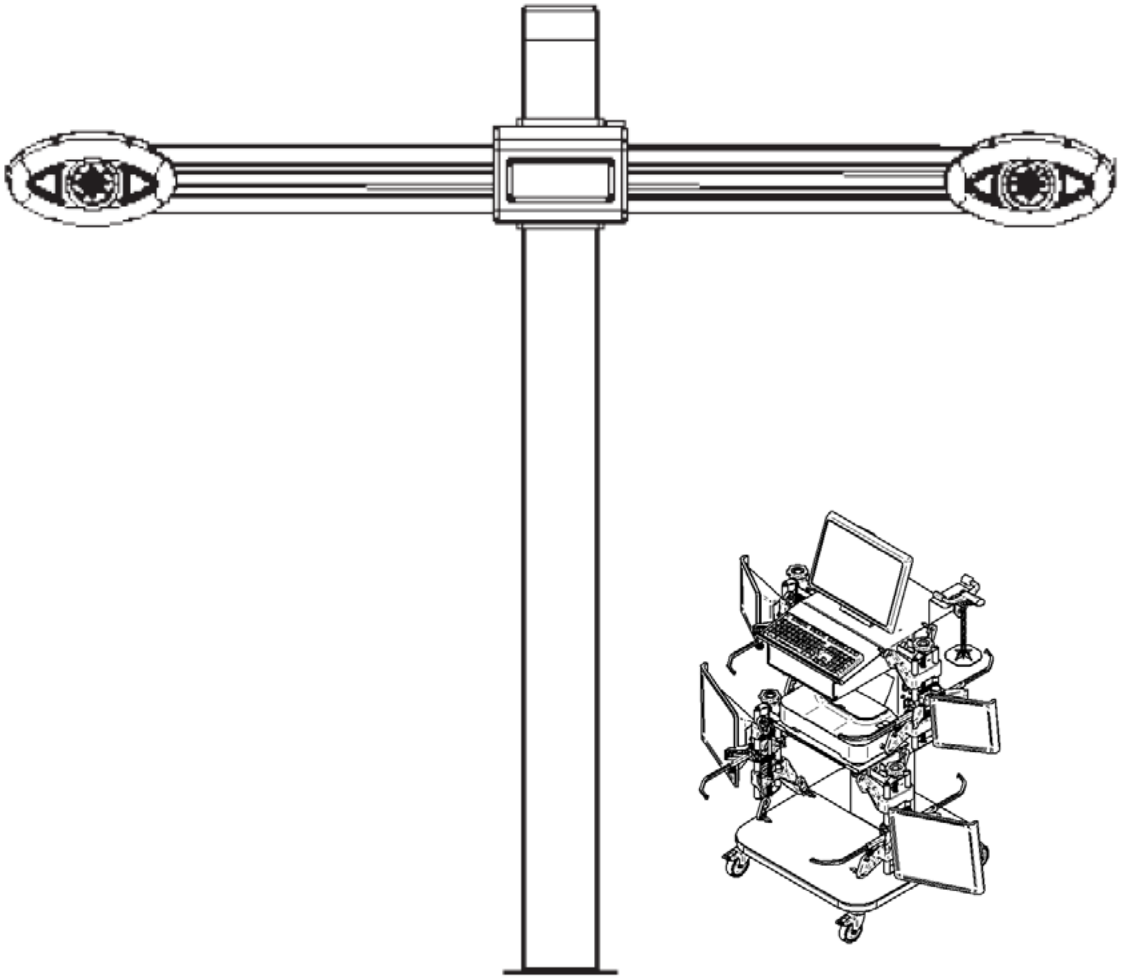
VSG
VEHICLE SERVICE GROUP
a DOVER company

WHEEL ALIGNMENT

ROT.3DTOW.701985
RAV.3DTOW.702050
SPA.3DTOW.702067

INSTALLATION AND ASSISTANCE MANUAL
FOR TESTING AND CALIBRATION



For any further information please contact your local dealer. Contact info are on the last page.

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

INSTALLATION INSTRUCTIONS

2025-R400-00
REV.-08.09.25

0 INTRODUCTION

This manual is intended to provide the installer with complete instructions for the connections and calibration of the ROT.3DTOW wheel alignment machine.
The instructions regarding use and maintenance, reserved for the end user, are collected in the specific manual supplied with the machine or downloadable from the manufacturer's website.

Attention!

The "CALIBRATION" procedure is reserved for specialist technical assistance personnel; for this reason, access to them is password-protected.
This password, which must not be communicated to other persons, is determined by the sequence of the keys "F8; F7; F6; F8".

CONTENTS

1 INSTALLATION OF THE PROGRAM

1.1 Installation

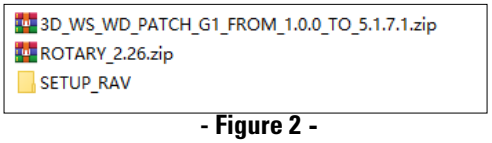
This process takes several minutes, it may require restarts.
You will install: Windows Power Shell; Microsoft SQL server; XVid Codec; .NET framework and finally the "AS9" series setup SW.
Note: If the PC not supplied by the manufacturer (supplied by the customer), must have the following minimum characteristics:

- 1.5 GHz clock CPU; 4 GB RAM;
- 120GB HD;
- 4 USB 2.0;
- Windows 10 Operating System;
- 1366x768 Pixels Video Output.

Turn on the PC and insert the USB key supplied with the equipment kit.
The USB Key in the file pocket see the figure 1.

- Figure 1

In the USB key, you will find 3 files see the figure 2.

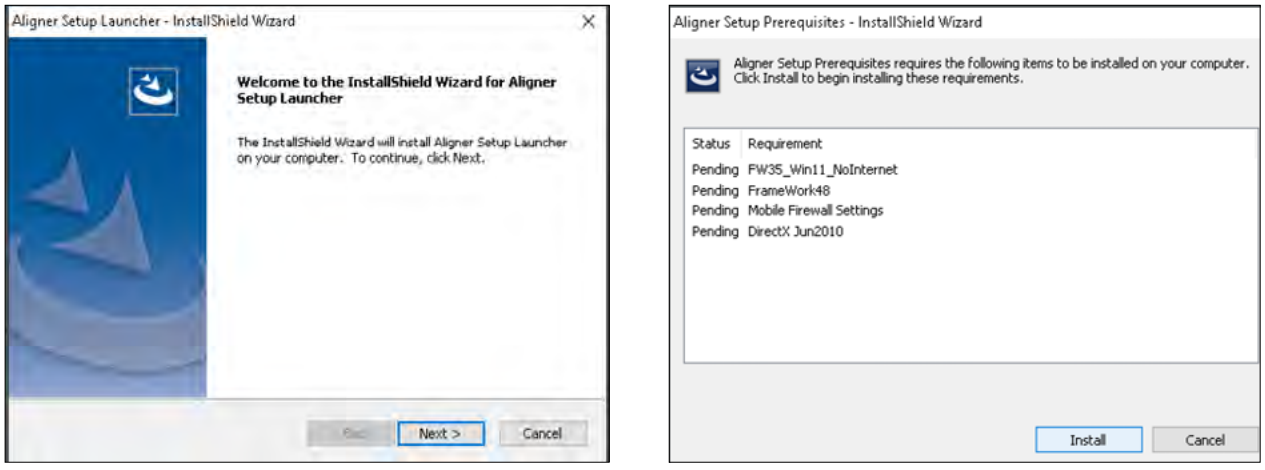


- Figure 2 -

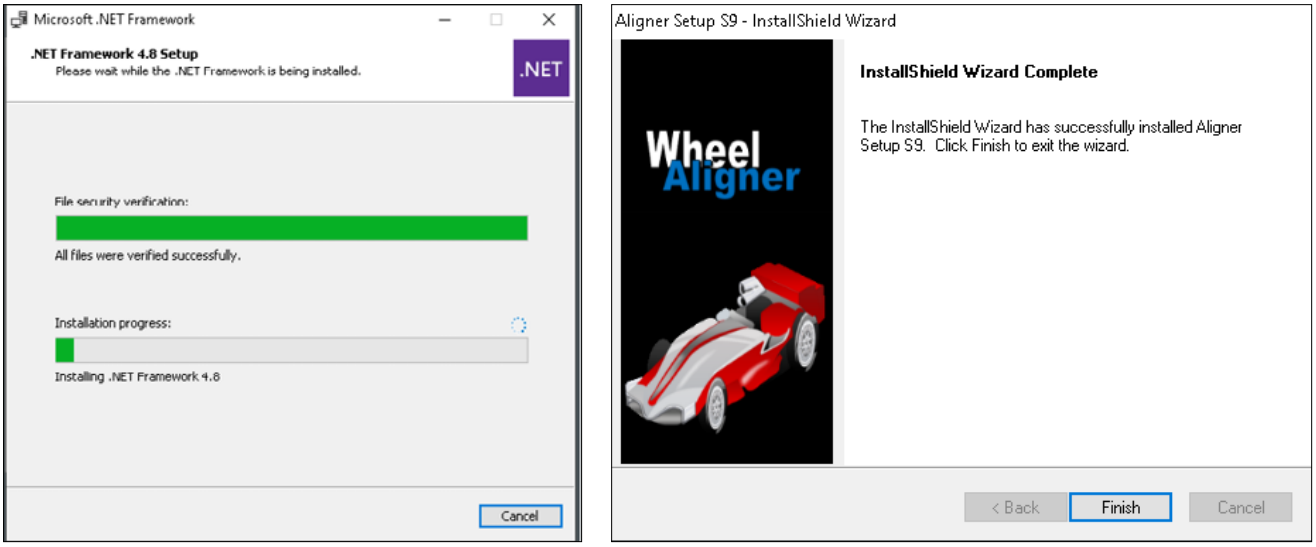
1.2 Start full installation

The installation consists of four parts:

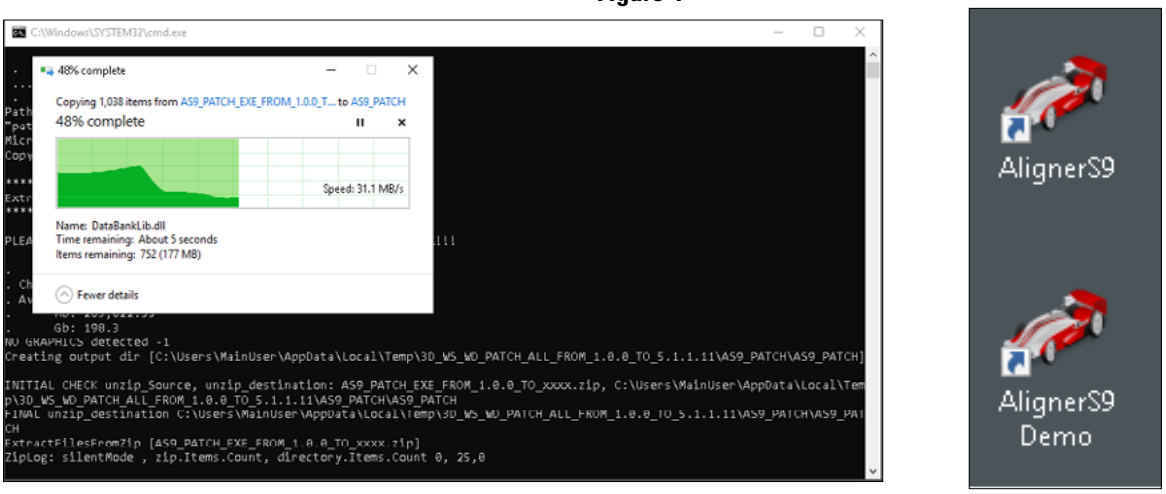
- Launcher (program that prepares and presides over the installation),
- Installing prerequisites,
- Main program,
- Upgrade.



- Figure 3

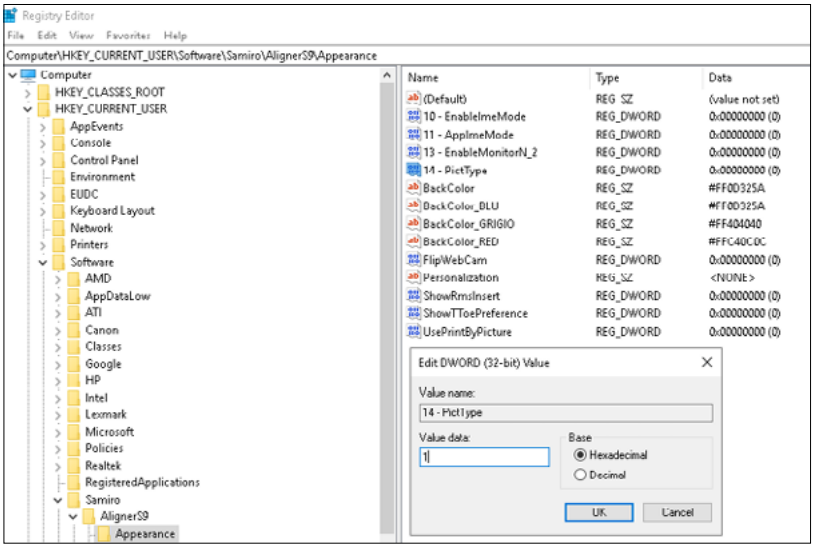


- Figure 4 -



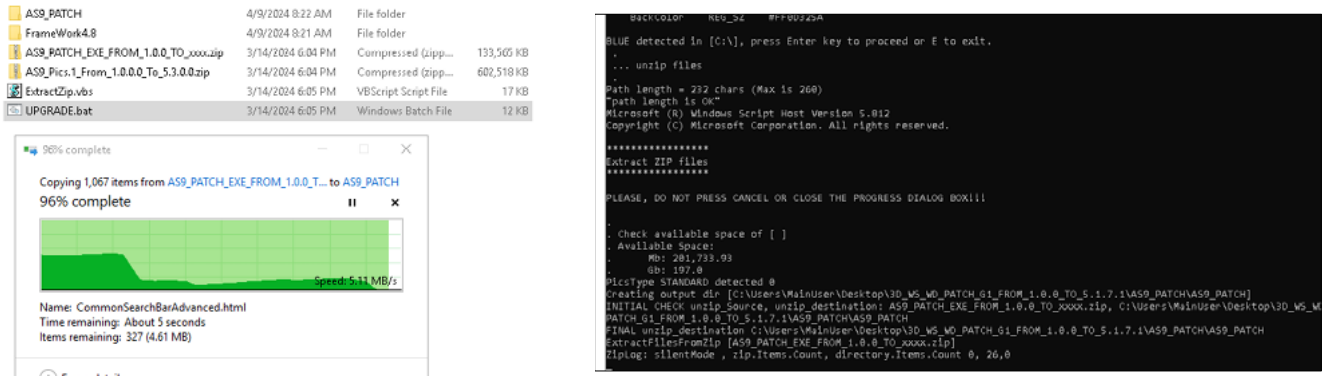
- Figure 5 -

1. Click into folder “SETUP_RAV” and then double clicking the “Setup.bat” to start the base software installation. Follow the software installation wizard step by step. See figure 3-5. The PC will auto reboot after finishing all steps, from there 2 icons (AlignerS9 / Aligner S9 Demo) will appear on the desktop. See figure 5.
2. Before next step, first check the Regkey: Computer\HKEY_CURRENT_USER\SOFTWARE\Samiro\AlignerS9\Appearance ---- 14-PicType: If it is set to 0 - change to 1. See figure 6.



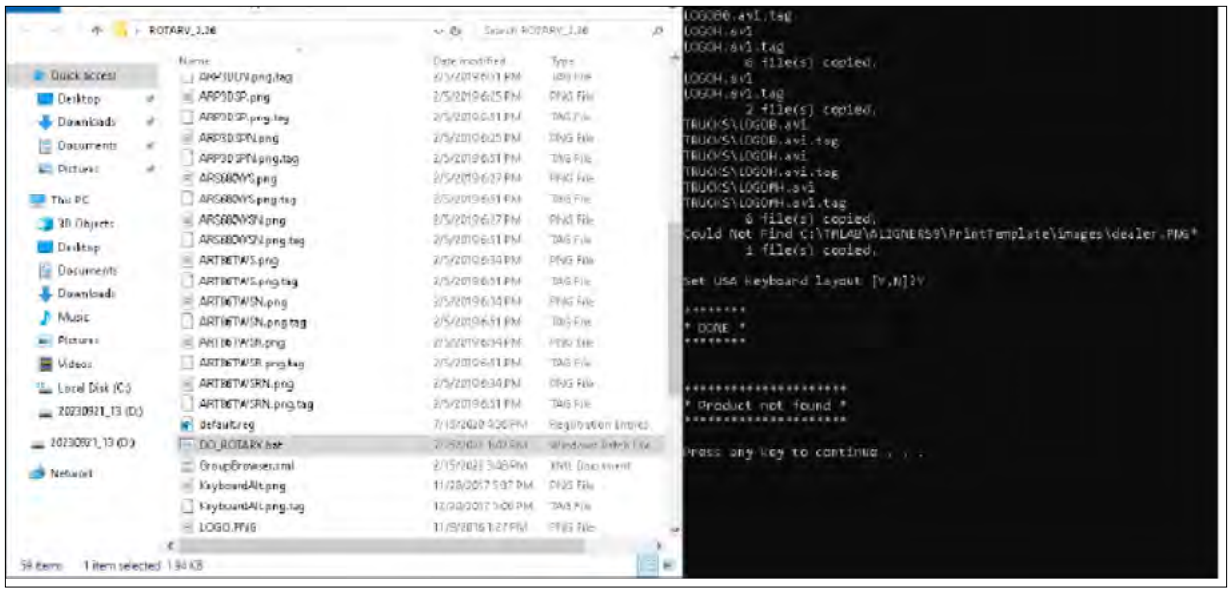
- Figure 6 -

3. The USB key supplied with the machine may have software that needs updating due to software differences between the time of manufacturer and time of install. Click the "UPGRADE.bat from compressed file"3D_WS_WD_PATCH_G1_FROM_1.0.0 TO_5.1.7.1.ZIP to start the process. (This will by copy the zip file to desktop and unzip the file). The latest SW update can also be downloaded from the "DATABANK" website or upgrade online. See figure 7.



- Figure 7 -

4. Run personalization 2.26.click the "DO _ROTARY.bat". See figure 8.



- Figure 8 -

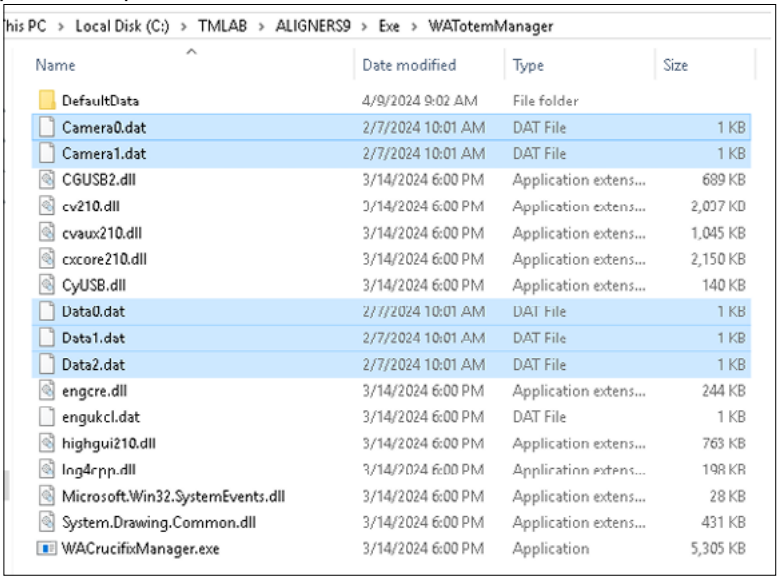
At this point, the AS9 software is ready, For license and database downlaod refer the operation manual.

1.3 Prepare for the camera connection

The installation consists of four parts:
- Camera data from factory. See figure 9.
- TID file from factory. See figure 9.
- Registry for camera connection. See figure 10.
- Drive for the motor and camera. See figure 11-15.

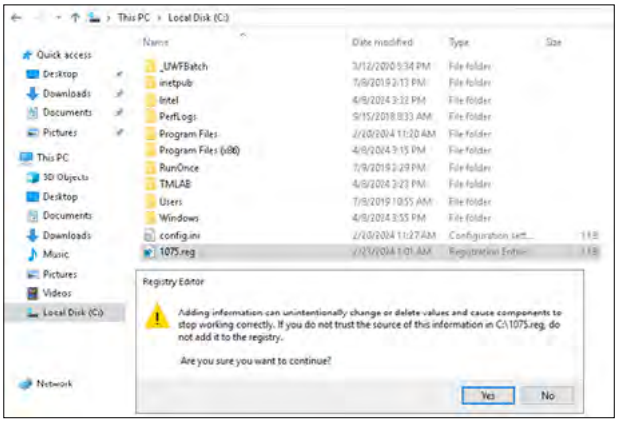
The USB key supplied with the machine, includes a folder name referencing the beam number. Within the folder there are 5 files. These files contain the camera data set in the factory together with the clamp / target Tid files. These files are necessary for the operation of the tower aligner. The absence of any file will cause the machine to not measure properly.

Copy these files from USB key to PC, the path is as follows: Local Disk(C:)/TMLAB/ALIGNERS9/Exe/WATotemManager.



These files will be automatically covered when you do the calibration or TID in the field. For detailed information relating to calibration and TID, refer next section in this manual.

- Figure 9 -



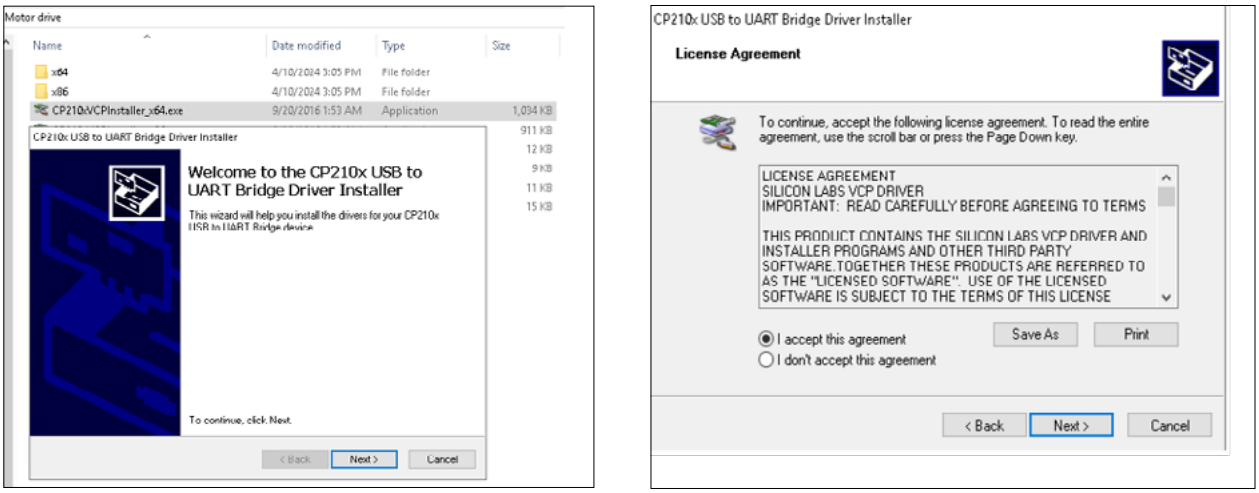
- Figure 10 -

Double click the "1075.reg " file in localDisk(C:) or from USB key. Choose yes for the next step, then the PC will add the data in the registry editor.

To install the drive for the cameras and motor, the wires from cross-beam must be connected to aligner, with the main power switch turned on. After the aligner is connected and power turned on, you can open “Device Manager”. See figure 11.

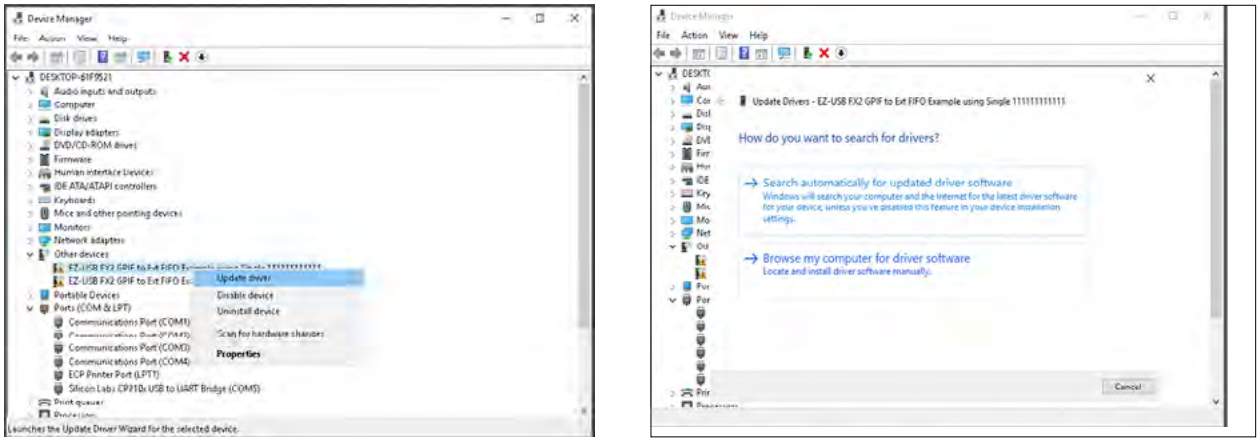
- Figure 11 -

Open the folder “Motor drive” from the USB key or aftersales, double click the “CP210xVCPInstaller_x64.exe” to start the process. See figure 12.

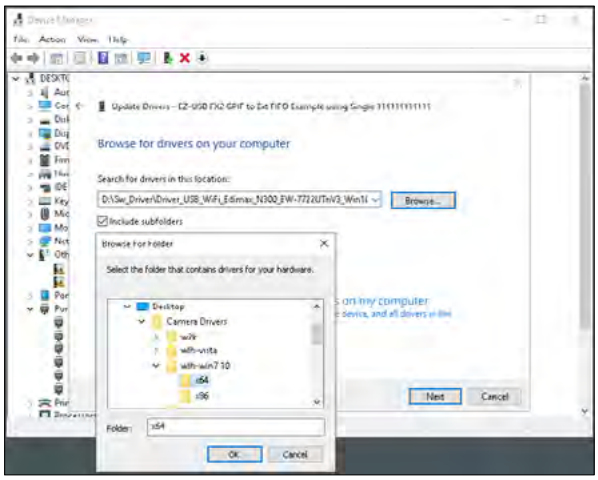


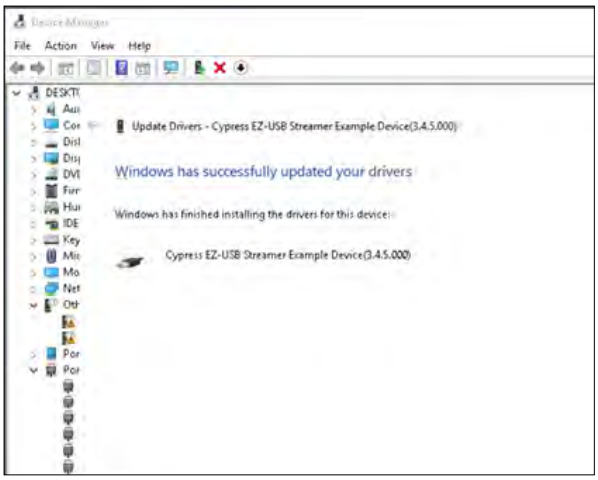
- Figure 12 -

Next, open “Device Manager”. In the other devices list, 2 unknown devices will be shown in the list. Click the first one shown, anc click properties to update the driver. See figure 13. Browse “My Computer” for the driver software, the path is the folder of the camera driver (from USB key or from aftersale). See figure 14. Once complete, follow the same steps for the second unknown device. See figure 15.

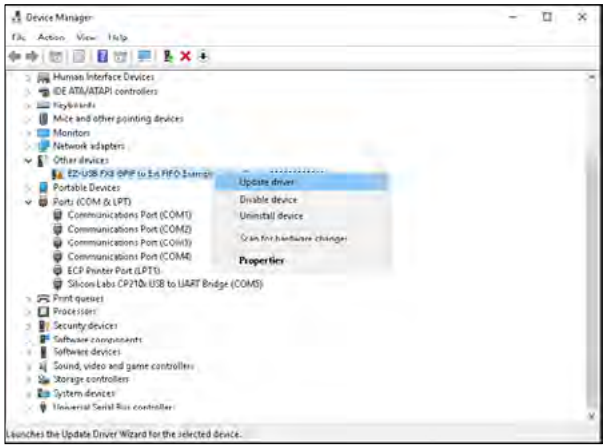


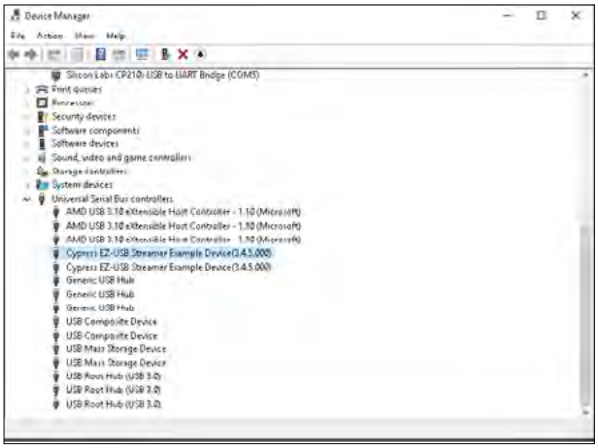
- Figure 13 -





- Figure 14 -





- Figure 15 -

At this point, the aligner is ready for operation.

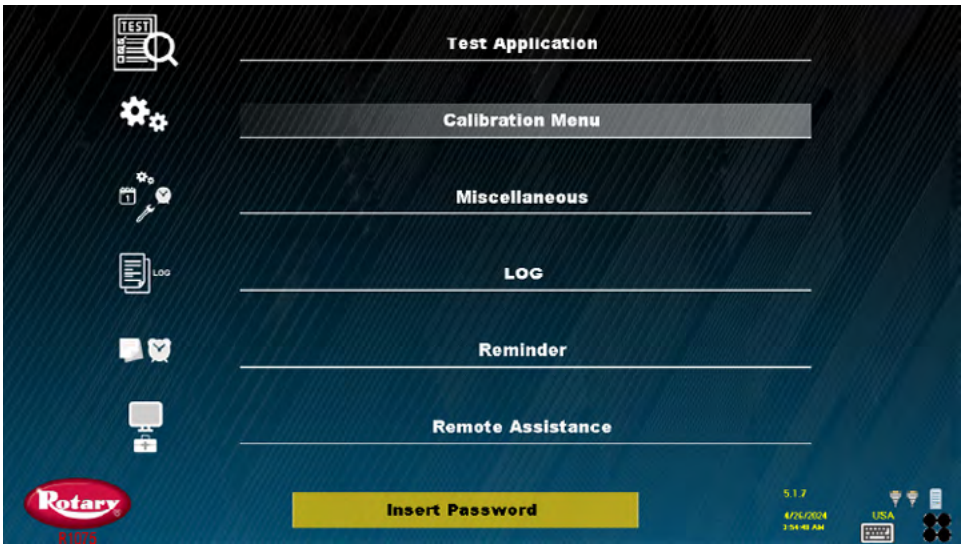
2 CALIBRATION

2.1 Aligner calibration

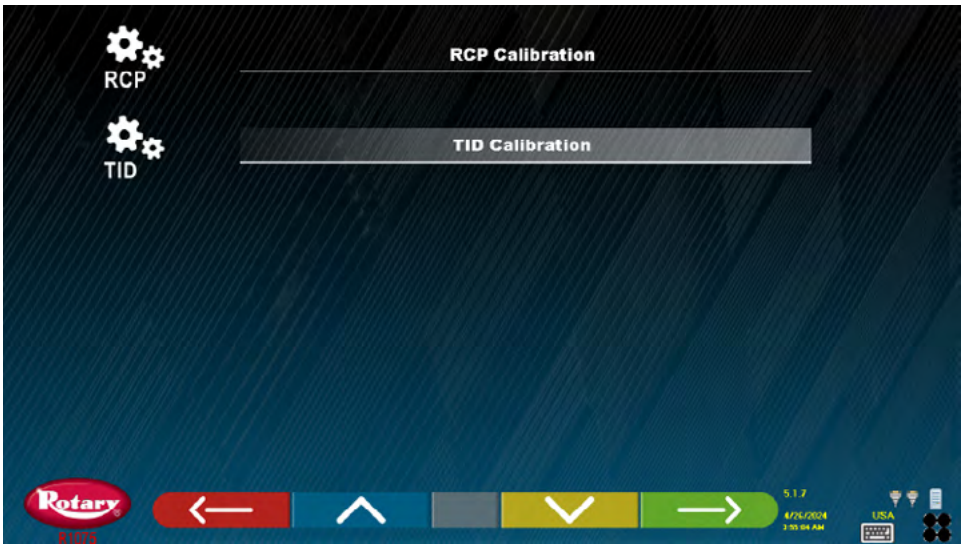
The ROT.3DTOW wheel alignment machine is already calibrated at the factory; moreover, the calibration values are stored in the PC of the aligner itself. Therefore, when installing the new aligner, it is not necessary to calibrate or configure the equipment with calibration data.

The calibration contains 2 different programs: RCP and TID. The instructions below are abbreviated TID calibration and RCP calibration.

Starting from the home page, press F2 to enter the System Menu, then use keys F2 / F3 to select the “Additional Functionalities” and confirm with F4. Using keys F2 / F3, select the “Calibration Menu”, then confirm with F4.
You can log in using the following password: “F8; F7; F6; F8”
The TID calibration is performed only in case of the failed connection between target and clamp or any movement of their connection.



- Figure 16 -

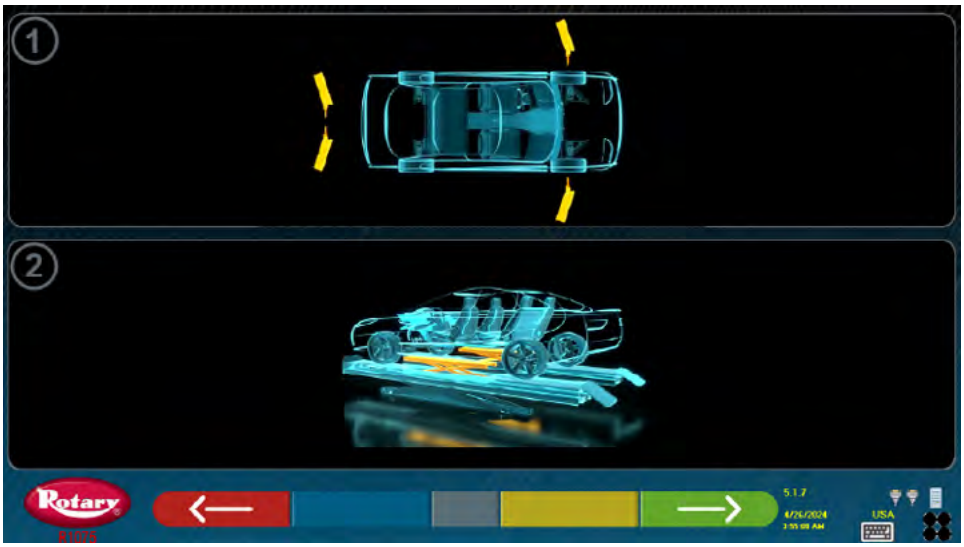


- Figure 17 -

2.2 TID calibration

Attention! In the daily work, please do not disassemble or loose any screws on the connection of target and clamps.

To perform a TID calibration, a rolling jack on the lift is needed to allow the vehicle to be lifting for free movement of the front wheels. The TID calibration is performed only at the front wheels.

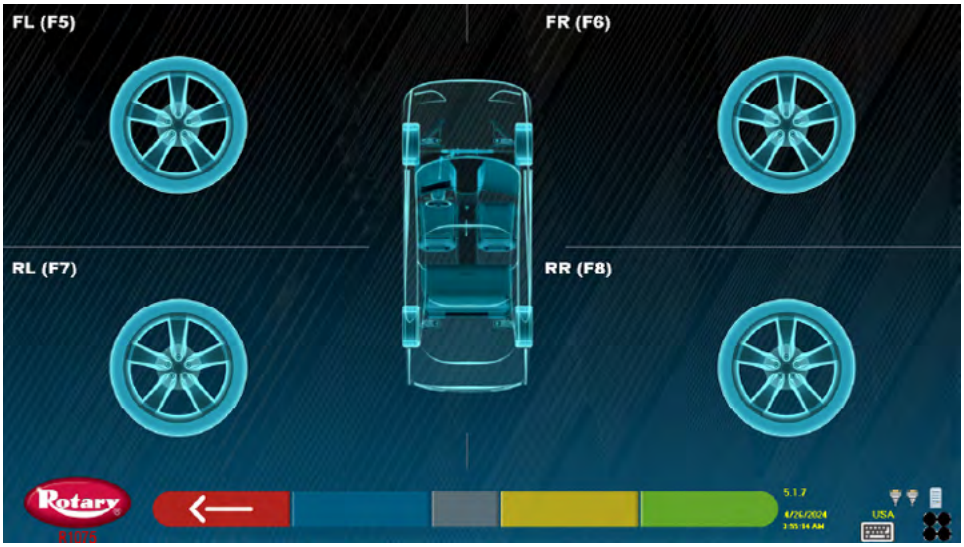


- Figure 18 -

Before proceeding , please ensure all targets are in clear field of view of the cameras. Please refer the green indicator targets at the bottom right of the screen (see circled) to confirm. See figure 19.

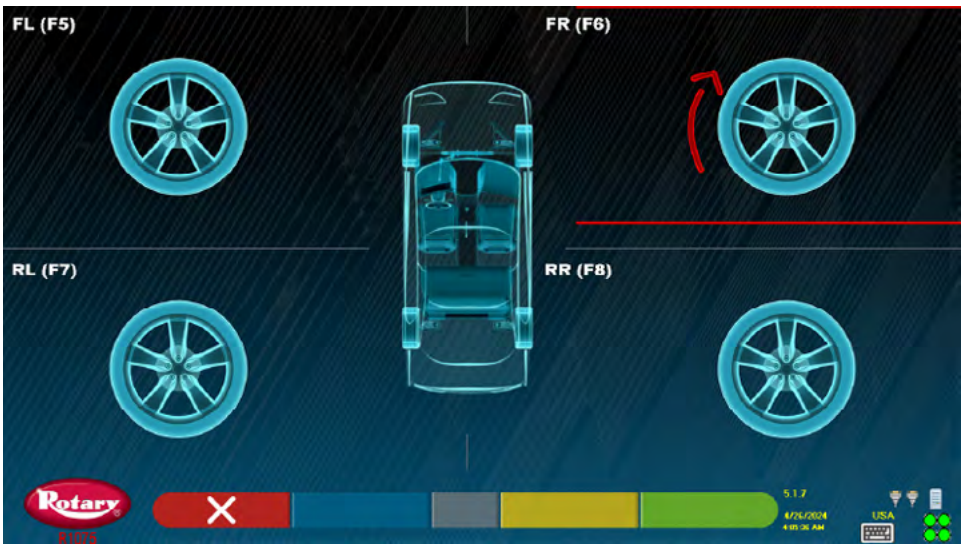
- Figure 19 -

Press the F4 key, The following screen appears:

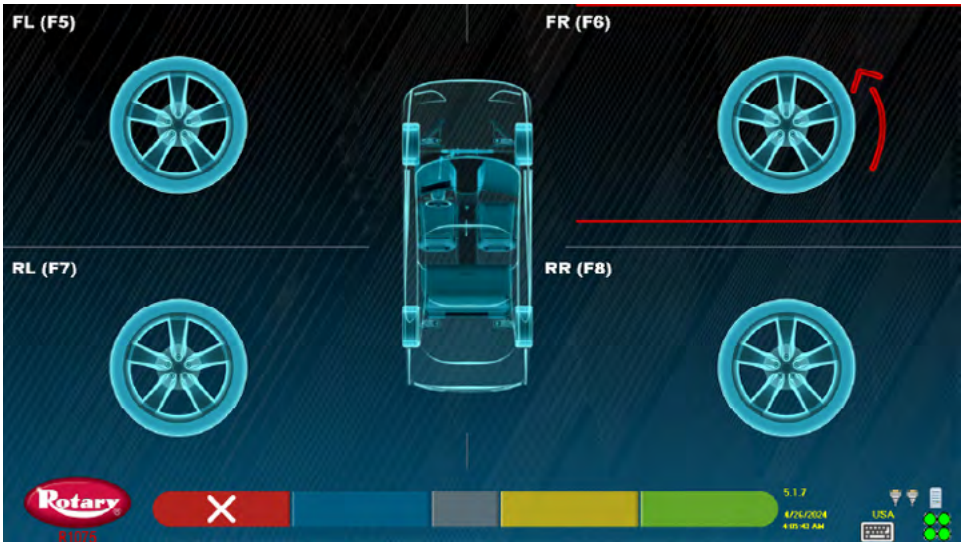


- Figure 20 -

Press the F6 key, the FR (front right) target and clamp will do the calibration. The following screen appears:

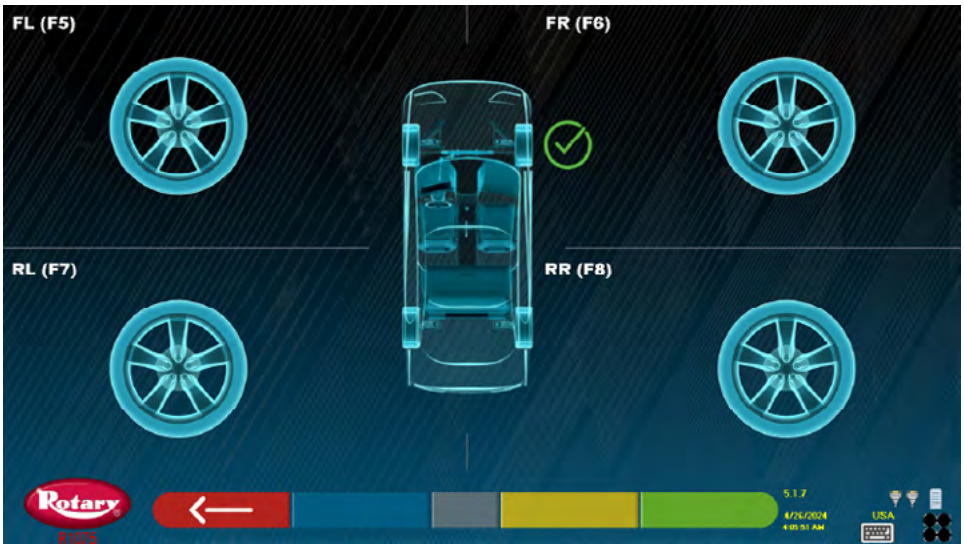


- Figure 21 -



- Figure 22 -

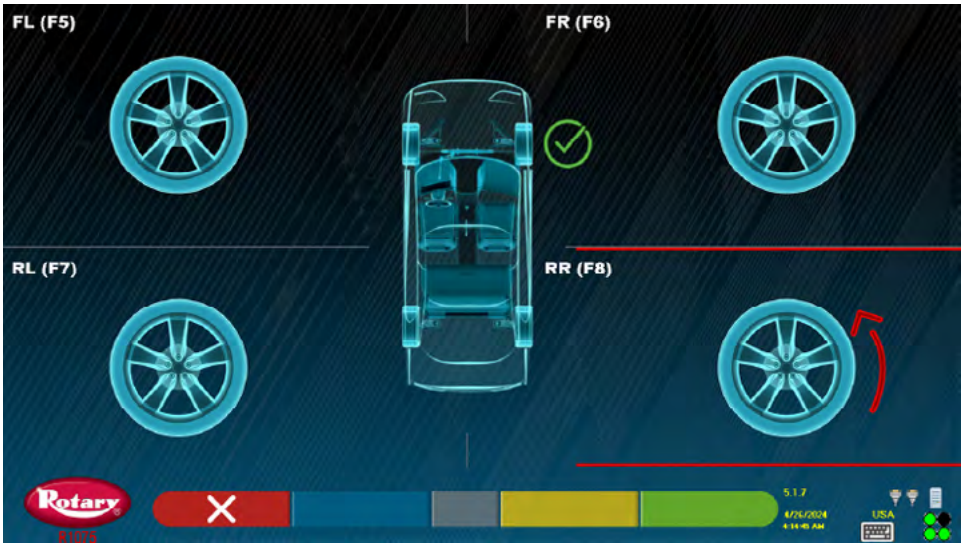
Rotate the front right wheel by the direction of arrow as indicated on screen.



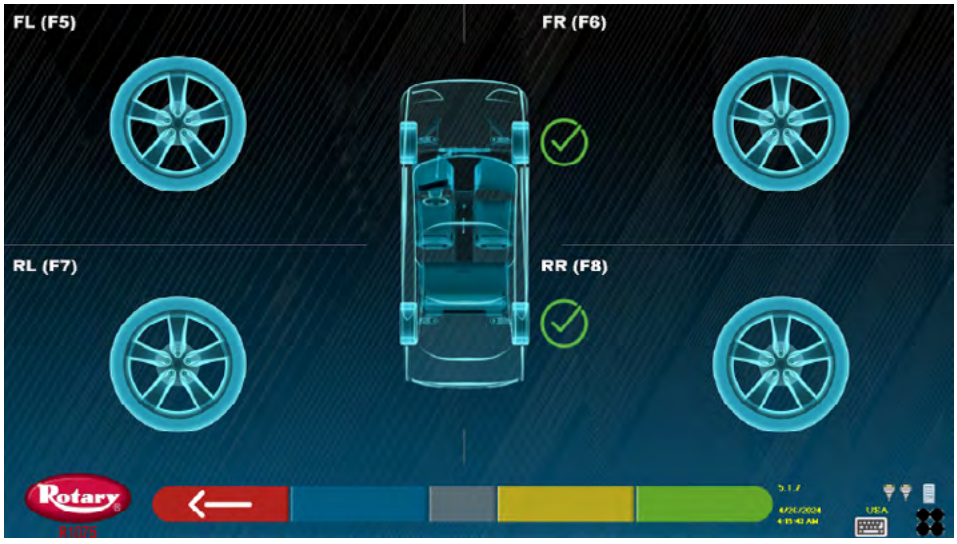
- Figure 23 -

The TID calibration for the front right clamp/target is finished.

Next step is to mount the assembly of rear right clamp and target to front right wheel and press F8. Rotate the front right wheel by the direction of arrow as indicated on screen.



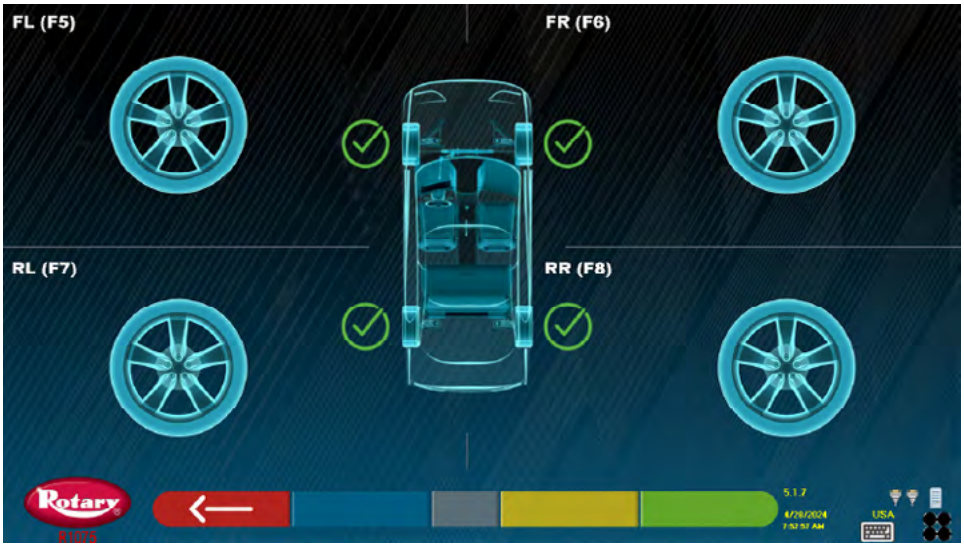
- Figure 24 -



- Figure 25 -

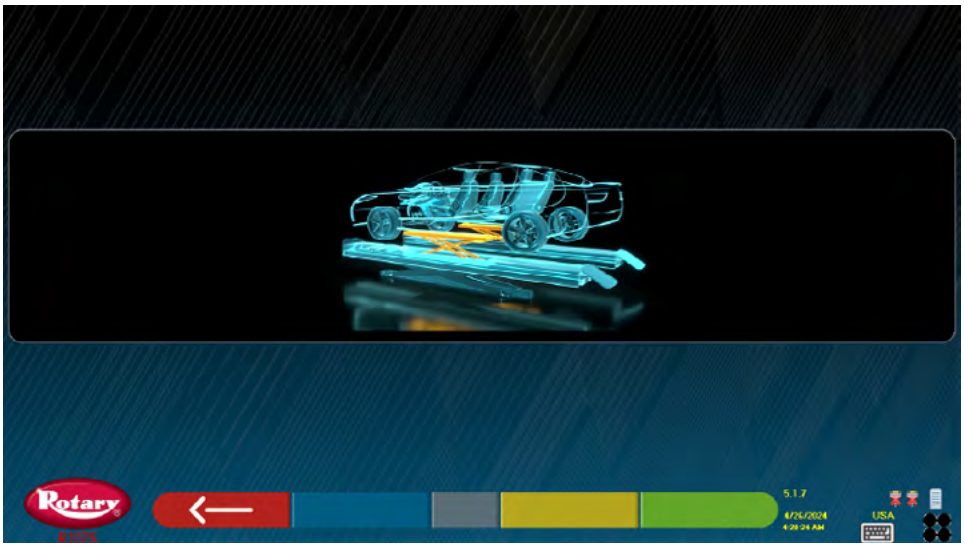
The TID calibration for the rear right clamp/target is finished same process on FL and RL .

The TID calibration for all clamp/target is finished. The following screen appears:



- Figure 26 -

Press the F1 key, and then F4.

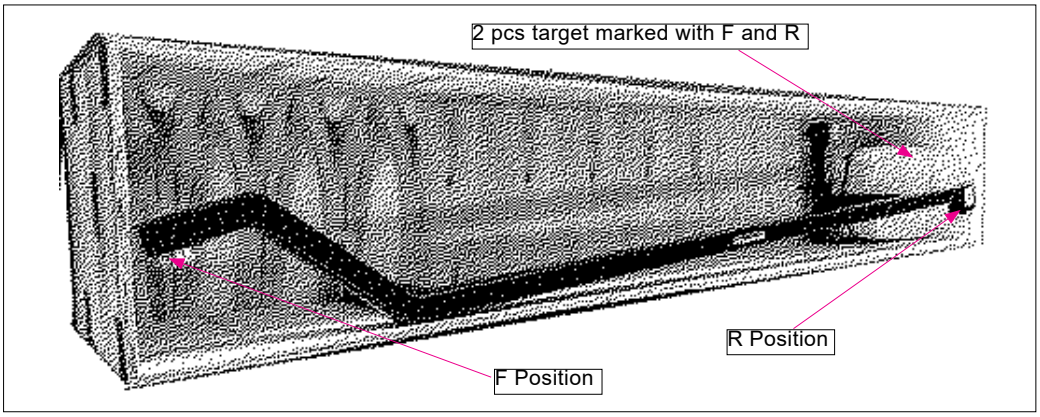


- Figure 27 -

Lower the front of the vehicle and then press the F1 key to return to the main calibration page.

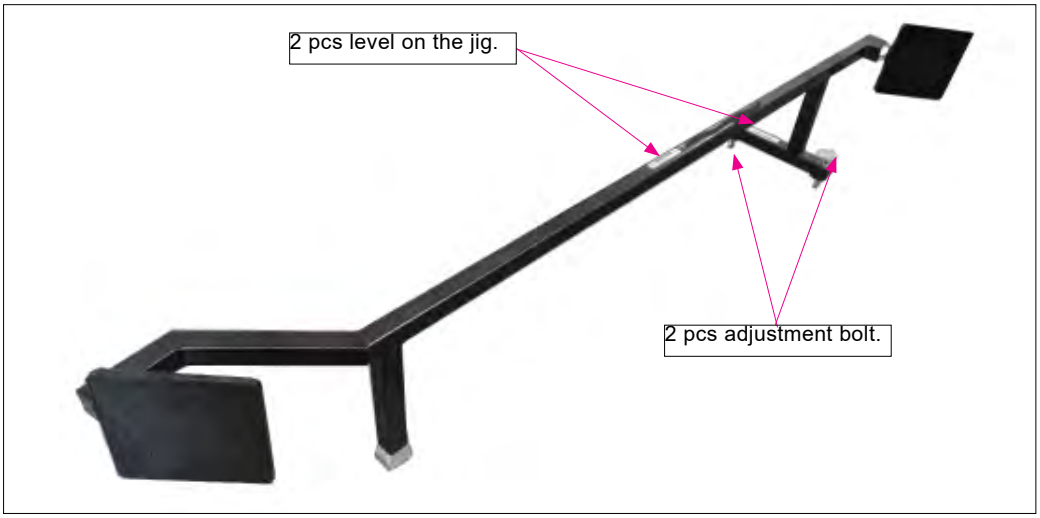
2.3 RCP calibration

The RCP calibration is performed only in case of replacement of cameras or following ascertained repetitive errors due to movements of transducers (consequently to falls, impacts etc.). Use the following calibration tool: CK-RWA1075

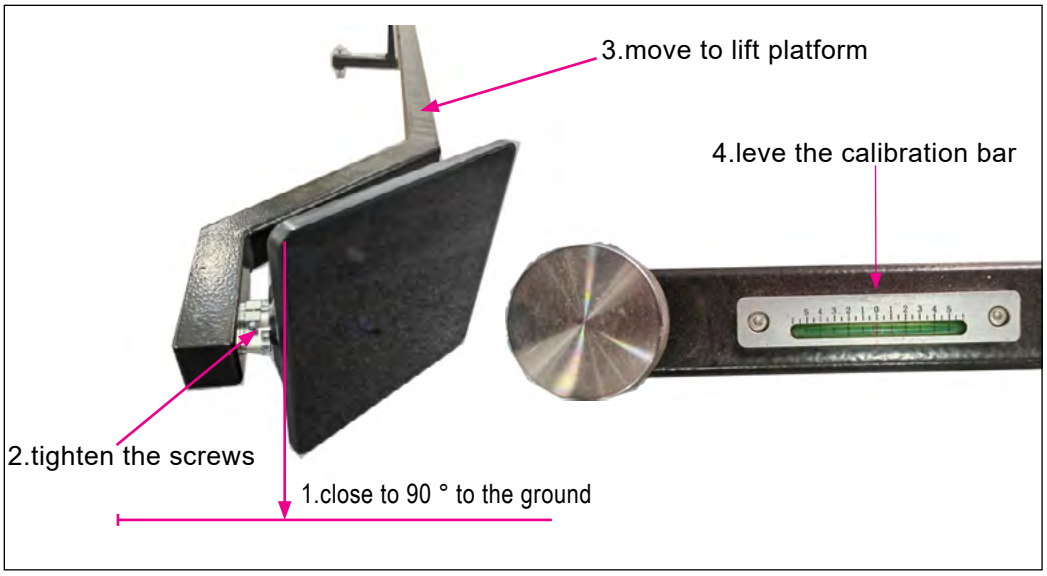


- Figure 28 -

Assemble 2 targets to the calibration jig in F and R position.



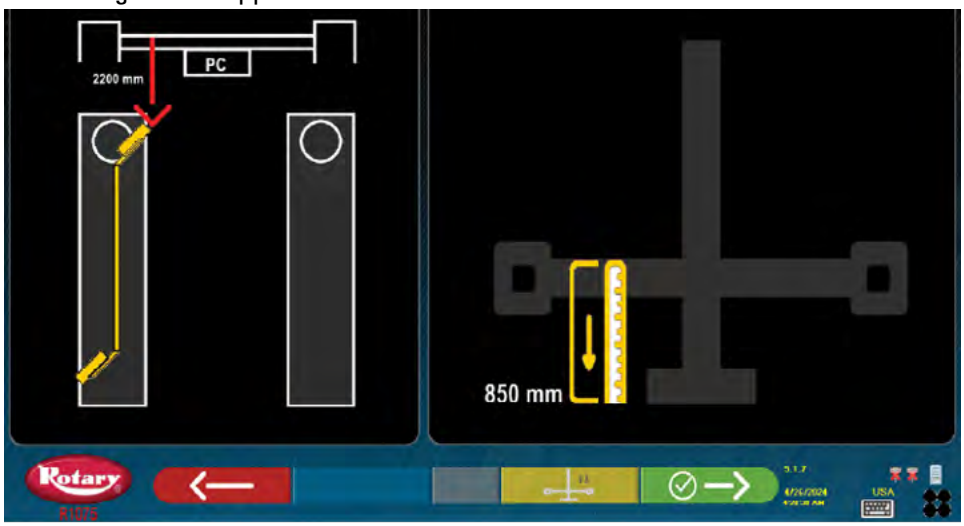
- Figure 29 -



- Figure 30 -

Ready for the calibration jig and enter the RCP calibration page .

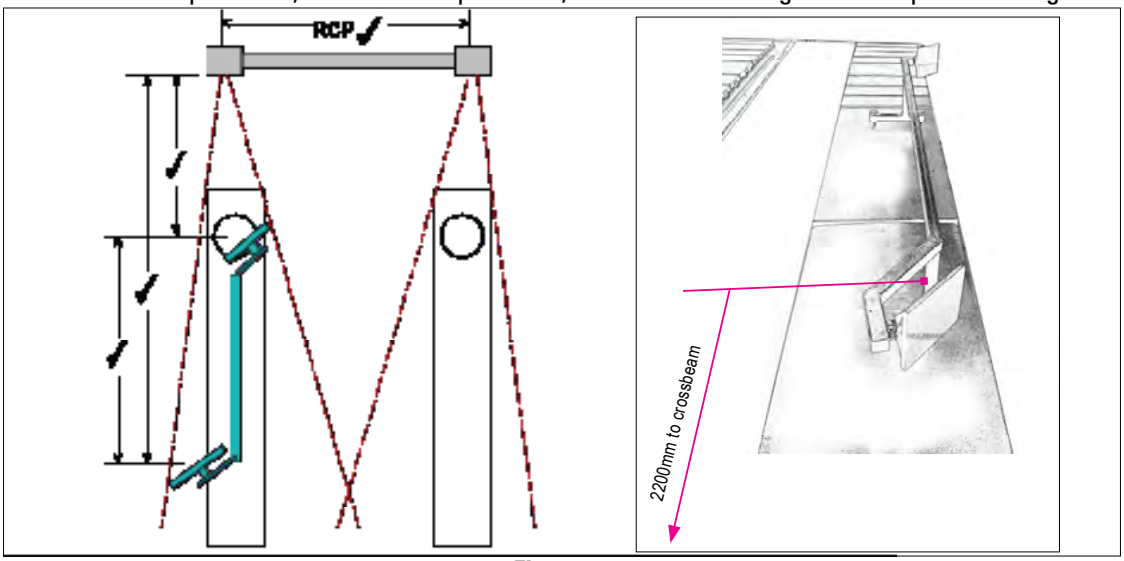
The following screen appears:



Attention!!
When the calibration bar position be ready in below steps, always waitting for 2-3 seonds for next step.
Make sure the calibration bar and the targets no any shake on the runway in below process.

- Figure 31 -

The beam height show on the screen is 850mm ,it is a suggestion height but not consider the height of lift platform .when you do RCP calibration on lift platform ,first level the platform ,then the beam height 850mm plus the height of lift platform.



- Figure 32 -

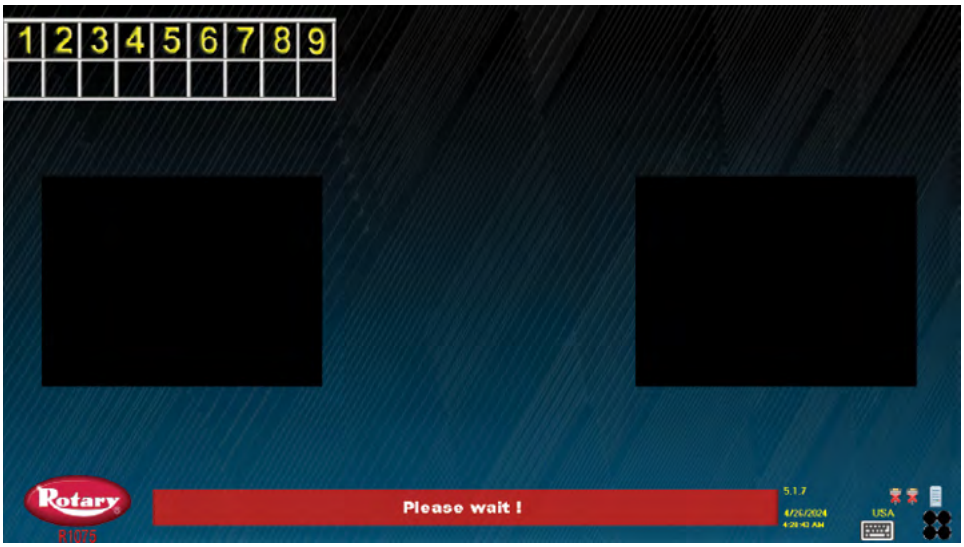
Place the calibration bar onto to the left side of runway ,position see figure 31 and 32.

Press the F3 key,to check the target view and if necssory lift the beam up and down for better view.

Attention!!
Be carefully that do not let the front target shadows the rear targets.

- Figure 33 -

Press the F1 key,back the last page(figure 31),then press F4 to start the RCP process.The following screen appears:

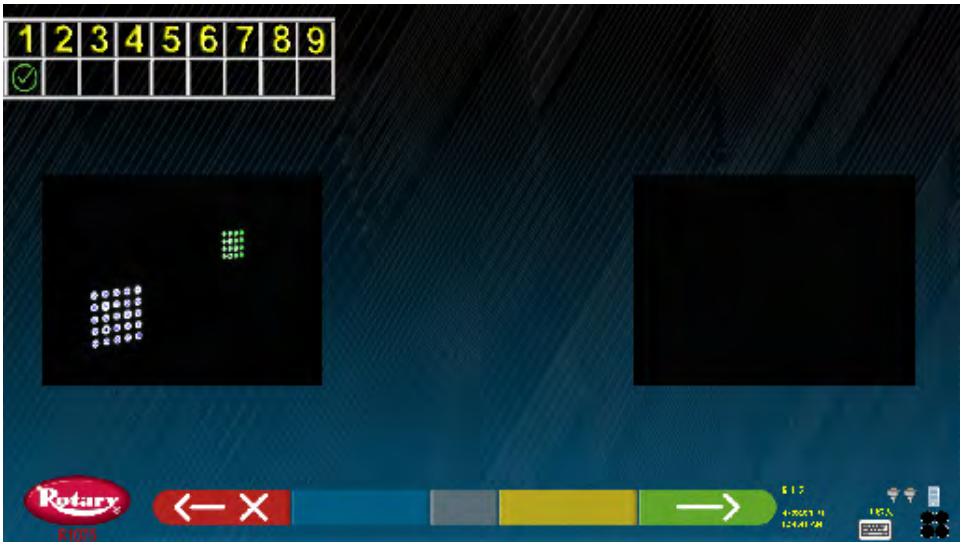


- Figure 34 -

After 30-50 seconds.The following screen appears:

- Figure 35 -

Move the calibration bar right and left until  appears see figure 36.

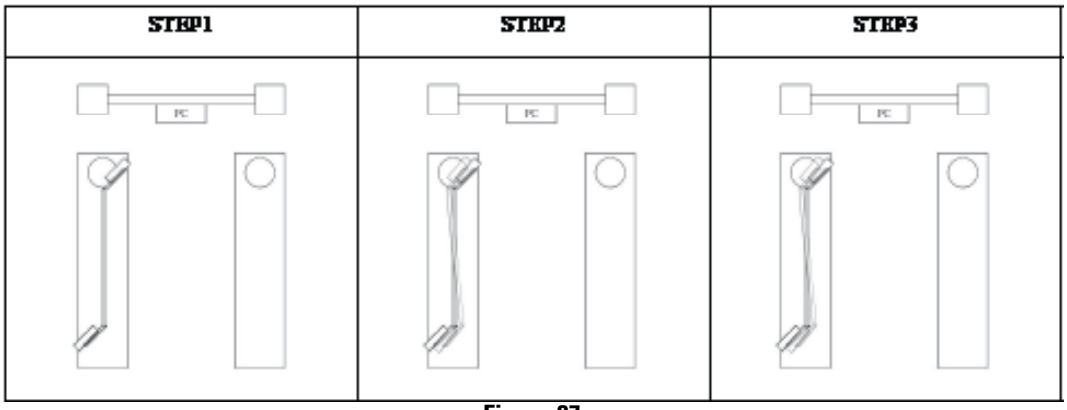


- Figure 36 -

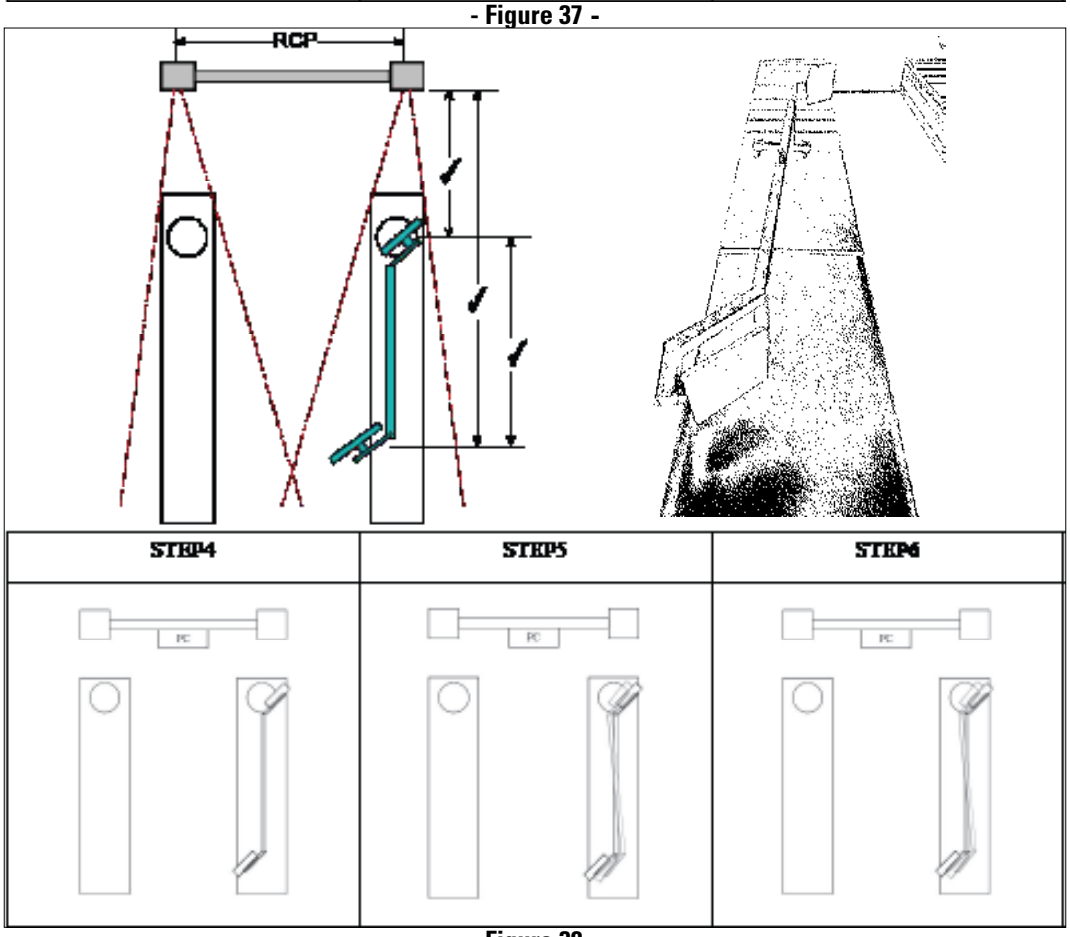
Attention!!

- Make the imaging position of the target within 3/4 of whole black windon.same for next steps.
- Move the calibration bar lightly on the runway.same for next steps.

Press F4 for step 2,then change the calibration bar position a little bit ,until  appear in step 2 .do same as step 3.

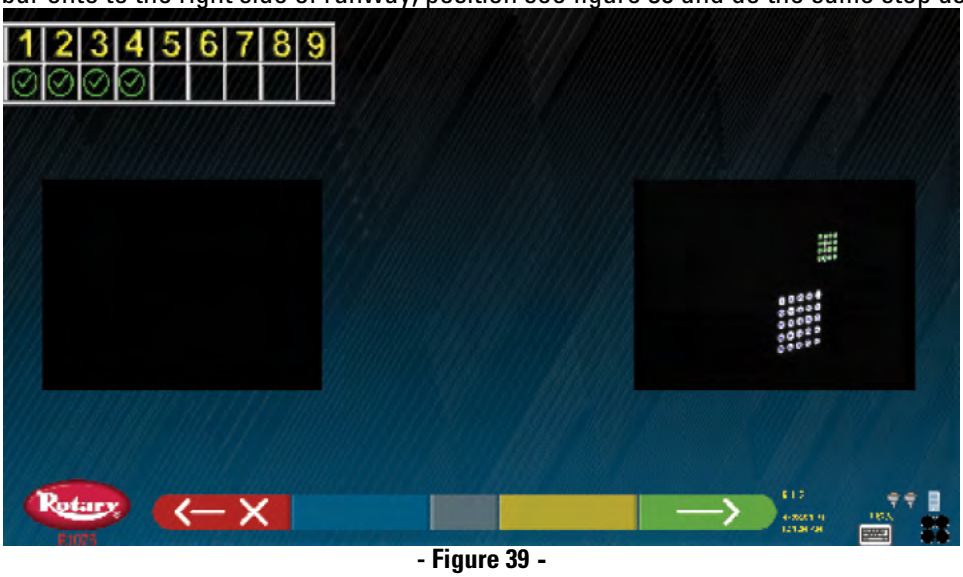


- Figure 37 -



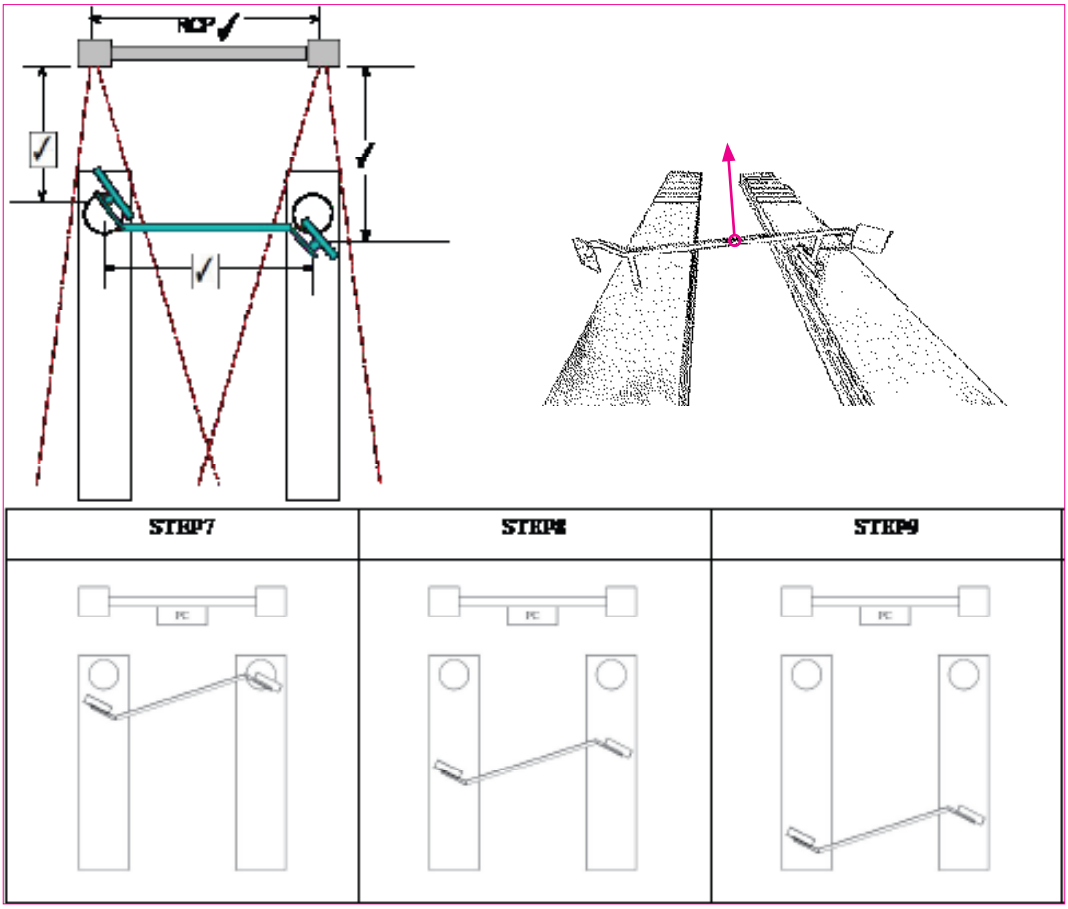
- Figure 38 -

Place the calibration bar onto to the right side of runway, position see figure 38 and do the same step as1-3.

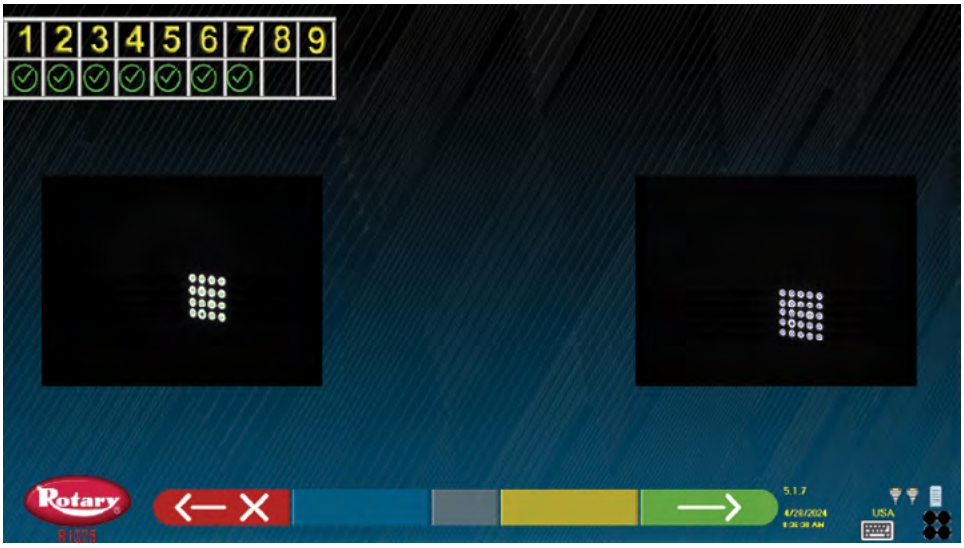


- Figure 39 -

Place the calibration bar over the lift.(step7-9),see figure 40.
Let both targets be as closer to the center of views as possible. Adjust the position until the message says both targets' position is OK.



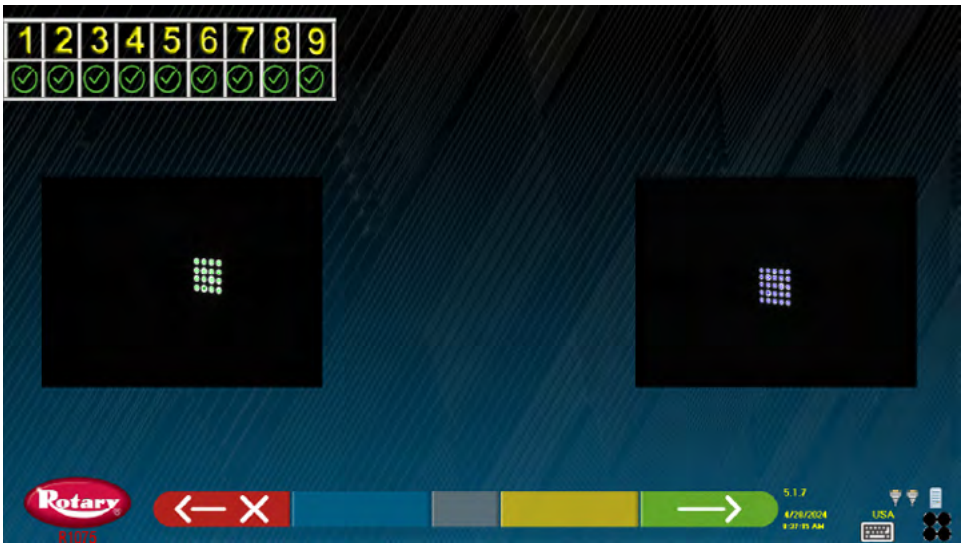
- Figure 40 -



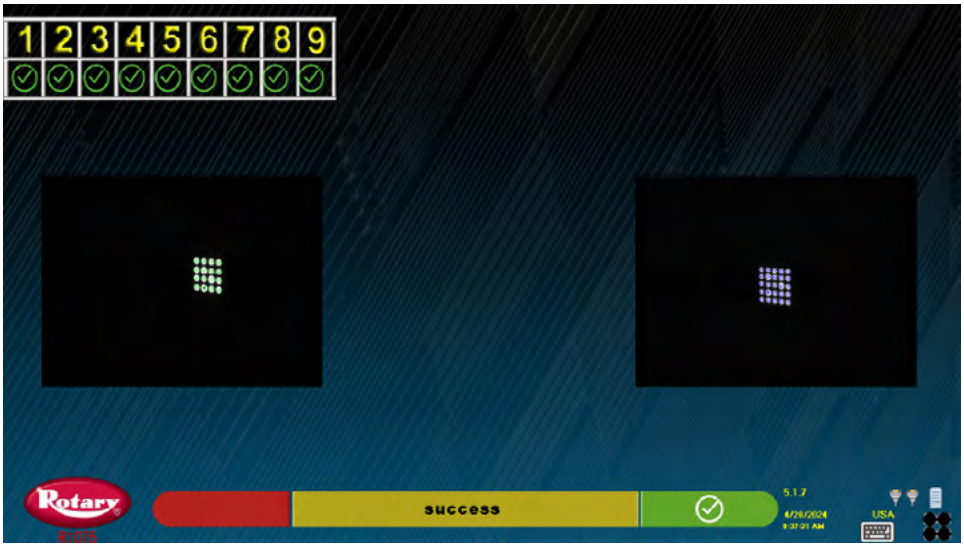
- Figure 41 -

When move back the calibration bar over the lift, the position you can check with camera LED arrow,see figure 44.

After the sucess of step 9,press F4 to save the calibration data into PC.



- Figure 42 -



- Figure 43 -

- Figure 44 -

The camera LED arrow is also telling whether the position is OK.
Up arrow in red means too far and need to put closer.
Down arrow in red means too close and need to put further.
All arrows light up means the position OK.

2.4 Caster compensation adjustment

The first option of the calibration menu is used to correct the readings of the caster angles caused by any “out of level” of the vehicle in a longitudinal direction. This can happen, for example, when the recesses of the lift for the rotating plates are of different heights of the plates themselves.
Simply set the difference between the height of the front wheel and the height of the rear wheel using keys F2 and F3 (see Figure 45).

The equipment automatically compensates for the read caster value taking into account this difference in relation to the average pitch of the vehicle.

- Figure 45 -

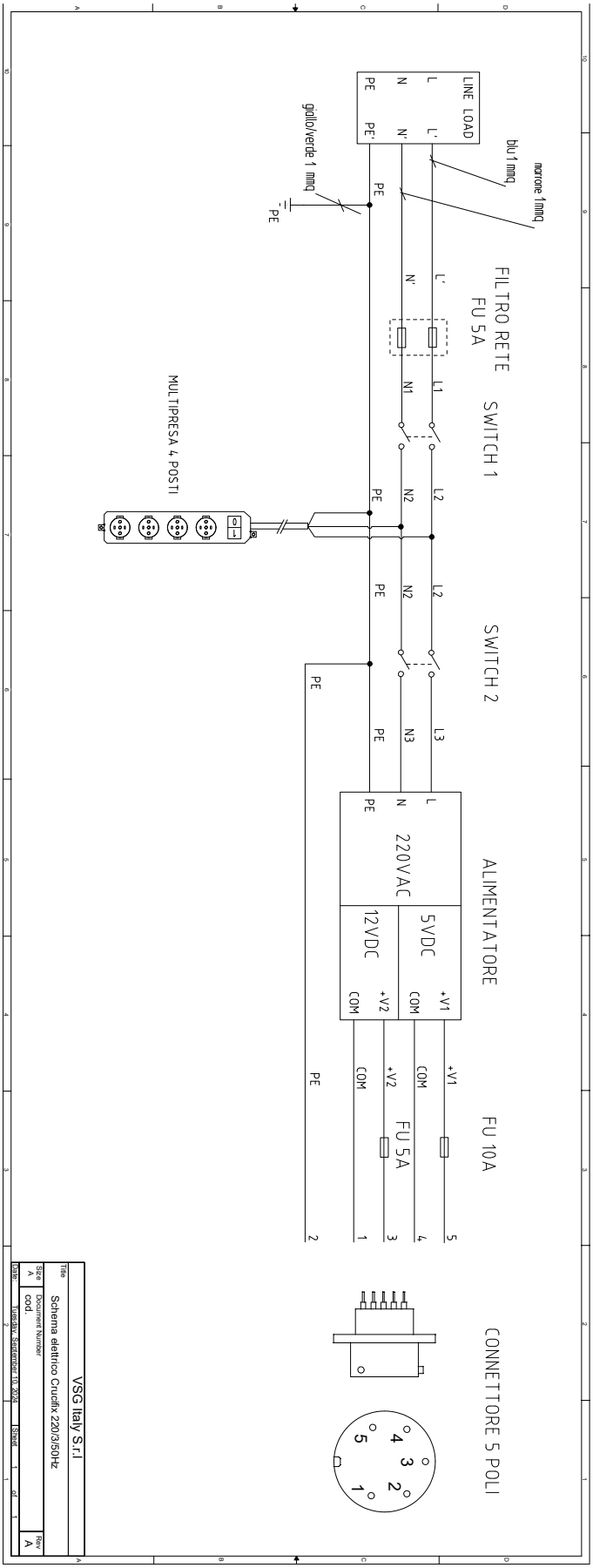
2.5 Steering wheel compensation adjustment

If the measuring sensors are not perfectly calibrated, it may happen that after registration the vehicle does not have a straight steering wheel. The second option of the calibration menu (see Figure 24) is used to compensate for the position of the steering wheel spokes.
Simply set the position of the current steering wheel using keys F2 and F3 (see Figure 46). The equipment automatically compensates for the reading so that the steering wheel spokes are straight.

- Figure 46 -

3 ANNEX

3.1 Electric wiring diagram



- Figure 47 -

4 TEST PROCEDURES

4.1 Test of the measurement of angles measured by the cameras

All corners read by the cameras are displayed on the screen:
Alpha, Beta; Gamma; these are connected to the Toe, Camber and Level angles respectively (see Figure 48).

Press key F1 to exit.

- Figure 48 -

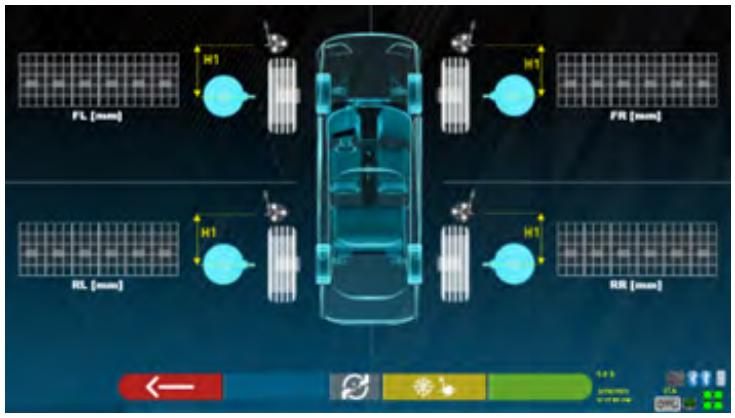
By pressing key F5 % a page with the distances X, Y and Z of the target from the reference measuring head is displayed.

Press key F1 to exit.

- Figure 49 -

By pressing key F4 H a page with the heights measured by the “Minitargets” (if available) from the centre of the wheel is displayed.

Press key F1 to exit.



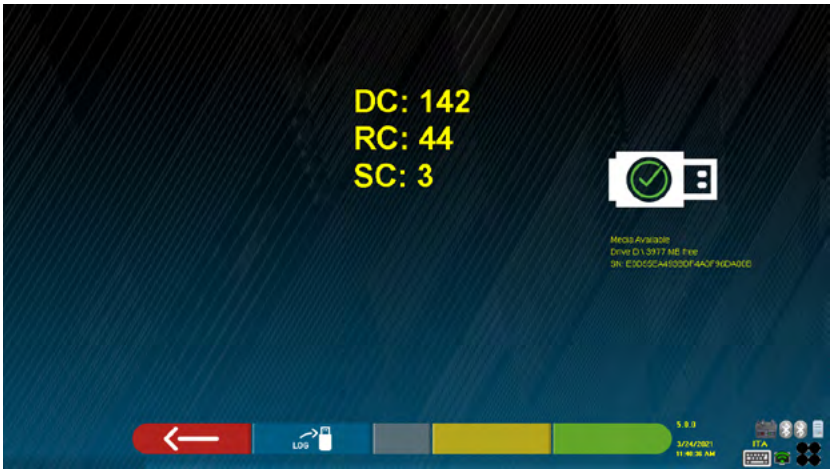
- Figure 50 -

4.2 Count of number of tests performed

Starting from the home page, simultaneously press the Ctrl-F12 keys, the page with the count of the tests performed appears (see Figure 51).
The meaning is the following:
DC = Diagnosticated vehicles
RC = Registered vehicles
SC = Saved vehicles

NOTE: The counters are kept even after the SW is updated.

NOTE 2: By pressing key F2, a “Log” file is saved in the USB memory key, such as “filename#.log” in the “AS9” directory.



- Figure 51 -

If no USB memory key is inserted in the PC ports, by pressing key F2, the “Log” file is saved in the PC folder:
“/TMLAB/ALIGNERS9/Temp”.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