degrees.

8) Thrust angle.

The angle formed between the axis of symmetry of the vehicle and the travel direction of the rear axle (Fig. 17).

The unit of measurement is degrees.

9) Track difference.

Angle formed by the line joining the ground contact points of the front and rear wheels on the left-hand side and the line joining the ground contact points of the front and rear wheels on the right-hand side of the vehicle (Fig. 18).

The units of measurement of track difference are the degree or the millimetre, only if the wheel base is known.

10) Wheel base difference.

Angle formed by the line joining the ground contact points of the front wheels and that of the rear wheels (Fig. 19).

The units of measurement of wheel base difference are the degree or the millimetre, only if the track is known.

11) Side offset.

Angle formed by the line joining the ground contact points of the front and rear wheels on the left-hand side, or the right-hand side, and the vehicle's axis of symmetry (Fig. 20).

The units of measurement of side offset are the degree or the millimetre, only if the wheel base is known.

12) Axle offset.

Angle formed by the line bisecting the track difference angle and the vehicle's thrust axis (Fig. 21).

The units of measurement of axle offset are the degree or the millimetre, only if the wheel base is known.

MAIN WORKING ELEMENTS OF THE MACHINE



WARNING

Get to know your equipment. The best way to prevent accidents and obtain top performance is for all the operators who use the equipment to know how it works. Learn the function and layout of all the controls. Check thoroughly that each of the equipment's controls is operating correctly. To avoid accidents and injuries, the equipment must be properly installed, operated correctly and serviced as necessary.

Central unit (Fig. 22)

- A) Monitor: shows the working screens with the diagrams of the angles measured; the operating commands are in the bottom part.
- B) Keypad: used to select the commands available and enter alphanumerical data. The Enter key recalls the command selected by the arrow keys. The Esc key returns the programme to the previous step.
- C) Personal Computer: contains and executes the vehicle wheel alignment programme. Also contains the wheel aligner control electronics.
- D) Remote control receiver: point the remote control in this direction before pressing a key.
- E) Printer: allows the results of the job done to be recorded on paper.
- F) Remote control: wheel aligner remote control unit.
- G) Wheel aligner card, card enabling wheel aligner operation. The second slot is used for the cards provided in the update kits.
- H) Sensor head connectors.
- I) Power supply plug.

Working screen (Fig. 23)

- A) Title (e.g. FRONT AXLE): indicates the procedure being used.
- B) Values measured on vehicle.
- C) Database values.
- D) Graphic comparison between measured values and database values.
- E) Sensor level indicators.
- F) Instantaneous measured angle display.
- G) HELP: command which recalls the on-line help function.
- H) Icon bar: icons you can use to move around the programme. More information about the selected icon is provided in the feedback bar.
- I) Feedback bar: displays a help message about the function of the selected icon.
- L) Vehicle name bar: displays the name of the vehicle selected from the databank. During selection of the vehicle from the databank, it shows the market selected.
- M) Status bar: displays system messages.
- N) Axle value difference: window containing the value and databank reference for the difference between the right-hand and left-hand values of the angle measured. The window only appears when the databank contains a

reference value.

- O) Work zone: part of the screen which displays the working information.

Sensors (Fig.24)

- A) Knob fastening sensor head on bracket.
- B) Button releasing the safety anchor fastening the sensor head to the bracket.
- C) Connector for connecting central unit in emergency function mode or for connecting electronic turnplates.
- D) Sensor head control panel.
- E) Sensor head orientation, fit the sensor head oriented correctly for the vehicle, as indicated on the label.

Sensor control panel (Fig.25)

- A) Sensor on/off key.
- B) Roc key.
- C) Electronic level indicator LED indicating when sensor head is levelled correctly.
- D) Electronic level indicator LED indicating when sensor head is not levelled correctly.
- E) LED lit while ROC is in progress.
- F) Sensor head status LED. When always on, the sensor is in operation; in radio versions, flashes to warn that the battery charge is running out.

Clamps

The clamps function in the same way as ordinary self-centring clamps.

Use the handles (C, Fig. 26) to fix the clamp to the rim or remove it.

The release lever (A, Fig.26) can be used to lower the sensor connection point to prevent particularly low spoilers from interfering with the measurements (Fig.27).

To fix the sensor at the required height, tighten the fixing screw (B, Fig.26) with the sensor in the position of choice.

These clamps are also able to operate on cars with wrap-around fenders (Citroen); in this case, mount the clamps in the horizontal position.

On small-diameter rims, always perform compensation with the clamps in the horizontal position.

Remote control (Fig.28)

With the keys Enter, Esc and the four arrows, repeat the functions of the same keys of the keypad and the control panel of the central unit.

It is powered by an ordinary 9V DC battery.

PERSONAL COMPUTER

Wait a few seconds to allow the monitor to switch on and the computer to load the programme.

The personal computer, and thus the entire wheel aligner, can only be switched off using the command provided in the wheel alignment programme.



IMPORTANT

Switching off the personal computer without using the command provided may damage the software installation.



IMPORTANT

When the wheel aligner is switched off using the software command, the PC, the monitor and the printer switch to standby status. To switch off these devices completely, use either the relative on and off buttons, or the PC feeder switch (switch marked C turned to 0), or cut off the wheel aligner power supply at the mains.

Keep the original GHOST and aligner software DVD-ROMs for future system upgrades.



IMPORTANT

The software on the DVD-ROM is the property of Corghi S.p.A. and may only be used with the personal computer supplied with the machine.

OPERATOR INTERFACE

Commands and information for moving around the vehicle wheel alignment programme.

Icons

An icon is a key on the screen which performs a specific action when it is selected. This function is the same throughout the procedure.

The icon's function is identified by a graphic symbol; a brief comment is also provided in the feedback bar.

Use the ↓, ↑, ←, → keys to highlight the icons and press ↵ to select.

If the icon selected has a sub-menu, it will open vertically and the icon selected will be replaced



by . Use this icon or the Esc key to close the menu.



 identifies additional icons in the menu for display.

Icons which are not active are plain grey in colour.

Main menu



Start Begins the vehicle alignment procedure.



Alignment mode Selects the guided wheel alignment procedure: quick, complete or customised.



Alignment procedure Selects the wheel alignment procedure: quick, complete or customised.



Databank and job management Tools for management of the jobs archive and user databank.



Set-up and maintenance Gives access to the utility functions for wheel aligner set-up and maintenance.



Service programs Gives access to the wheel aligner service and troubleshooting functions.



Last job Restarts the wheel alignment procedure by loading the data of the job just completed.



Shutdown Activates the programme closure and wheel aligner switch-off procedure.



Help Recalls the information for the current video page to the screen. The on-line instructions back up the Operator's Manual but do not replace it in all respects.

Programme step recall



Diameter selection Recalls input of the rim diameter to be used in toe measurements in millimetres / inches.



Chassis height For vehicles where this is necessary, recalls input of the chassis heights necessary to obtain the databank references.



Steering angle Recalls the steering lock procedure for measurement of the caster, king pin, steering angle difference at 20° and maximum steering angle.



Data summary Recalls the summary of the vehicle data.



Front axle Recalls the front axle adjustment step.



Rear axle Recalls the rear axle adjustment step.



Data summary and printout Recalls the job data summary, printout and save step.



End of session Ends the current job and returns to the main menu.



Vehicle adjustment Selects the help function for adjustment of the vehicle. Only the help selections available are active.





Vehicle selection Recalls selection of the vehicle from the databank.



Databank data summary Recalls the full summary vehicle's databank references.



Chassis situation Recalls the vehicle chassis situation step.



EZShim Recalls the EZShim calculation programme.



Toe curve Recalls the toe curve checking and adjustment procedure.



Distronic Adjustment Recalls the alignment screen for the equipment for adjusting the Mercedes "Distronic" anti-collision radar system.



Log Recalls the logs screen. Active for calibration procedures and other utility programs.



Sensor cross-check Sensor cross-check procedure for checking calibration.



Visual check Recalls the procedure for visual checking of the vehicle.



Vehicle weight Recalls the procedure for acquiring and adjusting the vehicle's axle weight.

General functions



Continue Moves on to the next programme step in the pre-set sequence.



Last step Returns to the previous programme step.



Skip operation Skips to the next programme step without requiring execution of the current step.



Back to selection Moves the active cursor from the icon bar to the working zone.



Increase Increases the value of the selected object (for example, it increases the rim diameter to the value above).



Decrease Decreases the value of the selected object (for example, it decreases the rim diameter to the value below).



Exit Ends the current operation.



Next page Displays the sequence of pages of the on-line help function. The icon is only active when there is more than one page.



Save Saves the vehicle's pre-adjustment values.



Save axle weight Saves the weight of the axle being measured.



Yes Confirms the selection made or the value entered.



No / Abort Aborts the selection made or the value entered.



User code For changing the user code.



VAS Set-up Changes the set-up settings, entering the defaults required by the manufacturer for alignment of VAS cars.



MERCEDES Set-up Changes the set-up settings, entering the defaults required by the manufacturer for alignment of MERCEDES cars.



Manufacturer's Set-up Changes the set-up settings, entering the Corghi factory defaults.

Special functions



Checking calibration Checking calibration of sensor heads mounted on vehicle.



Maximum steering angle Activates and deactivates the maximum steering angle procedure.



2WS steering angle Recalls the steering angle procedure for vehicles with 2-wheel steering.



4WS steering angle Recalls the steering angle procedure for vehicles with 4-wheel steering.



Adjustment with car lifted Starts the procedure for adjusting an axle with the car lifted.



End of adjustment with car lifted Ends the procedure for adjusting an axle with the car lifted, lower the vehicle.



Data transfer Automatic chassis clearance data transfer from the instrument to the wheel aligner.



Chassis input degrees Manual compilation of the chassis height record with data in degrees.



Chassis input mm Manual compilation of the chassis height record with data in millimetres.



Mercedes Clamp Selects the procedure with Mercedes wheel clamps, automatically skips the ROC procedure.



Self-centring clamp Selects the procedure with self-centring clamps, ROC procedure is compulsory.

Menu management



Open menu Opens the menu containing the additional icons for which there is no room in the icon bar.



Recall other icons Displays the second set of icons in the sub-menu.



Close menu Closes the menu containing the additional icons.

RUNOUT Compensation



Two point ROC Recalls the two point compensation procedure.



ROC skip Continues vehicle alignment operations, skipping the compensation procedure.



ROC recall Recalls the compensation values saved previously.



ROC Fast ROC procedure which can be performed moving around the vehicle just once.

Databank



Car markets Selection of the distribution markets of the databank vehicles.



Commercial description of vehicle Description of the vehicle with the commercial name.



Manufacturer's description of vehicle Description of the vehicle with the name given by the manufacturer for univocal identification of the alignment reference data.



Databank selection Selection of the databank archive from which the vehicles will be selected.





Main databank Sets the main archive supplied by Corghi as the databank for use.



User databank Sets the secondary archive entered by the user as the databank for use.



Both databanks Sets the combination of the main and secondary archives as the databank for use.

Printout and job record



Print Prints the data.



Save and print Saves the current job in the jobs archive and prints the data.



Save job Saves the current job in the jobs archive.



Compile job record Recalls compilation of the job record data.

Vehicle adjustments



Copy Starts copying of the vehicle adjustment help function.



Pause Stops copying of the vehicle help function and restarts it from the same point.



Stop Stops playback of an animation, returning to the first image (only applies to animations, not to stationary images).



Front toe Selects the front toe adjustment help function.



Rear toe Selects the rear toe adjustment help function.



Front camber Selects the front camber adjustment help function.



Rear camber Selects the rear camber adjustment help function.



Front caster Selects the front caster adjustment help function.



Front king pin Selects the front king pin adjustment help function.



Toe curve adjustment Selects the toe curve adjustment help function.



Toe curve measurement Selects the toe curve measurement help function.

Wheel alignment procedures



Two axle procedure Complete vehicle wheel alignment procedure.



Single axle procedure Vehicle wheel alignment procedure performed on front axle only.

Set-up and maintenance



Demo Vehicle wheel alignment procedure is executed in demonstration mode; use of sensors not required.



Set-up Recalls the aligner set-up procedure.



Sensor high output High power sensor mode. This mode remains active for just one job.

Service Programs



Sensor calibration Sensor calibration procedure.



Sensor test Sensor diagnostics instruments.



Technical assistance Service program-

mes reserved for technical assistance personnel only.



Exit to Windows Exits to the operating system. A password must be entered in order to access the operating system.



Save data Procedure for saving or refreshing the job archive and the user databank.

Management and jobs archive



Job records Jobs archive management.



Customer records Customer archive management.



Vehicle records Management of the registered vehicle data archive.



Operator records Operator archive management.



Customer correspondence Prints addresses of the customers on file.



Makes For entering makes not present in the main databank, for the user databank.



New For entering a new record.



Copy Copies the selected record into a new one.



Modify Modifies the selected record.



Delete Deletes the selected record.



Delete selection Deletes all the records selected earlier.



Find Job record search tool, used by entering selection parameters.



Check OK.

Data sorting



Sort Selects sorting criteria.



Alphabetical order Data on screen arranged in alphabetical order.



Chronological order Data on screen arranged in chronological order.



Sort by customer Job records sorted by customer.



Sort by registration number Job records sorted by registration number.



Sort by order Job records sorted by order.



Sort by operator Job records sorted by operator.

Calibration



Calibration check Checks sensor calibration.



Zero calibration Sensor zero value calibration procedure. Useful if cars' steering wheels are crooked after alignment.



Full scale calibration Procedure for calibrating the gain of the inclinometers and the angle sensors.

Units of measurement



Unit of measurement Selects the units of measurement of the data on screen.





Weight unit of measurement Switches the weight unit of measurement between kilograms and pounds.



Degrees or lengths Switches the display of values between units of length and degrees.



Length unit of measurement Switches the length unit of measurement between millimetres and inches.



Unit of measurement in degrees Switches the unit of measurement for angle values between centesimal and sexagesimal degrees.



Pressure unit of measurement Switches the unit of measurement for pressure values between PSI and BAR.

Technical Assistance



Upgrade SIM Card Procedure for upgrading main SIM Card.



SIM Card data Reads SIM Card contents.



Job counter Displays the number of jobs done.



Radio board manager Configures and tests radio devices

Status bar

The status bar shows messages of use during execution of the programme, in graphic form.



Entry mode, use the ← and → keys to move the cursor within a data entry field, but not from one data entry field to another.



"Demo" mode Car procedure for which the sensors are not required.



Maximum steering angle enabled.



Non standard toe sign convention.



Non standard thrust angle sign convention.



Save job in progress.

PC keypad

The keypad function keys give rapid access to programme steps. They always retain the same functions and are only active if the relative icon is included in the screen.

The keys indicated as in the following example ⌘+F12 are the combination of the "Upper case" key and the key indicated (in the example, F12).

Key	Name	Icon
F1	Databank selection	
F2	Rim diameter	
F3	Chassis clearance	
F4	Steering angle	
F5	State of vehicle	
F6	Rear axle	
F7	Front axle	
F8	Print	
F9	End of job	
F10	Vehicle adjustments	
F11	Databank	
F12	Help	

- +F1 Test screen
- +F12 Information window
Recalls on-screen display of information concerning wheel aligner software and database

Characteristic angle symbols for adjustment screens

In the adjustment screens, the vehicle's characteristic angles are referred to by means of graphic symbols

- Total front toe with standard signs
- Total front toe with RENAULT reversed signs
- LH and RH half toes with standard sign conventions
- LH and RH half toes with RENAULT sign conventions
- LH and RH camber
- LH and RH front casters
- Total rear toe with standard sign conventions
- Total rear toe with RENAULT sign conventions
- Thrust angle with standard sign conventions
- Thrust angle with MERCEDES sign conventions
- Front setback
- Rear setback
- Track difference
- Toe constant (S-POINT) for

multilink cars

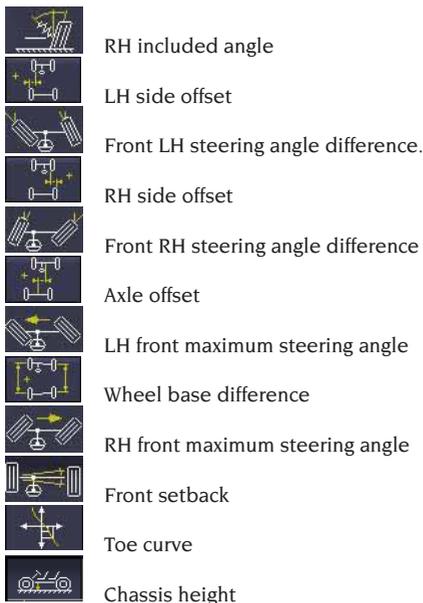
- Alignment of bars of accessory kit for alignment in relation to chassis
- Rear axle offset

Characteristic angle symbols for data summary screens

In the data summary screens, the vehicle's characteristic angles are referred to by means of graphic symbols

- Total front toe
- Total rear toe
- Front LH half toe
- Rear LH half toe
- Front RH half toe
- Rear RH half toe.
- LH front camber
- LH rear camber
- RH front camber
- RH rear camber
- LH front caster
- Thrust angle
- RH front caster
- Rear setback
- LH front king pin
- RH front king pin
- Track difference
- LH included angle





SET-UP

User set-up

To access the user set-up, select the  and



icons from the main menu.

From the user set-up, you can customise the alignment procedure to adapt it to your own requirements.

The alignment procedure customisation settings are contained in folders (shown in Fig. 44); each folder contains similar customisation settings. The different options available are provided for each setting.

Use the ↓, ↑, PAG↓, PAG↑, ← and → keys to navigate in the set-up windows and press ↵ to confirm the selected option. The Esc key aborts the selection just made.

The option currently saved is highlighted in blue. An option not active, because the aligner version does not allow its use or other selections prevent it from being used, is transparent.



Exit the set-up function by selecting the  icon and save the options set by selecting the



icon in the information window.



The ,  and  icons allow you to change the set-up settings quickly by recalling pre-set configurations.

Customisation

- Working language
 - Selection of the language to be used in the working procedure, from those available in the list.
- Printed report language
 - Selection of the language to be used in the printout of the reports of the jobs done, from those available in the list.
- Logo
 - Selection of the logo for display in the "Main Menu" step and in the screen saver (see "Logo" section).
- Customisation
 - Input of the main heading to be displayed in the "Main Menu" step.
- Secondary logo
 - Selection of the logo for display in the "Main Menu" step and in the screen saver (see "Logo" section).
- Secondary customisation
 - Input of the secondary heading to be displayed in the "Main Menu" step.
- Alternation of customisation
 - **YES:** In the "Main Menu" step the main and secondary logo and customisation are displayed in alternation.
 - **NO:** In the "Main Menu" step only the main logo and customisation are displayed.
- Advertising message
 - Input of the advertising message (see "Customisation" section).
- Date format
 - **European:** European date format day/month/year.
 - **American:** American date format month/day/year.

Units of measurement

- Toe
 - **Degrees:** Unit of measurement for selection in the "Angles" setting.
 - **Length:** Unit of measurement for selection in

- the "Length" setting.
- **ø 28.65"**: Measurement of toe values with fixed rim diameter. Unit of measurement for selection in the "Length" setting.
- ↳ Setback and track difference
- **Degrees**: Unit of measurement for selection in the "Angles" setting.
- **Length**: Unit of measurement for selection in the "Length" setting.
- ↳ Length
- **Mm**: millimetres
- **In**: inches (in / ")
- ↳ Angles
- **1/100**: grades
- **1/60**: degrees
- ↳ Pressure
- **bar**
- **psi**
- ↳ Weight
- **Kg**: kilograms
- **Lb**: pounds
- ↳ Mileage/kilometres on the clock
- **Km**: kilometres
- **Miles**: miles
- ↳ Angle resolution
- **0.01**: Angle values with resolution of one hundredth of a degree.
- **0.1**: Angle values with resolution of one tenth of a degree.

Print

- ↳ Type
- **Alphanumeric**: report without the aid of graphics, suitable for dot matrix printers or quick printouts.
- **Graphic**: graphic report, recommended for ink-jet or laser printers.
- ↳ Customised logo
- **YES**: Customised logo is included in printed report (see "Customised logo for printout" section).
- **NO**
- ↳ Colour printout
- **YES**: report in colour (a colour printer is required).
- **NO**: report in black and white.
- ↳ Billing management
- **NO**

Databank

- ↳ Archive
- **Main**: Selection of vehicle from main databank only.
- **User**: Selection of vehicle from user databank only.
- **Both**: Selection of vehicle from both main and user databanks.
- ↳ Markets.
- Select the chosen market from the ones in the list.
- ↳ Make
- Select the chosen make from the ones in the list.
- ↳ Sorting
- **Alphabetical**: display of vehicles in alphabetical order of description
- **Date**: display of vehicles in order of MOT registration date.
- ↳ Makes display
- **Graphic**
- ↳ Short-form selection
- **YES**: during vehicle selection the model is supplied with single description.
- **NO**: during vehicle selection the model is supplied with multiple description.
- ↳ Selection by year
- **YES**: selection of vehicle by year of MOT registration on.
- **NO**: selection of vehicle by year of MOT registration off.
- ↳ Vehicle description
- **Commercial**: vehicle description supplied using commercial names.
- **Manufacturer**: vehicle description supplied by means of the codes used by the manufacturers to identify the different types of wheel alignment.

JOB RECORD

- ↳ Type
- **Quick**: record containing on the essential customer and vehicle data.
- **Complete**: record containing full data on the customer and vehicle
- ↳ Record sorting
- **Date**: In the management function job records are sorted by date.
- **Customer**: In the management function job records are sorted by customer.
- **Vehicle registration number**: In the management function job records are sorted by vehicle registration number.

- **Operator:** In the management function job records are sorted by operator.
- **Order number:** In the management function job records are sorted by order number.
- ➔ Customer correspondence
- **NO**
- ➔ Enable modifications
- **YES:** allows modification of the adjustment data of a job saved in the memory.
- **NO:**

Alignment procedure customisation

- ➔ Enable vehicle weight procedure
- **YES:** vehicle weight procedure enabled
- **NO:** vehicle weight procedure not enabled.
- ➔ Visual check enabling
- **YES:** vehicle visual check procedure enabled.
- **NO:** vehicle visual check procedure not enabled.
- ➔ Lift test
- **YES:** recalls the lift test, "LIFT AND SENSOR CHECK" section, at switch-on
- **NO**
- ➔ Vehicle selection
- **Always activated:** Selection of vehicle from databank always activated.
- **On request:** Selection of vehicle from databank activated on request.
- ➔ Vehicle selection mode
- **Databank:** Selection of vehicle from databank, job record compilation on request
- **Job record:** compilation of job record with activation of vehicle from databank if necessary.
- ➔ Rim diameter
- **Always:** If toes are set in millimetres or inches, the step for input of the rim diameter is always activated.
- **On request:** If toes are set in millimetres or inches, the step for input of the rim diameter is activated either by the operator or automatically if the reference diameter is not available in the databank.
- ➔ R.O.C.
- **Always:** R.O.C. procedure is compulsory.
- **Manual skip:** R.O.C. procedure is always

- activated but can be skipped manually.
- **Automatic skip:** R.O.C. procedure is skipped automatically (can be performed later by manual recall).
- ➔ Caster measurement steering lock
- **Always activated:** Caster measurement steering lock always activated.
- **On request:** Caster measurement steering lock activated on request.
- **If adjustable:** Caster measurement steering lock only activated if at least one of the angles that can be measured is adjustable (caster, king pin, steering angle difference at 20° and maximum steering angle).
- ➔ Rear
- **Always activated:** Rear axle adjustment always activated.
- **If adjustable:** Rear axle adjustment only activated if at least one of the angles that can be measured is adjustable (half toe, camber, total toe, setback).

Wheel Aligner Customisation

- ➔ Electronic turntable enabling
- **Always:** electronic turntables for maximum steering angle always enabled.
- **On request:** electronic turntables for maximum steering angle enabled on request during steering angle measurement.
- **Never:** electronic turntables for maximum steering angle never enabled.
- ➔ Axis of reference
- **Symmetry:** axis of symmetry is axis of reference for both front and rear.
- **Thrust:** thrust axis is axis of reference for both front and rear. Setting the steering-wheel with the front half toe values equal ensures the steering wheel will be straight in normal operating conditions. If the thrust axis is axis of reference for the rear axle, the rear half toe values area always identical.
- **Straight steering wheels:** reference axis is axis of symmetry for rear and thrust axis for front. Setting the steering-wheel with the front half toe values equal ensures the steering wheel will be straight in normal operating conditions.
- ➔ Save previous data
- **Automatic:** vehicle situation before adjustment is saved automatically.
- **Manual:** vehicle situation before adjustment is saved manually.

- Front axle adjustment
 - Caster.
 - Total toe – setback.
- Rear axle adjustment
 - Total toe – thrust angle.
 - Setback – track difference.
- Thrust angle
 - **Clockwise positive:** angle is positive when thrust axis is turned clockwise in relation to the axis of symmetry.
 - **Anticlockwise positive:** angle is positive when thrust axis is turned anticlockwise in relation to the axis of symmetry.

Logo

The logo is the image displayed as a background for the main menu (Fig.33).

2 customised logos can be entered: they are selected from the set-up as the "Customised 1" and "Customised 2" logos.

The customised logo files must be in bitmap format and must have dimensions of 800x337 pixels.

Save the files in C:\program files\alignment\graphics\logo\.

The file for the "Customised 1" logo is LogoFeF.bmp, for the "Customised 2" logo it is LogoFeW.bmp.

Customised logo for printout

The customer's logo can be added to the printed job report.

Replace file C:\Program Files\Alignment\Graphics\Image\IMGPrBarra4.bmp with an equivalent file containing the desired logo.

Warning! The file dimensions must be 1100 x 354 pixels.

PREPARING THE VEHICLE FOR ALIGNMENT (FIG. 32)

For the wheel alignment operation to be carried out correctly, all parts of the vehicle must conform to the constructor's specifications; in particular, it is important to check the tyre pressure and eliminate any backlashes in the bearings and ball joints.

Place the vehicle over the pit or on the lift equipped for the alignment operations, taking care to ensure that the turntables and oscillating footboards are locked in position.

Fit the self-centring clamp/sensor assembly on the wheels and lock the clamp jaws onto the wheel rim using one of the two handles.



WARNING

Do not over-tighten the clamp as this may cause it to bend.

For steel rims or rims with projecting edges, the clamps should be tightened from the inside (Fig.29); for alloy rims tighten from the outside (Fig.30) and for rims with plastic covers connect from the inside with the pins turned round (Fig.31).

If necessary, tap on the clamp to insert the claw between the rim and the bead of the tyre; in this case, it is best to fit the clamp separately from the sensor.

Fit the sensors and switch on by pressing the On key (A, Fig. 25) during the operation. Radio sensors may switch off when the on button is pressed, because a battery is completely flat or due to the energy saving device. In all cases, to switch the sensors back on (provided the battery is not flat), press the on key.

STANDARD WORKING SEQUENCE

Alignment procedure for 2-axle vehicles (cars).

- 1) Aligner switch-on
- 2) Start work.
- 3) Databank / Job record
- 4) Preparation for wheel alignment
- 5) Wheel diameter input
- 6) Compensation
- 7) Chassis height input
- 8) Angle measurement with steering locked
- 9) Data summary
- 10) Rear axle measurement
- 11) Front axle measurement
- 12) Angle measurement with steering locked
- 13) Front axle measurement
- 14) Print out of data measured

(1) Switching on the aligner

Switch on the computer and the monitor.

Wait a few seconds to allow the monitor to switch on and the computer to load the programme.

In this stage, the central unit runs a functional self-diagnostics test and loads the operating system; if everything is in order, the "Main menu" screen will appear (Fig. 33).



If the user set-up field "Alignment customisation procedure/Lift test" = YES, the programme will automatically open the "Lift Check" page, see "Lift and Sensor Check" section.

(2) Work start selection (Fig. 33)

To access this function from the rest of the programme select the



icon or the F9 key.

Select the wheel alignment procedure



and start the job



restarts the previous job.



enable and disable the "demo" mode, for which the sensors are not required. The "demo" mode is indicated by the



symbol in the status bar.



access the service and maintenance utilities, and wheel aligner customisation.



ends execution of the programme, shuts down all the applications open and switches off the wheel aligner.



WARNING

before switching off the wheel aligner, always shut down the active programs and operating system correctly.

(3) Databank (Fig. 34)

To access this function from the rest of the programme select the



icon or the F8 key.

Select the vehicle from the database as follows: use the ↓, ↑, PAG↓, PAG↑, ← and → keys and the alphanumeric keys to scroll through manufacturers and model descriptions; press ↵ to confirm the selected vehicle.

During selection, the vehicle code is shown in the status bar.

The model of the vehicle selected will be loaded in the "Vehicle name bar", which contains the name

of the market set while selection is in progress.



recalls the market selection. The screen only shows the vehicles on sale on the selected market.



allows selection of the reference databank. The vehicles belonging to the user databank are marked by the



symbol.



displays the vehicle descriptions supplied by the manufacturers for wheel alignment operations.



displays the commercial descriptions of the vehicles.



accesses compilation of the job record.

If the user set-up field "Alignment procedure customisation / vehicle selection mode" = "Job record" the data input form will be displayed. Selection of the vehicle from the databank can be selected from the record.

Different job record options are available in the set-up, "Job record / type" field.

Key to Databank abbreviations

/	Separates different models
4WD - 4x4	Four Wheel Drive
4WS	Four wheel steering
ALU	Lightweight alloy wheels
DR	Door
CAB	Enclosed light commercial vehicle
CABR.	Cabriolet
ESTATE - SW	Estate Version (Station Wagon)
HD	Heavy Duty or all-terrain
S	Special or Sport
PAS	Power Assisted Steering
LHD	Left Hand Drive
RHD	Right hand drive
FWD	Front Wheel Drive
RWD	Rear Wheel Drive
AS	Pneumatic suspension system
HS	Hydraulic suspension system
SLS	Self-levelling suspension system
RS	Rigid suspension system

T	Turbo
TD	Turbo diesel
TDI	Turbo Diesel Direct Injection
R - RT	Radial Tyre
XP	Conventional Type Tyre
IFS	Independent front suspensions
IRS	Independent rear suspensions
SPS	Sports suspensions
LWB	Long wheel base
MWB	Medium wheel base
SWB	Short wheel base
MM/AA+	After the indicated date (month/year)
MM/AA-	Before the indicated date (month/year)
8565050+	From this chassis number
8565050-	Up to this chassis number
AT	Automatic Transmission
TA	Twin axle
TS	Single axle
LOA	Loaded
PLO	Partially loaded
UNL	Unladen
AB	Anti-roll bar

Updating the databank online

It is possible to update the databank online by following these instructions.

First note the number of the SIM CARD (5 figures) and the name of the aligner:

- go to the assistance menu of the aligner and select the item Smartcard management
- or from the main page (LOGO) pressing CAP+F12.

In order to update the aligner databank, you need the DATABANKCARD and a computer connected to the Internet.

Activate the receipt of the cookies in the browser that will be used to download the updates.

REGISTRATION

- Open the browser (Internet Explorer, Mozilla Firefox) and go to the page: www.corghicom/infoauto
- Select the language and continue with the registration, clicking on the registration link.
- On the registration page, fill in all the fields marked with the symbol "*" (the others are optional).
- At the end of the registration, continue with the login using the username and password chosen.

LOGIN AND DOWNLOAD OF VEHICLE CARDS

- Open the browser (Internet Explorer, Mozilla

Firefox etc.) and go to the page:

www.corghicom/infoauto

B. Insert the username and password.

C. The page for selecting the reference market will open. Select the market.

D. At this point, the vehicle/lorry selection page opens. Select the make and model of the vehicle you want, and proceed. 1 credit will be subtracted from the card.

E. The vehicle card will open, and here it is possible to set the diameter of the rim and read the data regarding the characteristic angles of the chosen vehicle. At the bottom of the page there are two links to download the file.

F. **Downloading XML file:** the Vehicle Card is converted in a file that will be imported into the aligner.

Click on the link and save the file on a removable support. **Save the file downloaded onto the aligner PC in the folder ROOT " C:\ " or " D:\ " .**

G. **Downloading PDF file:** The PDF file of the vehicle card is opened. It is necessary to have a PDF file reader. This file can be saved and printed. The reference data will then be entered into the aligner databank "by hand".

(4) Preparation for wheel alignment

Information for preparing the vehicle for checking and adjustment of its wheel alignment in accordance with the manufacturer's instructions. The programme step is automatically activated if this information is in the databank.

(5) Diameter input (Fig. 35)

To access this function from the rest of the pro-

gramme select the  icon or the F10 key. The step is only active if it is set in the set-up or operation with toe values in units of length has been selected.

Set the rim diameter of reference to work with toe values in millimetres or inches.

 reference rim diameter stated in databank

 rim diameter set by the operator.

 and  scroll through the diameter values in a pre-set list.





to do the job in angle measurements. The angle unit of measurement selected in the set-up will be set.

(6) Compensation (Fig. 36)

Runout compensation or ROC is used to compensate any geometrical errors in the rim (runout and plane error) and errors in fitting the clamps. The compensation skip option is available if set in the set-up.

Apply ballast to the vehicle as instructed and select the RUNOUT compensation method required.

The screen shows the databank references for the selected vehicle.



indicates that the angle is adjustable.



indicates that a help function is available for the adjustment.

Complete display of the databank values is available in the DATABANK DATA SUMMARY



The values which depend on input of the chassis height values are only shown after these values have been entered.

The compensation procedure is guided by means of graphics showing the status or the operations to be performed on each single sensor.



Fit the clamp and sensor on the wheel, connect the sensor to the central unit and switch it on.



Press the Roc key on the sensor control panel as required by the selected procedure.



Rotate the wheel by 180°.



Compensation calculations in progress, wait for the end of the operation.



Compensation procedure terminated.



Compensation procedure terminated with a high compensation value. Check that the rim does not have unacceptable levels of damage or that the clamp is fitted correctly.

2-point ROC



Select the icon.

Fit the four sensors on the wheels, fit the clamp with the black handle pointing upward (if working on a car with bodywork covering part of the wheel, fit the clamp horizontal with the black handle pointing to the left), lift the vehicle and proceed with the ROC procedure.

The 2-point ROC allows the procedure to be continued with compensation completed on the front sensors only; it will not be possible to use the rear sensors at a later point.

- 1) Turn the wheel, positioning the clamp vertical with the red handle at the top (red handle on the left).
- 2) Start the compensation procedure on the sensor by pressing the Roc key (B, Fig.25). The LED (E, Fig. 25) starts to flash.
- 3) Level the sensor and engage the brake; the values will be saved as soon as they become stable. An on-screen message confirms that the values have been saved successfully.
- 4) Turn the wheel slowly by 180°, positioning the bracket vertically with the black knob at the top (black knob on the left). Press the Roc key. The LED (E, Fig.25) starts to flash.
- 5) Level the sensor and engage the brake; the values will be saved as soon as they become stable. An on-screen message confirms that the values have been saved successfully.
- 6) The procedure ends automatically when the compensation value is within the pre-set limits. If the compensation value is too high, it is displayed on-screen. To accept the compensation value and continue, press the Roc key. Check the state of the wheel and that the bracket is correctly fastened, then repeat the compensation procedure if necessary.
- 7) Repeat the procedure on the other wheels.

ROC FAST



Select the icon.

Fit the four sensors on the wheels, fit the clamp

with the black knob pointing upward (if working on a car with bodywork covering part of the wheel, fit the clamp horizontally with the black knob pointing to the left), lift the vehicle and proceed with the ROC procedure.

- 1) Turn the wheel, positioning the clamp vertical with the red handle at the top (red handle on the left).
- 2) Start the compensation procedure on the sensor by pressing the Roc key (B, Fig.25). The LED (E, Fig. 25) starts to flash.
- 3) Level the sensor and engage the brake; the values will be saved as soon as they become stable. An on-screen message confirms that the values have been saved successfully.
- 4) Turn the wheel slowly CLOCKWISE by 90°, placing the clamp in the correct position. Press the Roc key. The LED (E, Fig.25) starts to flash.
- 5) Level the sensor and engage the brake; the values will be saved as soon as they become stable. An on-screen message confirms that the values have been saved successfully.
- 6) Turn the wheel slowly CLOCKWISE by another 90°, positioning the clamp vertically with the black knob at the top. Press the Roc key.
- 7) Level the sensor and engage the brake; the values will be saved as soon as they become stable. An on-screen message confirms that the values have been saved successfully.
- 8) The procedure ends automatically when the ROC value is within the pre-set limits. If the compensation value is too high, it is displayed on-screen. To accept the compensation value and continue, press the Roc key. Check the state of the wheel and that the bracket is correctly fastened, then repeat the compensation procedure if necessary.
- 9) Repeat the procedure on the other wheels.

Push Mode ROC



Select the  icon.

The 4 sensor heads must be fitted to enable the procedure.

- 1) Place the vehicle on the lift or above the pit with the front wheels straight and clamp the steering wheel with the steering clamp.
- 2) Fit the sensors on the wheels without engaging the brake (A, Fig. 24).
- 3) Move close to one of the sensors and press the Roc key (B, Fig.25). The LED (E, Fig. 25) starts to flash. It stops flashing once the initial

values have been memorised; this occurs once the values are stable.



- 4)  Move the vehicle back, turning the wheels through 90° (the closer the rotation to 90°, the greater the accuracy of the compensation) and press the Roc key on one of the sensors. The LED (E, Fig. 25) starts to flash.



- 5)  Move the vehicle forward to the initial position and press the Roc key. Press the Roc key on one of the sensors.
- 6) If the final position values differ excessively from the initial values, the procedure error



is indicated. Press the Roc key to repeat the compensation procedure. If the procedure is correct it ends automatically.

ROC SKIP



Select the icon  to skip straight to "Angle measurement with steering locked" without having to make any adjustments to the sensors; compensation is disabled.

Fit the 4 sensors and wait for the compensation



skip operation to be completed.  allows the procedures to be continued with the front sensors only; it will not be possible to use the rear sensors at a later point.

N.B. Any geometrical errors in the rim or clamp mounting errors will not be considered.

In some conditions (e.g. cars with rigid suspension systems and alloy rims) it is advisable to skip the compensation procedure because after the car has been lifted the suspensions may settle into a position different from the normal operating position.

This may generate errors of a greater magnitude than those caused by a misshapen rim.

Last ROC



Select the icon  to skip straight to "Angle measurement with steering locked" without performing any adjustment to the sensors; the last compensation operation performed on the sensors is recalled.

Fit the 4 sensors and wait for the compensation



skip operation to be completed. allows the procedures to be continued with the front sensors only; it will not be possible to use the rear sensors at a later point.

N.B. This procedure is only recommended when the sensors have not been removed from the wheels, but it has been necessary to restart the alignment procedure for some reason.

ROC x 1

Compensation can also be repeated on just one wheel.

ROCx1 is used when a wheel has been removed during wheel alignment operations. In this case, perform the operations as described in steps 1 to 7 in the paragraph Roc Fast (3 steps).

In some conditions (e.g. cars with rigid suspension systems and alloy rims) it is advisable to skip the compensation procedure because after the car has been lifted the suspensions may settle into a position different from the normal operating position.

This may generate errors of a greater magnitude than those caused by a misshapen rim.

(7) Chassis height input (Fig. 37)

To access this function from the rest of the pro-



gramme select the icon or the F9 key. Prepare the vehicle for wheel alignment as indicated or select the clearance required from the table using the keys as follows:

↑, ↓ to scroll through the list of pre-set values; ↵ to confirm the selection.



to skip the input operation.

Failure to enter the clearances requested will prevent provision of the reference values of the angles affected by them.

(8) Angle measurement with steering locked

To access this function from the rest of the pro-



gramme select the icon or the F4 key.

In this stage, the system measures the caster, king pin angle, steering angle differences and front maximum steering angle values.

Engage the clamping brake, fit the pedal de-

pressor to operate the brake and release the turnplates.

The first stage of preparation for the steering lock operation is to set the wheels straight and level the sensors (Fig.38). Once these operations are complete, the programme automatically moves on to the steering lock screen.

Following the graphics on the screen:

- Steer the front wheels in the direction indicated until the Stop sign is displayed.
- Bring the arrow into the green measurement field. To facilitate the procedure, use the zoom window shown near the Stop sign.
- Wait for the data to be saved, as confirmed by the 'saved' symbol.
- Repeat the procedure in the opposite steering direction.
- Wait for the data to be saved.
- Return the wheels to the straight ahead position.

End of procedure, the programme automatically moves on to the next step.



allows execution or abortion of the maximum steering lock procedure, selection of which is displayed in the status bar by the



symbol. After the angles are saved, turn the steering wheel to full lock and wait for the signal indicating that the values have been saved.



WARNING

The electronic turntables for connection to the front sensors are required for performance of the maximum steering angle procedure.

(9) Data summary (Fig. 40)

Once the steering lock procedure is complete, the system automatically moves on to display of all the data measured. This function can other-



wise be accessed by selecting the icon or the F5 key.

Vehicle's current situation. If the databank reference values are available, the values are displayed: on a red background if they are outside the tolerance range, on a green background if they are inside the range, on a dark blue background if there are no reference values.



indicates that the angle is adjustable.



indicates that a help function is available for the adjustment.

The stylised vehicle illustrates, in an accentuated way, the half toe, camber and setback situation.



saves the vehicle's pre-adjustment values. The icon is only active if saving is set in "Manual" mode in the set-up.

(10) Rear axle measurement

(Fig. 41)

To access this function from the rest of the pro-



gramme select the icon or the F2 key. Level the sensors and adjust the angles by bringing the values within the tolerance range (numerical data and graph bar coloured green).

The 2 rear axle measurement screens display the rear camber angle, rear half-toe, rear total toe, thrust angle, rear set-back and track difference values.



In the rear axle measurement screen, switches between the two pages of values.



returns to normal display mode.

(11) Front axle measurement

(Fig. 23)

To access this function from the rest of the pro-



gramme select the icon or the F1 key. Level the sensors and adjust the angles by bringing the values within the tolerance range (numerical data and graph bar coloured green).

The 2 front axle measurement screens display the front caster, front camber, front half toe, front total toe and front set-back angle values.



In the front axle measurement screen switches between the two pages of values.



returns to normal display mode.

For adjustment of the caster the data, only available if the steering lock measurement procedure has been carried out, must be on the screen. The data are only shown when the front sensors

are levelled.

N.B. On exit from this procedure the caster values are saved automatically.

Saving of these values means that the procedure can always be restarted from the last adjustment made.

If a new steering lock procedure is performed, the values recalled will be the last ones measured during the steering lock sequence.

(12) Second angle measurement with steering locked

Repetition of the steering axis angle measurement allows you to check whether errors have been introduced during adjustment of the caster.

The procedure is exactly the same as the first time the caster, king pin and steering angle difference values were measured.

Performing the steering lock procedure or



moves the programme straight on to front axle measurement.

(13) Second front axle measurement

Repetition of the front axle measurement procedure allows any corrections to the adjustments already made.

(14) Printout of the data measured

(Fig. 42)

To access this function from the rest of the pro-



gramme select the icon or the F4 key. The printout serves to inform the customer about the operations performed and as a reference for subsequent checks on the vehicle.



Fill in the heading of the job record and print and/or save the job done using the appropriate commands.

When the printout is complete, end the job and



return to the main menu or restart the



job for any further adjustments.

(15) Graphic printouts

The current printed report, supplied in alphanu-

meric form, has now been updated with the addition of two annexes consisting of graphics which illustrate some information about the vehicle in intuitive form.

The first annex, entitled "Vehicle Situation", shows the toe, camber and setback values before and after adjustment.

The second annex, entitled "Chassis Situation", lists the set-back, track difference, wheel base difference, side offset and offset values of the axles after adjustment.

The "Print \ Type" field of the user set-up can be set appropriately to select the annexes to be printed:

- "Alphanumeric" prints the alphanumeric pages only.
- "Vehicle Situation" prints the alphanumeric report and the vehicle situation annex. This



setting is indicated by the icon in the print page status bar.

- "Chassis Situation" prints the alphanumeric report and the chassis situation annex. This



setting is indicated by the icon in the print page status bar.

- "Complete" prints the alphanumeric report and both annexes.

The set-up can be varied on the print page.



PRINT ON FILE. If selected, allows the data to be printed in a CSV (Comma Separated Values) file.



COLOUR PRINT. If selected, the printed reports will be in colour.



PRINT PRELIMINARY CHECKS. The preliminary check reports are printed.



ALPHANUMERIC PRINT (standard).



VEHICLE SITUATION GRAPHIC PRINT.



CHASSIS SITUATION GRAPHIC

PRINT.

JOB RECORD

From the printing stage, access the job record



using the icon. Use of the job record instead of selection of the vehicle from the databank can also be set in the set-up.

Another setting that can be made in the set-up is the type of job record to be used.

Fill in the job record by using the keys as described in the "Databank Management" section. The compulsory fields are highlighted.



WARNING

When a customer or vehicle is selected from those already on file, the relative data are loaded in the job record (e.g., when a vehicle is selected by means of the registration number, the customer and the vehicle saved in the vehicle record are automatically loaded). These data overwrite those entered previously, so the selected vehicle may be modified in the databank.

When a new value is entered in the REG.N., CHASSIS and CUSTOMER fields, a new record is automatically opened for data input.

When the job done is saved, the vehicle and customer records are also automatically updated.

TOE CURVE ADJUSTMENT

This procedure is used to check the variation in the toe when the vehicle's wheel alignment is modified.

Locate the front axle adjustment screen and select



the pop-up menu above the "front axle" icon (press the up arrow to open the menu). Click



on the "Toe Curve" icon.

Follow the procedure.

ADJUSTING THE ENGINE CRADLE

Procedure used for adjusting the position of the engine cradle, useful for obtaining even front camber distribution by adjusting the cradle position. Locate the front axle adjustment screen and select

the pop-up menu above the  "front axle" icon (press the up arrow to open the menu). Click on the  "Cradle Adjustment" icon. Follow the procedure.

FREE WHEEL TOE ADJUSTMENT PROCEDURE

On some vehicles, access to the toe adjustment registers is difficult. This procedure allows the front toe values to be adjusted with the wheels locked to an angle, with no need to remove and replace the steering wheel holder. Locate the front axle adjustment screen and select the pop-up menu

above the  "front axle" icon (press the up arrow to open the menu). Click on the  "Free Wheel Toe" icon. Follow the procedure.

MEASUREMENT WITH WHEELS RAISED

The "Measurement with wheel raised" procedure allows the vehicle to be adjusted with two or four wheels lifted off the ground. Working in this position prevents the weight of the vehicle applying force to the adjustment registers, preventing their use.

From an axle (front or rear) adjustment screen, activate the procedure by selecting ; the values measured are frozen and will not change.

Lift the vehicle and then select ; the measured data are available once more. Adjust the data as in an ordinary alignment procedure; the values displayed will be the same as those shown with the car "on the ground".



When the adjustment is complete select  to return to the normal adjustment screen. Lower and settle the vehicle.

ALIGNING CARS WITH MULTILINK SUSPENSIONS

Alignment procedure for cars produced by the VOLKSWAGEN - AUDI group equipped with MULTILINK front suspensions (AUDI A4, A6 and A8, VW PASSAT). It allows checking and adjustment of the "toe curve", i.e. the variation in the toe value generated by a known extension of the suspension.

If the aligner has the appropriate procedure enabled, it is recalled automatically for cars which require it. A special tool is needed to check and adjust the toe curve (refer to the cars' service manuals).

Below, only the differences from the standard procedure, which all occur in the vehicle adjustment stage, are described.

- 1) Angle measurement with steering locked.
- 2) Steering wheel position.
- 3) Data summary.
- 4) Steering wheel centring and front camber adjustment.
- 5) Rear axle measurement.
- 6) Checking and adjusting "Toe curve".
- 7) Adjusting front toe.
- 8) Angle measurement with steering locked.
- 9) Printout of data measured.

(2) Steering wheel position

Indicate whether after angle measurement with the steering lock the steering wheel is in

the correct position ( icon), or crooked ( icon).

The steering wheel condition will be stated in the "notes" field of the printed job report.

(4) Steering wheel centring and front camber adjustment

Keeping the front wheels aligned and the sensors level, adjust the steering wheel and the front camber values.



(6) Checking and adjustment of the toe curve

S-Point Selection

Set the steering wheel straight and fit the steering wheel clamp.



Check and adjust the toe curve,  icon, only when the car no longer travels straight after hitting a bump or a manhole cover, when pieces of the suspension system have been replaced, after an accident or when specifically required by the manufacturer.

The toe curve checking and adjustment sequence depends on the type of suspension installed on the car: there are differences for cars with STANDARD, SPORTS or ALL-TERRAIN chassis. Follow the instructions on the screen for the operations to be performed and the adapters to be fitted on the checking tool.

ASA NETWORK

To enable use of the Asa Network protocol, set up the aligner after accessing the technical services



set-up function ,  and . Then set the "Procedure" / "Asa Network Procedure" option as "enabled".

When the aligner software is run, it automatically checks the network connection, and the connection icon appears in the Windows status bar.

Operation

After starting the alignment procedure,



, the screen for selection of the working order for processing will appear.

If the network connection is not established, a dialogue window asks whether you wish to return



the connection, , or move on to selection of the vehicle from the databank without connecting,



. Once the order has been selected, the working data are loaded in the form, after which the vehicle has to be selected from the databank in the usual way.

The alignment procedure which follows is the usual one.

The ,  or  icons can be used to print, and to save the job done if you wish.



 ends the session and sends the notification that the order has been processed, and the attached .XML file containing the data of the job done to the Network Manager.

ANGLE READING ERROR

During the working procedures, the beams of the CCD angle sensors may be interrupted. This occurrence is signalled by the connection failure symbol (Fig.45) which also indicates which beam has been interrupted.

The angles which cannot be calculated without the interrupted beams disappear from the adjustment screens, while the other angles are correct and can be used for adjustment.

ALIGNING CARS WITH LARGE TRACK DIFFERENCES

The "High output" mode, and icons, allows wheel alignment to be performed even on cars with high track differences (sports cars such as Porsche models). If this setting is not used, "Link Error" problems serious enough to make the job impossible may occur both during adjustment and during the steering lock procedure.

The "High output" mode is indicated by the symbol in the status bar and is maintained for just one job.

ALIGNING PROCEDURE COUNT

The equipment now features a count of the number of alignment jobs performed. The count increases after performance of the ROC procedure, including ROC skip.

To display the count, select the , 

and  icons from the initial screen.

USER FILE BACKUP

From the logo page, select the icons



and , Fig. 53.

The page shown in Fig.54 will open, allowing you to select the backup or restore procedure of the data regarding:

- the databank
- files of jobs carried out
- customer databank
- calibration log

Backup procedure:

In the window shown in Fig. 54, select the icon DATA SAVING. The page shown in Fig. 55 will open, and here it is possible to set:

- the path for saving (HARD DISK, REMOVABLE SUPPORTS, etc.)
- the frequency of the autosaves
- confirmation of the user before carrying out the autosaves
- saving in compressed format.

Press Continue in order to proceed. The save will be indicated as in Fig. 56.

The programme returns to the page shown in



Fig. 54. Click on the icon to go back to the LOGO page.

Restore procedure:

In the window shown in Fig.54, select the icon DATA RESTORE. The page shown in Fig. 58 will open, and here it is possible to select the path leading to the data to be restored.

Once the correct path has been selected, the data regarding the save are shown in the lines below.

Press Continue in order to proceed. The indication of Fig. 59 will appear.

Press Continue to proceed with the restore, or Cancel to cancel the operation.

Once the restore is completed, the indication of Fig. 60 will appear, informing you to restart the alignment programme in order to register the data restore.

The programme returns to the page shown in



Fig. 54. Click on the icon to go back to the LOGO page.

DATABANK MANAGEMENT

Database management functions

To access the databank management tools,



from the main menu page select the



and  icons. When prompted, type the password; the aligner leaves the factory with the password "databank".

Navigate within the records as follows:

press ← and → to scroll between fields and confirm entry;

press ← and → in Ins mode (selected by pressing the Ins key and indicated by the symbol

INS in the status bar) to scroll through individual characters within the field.

press ↓ to confirm the value entered;

press ↑, ↓ to access the selection list in Combo

fields (fields indicated with the  symbol allowing selection of previously archived values) and press ↓ to confirm the selection.

ESC to abort the last selection or move the cursor along the icon bar.

press ↓ to save the record and continue.

Job record selection



To access select the



icons.

Move the cursor onto the desired job and press ↓ to select the job and view its content.



to sort jobs by date, customer, registration number, operator or order



to select jobs using search parameters.



deletes the job selected by the cursor.



deletes all jobs. If a sorting criterion has been applied, deletes the selected jobs only.



allows modification of the working data, the option must be enabled in the set-up.

Customer records



To access select the



icons.

Move the cursor onto the desired customer record and press \downarrow to select and view/edit its content.



printout of the addresses of the customers in the correspondence list (marked with the  symbol).

Add a customer to  or delete one from



the correspondence list by switching the selection with the space bar.

The fields highlighted in blue are compulsory.

Vehicle records



To access select the



icons.

Position the cursor on the card of the vehicle you want, and select it with \downarrow to visualise and/or modify the content.

When a customer not previously registered is entered, the record for entering the new customer opens automatically.

The description and make of the vehicle selected from the databank can be modified as required without changing the reference values.

The unit of measurement for "Mileage" can be selected in the set-up.

The fields highlighted in blue are compulsory.

Operator records



To access select the



icons.

Move the cursor onto the desired operator record and press \downarrow to select and view/edit its content. The fields highlighted in blue are compulsory.

Vehicle selection from user databank



To access select the



icons.

Select the vehicle from the databank using the keys as follows:

Use the \downarrow , \uparrow , PAG \downarrow , PAG \uparrow , \leftarrow and \rightarrow keys and the alphanumeric keys to scroll through manufacturers and model descriptions;

Press \downarrow to confirm the vehicle and view the relative data.

During selection, the vehicle code is shown in the status bar.

In "passenger car" mode, all cars and vans up to 3,500 Kg in weight are displayed on the screen.



creates a new vehicle.

Vehicle data input

Enter the reference data of the vehicle included in the user databank.

The fields highlighted in blue are compulsory.



copies the vehicle's data into a new user databank record and opens it in modify mode.



deletes the selected vehicle.



sets the units of measurement required.

Vehicle selection from main databank



To access select the



icons.

Select the vehicle from the databank using the keys as follows:

Use the \downarrow , \uparrow , PAG \downarrow , PAG \uparrow , \leftarrow and \rightarrow keys and the alphanumeric keys to scroll through manufacturers and model descriptions;

Press \downarrow to confirm the vehicle and view the relative data.

During selection, the vehicle code is shown in the status bar.

In "passenger car" mode, all cars and vans up to 3,500 Kg in weight are displayed on the screen.



recalls the market selection. The screen only shows the vehicles on sale on the selected market.



displays the vehicle descriptions supplied by the manufacturers for wheel alignment operations.



displays the commercial descriptions of the vehicles.

Main databank data display

Displaying the data for the selected vehicle from the main databank.



copies the vehicle's data into a new user databank record and opens it in modify mode.

Password input window



To access select the



icons.

In the relative fields, enter the old password and the new one, which you will have to type in again to check that it is correct.

Vehicle make records



To access select the



icons.

Move the cursor onto the desired manufacturer record and press ↵ to select and view/edit its content.

The fields highlighted in blue are compulsory.



during vehicle selection, identifies the new makes entered by the user, not accompanied by the specific graphic logo.

MEASURING SITE CHECK

Lift check and sensor calibration utility. The procedures are enabled automatically when the wheel aligner is switched on if the "Yes" option is selected for the "Alignment procedure customisation - Lift test" field in the user set-up.

If the procedure is enabled, the wheel aligner will recall the lift check screen whenever it is switched on. The procedure can also be recalled

from the initial screen using the  and

 icons.

Lift check – MKS – (Fig.46)



WARNING

Do not use the check procedure to level the lift.

This tool allows checking of the mechanical stability of the lift used for the wheel alignment check. The lift check function can only be used on lifts fitted with clamps for the alignment sensors.

For the initial check and whenever you wish to reset the system, proceed as follows:

- 1) With the lift lowered, fit the sensors into the clamps provided on the lift;
- 2) level the sensors with the aid of a spirit level;
- 3) save the sensor values, which will be used for subsequent checks. The default password is "mercedes". You will be prompted to provide the operator's name and any working notes.

For daily checks, use only points 1 and 2 of the complete procedure.

If the lift fails to pass the test, there may have been mechanical changes in the lift (check that the lift is level) or the sensors may no longer be properly calibrated (check the sensor calibration by recalling the relative procedure).



records the saved data log (Fig.47). The log contains the date when the data were saved, the operator and any working notes.



Sensor calibration check (Fig.48)

Procedure which allows you to check that the sensors are correctly calibrated.



recalls the procedure from the lift check screen.

Proceed as follows:

- 1) drive the vehicle onto the lift, positioning the wheels straight on the turntables and oscillating footboards;
- 2) fit the brake pedal clamp;
- 3) remove the safety pins from the turntables and slip plates;
- 4) fit the sensors on the wheels, fitting the front sensors on the rear axle and vice-versa;
- 5) SET THE THRUST ANGLE AT ZERO using the steering wheel and then fit the steering wheel clamp. When the values measured are stable,
 press;
- 6) swap the sensors on the wheels, fitting the front measuring sensors on the front axle and vice-versa; When the values measured are stable,
 press;
- 7) press again to save the test data. You will be prompted to provide the operator's name and any working notes.
- 8) if the differences between the values read by the sensors exceed 5' (red values) the measurement procedure must be repeated;
- 9) if the system fails the test the second time, calibrate the wheel aligner;
- 10) after calibration, repeat the measurement again. If the system still fails the test, contact the authorised service centre.



records the measurement log. The log contains the date when the data were saved, the operator and any working notes, in the same format as the lift check log (Fig.47). If you select an old test and press "Enter", its results will be displayed in a screen similar to the working screen (Fig.48).

RADAR PROCEDURES

The wheel aligner software allows the vehicle to be prepared correctly for adjustment of the most widely used anti-collision Radar systems.

The procedures are described in the addenda to the Operator's Manual.

CALIBRATION

The calibrator, available as an optional accessory, is able to calibrate all four heads simultaneously. Users may perform zero calibration or full scale inclinometer calibration (with the appropriate accessories) or run a calibration check.

Before a calibration or calibration check, a number of preliminary operations are required:

- fit the calibrator feet
- connect all four heads and switch them on
- fit the heads on the calibrator, following the arrows on the heads and the monitor (the arrows indicate the vehicle's assumed travel direction)
- level the calibrator using the screws in the feet
- level the heads using the spirit level supplied with the calibrator.

Call up the calibration procedure (Fig.43) from

the main menu by selecting the  and  icons.

The following values are displayed for each head:

- A) Transverse goniometer.
- B) X axis inclinometer (spirit level).
- C) Y axis inclinometer (camber measurement).
- D) Longitudinal goniometer.

The numbers displayed are the data read by each individual transducer, on a green or red background depending on whether or not they are inside the tolerance range.

The data displayed refer to the transducers' mechanical values, data unaffected by compensation and calibration.

If one or more transducers are on a red background, try switching the head off and back on.

If the new values shown are still on a red background, calibration cannot be performed. The relative icons are deactivated but the transducer affected must be replaced or mechanically repaired (call the after-sales service).

Calibration check



To access select the  icon.

The values show the variation from the last 0 calibration carried out.

The goniometers are within the tolerance range (green colour) if they are inside the range $0^\circ \pm 0.10^\circ$, the inclinometers are within the range if they are inside the range $0^\circ \pm 0.20^\circ$. If some values are

outside the tolerance range, zero calibration should be performed.

Zero calibration



To access select the  icon.

This programme step calibrates only the head transducer zero values.

This procedure must be performed whenever there are doubts about the aligner's measurements, or if several cars are found to have crooked steering wheels after adjustment.

Make sure that the calibrator and heads are perfectly levelled before starting the procedure.



The danger sign warns that if you continue with the calibration the previous values will be overwritten.



Select the  icon to continue or the



 icon to abort.

The sensor values displayed on the screen are on a green or red background depending on whether or not they are inside the tolerance range. The icon only becomes active, allowing the user to continue with the procedure, if the values are stable and within the tolerance range. Select it to save the calibration values, or press the Esc key to abort the procedure. The end of the operation and saving of the new calibration values are shown by figure



Calibration log

To access the calibration log, select the icon from the calibration procedure main screen.

The log contains the date when the data were saved, the operator and any working notes. The



icon  indicates 0 calibration and the icon



 indicates full scale calibration.

If you select an old calibration procedure and press "Enter", the mechanical values of the sensors will be displayed in a screen similar to the calibration screen. An analysis of the variation in the mechanical

values over time can be useful for troubleshooting any problems on the sensors.

The values are saved at the end of the calibration procedures. Apart from the operator's details and the working notes, the system also prompts input of the serial numbers of the tools used for calibration.

RADIO VERSION

It makes no difference whether the radio aligner sensors are connected to the central unit by wire or radio. The sensor heads are powered by an NiMH battery that is recharged by connecting the sensor head recharge cable to the electrical connector panel (H, Fig. 22). The GREEN LED on the sensor head connector lights to indicate when charging is in progress. Corgi S.p.A. declines all responsibility for the use of non-original batteries and battery chargers.

BATTERY RECHARGING PROCEDURE

Battery charging is managed directly from the head board. The charging cables carry 12 V DC voltage directly from the PC power unit.

The batteries may also be charged by connecting the sensors to the central unit with the emergency cables.

The possible signals displayed by the sensor head during charging are described as follows.

- Green LED on - charging in progress.
- Yellow LED on - charging error.
- Both LEDs off and head functioning - battery fully charged.
- Both LEDs off and head not functioning - battery faulty or absent.

RUN-DOWN PROCESS

For good working and lengthy duration, the NiMH type batteries, used in the measuring sensors of the wheel aligner, need to be periodically run down.

The rundown process involves running the four batteries down completely at a constant current, then recharging them.

You are advised to carry out the rundown process every 15/30 days, depending on the cycle of recharges carried out (the more often the recharge, the more often the rundown procedure must be carried out). The rundown is effected by leaving



the heads switched on, on the head test page, until they are completely run down.

Note:

- Rechargeable NiMh AA penlight batteries are used. When fully charged, new batteries will ensure 8 hours of continuous operation.

UNAUTHORISED USES

The Personal Computer installed in the central unit should only be used with the programmes supplied by Corghi S.p.A.



WARNING

You are strongly advised not to use the Personal Computer for games or with other software based on unauthorised copies, to avoid reducing the safety of plants and persons. This is mandatory to avoid any possible contamination from viruses.

In any case, you are advised to check the compatibility of all original software not supplied by Corghi S.p.A. with the Corghi Technical Service.



WARNING

Do not remove the Personal Computer from its installation position to avoid any damage to the connections.

MOST COMMONLY ENCOUNTERED VEHICLE ALIGNMENT FAULTS

Vehicle tends to wander to the left or the right.

Cause: tyre side slip.

Invert the position of the wheels on the same axle:

if the vehicle now tends to wander to the other side, take one of the wheels whose position you have already inverted and turn the tyre on the rim; if the wander direction does not change perform the same operation on the wheels of the other axle; if this double inversion procedure fails to solve the problem, check that camber values on the same axle are identical, make the same comparison for caster values.

Steering wheel not aligned with vehicle path

Possible causes:

- Mechanical free play.
- Compensation not performed or incorrectly

performed.

- Wheel alignment performed using two sensor head procedure.
- Wheel alignment performed with steering wheel in incorrect position.
- Front wheels adjusted with respect to the axis of symmetry.

Disparity between steering locks.

The steering box range must be centred by counting the number of steering wheel revolutions from full lock to full lock.

Position the steering wheel in the centre of its range, clamp the steering wheel and perform the normal procedure for adjustment of the front half toe values.

Position the steering wheels correctly, disassembling it from the steering column if needs be.

Steering wheel is excessively stiff with vehicle stopped.

Possible causes:

- Excessive caster.
- Incorrect king pin angle.
- Excessive camber.

Steering wheel return is too low or too forceful when driving.

Incorrect caster value - adjust it.

Tyre wear.

- Tyres with irregular wear on both sides: incorrect pressure - under-inflated.
- Tyre with irregular wear in centre of tread: incorrect pressure - over-inflated.
- Tyre with stepped wear profile: shock absorber not working properly.
- Tyres on the same axle with irregular wear on single side: toe out of tolerance.
- Only one tyre on an axle with irregular wear on one side: camber out of tolerance.

Vehicles with just one register.

Adjust the total toe to the value specified by the manufacturer.

Set the two front half-toes so that they are equal. Remove the steering wheel from the steering column and move it to the correct position; if the steering wheel has adjustment slots, use them.

Adjusting vehicle with power steering.

Before making the adjustments start the engine, turn the steering wheel to the limit position in both directions, set the steering-wheel correctly and lock

it in place.

During the adjustment operations it does not matter whether the engine is left running or stopped, except for cars where adjustment with the engine on is specified.

Vehicles with hydro-pneumatic or intelligent suspension systems.

Adjust the vehicle with the engine running and the suspensions at the normal height for use.

Vehicles with fixed rear axle.

The rear axle should still be measured to identify any excessive anomalies, after which adjust the front-half-toes in relation to the thrust axis; this eliminates the crooked steering-wheel problem.

TROUBLESHOOTING

Nothing turns on

Mains voltage incorrect or not present

➔ Check the electrical system and hook-up the equipment correctly.

Plug not fitted into socket correctly

➔ Connect the plug properly.

PC feeder not switched on

➔ Switch on the PC feeder using the button on the rear of the PC.

Incorrect power supply voltage selected

➔ Set the power supply voltage jumper to the correct position, check also the power supply of the transformer.

Monitor power switch is set to OFF

➔ Set the monitor power switch to ON.

Monitor is not receiving power

➔ Renew the monitor fuse.

System does not move on from opening screen

Press the keypad Esc key

➔ Press the alphanumeric keypad "Esc" key.

KEYPAD

Keypad not accepting commands

Keypad connection cable is not connected

➔ Make sure the cable is connected to the computer inside the aligner correctly.

Possible faulty keypad

➔ Call the service centre.

Crooked steering wheels

Compensation routine performed incorrectly

➔ Repeat compensation taking care that the corresponding wheel on the opposite side of the vehicle does not rotate or steer (in the case of steer wheels).

SENSOR OFF

Black square on monitor with sensors connected

Break in sensor connecting cable

➔ Replace it with one of the other three cables; if the fault disappears, replace the faulty cable.

Control panel LED "F, Fig.25" off

➔ If all the connections are correct but the LED is off, check the power supply inside the wheel aligner.

One or more LEDs always on

Control panel key short circuit

➔ Keep pressing the key whose LED is on and if the defect is not eliminated, contact the after-sales service.

A key LED does not light up

Burned LED or key not making the necessary contact

➔ Keep pressing the defective key and if the defect is not eliminated, contact the after-sales service.

Sensor does not perform ROC

Transducer values are fluctuating too violently

➔ Make sure that the vehicle is stably positioned and wait.

Roc key pressed too quickly

➔ Switch the wheel aligner off then repeat the compensation operations slowly; if the defect does not appear, skip compensation (ROC 0) and call the after-sales service.

Data transmission defective or beam obstructed

➔ Remove the obstacle which is obstructing the measuring beam and/or level the sensors.

Crooked steering wheels

Compensation routine performed incorrectly

➔ Repeat compensation taking care that the corresponding wheel on the opposite side of the vehicle does not rotate or steer (in the case of steer wheels).

Sensors not calibrated



- ➔ Calibrate the sensors.

CALIBRATION

Data on red background persist with sensors fitted on calibrator, connected correctly and levelled

Something is obstructing the passage of the infrared beam between the goniometers

- ➔ Remove the obstruction.

One or more transducers out of tolerance range

- ➔ Call the service centre and do not use the wheel aligner.

REMOTE CONTROL

Programme does not change when keys are pressed

Battery flat

- ➔ Replace the battery.

Distance between remote control and central unit too great

- ➔ Move closer: max distance 6m.

Remote control pointing in wrong direction

- ➔ Point the remote control towards the eye of the receiver.
- ➔ Hold the remote control properly.

Too much ambient light

- ➔ Move closer.

PRINTER

Does not switch on

Printer switch "OFF"

- ➔ Turn the printer switch to "ON".

No power

- ➔ Check that the printer plug is connected correctly.

Switches on but does not print

Cable crushed between steel plate parts

- ➔ Position the cable correctly.

Printer in standby status, "on line" LED off

- ➔ Press the "On Line" button to illuminate the LED.

Does not print properly

Print head failure

- ➔ Call the service centre.

Printing too pale

Ink ribbon worn out or broken

- ➔ Change the cartridge, following the instructions in the printer manual.

"ERROR" LED on - "ERROR" LED flashing

No paper

- ➔ Fit fresh sheets of paper, following the instructions in the printer manual.



WARNING

the "Spare Parts" manual does not authorise the user to do any work on the machine except for that specifically described in the operator's manual, but does enable the user to provide accurate information to the after-sales service, in order to reduce service times.

MAINTENANCE



WARNING

Corghì declines all liability for claims deriving from the use of non-original spares or accessories.



WARNING

Before making any adjustments or performing maintenance, disconnect the electrical supply from the machine and make sure that all moving parts are suitably immobilised.

Do not remove or modify any part of this machine (except for assistance).



WARNING

Keep the working area clean.

Do not clean the machine with compressed air or jets of water.

When cleaning the area take steps to avoid raising dust as far as possible.

Never use solvents to clean the aligner or sensors.

- Store the sensors carefully in a dry place to prevent miscalibration and consequent measurement inaccuracy.
- Calibrate the sensors at least once every six months.
- Keep the sensor mounting clamp guides clean.
- Keep the templates and oscillating footboards used for vehicle alignment perfectly clean. Do not oil or grease.

SCRAPPING

If the machine is to be scrapped, remove all electrical, electronic, plastic and metal components. Scrap different waste types separately in compliance with applicable legislation (see Fig. 61, 62 and 63).

ENVIRONMENTAL INFORMATION

The disposal procedure described below must only apply to machines with the symbol of



the waste bin with a bar across it on their data plates.

This product may contain substances that can be hazardous to the environment or to human health if it is not disposed of properly.

We therefore provide you with the following information to prevent releases of these substances and to improve the use of natural resources.

Electrical and electronic equipment should never be disposed of in the usual municipal waste but must be separately collected for their proper treatment.

The crossed-out bin symbol, placed on the product and in this page, reminds you of the need to properly dispose of the product at the end of its life.

In this way it is possible to prevent that a not specific treatment of the substances contained in these products, or their improper use, or improper use of their parts may be hazardous to the environment or to human health. Furthermore this helps to recover, recycle and reuse many of the materials used in these products.

For this purpose the electrical and electronic equipment producers and distributors set up proper collection and treatment systems for these products.

Contact your local distributor to obtain information on the collection procedures at the end of the life of your product.

When buying this new product your distributor will also inform you of the possibility to return free of charge another end of life equipment as long as it is of equivalent type and has fulfilled

the same functions as the supplied equipment.

A disposal of the product different from what described above will be liable to the penalties prescribed by the national regulations in force in the country where the product is disposed of.

We also recommend you to adopt more measures for environment protection: recycling of the internal and external packaging of the product and disposing properly used batteries (if contained in the product).

With your help it is possible to reduce the amount of natural resources used to produce electrical and electronic equipment, to minimise the use of landfills for the disposal of the products and to improve the quality of life by preventing that potentially hazardous substances are released in the environment.

RECOMMENDED FIRE-EXTINGUISHING DEVICES

When choosing the most suitable fire-extinguisher refer to the table below.

Dry materials

Water	YES
Foam	YES
Powder	YES*
CO ₂	YES*

YES* Use only if more appropriate extinguishers are not on hand or if the fire is small.

Flammable liquids

Water	NO
Foam	YES
Powder	YES
CO ₂	YES

Electrical equipment

Water	NO
Foam	NO
Powder	YES
CO ₂	YES



WARNING

The information in this table is of a general nature and is intended to provide users with general guidance. Contact the manufacturer for details of the applications of each type of extinguisher.

UK

GLOSSARY

Characteristic Angles

This term refers to all the angles that can be normally measured on an aligner (total front/rear toe, left/right and front/rear half toe values, left/right and front/rear camber, left/right caster, left/right king pin angle and steering angle difference).

Calibrator

Precision device on which the measuring sensors are fitted for calibration; this instrument is constructed to very high precision standards and must be stored with great care.

Calibration eliminates any shifts in transducer position due to small knocks or temperature variations.

CCD (Charge Coupled Device)

Special type of sensor used in TV cameras; has excellent light sensitivity.

Longitudinal goniometer

CCD sensor that measures the angles using an infrared beam that is parallel to the vehicle's axis of symmetry. goniometers that measure the angles between the front and rear part of the vehicle.

Transverse goniometer

CCD sensor that measures the angles using an infrared beam that cuts across the vehicle. goniometers that measure the angles between the right and left side of the vehicle.

Inclinometers

Electronic devices that measure their angle of inclination with respect to the vertical; they are used to measure camber.

Equatorial plane

Hypothetical vertical plane that divides the wheels into two equal parts.

Rotating platform

This is a base mounting a disk on which the steering wheels of the vehicle are positioned. Turntables reduce friction between the wheel and the ground to facilitate settling in of the suspensions and to cancel measurement errors during steering.

The area between the disk and the base must be always clean.

Oscillating footboard

The function is similar to that of the rotating platform, but it is used for the non-steered wheels only.

Infrared rays (IR)

Electromagnetic waves that are invisible to the eye.

Sensors

Measurement instruments that are applied to the vehicle wheels to measure characteristic angles.

Clamp

Adapter between the wheel and the measuring sensor.

Head

Synonym of "sensor"

Transducers

Electronic component that converts a physical parameter into another type of parameter, e.g. angle transducers convert angles into proportional electronic signals.

GENERAL ELECTRICAL WIRING DIAGRAM (4-110926)

Fig. 52

AP1	Personal Computer
AP3	Keypad
AP4	Printer
AP5	Monitor
AP9	Radio RX/TX board
AP10	Motherboard (CPU)
AP16	Mouse
AP20	Hard Lock
AP21	Electrical connector panel
B1	Speaker
BP1	Angle transducer
BP2	Inclinometer
FU..	Fuse
GB1	Battery
HL1	LED light
QS1	Main switch
XB1	Head connector
XB3	USB Connector
XB4	IR Remote control connector
XB5	HDD Connector
XS2	Multiple socket

UK

IT - Dichiarazione CE di conformità - Dichiarazione di conformità UE *
EN - EC Declaration of conformity - EU Declaration of conformity *
FR - Déclaration EC de conformité - Déclaration UE de conformité *
DE - EG – Konformitätserklärung - EU – Konformitätserklärung *
ES - Declaración EC de conformidad - Declaración UE de conformidad *



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