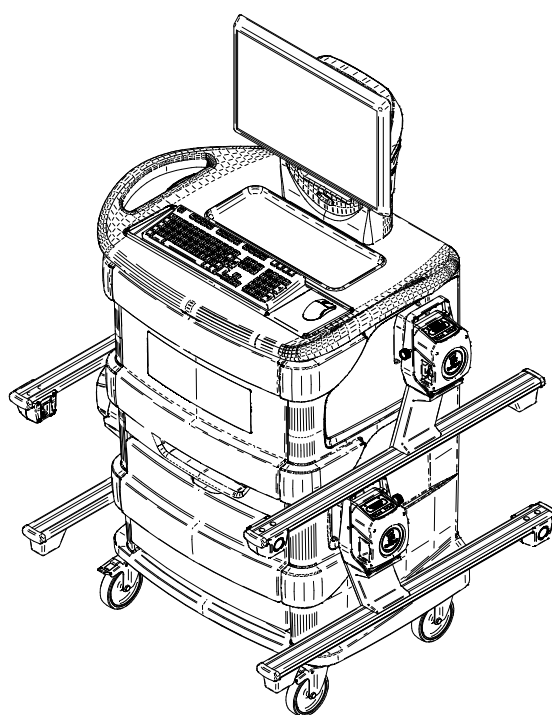
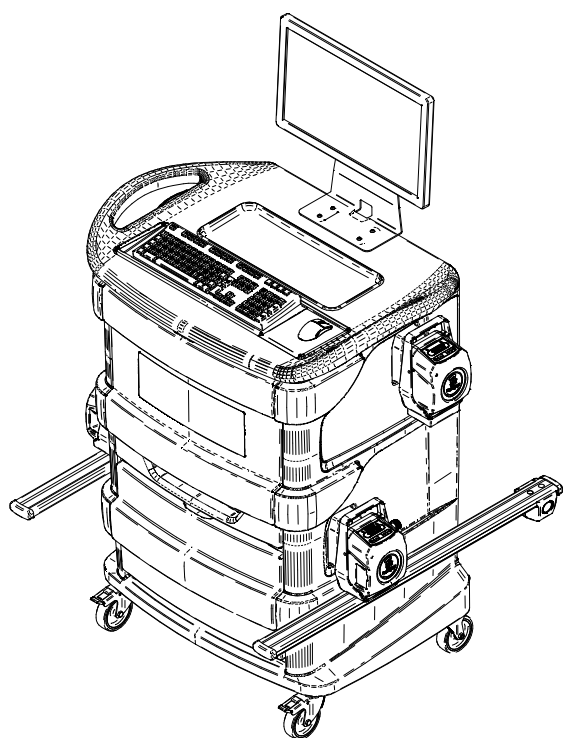




ASSETTI AUTOCARRO

| Translation of the original instructions



**RAV.TD808-R.V. - TD806 - ROT.SP808-
ROT.SP806 - SPA.ART98-SPA.ART86**

2015-M362-0 | Rev. n° 0 (04/2024)

Manuale valido per i seguenti modelli
This manual is valid for the following models
Handbuch gültig für die folgenden Modelle
Manuel valable pour les modèles suivants
Manual válido para los siguientes modelos



RAV.TD808

RAV.TD806

ROT.SP808

ROT.SP806

SPA.ART98

SPA.ART86

Manuale valido per i seguenti PRIMARY CODE	This manual is valid for the following PRIMARY CODE	Handbuch gültig für die folgenden PRIMARY CODE	Manuel valable pour les PRIMARY CODE suivants	Manual válido para los siguientes PRIMARY CODE
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MODEL	PRIMARY CODE
RAV.TD808 (TWSR)	
	RAV.TD808.700223
	RAV.TD808.700490
	RAV.TD808.700506
	RAV.TD808.700544
RAV.TD808 (TWS)	
	RAV.TD.808.700209
	RAV.TD808.700414
	RAV.TD808.700513
	RAV.TD808.700551
KIT	
	RAV.TD808.701275
RAV.TD806 (TWSR)	
	RAV.TD806.700339
	RAV.TD806.700469
	RAV.TD806.700520
	RAV.TD806.700568
KIT	
	RAV.TD806.701305
RAV.TD806 (TWS)	
	RAV.TD806.700261
	RAV.TD806.700438
	RAV.TD806.700537
	RAV.TD806.700575

MODEL	PRIMARY CODE
ROT.SP808 (TWSR)	
	ROT.SP808.700186
	ROT.SP808.700346
	ROT.SP808.700605
	ROT.SP808.700476
ROT.SP808 (TWS)	
	ROT.SP808.700056
	ROT.SP808.700308
	ROT.SP808.700582
	ROT.SP808.700445
KIT	
	ROT.SP808.701299
ROT.SP806 (TWSR)	
	ROT.SP806.700063
	ROT.SP806.700315
	ROT.SP806.700599
	ROT.SP806.700452
KIT	
	ROT.SP806.701329
ROT.SP806 (TWS)	
	ROT.SP806.700247
	ROT.SP806.700360
	ROT.SP806.700612
	ROT.SP806.700483

MODEL	PRIMARY CODE
SPA.ART98 (TWSR)	
	SPA.ART98.700131
	SPA.ART98.700629
SPA.ART98 (TWS)	
	SPA.ART98.700179
	SPA.ART98.700421
KIT	
	SPA.ART98.701282
SPA.ART86 (TWSR)	
	SPA.ART86.700285
	SPA.ART86.700377
KIT	
	SPA.ART86.701312
SPA.ART86 (TWS)	
	SPA.ART86.700216
	SPA.ART86.700407

TABLE OF CONTENTS

1	SYMBOLS USED IN THE MANUAL	EN-4
2	PRESENTATION	EN-5
2.1	PRODUCT DESCRIPTION	EN-5
2.2	INTENDED USE	EN-5
3	TECHNICAL DATA	EN-6
3.1	KEY TECHNICAL FEATURES	EN-6
3.2	GENERAL TECHNICAL DATA	EN-6
3.3	MACHINE IDENTIFICATION DATA	EN-9
3.4	COMPONENTS SUPPLIED	EN-10
3.5	MANAGEMENT PC	EN-12
3.6	SENSORS	EN-13
3.6.1	Front sensors RAV.TD808-ROT.SP808-SPA.ART98 (Lowered) and RAV.TD806-ROT.SP806-SPA.ART86 (Lowered)	EN-14
3.6.2	Front sensors RAV.TD808-ROT.SP808-SPA.ART98 (TWS) and RAV.TD806-ROT.SP806-SPA.ART86 (TWS)	EN-14
3.6.3	Rear sensors RAV.TD806-ROT.SP806-SPA.ART86	EN-15
3.6.4	Detector keypad	EN-15
3.6.5	Automatic sensor switch-off	EN-16
3.6.6	Low battery warning	EN-16
3.7	CLAMPS	EN-17
3.7.1	STDA30E Clamps	EN-17
3.7.2	Using the STDA30E clamp	EN-18
3.7.3	Run-out for motor vehicles with STDA30E clamp	EN-18
3.7.4	STDA92E Clamps	EN-19
3.8	STDA29L TURNABLES	EN-20
4	GENERAL SAFETY REGULATIONS	EN-21
4.1	SAFETY LABELS AND/OR STICKERS	EN-21
4.2	OPERATOR TRAINING	EN-22
4.3	FITNESS FOR USE	EN-22
5	INSTALLATION REQUIREMENTS	EN-23
5.1	MINIMUM REQUIREMENTS OF INSTALLATION SITE	EN-23
5.2	TRANSPORT AND PACKAGING	EN-23
6	HANDLING AND PRE-INSTALLATION	EN-24
6.1	INSTALLATION	EN-24
6.2	ELECTRICAL CONNECTION	EN-24
7	USE	EN-25
7.1	STARTING THE PROGRAM	EN-25
7.2	CONFIGURING THE PROGRAM	EN-25
7.3	DATABASE CONFIGURATION	EN-26
7.4	VEHICLE DIAGNOSIS AND ADJUSTMENT	EN-27
7.4.1	Vehicle make and model selection	EN-27
7.5	VIEWING THE TECHNICAL DATA OF THE PRESELECTED VEHICLE	EN-28
7.5.1	Display of ADDITIONAL MEASUREMENTS on RIDE HEIGHTS	EN-29
7.5.2	Display of VERIFICATION MEASUREMENTS on RIDE HEIGHTS	EN-31
7.5.3	Viewing of ADJUSTMENT AID images	EN-32
7.6	PRELIMINARY OPERATIONS	EN-33

7.6.1	Preliminary vehicle check operations.....	EN-33
7.6.2	Run-out preparation.....	EN-33
7.7	RUN-OUT	EN-34
7.7.1	Run-out with wheels lifted.....	EN-34
7.7.2	Push run-out	EN-37
7.8	PREPARING FOR MEASUREMENTS	EN-39
7.9	VEHICLE ALIGNMENT / DIRECT MEASUREMENTS.....	EN-39
7.10	STEERING PROCEDURE.....	EN-40
7.11	VEHICLE DIAGNOSIS	EN-41
7.12	PREPARING FOR ADJUSTMENT	EN-41
7.13	REAR AXLE ADJUSTMENT	EN-42
7.14	FRONT AXLE ADJUSTMENT	EN-43
7.14.1	Adjustment of front toe-in with steered wheels.....	EN-44
7.14.2	"Jack-Hold" procedure.....	EN-45
7.15	DIAGNOSIS AND ADJUSTMENT DATA SUMMARY	EN-47
7.15.1	Chassis diagnosis.....	EN-47
7.15.2	"Test Drive" procedure	EN-48
7.16	AUXILIARY FUNCTIONS MENU	EN-49
7.17	PRINTING THE MEASUREMENTS	EN-50
7.17.1	Example of tabular printing.....	EN-51
7.17.2	Example of tabular printing for trucks.....	EN-52
7.17.3	Graphic print example	EN-53
7.17.4	Example of graphic printing for trucks.....	EN-54
7.18	TRUCK DIAGNOSIS AND ADJUSTMENT	EN-55
7.18.1	Adjustment of a 3-axle tractor - 1 steering axle	EN-55
7.18.2	Adjustment of a 3-axle semi-trailer	EN-60
7.18.3	Adjustment of 3-axle tractor - 2 steering axles.....	EN-63
7.18.4	Adjustment of a full-trailer with drawbar	EN-68
7.19	SAVING THE TESTS WITH TEQ-LINK	EN-72
7.19.1	TEq-Link function configuration	EN-72
7.20	ERROR NOTIFICATIONS.....	EN-73
8	SAFETY DEVICES	EN-74
8.1	INDICATIONS OF RESIDUAL RISKS.....	EN-74
9	MAINTENANCE.....	EN-75
9.1	TROUBLESHOOTING	EN-75
10	DISPOSAL-SCRAPPING	EN-76
10.1	STORAGE.....	EN-76
10.2	DISPOSAL.....	EN-76
11	NON-ROUTINE MAINTENANCE AND REPAIRS.....	EN-77

**ATTENTION!**

- This manual is an integral part of the product and must follow the entire service life of the wheel aligner; therefore, keep it in a known and easily accessible place and consult it whenever uncertainties arise.
- Only suitably trained personnel who have read and understood this manual are authorised to use the wheel aligner.
- Any damage resulting from failure to observe the instructions in this manual and due to misuse of the wheel aligner shall release **VSG ITALY S.R.L.** from all and any liability.

WARNINGS**Preliminary safety information**

Before turning on the equipment:

- Read the instructions and the entire manual before using or working on the wheel aligner. This manual is an integral part of the product and is intended to provide the user with instructions on the use of the RAV.TD808/RAV.TD806 wheel aligner. Therefore, keep it, for the entire operating life of the machine, in a known and easily accessible place and consult it whenever uncertainties arise. All product operators must be able to read the manual.
- Check that the power supply complies with the specifications shown on the plate. The plate with the voltage and frequency data is located on the back of the equipment. Please note the information on the plate. **NEVER** connect the appliance to a voltage or frequency other than those indicated.
- Properly arrange the power cable of the wheel aligner. This product has a built-in 3-wire earthing plug. It only fits into a socket that is also earthed. If it is not possible to insert the plug into a socket of this type, please consult an electrician. Do not modify or misuse the plug.



In emergency conditions and before any maintenance work:

- Isolate the machine from the energy sources using the appropriate main machine switch and remove the plug from the power socket.
- Do not try to service this unit arbitrarily, as removing the panels could expose you to dangerous voltage; maintenance works must be carried out strictly by authorised service personnel.



Work environment and cleaning the equipment:









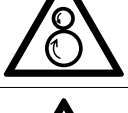

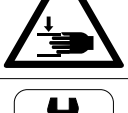






- The work environment must be kept clean, dry, not exposed to atmospheric agents and sufficiently lit.
- Avoid cleaning the equipment with jets of water and compressed air.
To clean plastic panels or shelves, use a damp cloth (in any case avoid liquids containing solvents).

VSG ITALY S.R.L. may make changes to the models described in this manual at any time, for technical or commercial reasons.

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1 SYMBOLS USED IN THE MANUAL

	Attention!		The instruction manual/booklet must be consulted
	Danger, electrical hazard		Specialised personnel
	Danger, suspended loads		Obligation
	Danger, forklift and other industrial vehicles		Do not walk under suspended loads
	Danger, moving parts		Use safety footwear
	Danger, hand crushing		Use gloves
	Lifting from above		Use protective clothing
	Prohibited		Use goggles
			Disconnect before maintenance or repair works

2 PRESENTATION

2.1 PRODUCT DESCRIPTION

- Product name: TRUCK WHEEL ALIGNERS
- Product description: CCD Truck Wheel Aligner

2.2 INTENDED USE

The CCD system is a piece of equipment intended for the full detection of the characteristic angles of heavy vehicles and trucks. Angle detection is carried out by four sensors with microprocessor technology and an infrared measuring and data transmission system (without using cable connections between the sensors).

Data transmission from the measuring heads is VIA RADIO by means of Bluetooth-compatible modules.

Use the equipment (CAT II) in the following operating range:

- Internal use
- Temperature between 32°F (0°C) and 104°F (40°C)
- Relative humidity from 30% to 70%
- Maximum altitude 9842Ft (3000m) above sea level (asl)
- During the operation and maintenance of this machine it is absolutely essential to comply with all the safety and accident-prevention regulations in force and with the European Directives 89/686/EEC, UNI EN ISO 20345, UNI EN ISO 13688: 2013, EN 388 and EN 420.
- The equipment must only be used by authorised and adequately trained personnel.
- It is not permitted to attach very heavy objects (weighing more than 15 kg) on the console (e.g.: the turntables).
- Do not use the equipment in places where persistent conductive dust is present (pollution degree equal to or greater than 3).
- Do not install or store the device in outdoor areas or in areas exposed to climatic conditions such as direct sunlight, wind, rain or temperatures below zero.
- When operating the device outside the specified conditions, there is a risk that its safety and operation could be compromised.
- Always check that the equipment is positioned in such a way that the electrical outlet is accessible.
- The equipment must always be on a flat and horizontal surface.
- If the power cord is damaged, it must be replaced by the manufacturer, an authorised dealer or qualified personnel to avoid danger.
- It is important to keep this manual for future use. It is an integral part of the equipment. For this reason, it should always be attached to the equipment itself.



WARNING

- For safety reasons, insert the cable in an earthed AC (Alternate Current) socket.
- **Risk of fire and explosion!** To reduce this risk, the machine must be used only in places where there is no risk of fire or explosion. This product must be installed and used only within licensed workshops.
- **Risk of electric shock!** Never open the system. For continuous protection against electric shock, the console must be connected to a reliable earthing system. Do not remove the earthing connection. If the socket in the facility does not have an earthing connection, do not modify the connection plug.
- This equipment must only be used for the purpose for which it is expressly designed.
VSG ITALY S.R.L. disclaims all liability for persons, animals and property caused by misuse of the machine.
- Accessories and spare parts must be installed by VSG ITALY S.R.L. authorised personnel and only original accessories and spare parts must be used. It is also not permitted, in any way, to replace batteries using non-original batteries. It is necessary to use only the manufacturer's original batteries on the measuring heads.
- The removal or modification of safety devices or of warning signs placed on the machine can cause serious danger and constitutes a violation of the European safety standards.
- Before carrying out any maintenance on the system, it is necessary to disconnect the power supply. In case of doubt, do not improvise but rather contact VSG ITALY S.R.L. technical support to receive instructions and carry out the necessary procedures under safe conditions.
- The operator must wear safety footwear to avoid damage to their feet, caused by the accidental falling of clamps or measuring heads. Use footwear with certified protection according to the EN ISO 20345 standard.
- The operator must wear protective gloves when handling the clamps. Use gloves according to the EN 388 standard.
- Prevent unauthorised personnel from approaching the wheel aligner during use.
- Use only the supplied cables. In the event of breakage or a fault, consult qualified service personnel.
- Never try to use the equipment if it is damaged, if it works incorrectly, if it has been partially disassembled and if any components, including cable and plug, are missing or damaged.

3 TECHNICAL DATA

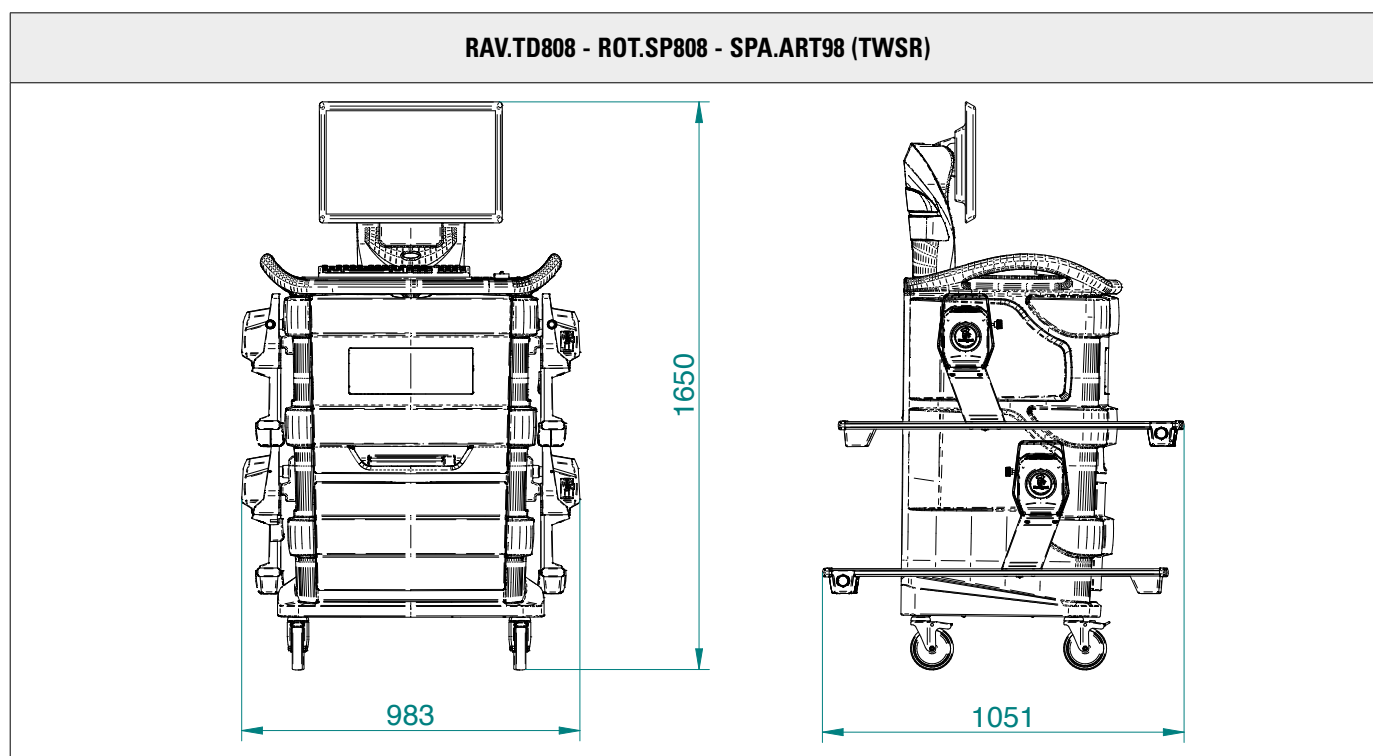
3.1 KEY TECHNICAL FEATURES

Measuring range and accuracy:

Axis	Measurement	Precision	Measuring range	Total measuring range
Front	Toe	$\pm 2'$	$\pm 2^\circ$	$\pm 20^\circ \times 2$
	Partial toe	$\pm 1'$	$\pm 1^\circ$	$\pm 20^\circ$
	Set-back	± 2	$\pm 2^\circ$	$\pm 5^\circ$
	Wheel camber	$\pm 2'$	$\pm 3^\circ$	$\pm 10^\circ$
	Caster	$\pm 5'$	$\pm 10^\circ$	$\pm 18^\circ$
	King-pin	$\pm 5'$	$\pm 10^\circ$	$\pm 18^\circ$
Rear	Toe	$\pm 2'$	$\pm 2^\circ$	$\pm 20^\circ \times 2$
	Partial toe	$\pm 1'$	$\pm 1^\circ$	$\pm 20^\circ$
	Set-back	$\pm 2'$	$\pm 2^\circ$	$\pm 5^\circ$
	Wheel camber	$\pm 2'$	$\pm 3^\circ$	$\pm 10^\circ$
	Thrust angle	$\pm 2'$	$\pm 2^\circ$	$\pm 5^\circ$

3.2 GENERAL TECHNICAL DATA

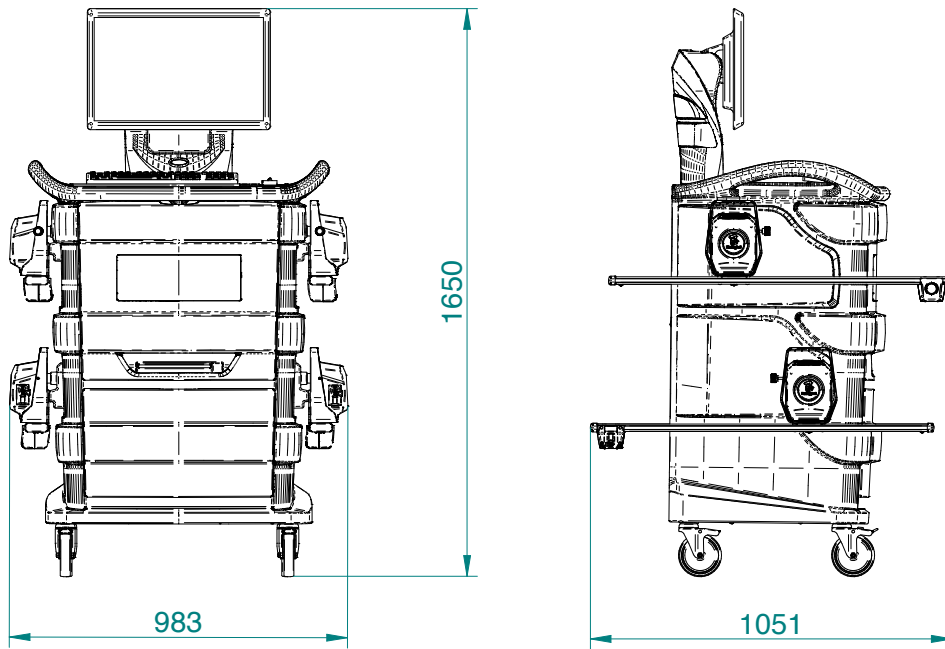
Overall dimensions:



Weights:

Enclosure only	51 kg
Complete vehicle with sensors, clamps and plates	121 kg

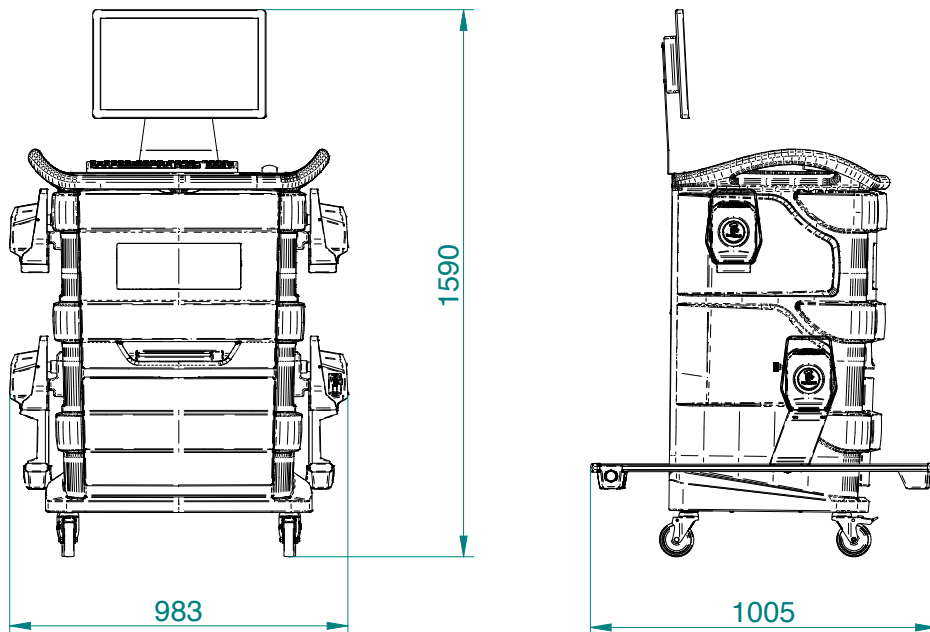
RAV.TD808 - ROT.SP808 - SPA.ART98 (TWS)



Weights:

Enclosure only	51 kg
Complete vehicle with sensors, clamps and plates	119 kg

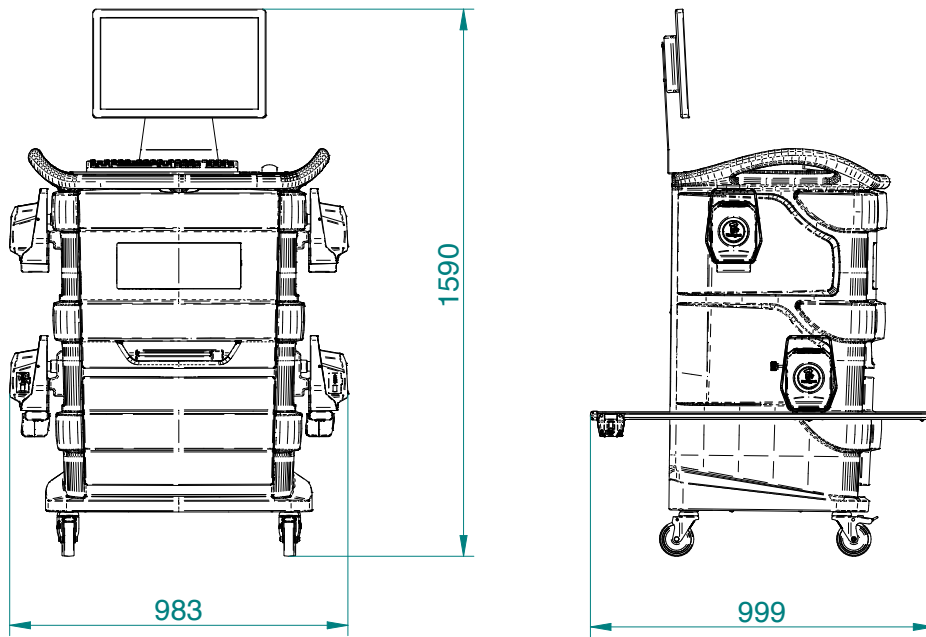
RAV.TD806-ROT.SP806-SPA.ART86 (TWSR)



Weights:

Enclosure only	48 kg
Complete vehicle with sensors, clamps and plates	115 kg

RAV.TD806 - ROT.SP806 - SPA.ART86 (TWS)



Weights:

Enclosure only	48 kg
Complete vehicle with sensors, clamps and plates	113 kg

3.3 MACHINE IDENTIFICATION DATA

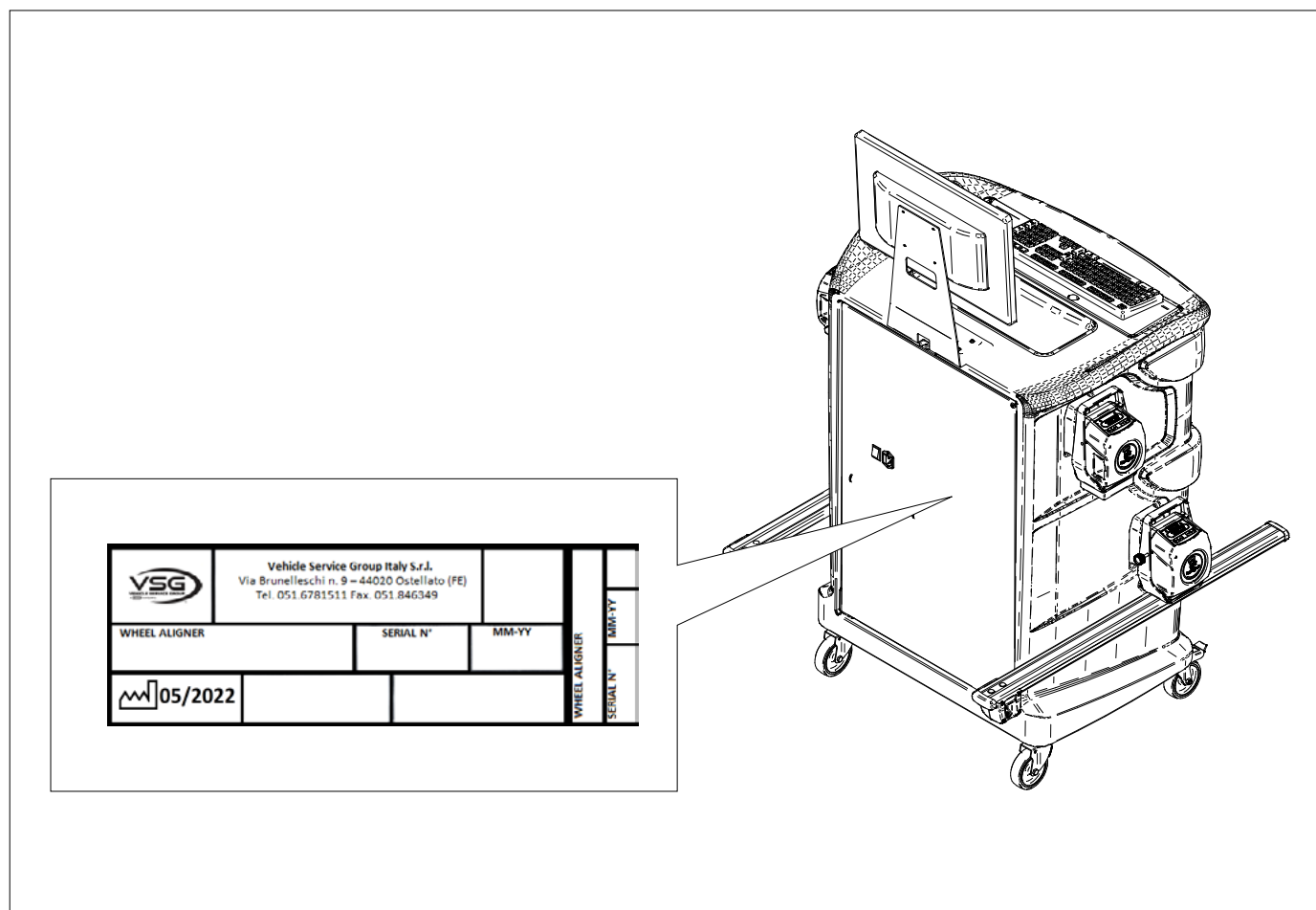
The nameplate of the wheel aligner is affixed to the carriage on the control column and contains the following data:

- A** Manufacturer
- B** Vehicle
- C** Serial number
- D** Year of manufacture

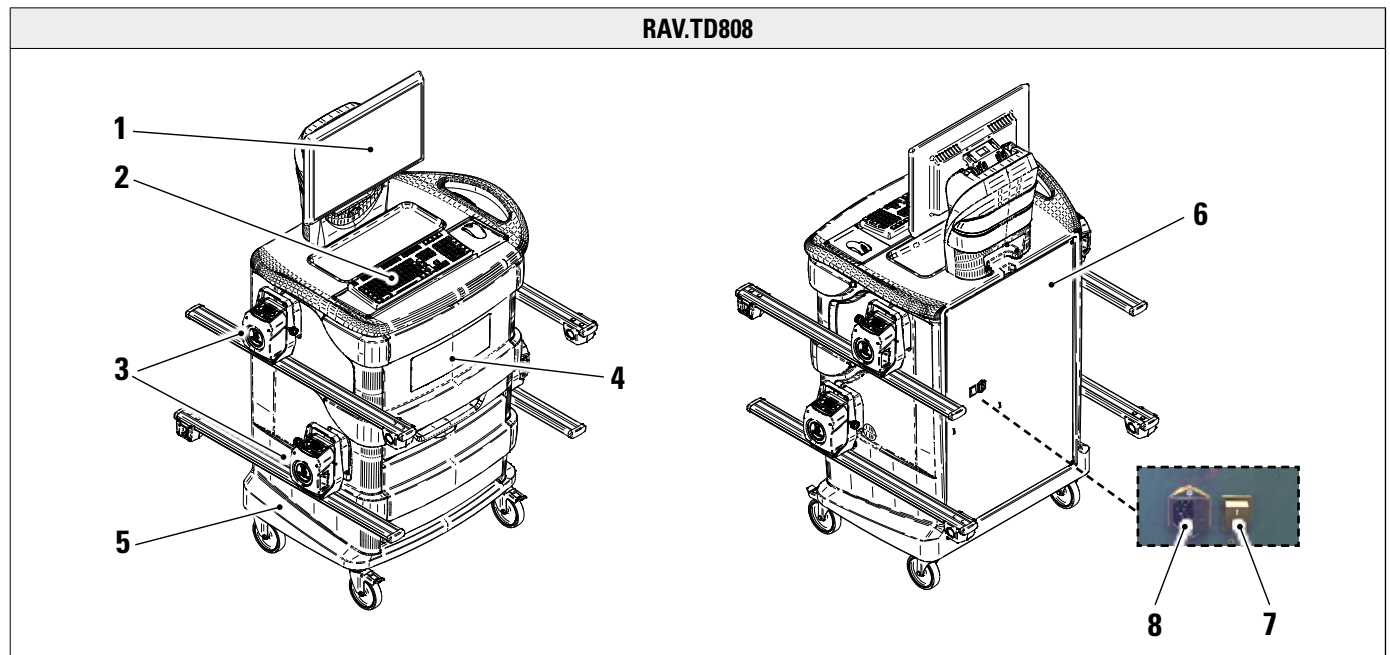
ATTENTION: It is strictly forbidden to tamper with, engrave, alter in any way or even remove the machine reg.number; do not cover this plate with temporary panels, etc. as it must always be clearly visible.

Always keep this reg.number clean from grease or dirt in general.

WARNING: In the event that for accidental reasons the reg.number is damaged (detached from the machine, ruined or even partially illegible) immediately notify the manufacturer.



3.4 COMPONENTS SUPPLIED



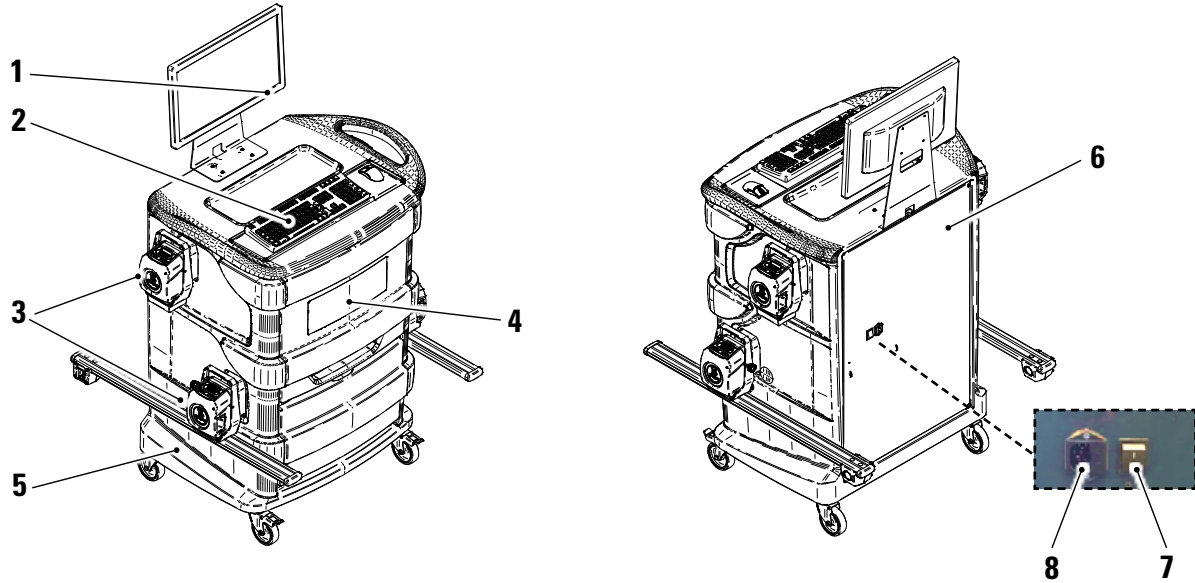
1	MONITOR. There is a 24"16/9 high definition colour monitor. The instructions on use and maintenance are shown in the manual supplied with the same; follow the instructions indicated in it.
2	PC KEYPAD. The equipment is equipped with a 102-key PC-type control keypad
3	CHARGING DOCKS. Where the sensors are located (Para. 3.6.1).
4	CENTRAL COMPARTMENT FOR PRINTER HOUSING. The results are printed with a colour inkjet printer for A4 size sheets. The instructions on the use and maintenance of the printer are provided in the manual supplied with the printer; follow the instructions indicated in it.
5	MEASURING CABINET For all operations relating to the taking of measurements, the measuring cabinet is used, which is equipped with electronic components for the processing and management of measurements from the sensors.
6	MANAGEMENT PC HOUSING Accessible from the rear panel. For PC specifications see para. 3.5.
7	MAIN EQUIPMENT SWITCH (on rear panel)
8	POWER SUPPLY OUTLET Power supply: 1/N/PE 220 - 240 V AC, maximum current 3.15A (approximately 693W) 50/60 Hz



*The equipment is equipped with two protection fuses, one on the neutral.
The fuses are inside the side-mounted power socket.
Use only **T 3.15A L - 250V AC** compliant fuses.*

	PEDAL DEPRESSOR It is a tool used to lock the brake pedal when preparing for measurement. It is to be used as shown in the instructions that appear during the program.
	STEERING LOCK It is a tool used to hold the steering in a fixed position. It is used before the adjustment procedure as shown in the instructions that appear during the program.

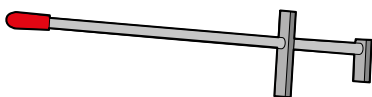
RAV.TD806



1	MONITOR. There is a 22"16/9 high definition colour monitor. The instructions on use and maintenance are shown in the manual supplied with the same; follow the instructions indicated in it.
2	PC KEYPAD. The equipment is equipped with a 102-key PC-type control keypad
3	CHARGING DOCKS. Where the sensors are located (Para. 3.6.1).
4	CENTRAL COMPARTMENT FOR PRINTER HOUSING. The results are printed with a colour inkjet printer for A4 size sheets. The instructions on the use and maintenance of the printer are provided in the manual supplied with the printer; follow the instructions indicated in it.
5	MEASURING CABINET For all operations relating to the taking of measurements, the measuring cabinet is used, which is equipped with electronic components for the processing and management of measurements from the sensors.
6	MANAGEMENT PC HOUSING Accessible from the rear panel. For PC specifications see para. 3.5.
7	MAIN EQUIPMENT SWITCH (on rear panel)
8	POWER SUPPLY OUTLET Power supply: 1/N/PE 220 - 240 V AC, maximum current 3.15A (approximately 693W) 50/60 Hz

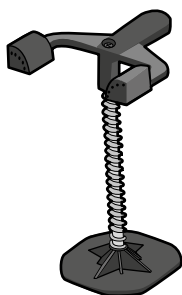


*The equipment is equipped with two protection fuses, one on the neutral.
The fuses are inside the side-mounted power socket.
Use only **T 3.15A L - 250V AC** compliant fuses.*



PEDAL DEPRESSOR

It is a tool used to lock the brake pedal when preparing for measurement. It is to be used as shown in the instructions that appear during the program.



STEERING LOCK

It is a tool used to hold the steering in a fixed position. It is used before the adjustment procedure as shown in the instructions that appear during the program.


3.5 MANAGEMENT PC

The software product is installed on the management PC (personal computer), located inside the cabinet.
The management PC has the following minimum features:


Processor	2.00 GHz
RAM	4 GB
USB	6 USB; 1 LAN Ethernet 10/100/1000 Mbps
Operating system	Windows 10 IoT™ integrated, standard operating system in English
Video output	1366x768 Pixels HD Ready
Hard Disk	≥ 64.0 Gb

The first time the App is used, it will be necessary to enter the codes to activate the licence, which are shown in the accompanying document. Subsequently, it will be necessary to enter certain data relating to the user, to start the manufacturer's warranty period.

Keep the document with the codes, which will be needed in the event the App is uninstalled and reinstalled again.




Dear customer, your new wheel aligner with serial number:
 Gentile cliente, il tuo nuovo assetto con numero di matricola:
 Cher client, votre nouvel équipement d'alignement des roues avec numéro de série:
 Estimado cliente, el nuevo alineador de neumáticos con número de matrícula:
 Sehr geehrter Kunde, Ihre neue Einrichtung mit Ihrer Registrierungsnummer:



99999748

It is matched with the following unlock code:
 Il abbinato al codice di sblocco sotto riportato:
 Est associé au code de déblocage ci-dessous:
 Corresponde al código de desbloqueo indicado a continuación:
 Ist mit dem nachstehendem Entsperrcode verknüpft:



AA7Z781E


The unlock code has to be used to fully enable the functions of your wheel aligner and to make the warranty start date effective.
 The activation is requested at every start-up of the application, or can be reached from the menu option:
 Settings/Application/License Activation

Il codice di sblocco dovrà essere utilizzato per abilitare il pieno funzionamento del suo assetto e per avviare la decorrenza della garanzia.
 L'attivazione viene richiesta ad ogni avvio dell'applicazione, oppure è raggiungibile dalla voce di menu:
 Impostazioni/Applicazione/Attivazione Licenza

Le code de déblocage doit être utilisé pour activer le fonctionnement complet de votre équipement d'alignement des roues et pour démarrer la période de garantie.
 L'activation est demandée à chaque démarrage de l'application ou elle est accessible à partir de l'option du menu:
 Paramètres/Application/Activation Licence

Se deberá utilizar el código de desbloqueo para habilitar el pleno funcionamiento del alineador de neumáticos y para activar la garantía.
 La activación se solicita cada vez que se inicia la aplicación, o se puede acceder a la misma desde la opción del menú:
 Configuración/Activación/Activación Licencia

Der Entsperrcode muss verwendet werden, um den vollen Betrieb Ihrer Einrichtung zu ermöglichen und die Garantiezeit zu starten.
 Die Aktivierung wird bei jedem Start der Anwendung angefordert, bzw. ist über den Menüpunkt erreichbar:
 Einstellungen/Anwendung/Lizenzaktivierung



The manual "Instructions for Use and Maintenance" is available online at:
 Il manuale "Istruzioni Uso e Manutenzione" è disponibile online all'indirizzo:
 Le manuel « instruction utilisation et entretien » est disponible en:
 El manual "Instrucciones Uso y Mantenimiento" está disponible online en la dirección:
 Das Handbuch „Gebrauchs- und Wartungsanleitung“ ist online unter verfügbar:
<http://www.equipmentgroup.it/manuals>

14/02/2022, 08:01:05

3.6 SENSORS

The wheel aligner sensors do not need to be connected to any cables or wires for the measurement of angles. The detector assemblies consist of infrared data transmitters/receivers and CCD-type transducers with an infrared emitter focal point. All characteristic angles on both vehicle axles are monitored using 6 or 8 CCD sensors and infrared transmission.

Data transmission between infrared sensors is effective even in poor lighting conditions. Data from the rear sensors are transmitted/received via infrared transmission to the front sensors. Data is transmitted by the front sensors via Bluetooth-compatible modules.

Power is supplied by long-lasting 6V rechargeable batteries. The front and rear sensors are recharged using the sensor battery charging cradles on the enclosure.



ATTENTION

- The rechargeable batteries are contained in a plastic housing. If there are any signs of corrosion, swelling of the container or damage to the container, the battery must be removed immediately and replaced with a new, undamaged, original one.
- The batteries must be handled with care. The user must wear protective gloves.
- Do not open or tamper with the battery pack and its shell.
- Use only the supplied battery pack.
- A label with notes and warning symbols is affixed to each battery



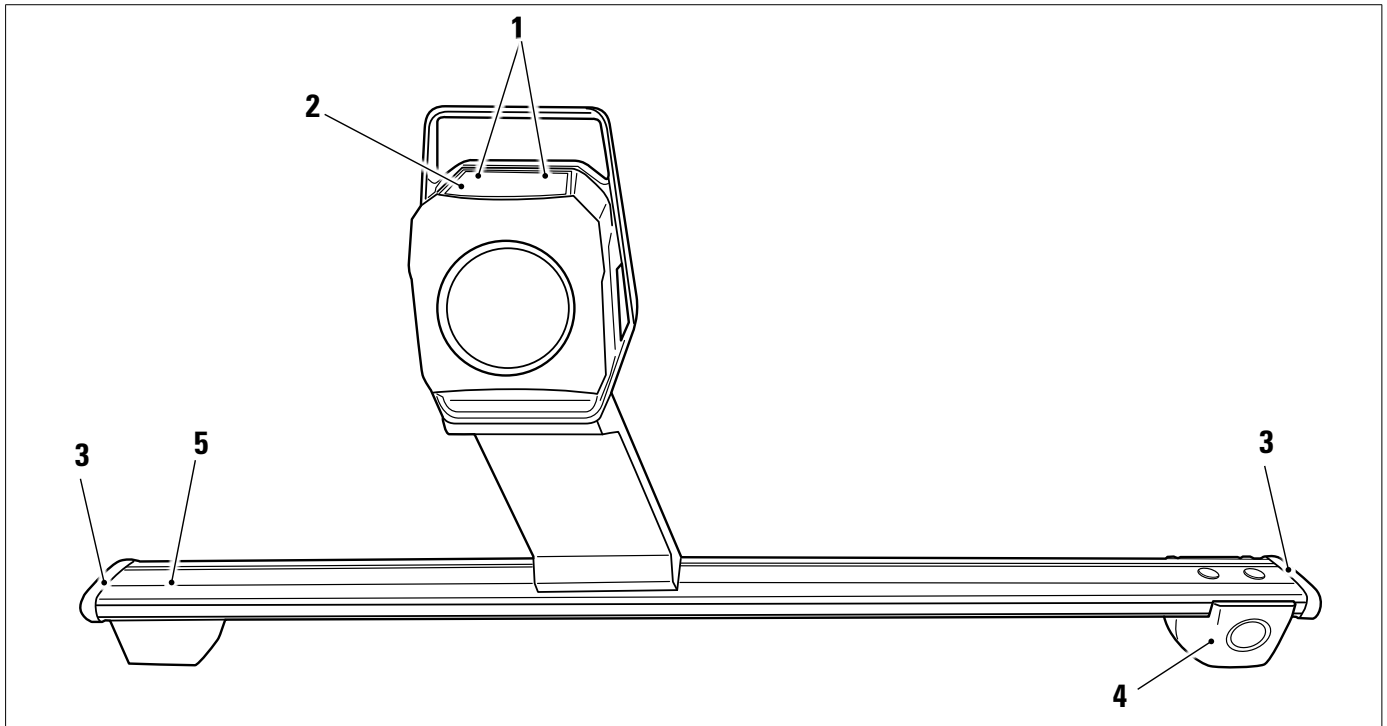
WARNING

- Do not cause short circuits and do not disassemble the battery pack.
- Do not expose the battery pack to excessive heat sources

The power and consumption data of the measuring heads with rechargeable battery are as follows:

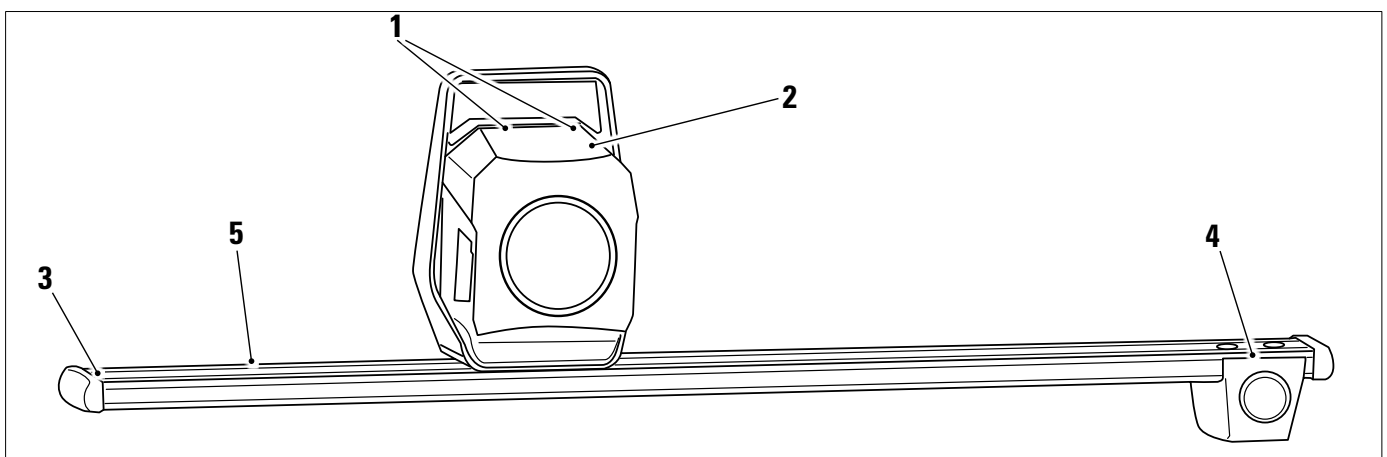
Power supply	NiMH battery (Nickel-Metal Hydride) 6V- 2Ah
Average operation with battery in full efficiency and charged	Approximately 8 hours
Average charging time	Approximately 12 hours

3.6.1 Front sensors RAV.TD808-ROT.SP808-SPA.ART98 (Lowered) and RAV.TD806-ROT.SP806-SPA.ART86 (Lowered)



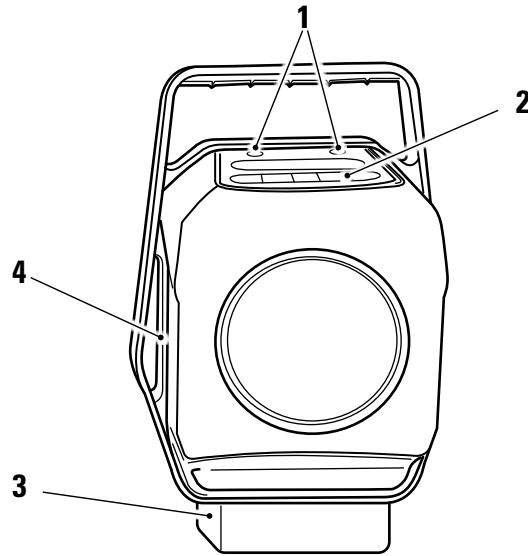
1	RED LED indicating that the sensor is on / GREEN LED indicating that the sensor is charging
2	Detector keypad (Para. 3.6.4)
3	Rubber protection
4	Optical toe unit
5	Battery enclosure

3.6.2 Front sensors RAV.TD808-ROT.SP808-SPA.ART98 (TWS) and RAV.TD806-ROT.SP806-SPA.ART86 (TWS)



1	RED LED indicating that the sensor is on / GREEN LED indicating that the sensor is charging
2	Detector keypad (Para. 3.6.4)
3	Rubber protection
4	Optical toe unit
5	Battery enclosure




3.6.3 Rear sensors RAV.TD806-ROT.SP806-SPA.ART86






1	LED sensor indicator RED - on LED sensor indicator GREEN - charging
2	Detector keypad (Para. 3.6.4)
3	Battery Enclosure
4	Optical alignment unit

3.6.4 Detector keypad



1	RED LED on steady. The sensor is on. RED LED flashing. The sensor battery is low (when the remaining battery charge is lower than or equal to 30%); it will turn off after a few minutes
2	GREEN LED. The sensor battery is charging.
3	Control keypad:
	Scroll back in program
	Scroll up the menu
	Sensor power button.

		Scroll down the menu
		Scroll forward in program
		Tap them at the same time to switch off the sensor manually.
4	Level indicator with LED. Not featured on the keypads of the rear sensors RAV.TD806-ROT.TD806-SPA.ART86	

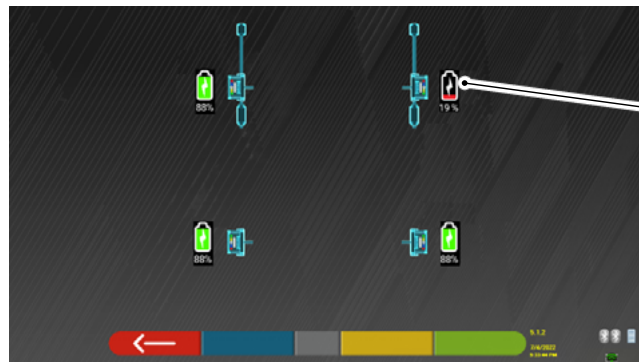
3.6.5 Automatic sensor switch-off

The sensors automatically switch off after approx. 5 minutes if no data is received, i.e. when the programme is at a stage where measurement data is not transmitted/received (e.g. on the start page) or if the PC is switched off.
It is possible to switch off the sensors manually when they are not used (see table in para. 3.6.4).

3.6.6 Low battery warning



When the remaining charge of one or more sensors is LESS than or EQUAL to 30%, the programme displays an error message with details of the charging percentage.
This signal is also emitted on the sensor itself with the flashing of the red power LED (see para. 3.6.4).



Front right sensor charge low

- Put the sensor back on charge as soon as possible.



F1

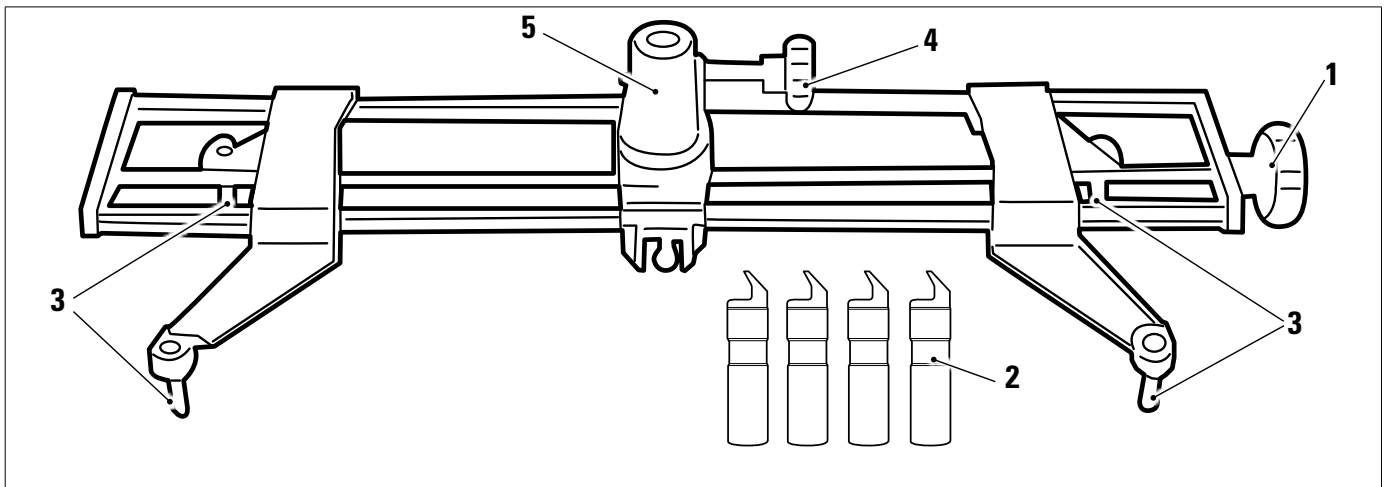
Tap this key to exit the page.

3.7 CLAMPS

Different types of clamps can be included in the delivery depending on the composition of the machine.

3.7.1 STDA30E Clamps

STDA30E clamps are of the self-centring screw type for alloy wheels from 12" to 24", and include removable claws.



1	Knob
2	Tips with steel claw
3	Claw attachment pins
4	Sensor pin clamping knob
5	Sensor coupling flange



NOTE:
each clamp has a label with warnings for hands and to refer to this manual before use.

3.7.2 Using the STDA30E clamp

The central crossbar of STDA30E clamps is movable; therefore, it is possible to lower and/or raise the clamp by up to 180 mm if there is an obstacle (e.g. the truck wheel itself is too wide) inhibiting the communication of the two sensors.

To lower the two sensors to the same level, the crossbar features 3 notches each 60 mm high.
ALWAYS LEVEL THE CLAMP BEFORE LOWERING THE CROSSBAR.



3.7.3 Run-out for motor vehicles with STDA30E clamp

Should the operator wish to use STDA30E truck clamps on a motor vehicle, great care must be taken, because they are much longer than motor vehicle clamps and, at the end of the run-out procedure and when the wheels are lowered, the clamp may touch the floor, and therefore move and/or break and compromise the outcome of the next tests.

During the run-out procedure, it is indicated on the screen to turn the wheel, taking the knob as a reference, which is represented by the red arrow.

By following this method, the run-out procedure would end with the clamp in the vertical position (knob up) and the clamp would touch the floor when the wheels are lowered.

To avoid this, it is necessary to take as a reference for turning the wheel not the knob but a point on the wheel translated by 90° with respect to the knob itself, so that the procedure ends with the clamp in the horizontal position.



1	Reference point indicated on the screen for turning the wheel
2	Position the knob to the right

- Turn the wheel by 180° (position the knob to the LEFT). Press the central button on the sensor. Acquire the measurements.



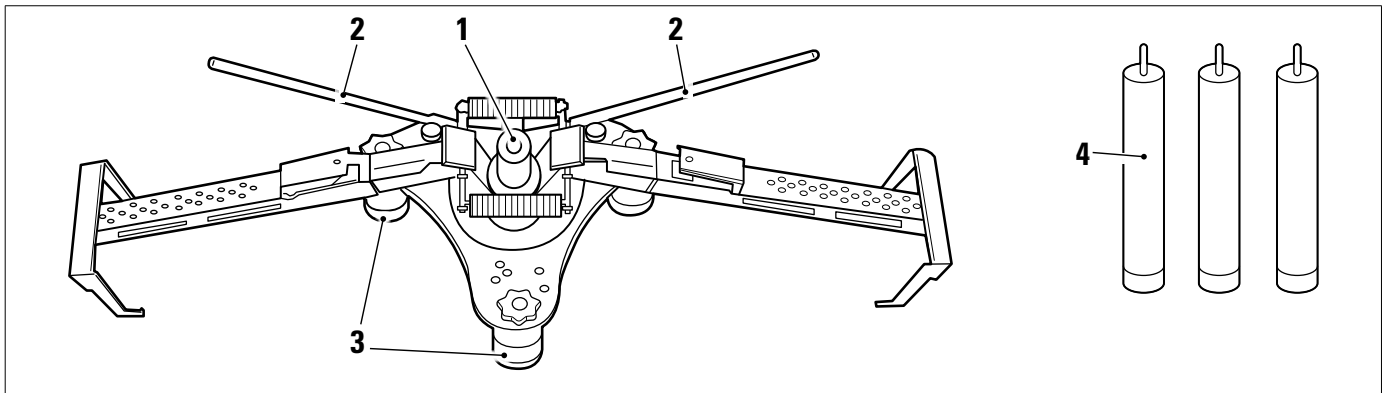
1	Reference point indicated on the screen for turning the wheel
2	Position the knob to the left

NOTE:

The clamps must all be placed horizontally when the vehicle is lowered, at the end of the run-out procedure. In this way, during the sensor ALIGNMENT AND LEVELLING procedure, it will not be possible to level the clamps, but if STDA30E clamps are used (Para. 3.7.1) on a car, it will NEVER be necessary to translate the movable crossbar of the clamp downward because the a car's wheels will never be so large as to cover the sensors' signal.

3.7.4 STDA92E Clamps

Special truck clamps to avoid compensation, they act on the wheel centre, which is very accurate; excellent measurements are ensured without the need to lift each wheel.
Each pair of clamps is supplied with 6 short adapters and 6 long adapters.



1	Sensor pin clamping knob
2	Handles for quick clamping on wheel
3	Short adapters
4	Long adapters



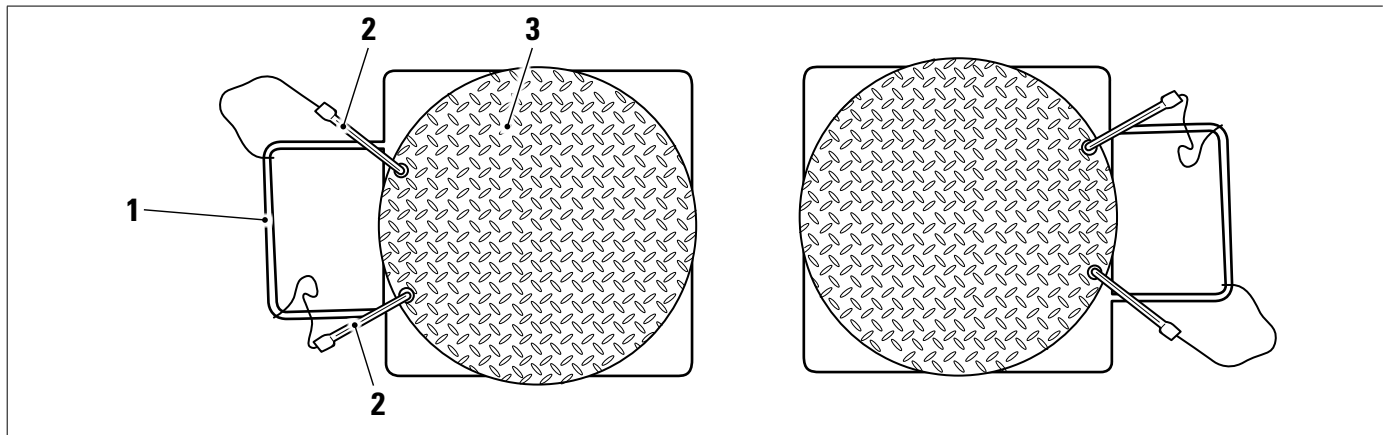
NOTE:

each clamp has a label with warnings for hands and to refer to this manual before use.

3.8 STDA29L TURNTABLES

Available as options.

The STDA29L turntables have a capacity of 7000 kg.



1	Plate handle
2	Plate stop
3	Upper plate with non-slip disc

4 GENERAL SAFETY REGULATIONS



4.1 SAFETY LABELS AND/OR STICKERS

Plates and stickers are provided on the sensor to identify the machine, range, instructions and electrical system.

In the event these labels and/or stickers are damaged, they must be replaced by submitting a request to **VSG ITALY s.r.l.**



It is strictly forbidden to tamper with, engrave, alter in any way or even remove the machine reg.number; do not cover this plate with temporary panels, etc. as it must always be clearly visible.
Always keep this reg.number clean from grease or dirt in general.



In the event that for accidental reasons the reg.number is damaged (detached from the machine, damaged or even partially illegible) immediately notify the manufacturer of this fact.

**MAXIMUM
LOAD 15 KG**



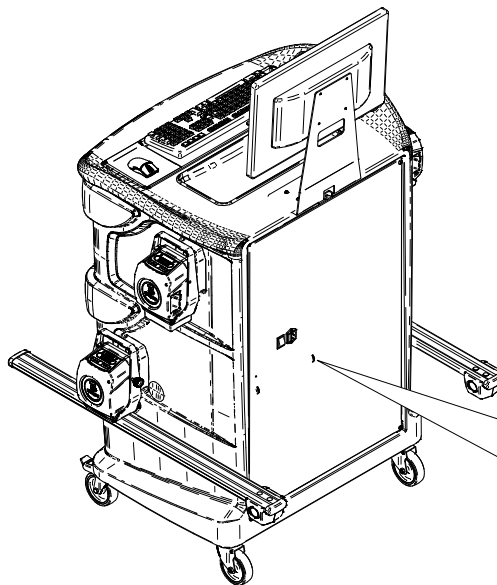
**WARNING
LABEL**

"Read the
manual"



PLATE

"Disposal"



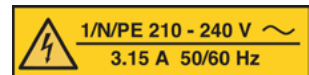
FUSE LABEL

"Circuit
protection"

Battery charger



**MISCELLANEOUS LABELS WITH
DATA AND WARNINGS ON THE
GENERAL POWER SUPPLY**



**Maximum Power 500 W
Puissance maximale**



999916311	DISPOSAL LABEL
999930530	WARNING LABEL "Read the manual"
999930450	FUSE LABEL
999930520	POWER LABELS
999930460	DOUBLE FUSE LABEL
999930470	MAXIMUM POWER LABEL

4.2 OPERATOR TRAINING

Only specially trained and authorised personnel may use the equipment. In order to ensure optimal machine management and efficient operations, the designated personnel must be properly trained to learn the necessary information in order to achieve an operating mode that is in line with the instructions provided by the manufacturer.

For all doubts regarding use and maintenance of the machine, refer to the instruction manual and, if necessary, contact **VSG ITALY s.r.l.** authorised service centres or technical support.

4.3 FITNESS FOR USE

During the operation and maintenance of this machine it is absolutely essential to comply with all the safety and accident-prevention regulations in force and with the European Directives 89/686/EEC, UNI EN ISO 20345, UNI EN ISO 13688: 2013, EN 388 and EN 420.

5 INSTALLATION REQUIREMENTS



5.1 MINIMUM REQUIREMENTS OF INSTALLATION SITE

Check that the place where the machine will be installed complies with the following specifications:

- use of the wheel aligner is only permitted in indoor locations where there is no risk of explosion or fire.
- sufficient lighting (but not in an area with glare or bright lights). Reference standard **EN 12464-1**;
- place not exposed to weathering;
- place with suitable air exchange;
- pollutant-free environment;
- noise level below the current regulatory requirements at ≤ 70 dB (A);
- room temperature: min 0°C - max 40°C;
- the workplace must not be exposed to hazardous movements due to the simultaneous operation of other machines;
- the place where the machine is installed must not be used to store explosive, corrosive and/or toxic materials;
- the minimum dimensions of the area where the enclosure can be placed are 2500 x 2500 mm;
- the installation layout must be selected taking into account that the operator must be able to see the entire device and surrounding area from the control station. He/she must prevent the entry of unauthorised persons or objects in this area, which may be a source of danger.

All installation works concerning external connections and power supplies (electrical, in particular), must be carried out by professionally qualified personnel.

The installation must be carried out by authorised personnel following any special instructions included in this booklet; in case of doubt, contact the **VSG ITALY s.r.l.** authorised service centres or technical support.

5.2 TRANSPORT AND PACKAGING

The equipment is supplied packed in a box secured onto a pallet to facilitate transportation.



ATTENTION

- *To transport the machine to the point where it will be installed, use lifting and transport means such as forklifts or lifters equipped with forks.*
- *The equipment must be stored and packaged in indoor areas not exposed to weathering such as rain or sub-zero temperatures, and preferably in a dry and airy location.*
- *The packaging must never be overturned or arranged horizontally, the pallet must always rest on a flat and solid surface, do not stack other packages on top, the arrangement must allow easy reading of the indications.*



WARNING

- *Always wear gloves and safety shoes during unpacking.*

Be sure to have received all the standard parts listed above.

The packaging material (plastic bags, polystyrene, nails, screws, wood, etc.) must be kept collected and disposed of according to the regulations in force, with the exception of the pallet, which could be reused for subsequent handling of the machine.

6 HANDLING AND PRE-INSTALLATION



6.1 INSTALLATION



ATTENTION

- Do not install the equipment in places where persistent conductive dust is present (pollution degree equal to or greater than 3).
- Install the equipment in indoor areas, sufficiently lit and protected from atmospheric agents.

The minimum dimensions of the area in which the cabinet can be placed are 2500x2500 mm, the cabinet dimensions are indicated in Para. 3.2.



WARNING

- Before positioning the equipment, make sure that the chosen location is suitable for the local regulations Local in force on workplace safety and check the minimum distances from walls or other obstacles.
- The enclosure's electrical socket must be free from obstacles and accessible in an emergency.

6.2 ELECTRICAL CONNECTION



ATTENTION

Before connecting the machine, carefully check that:

- the characteristics of the power line correspond to the requirements of the machine indicated on the relative plate;
- the earthing line is present and that it is adequately sized (section greater than or equal to the maximum section of the power cables);
- all the components of the electrical line are in good condition.



WARNING

- Connect the machine to the mains by inserting the supplied 3-pin plug (220V - 240V AC) into the wall socket. If the plug supplied is not suitable for the one on the wall, equip the machine with the plug in accordance with the local laws and current standards and regulations. This operation must be performed by experienced and qualified personnel.
- **Risk of fire and explosion!** To reduce this risk, the machine must be used only in places where there is no risk of fire or explosion. This product must be installed and used only within licensed workshops.

7 USE



7.1 STARTING THE PROGRAM



Press this icon.

The program starts and the presentation page is displayed on the monitor, from which all the main functions of the equipment can be accessed.

Home page



Press this button to close the application.



Press this button to configure the programme.



Press this button to access the customer database.



Selects the list with the various database profiles

7.2 CONFIGURING THE PROGRAM

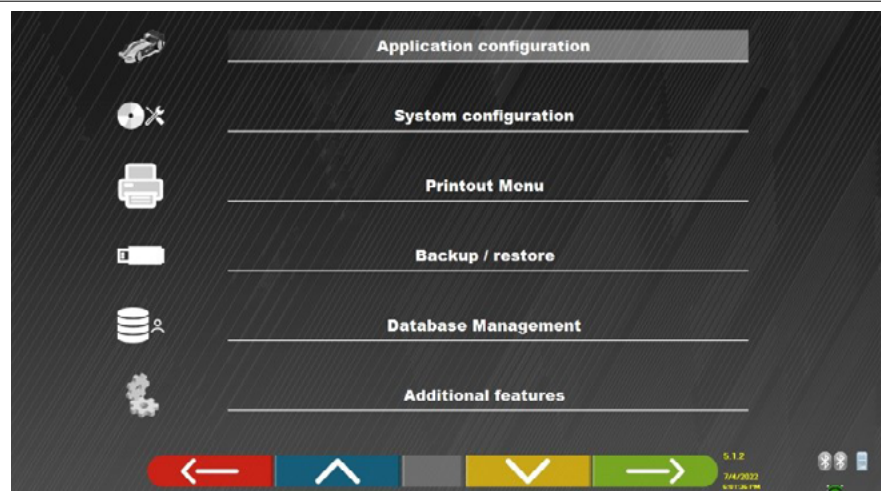


F2






Tap this key on the home page; the system configuration menu page opens, allowing the characteristics of the application to be edited according to your needs.

NOTE: the functions effectively available may depend on the type of device and the version of the operating system being used.

System configuration
menu



Menu	Description
	APPLICATION CONFIGURATION It is possible to select a language among the ones available; it is possible to set the rules for the data protection policy.

Menu	Description
	SYSTEM CONFIGURATION It is possible to change the system parameters: customise the vehicle database, by selecting which "groups" to show, or create new groups or modify existing ones by adding or removing makes; specify which components are included in the supply and their type; perform a Bluetooth search to pair the sensor heads with the PC.
	PRINT MENU It is possible to customise printouts by entering the workshop data, choose the desired print type and select the default printer (if more than one printer is connected).
	BACKUP / RECOVERY To avoid the risk of losing data in the vehicle and customer database, it is advisable to create a backup copy (save). A USB "flash disk" is used for this operation. It is possible to recover lost or deleted data with the recovery procedure, if the backup operation has been performed.
	Database management (para. 7.2).
	ADDITIONAL FEATURES It is possible to access the TEST or Calibration applications of the sensors (reserved for specialist, authorised personnel)

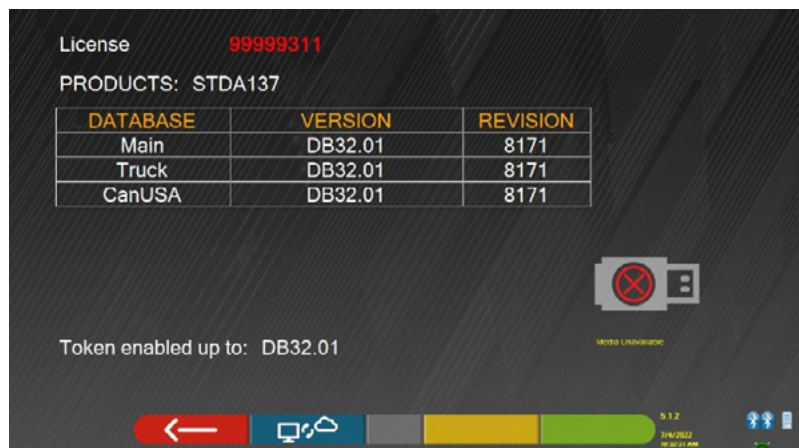


Where present, tap this key to go back to the "System configuration menu".

7.3 DATABASE CONFIGURATION



From the "Configuration menu" page (para. 7.2), tap this key to access the configuration page. On this page it is possible to view information on existing databases and check for new program updates.



The screen shows the databases present and their version. It shows the licence number, corresponding to the equipment's serial number, which must be communicated to the Manufacturer to purchase a new database.



F2

By tapping this key, it is possible to check for the presence of new program updates or the availability of new database releases.

7.4 VEHICLE DIAGNOSIS AND ADJUSTMENT

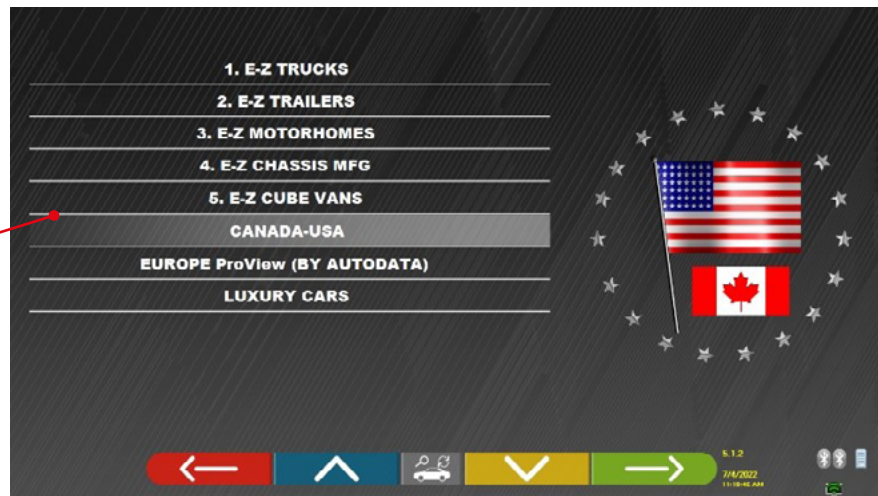
7.4.1 Vehicle make and model selection



F4

Tap this key on the "Home Page" to continue with vehicle selection in the database.

List with different groups
present in the database
(para. 7.4).



Select the group from those available.

The program shows the list of makes in the preselected group (see figure below).

By scrolling up and down the lists, select the vehicle make and model.



F5

Alternatively, tap this key to perform a key search (model/make/year) or with the V.I.N. ("Vehicle Identification Number" - for vehicles with USA-Motor database only).

Enter the model (max 3 words of at
least 3 characters).
It is also convenient to enter the
vehicle make.
It is also possible to enter the year
of manufacture (4 digits are
necessary)

Enter the vehicle's
V.I.N..



The V.I.N. (Vehicle Identification Number) is a unique serial number used by the automotive industry to identify motor vehicles. It consists of a plate with 17 alphanumeric characters usually located inside the engine compartment.

Searching by V.I.N. is only possible with the optional USA database.



F2

Tap this key to move the cursor from the "vehicle name" field to the "V.I.N." field.



F4

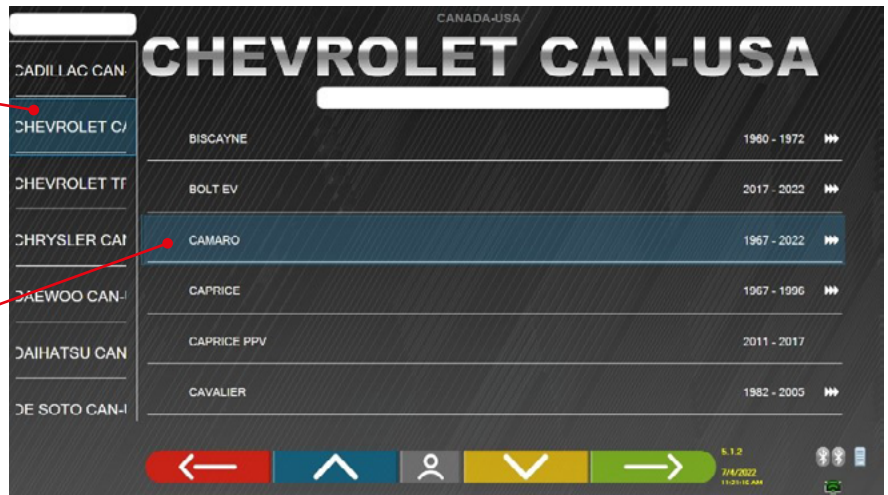
Tap this key to continue and view the list of all vehicles that satisfy the search criteria entered above, then select the correct vehicle and view the page with the technical data of the preselected vehicle

To select the make and model of a vehicle, press the F4 button on the presentation page (para. 7.1) or on the profiles page in the database.

The program displays the following page; the make and model of the vehicle to be operated on must be selected.

Make of the selected
vehicle

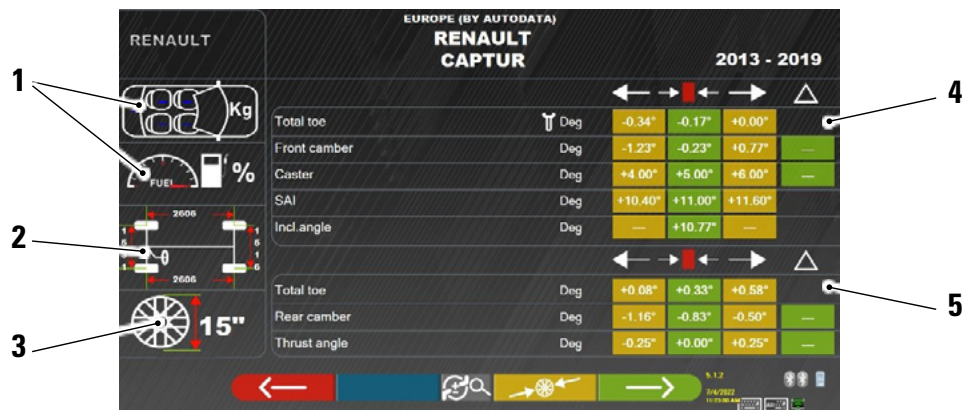
Model of the selected
vehicle



7.5 VIEWING THE TECHNICAL DATA OF THE PRESELECTED VEHICLE

Once the vehicle has been selected (Para. 7.4.1), a screen appears with the measurements and tolerances of the angles (minimum, central and maximum value) and other additional data, such as rim diameter, wheelbase, track and any load and tank conditions.

The screen with the measurements and tolerances can be displayed as per the image below: with a single column of corresponding values for the left and right side.



1	Any load and tank conditions
2	Wheelbase and track values in mm
3	Circle diameter: <i>Note: it is also possible to change the displayed diameter by pressing on the circle symbol.</i>
4	Front axle angle tolerances
5	Tolerances of rear axle angles

Note: use the scroll to view all the data.

The measurements and tolerances can be displayed as in the screen above: with a single column of consistent values for the left and right sides.



Alt+F5

Pressing this key combo (Alt+F5) displays the measurements with the central value and the overall tolerance "±".

In the "System configuration" menu (Para. 7.2) it is also possible to set the separate display of left and right data (some vehicles may have slightly different tolerance values for the left and right sides).

Tap this key to display a single column of consistent values for the left and right sides.

RENAULT	EUROPE (BY AUTODATA) RENAULT CAPTUR				2013 - 2019
	Total toe	↔	↔	↔	±
	Front camber	↔	↔	↔	±
	Caster	↔	↔	↔	±
	SAI	↔	↔	↔	±
	Incl. angle	↔	↔	↔	±
	Total toe	↔	↔	↔	±
	Rear camber	↔	↔	↔	±
	Thrust angle	↔	↔	↔	±



Tap this key to continue with the preliminary operations on the vehicle.

The PC with the SW contains technical, vehicle-related information from official databases. Access to the system and information is subject to the reading and acceptance of a Disclaimer, which is shown on the device the first time the SW is used.

7.5.1 Display of ADDITIONAL MEASUREMENTS on RIDE HEIGHTS

Some manufacturers (for example: Mercedes, Renault) provide angle tolerance values based on certain measurements on the vehicle chassis.



When the selected vehicle has angle tolerance values linked to additional measurements on the chassis, key (1) is present on the technical data page. Tap this key to view the page with details of the chassis measurements.

MERCEDES-BENZ	EUROPE (BY AUTODATA) MERCEDES-BENZ CLA (117) STD				2013 - 2019
	Total toe	↔	↔	↔	±
	Front camber	↔	↔	↔	±
	Caster	↔	↔	↔	±
	SAI	↔	↔	↔	±
	Incl. angle	↔	↔	↔	±
	Total toe	↔	↔	↔	±
	Rear camber	↔	↔	↔	±
	Thrust angle	↔	↔	↔	±

The programme displays a page as in the example below; use the symbols (2) to display the different images.

MERCEDES-BENZ	MERCEDES-BENZ CLA (117) STD				2013 - 2019
	RA (Deg) Rear camber	↔	↔	↔	±
	FA (Deg) Front camber	↔	↔	↔	±
	RA (Deg) Toe (Rear)	↔	↔	↔	±



Tap these keys to scroll through the different heights/angles in the tables and select the correct values.



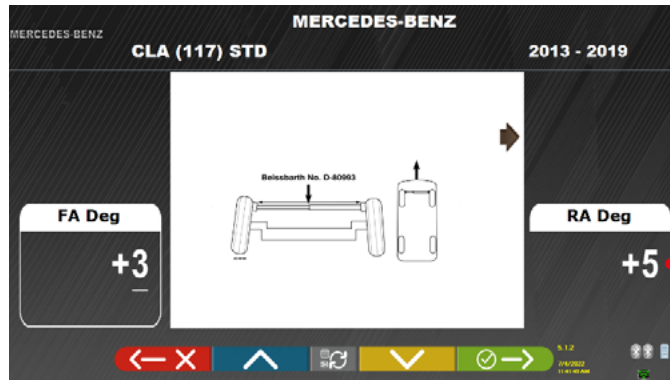
F4

Tap this key to switch between tables and confirm.



F5

The measurements can be entered by selecting them from the tables.
Or tap this key, which opens the page where the values can be entered directly.



Enter the height value in
mm or the angle in "°"
(degrees).



F4

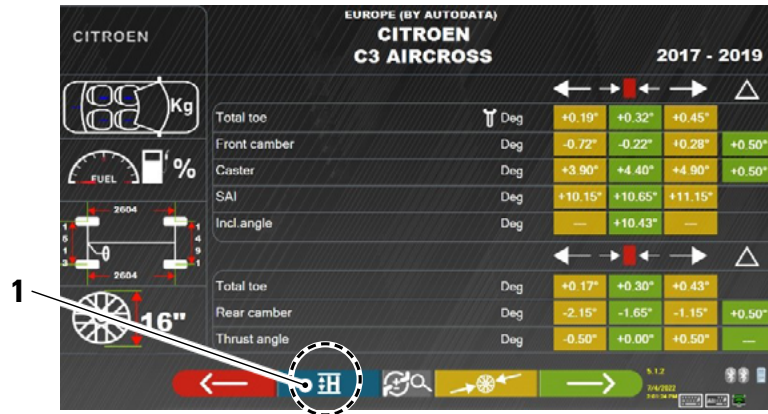
Tap this key to confirm the values entered.

7.5.2 Display of VERIFICATION MEASUREMENTS on RIDE HEIGHTS

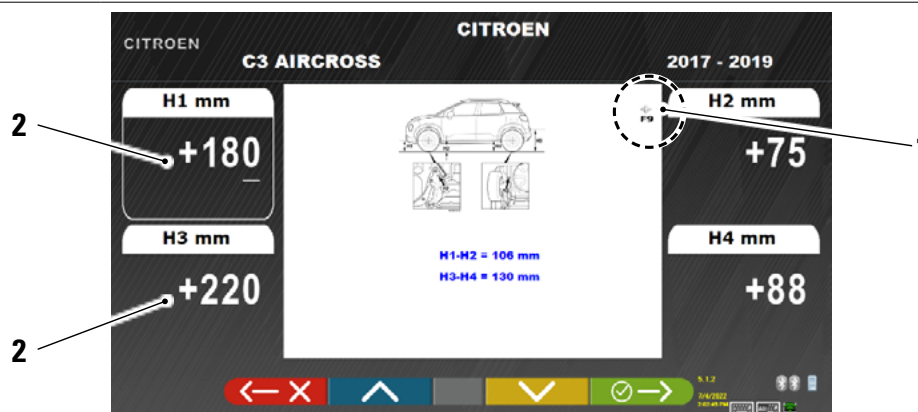
Some manufacturers (for example: Citroen, Peugeot) provide tolerance values referred to special measurements on the vehicle chassis (control values).



When the selected vehicle has tolerance values with control values, key (1) is present on the technical data page.
Tap this key to view the page with details of the control values.



The program displays a page as shown in the following example; select the F9 key or tap key (1) to enlarge the image.
Enter the control values in the fields (2).



Tap these keys to scroll through the options of the various fields to be filled in.



F4

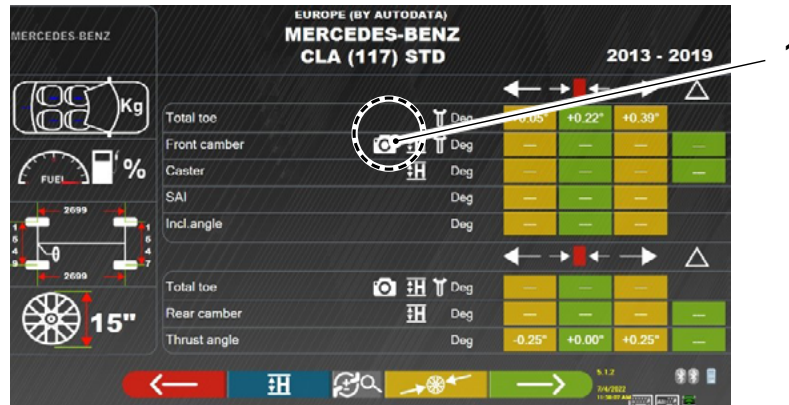
Tap this key to confirm the entered values.

7.5.3 Viewing of ADJUSTMENT AID images

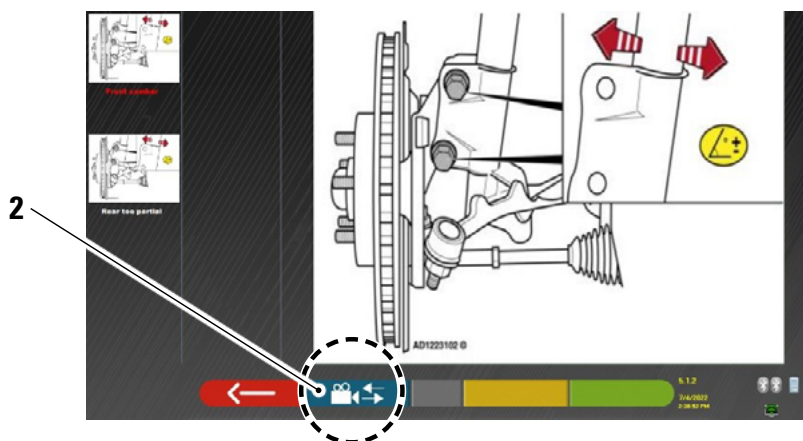
For various vehicles of certain manufacturers, images are available to assist with adjustment, which indicate the adjustment modes on the various angles of the vehicle, such as the camber and caster of the front axle or the camber and toe of the rear axle.



When the selected vehicle has adjustment aid images, key (1) is present on the technical data page. Tap this key to view the adjustment aid images.



The program displays a page as shown in the following example; use key (2) to display the various images, if there is more than one.



Tap on the image to enlarge it



Tap this key to go back to the vehicle's technical data page.



Note: even during the rear adjustment stage (Para. 7.13) this key is available to display the adjustment aid images.

7.6 PRELIMINARY OPERATIONS

7.6.1 Preliminary vehicle check operations

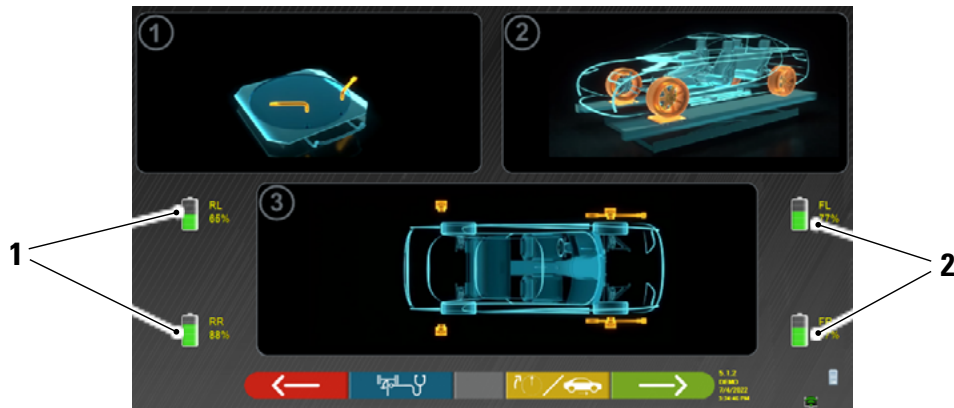
Before carrying out the vehicle alignment check, it is necessary to perform a number of preliminary checks:

- Check and if necessary eliminate the play on the suspension and on the steering linkage.
- Check and if necessary eliminate possible hardening or yielding of the elastic parts of the suspensions.
- Adjust the tyre pressure to the values prescribed by the manufacturer.
- Position and distribute any loads envisaged by the manufacturer.

7.6.2 Run-out preparation



Once the vehicle's technical data page has been viewed (Para. 7.5) tap this key to continue. The following page appears illustrating the preparation of the vehicle for the run-out procedure.



1	Battery charge percentage of rear sensors
2	Battery charge percentage of front sensors



Tap this key to select the run-out type: with wheels lifted (Para. 7.7.1) or push (Para. 7.7.2).

Note: during this step, the images representing the 4 batteries of the sensors, with their residual charge percentages, are shown.

- Prepare for measurements by blocking the turntables and all the rear oscillating platforms.
- Put the vehicle in the correct position on the lifter, with the front wheels on the radius indicators.
- Install the clamps and the sensor heads on the wheels



7.7 RUN-OUT

The **run-out** procedure is carried out to compensate for any decentring between the plane passing through the wheel and the one that is actually measured.

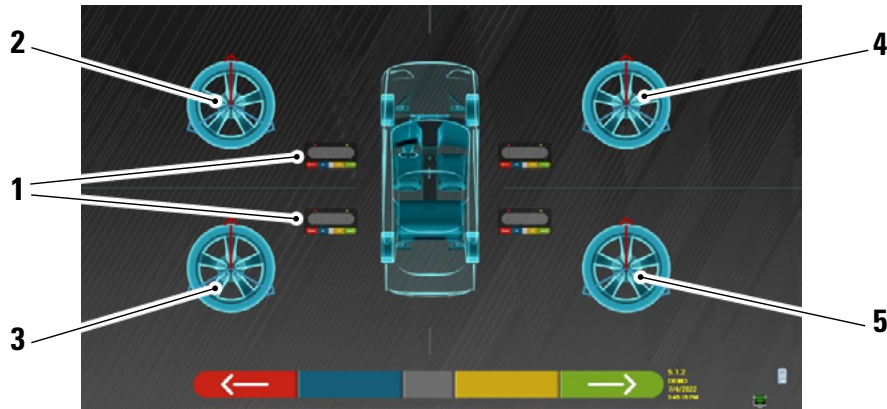


NOTE: this key can nonetheless be used to skip this procedure, when required.

This procedure can also be carried out following completion of vehicle diagnostics, by selecting the relative option in the menu (Para. 7.16).

In order to carry out the run-out procedure, it is necessary to have performed the preparation as explained in para. 7.6.2.

7.7.1 Run-out with wheels lifted



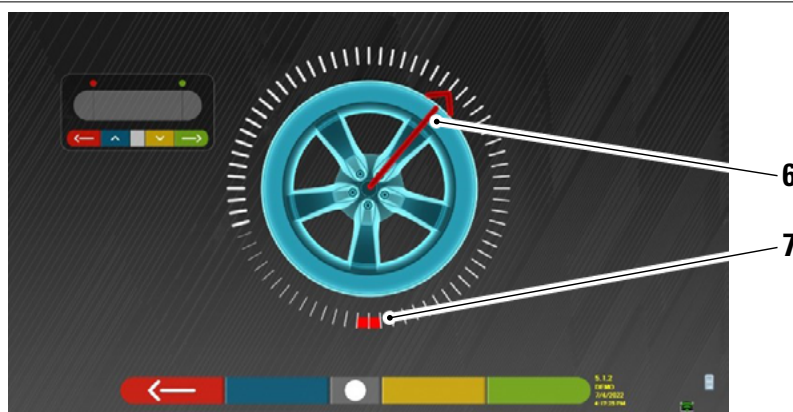
1	Flashing of centre keys of sensor head keypads
2	Front left wheel
3	Rear left wheel
4	Front right wheel
5	Rear right wheel

It is advisable to follow the visual instructions that appear on the screen very carefully.

During the initial step, the centre keys of the keypads displayed on the screen will flash, indicating which key needs to be pressed to start the procedure. It is not necessary to start with a specific wheel or to proceed in a certain order.

The procedure must be carried out on all four wheels. Images of the centre keys of the sensor head keypads flash on the screen, suggesting that the procedure should be initiated by pressing the specific key.

When the centre key of the keypad is tapped, the following screen appears:



Current wheel position.

6	Position indicator
7	First point of arrival of rotation

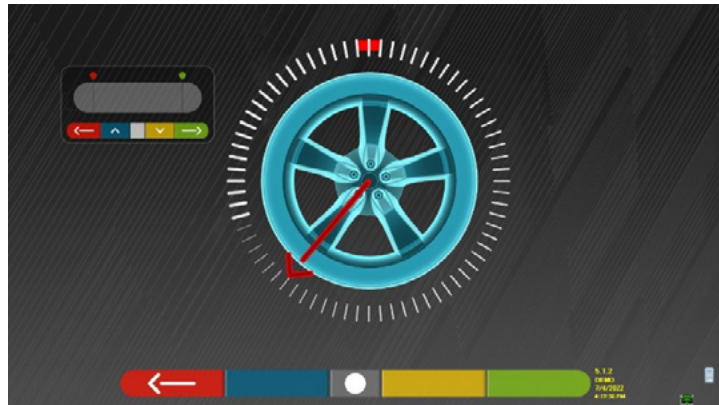
At the start of the procedure, a "self-calibration" is performed so that the position indicator is set at the top. As the wheel is rotated manually, the wheel position is updated in real time on the screen, as is the relative position indicator. The first goal is to rotate the wheel by approximately 180°, to reach the first highlighted point. The wheel can be rotated in either direction.



Rotate the wheel by 180° and, once the destination has been reached, tap the centre key on the sensor head keypad.



The word "STOP" will be displayed for about three seconds, the time it takes for the program to acquire the measurements.



At this point, it is necessary to rotate the wheel until the position indicator is aligned with the second point, positioned at 180° with respect to the first position and thus coinciding with the starting point.



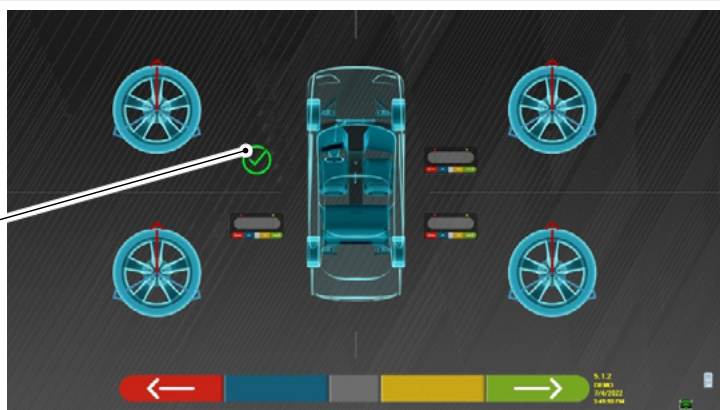
Rotate the wheel by another 180° and, once the destination has been reached, tap the centre key on the sensor head keypad.

When the last rotation has been performed, the program acquires the last measurements.

The screen with the "STOP" symbol appears again for about three seconds. After acquiring the measurements, the program automatically continues and displays the following screen accompanied by a check mark, indicating that for that wheel the procedure is complete.

However, the procedure can be repeated by pressing the centre key of the detection head in question again. When the oscillation has been performed on all wheels, the programme automatically moves on to the next step.

Wheel on
which the
procedure
was carried
out.



The image of the front left wheel is accompanied by a tick, indicating that for that wheel, the procedure is complete. The procedure can nonetheless be repeated by pressing the central key of the sensor head in question. When the run-out has been performed on all wheels, the program automatically proceeds to the next step.

NOTE:

the various stages can be followed by monitoring the red LED on the keypad for each sensor head:

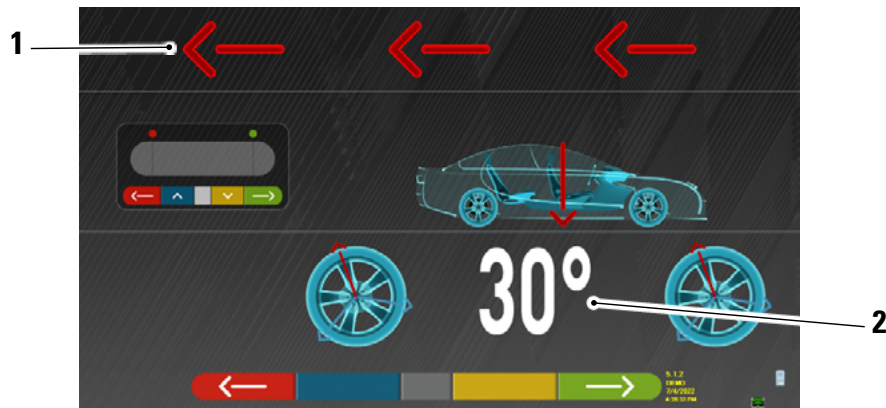
the red LED flashes when the wheel needs to be rotated; the red LED goes out when one of the points is being sampled; the red LED is on steady when the procedure is completed.

In the system configuration, it is possible to define that the procedure needs to be performed on 3 points instead of 2, in which case the wheel is rotated 3 times by 120° instead of 2 times by 180° as explained above.

7.7.2 Push run-out



Pressing this key on the main screen of para. 7.7.
The following screen appears.



1	Vehicle push direction (back)
2	Point of arrival of vehicle at 30°

It is advisable to follow the visual instructions that appear on the screen very carefully.



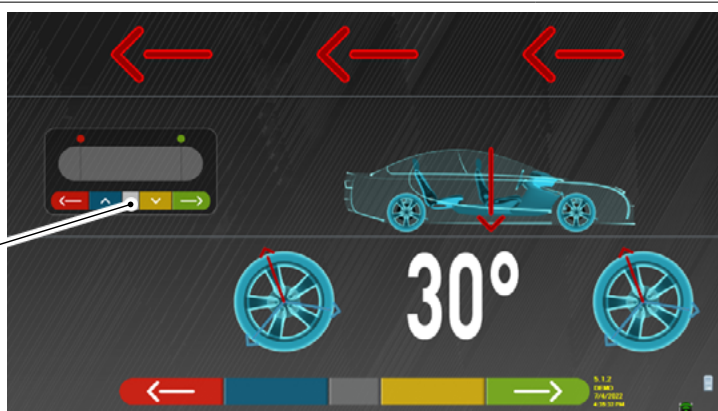
ATTENTION!

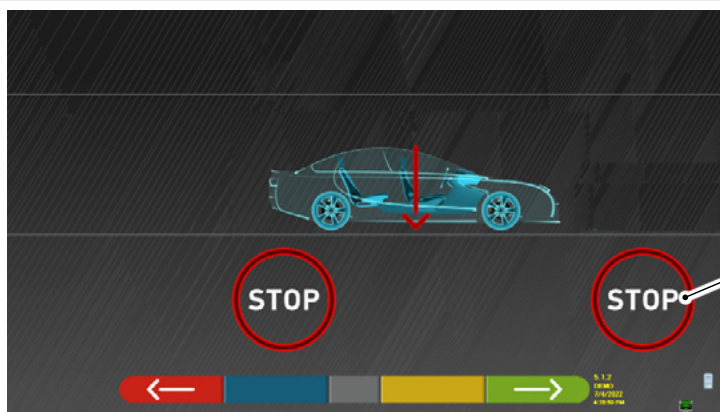
This procedure can be carried out correctly only if STDA35 3-point clamps are used, observing a 30° rotation in accordance with the position of the spokes.

- RELEASE the sensor heads so that they are free to oscillate with the movement of the wheel. Wait for the sensor heads to stop swaying and start moving the vehicle back, very slowly, until the wheel has made a 30° rotation. This rotation can be observed on the spokes of the STDA35 3-point clamps, as shown below:



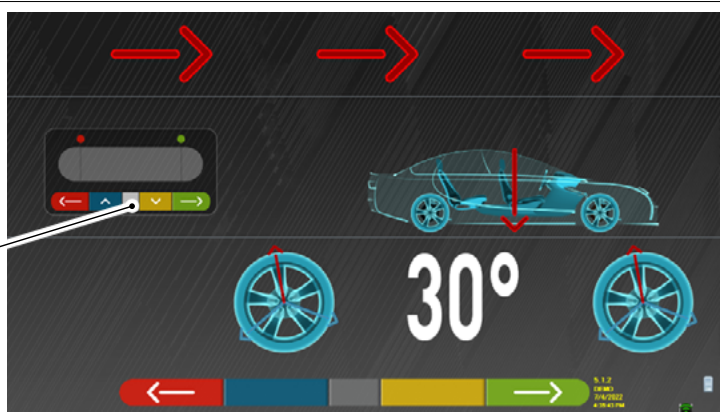
Press the centre key on one of the sensor heads at the point of arrival.





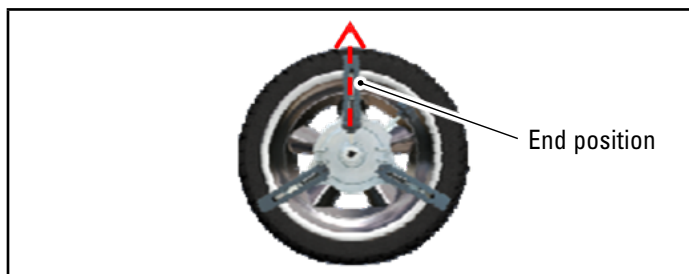
"STOP" is displayed for about three seconds.

- Tap the centre key: the word "STOP" will appear for about three seconds, which is the time it takes for the program to acquire the measurements, then the program shows the following screen.



Press the centre key on one of the sensor heads at the point of arrival.

Advance the vehicle once again until the wheel has rotated another 30° forwards (end point) - the spoke of the clamp is in the upright position again.



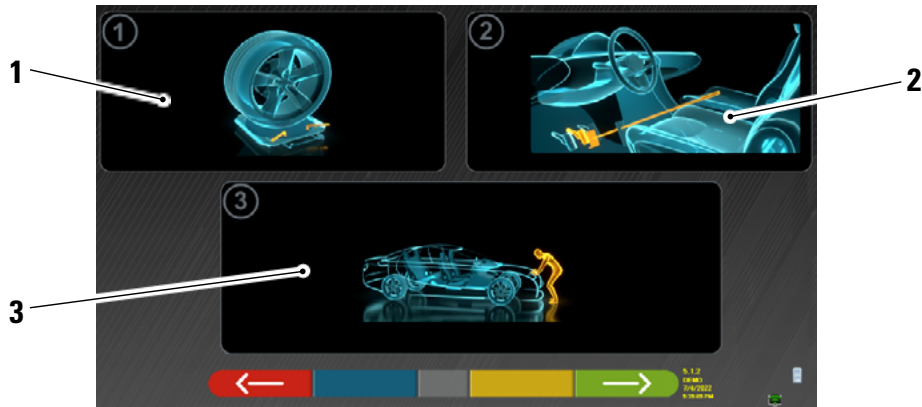
Move the vehicle forward again, until the arrow of the vehicle matches the arrival point (return to the starting position in the centre of the plates), "STOP" is displayed for a few seconds, the measurements are acquired. The push run-out procedure has been performed.



To repeat the operation, having already advanced in the program, it is possible to return to this page by tapping this key and then repeat the operations described above. When the run-out has been performed, the program automatically proceeds to the next step.

7.8 PREPARING FOR MEASUREMENTS

After completing the run-out procedure (Para. 7.7), the vehicle must be prepared for the measurements. The following screen will appear:



1	Unlock the front plates and any rear footboards
2	Brake the wheels with the handbrake and lock the brake pedal with the appropriate tool (this is necessary if steering in order to correctly calculate the camber and caster angles).
3	Position the front and rear of the vehicle. This procedure is required if the vehicle has previously been raised with the suspension released (e.g. running off-centre with the wheels raised).



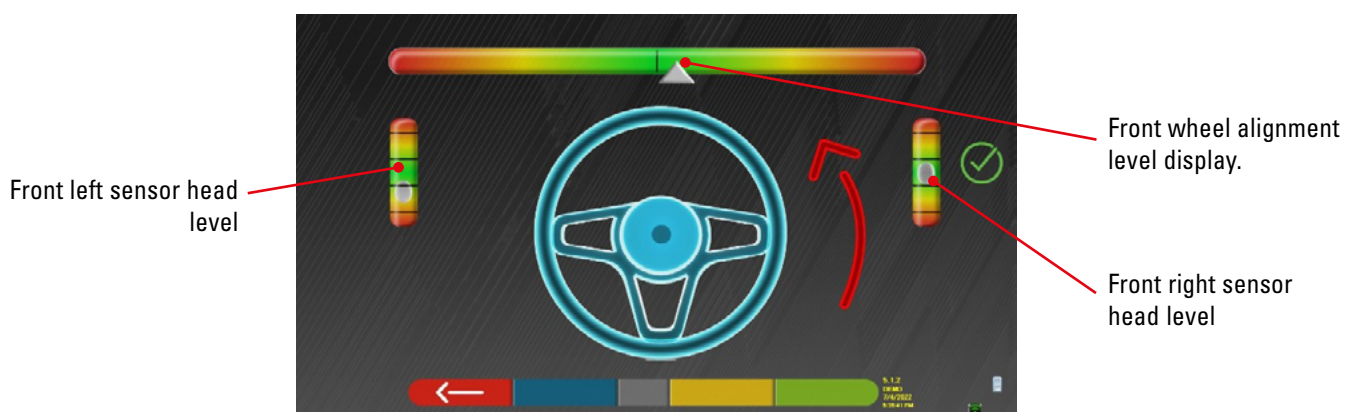
Tap this key to go back to the run-out procedure (Para. 7.7).



Tap this key to continue to the alignment procedure (Para. 7.9).

7.9 VEHICLE ALIGNMENT / DIRECT MEASUREMENTS

Once the vehicle has been prepared for measurements (Para. 7.8), the following screen appears. An alignment and levelling procedure for the sensor heads and the resulting direct angle detection must be carried out:



Carry out the alignment procedure and subsequent direct angle detection:

- turn the steering wheel from left to right, or vice-versa, until the wheels are aligned, that is, until the display level appears in the centre;
- Adjust the front sensor heads until they are level and brake using the clamp knobs. The rear sensor heads must similarly be visually levelled and braked using the clamp knobs.

At the end of the sensor head alignment and levelling operations, a "STOP" sign image appears under the alignment level display: this indicates that the program is acquiring vehicle data measurements.

NOTE:

The vehicle on which the operations are being performed can be equipped with a front spoiler that prevents the sensor heads from communicating with one another. In this case, the special "spoiler" procedure is started automatically.

Following the graphical representation that appears on the screen, the front sensors must be lowered so that the transducers at the end of the arm are under the spoiler. The system acquires the front toe measurement, after which the procedure in the previous alignment and levelling screen is displayed again.

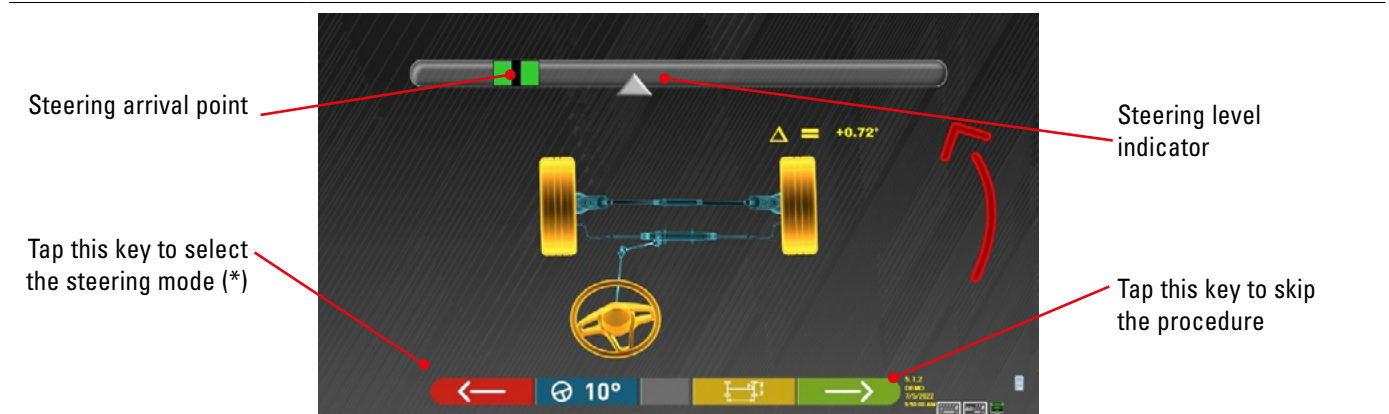
The program will automatically proceed to align and level.

When alignment and levelling are achieved, the "STOP" sign image appears, indicating that the program is acquiring the vehicle data measurements. The program then proceeds automatically.

7.10 STEERING PROCEDURE

Once the alignment procedure is complete (Para. 7.9), the following screen appears; from here, it is possible to carry out the steering procedure needed to determine the following angle measurements:

- Caster - King-pin - Incl.angle



Following the instructions on the screen, turn the steering wheel such as to bring the level of the viewer to the point of arrival highlighted in green, first to the left, then to the right and finally to the centre.

After the wheels have been returned to the centre, the program proceeds automatically and will show the diagnosis page (Para. 7.11).



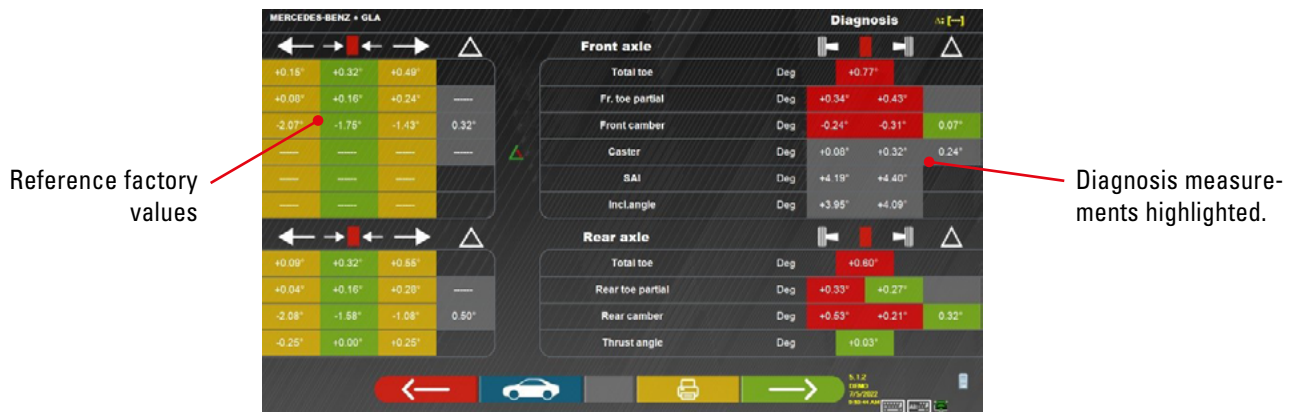
Note: The steering procedure can also be skipped by selecting this key; the values of the measurements indicated above will not be obtained, skipping straight to the diagnosis page (Para. 7.11).

(*) Steering mode for acquisition of caster/king-pin.

	Steering at 10°
	Steering at 20°
	ACKERMANN steering (at 20° with steering geometry)
	Tap this key to display the "chassis diagnosis" (graphic-geometric representation of the axles of the vehicle the operator is working on - Para. 7.15.1).
 Alt+ F2	Tap this key; a page appears to the side where you can enter the MAXIMUM STEERING values (useful for assessing the centring of the steering gear), which must be measured manually by observing the values on the graduated scales on the steering plates. These values will then be indicated in the printed report.

7.11 VEHICLE DIAGNOSIS

Once the steering procedure is complete (Para. 7.10), a page appears showing a summary of the measurements made. The part on the left shows the factory reference values, on the right the diagnosis measurements are shown; the values are highlighted in green if in tolerance, in red if outside the tolerance, in grey if the tolerances are not present.



Tap this key to go back to the steering procedure (Para. 7.10).



Tap this key to display the technical data of the selected vehicle (the model can be changed if it is different).



Tap this key to display and print the diagnosis measurements.



Tap this key to continue with preparation for the adjustment (Para. 7.12).

7.12 PREPARING FOR ADJUSTMENT

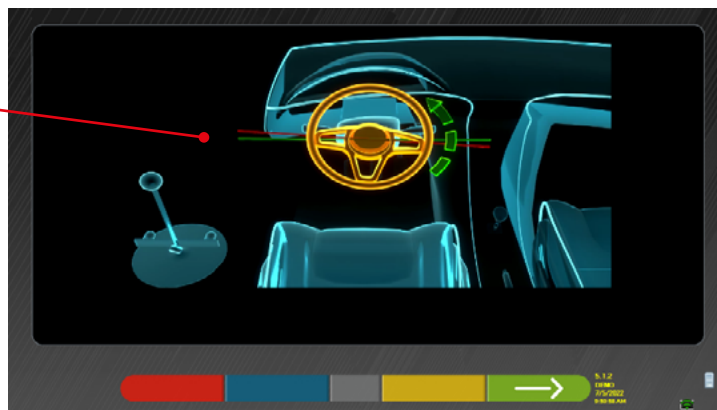


Tap this key on the diagnosis measurement summary page (Para. 7.15), a page appears showing the preparation for adjustment.

Follow the directions that appear on the device to prepare for adjustment.

1. Centre the steering wheel.

2. Mount the steering holder with the appropriate tool and proceed



Tap this key to continue with adjustment of the rear axle (Para. 7.13).

7.13 REAR AXLE ADJUSTMENT



Tap this key on the screen of Para. 7.12 after preparation for adjustment is complete.

The following screen appears.

Measurements of the
rear camber angles.

Measurements of the
rear partial toes.



Thrust angle
measurements.

Adjustment, where permitted, in the following order:

Rear camber - Rear partial toe (this also determines the thrust angle).



Tap this key to run the "Jack-Hold" procedure, adjustment with the wheels raised (Para. 7.14.2).



Tap this key to display additional images (if present) to aid in adjustment (Para. 7.5.3).



Tap this key to display the "chassis diagnosis" (graphic-geometric representation of the axles of the vehicle the operator is working on - Para. 7.15.1).



Tap this key to continue with adjustment of the front axle (Para. 7.14).

7.14 FRONT AXLE ADJUSTMENT



Tap this key on the screen of para. 7.13 after preparation for adjustment is complete.

The recommended angle adjustment order is as follows: CASTER - CAMBER - TOE.

NOTE:

in this step, the caster values are "FROZEN" (they appear on a superimposed grid).

To "unfreeze" these values, it is necessary to:

- with key move the "Adjustment" selection to the caster values and then press (they will now appear without a superimposed grid).

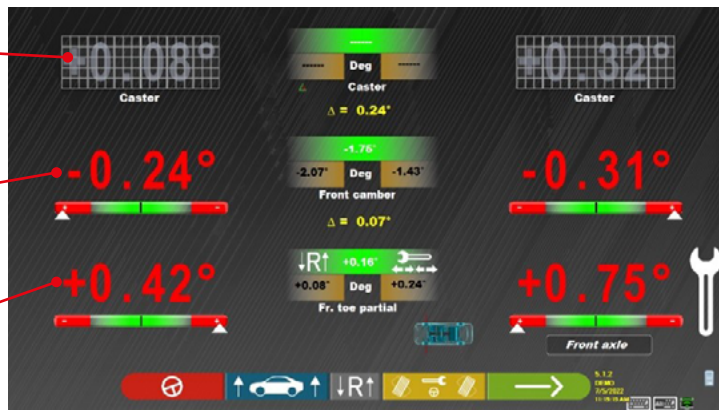
Once the caster values have been adjusted, or if they have not been adjusted and are considered correct, it is advisable to "Refreeze" these values by pressing again.

Then adjust the front axle.

Caster measurements
"Frozen" values.

Front camber
measurements

Front partial toe
measurements.



Tap this key to run the "Jack-Hold" procedure, adjustment with the wheels raised (Para. 7.14.2).



Tap this key to repeat the steering procedure (Para. 7.10)



Tap this key to adjust the front toe with the wheels steered (Para. 7.14.1).



Tap this key to go to the DIAGNOSIS and ADJUSTMENT data summary (Para. 7.15).

NOTE:

The PARTIAL TOE values can be displayed added together in order to obtain the TOTAL TOE.

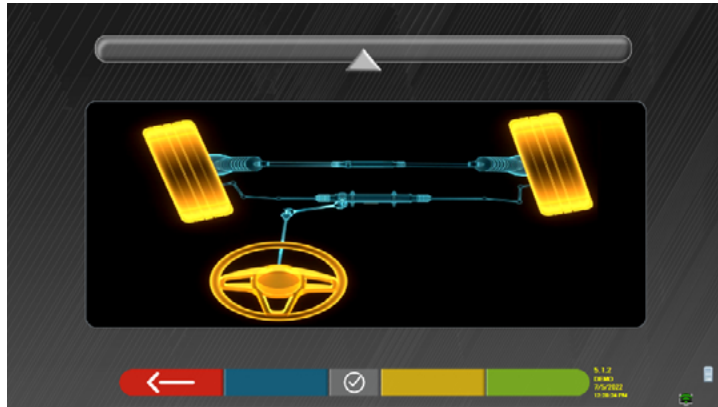
Press the Shift+F5 keys to alternate between the PARTIAL TOE and TOTAL TOE displays.

7.14.1 Adjustment of front toe-in with steered wheels



Tap this key to adjust the front toe with the wheels steered.
The following page is displayed.

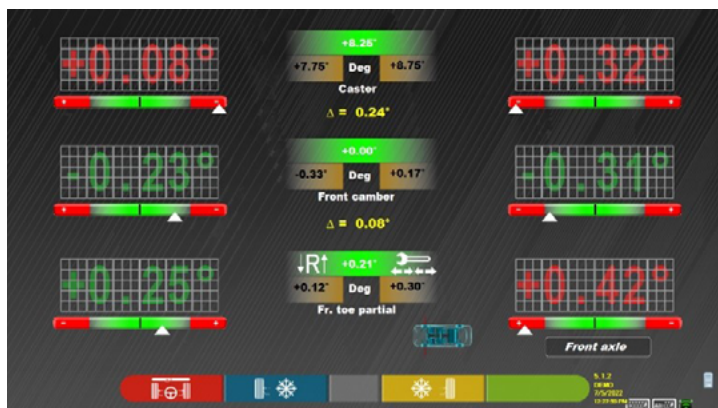
Steer to the left or to the right.



Tap this key to confirm.
The following page is displayed.

Note:

the steering level indicator is displayed only to give the operator feedback on the value, which must remain within the maximum alignment reading (about $20 \div 22^\circ$).



Partial toe adjustment
Press F2 to "release" the left partial toe or press F3 to "release" the right partial toe.



Tap this key at the end of the adjustment to go back to the front adjustment step (para. 7.14).

NOTE:

The program asks the operator to steer back towards the centre before showing the front adjustment page.

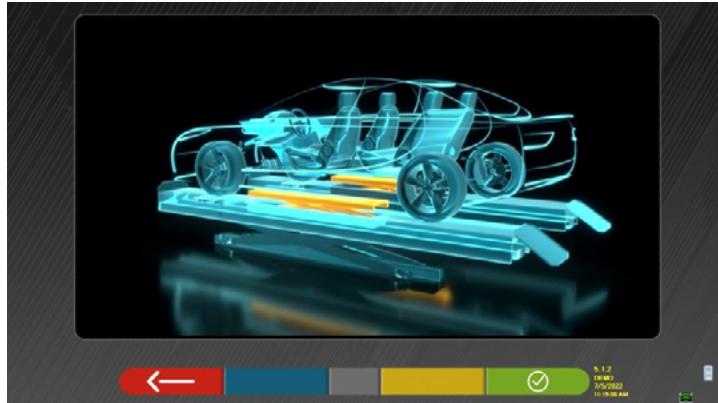
7.14.2 "Jack-Hold" procedure



Tap this key during the adjustment (Para. 7.13 and 7.14) to run the "Jack-Hold" procedure, adjustment with wheels raised.

Follow the visual instructions that appear on the screen.

Raise the vehicle.



With the vehicle raised, tap this key to confirm lifting.
With the vehicle raised it is now possible to perform adjustment.



Tap this key to switch from rear adjustment to front adjustment and vice versa.



This icon is present when the vehicle is raised.
At the end of adjustment, tap the key to lower the vehicle.



Tap this key to switch between rear and front and vice versa.

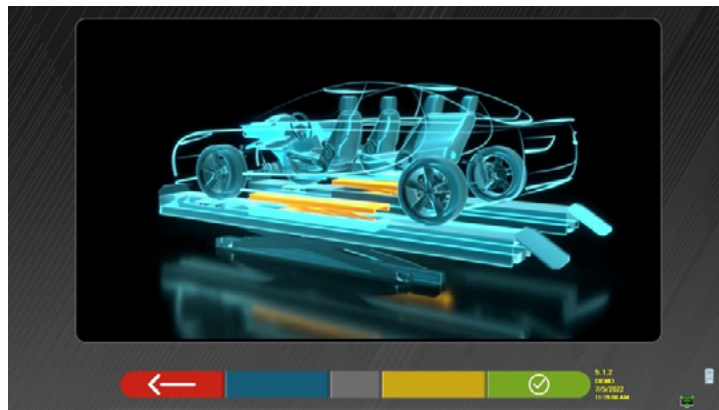
When the adjustment is complete:



Tap this key to lower the vehicle.



Tap this key to check that it is correctly positioned on the indicators for the turn radius/rear steering plates.



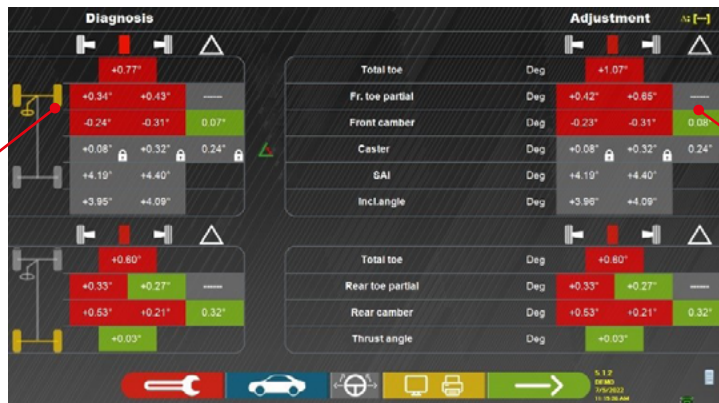
At this stage of adjustment, the program shows the following screen again.

7.15 DIAGNOSIS AND ADJUSTMENT DATA SUMMARY



When front adjustment on the vehicle is complete and after tapping this key, the following screen appears with the Diagnosis and Adjustment data summary

Summary of diagnosis
data



Summary of adjustments
made



Tap this key; the program will open the auxiliary options menu (Para. 7.16).



Tap this key to display the technical data of the selected vehicle (the model can be changed if it is different).



Tap this key; the program opens the "Test Drive" procedure (Para. 7.15.2)



Tap this key; the programme switches to the vehicle and customer data input stage where the tests can be printed and saved (see also Saving "TEq-Link" - Para. 7.19).

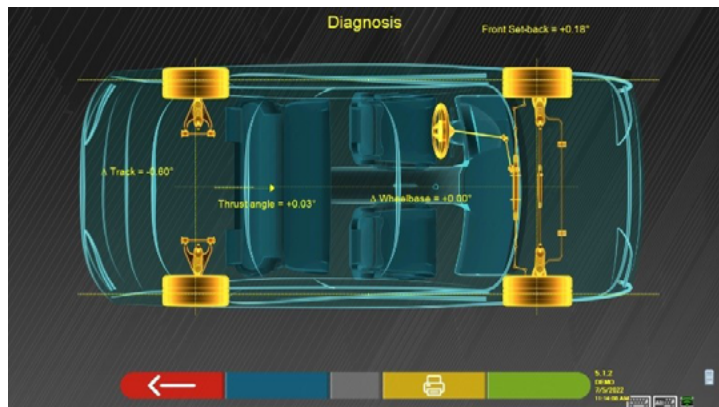


Tap this key to go back to the rear adjustment step (Para. 7.13).

7.15.1 Chassis diagnosis



Tap this key on the Diagnosis summary page and on the Diagnosis and Adjustment summary page; a graphic-geometric representation of the vehicle axes currently being worked on is displayed.



This measurement is made during vehicle alignment (Para. 7.9). Differences in wheelbase and track width and front axle setback are displayed on this page.



Tap this key; the program will allow printing of the "Chassis Diagnosis" measurements.

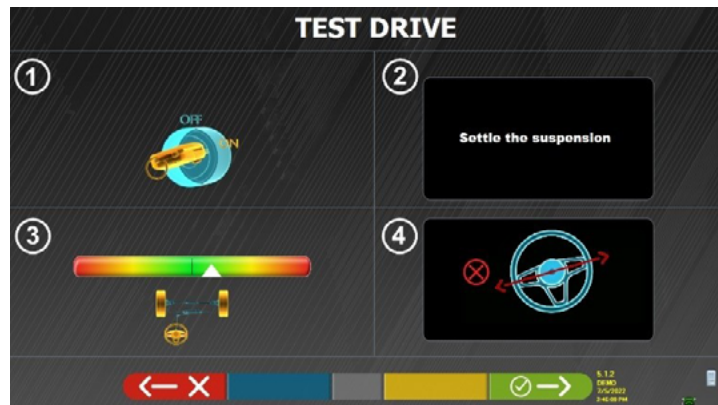


Tap this key to exit and go back to the previous step.

7.15.2 "Test Drive" procedure



Tap this key on the Diagnosis and Adjustment summary page (Para. 7.15). The "Test Drive" (*) procedure is launched to check the correct adjustment of the partial toes, to check accurate adjustment by observing the steering wheel spokes.



NOTE: the possibility to select the "Test Drive" procedure must be set in the "Settings/Procedures" page - Para. 7.2.

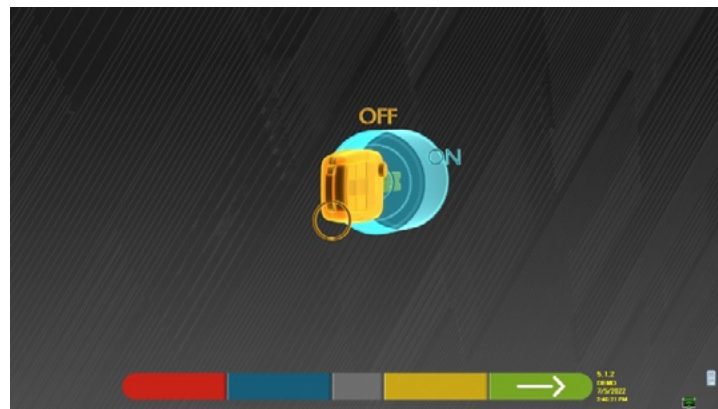
- 1 - Start the vehicle engine
- 2 - Proceed to settle the suspension clearances, turning the steering wheel a little to the left and right
- 3 - Turn the steering wheel very slowly until the cursor is exactly in the centre of the alignment level bar
- 4 - Visually check that the spokes of the steering wheel are positioned correctly in a symmetrical, horizontal or consistent manner with the straight line of the vehicle.



Tap this key in case of a negative outcome; the program will ask to perform the partial toe adjustment procedure again, going back to the Alignment step (Para. 7.9).



Tap this key if the steering wheel spokes are correctly positioned; the program will show the following page.



Turn off the vehicle engine and tap this key to return to the Diagnosis and Adjustment summary (Para. 7.15).

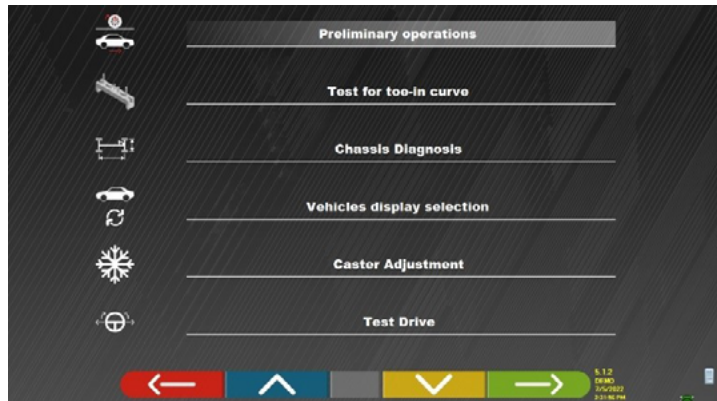
7.16 AUXILIARY FUNCTIONS MENU



F1

Tap this key (on the CONTENTS page, para. 7.154) to perform some auxiliary operations or to be able to repeat some steps of the program if they were not satisfactory or not performed at all.

The following page opens.



PRELIMINARY OPERATIONS

Select to repeat all operations, beginning with the preliminary ones, in order to obtain new measurements (see para. 7.15).

TEST FOR TOE-IN CURVE

Following the illustrations that appear on the screen, the test for the toe-in curve can be adjusted as follows:



Tap this key to:

- adjust the vehicle;
- place the relative tool under the front axle;
- adjust the front partial tips as envisaged by the manufacturer;
- remove the tool from the axle.

The program will go back to the adjustment step

CHASSIS DIAGNOSIS

Select to display the "Chassis diagnosis" (graphic-geometric representation of the axles of the vehicle on which the operator is working - Para. 7.15.1).

SHOW VEHICLE SELECTION

Opens the vehicle selection page (Para. 7.4.1) and allows for a different vehicle to be selected.

CASTER ADJUSTMENT

Select to adjust the caster values (during the front chassis adjustment, they are normally "frozen" - Para. 7.13).

TEST DRIVE

Select to open the "Test Drive" procedure (Para. 7.15.2)



Turn off the vehicle engine and tap this key to return to the Diagnosis and Adjustment summary (Para. 7.15).

7.17 PRINTING THE MEASUREMENTS

Tap this key on the "CONTENTS" page (Para. 7.15); the following screen is displayed

Adjustment

Customer	GIOVANNI FORNENGO
V.I.N.	
Miles	
Company	
Lic number	AW355FX
Vehicle Key	
Chassis n.	
Note	

- Vehicle data and entry of customer data



Tap this key to go back to the “CONTENTS” page (Para. 7.15).

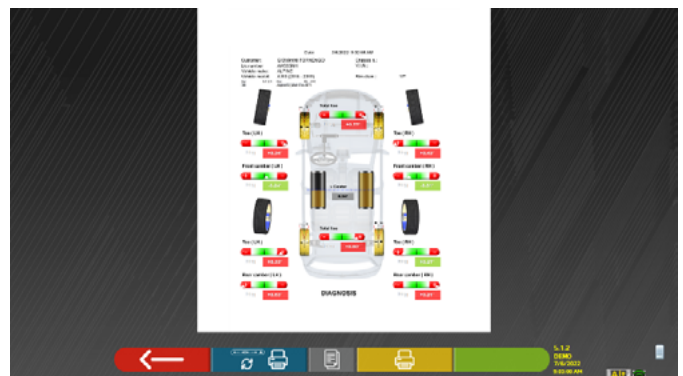


Tap this key; the test is saved in the "customer database" of performed tests. The data contained in the "customer database" can be accessed from the home page (Para. 7.1).

Tap this key; a preview of the printout of the performed test will be shown (see the examples below).



Tap this key to end the test and go back to the home page.

[illegible]

Tap this key to switch between tabular (left example) and graphical (right example) printing

Tap this key to produce the print report.

Print example key:

- 1 - Manufacturer's logo
- 2 - Space reserved for customisation of workshop data
- 3 - Date and time of the test
- 4 - Identification data of the tested vehicle and owner
- 5 - Factory data of the vehicle being tested
- 6 - Diagnosis data of the vehicle being tested
- 7 - Data of the vehicle being tested after adjustment
- 8 - Front axle data table
- 9 - Rear axle data table
- 10 - Space reserved for notes that can be entered manually

7.17.1 Example of tabular printing

1	2	3	7
Customer: Johnson Tally	Date: 1/15/2019 4:16:10 PM	V.I.N.: 3RERA 3.2 JTS (2005 - 2011)	Rim diam.: 16"
Reg. number FS258MB	Chassis n.: 3RERA 3.2 JTS (2005 - 2011)	Vehicle: 3RERA 3.2 JTS (2005 - 2011)	
Vehicle make: ALFA ROMEO			
Svc: 99.44.31.0			
Fw: RLE -			
DB: AlignerS9_Main Rev.6915			
4	5	6	7

7.17.2 Example of tabular printing for trucks

1

4

Customer: Mario
Lic.number: AW342TR
Vehicle make: MACK E-Z
Miles: 150000
V.I.N.:
Sw: 5.1.2.1 Fw: FL - FR 5.0
DB: AlignerS9_Truck Rev.8171

2

5

6

3

7

Date: 7/6/2022 10:51:09 AM
Company: TRUCK SMITH
Chassis n.:
Vehicle model: ALL * (--- - ---)
Rim diam. 22.5"
Vehicle Key:

Target values

Ax: 1	L/R	<=>	<=>	=>	<=>	<=>	=>	Δ
Total toe	Deg	+0.04°	+0.08°	+0.12°				
Partial toe	Deg	+0.02°	+0.04°	+0.06°	+0.02°	+0.04°	+0.06°	
Camber	Deg	-0.66°	+0.00°	+0.66°	-0.66°	+0.00°	+0.66°	-----
Caster	Deg	+3.00°	+4.00°	+5.00°	+3.00°	+4.00°	+5.00°	-----
SAI	Deg	-----	-----	-----	-----	-----	-----	
Incl.angle	Deg	-----	-----	-----	-----	-----	-----	
Set-back	Deg	-0.05°	+0.00°	+0.05°				

Diagnosis

Lh	<=>	Rh	Δ

Adjustment

Lh	<=>	Rh	Δ

Ax: 2

L/R	<=>	<=>	=>	<=>	<=>	=>	Δ
Total toe	Deg	-0.50°	+0.00°	+0.50°			
Partial toe	Deg	-0.25°	+0.00°	+0.25°	-0.25°	+0.00°	+0.25°
Camber	Deg	-0.70°	+0.00°	+0.70°	-0.70°	+0.00°	+0.70°
Thrust angle	Deg	-0.04°	+0.00°	+0.04°			
Scrub-angle	Deg	-0.04°	+0.00°	+0.04°			
Offset axle	Deg	-0.04°	+0.00°	+0.04°			
Set-back	Deg	-0.05°	+0.00°	+0.05°			

Ax: 3

L/R	<=>	<=>	=>	<=>	<=>	=>	Δ
Total toe	Deg	-0.50°	+0.00°	+0.50°			
Partial toe	Deg	-0.25°	+0.00°	+0.25°	-0.25°	+0.00°	+0.25°
Camber	Deg	-0.70°	+0.00°	+0.70°	-0.70°	+0.00°	+0.70°
Thrust angle	Deg	-0.04°	+0.00°	+0.04°			
Scrub-angle	Deg	-0.04°	+0.00°	+0.04°			
Offset axle	Deg	-0.04°	+0.00°	+0.04°			
Set-back	Deg	-0.05°	+0.00°	+0.05°			

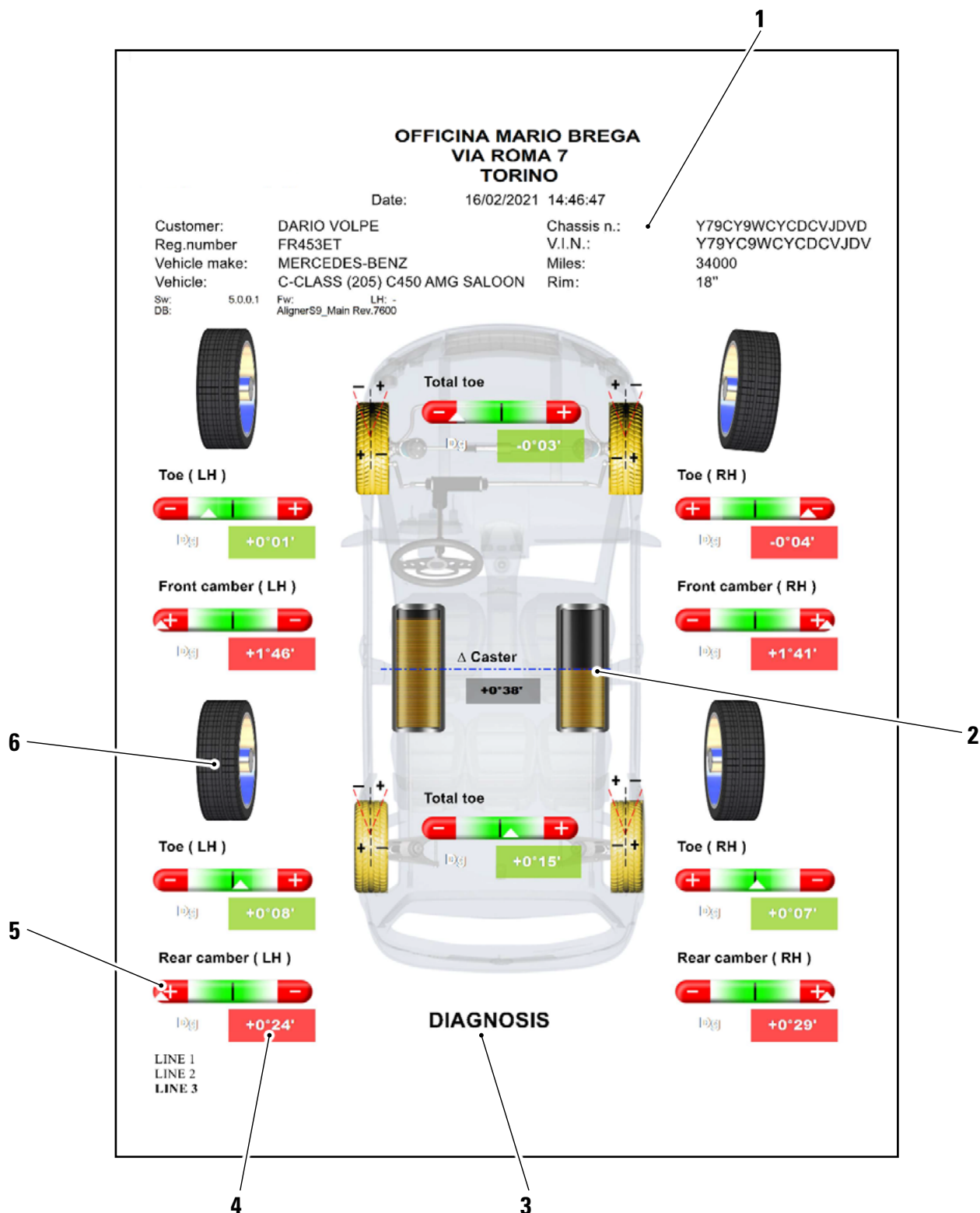
8

Note:

Print example key:

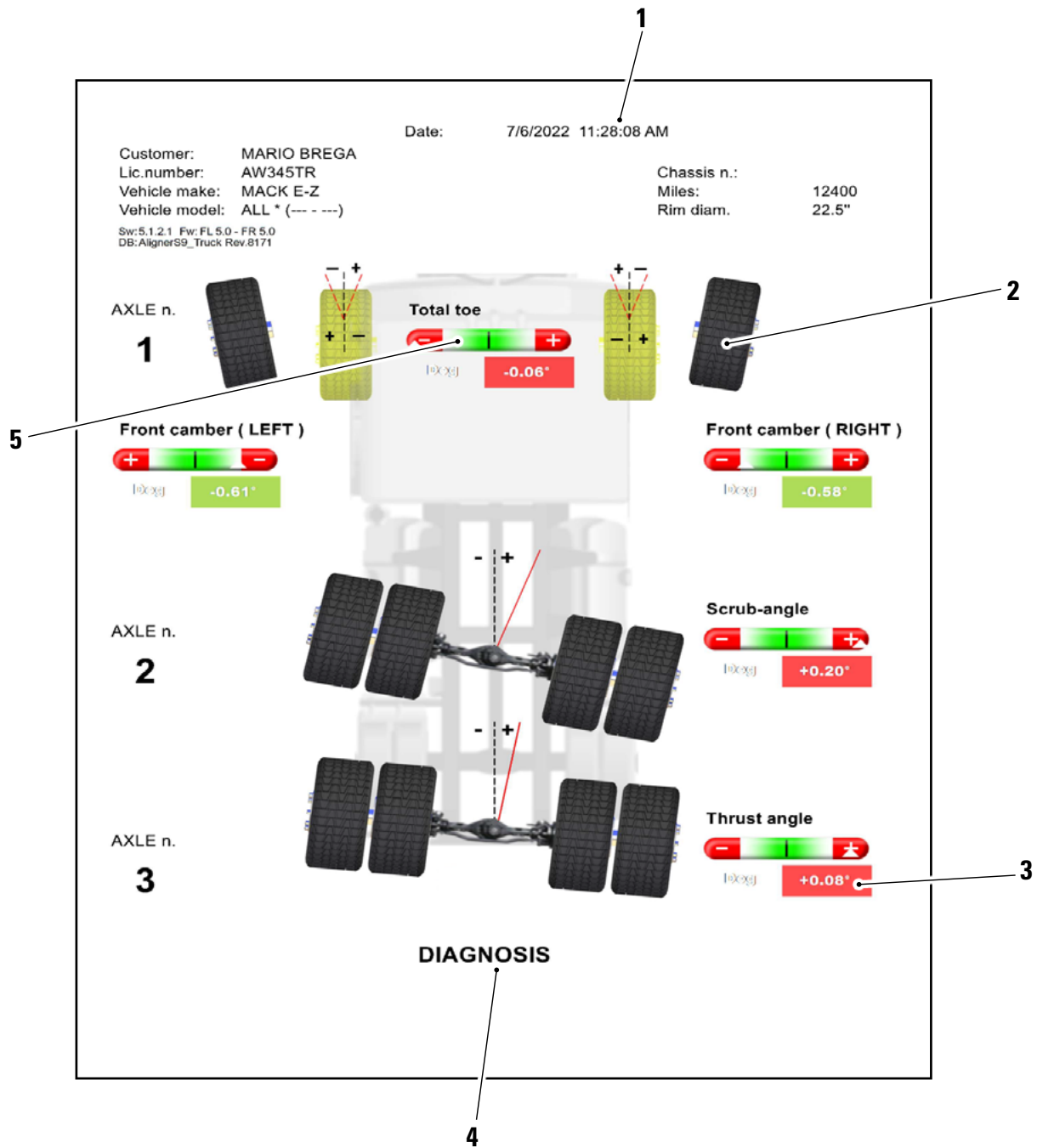
- 1 - Manufacturer's logo
- 2 - Space reserved for customisation of workshop data
- 3 - Date and time of the test
- 4 - Identification data of the tested vehicle and owner
- 5 - Factory data of the vehicle being tested
- 6 - Diagnosis data of the vehicle being tested
- 7 - Data of the vehicle being tested after adjustment
- 8 - Space reserved for notes that can be entered manually

7.17.3 Graphic print example



1	Date/time; Vehicle data and customer data
2	Graphic representation of the left/right caster difference
3	Indication of the diagnosis and adjustment measurements
4	Indication of the diagnosis and adjustment measurements indicated in red/green according to the tolerances
5	Tolerance bar
6	Graphical representation of the wheel based on tolerance values

7.17.4 Example of graphic printing for trucks

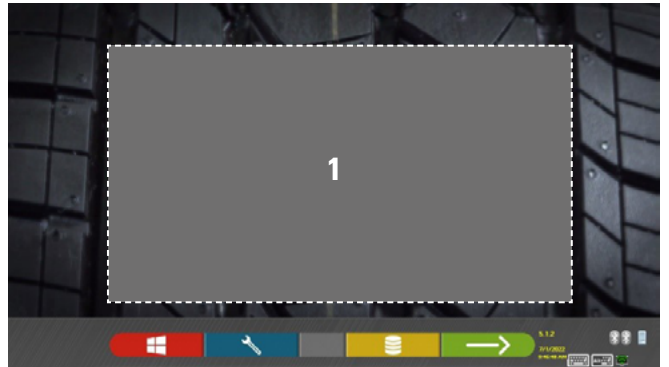


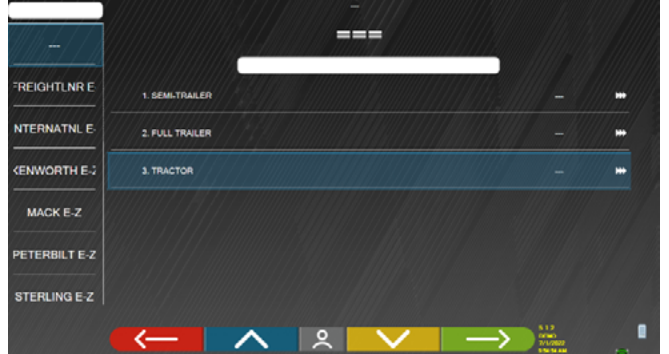


1	Date/time; Vehicle data and customer data
2	Graphical representation of the wheel based on tolerance values
3	Value indicated in red/green according to the tolerance
4	Indication of the diagnosis and adjustment measurements indicated in red/green according to the tolerances
5	Tolerance bar

7.18 TRUCK DIAGNOSIS AND ADJUSTMENT


Some examples of heavy vehicle adjustment procedures are shown below. When one of these vehicles is selected from the database, it is necessary to perform the operations described in the following chapters.

7.18.1 Adjustment of a 3-axle tractor - 1 steering axle

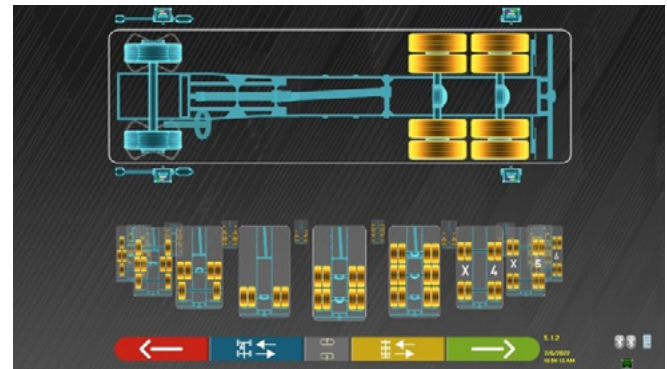
<ul style="list-style-type: none"> From the first page of the program 1 (Logo), press F4 to access the vehicle selection from the Database. 	
<ul style="list-style-type: none"> Select the TRUCK group. Press F4 to continue. 	
<ul style="list-style-type: none"> From the "TRUCK" database, select a tractor with 1 steering axle and 2 driving axles, or select a general truck (the first one in the list). Press F4 to continue. 	
<ul style="list-style-type: none"> Select "Tractor" and press F4 to continue. 	

- Select "Tractor 6x4", for example (6 wheels - 4-wheel drive).
- Press F4 to continue.

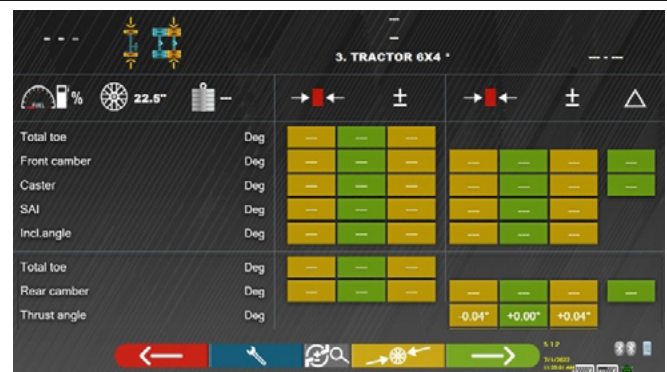


- Press F4 to confirm the selected 3-axle tractor. It is possible to change the rear axle (2nd or 3rd) from which the adjustment starts to use it as the 2nd axle of the main vehicle. It is necessary to press F5 .

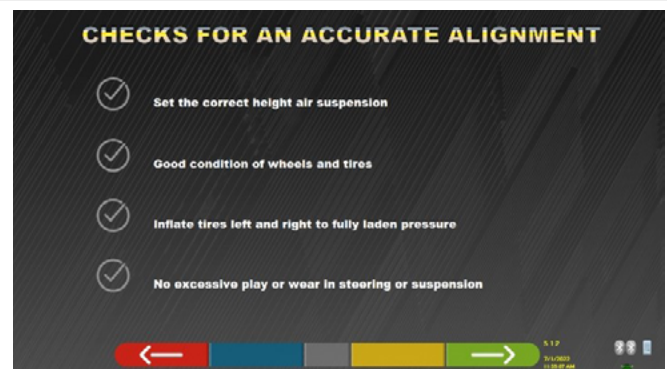
Note: it is still possible to change the type of tractor by modifying the number and the layout of the axles with F2 and F3, or by tapping the silhouette at the bottom.



- A screen appears with the measurements and tolerances provided by the manufacturer. The following data refers to the 1st and last axles.
- Tap the axle in the silhouette in the top left corner to view the relative data.
- Press F4 to continue.



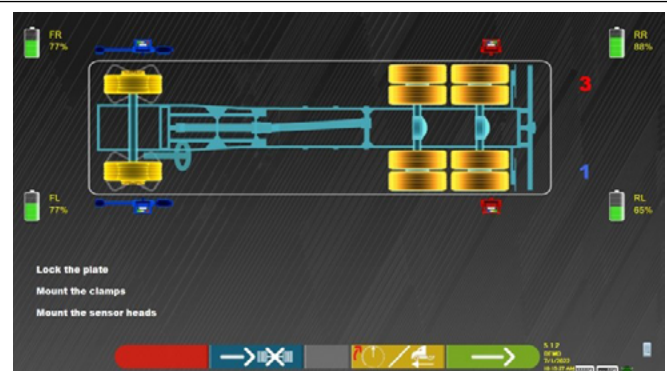
- An instruction page appears, suggesting the operations to perform to prepare the adjustment; wait for the next page to appear automatically or press F4 to continue.



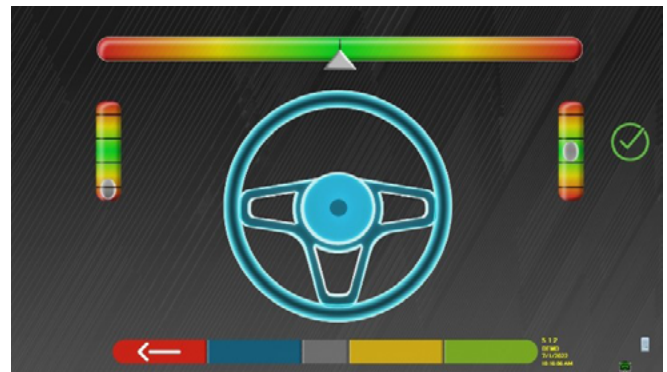
- Mount the front sensor heads on the front axle.
- Mount the rear sensor heads on the 2nd rear axle.
- (the front sensors are normally illustrated in BLUE, the rear ones in red).
- Press F4 to continue.

Note: the compensation procedure can be performed during the next step. However, it can be skipped by using the STDA92 clamps.

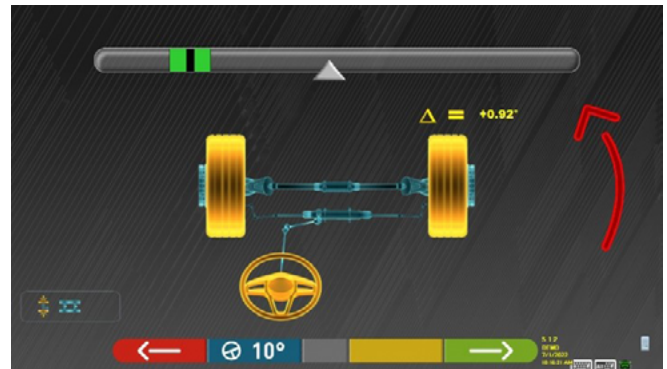
NOTE: the entire compensation procedure can be disabled (settings in parameter configuration - Para. 7.2).



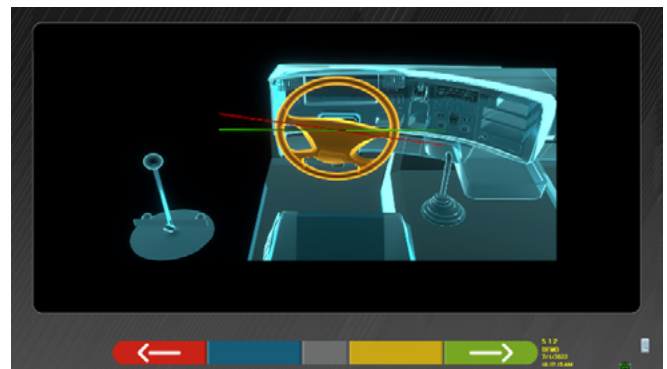
- Turn the steering wheel until the wheels are aligned, i.e. until the display level appears perfectly centred.
- Adjust the front sensor heads until they are level and brake them with the appropriate knobs.
- Wait for the next page to be displayed automatically.



- Perform the steering procedure following the indicator on the screen, first to the left, then to the right, and lastly at the centre.
- The steering procedure can also be skipped by pressing F4; in this case, the caster data will not appear.



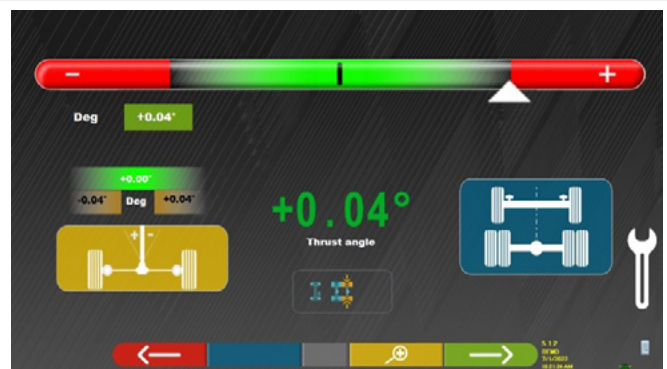
- Centre the steering wheel and/or centre the steering box.
- Mount the steering support with the special tool.
- Wait for the next page to be displayed automatically or press F4 to continue.



If possible and necessary, adjust the rear thrust angle.

Note: on this page and on all pages where the adjustable angles are indicated, tap "Ins" to display the table shown below, which determines the thickness to be entered as the angle changes.

- Press F4 to continue.



- Make a note of the thicknesses and press F1 to go back to the previous page.

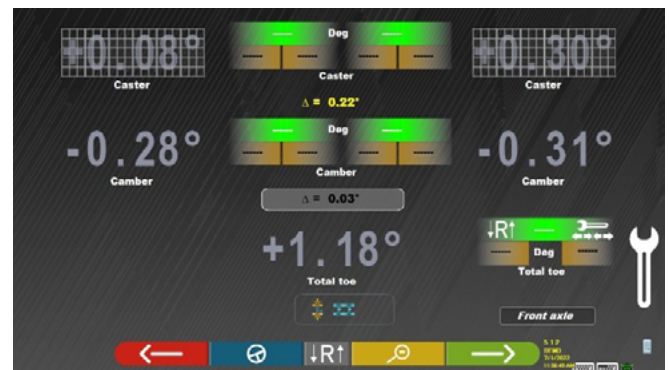


With F3, it is possible to increase and decrease the partial toe values, as well as to display the total toe and camber.

- Press F4 to continue.
- Tap Shift +F5 to display the partial toe values in zoom mode and then Shift +F5 again to display them in normal mode.

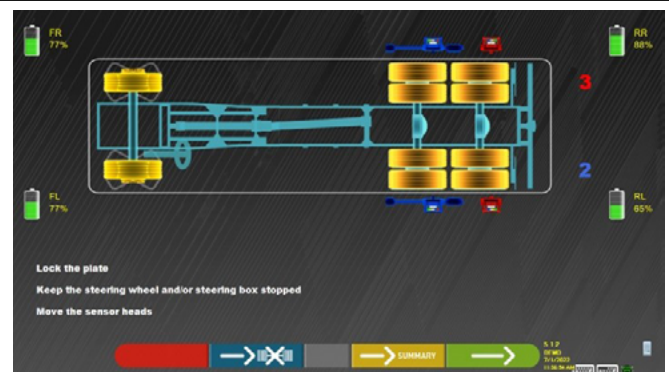


- Adjust the front axle, the caster, the camber and the toe where possible and necessary.
- Press F4 to continue.
- Press F2 to repeat the steering procedure or F1 to go back to the rear adjustment step.

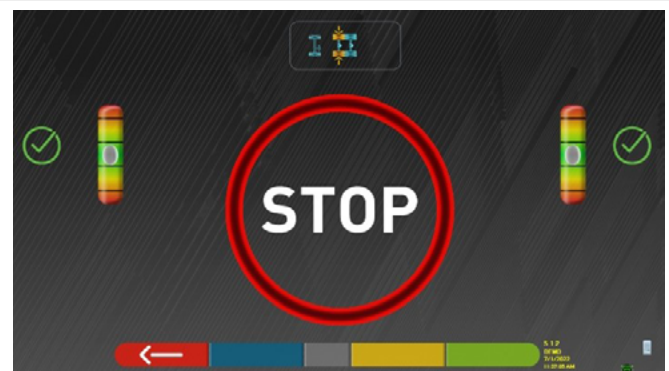


- Move the front sensor heads to the 1st rear axle, press F4 to continue.
- Important: hold the steering wheel and/or the steering box still.

Note: The adjustment step for this axle can be skipped by pressing F2, or all other axles can be skipped by going directly to the final results page by pressing F3.

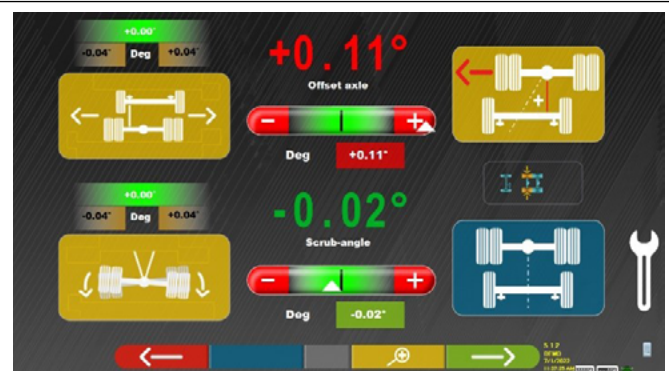


- Adjust only the front sensor heads until they are level and brake them with the appropriate knobs. Leave the rear sensor heads in their position.
- Wait for the next page to be displayed automatically.

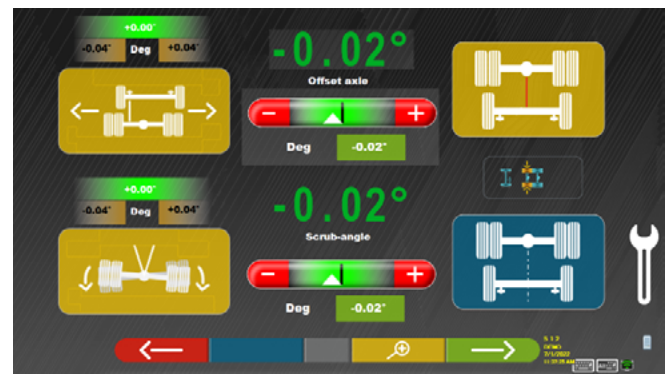


- Adjust the "ROTATION" angle referring to the front axle, as shown in the figure opposite.

In the example opposite, the 1st rear axle must be rotated counter-clockwise.



- When the adjustment is complete, press F4 to continue.

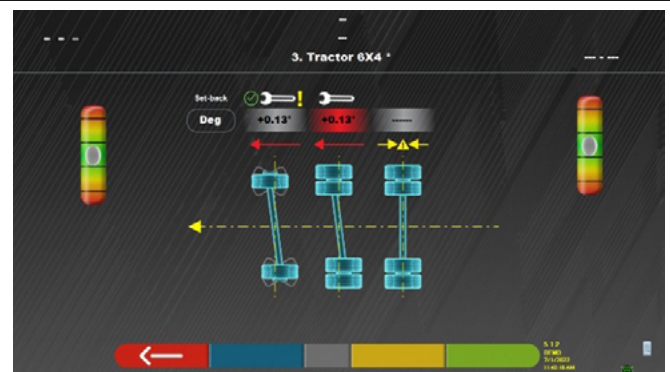


- With F3, it is possible to increase and decrease the "ROTATION" values and display the total toe and camber.
- Press F4 to continue.



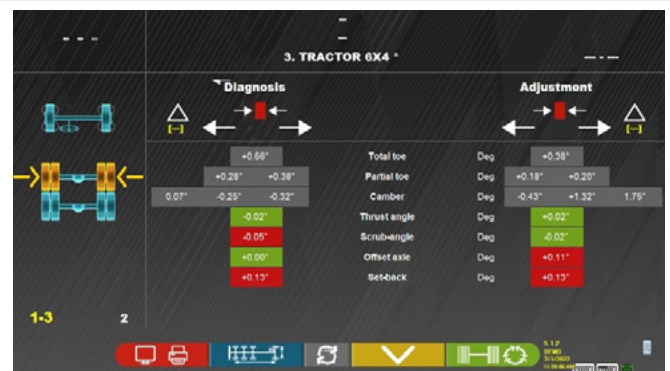
- To adjust the set-back in real time ("Set-Back LIVE") while adjusting an axle, tap the Alt key and another key sequence will appear.
- Press F3 to display the figure opposite, showing the set-back angles in real time.
- Once the angle has been adjusted, press F1 to exit.

The operator will be asked to align the wheels again before continuing.

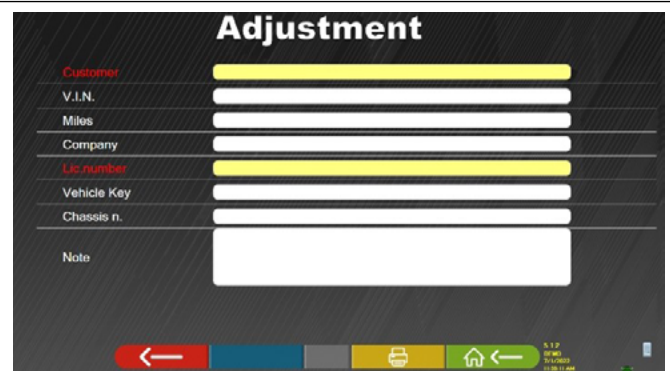


- The final summary page containing the diagnosis and adjustment data will appear.
- Press F1 to access the page from which the diagnosis and adjustment data can be printed or saved.
- Press F2 to display the graphic page with the set-back data.
- Press F3 to select and view the data of the highlighted axle.
- Press F4 to select the highlighted axle to be repeated.

Attention: If the front axle is adjusted again, the rear axles must be adjusted again too, as they refer to the front one.



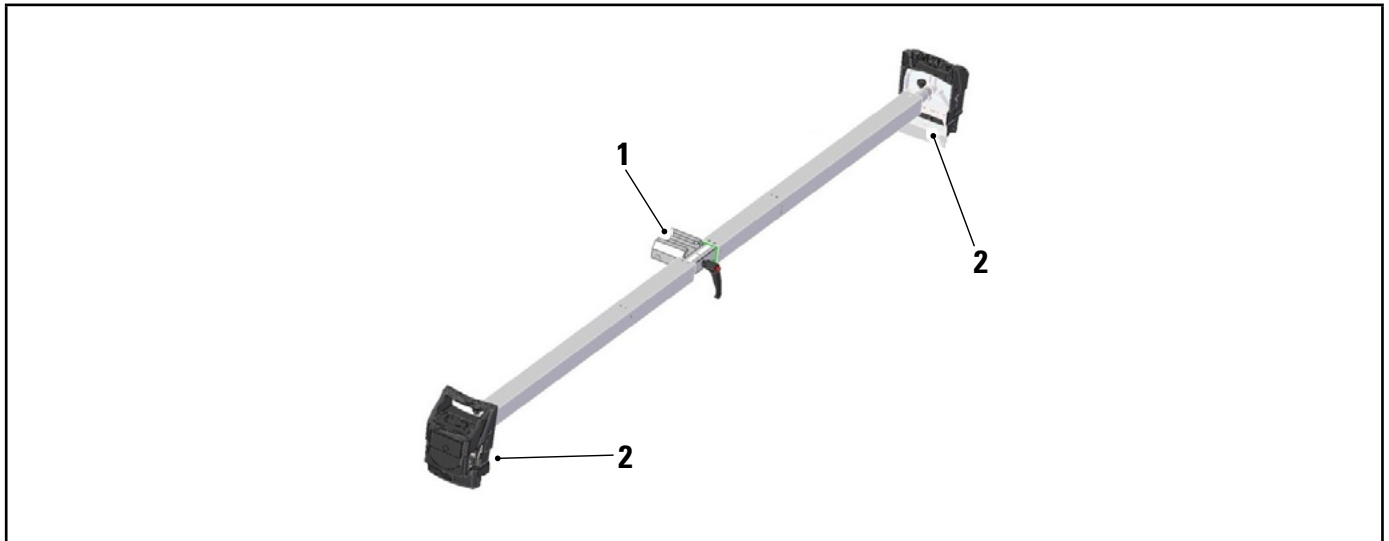
- Press F1 to open the page to the side, where it is possible to print the diagnosis and adjustment data with F3 or save it in the customised database with F2.
- Press F4 to go back to the introductory page (Logo).



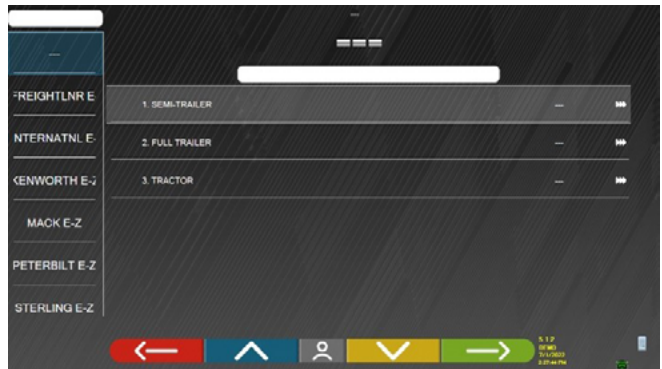

7.18.2 Adjustment of a 3-axle semi-trailer

IMPORTANT NOTE:

For this type of adjustment, the STDA49N adapter kit is necessary to align the trailer.

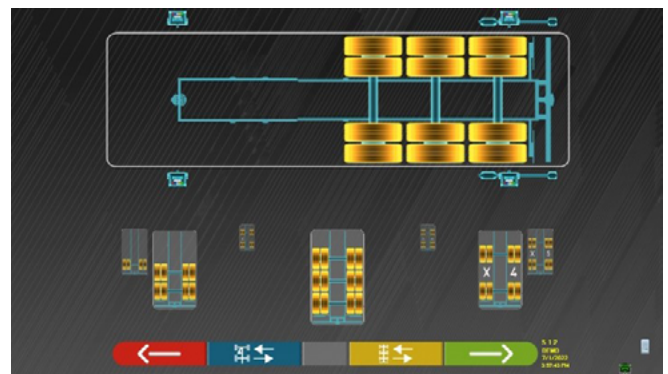


1	STDA49N adapter to align the trailer
2	Pair of "rear" sensor heads

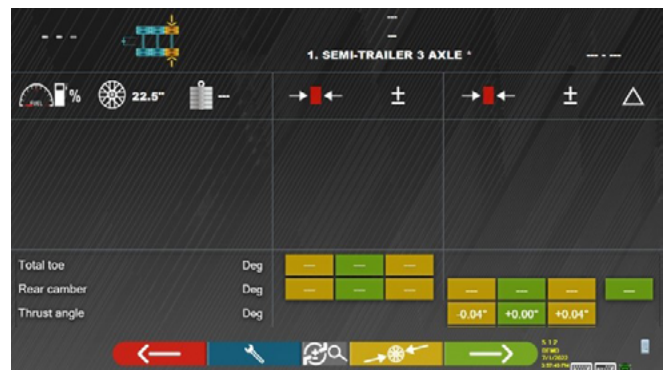
<ul style="list-style-type: none"> Select a semi-trailer from the database. 	 <p>The screenshot shows a software interface with a list of vehicle types on the left: 'FREIGHTLINER', 'INTERNATIONAL', 'KENWORTH', 'MACK', 'PETERBILT', and 'STERLING'. On the right, there is a table with three rows: '1. SEMI-TRAILER', '2. FULL TRAILER', and '3. TRACTOR'. The '1. SEMI-TRAILER' row is highlighted.</p>
<ul style="list-style-type: none"> Select a 3-axle semi-trailer. 	 <p>The screenshot shows a software interface titled '1. Semi-Trailer'. It has a list of axle configurations: '1 AXLE', '2 AXLE', and '3 AXLE'. The '3 AXLE' option is highlighted.</p>

- Press F4 to confirm the selected 3-axle semi-trailer.

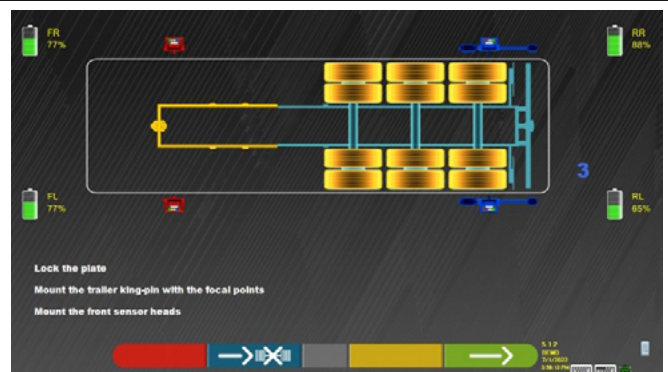
Note: The selected number of axles can still be changed with the key or with F3.



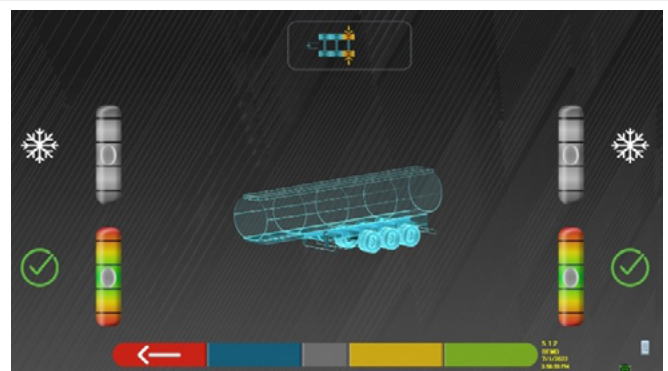
- A screen appears with the measurements and tolerances provided by the manufacturer. The data indicated below refers to the axle highlighted in the top left corner. Tap the top left corner of the screen to view the data of the other axles.
- Press F4 to continue.



- Install the STDA49N adapter to align the trailer.
- Mount the front sensor heads on the last semi-trailer axle.
- Press F4 to continue.



- Adjust the front sensor heads until they are level and brake them with the appropriate knobs.
- Wait for the next page to be displayed automatically.

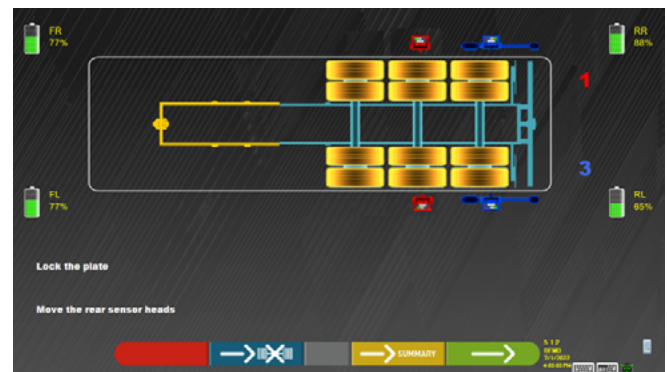


- Adjust the camber, the toe and the thrust angle where possible and necessary.
- Press F4 to continue.



- Mount the rear sensor heads on the 2nd rear axle (the front sensors are normally illustrated in BLUE, the rear ones in red).
- Remove the trailer alignment adapter kit
- Press F4 to continue.

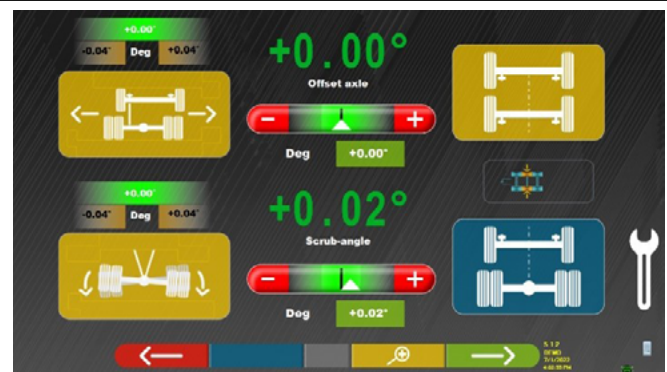
Note: The adjustment step for this axle can be skipped by pressing F2, or all other axles can be skipped by going directly to the final results page by pressing F3.



- Adjust only the front sensor heads (mounted on the last rear axle) until they are level and brake them with the appropriate knobs. Leave the front sensor heads in their position.
- Wait for the next page to be displayed automatically.



- Adjust the "ROTATION" angle referring to the front axle, as shown in the figure opposite.

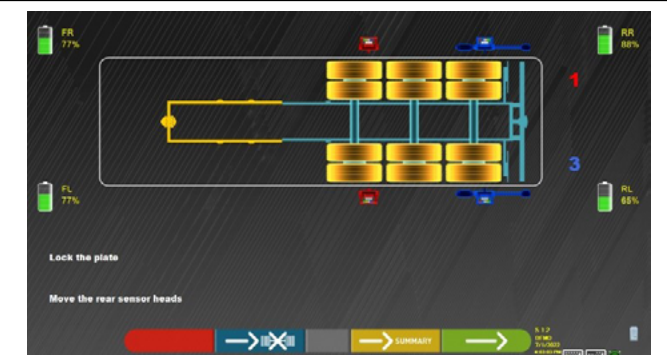


- With F3, it is possible to increase and decrease the ROTATION angle values, as well as to display the toe and camber.
- Press F4 to continue.

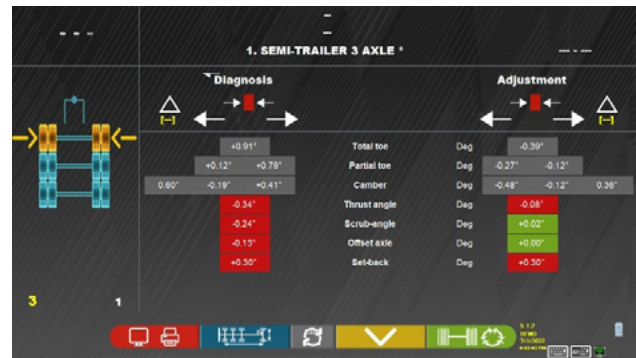


- Now adjust the first rear axle as done for the 1st.
- Move the rear sensor heads from the 2nd axle to the 1st, press F4.
- Level the sensor heads and adjust the SCRUB angle, when finished, press F4.

Note: The adjustment step for this axle can be skipped by pressing F2, or all other axles can be skipped by going directly to the final results page by pressing F3.

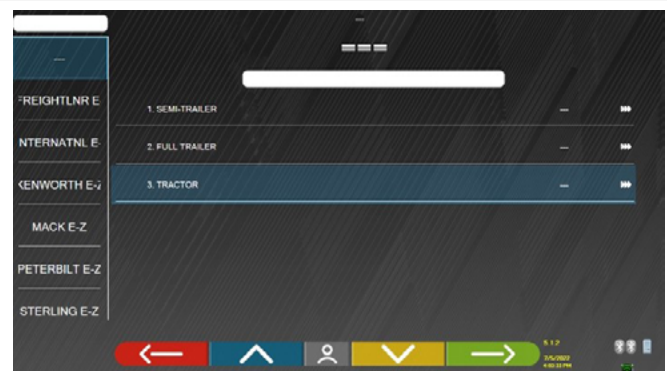


- The final summary page containing the diagnosis and adjustment data will appear to the side.
- Press F1 to open the page where it is possible to print the diagnosis and adjustment data with F2 or save it in the customised database with F3.



7.18.3 Adjustment of 3-axle tractor - 2 steering axles

- Select a tractor from the database.

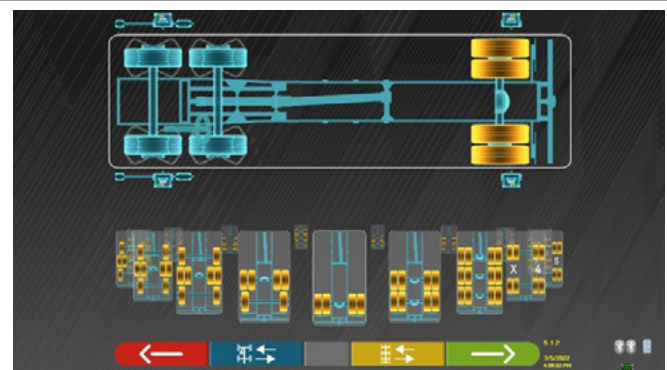


- Select a tractor with 2 steering axles.

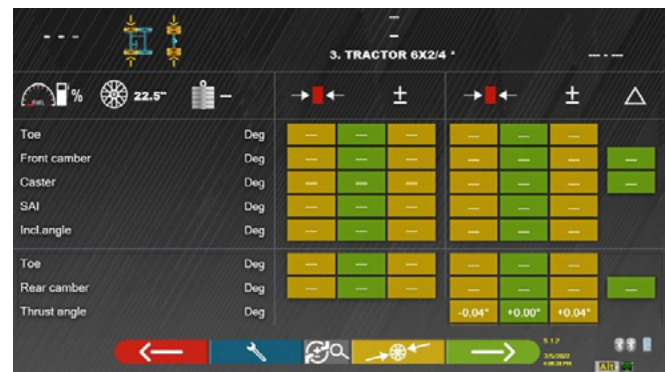


- Press F4 to confirm the selection of the tractor with two steering axles.

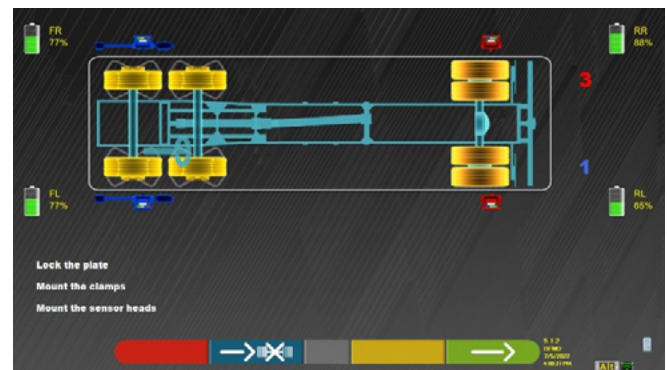
Note: The selected number of rear axles can be changed with the key or with F3.



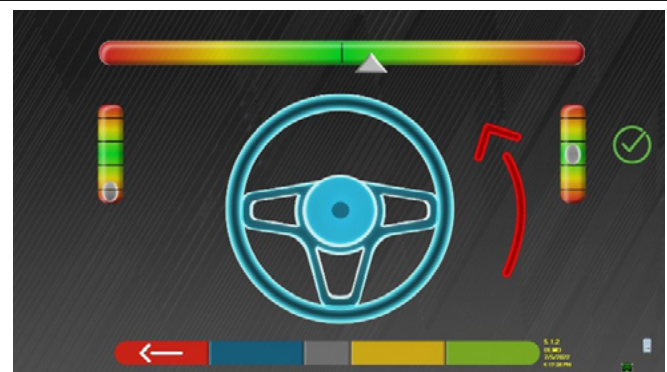
- A screen appears with the measurements and tolerances provided by the manufacturer.
- The data indicated refers to the 1st and last axles.
- Tap the desired axle in the silhouette in the top left corner to view the relative data.
- Press F4 to continue.



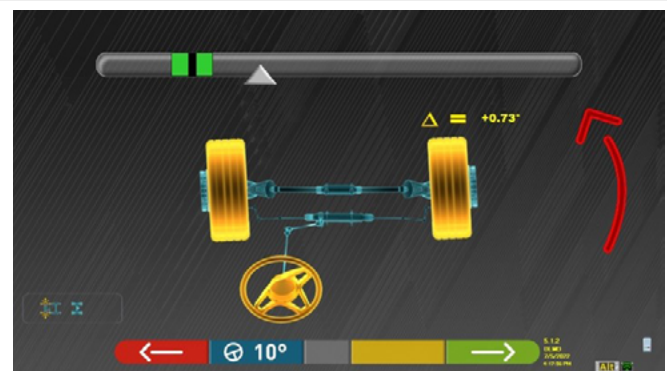
- Mount the front sensor heads on the 1st front axle.
- Mount the rear sensor heads on the rear axle (the front sensors are normally illustrated in BLUE, the rear ones in red).
- Press F4 to continue.



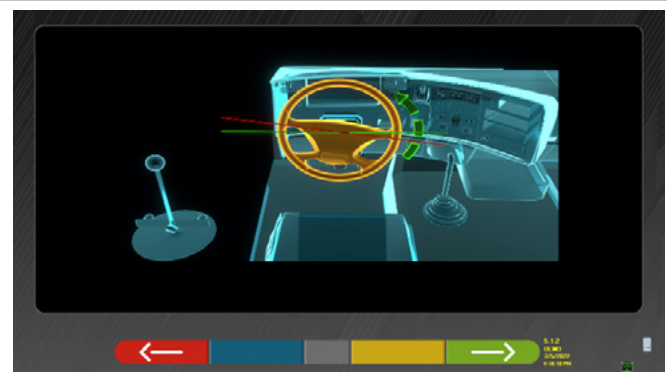
- Turn the steering wheel until the wheels are aligned, i.e. until the display level appears perfectly centred.
- Adjust the front sensor heads until they are level and brake them with the appropriate knobs.
- Wait for the next page to be displayed automatically.



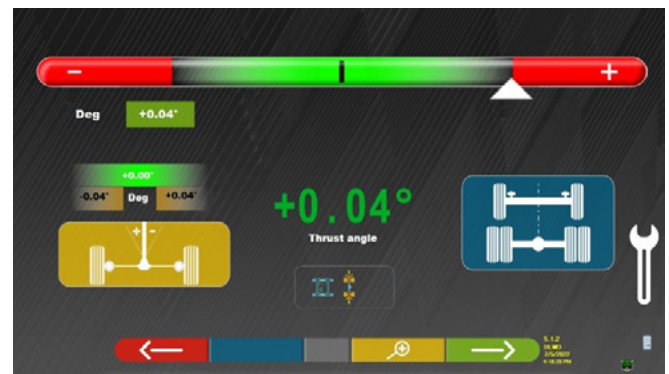
- Perform the steering procedure following the indicator on the screen, first to the left, then to the right, and lastly at the centre.
- The steering procedure can also be skipped by pressing F4; in this case, the toe data will not appear.



- Centre the steering wheel and/or centre the steering box.
- Mount the steering support with the special tool.
- Wait for the next page to be displayed automatically or press F4 to continue.



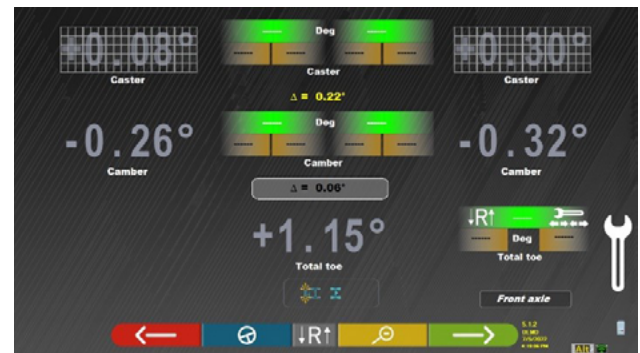
- If possible and necessary, adjust the rear thrust angle.
- Press F4 to continue.



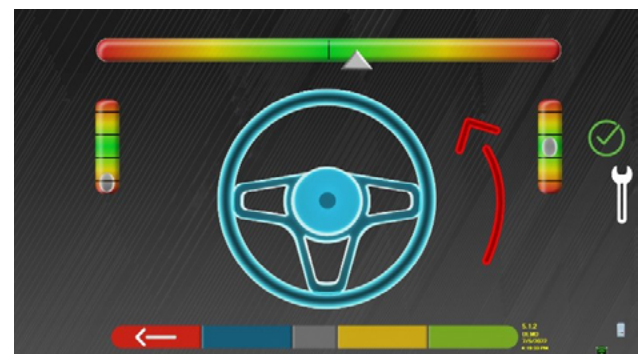
- With F3, it is possible to increase and decrease the partial toe values, as well as to display the total toe and camber.
- Press F4 to continue.



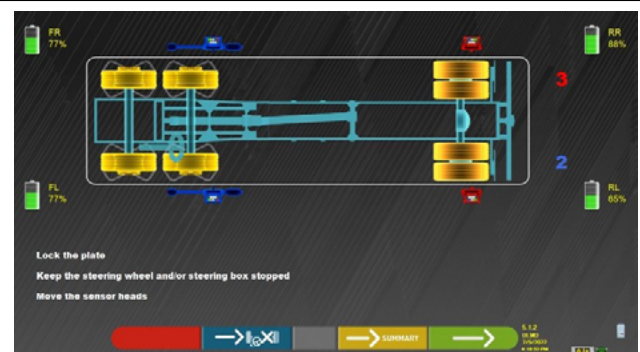
- Adjust the front axle, the caster, the camber and the toe where possible and necessary.
- Press F4 to continue.
- Press F2 to repeat the steering procedure or F1 to go back to the rear adjustment step.



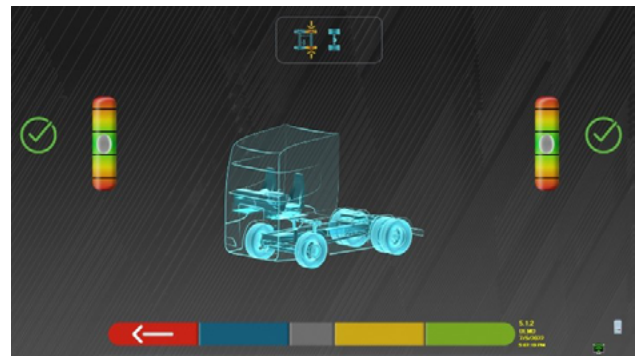
- Turn the steering wheel until the wheels are aligned, i.e. until the display level appears perfectly centred.
- Adjust the front sensor heads again (mounted on the 1st steering axle) until they are level and brake them with the appropriate knobs.
- Wait for the next page to be displayed automatically.



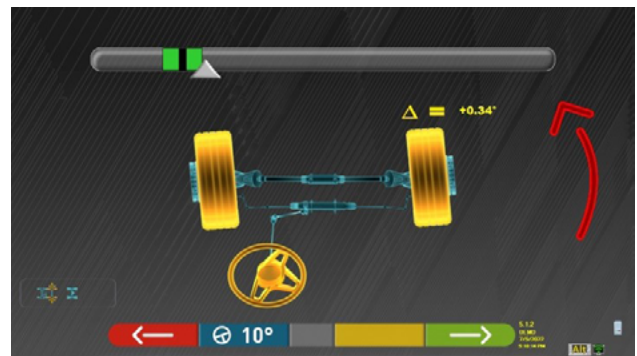
- Move the front sensor heads from the 1st steering axle to the 2nd steering axle, press F4 to continue.
- Important: hold the steering wheel and/or the steering box still.
- Note: The steering procedure for this axle can be skipped by pressing F2, or all other axles can be skipped by going directly to the final results page by pressing F3.



- Adjust the front sensor heads (mounted on the 2nd steering axle) until they are level and brake them with the appropriate knobs. Leave the rear sensor heads in their position.
- Wait for the next page to be displayed automatically.



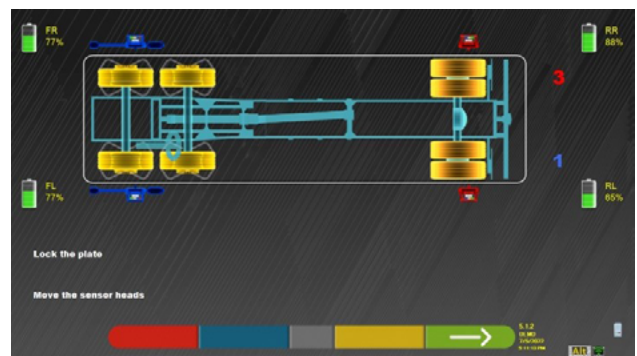
- Perform the steering procedure of the 2nd steering axle following the indicator on the screen, first to the left, then to the right, and lastly at the centre.
- The steering procedure can also be skipped by pressing F4; in this case, the toe data will not appear.



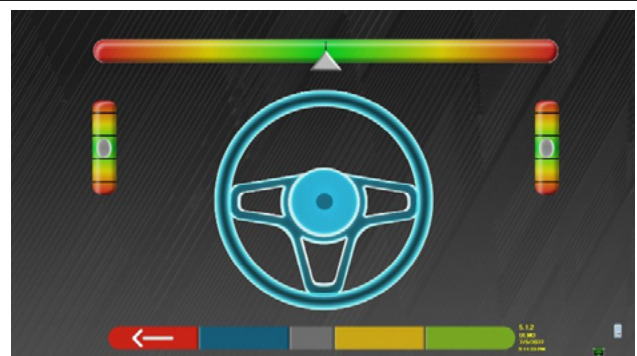
- Adjust the 2nd front steering axle, the caster and the camber where possible and necessary.
- Press F4 to continue.
- Press F1 to go back to the rear adjustment step.
- Press F1 to go back to the rear steering procedure.



- Move the front sensor heads from the 2nd steering axle to the 1st steering axle, press F4 to continue.

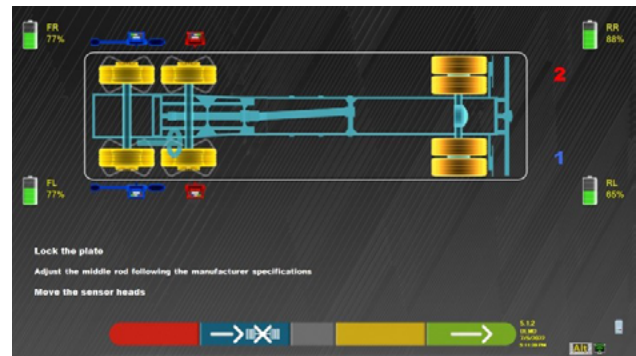


- Turn the steering wheel until the wheels are aligned, i.e. until the display level appears perfectly centred.
- Adjust the front sensor heads again (mounted on the 1st steering axle) until they are level and brake them with the appropriate knobs.
- Wait for the next page to be displayed automatically.

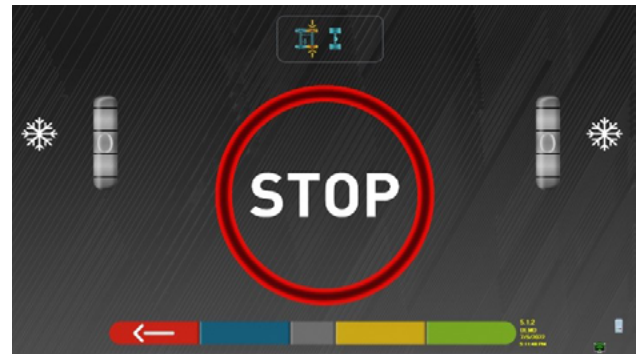


- Move the rear sensor heads from the rear axle to the 2nd steering axle, press F4 to continue.
Important: hold the steering wheel and/or the steering box still.

Note: The toe adjustment for this axle can be skipped by pressing F2, or all other axles can be skipped by going directly to the final results page by pressing F3.



- Position the rear sensor heads (mounted on the 2nd steering axle) in such a way that they are visually level and brake them with the appropriate knobs. Leave the front sensor heads in their position.
- Wait for the next page to be displayed automatically.




- Adjust the 2nd steering axle, the camber (release first) and the toe, if possible and necessary.
- Press F4 to continue.


NOTE: During this step, it is not possible to adjust the toe as this operation would have been performed already.

The page where it is possible to print or save the diagnosis and adjustment data is then displayed.

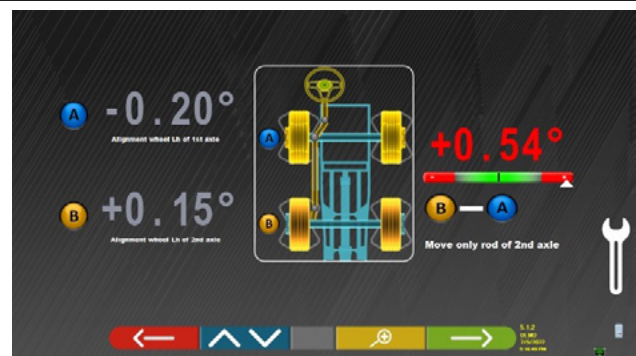


- Press F3  to open the page showing the total toe adjustment.

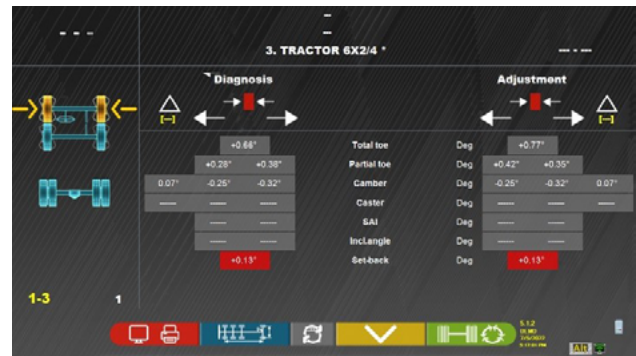


- Press F2  to display the page opposite and proceed to adjust the rod of the 2nd steering axle, observing the display on the right.

Note: Using the rear reference axle, the procedure involves another step in which the rear sensor heads must be mounted on the 2nd steering axle.



- The final summary page containing the diagnosis and adjustment data will appear.
- Press F1 to access the page from which the diagnosis and adjustment data can be printed or saved.
- Press F2 to display the graphic page with the set-back data.
- Press F3 to select and view the data of the highlighted axle.
- Press F4 to select the highlighted axle to be repeated.



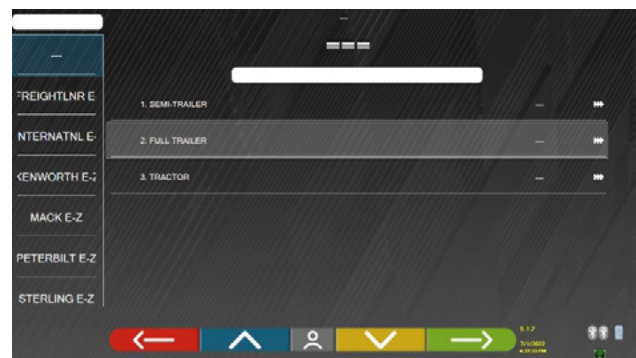
7.18.4 Adjustment of a full-trailer with drawbar

IMPORTANT NOTE:

For this type of adjustment, the STDA49N adapter kit is necessary to align the trailer.



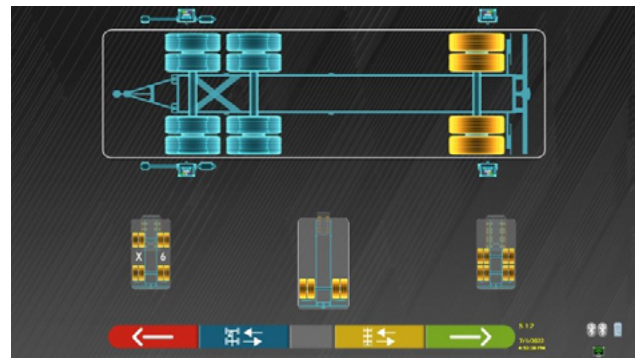
- Select a complete trailer from the database.
- Press F4 to continue.



- Select a complete trailer with 2 axles on the draw bar and a rear axle.
- Press F4 to continue.



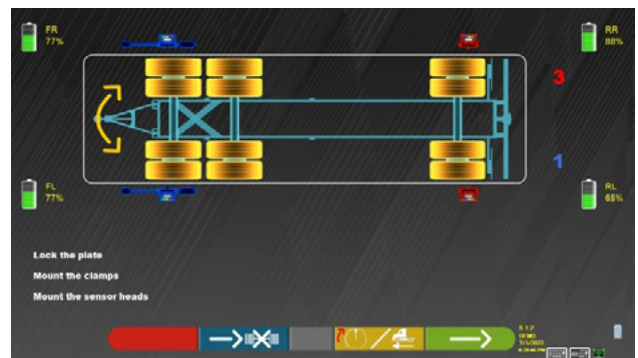
- Change the selected number of axles by pressing F2 to select the image indicating the adjustable draw bar.
- Press F4 to continue.



- A screen appears with the measurements and tolerances provided by the manufacturer. The data indicated refers to the 1st and last axles.
- Tap the axle in the silhouette in the top left corner to view the relative data.
- Press F4 to continue.



- Lock the plates.
- Install the clamps.
- Mount the front sensor heads on the 1st front axle.
- Mount the rear sensor heads on the rear axle.
- (the front sensors are normally illustrated in BLUE, the rear ones in red).
- Press F4 to continue.



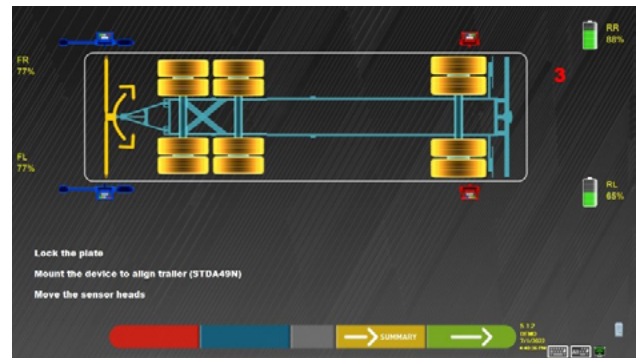
- Rotate the draw bar until the wheels of the 1st front axle are aligned, i.e. until the display level appears perfectly centred.
- Adjust the sensor heads until they are level and brake them with the appropriate knobs.
- Wait for the next page to be displayed automatically.



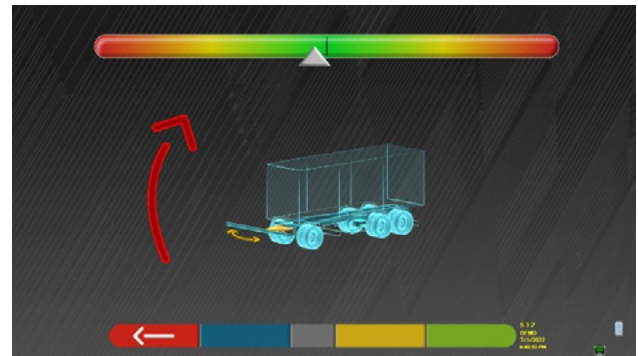
- If possible and necessary, adjust the rear thrust angle.
- Press F4 to continue.



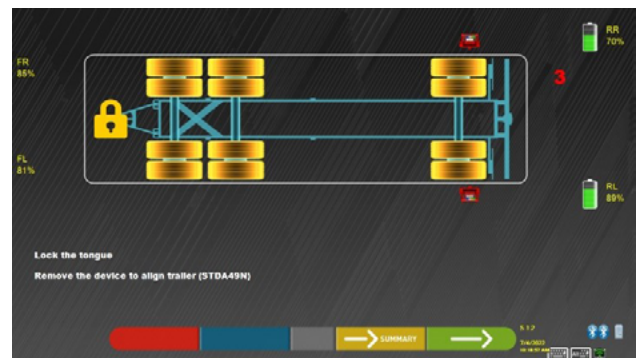
- Install the STDA49N trailer alignment adapter kit, as shown in the figure.
- Move the front sensor heads onto the STDA49N bar and leave the rear sensor heads on the rear axle, press F4 to continue.



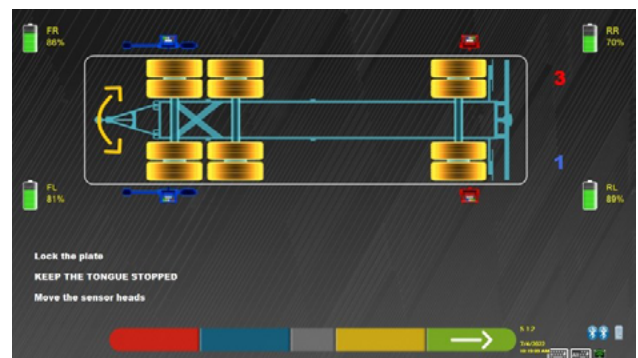
- Rotate the draw bar until the wheels of the 1st front axle are aligned, i.e. until the display level appears perfectly centred.
- The F4 key flashes; press it to continue.



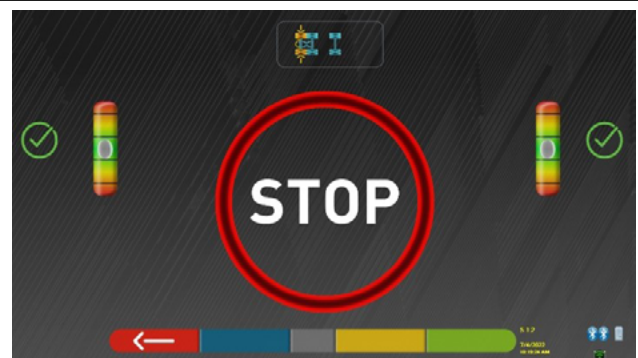
- Lock the draw bar and remove the STDA49N trailer alignment adapter.
- Press F4 to continue.



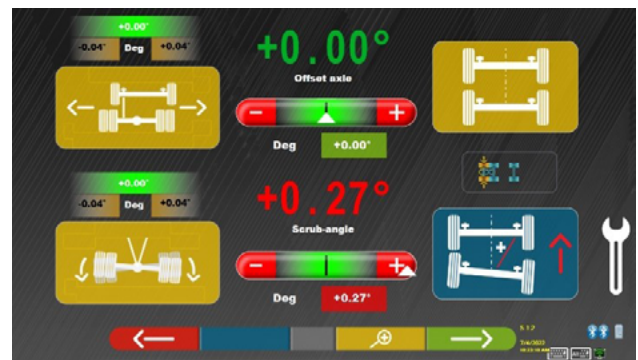
- Mount the front sensor heads on the 1st front axle again.
- Press F4 to continue.



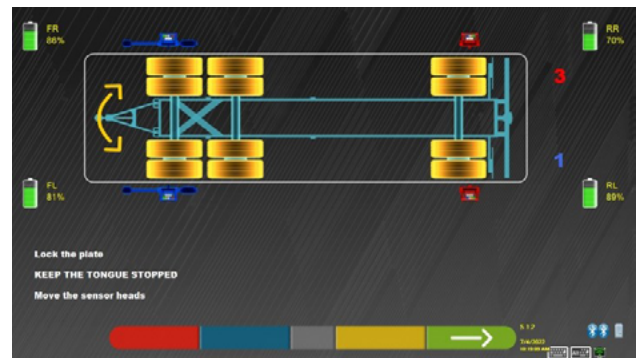
- Adjust only the sensor heads (mounted on the 1st front axle) until they are level and brake them with the appropriate knobs, then wait for the next page to be displayed automatically.



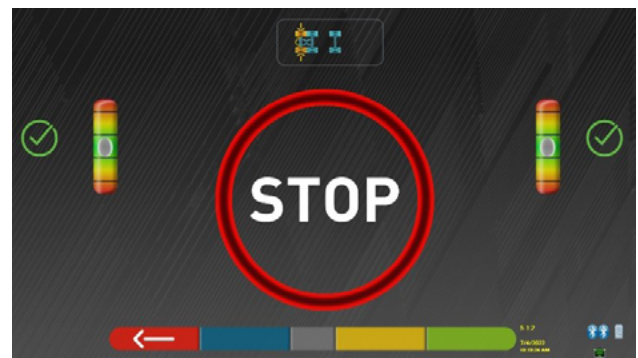
- Adjust the rotation of the first front axle and possibly the offset by pressing F3 to display the toe and camber details.
- Press F4 to continue.



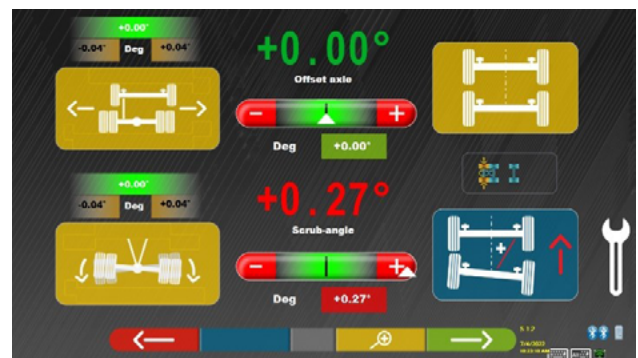
- Move the front sensor heads to the 2nd front axle, press F4 to continue.
- Important: keep the draw bar locked.



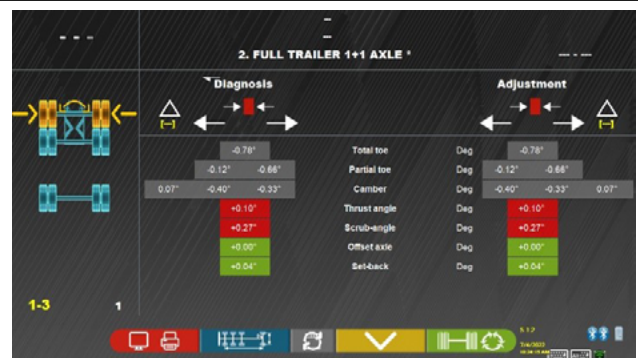
- Adjust only the sensor heads (mounted on the 2nd front axle) until they are level and brake them with the appropriate knobs, then wait for the next page to be displayed automatically.



- Adjust the rotation of the second front axle and possibly the offset by pressing F3 to display the toe and camber details.
- Press F4 to continue.



- The final summary page containing the diagnosis and adjustment data will appear.
- Press F1 to access the page from which the diagnosis and adjustment data can be printed or saved.
- Press F2 for the set-back in real time.
- Press F3 to select and view the data of the highlighted axle.
- Press F4 to select the highlighted axle to be repeated.



7.19 SAVING THE TESTS WITH TEQ-LINK

At the end of the test, it is possible to save the report with the results and all the vehicle data using the **"TEq-Link"** function.

It is necessary to install the **"TEq-Link Web Manager"** software on a Personal Computer connected to the workshop computer network (see the TEq-Link function configuration manual cod. M0215) and to connect the PC of the equipment to the same data structure.

NOTE: It is necessary to request authorisation for this function from the manufacturer in advance, by providing your licence number, and to configure the equipment PC with the details of the PC where the "TEq-Link Web Manager" software is installed.

After the test, when entering the customer data (Para. 7.17), it is possible to save the test results using the "Blue" key (Para. 7.19). When the tests carried out are stored, their results are immediately accessible from any PC or mobile device in the network.

7.19.1 TEq-Link function configuration

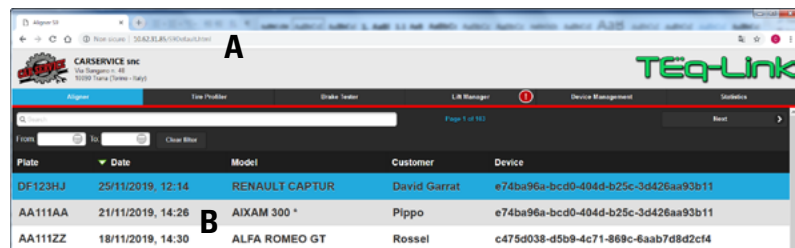
Before saving the test with the TEq-Link functionality, it is necessary to insert the references of the PC where the "TEq-Link Web Manager" software is installed.

From the system configuration menu (Para. 7.2) access the "Application configuration" / "TEq-Link connection" settings, then enter the IP address of the PC on which the "TEq-Link Web Manager" software is installed.

For further details, see the TEq-Link functions configuration manual (cod. M0215, paragraph 3.2).

At this stage, from any PC or mobile device in the same network, by simply entering the IP or the name of the PC with the SW "TEqLink Web Manager" in the address bar of the browser, you can access the main page to manage the saved tests as shown in the figure below.

Using any PC or mobile device in the same network, by simply entering the IP in the browser address bar. (A) or the name of the PC with the "TEqLink Web Manager" software, the main page for managing the saved tests opens (B).



The screenshot shows the TEq-Link Web Manager interface. At the top, there is a navigation bar with 'TEq-Link' and 'Web Manager' labels. Below the navigation bar, there is a search bar and a table of saved tests. The table has columns for Plate, Date, Model, Customer, and Device. Three rows of test data are visible.

Plate	Date	Model	Customer	Device
DF123HJ	25/11/2019, 12:14	RENAULT CAPTUR	David Garrat	e74ba96a-bcd0-404d-b25c-3d426aa93b11
AA111AA	21/11/2019, 14:26	AIXAM 300 *	Pippo	e74ba96a-bcd0-404d-b25c-3d426aa93b11
AA111ZZ	18/11/2019, 14:30	ALFA ROMEO GT	Rossel	c475d038-d5b9-4c71-869c-6aab7d8d2cf4

7.20 ERROR NOTIFICATIONS



During data transmission/reception between the sensor heads and the enclosure, the following screen may appear.



Red cross near the sensor head.

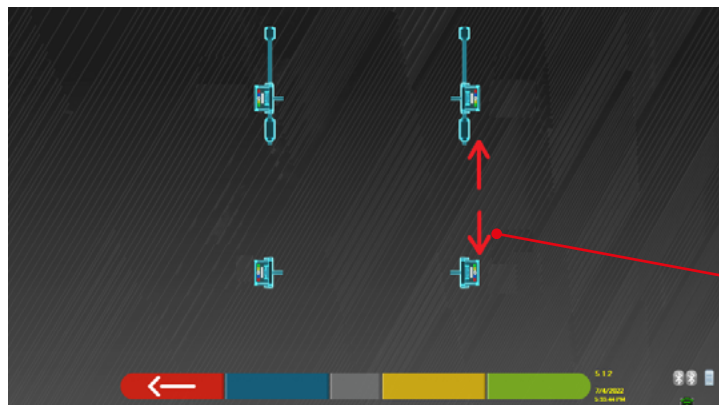
This means that a transmission/reception error has occurred due to one or more of the following problems:

- the infrared transceivers of the sensors do not operate
- there is a radio error or interference in the transmission system,
- there is an obstacle (e.g. an open vehicle door) between the front and rear sensor heads

The rear sensor heads are not directly communicating with the cab: their data is transmitted/received via the front sensor heads, therefore if a front sensor head is not working properly it will be impossible to transmit the data of the corresponding rear sensor head, even if it is working properly.

If the cause of the malfunction is removed (e.g. the vehicle door is closed), the error page disappears immediately and the measurement page reappears on the screen. If the problem persists, the system hardware needs to be checked after switching off the equipment first.

During infrared data measurements, the following screen may appear:



Flashing arrows.

This error page indicates that one or more infrared measurements could not be taken in the horizontal plane. There may be multiple causes:

- one or more CCD sensors (infrared digital transducer for the measurement of angles in the horizontal plane) are not working;
- one or more infrared emitters for the measurement of angles in the horizontal plane are not working (I.R. LED)
- there is an obstacle (e.g. an open vehicle door) between the front and rear sensor heads.

If the cause of the malfunction is removed (e.g. the obstacle is removed), the error page disappears immediately and the measurement page reappears on the tablet.

If the problem persists, the system hardware needs to be checked. To do this, contact technical assistance.

8 SAFETY DEVICES

The wheel aligner is fitted with a safety device (main switch) at the side of the machine central panel (ref. detail **8**, Para. 3.4). The main switch deactivates the power supply of the machine when placed in the "0" position.



In case of emergency or danger, unplug the power cord.

8.1 INDICATIONS OF RESIDUAL RISKS

The sensor has been manufactured to strict standards to meet the requirements of the applicable directives. The risk analysis was accurately conducted and the hazards have been eliminated as far as possible. Any residual risks are highlighted in this manual and on the machine by means of safety signs and symbols.

9 MAINTENANCE



WARNING



- Before carrying out any maintenance work, it is necessary to turn off the main switch and disconnect the equipment from the mains.
- Before connecting the power cable and turning on the equipment, make sure that the enclosure is dry and that there are no wet, damaged or dirty parts.

WARNING



- Do not use products that contain substances such as acetone, methyl chloride, ethyl alcohol, ammonia or ethyl acid.
- To clean plastic panels or shelves, use non-aggressive, neutral products. Do not use solvents such as synthetic thinners, benzene, alcohol or abrasive products as they may damage the surface.
- Do not clean the equipment using water jets.
- Keep the filters of the optical units clean using a slightly damp cloth, do not use solvents;
- Cleaning and other operations relating to maintenance of the Tablet are described in the manual supplied with it. Always refer to the latter before carrying out any maintenance on the Tablet.

9.1 TROUBLESHOOTING

Listed below are several problems that may be encountered on the wheel aligner equipment.

VSG ITALY S.R.L. disclaims all liability towards persons, animals and property due to intervention by unauthorised personnel and the use of non-original spare parts.

WARNING



- Before carrying out any work on the system, it is necessary to disconnect the power supply.
- In case of doubt, do not improvise but rather contact **VSG ITALY s.r.l.** technical support to receive instructions and carry out the necessary procedures under safe conditions.

PROBLEM	CAUSE	SOLUTION
No operation	- No mains voltage.	- Check the mains voltage.
	- Safety fuses interrupted.	- Check the safety fuses.
The sensors do not switch on	- Battery completely flat.	- Recharge battery.
The sensors are not recharged on the stands	- No mains voltage.	- Check the mains voltage.
	- Safety fuses interrupted.	- Check the safety fuses.
Sensors do not communicate with enclosure	- The sensors are off.	- Switch on the sensors.
	- Bluetooth connection not activated on the Tablet.	- Activate the Bluetooth connection on the Tablet.

10 DISPOSAL-SCRAPPING

10.1 STORAGE



ATTENTION

Storage - In the event of long-term storage, it is necessary to disconnect the power sources and to provide protection for the display which could be damaged due to excessive dust deposits.
Grease the parts that could be damaged in case of drying.

- In the event of long-term storage, the power sources must be disconnected and any parts that may be damaged due to dust deposits must be protected.
- Grease the parts that could be damaged in case of drying.
- When recommissioning, replace the gaskets indicated in the spare parts.

10.2 DISPOSAL



ATTENTION

Make the device inoperative by removing the connecting cables and susceptible parts that may be a source of danger. All waste of electrical and electronic equipment marked by this symbol (crossed-out wheeled bin), must be collected and disposed of separately from other mixed urban waste through specific collection facilities set up by public or local authorities. Consider the equipment as special waste and dismantle it, dividing it into homogeneous parts.
The product meets the requirements of the directive introduced to protect the environment (2003/108/EC, 2011/65/EU).

Correct disposal of the obsolete unit helps prevent possible negative consequences on the health of individuals and on the environment. Responsible end-of-life management of electrical and electronic equipment by users contributes to the reuse, recycling and sustainable recovery of obsolete products and related materials.

For more detailed information on disposal, contact your local municipality, waste disposal service or the **VSG ITALY s.r.l.** after-sales service.

Environmental disposal procedures

- **Preventing environmental risks.**

Avoid contact with, or inhalation of toxic substances such as hydraulic fluid.

Oils and lubricants are water pollutants according to the terms of the WGH water management law. Always dispose of these products in compliance with the regulations in force in the country of use

Mineral hydraulic oil is a water pollutant and is combustible. See the safety data sheet for disposal.

Ensure that no hydraulic oil, lubricants or cleaning materials contaminate the soil or are discharged into the sewage system.

- **Packaging**

Do not dispose of with household waste! The packaging contains certain recyclable materials that must not be disposed of with household waste.

1. Dispose of packaging materials in compliance with local regulations.

- **Oil, grease and other chemicals.**

1. When working with oils, grease and other chemicals, observe the environmental regulations applicable to the product in question.

2. Dispose of the oil, grease and other chemicals in compliance with the environmental regulations applicable in the country of use.

- **Metals / Electronic waste**

These must always be properly disposed of by a certified company.



PAGINA LASCIATA INTENZIONALMENTE BIANCA	PAGE INTENTIONALLY LEFT BLANK	SEITE ABSICHTLICH LEER GELASSEN	PAGE LAISSÉE INTENTIONNELLEMENT BLANCHE	PÁGINA DEJADA INTENCIONALMENTE EN BLANCO
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Dichiarazione di Conformità

Declaration of Conformity
Konformitätserklärung
Déclaration de Conformité
Declaración de Conformidad



Noi

We / Wir / Nous / Nosotros / Vi

Vehicle Service Group Italy S.r.l.
Via Filippo Brunelleschi 9
44020 Ostellato (FE) – ITALIA

dichiariamo sotto la nostra esclusiva responsabilità che il prodotto

declare, undertaking sole responsibility, that the product
erklären unter unserer alleinigen Verantwortung, dass das Produkt
déclarons, sous notre entière responsabilité, que le produit,
declaramos bajo nuestra exclusiva responsabilidad, que el producto

Assetto / Wheel aligner Achsmessgeräte / Appareil de contrôle de la géométrie des Alineadora	
---	--

alla quale questa dichiarazione si riferisce, risponde alle seguenti Direttive applicabili
to which this declaration applies is in compliance with the following applicable Directive:
auf dass sich diese Erklärung bezieht, den nachstehenden anwendbaren Normen entspricht:
objet de cette déclaration est conforme aux Normes applicables suivantes:
al que se refiere esta declaracion cumple con las siguientes Normas aplicables:

2014/53/EU

Radio Equipment Directive

2015/863 - 2011/65/EU

Restriction of the use of certain hazardous substances in electrical and electronic equipment – RoHS

Per la conformità alle suddette direttive sono state seguite, in modo totale o parziale, le seguenti Norme Armonizzate:

To comply with the above mentioned Directive, we have followed, totally or partially, the following harmonized directive
In Übereinstimmung mit o.g. Richtlinien wurden folgende harmonisierte Normen vollkommen oder teilweise befolgt
Pour la conformité aux normes ci-dessus, nous avons suivi, d'une façon partiel ou totale, les normes harmonisées suivantes :
Para la conformidad a las Normas arriba mencionadas, hemos seguido, parcialmente o totalmente, las siguientes normas armonizadas:

EN IEC 62368-1:2020/A11:2020	RED 2014/53/EU Art. 3.1(a) - SAFETY
EN IEC 62311: 2020	RED 2014/53/EU Art. 3.1(a) - HEALTH
EN 55011:2016/A2:2021	RED 2014/53/EU Art. 3.1(b) - EMC
EN IEC 61000-6-2:2019	RED 2014/53/EU Art. 3.1(b) - EMC
EN IEC 61000-3-2:2019	RED 2014/53/EU Art. 3.1(b) - EMC
EN IEC 61000-3-3:2013/AMD2:2021	RED 2014/53/EU Art. 3.1(b) - EMC
EN 300 328 V2.2.2:2020	RED 2014/53/EU Art. 3.2 - RADIO

Where appropriate, the reference to other technical standards and specifications used :

ETSI EN 301 489-1 V2.2.3 (2019-11)
ETSI EN 301 489-17 V3.2.4 (2020-09)

La persona preposta a costituire il fascicolo tecnico è Vehicle Service Group Italy S.r.l.
The technical documentation file is constituted by Vehicle Service Group Italy S.r.l.
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Vehicle Service Group Italy S.r.l. es encargada a la constitución del archivo técnico

S.G. Ostellato, XX/XX/XXXX

SIMONE FERRARI
VP VSG Europe Managing Director

Il modello della presente dichiarazione è conforme alla norma
The version of the present declaration conforms to the regulation
Das Formular der vorliegenden Erklärung entspricht den Normen
Le modèle de la présente déclaration est conforme à la norme
El modelo de la presente declaración es conforme

UNI CEI EN ISO/IEC 17050-1

Vehicle Service Group Italy S.r.l.
Via Filippo Brunelleschi 9
44020 Ostellato (FE) – ITALIA

We declare, undertaking sole responsibility, that the product

Wheel aligner

to which this declaration applies is in compliance with the following applicable Directive:

Radio Equipment Regulations 2017

The Restriction of the use of certain hazardous substances in electrical and electronic equipment – Regulation 2012

To comply with the above mentioned Directive, we have followed, totally or partially, the following harmonized directive

BS EN IEC 62368-1:2020+A11:2020	Audio/video, information and communication technology equipment - Safety requirements
BS EN IEC 62311:2020	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)
BS EN 55011:2016+A2:2021	Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement
BS EN IEC 61000-6-2:2019	Electromagnetic compatibility (EMC) - Generic standards. Immunity standard for industrial environments
BS EN IEC 61000-3-2:2019	Electromagnetic compatibility (EMC) - Limits. Limits for harmonic current emissions (equipment input current ≤16 A per phase)
BS EN 61000-3-3:2013+A2:2021	Electromagnetic compatibility (EMC) - Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

Where appropriate, the reference to other technical standards and specifications used :

EN 300 328 V2.2.2:2020
ETSI EN 301 489-1 V2.2.3 (2019-11)
ETSI EN 301 489-17 V3.2.4 (2020-09)

The technical documentation file is constituted by

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