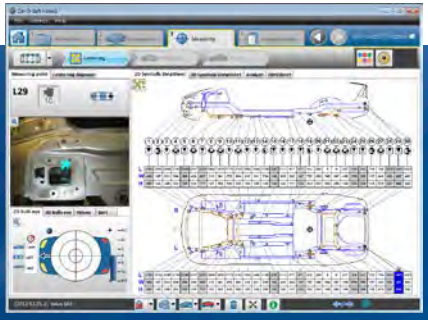
Electronic Measuring System

Car-O-Tronic Vision2

Instruction Manual



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CAR-O-LINER®

Foreword

Car-O-Tronic Vision2 is an electronic measuring system which allows you to electronically measure vehicles. Car-O-Tronic Vision2 comprises Car-O-Tronic, Vision2 Software and Car-O-Data. Car-O-Tronic is the measuring hardware, Vision2 Software is the measuring software. Car-O-Data is a database containing Car-O-Liner DataSheets, photo DataSheets and indexes for most vehicles. Car-O-Data is available through an online subscription or a DVD subscription which is updated 4 times a year.

Car-O-Liner Group AB can in no way be held responsible for intentional or unintentional damage, and consequent unlimited loss of profit, loss of income, loss of business opportunity, loss of use or other similar nuisance, irrespective of how this has arisen, that originates from deficiencies in the information provided in the Vision2 Software or its use in a manner not intended.

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NOTE: Before installation of Vision2 Software and Car-O-Data DVD, be sure to read the Licence Agreements. By installing the software, you agree to the terms of the Agreement.

NOTE: Car-O-Tronic Vision2 Instruction Manual (on installation cd) is one instruction out of three that describes Car-O-Tronic Vision2; the other two are Start Up Guide (on installation cd) and Quick Guide (printed).

Notice

Dimensions and information contained on Car-O-Liner Data Sheets are compiled from information prepared by measuring vehicles and from information provided by the car manufacturers. The methods used in the measuring of vehicles are normally considered reliable as regards to the accuracy required.

Car-O-Liner Group AB and other directly or indirectly involved parties cannot be held responsible for any loss, damage or injury that occurs as a result of deficiencies in the information provided on Car-O-Liner DataSheets or in the Car-O-Liner Index and its components.

We reserve the right to make changes without prior notice.

License Agreement

By installing the software, you agree to the terms of this Agreement. To the extent that other terms have been agreed to in writing with Car-O-Liner Group AB, such other terms shall prevail. If you do not agree with the terms, promptly return the software box with accompanying items for a refund.

Software and documentation are owned by Car-O-Liner Group AB and its suppliers and are protected by copyright laws and international treaty provisions.

You may not rent, lease, sub-licence, copy or lend the software or documentation. You may not alter, modify or adapt the software or documentation.

Measuring system functions

All information about the software in this manual is intended for Vision2 Software.

All chapters and sections in this manual with specific *Vision2 X3* Software information are marked *Vision2 X3 (see table of contents)*.

For Car-O-Tronic Vision2 hardware and software overview *see 1.2 Car-O-Tronic Vision2 functions overview*.

Contents

1 Introduction

1.1 General

Car-O-Tronic Vision2 is an electronic measuring system which allows you to electronically measure vehicles. The basic delivery of the electronic measuring system from Car-O-Liner Group AB comprises of the following parts:

- Car-O-Tronic Vision2
    - PC Cabinet
    - Car-O-Tronic measuring slide
    - Battery and charger
    - Measuring bridge
    - Measuring bridge support
    - Measuring adapters and tubes
    - Bluetooth
- Vision2 Software
- Car-O-Data (DVD and Internet)

1.2 Car-O-Tronic Vision2 functions overview

	Car-O-Tronic *Vision2* ***X1***	Car-O-Tronic *Vision2* ***X2***	Car-O-Tronic *Vision2* ***X3***
Hardware			
Click in Batteries	●	●	●
Plug in Slot/Measuring Adapters	●	●	●
Wireless	●	●	●
Compatibility to other benches	●	●	●
High Measuring Points - HMP		●	●
Built in Remote Control			●
Smart LED	●	●	●
Endless rotation			●
Software			
Support for Car-O-Tronic	●	●	●
Support for Car-O-Tronic with HMP		●	●
Complete Workorder Form	●	●	●
Complete Vehicle Index List	●	●	●
Analyze mode of vehicle damage	●	●	●
Automatic Search Point (ASP)	●	●	●
Measuring during pulling (updates 3 times/sec)	●	●	●
Absolute & Comparative Measuring Mode	●	●	●
Documentation as printouts	●	●	●
Quick Guide, Instruction Manual	●	●	●
Backup	●	●	●
Support through VisionWeb	●	●	●
Upper Body Measuring Mode		●	●
Automatic Centering with diagnose	●	●	●
Info Center	●	●	●
Repair Info	●	●	●
Online software and data updates	●	●	●
Online support	●	●	●
Automatic adjustment to screen resolution	●	●	●
Import / export of Workorder	●	●	●
Holding and anchoring support (EVO 1, 2, 3)			●
Balljoint measuring			●
Suspension Check Diagnose			●
Surface Damage Diagnose			●
VIN Decoding			●
Point to Point - P2P Measuring			●
Animated setup/clamping			●
handEye			●

	Car-O-Tronic *Vision2* ***X1***	Car-O-Tronic *Vision2* ***X2***	Car-O-Tronic *Vision2* ***X3***
Vehicle information			
Photos of all measuring points	●	●	●
Photos of vehicles	●	●	●
Chassis drawings	●	●	●
Lower body data	●	●	●
Set-up information	●	●	●
Upper body data, unibody		●	●
Holding and anchoring data (EVO 1, 2, 3)			●
Balljoint measuring			●
Point to point data, unibody and fullframe			●
VIN decoding			●

1.3 Car-O-Tronic Vision2, measuring hardware

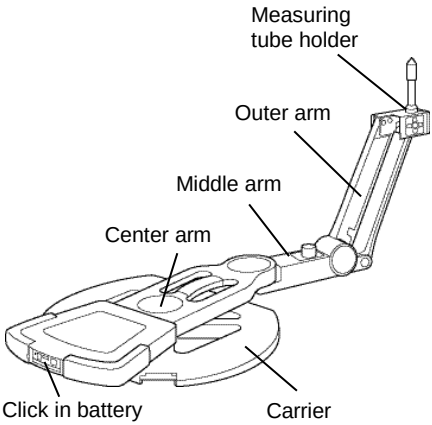
Car-O-Tronic Vision2 is an electronic measuring system designed primarily to measure and check the dimensional correctness of vehicle chassis. Car-O-Tronic measures either with reference to Car-O-Liner DataSheets or on an absolute or comparative basis. Measuring with DataSheets is described in this manual. Advanced mathematics and computer technology mean that Car-O-Tronic can be used without any other special equipment. The only requirements are that the measuring system should be placed on a flat surface, and that the object to be measured should also be placed on a flat surface. There is no need for these surfaces to coincide or be aligned to each other in any particular way.

The five main parts of the measuring system are:

- Car-O-Tronic measuring slide with measuring adapters and tubes
- Measuring bridge
- PC
- Cabinet
- Bluetooth

1.3.1 Car-O-Tronic measuring slide

The measuring slide described in this manual is the Car-O-Tronic.
All use of the name "Car-O-Tronic" in this manual refers to the Car-O-Tronic measuring slide (For Car-O-Tronic and Car-O-Tronic Classic measuring slide functions, *see section 3.6 Car-O-Tronic remote control*).
The measuring slide carrier forms the basis of the measuring arm. It runs on wheels, which makes it easy to move to different positions along the measuring bridge.



The measuring arm constitutes the actual measuring unit. It comprises three arms:

- The center arm is movable in the horizontal plane. It is mounted on a vertical axis on the measuring slide's carrier.
- The middle arm is mounted on a vertical axis on the center arm.
- The outer arm, with a parallel movement arm, is mounted on a horizontal axis at the end of the middle arm. At the other end of the parallel movement arm there is a measuring stylus holder for different measuring tubes which hold the measuring adapters as specified on the DataSheets.

CD containing the measuring slide calibration parameters.

There is an angle sensor in each pivot which emits electric signals, proportional to the actual angle of the arm. By knowing the angle of each arm and the distance between the pivots, the position of the adapter relative the center of the measuring slide can be calculated. This is the same type of mathematics that is used in robotics. In reality, the mathematics are more advanced if you take the tolerances in the arm lengths, angle errors in positioning etc. into consideration. Every measuring slide is therefore individually calibrated prior to delivery, and the parameters, lengths, angles etc. which are calculated; apply only to that particular measuring slide.

The major part of the electronics, together with the rechargeable battery, is mounted in the center arm.

In addition to the above mentioned length and angle sensors, the measuring stylus holder sensor can automatically identify which measuring tube is selected. Therefore, it is possible to change the measuring tube as necessary to reach the desired measuring point, and still automatically have the correct measuring value.

For practical reasons it is not possible to read off the measurement on the measuring slide, instead the measured values are transmitted, via wire-less communication, to the PC. This is where all measured data; DataSheets, measurement reports etc. are processed and stored.

1.3.2 Measuring bridge

There are two different measuring bridges M75 and M74. Which one to be used, depends on the type of bench. The instructions in this instruction manual are valid for both versions.

The measuring bridge is complemented with a longitudinal measuring rail. The measuring bridge forms the surface (track) for the measuring slide, and it is therefore important that it is placed on a plane surface.

The longitudinal measuring rail on the measuring bridge constitutes, in combination with the length measuring head under the measuring slide's carrier, a longitudinal measuring system which keeps a register of where on the measuring bridge the measuring slide is. This should be placed on the left side of the vehicle.

Ensure that the vertical distance remains within certain limits to provide the optimum range and the arrow on the bridge is pointing to the front of the vehicle.

The longitudinal measuring system gives double readings, both incremental (pulse) and absolute. The absolute reading implies that once the measuring system is active and centered to the vehicle, the measuring slide can be lifted on and off the measuring bridge without the centering being lost, provided that the measuring bridge is not moved from its original position in relation to the vehicle.

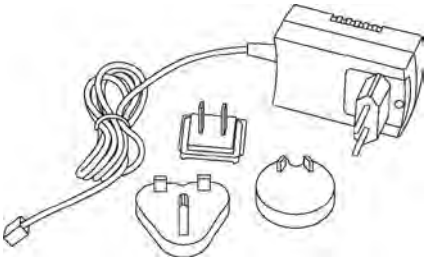
1.3.3 Cabinet and PC

The cabinet is intended for storage of the PC, measuring slide and a set of measuring tubes and adapters. It is recommended that the measuring slide should be stored in the cabinet when not in use.

PC

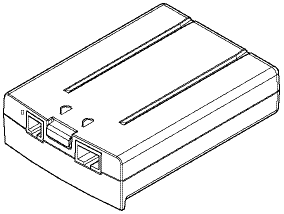
The PC processes all measured data, DataSheets and measurement reports etc. The computer is not included in the basic delivery of Car-O-Tronic Vision2, but a computer is required for using the Vision2 Software. Along with the PC you also need a printer, a keyboard and a mouse.

Measuring slide charger and click in battery



The battery used with Car-O-Tronic is Lithium-ION. Full capacity of the battery is enough for about 6-8 hours of continuous operation. But, since Car-O-Tronic shuts down automatically after a set time, the battery actually lasts much longer.

NOTE: Before charging the battery you must remove it from the measuring slide.

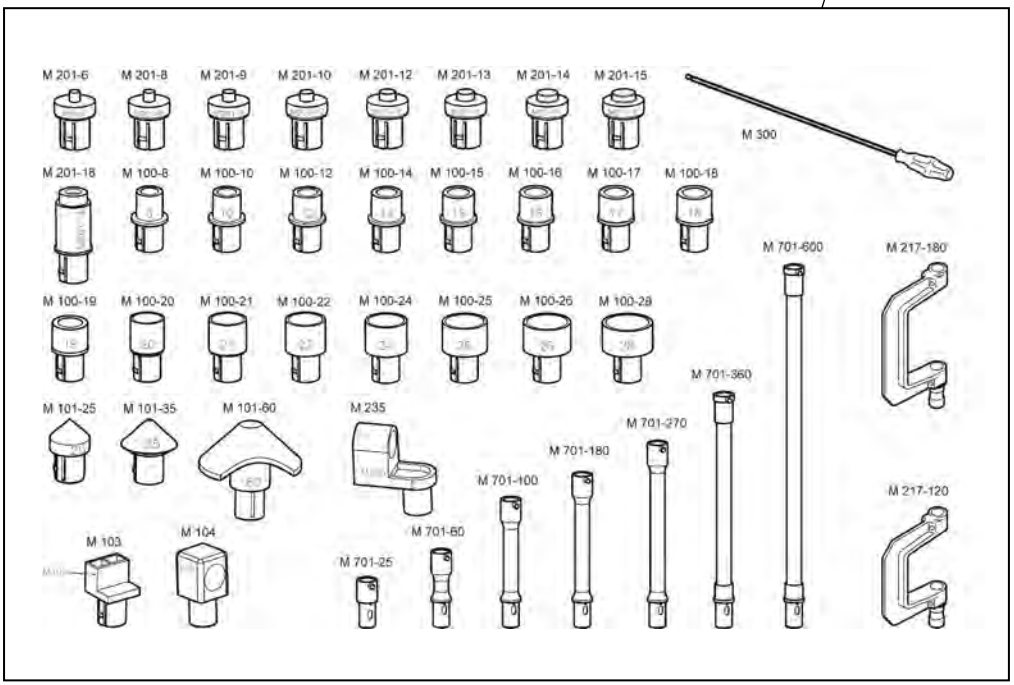


The capacity of the battery is continuously displayed in Vision2 Software during measuring mode. The range displayed is 15-100%. The battery should not be exposed to severe heat. During charging in particular, the units should be protected from excessive heat, as this adversely affects their ability to absorb the charge.

Once the battery has been discharged it takes 2-3 hours before you have 80% capacity in the battery and 6 hours to reach full charge.

Measuring parts M62

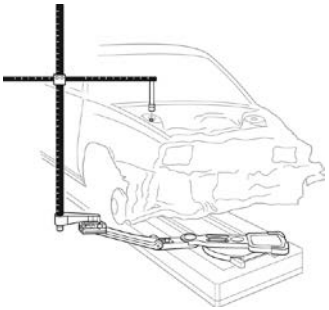
The measuring tubes and adapters are stored in the drawer at the right side of the cabinet.



Measuring tubes and adapters.

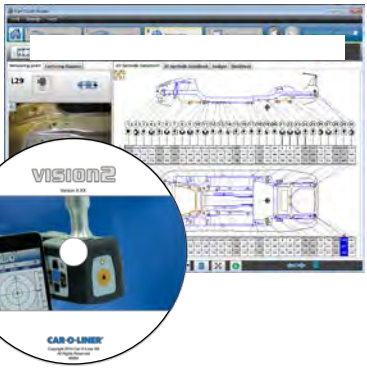
M705 HMP unit

The High Measuring Point (HMP) M705 unit is used to measure high points on the vehicle body and in the engine compartment, *see section 3.10 High Measuring Points (HMP).*



1.4 Vision2 measuring software

Vision2 Software contains the original version of the measuring software. Vision2 Software automatically checks for updates every week if you are a registered Car-O-Data internet user. As a Car-O-Data internet user you can also manually update Vision2 Software. For DVD subscribers the updates for Vision2 Software are included on the Car-O-Data Update DVD. Always make sure you have the most recent DVD version. Vision2 Software must be installed on the hard drive.



1.5 Car-O-Data vehicle database – DVD´s and Internet

Car-O-Data is the world´s largest vehicle database containing Car-O-Liner index with DataSheets for more than 15 000 vehicle models. To use the Car-O-Data database you need to be a Car-O-Data subscriber.

	Car-O-Tronic *Vision2* ***X1***	Car-O-Tronic *Vision2* ***X2***	Car-O-Tronic *Vision2* ***X3***
Vehicle information			
Photos of all measuring points	●	●	●
Photos of vehicles	●	●	●
Chassis drawings	●	●	●
Lower body data	●	●	●
Set-up information	●	●	●
Upper body data, unibody		●	●
Holding and anchoring data (EVO 1, 2, 3)			●
Balljoint measuring			●
Point to point data, unibody and fullframe			●
VIN decoding			●

Car-O-Data Internet is an online subscription which enables you to update desired models in your vehicle database via internet.
As a Car-O-Data Internet subscriber you will have instant access to the latest DataSheets with new releases every week!

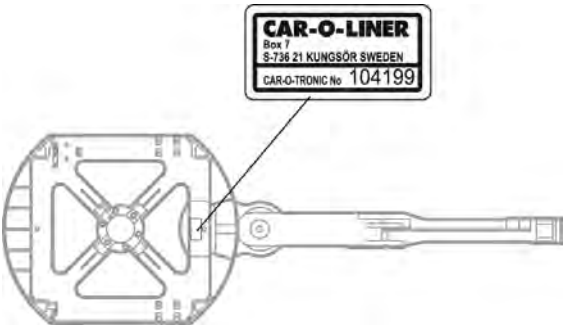
As a DVD subscriber you will receive new DataSheets four times a year. Always make sure you have the most recent version of Car-O-Data Update. The *Car-O-Data DVD* **must** be installed on the hard drive in order to update the Car-O-Liner Index and the Car-O-Data database.

Dimensions and information on Car-O-Liner DataSheets are compiled from information prepared by measuring vehicles, and from information provided by the car manufacturers. The methods used in the measuring of vehicles are normally considered reliable regarding the accuracy required.

Car-O-Data update DVD

Marking

The name plate (with Car-O-Tronic serial number) is placed at the bottom of the Car-O-Tronic measuring slide.



2 Safety

2.1 General

Car-O-Tronic Vision2 has been designed and tested to meet strict safety requirements. Please read the following instructions carefully before operating Car-O-Tronic Vision2, and refer to the instructions as needed to ensure the continued safe operation of Car-O-Tronic Vision2.

Information provided in this manual describes the suggested best working practices and should in no way take precedence over individual responsibilities or local regulations.

Great effort has been placed on the design and manufacture of Car-O-Tronic Vision2 so that it will comply with all applicable safety aspects for this type of equipment. During operation and other work, it is always each individual's responsibility to consider:

- Their own and other's personal safety.
- The safety of Car-O-Tronic Vision2 through correct use of the equipment in accordance with the descriptions and instructions provided in this manual.

By observing and following the safety precautions, users of Car-O-Tronic Vision2 will ensure safer working conditions for themselves and their fellow workers.

2.2 Warnings and important notices

The following types of safety signs are used on the equipment and in Car-O-Liner's instruction manuals:

PROHIBITED – Prohibits behaviour that can cause injury.

COMMAND – Prescribes a specific responsibility or action.

WARNING – Warns of risks for personal injuries and or damages to equipment.

The following warnings and important notices are used in the instruction manual:

WARNING
Warning (in bold type) is used in this manual to indicate a possible danger that could lead to personal injury. An instruction is normally given, followed by a short explanation plus the possible effect if the instruction is not followed.

IMPORTANT
Important (in bold type) is used to indicate a possible danger that could lead to damage to the equipment and/or cause environmental damage.

NOTE: (in bold type) is used to accentuate supplementary information that is required for problem-free use or optimal use of the equipment.

In addition to the safety signs illustrated in section 2.3 "Safety signs", the following warnings and important notices appear in the manual:

WARNING! All electrical connections must be carried out by a qualified electrician. Risk for electrical shock.

WARNING! Most service must be carried out by Car-O-Liner service personnel and service support. Risk for electrical shock.

WARNING! Never remove any covers or perform any work to the equipment without unplugging it from the wall outlet. Risk for electrical shock.

WARNING! Unplug the equipment from the wall outlet before servicing, cleaning or maintenance. Risk for electrical shock.

WARNING! Do not disassemble or short circuit the battery. Do not overcharge or put it into a fire. Risk for injuries.

WARNING! The arm of the measuring slide must be locked when moving it from the measuring bridge. Risk for crush injuries.

IMPORTANT! It is the responsibility of the owner (user) to ensure that the equipment has been installed as specified in the instructions provided. It is also the owner's responsibility to ensure that the equipment is inspected in accordance with applicable regulations before it is used.

IMPORTANT! Keep the measuring tubes, the measuring adapters and the measuring tube attachments clean. These are precision parts that contribute to accurate measurement results.

IMPORTANT! Lock the measuring tubes and the measuring adapters with the proper locking devices. Accuracy will suffer if these items are not properly secured.

IMPORTANT! The Car-O-Tronic measuring slide should be kept away from moisture and fluids.

IMPORTANT! Dust, paint and other chemicals should be kept away from the measuring bridge.

IMPORTANT! The measuring bridge should be kept clean to allow smooth operation of the measuring slide.

IMPORTANT! The Car-O-Tronic measuring slide and bridge should be kept away from all welding sparks and slag.

IMPORTANT! The battery should not be exposed to severe heat. During charging in particular, the battery should be protected from excessive heat, as this adversely affects its ability to absorb the charge.

IMPORTANT! No strong solvents should be exposed to the measuring slide or the measuring bridge.

IMPORTANT! For the sake of the environment, it is important that the equipment is dismantled in an environmentally friendly way.

IMPORTANT! The measuring bridge should be stored hanging from the side without measuring scale. Do not use the measuring bridge as a storage place and do not place heavy objects on the measuring bridge as it can be damaged.

IMPORTANT! Only one extension at a time is allowed.

2.3 Safety signs

Undamaged safety signs shall always be affixed at the indicated places. If any signs are damaged or missing, the user is responsible for their immediate replacement. The following safety signs can be found on Car-O-Tronic Vision2:

Risk of tripping on loose hoses, etc.

All electrical modifications must be made by a qualified electrician. Disconnect the supply before performing any service or installation work.

Risk of cabinet overturning.

2.3.1 Placement of safety signs

The safety signs are placed as follows:

3 Operation

3.1 General

Before you begin using Car-O-Tronic and Vision2 Software, be sure to read the instructions in this Instruction Manual and that you understand them. The equipment is inspected and checked prior to leaving the factory to guarantee consistent quality and maximum reliability.

Measuring in Vision2 Software is performed with or without DataSheets. All measuring methods are described in this manual, *see sections 3.7-3.13.*

IMPORTANT: It is the responsibility of the owner (user) to ensure that the equipment has been installed as specified in the instructions provided. It is also the owner's responsibility to ensure that the equipment is inspected in accordance with applicable regulations before it is used.

IMPORTANT! Keep the measuring tubes, the measuring adapters and the measuring tube attachments clean. These are precision parts which contribute to accurate measurement results.

IMPORTANT! Lock the measuring tubes and the measuring adapters with the proper locking devices. Accuracy will suffer if these items are not properly secured.

IMPORTANT: The Car-O-Tronic measuring slide should be kept away from moisture and fluids.

IMPORTANT: Dust, paint and other chemicals should be kept away from the measuring bridge.

IMPORTANT: The measuring bridge should be kept clean to allow smooth operation of the measuring slide.

IMPORTANT: The measuring slide Car-O-Tronic and bridge should be kept away from all welding sparks and slag.

3.2 Installation of Car-O-Tronic measuring slide

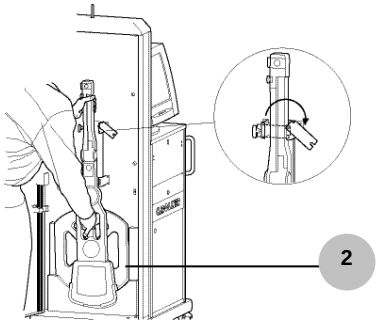
Before centering a vehicle, the measuring slide must be locked onto the measuring bridge. **Open Vision2 Software before installing measuring slide!** *see section 3.3 Open the Vision2 Software and start to work.*

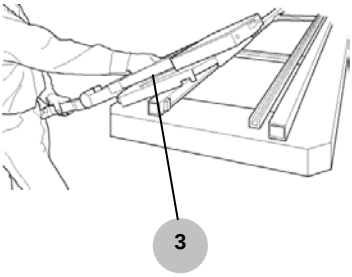
WARNING: The measuring slide arm must be locked whenever the measuring slide is moved outside the measuring bridge. Risk of crushing injuries.

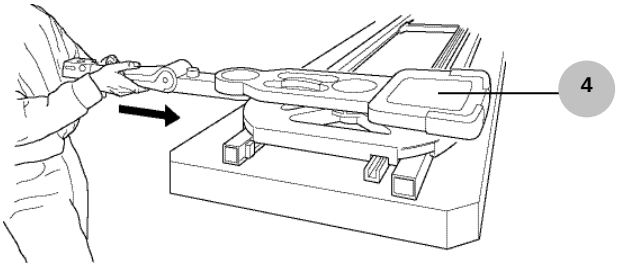
1. Make sure that the measuring bridge is secured to the bench; see Car-O-Tronic Vision2 Start Up Guide, section 4.1 "Installation of measuring bridge".
2. Remove the measuring slide from the cabinet
3. Place the measuring slide onto the measuring bridge.

NOTE: When placing the measuring slide onto the bridge, grab the measuring slide as shown. Grab the outer arm of the measuring slide with your left hand and grab the center arm with your right hand.

4. Push the measuring slide into place onto the bridge.

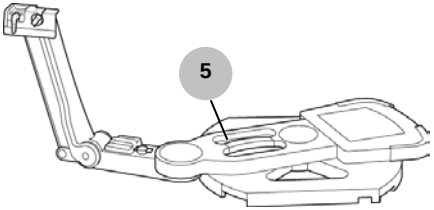




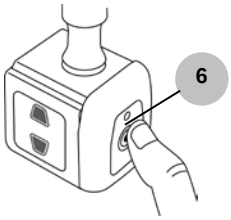


The measuring slide arm must always be kept locked whenever the measuring slide is moved outside the measuring bridge. Therefore, the arm must be unlocked once the slide is placed onto the bridge.

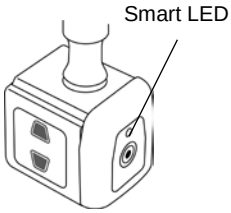
5. Turn the locking handle 90 degrees to unlock the measuring slide arm.



6. Start the measuring slide by pressing the target button on the remote control of the measuring slide.



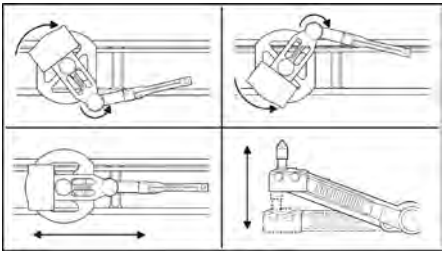
Once the measuring slide is started, the Smart LED shows that the measuring slide is active. The measuring slide now has to be zero-set before it can be used. A resetting symbol will also appear on the screen of the computer if the measuring slide is not zero-set.



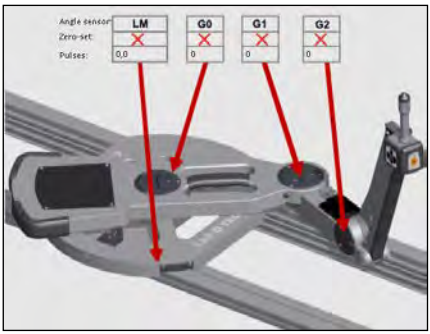
You can receive the following color codes from the Smart LED on the remote control of the measuring slide:

- **Blinking red** = The measuring slide is not zero-set and is not fitted with an adapter and does not have any communication with the PC .
- **Blinking green** = The measuring slide is zero-set and is fitted with an adapter but does not have any communication with the PC.
- **Blinking orange** = The measuring slide is zero-set and is not fitted with an adapter but may have communication with the PC (please check the communication between the measuring slide and the PC, see *section 7.2.1 "Vision Measuring System Diagnose > Communication"*).
- **Fixed red light** = The measuring slide is zero-set and is fitted with an adapter and has communication with the PC but is not at an measuring point.
- **Fixed green light** = The measuring slide is zero-set and is fitted with an adapter and has communication with the PC and is at an measuring point.

7. Zero-set the measuring slide by moving the slide according to the procedure at the right. Take special note of the direction the arm is pointing according to the length scale.



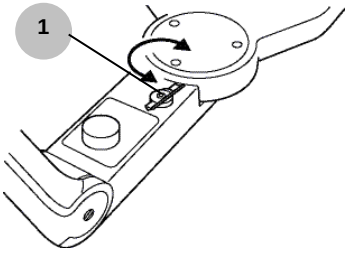
When zero-setting the measuring slide, the picture at the right appears on the screen. When the measuring slide is correctly zero-set, green ticks are shown in all boxes.



If the resetting procedure isn't done correctly, the red LED will remain blinking and a resetting symbol  will appear in the lower status bar of Vision2 Software.

3.2.1 Spring load the measuring slide arm

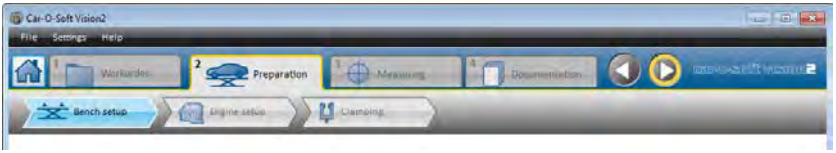
When measuring during a pull, you are advised to tighten the spring load handle so that the measuring slide arm follows the point more easily.



1. Rotate the spring load handle 90 degrees to spring load the measuring slide arm.

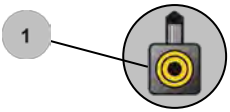
3.3 Open the Vision2 Software and start to work

The Vision2 Software has an easy-to-learn "workflow" presented in a user friendly and self instructive graphic user interface.
A clear and evident tab system continuously informs you where in the process you are and where to go.



Self instructive tab system for easy navigation.
Each tab is described in section 4.1 The Vision2 Software Main Tab System.

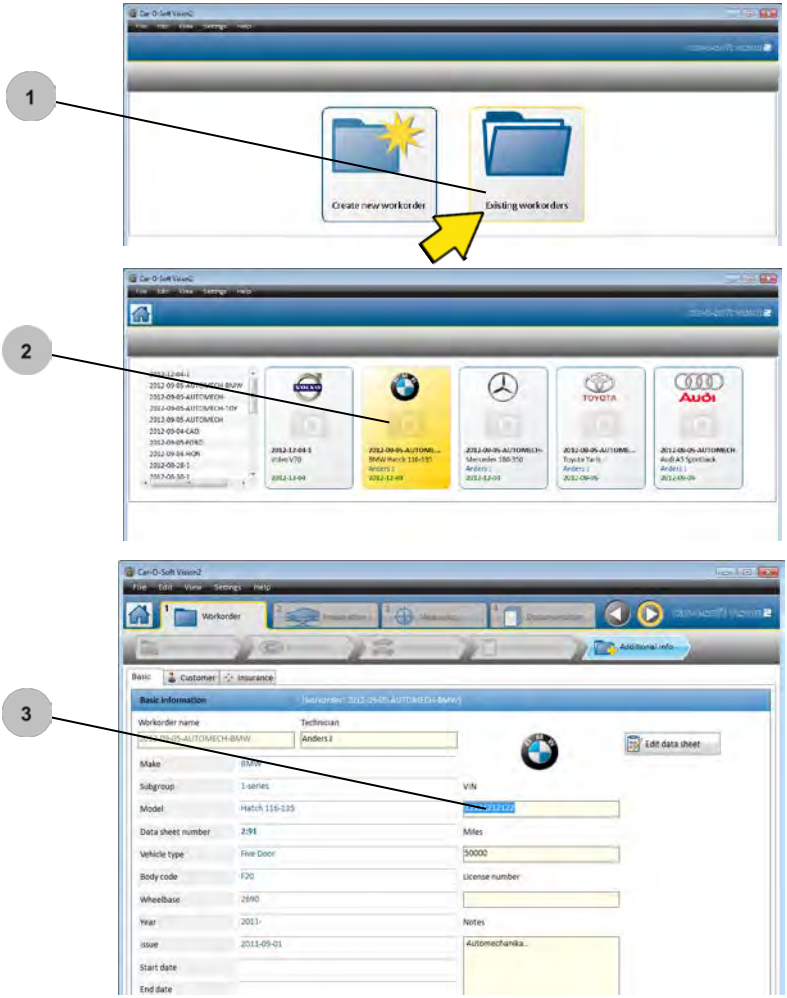
1. Click on the Vision2 Software icon on the desktop.
2. Vision2 Software starts up and the Start menu (Home view) appears.



3.3.1 Open an existing workorder

When continuing to work on an existing workorder:

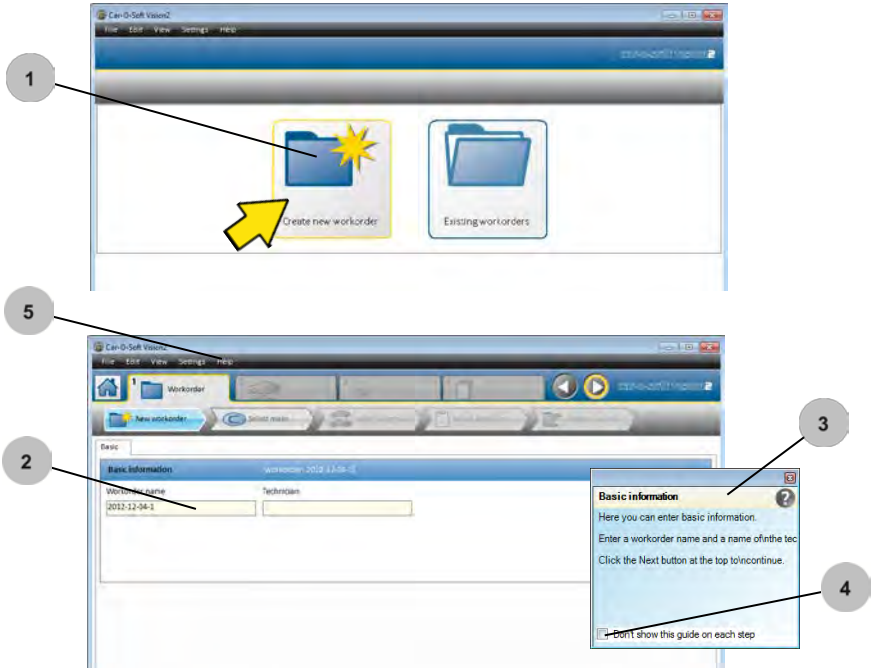
1. Click on the "Existing workorder" button.
2. Select an ongoing workorder.
3. Add info such as license number, mileage, notes etc.



3.3.2 Create a new Workorder

Before you start to do repair work on a vehicle you have to create a new workorder:

1. Click on the "New workorder" button.
2. Fill in the workorder name and create a workorder.
3. The "Workflow Guide" guides you trough the work process. Deactivate by clicking (4). Activate under "Help" (5), chapter 6.

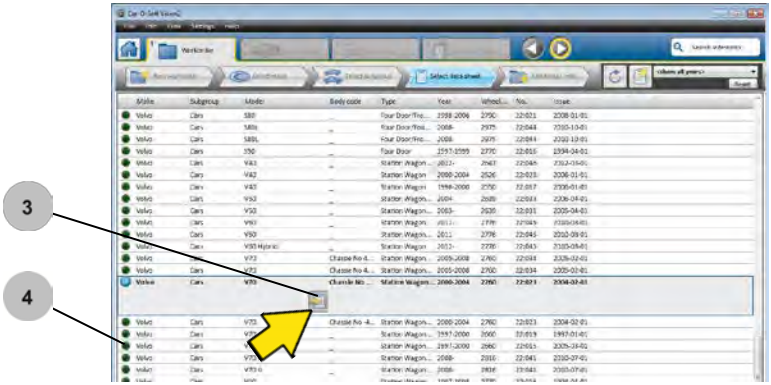


For more extensive information regarding how to fill in the Workorder, *see section 4.3 The Workorder tab.*

3.3.3 Find and download a data sheet

1. Click on the required vehicle make.
2. Click on the required subgroup (for example car or SUV).
3. Click on the required model and then click on the "Download datasheet" icon. icon (4) indicates downloaded datasheet.

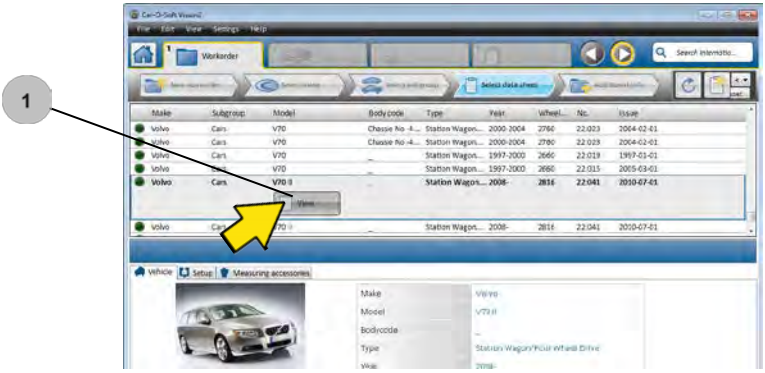
.

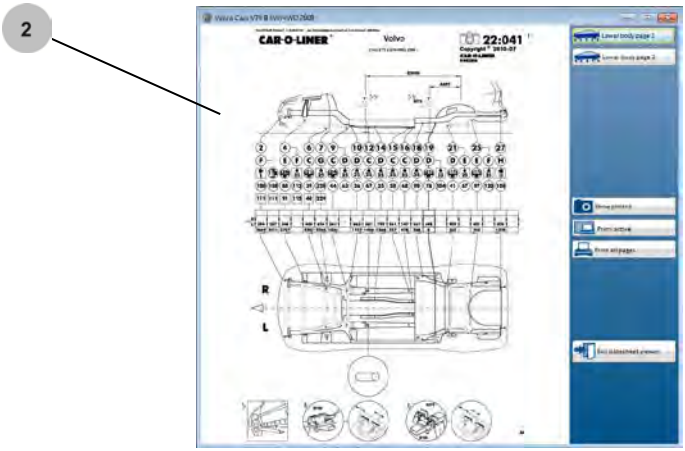


3.3.4 View a datasheet

1 Click on the "View datasheet" icon.

2. Pop up window with data sheet appears



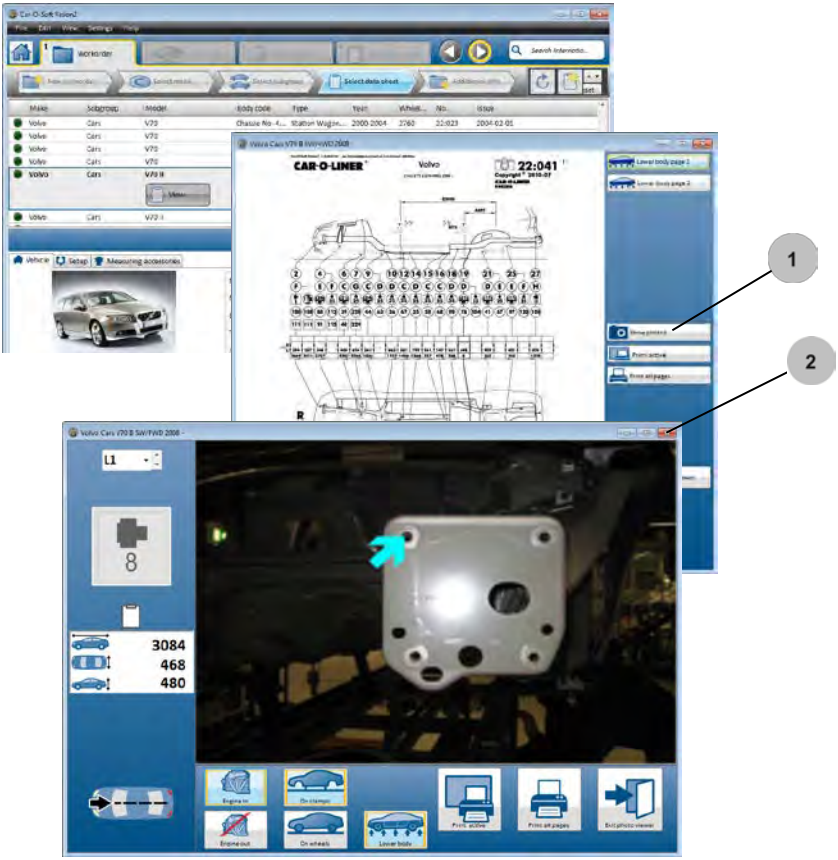


For more extensive information regarding how to read datasheets, *see chapter 8 How to read data sheets*

3.3.5 View photos

1. Click on the "View photos" button for help in locating the correct measuring point.

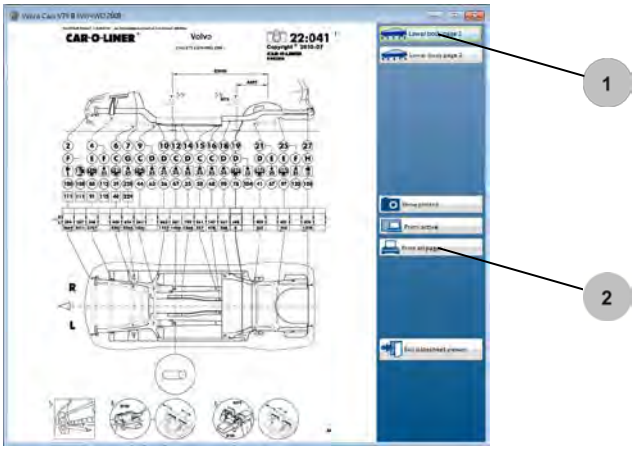
2. Close all pop-up windows by clicking on the  icon in the upper right corner.



For more extensive information regarding how to view photos, *see section 4.3.8 View photos.*

3.3.6 Select a datasheet page for printing

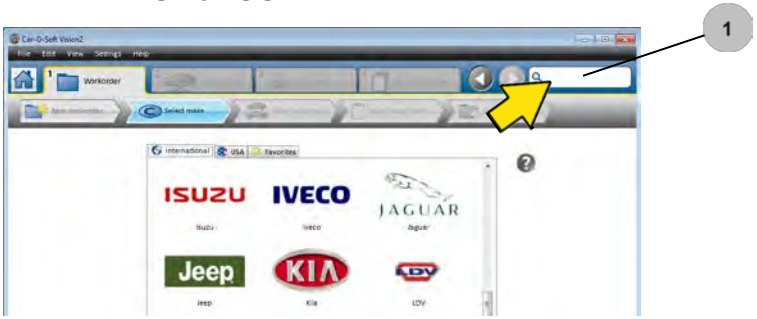
1. Select datasheet page.
2. Print selected datasheet.



3.3.7 Search for a datasheet

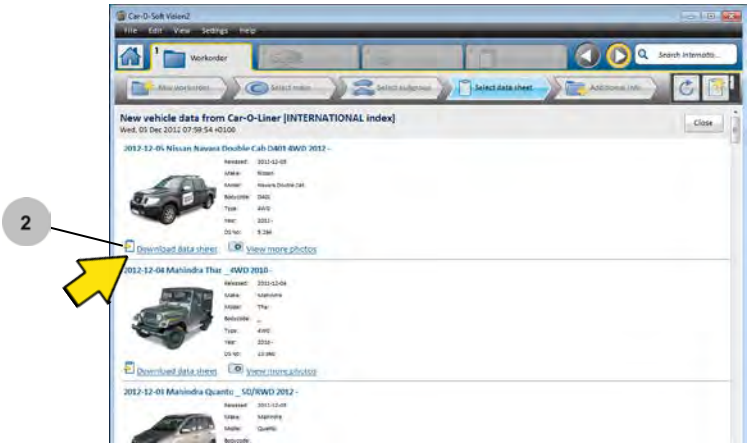
Alternate method of finding a datasheet.

1. Type, for example, make, model or body code.
   Click on the magnifying glass icon.



3.3.8 View new (recently released) datasheets

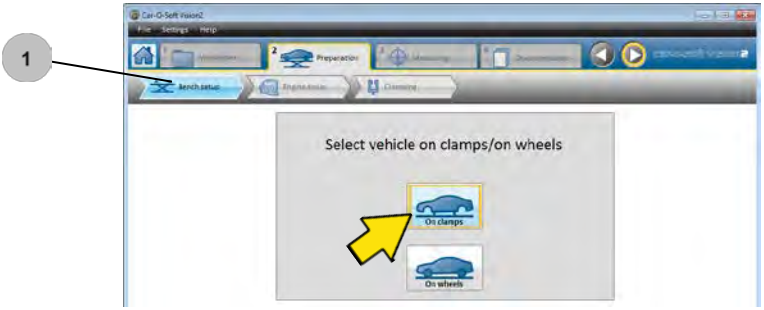
1. Click on "View new datasheet" icon.
2. Click on the "Download datasheet" icon to download selected datasheet from datasheet index.

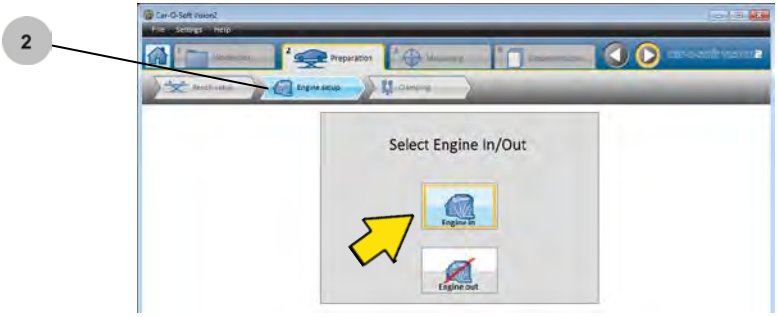


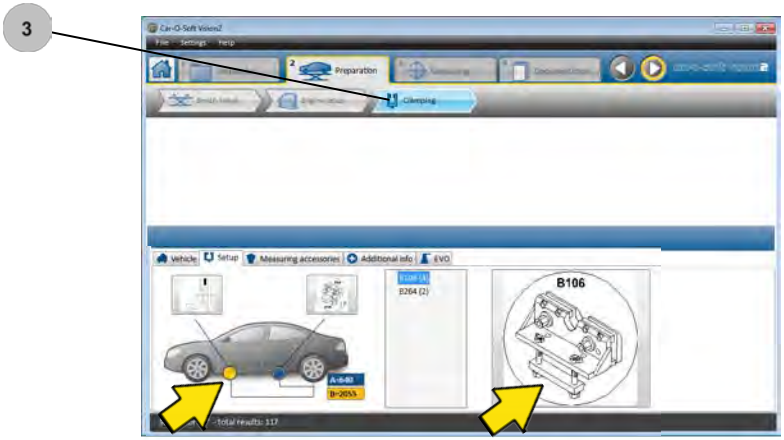
3.3.9 Preparation/set up of the vehicle

Under the "Preparation" tab you will find all the necessary information about how to prepare and set up the vehicle for measuring. The information includes what clamps to use and positioning of the clamps.

1. Click on the "Bench set up" icon to select measuring "On clamps" or "On wheels" depending on how you are planning to work on the vehicle.
2. Click on the "Engine set up" icon to select "Engine in" or "Engine out".
3. Click on the "Clamping" icon for information about which clamps to use and where to attach them.





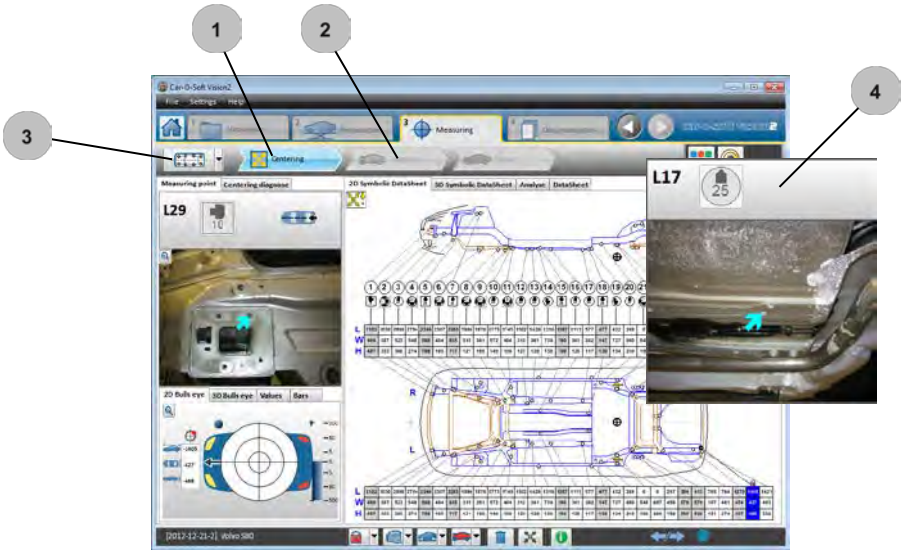


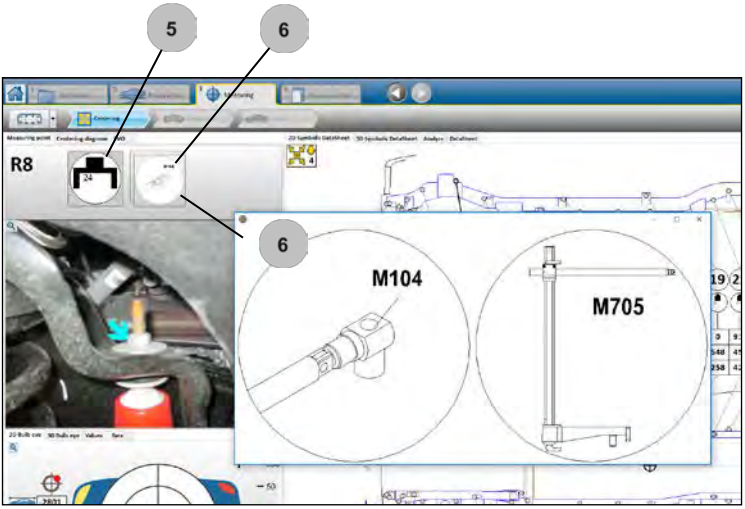
For more extensive information regarding preparation/set up of the vehicle, *see section 4.4 The Preparation tab.*

3.3.10 Centering and measuring of vehicle

Under the "Measuring" tab you will find all the necessary information to perform centering and measuring of the vehicle.
You can easily check your result in the "Diagnose" and "Repair" modes.
The measuring method showed in this section is "Normal measuring".

1. Centering of the vehicle.
2. Switch between "Diagnose" (before repair) and "Repair" (after repair) by clicking red/green car icon in the lower status bar.
3. Measuring method "Normal" is default.
4. See previews of measuring points without selecting a specific measuring point by placing the cursor on a measuring point.
5. Icon showing what adapter to use.
6. Click on icon to zoom explanatory drawings.





For more extensive information regarding Centering and the "Normal measuring" method *see section 3.7 Centering and normal measuring*

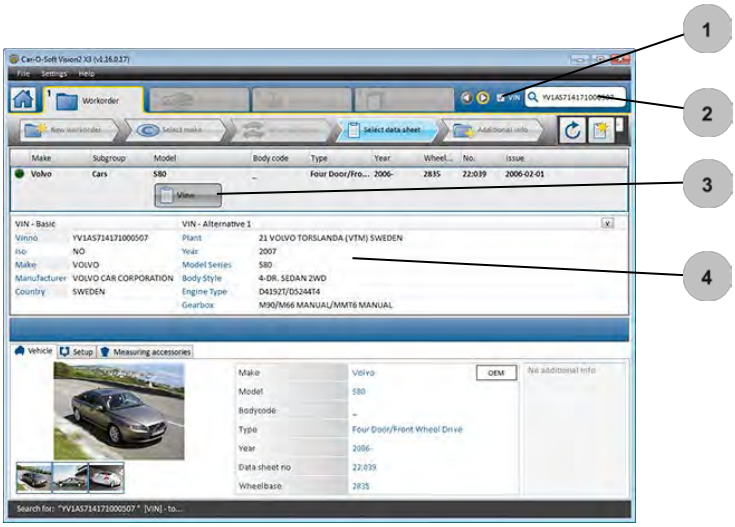
3.4 VIN Number System (VNS) *Vision2 X3*

By using the VIN No System (VNS) you will get vehicle information and help to find the correct DataSheet for a specific vehicle.

NOTE! The VIN No system requires Internet access.

Operation in index list

1. Click in the “VIN” field.
2. Type VIN number in the search field and click on the magnifying glass.
3. The VNS searches for the desired DataSheet.
4. Correct vehicle information is displayed.



NOTE! Sometimes the VIN search result will give several DataSheets.

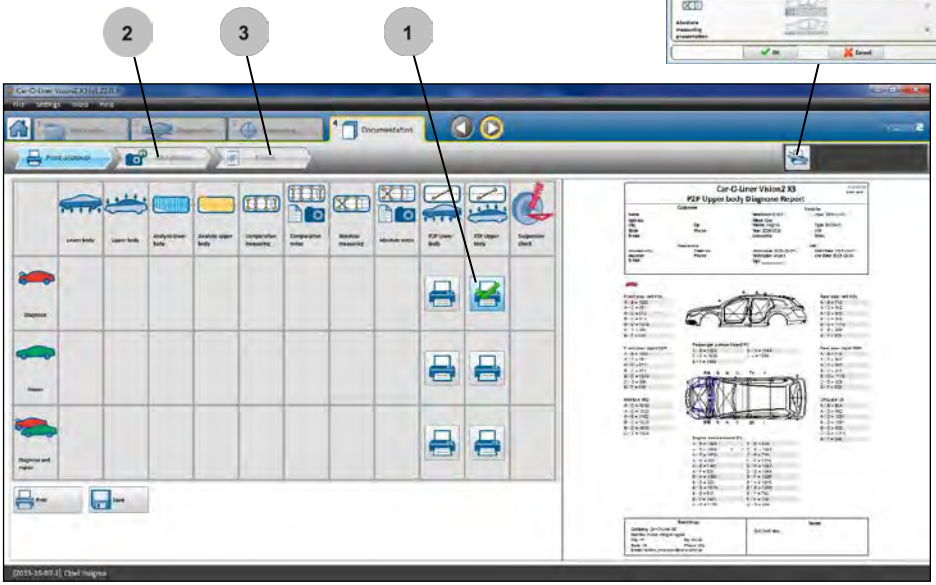
3.5 Documentation of vehicle

Under the "Documentation" tab you will find the "Print report" function which enables you to print out your selected reports. You can also add photos an e-mail the report.

3.5.1 Print report

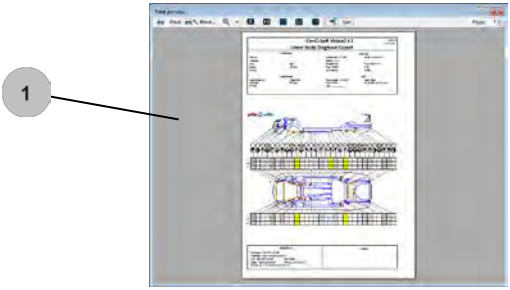
1. Click on requested reports, "Diagnose" (measurements before repair), "Repair" (measurements during repair) or "Analysis".
2. Click on “Add photos”-button to add photos to the report.
3. Click on “E-mail”-button to e-mail the report.

Click on toolbox icon for “Documentation settings”.



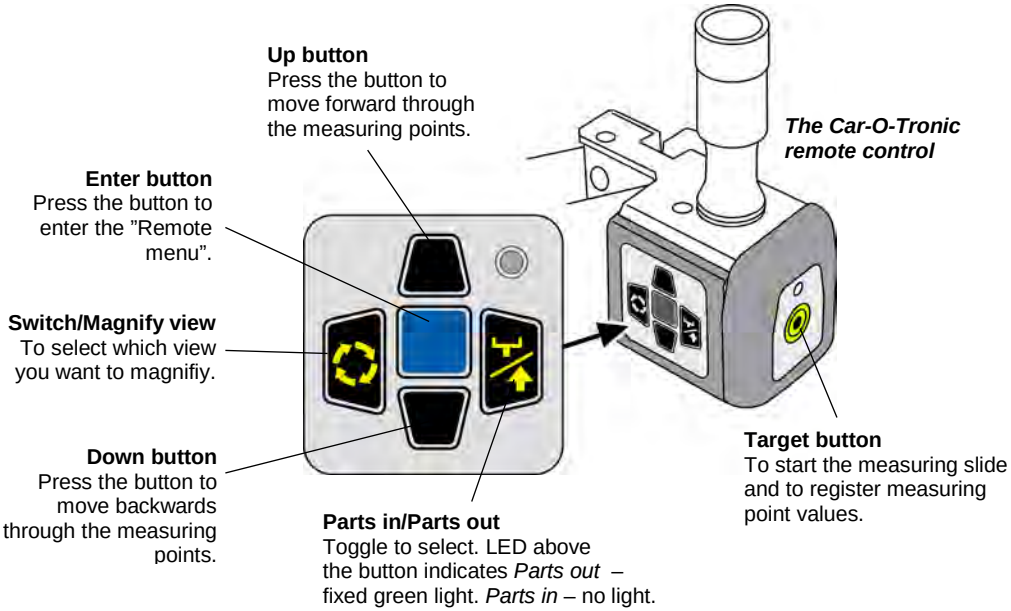
3.5.2 Print preview

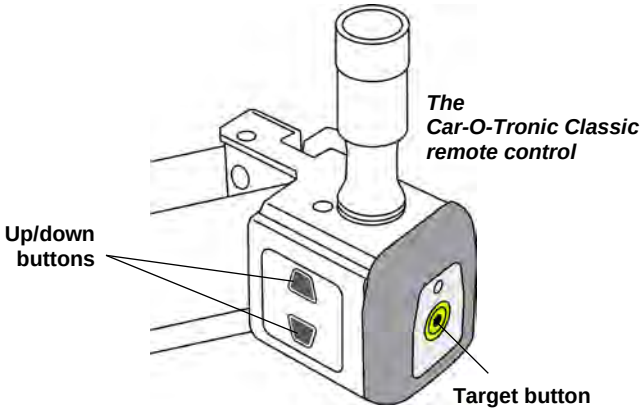
1. Here you can see the print outs before printing, select number of reports per print out, etc.



3.6 Car-O-Tronic remote control

The Car-O-Tronic remote control enables you to navigate the Vision2 Software directly from the masuring slide.
(The Car-O-Tronic Classic remote control only have *Up/Down* buttons and *Target* button".)





3.7 Centering procedure and "Normal measuring" method

When measuring the vehicle you must first perform centering of the vehicle which means you register 4-5 undamaged points.
Centering is a method to calculate tilting of the vehicle, relative to the measuring bridge and bench.
The centering procedure is described in this section.

The measuring method described in this section is called "Normal measuring". “Normal measuring” is used to measure the vehicle and compare the registered values against the recommended values from the DataSheet.

For a correct measuring it is very important to use the adapters as indicated on the DataSheet, to select whether the parts to be measured are assembled or dismantled (Parts in/Parts out) and if the engine is in the vehicle or not. It is also very important to measure the actual points indicated on the DataSheet.

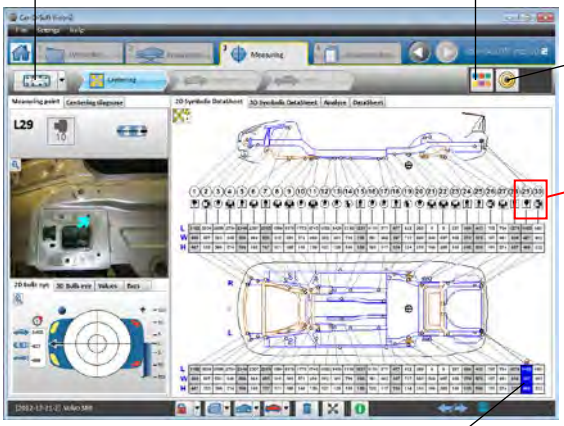
NOTE: The expression “Parts in/Parts out” refers to two different situations: 1) When it is necessary or not to dismantle parts, to allow access to the point to be measured. 2) When parts can be either assembled or dismantled when measuring a point (for example if a front subframe is removed or not).

Through the complete measuring process you are aided by a function called Automatic Searching Point or “**ASP**”. This function shows nearest point to measure by using the Smart LED. The Smart LED indicates where the measuring point is and how close to the point you are (when the Smart LED is green you are at the point), *see section 3.2 Installation of Car-O-Tronic measuring slide*.

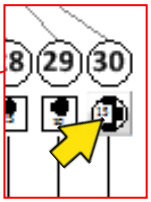
When Smart LED is green you are at the measuring point .

The "Normal" measuring mode.

Remote menu.
For more extensive information, see section 4.5 Key functions: The measuring tab

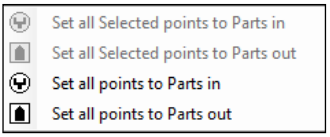


Target Button



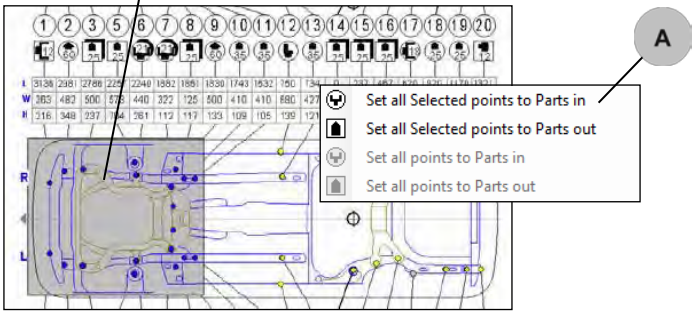
Select parts in /parts out
Toggle by clicking on the adapter symbol beneath the measuring point number.

Active point value (and pre selected start point) - marked with blue



Set all points to Parts in /parts out by rightclicking anywhere in the DataSheet view.

Select Parts in/Parts out for specific areas of the vehicle by using the mouse. Click, hold down, move and release, to highlight the area you want to change settings for.
Select points Parts in/Parts out (A).



The following adapter frames are used in the DataSheet view:

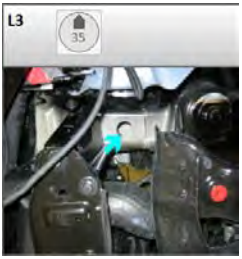
Dismantled (Parts out) – An assembly or component needs to be removed to reach the measuring point (for example strut, suspension, bumper).

Assembled (Parts in) – No assembly or component needs to be removed to reach the measuring point (but some items may need to be removed to reach the point, for example exhaust, heat shield, plastic cover).

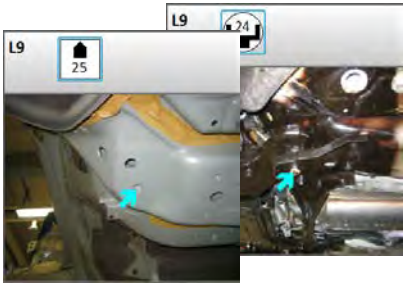
Dismantled/assembled – The measuring point can be measured with the assembly/component removed or not (for example front subframe fixing bolt).

Photos in the DataSheet view, showing different types of measuring points:

Dismantled (Parts out)

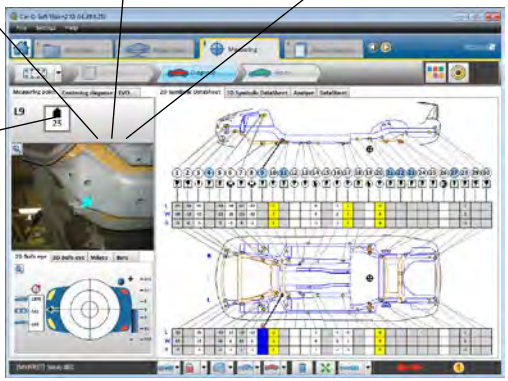


Assembled (Parts in)

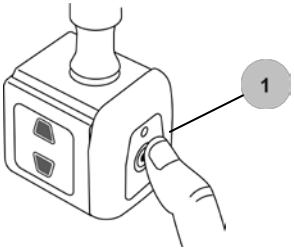


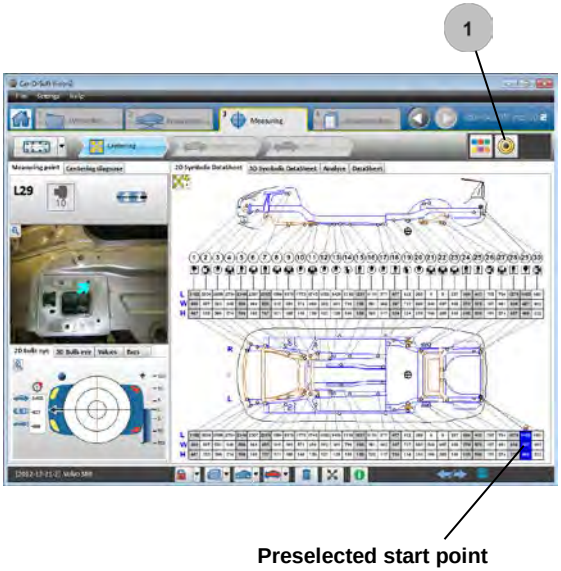
Dismantled /Assembled (Parts in/Parts out)

You can also toggle the Parts in /Parts out setting by clicking on the adapter symbol here.

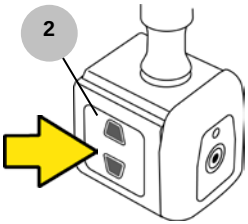


Activate the measuring slide by pressing the "Target button" (1) on the Remote control or in the software.

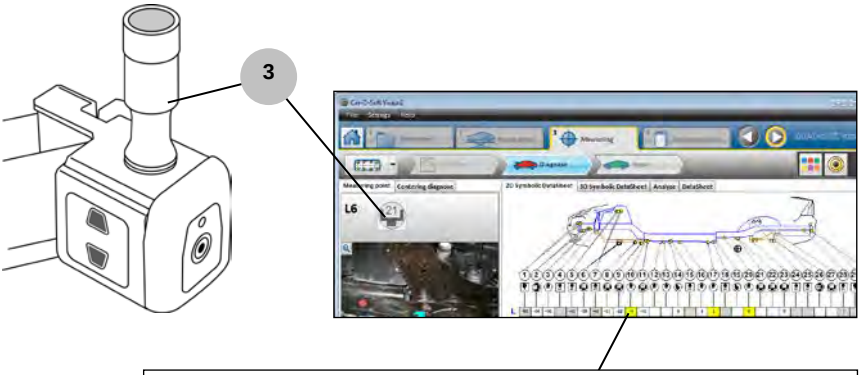




Start measuring the vehicle by registering the preselected start point (marked with blue). The preselected point is the zero point on the left side of the vehicle. Make sure that the preselected point is undamaged. If the point is damaged select another one.
Use the up/down buttons on the Car-O-Tronic remote control (2) to move forward/backward (and left and right hand side) between measuring points on the DataSheet.



Make sure that you reach the measuring point by using the necessary adapter (3). Select measuring options “Parts in/Parts out” (indicating if the part to be measured is assembled or dismantled), by clicking on the adapter symbol.



Active point value (and pre selected start point) - marked with blue
Centering point values - marked with yellow
Assembled point values – white background
Dismantled point values – grey background

Register the first point by pressing the "Target button" (4) on the Remote control or in the "Toolbox" in the software.

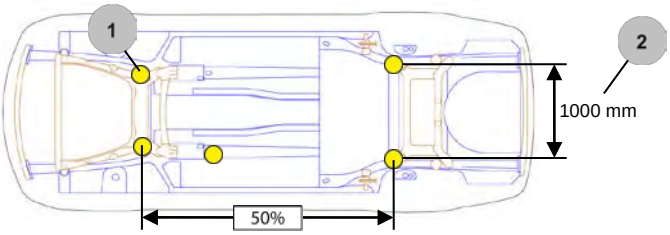
When 4-5 undamaged points have been registered, Vision2 Software will give you an visual and audible indication. If the automatic centering was successfull, the green Quality symbol is shown on the lower status line. If the centering was not successful the red Quality symbol is shown on the lower status line. Recenter the vehicle if the red symbol is shown.

Continue to measure undamaged points.

If centering is not satisfactory, locate the most inaccurate point by clicking on the green Quality symbol (opens Centering diagnose sub tab, *see 4.5.8 Centering diagnose*).

If a point has been registered incorrectly, either re-center the most inaccurate point or delete it and select another point.

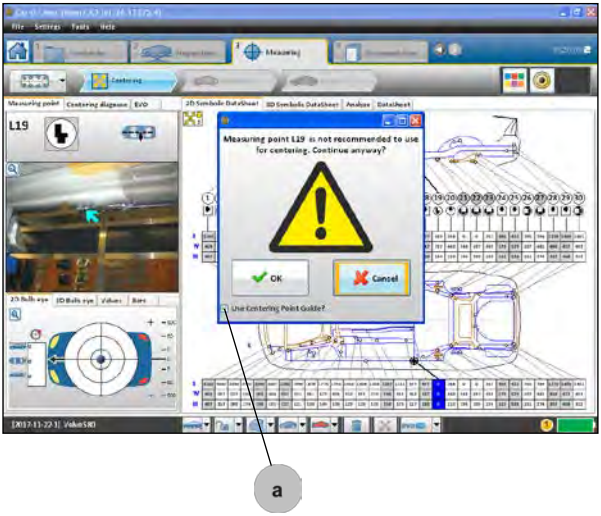
To perform a good centering, follow these tips:
1) Measure 4-5 undamaged points. Area under passenger compartment is recommended.
2) Measuring points as far apart as possible. Ideally 50% of vehicle length and 1000 mm in width between points. When front and rear centering points are symmetrical, the software asks for a 5:th centering point, if “Use centering help?” option (default) is selected in Vision2 Software Setup.



Centering Point Guide

If you choose an inappropriate centering point, you will be notified by the Centering Point Guide.
An inappropriate centering point is for example an oval hole which may give an unreliable length or width measurement.
Measuring adapter M103 may also give an unreliable length measurement.

The Centering Point Guide is a default setting that you can turn off by clicking the checkbox [a]. You can also turn it on/off in Setup - Centering in the Vision2 Start Up Guide.



1. Shows the spread between the points in length and width. The best possible value is 100%. The best possible value can be obtained when the centering points are covering more than 50% of the length of the car and 70% of the width. The closer the points are together the lower the value will be.

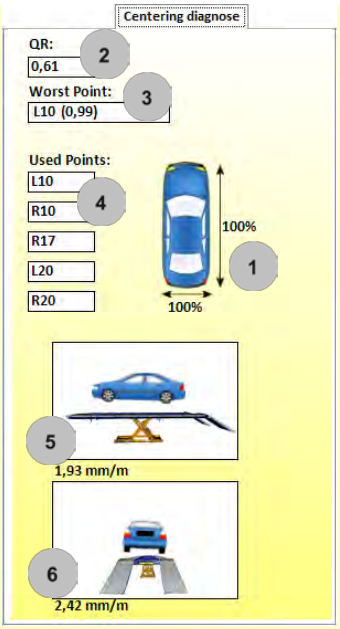
2. "QR" shows the total error sum divided by the number of points used for centering. The QR value should be as low as possible.

3. Shows the worst point used for centering. It indicates it's position and its fault radius.

4. Used points: Shows the points used for centering the vehicle.

5. This value indicates how much the vehicle is tilting length wise.

6. Shows the vehicle's actual position (width) according to the measuring bridge.



Once you have centered the vehicle continue to measure the vehicle.

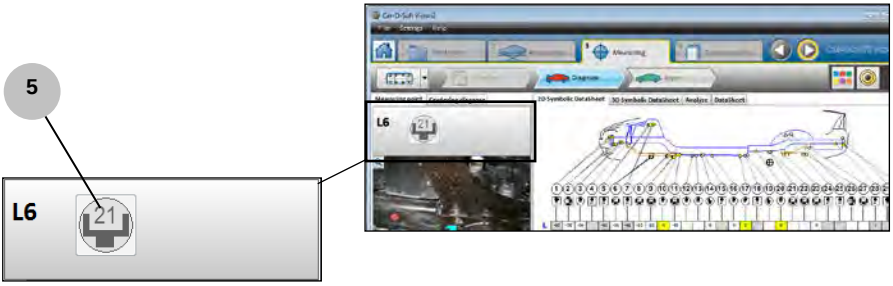
The adapter necessary to measure the active point is shown in the Upper left pane of the screen.

A circle around the adapter indicates that parts need not to be removed to obtain measurement. A square indicates that removal of some parts may be necessary to measure the point. (Circles and squares that have shadows are clickable.)
The extension tubes should be selected to make sure you could easily reach the measuring point. Car-O-Tronic Vision2 automatically detects the tube length.

Place the measuring slide in position at a measuring point.

NOTE: If measuring during a pull, spring load the measuring slide arm, *section 3.2.1 "Spring load the measuring slide arm"*. This will make the measuring slide arm follow the measuring point more easily.

Make sure that you reach the measuring point using the necessary adapter (5).



If the system is "*Unlocked*", the closest point to the measuring slide is always the active point (ASP – Automatic Searching Point). This means that it's not necessary to manually select each point you are going to measure. Just move the arm around the vehicle and measure the points (according to the DataSheet). You can see on the *Lower Status bar* if the system is locked or not.

If the system is "*Locked*" it is necessary to select the point by manually clicking on the measuring slide or click on the measuring points dimension box on the screen.

To "Lock/Unlock" the system, click on the **"Unlock/Lock"** symbol on the *Lower Status bar*.

Register the measuring points by pressing the "Target button" on the Remote control or in the "Toolbox" in the software.

During damage diagnosis, make sure that the Lower status line shows "*Diagnose*" (Red car icon). "*Diagnose*" registers the measurement values before repairs.

After damage diagnosis, switch to "*Repair*" (Green car icon), and then proceed with the repairs. "*Repair*" registers the measurement values during the repairs.

"*Diagnose*" and "Repair" is changed by clicking on "**Diagnose/Repair**" (Red car/Green car icon) in the *Lower status bar*.

NOTE: The point's values are automatically stored and/or updated in the memory of the PC and it can be obtained whenever needed.

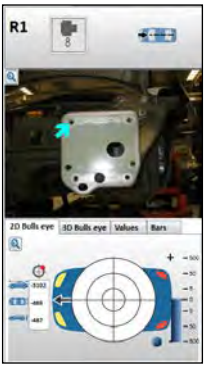
3.7.1 CCIS (Car-O-Liner Centering Intelligence System)

The **CCIS** "**C**ar-O-Liner **C**entering **I**ntelligence **S**ystem" is a package of functions which will make the centring of the vehicle easier for you. CCIS handles most of the common user mistakes automatically.

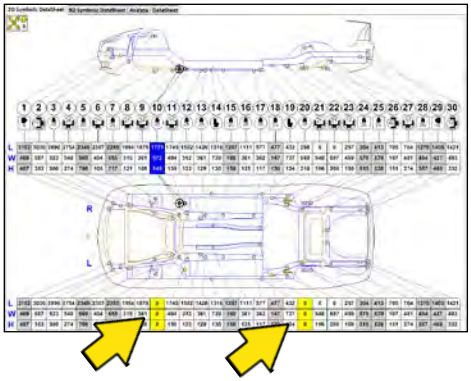
The following is a list of functions that is included in the CCIS System. It will help you centring the vehicle with the highest precision.

1. The order to measure points is free. Select the first point (undamaged) and measure the rest of the vehicle in any order.

2. **ASP** (**A**utomatic **S**earch **P**oint): After measuring the first point, the active point closest to Car-O-Tronic will automatically be found and displayed. Car-O-Tronic Smart LED indicates how close to the active point you are.

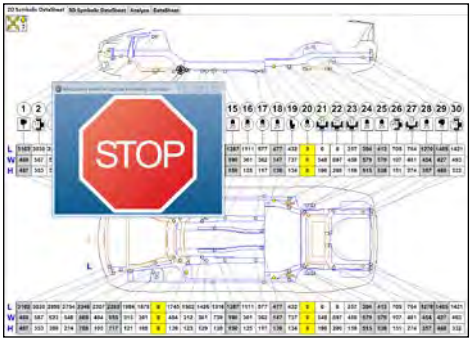


3. The first centering in CCIS - the Angle rotations are made after 2 points, makes it easy to center the vehicle on 2 points at the same side of the vehicle.



4. If a point is damaged, CCIS will notify you with a sound and graphical presentation.

5. CCIS has tolerances to eliminate bad centering.



6. If the result of a complete centering (4 non symmetrical points) is out of tolerance:

a. CCIS will ask for one more point.

b. CCIS will try to do a centering with 5 points.

c. If the result still is out of tolerance CCIS will locate the worst point, delete it and make a new centering with the rest of the points.

d. If the result still is out of tolerance CCIS will continue to ask for a 5th point until a good result is achieved.

7. If two symmetrical point pairs are used, CCIS will ask after a 5th point.
(This is made for security reasons. E.g. if one of the two symmetrical point-pairs are measured with pointer 60 instead of 35 and only 4 points are used for centering, the created plane will be offset in height, which means that you will get wrong height values.)

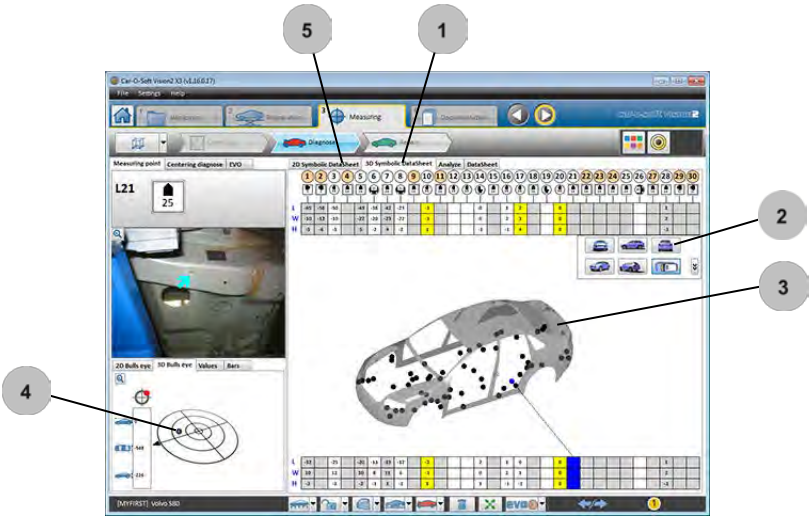
8. CCIS detects if the measuring bridge is turned “the wrong way”. (Normally you have to select the 2 first points when the measuring bridge is turned wrong. CCIS will automatically figure out the measured points and “turn” the bridge right).

9. CCIS has the possibility to default set the numbers of centering points.

3.7.2 Normal measuring in 3D

When in Normal measuring mode, you can select 3D measuring for 3-dimensional presentation of the measuring points.

1. Click on “3D Symbolic DataSheet” sub tab.
2. Click on the pictures for preset vehicle body positions …
3. … or rotate the vehicle body freely with your mouse cursor.
4. Click on “3D Bullseye” sub tab for 3D Bullseye presentation. The rotation of the 3D Bullseye automatically follows the rotation of the 3D vehicle body.
5. Return to “2D Symbolic DataSheet” by clicking on the sub tab.

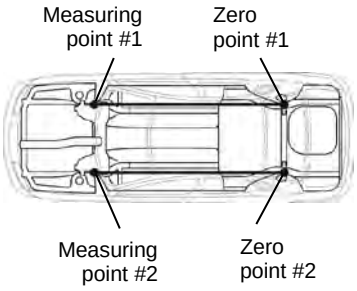


For more extensive information regarding Symbolic DataSheet – 3D measuring *see section 4.5 The Measuring tab*

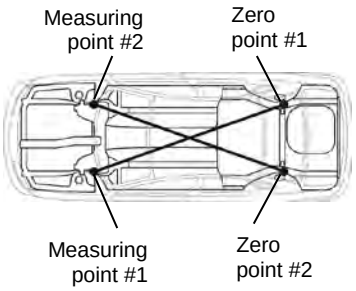
3.8 Absolute measuring

Absolute measuring is used when no DataSheet is available or if you want to measure a point that is not included on the DataSheet. Absolute measuring can also be used if the information is not electronically formatted. When using Absolute measuring, the user may choose any centering and measuring points. The vehicle can either be measured using Parallel measuring or Cross measuring.

Absolute measuring can be used to measure point to point (Parallel measurement) as using a measuring-tape. It can compare two identical measurements (Cross measurement of a center section) to compare the measurements for diamond damage.

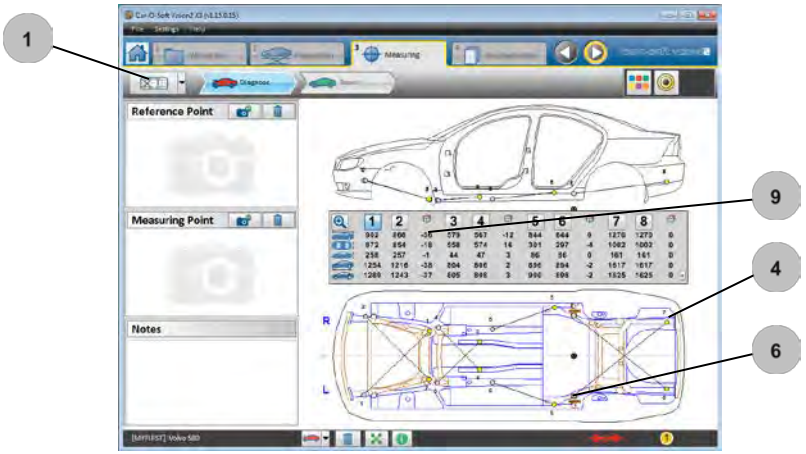


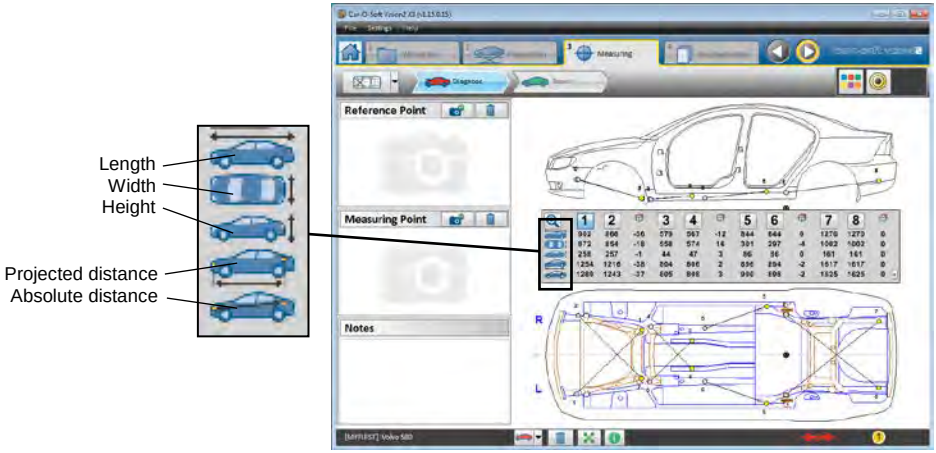
Parallel measuring

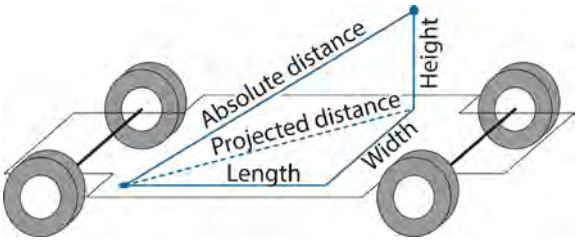


Cross measuring

1. Select “Absolute measuring” in the measuring menu.
2. If required, fit the measuring slide with a High measuring point (HMP) unit; see *section 3.10 "High measuring points (HMP)”* .
3. Fit the measuring slide with an adapter and/or tube.
4. Place the measuring slide in position at the first zero point.
5. Register the first zero point by pressing the “**Target button”** on the measuring slide or (Measure) on the Main menu. The measured values are shown in the *measuring field*.
6. Place the measuring slide in position at the first measuring point.
7. Register the first measuring point. Once the first measuring point is registered, the point’s measuring value is given in the measuring field.
8. Register the second zero point.
9. Register the second measuring point and the difference between point #1 and point #2 is presented in the values field etc. as long as symmetrical points were measured.







NOTE: If the measuring system is not centered, only the Absolute distance will be shown.

NOTE: The point's values are automatically stored in the memory of the PC and it can be obtained whenever needed.

During damage diagnosis, make sure that the Lower status line shows "*Diagnose*" (Red car icon). "*Diagnose*" registers the measurement values before repairs.

After damage diagnosis, switch to "*Repair*" (Green car icon), and then proceed with the repairs. "*Repair*" registers the measurement values during the repairs.

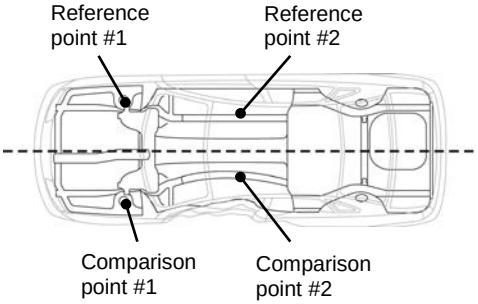
"*Diagnose*" and "Repair" is changed by clicking on "**Diagnose/Repair**" (Red car/Green car icon) in the *Lower status bar*.

3.9 Comparative measuring

When no DataSheets are available, comparative measuring can be used. Comparative measuring can also be used if you want to measure a point that is not included on the DataSheet, and can also be used if the information is not electronically saved. When performing comparative measuring, the damaged side of the vehicle is compared to the undamaged side. (The differences against the center line are presented).

When performing a comparative measuring, you may choose any centering and measuring points, using Parallel measurement.

Comparative measuring is used to compare symmetrical points at each side of the vehicle. A total of 12 sets of points can be compared. Each set of comparative points comprises two points – a reference point and a comparison point. The reference point must be set on the undamaged side of the vehicle.



Comparative measuring
One side of the vehicle is compared to the other side.

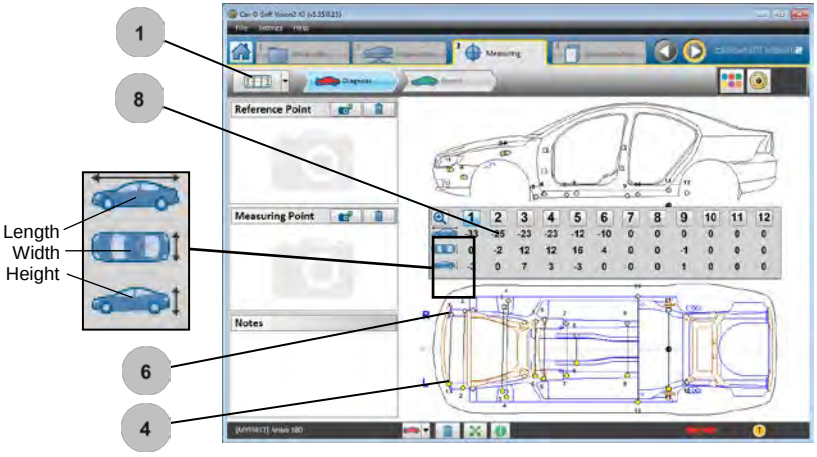
NOTE: If measuring during a pull, spring load the measuring slide arm, *section 3.2.2 "Spring load the measuring slide arm"*. This will make the measuring slide arm follow the measuring point more easily.

NOTE: Make sure that all reference points are situated on the undamaged side of the vehicle.

NOTE: Comparative measuring can only be used if the vehicle is only damaged on one side of the vehicle.

1. Select “Comparative measuring” in the measuring menu.
2. If required, fit the measuring slide with a High measuring point (HMP) unit; see *section 3.10 "High measuring point (HMP)*
3. Fit the measuring slide with an adapter and/or tube.
4. Place the measuring slide in position at the first reference point. Make sure to set the reference point on the undamaged side of the vehicle.

Register the first reference point by pressing the **“Target button”** on the measuring slide or (Measure) on the Main menu.The measured values are shown in the measuring field. Once the first point has been registered it will be automatically set as reference point.



5. Note that the registered point, which is the reference point, turns yellow on the screen. Also note that the registered values go to zero except for the width, which shows a negative value.
6. Place the measuring slide in position by the comparison point which must be symmetrical with the reference point (on opposite side of the vehicle)
7. Register the comparison point.
8. Once the comparison point has been registered, the difference between the reference point and the comparison point is given in the values field.

For exemple if the registered values are showing “0, 0, 0” (length = 0, width = 0 and height = 0) it means that the reference point and the comparison point are perfectly symmetrical. If the registered values are showing “5, -4, 3” (length = 5, width = –4 and height = 3) it means that the comparison point is 5 mm longer, 4 mm narrower and 3 mm higher than the reference point.

NOTE: The point's values are automatically stored in the memory of the PC and it can be obtained whenever needed.

During damage diagnosis, make sure that the Lower status line shows “*Diagnose*” (Red car icon). “*Diagnose*” registers the measurement values before repairs.

After damage diagnosis, switch to “*Repair*” (Green car icon), and then proceed with the repairs. “*Repair*” registers the measurement values during the repairs.

“*Diagnose*” and “Repair” is changed by clicking on “**Diagnose/Repair**” (Red car/Green car icon) in the *Lower status bar*.

3.10 High measuring points (HMP)

The high measuring point (HMP) unit M705 is used to measure high points on the vehicles chassis and in the engine compartment. This is also called “Upper body measuring”.

Measuring can be done in the following steps:

1. Place HMP with adapter and extension on point to be measured.
2. Set height and width dimensions to desired position.
3. Register width, height, angle (A, B, C) pointer direction and extension information in software.

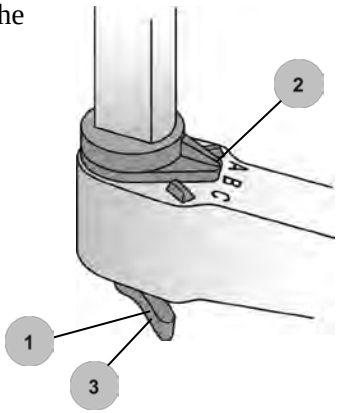
Equipment set up

When the HMP-unit is set on the measuring slide, the measuring slide automatically informs the PC that high measuring points are to be measured. The PC-screen changes automatically to the high measuring points.

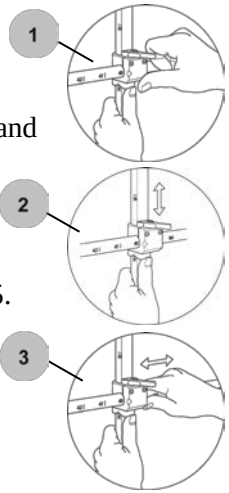
HMP unit length angle

Set the length of the HMP unit so that it will reach the chosen measuring point:

1. Loosen the locking screw (underneath the HMP unit).
2. Turn the vertical bar to position A, B or C as desired.
3. Tighten the locking screw.



HMP unit set height and width



1. Hold a thumb on the bottom edge of the junction, and open the lever.
2. Set the height on the vertical bar, graded from 0-26.
3. Set the width on the horizontal scale, graded 30-45.
4. Release the lever. Make sure to hold the thumb on the junction until the lever is locked.

HMP unit fit adapter or extension

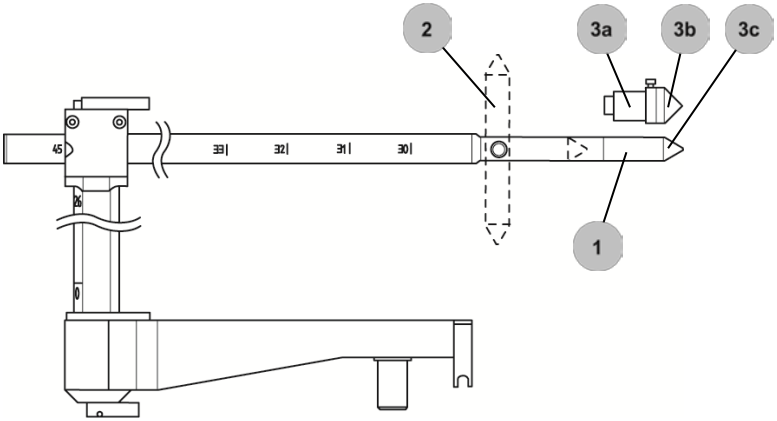
Fit the HMP unit with an adapter and, if necessary, an extension. The adapter is chosen according to the data given in the Car-O-Liner upper body DataSheets.

1. To change the extension, unscrew the old extension from the HMP unit. Fit the new extension onto the HMP unit (see next page).
2. To adjust the direction of the extension, loosen the extension and flip it to the correct direction and tighten it again.

NOTE: The direction of the extension must fit the description from the Car-O-Liner upper body DataSheet.

IMPORTANT! Only one extension at a time is allowed.

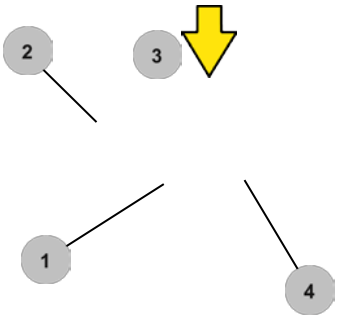
3. Fit the adapter holder [3a]) with an adapter [3b] or a pointer [3c] according to the DataSheet.



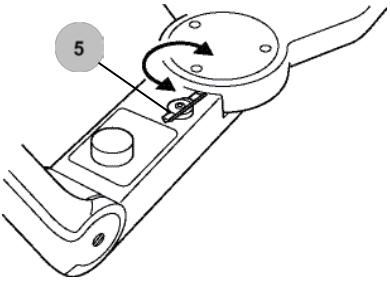
Fit HMP unit to measuring slide

Finally, in order to obtain good measuring accuracy it is important to fit the HMP-unit onto the measuring slide as follows:

1. Hold in the locking lever.
2. Insert the HMP-unit on the measuring slide arm.
3. Apply pressure to the HMP-unit by pressing the left thumb at the indicated position.
4. Tighten the knob.



5. To balance the weight of the HMP-unit, see section 3.2.1 "Spring load the measuring slide arm".
6. Place the adapter and the HMP unit by the measuring point.

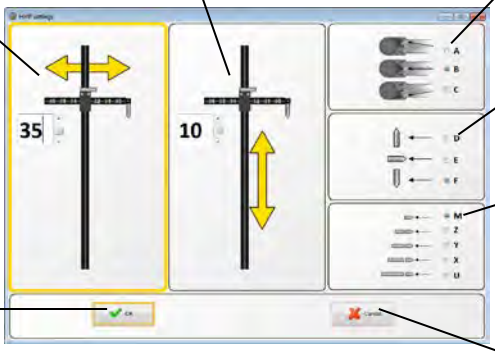


IMPORTANT! To assure tensionless measuring of the point, make sure to place the adapter by the measuring point without tension when using the HMP unit.

HMP unit set up in Vision2 Software

If you have communication between the M705 HMP unit and the PC, the M705 HMP Set Up will automatically appear on the screen *(see next page*) once the HMP unit is inserted. The DataSheet automatically switches to Upper Body DataSheets. You can also find the HMP Set Up in the Remote menu, *see 4.5.1 Remote menu.*

HMP Setup window



Vertical scale
Set the height by using "Up and Down" buttons on the remote control.

Vertical bar angel
Set the angle by using "Up and Down" buttons on the remote control.

Horizontal scale
Set the width by using "Up and Down" buttons on the remote control.

Extension angel
Set the length by using "Up and Down" buttons on the remote control.

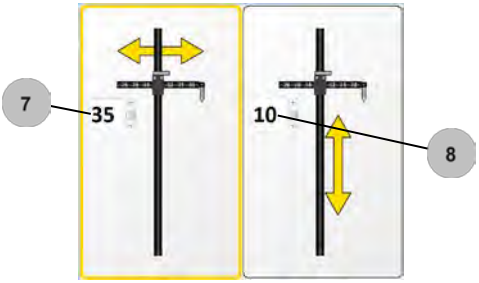
Extension
Choose extension by using "Up and Down" buttons on the remote control.

OK
Select by using "Up and Down" buttons on the remote control. Confirm by pressing the "Blue Enter Button".

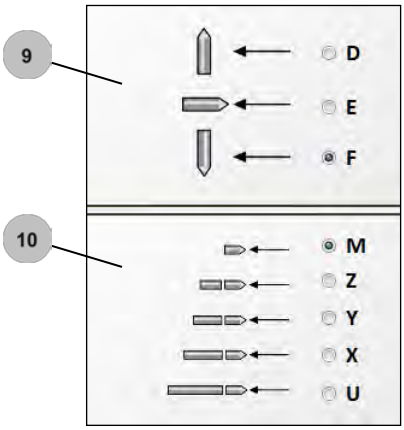
Cancel
Select by using the "Up and Down" buttons on the remote control. Confirm by pressing "Blue Enter Button".

IMPORTANT! When measuring with the HMP unit, the reading of the setting on the display must agree fully with the scales and the selected measuring tube length and angle. If not, the measuring value will be incorrect.

7. Set the chosen width of the horizontal HMP scale (graded from 30-45) in the drop down box.
8. Set the chosen height of the vertical HMP scale (graded from 0-26) in the drop down box.

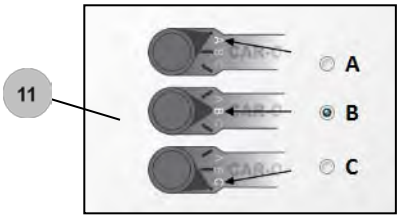


9. Set the chosen direction of the extension.
10. Set the length of the chosen extension.



NOTE: The minimum information required is Workorder (number or name) and selected DataSheet.

11. Set the angle of the vertical bar.

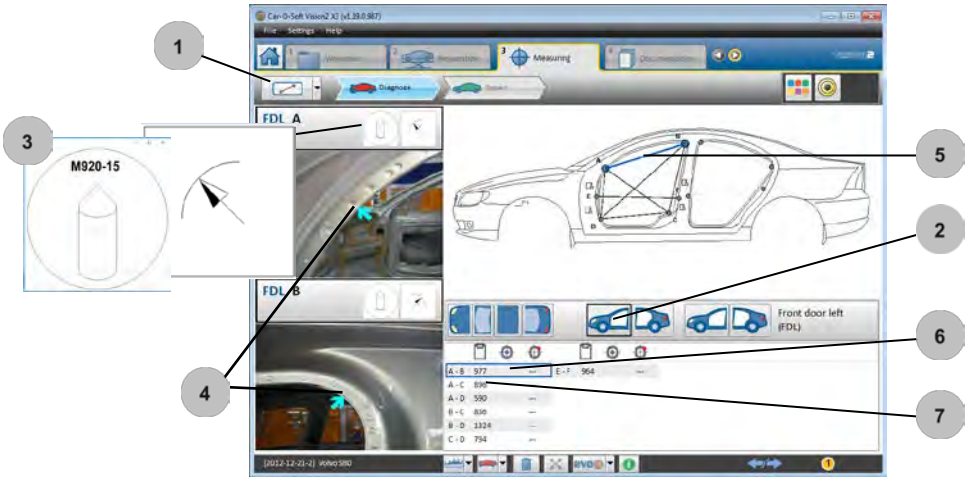


IMPORTANT! To assure a correct measuring when using the HMP unit, avoid registering the measuring points by pressing the Target button in the Vision2 software.

3.11 Point-to-point (P2P) measuring *Vision2 X3*

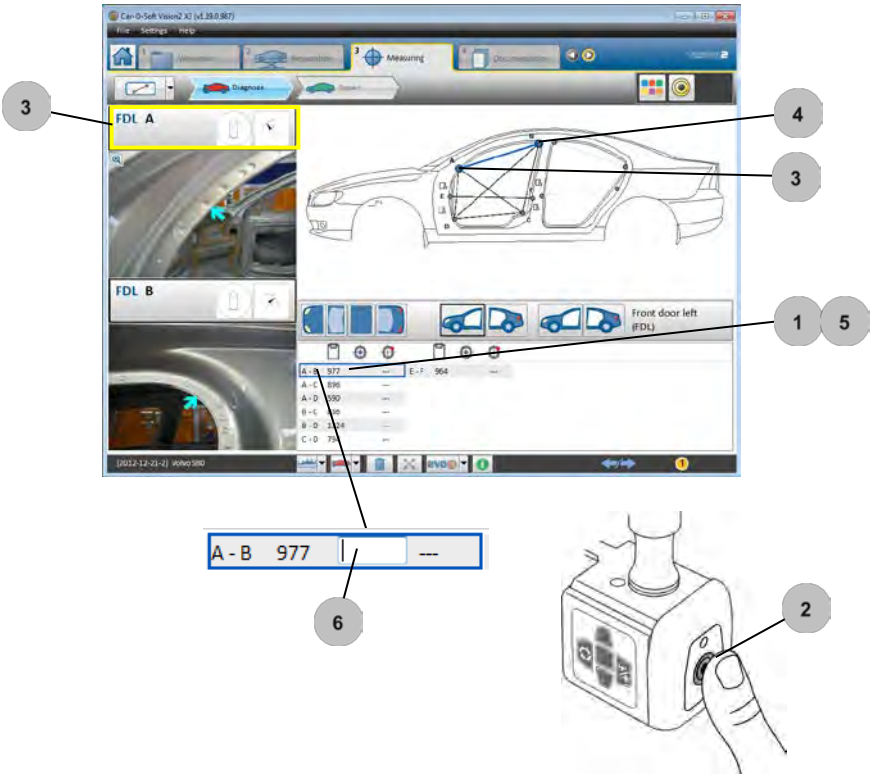
P2P measuring is a method used to measure Upper/Lower Body distances from one point to a second point. The measuring can be done with Car-O-Tronic HMP unit M705 or with a measuring tape. If the “P2P measuring” icon in the measuring menu is coloured grey there are no distance values for the selected vehicle.

1. Click on the “P2P measuring” icon in the measuring menu.
2. Click on a view button to activate the view.
   Active view has a black frame.
3. Recommended measuring adapter and measuring point.
   Click on icons to zoom pictures.
4. Photographs showing the two points in a selected measuring distance.
5. Measure the first distance (point A to point D)
6. DataSheet reference distance, measured distance and difference between reference and measured distance.
7. Click on the next distance to be measured (C-D) and the distance will be displayed in the measuring view. Keep on measuring all the distances in the measuring field.



Measuring with Car-O-Tronic HMP

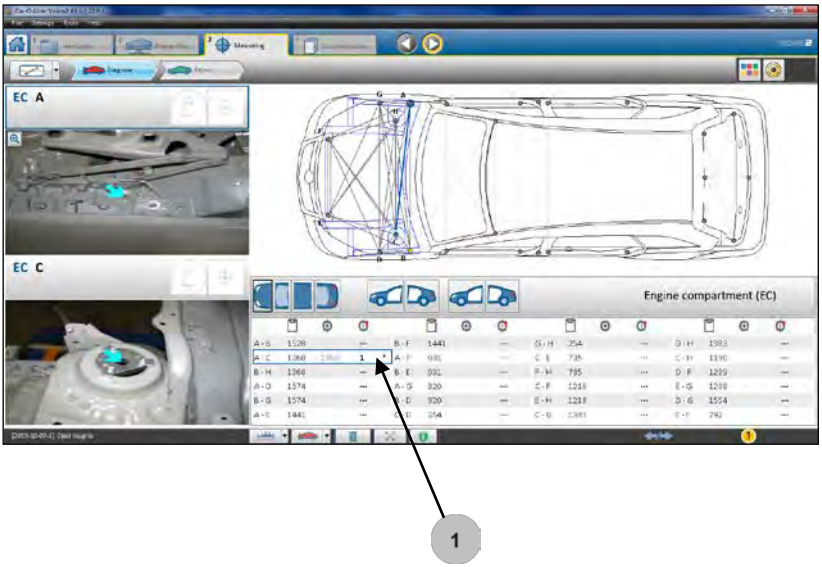
1. Click on a distance to be measured
2. Then press the "Target button"  .
3. Measured point (A) is marked with a yellow frame.
4. Measure point D. Both point frames turn yellow to indicate that distance is measured.
5. Measured value is displayed in the list.
6. For manual measuring (using a measuring tape), double click on input field and type in the measured value. Push the Enter key on your PC keyboard to register the value.



Register measuring values manually

Measuring values can be registered manually when PointX measuring arm or measuring tape is used.

1. To register measuring value manually, double click on distance and type in value. * indicates that value has been manually registered.



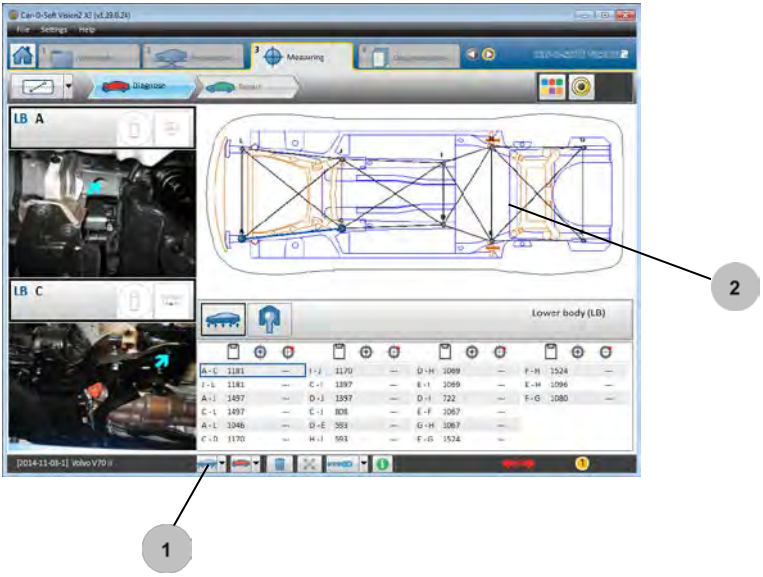
Set the tolerance

For information regarding how to set the tolerance, *see chapter 5 Settings*.

Measuring lower body distances

For some vehicles, P2P measuring can be used to measure lower body distances.

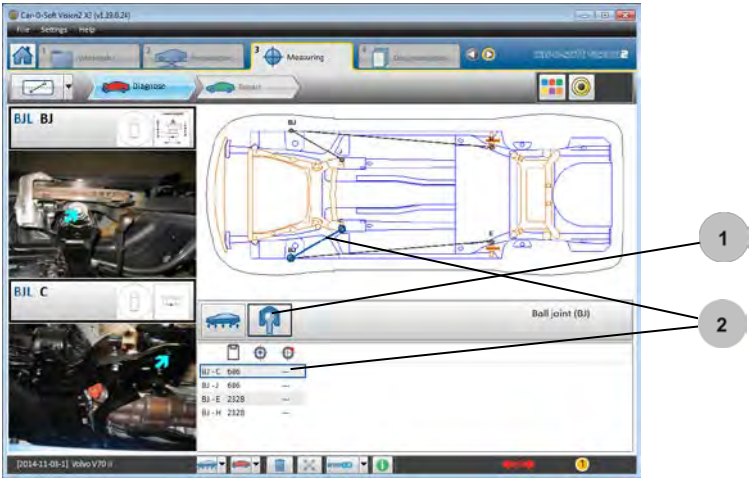
1. Click on “Upper/Lower body” button. Select “Lower body”.
2. Same measuring procedure as for P2P Upper body, except the HMP-unit is not needed.



Ball joint measuring

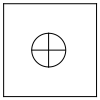
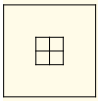
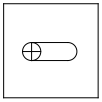
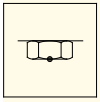
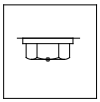
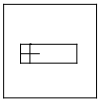
For some vehicles, P2P measuring can be used to measure distances on suspension ball joints.

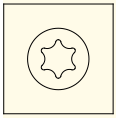
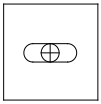
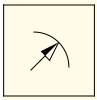
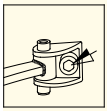
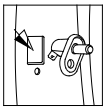
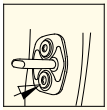
1. In Lower body mode, click on “Ball joint” button.
2. Same measuring procedure as for P2P Lower body.

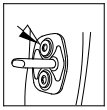
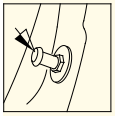
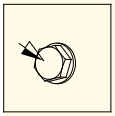
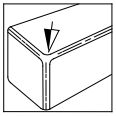
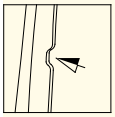


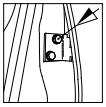
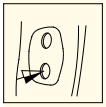
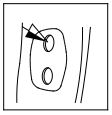
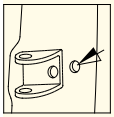
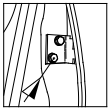
3.11.1 Point-To-Point measuring point descriptions

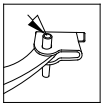
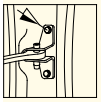
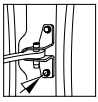
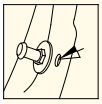
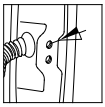
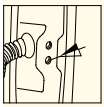
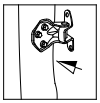
The Point-To-Point measuring point symbols are shown in the DataSheets and in the software information box. In the table below you can see the meaning of the symbols.

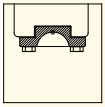
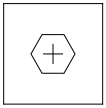
Description	Symbol
Hole	
Square hole	
Oval hole	
Head to rail	
Washer to head	
Washer to stud	
Nut to end of stud	
Rail to stud	
Rectangular hole	

Torx srew	
Middle of oval hole	
Center of arc 45	
Center of arc 135	
Center of arc 225	
Center of arc 315	
Check Strap hinge mounting bolt	
Rear edge of wiring loom hole	
Center of light switch hole	
Bottom screw of striker plates	

Top screw of striker plate	
Center of head of striker pin	
Center W/S screw	
Left screw of striker plate	
Seam at edge of sill plate	
Center post trim bolt	
Corner	
Inner Seam	
Outer Seam	
Notch	

Center of fender bolt	
Center hinge bolt	
Center of front screw	
Front W/S Moulding screw	
Center rear hinge bolt	
Upper hinge bolt	
Bottom hole of striker plates	
Top hole of striker plate	
Check strap hinge mounting hole	
Lower hinge bolt	

Cross marking, unidentified point object	
Center of check Strap hinge pin	
Check strap hinge hole	
Center bottom hinge bolt	
Check Strap hinge upper mounting bolt	
Check Strap hinge lower mounting bolt	
Striker pin hole	
Check strap hinge upper hole	
Check strap hinge lower hole	
Outer edge of post below door hinge	

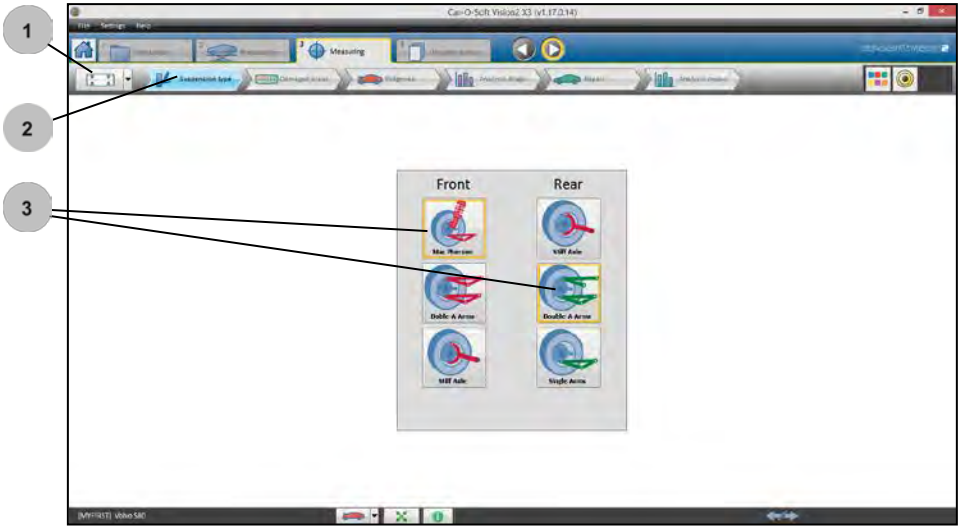
Ball joint	
Six sided hole	
Right screw of striker plate	

3.12 Suspension check *Vision2 X3*

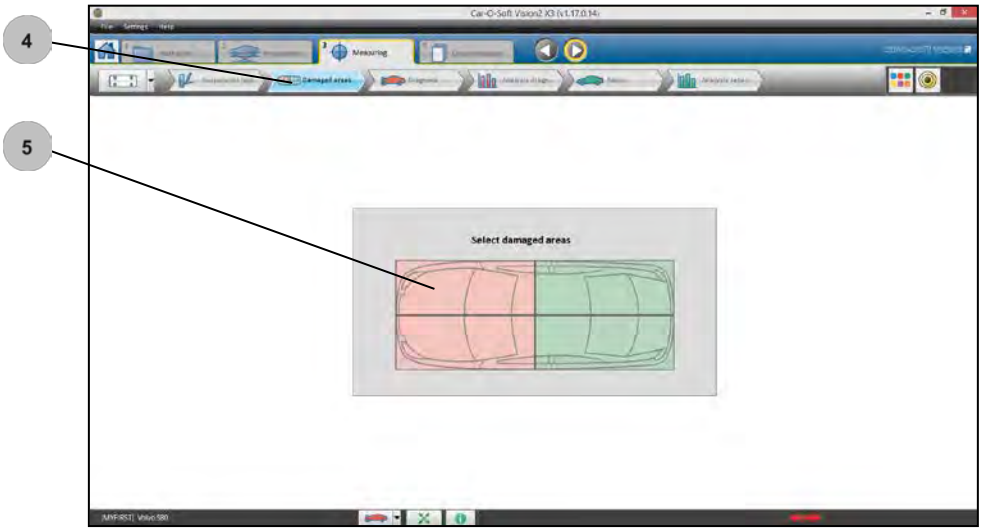
The Suspension Check measuring mode helps you to analyze suspension points by comparing left and right side of the vehicle.

NOTE! It's necessary to make a centrering of, at least, three centering points before it's possible to work with Suspension check.

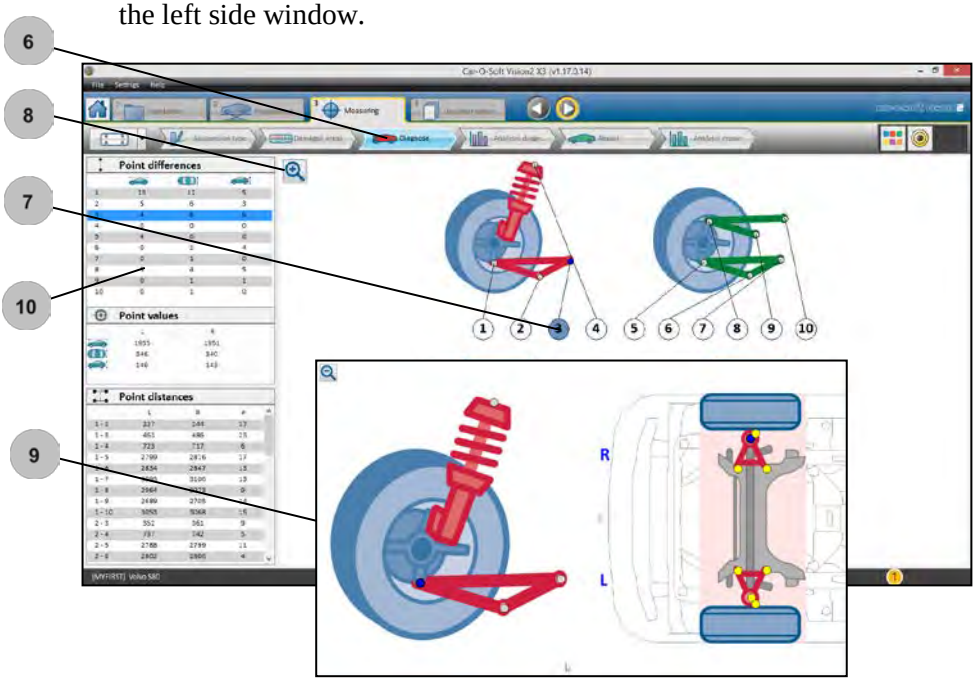
1. Select "Suspension check" in the measuring menu.
2. Click on "Suspension type" button …
3. … and select "Suspension type", front and rear (correct alternative for the actual vehicle).



4. Click on “Damaged areas of the vehicle” button.
5. Select damaged area of the vehicle by clicking on a green area. The selected area will now turn red.



6. Click on the “Diagnose” icon.
7. The first point to be measured is marked blue. When you have measured the active point, the next point number automatically changes to blue and so on.
8. Click on magnifier icon to enlarge presentation.
9. The enlarged presentation will change automatically when it is time to measure the front axle sequence and it will also automatically return to normal presentation when the last point in the sequence is measured.
10. When all measuring is done, the mesuring results are displayed in the left side window.



To change suspension type

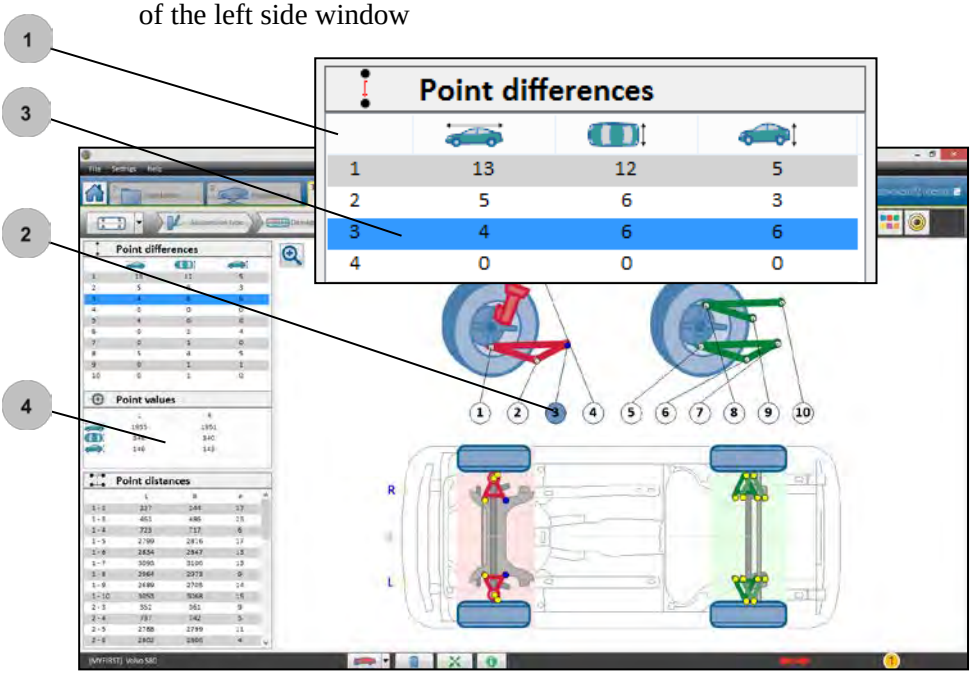
It is possible to change Suspension type during measuring procedure.
If this is performed, measured values will be lost.

Point pair analysis

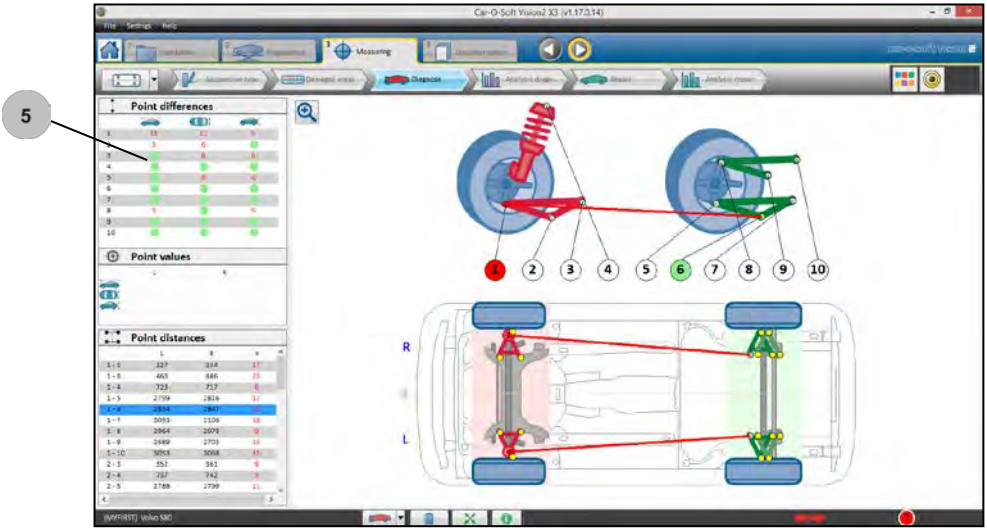
In “Point pair analysis” you can compare difference in length, width and height between right and left wheel.

NOTE! Red points and values are out of tolerance, green points and black values are within tolerance. Blue points have no tolerance settings.

1. The upper part of the left side window, displays the differences in length, width and height compared to the corresponding point on the opposite side.
2. To select a point, click on a row or on the point number.
3. For example point 3, the differences are 4 mm in length, 6 mm in width and 6 mm in height between left and right side.
4. The active point coordinate values are displayed in the middle part of the left side window



5. In this example green balls, instead of values, indicate that measuring points are within tolerance. For setting of this presentation, see section “Tolerance setting”.

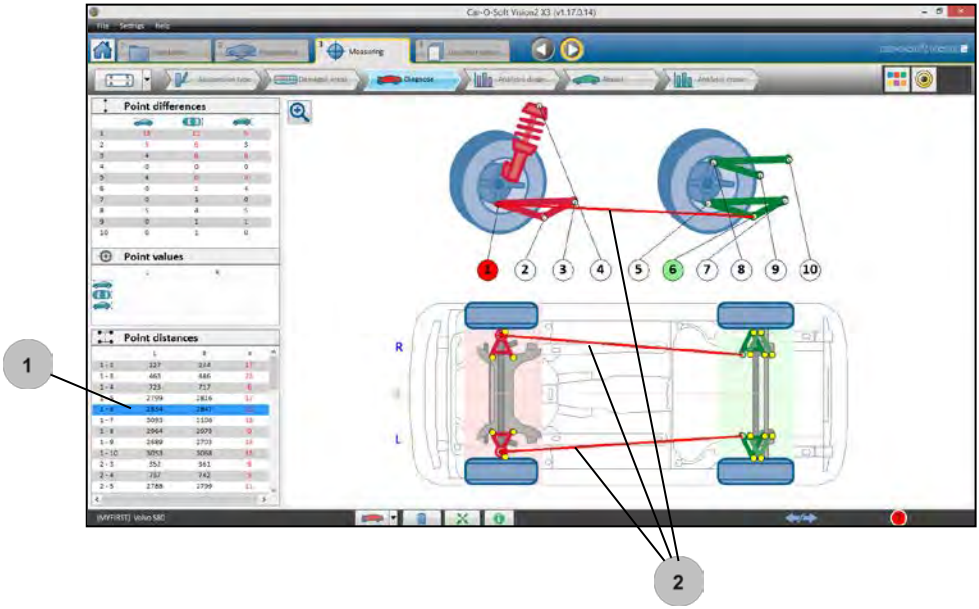


NOTE! For measuring distances on ball joints, see section 3.11 Point-to-point measuring, Ball joint measuring.

Distance analysis

In “Distance analysis” you can compare the difference in distance between front and rear wheel on right and left side.

1. The distances between left and right side is presented in the lower part of the left window. For example “**1-6 row**” shows the distance between point 1 and 6, left (L) is 2834mm and the right (R) is 2847mm. The difference column shows 13mm.
2. Click on a row and the distance will be shown in the right window.



L Left side distance

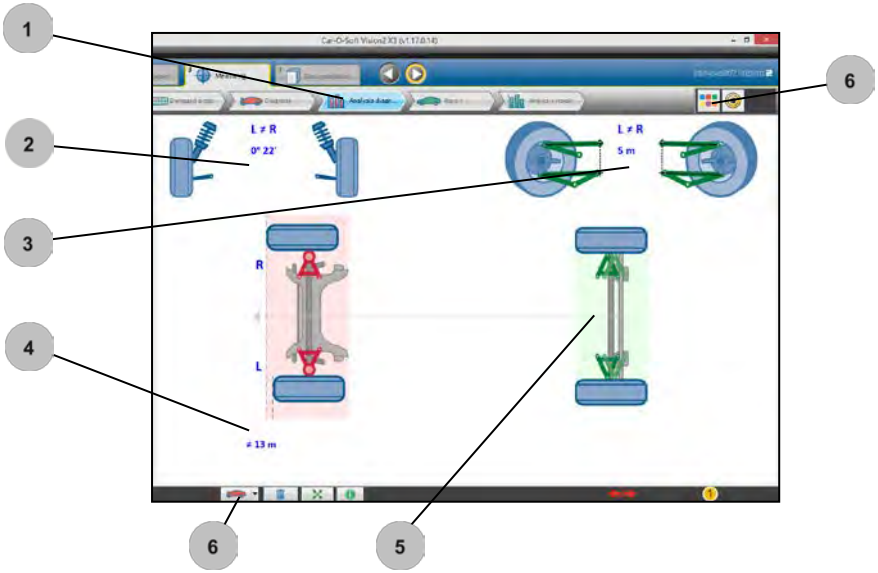
R Right side distance

Difference between left and right side distances.

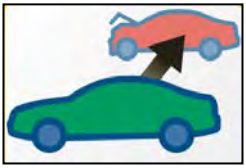
Analysis diagnose

In “Analysis diagnose” you can check strut tower angle, difference in distance between the balljoints, axle set back value and thrust angle line.

1. Click on the “Analysis diagnose” icon.
2. Calculated ***Strut tower angle***
   (difference between left and right side).
3. The difference in distance between the ***Balljoints***
   (left and right side).
4. Calculated ***Axle set back value***
   (difference between left and right side).
5. Calculated ***Thrust angle line*** if “Stiff axle” has been selected



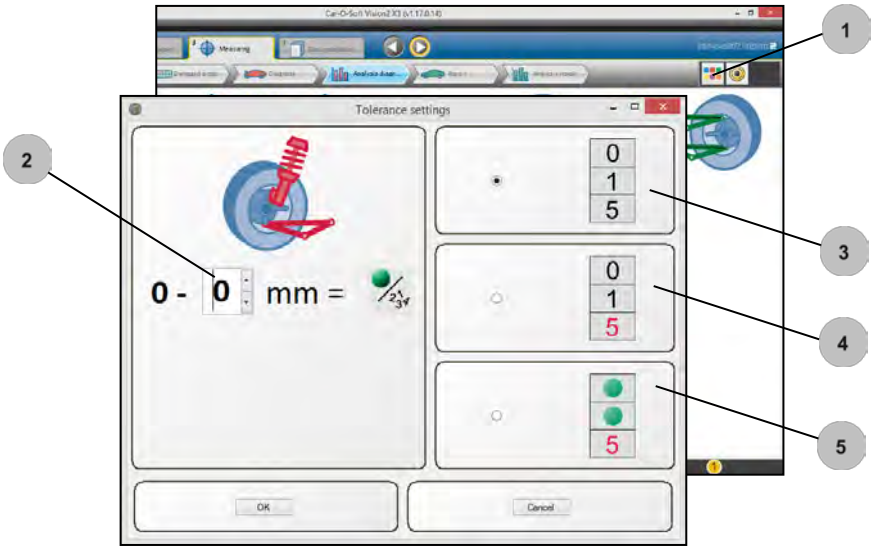
Diagnose/repair mode
Toggle between Diagnose and Repair measuring mode in the “Remote menu” (6) or in the lower status bar.



Tolerance setting

In “Tolerance setting” you can adjust the tolerance value. The tolerance setting is easy to manage through one setting for all three values: length, width and height.

1. Click on the “Remote menu” icon and select “Tolerance settings”
2. Setting of general tolerance value.
3. **Black numbers presentation:** No changes in values representation. Out of tolerance values are not shown. All values are shown in black.
4. **Red numbers presentation:** Out of tolerance values are shown in red. In the measuring view, out of tolerance points are shown in red and within tolerance are shown in green.
5. **Green balls presentation:** Out of tolerance values are shown in red. Green balls indicate within tolerance instead of values. In the measuring view, out of tolerance is indicated by red balls and within tolerance by green balls.



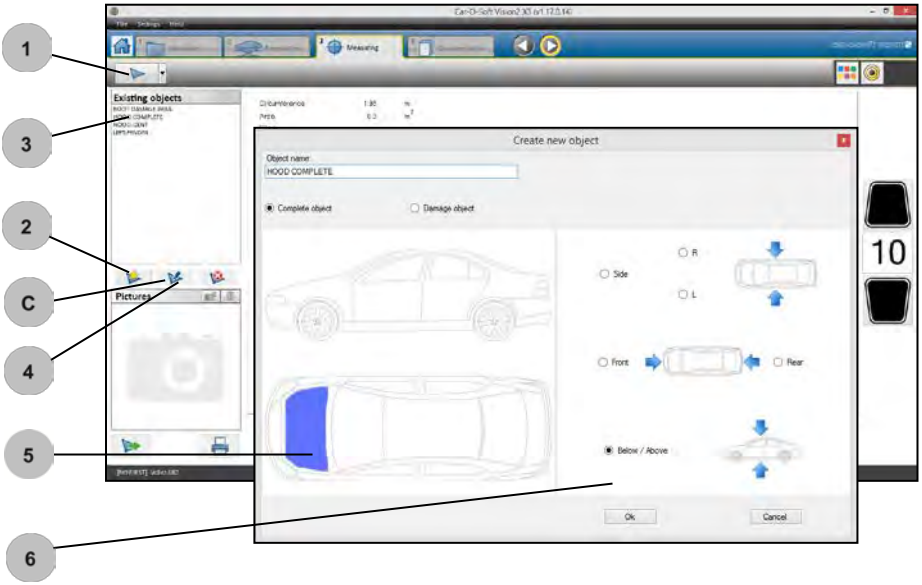
3.13 Surface measuring in 3D *Vision2 X3*

In “Surface measuring” you can measure a number of points on a selected surface. The software renders a 3D image of the surface and calculates circumference and area.

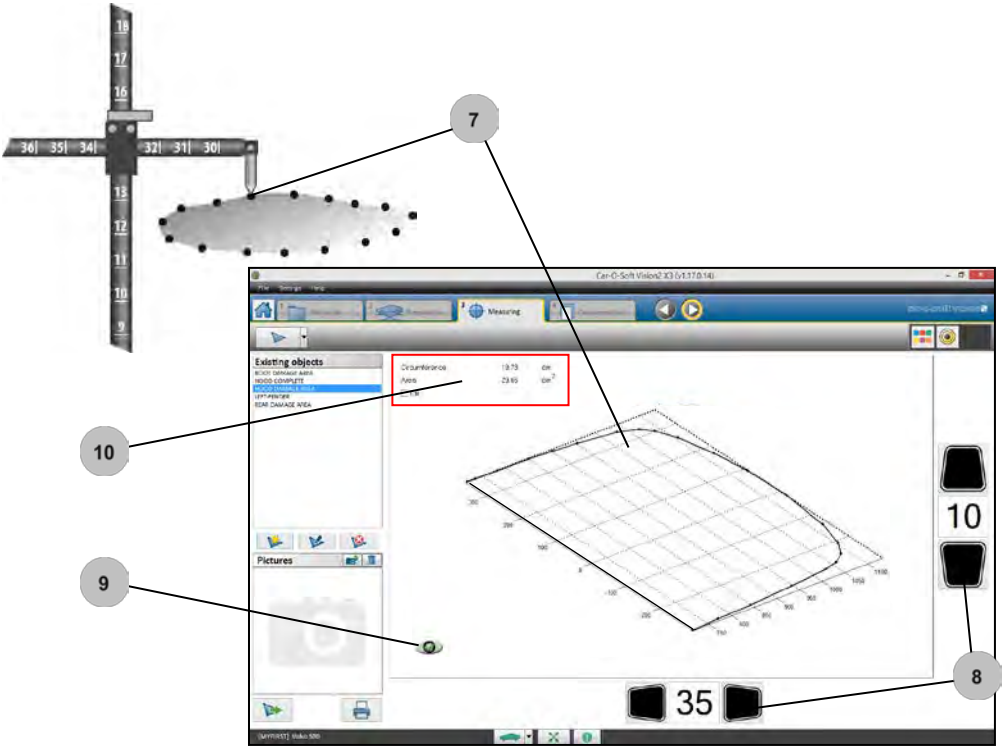
The 3D analysis can be used for calculating the costs for dent repair

1. Open workorder and select “Surface measuring” mode.
2. Create new object.
3. Type object name.
4. Click on “Edit” button.
5. Select area to be measured.
6. Select measuring direction.

NOTE! Correct setting of the measuring direction is necessary for a correct 3D image. Click on (C) to change measuring direction.

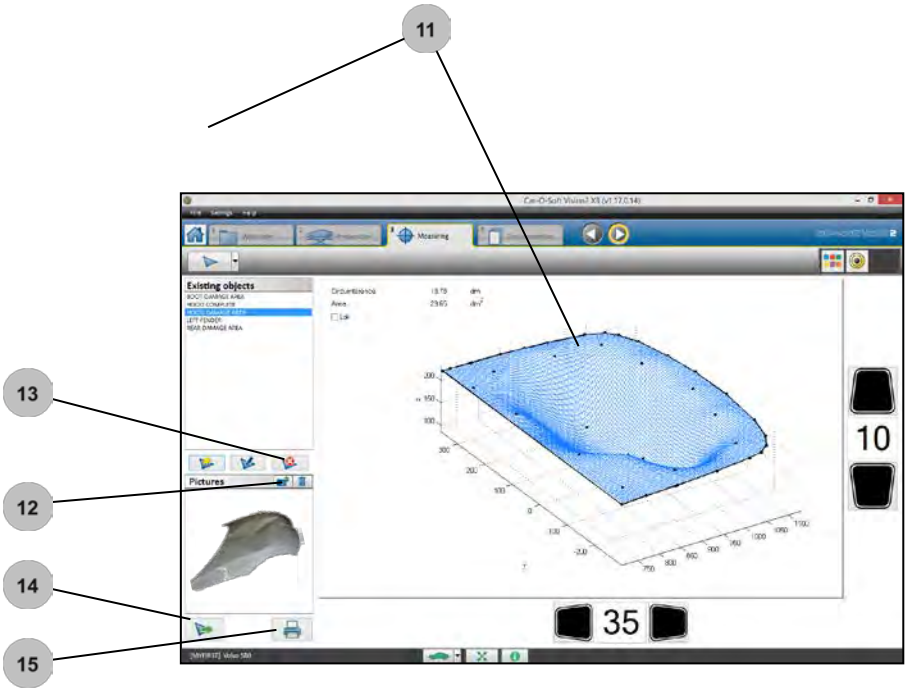


7. Measure points (minimum 3) on the circumferance of the area with HMP unit M705 *(see section 3.10 HMP)*. Register with Car-O-Tronic. Image of measured area is presented in the software.



8. Change HMP vertical and horizontal settings according to actual settings on HMP unit.
9. To finish the circumference measuring, click on “Close circumference” button.
10. Circumference and area of measured object is displayed.

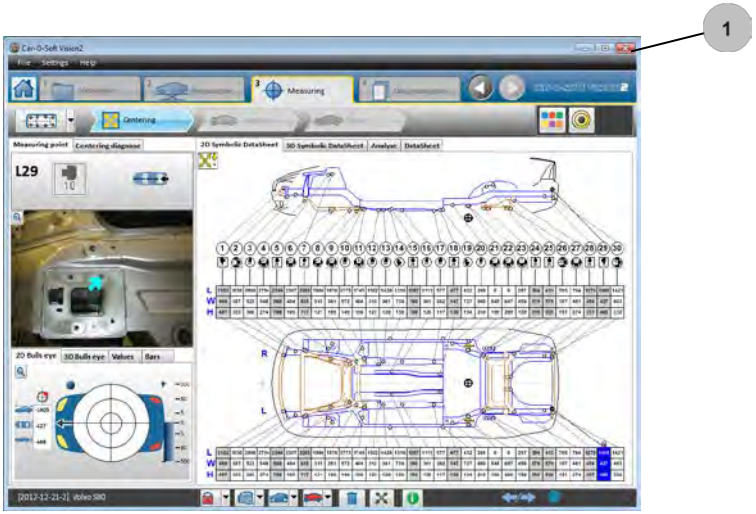
11. Measure points inside object. 3D image is now presented in the software.



12. To add photo to active surface object, click on the camera icon and browse to select your photo.
13. Delete active object.
14. Export active object.
15. Print active object.

3.14 Close Vision2 Software

1. Close the Vision2 Software by clicking on the  icon in the upper right corner.

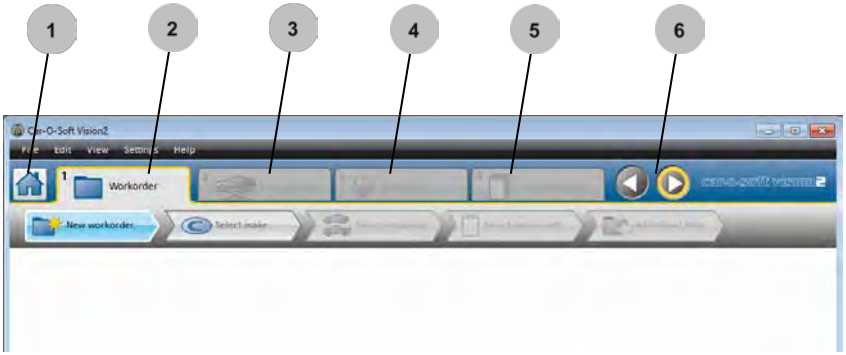


4 Key functions

4.1 The Vision2 Software main tab system

In the Vision2 Software tab system you can navigate through the work process and you can also acquire a wide selection of information.
The main tab system "workflow" guides you through the work process, but you can easily navigate manually by using the forward/return buttons (6).
The functions under each main tab are described in the following sections.

1. The Home view, *see section 4.2*
2. The Workorder tab, *see section 4.3*
3. The Preparation tab, *see section 4.4*
4. The Measuring tab, *see section 4.5*
5. The Documentation tab, *see section 4.6*



4.2 The Home view

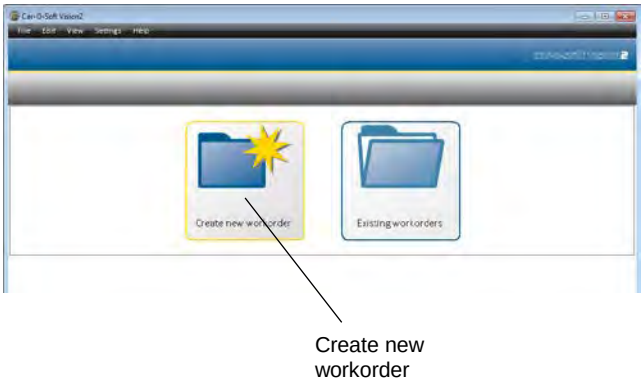
In the Home view you will find the options "Existing workorders" or "Create new workorder".

4.2.1 Existing workorder

When continuing to work on an existing workorder.

4.2.2 Create new workorder

When starting a new job you must create a new workorder.



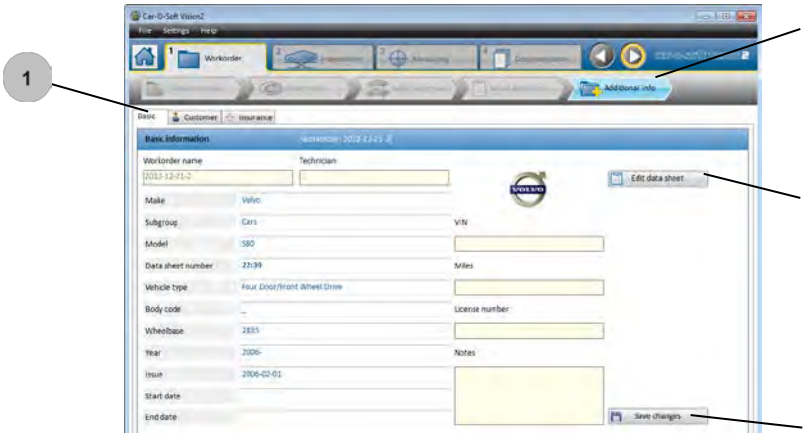
4.3 The Workorder tab

Each Workorder form gives you information about the customer; the Insurance Company involved and allows you to make a specification of the work performed on the vehicle.

4.3.1 Workorder list

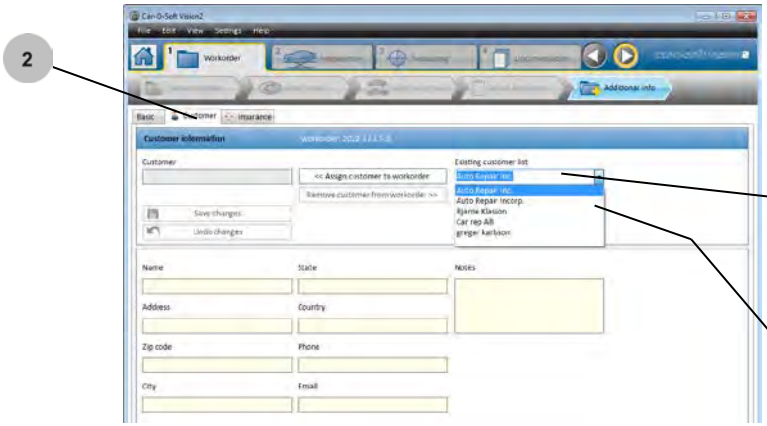
4.3.2 Basic information sub tab

1. Here you can enter basic information about the Workorder such as the Workorder number and the selected vehicle information.



4.3.3 Customer information sub tab

2. Here you can enter information about the customer.

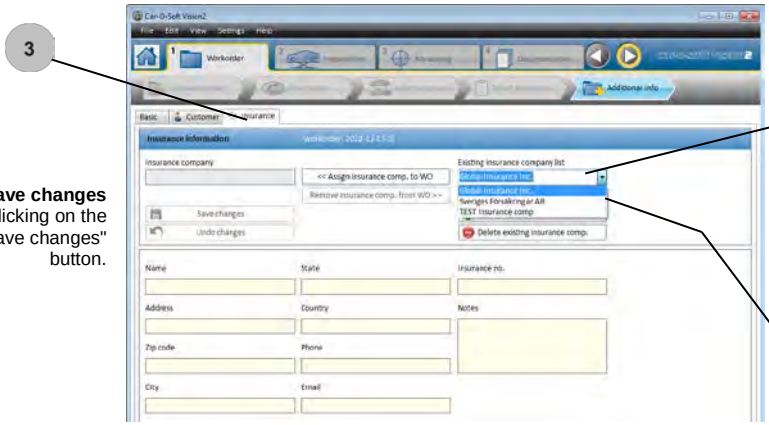


Customer list
Shows all customers saved in the customer data base.

Add new customer
by clicking on "Add new customer" button underneath the customer list.

4.3.4 Insurance information sub tab

3. Here you can enter insurance related information about the vehicle.



Save changes
by clicking on the "Save changes" button.

Insurance company list.
Shows all insurance companies saved in the insurance company data base.

Add new insurance company
by clicking on "Add new insurance company" button underneath the insurance list.

4.3.5 Car-O-Liner Index

The Car-O-Liner Index includes all DataSheets stored in the Car-O-Data database. To select a DataSheet, *see section 3.3.4"View a DataSheet"*.

Index list
Click on the tabs to switch between American and International Index lists.

Favorites list
Here you can find the car makes you have added to your "favorites" list.

Add to favorites list
By right-clicking on the desired car make you add it to your "favorites" list.

For model translation settings, *see chapter 5 Settings.*

Subgroup
Shows the selected type of vehicle e.g. "car" or "SUV".

Body code
Shows the body code of the selected vehicle (if available).

Year
Shows the manufacturing years of the selected vehicle.

No
Shows the DataSheet number of the selected vehicle.

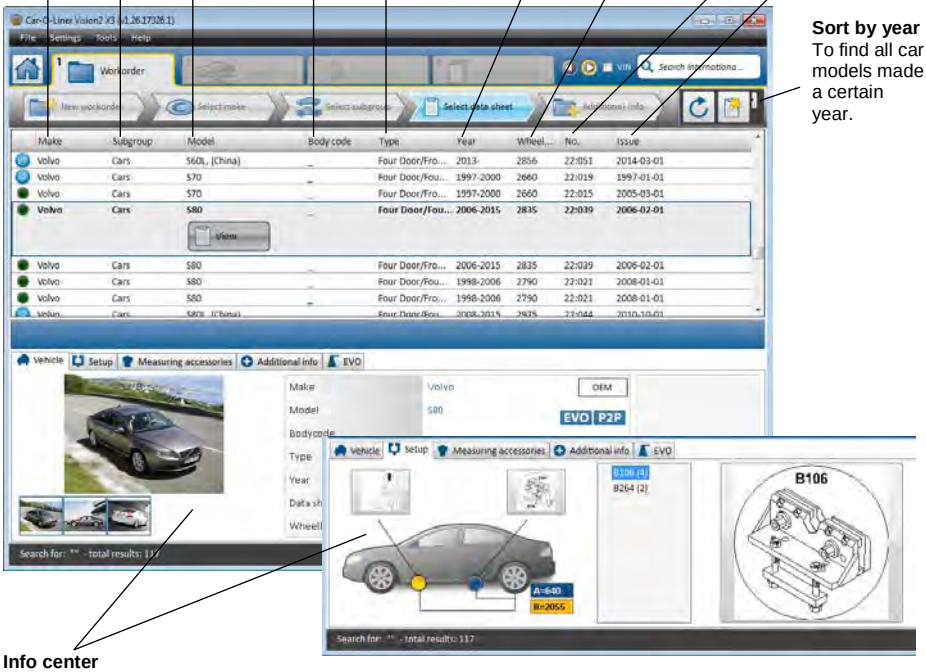
Make
Shows the selected make.

Model
Shows the available models of the selected make of vehicle.

Type
Shows the available types of the selected vehicle, see the Type code explanations on next page.

Wheelbase
Displays the distance between the front and rear wheels.

Issue
Issue date of the DataSheet.



Sort by year
To find all car models made a certain year.

Info center
Gives you important information such as picture of the vehicle, datasheet no and wheelbase.
Info center gives you information about what clamps to use and where to attach them.
Info center also indicates if the selected datasheet contains P2P-data and EVO information.
For EVO information and presentation, *see chapter 11 The EVO system*.

The manufacturing years are given as follows:

2000–	Manufacturing started in 2000, and the vehicle is still in production.
2000	Vehicle was only manufactured during 2000.
1995–2000	Manufacturing started in 1995 and ended 2000.

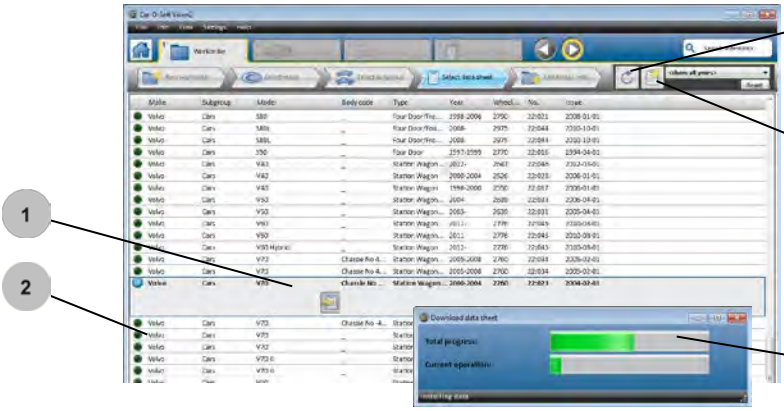
Type Codes for Car-O-Liner Index

2	Two seater	**LoB**	Long bed
4	Four seater	**LS**	Leaf springs
2 + 2	Two + two seater	**LWB**	Long wheelbase
2D	Two door	**Man**	Manual gear box
3D	Three door	**McP**	McPherson
4D	Four door	**MPV**	Multi purpose Vehicle
5D	Five door	**MV**	Mini Van
3HB	Three door hatchback	**MWB**	Middle wheelbase
5HB	Five door hatchback	**O**	Open
2HT	Two door hardtop	**P**	Petrol
4HT	Four door hardtop	**PS**	Power steering
4L	4-link suspension	**PU**	Pick up
5L	5-link suspension	**R**	Roadster
2WD	Two wheel drive	**RC**	Regular cab
4WD	Four wheel drive	**RHD**	Right hand drive
4WS	Four wheel steering	**RWD**	Rear wheel drive
Aut	Automatic gearbox	**S3**	3 cylinder straight engine
AWD	All wheel drive	**S4**	4 cylinder straight engine
B4	4 cylinder Boxer engine	**S5**	5 cylinder straight engine
B6	6 cylinder Boxer engine	**S6**	6 cylinder straight engine
B	Bus	**S**	Sedan
C	Coupe	**Sh**	Short
CO	Combi	**ShB**	Short bed
CP	Compact	**Sp**	Sport
CS	Coil springs	**SR**	Servo
CV	Convertible/Cab	**Std**	Standard
CVP	Cab plus	**StdC**	Standard cab
D	Diesel	**StdV**	Standard van
E	Extended	**SUV**	Sport utility vehicle
ExC	Extended cab	**SW**	Station wagon
ExV	Extended van	**SWB**	Short wheelbase
EV	Electric vehicle	**Ute**	Utility vehicle/outback
FWD	Front wheel drive	**V**	Van
HB	Hatchback	**V4**	4 cylinder V-engine
HD	Heavy duty	**V5**	5 cylinder V-engine
HT	Hard top	**V6**	6 cylinder V-engine
IRS	Independent rear susp.	**V8**	8 cylinder V-engine
LB	Liftback	**V10**	10 cylinder V-engine
LC	Light commercial	**V12**	12 cylinder V-engine
LHD	Left hand drive	**W**	Wankel engine
Lo	Long	**WB**	Wheelbase

Table 4.1 Type codes for Car-O-Liner Index

4.3.6 Download datasheet

1. To download a datasheet, click on the required model and then click on the "Download datasheet" icon. icon (2) indicates downloaded datasheet.



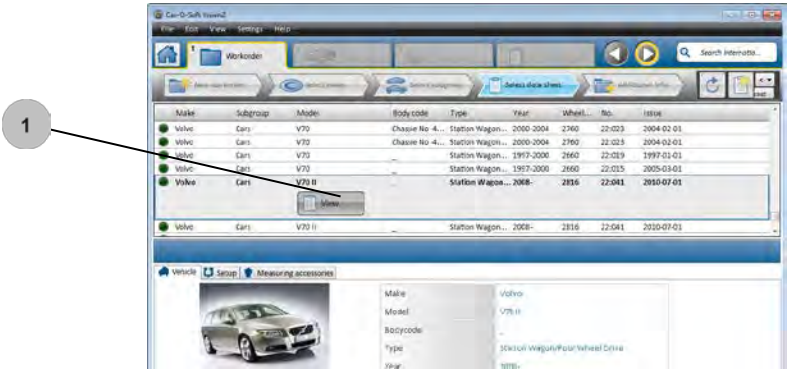
Update index list.
Click to update index list

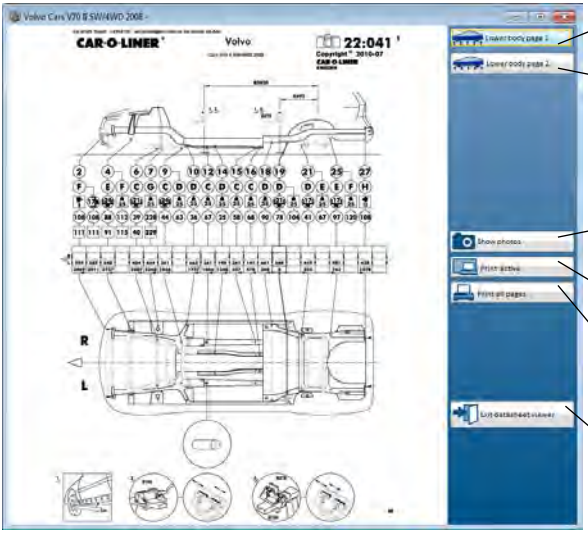
View new datasheets
Click to view newly released datasheets from Car-O-Liner.

Downloading progress.
Displays progress of datasheet downloading process

4.3.7 View datasheet

To open the "View datasheet" window, click on the "View datasheet" button (1) in the index list.





Page1
Shows DataSheet page 1.
For a double-sided DataSheet, this button will show page 1.

Page2
Shows DataSheet page 2.
For a double-sided DataSheet, this button will show page 2.

View Photos
Shows photos for DataSheet in a View photo window.

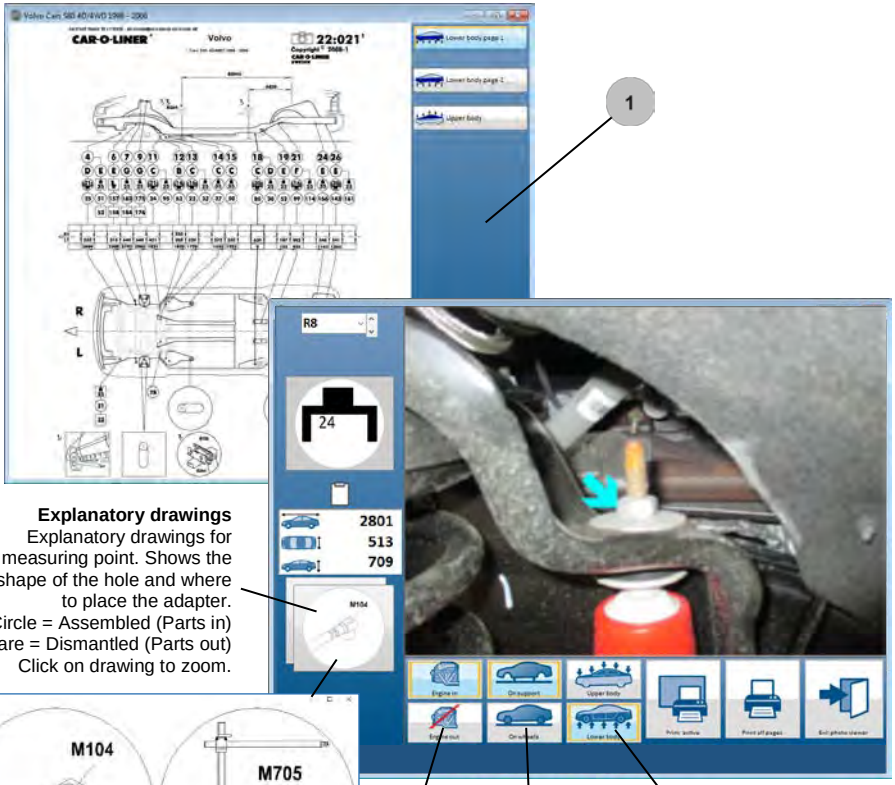
Print active DataSheet
Prints active DataSheet on selected printer.

Print all DataSheets
Prints all DataSheet pages belonging to the selected vehicle.

Exit DataSheet
Returns to the Car-O-Liner Index menu.

4.3.8 View photos

To open the “View photo“ window, click on the View photos button  (1) in the “View DataSheet“ window.



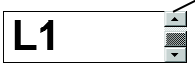
Explanatory drawings
Explanatory drawings for measuring point. Shows the shape of the hole and where to place the adapter.
Circle = Assembled (Parts in)
Square = Dismantled (Parts out)
Click on drawing to zoom.

Engine In or Out
Toggle between engine in or engine out during measuring.

On clamps / on wheels
Toggle between vehicle on clamps or on wheels during measuring.

Upper body / Lower body
Toggle between high and low measuring points.

Measuring point drop-down box
For changing the measuring point. The drop-down box shows the location of the measuring point, e.g. L1= Lower left side, measuring point number 1. HL1= High left side, measuring point number 1.



DataSheet reference values
Shows the DataSheet values of the length, width and height for the chosen point.

Required adapter
Adapter for current point. Clickable if symbol has a shadow, which means that point is both part in/out.

Measuring direction
Shows the direction for measuring the point

Print current screen

Print all photos
Print all photos from the active DataSheet.

Exit
Returns to View DataSheet window.

4.3.9 Search function

The search function is an alternate method of finding a datasheet in the Car-O-Liner Index. Type in a datasheet number or "free text" for example care make or model combined with year.

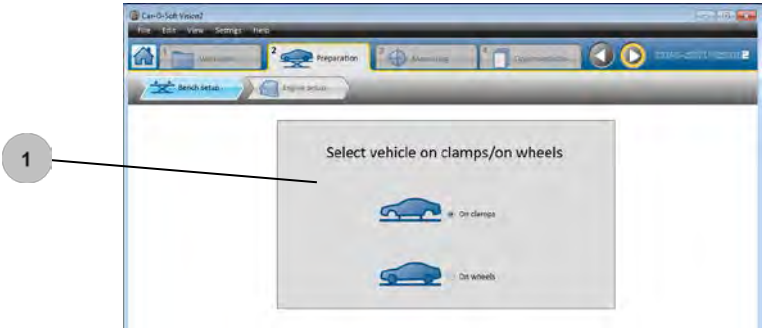
1. Click in the search field and type in requested vehicle information.
2. Click on the magnifying glass icon.
3. The index list is displayed with selected model marked.
4. ● icon indicates downloaded datasheet.

4.4 The Preparation tab

Under the Preparation tab you will find the following functions: "Select vehicle on clamps/on wheels", "Select Engine In/Out" and "Clamping information".

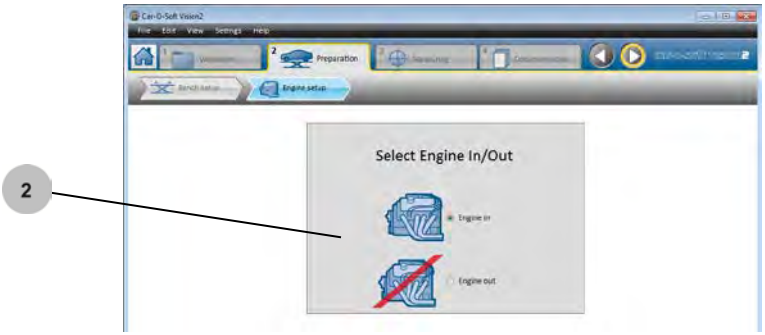
4.4.1 Vehicle on clamps or on wheels

1. Chose if the vehicle is on wheels or on clamps.



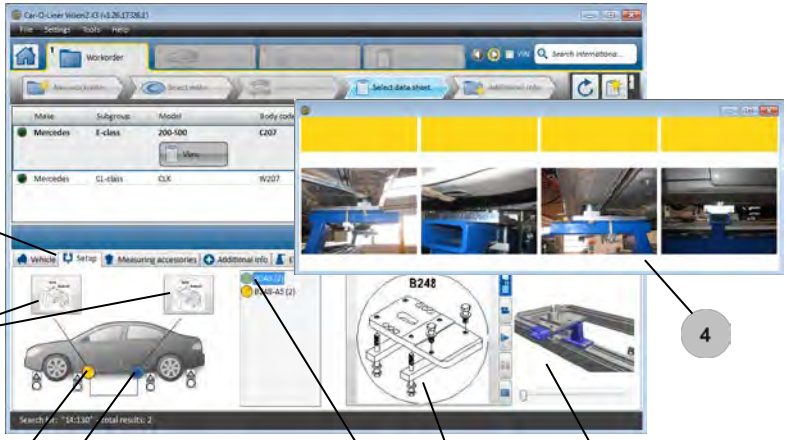
4.4.2 Engine In or Out

2. Chose if the engine of the vehicle is in or out



4.4.3 Info center

Clamping mode



"Setup" subtab
Here you find information about where to attach clamps during vehicle setup.

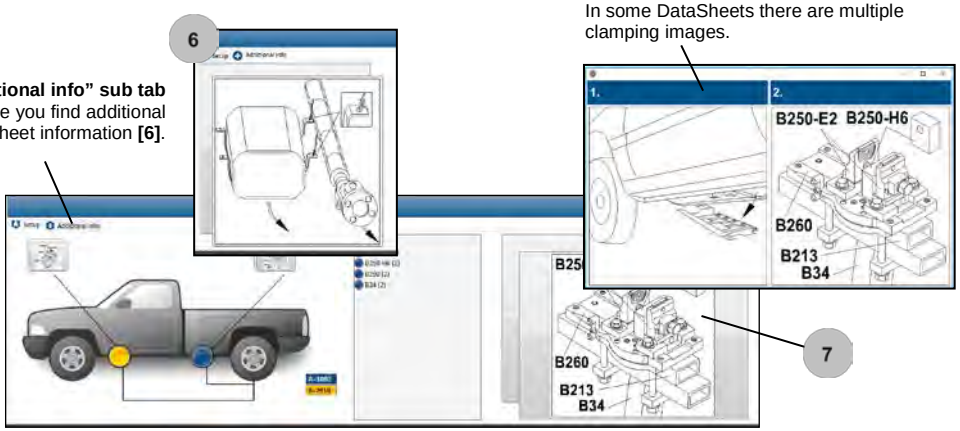
Yellow dot **[1]** displays front attachment point.
Blue dot **[2]** displays rear attachment point.

Clamping information
Click on yellow/blue dots **[1]**, **[2]** or icons above vehicle [3] to get clamping information.
In some DataSheets this will also activate viewing of clamping photos **[4]**.

Multimedia presentation
Click on yellow or blue dot to view multimedia presentation of clamping accessories assembly.

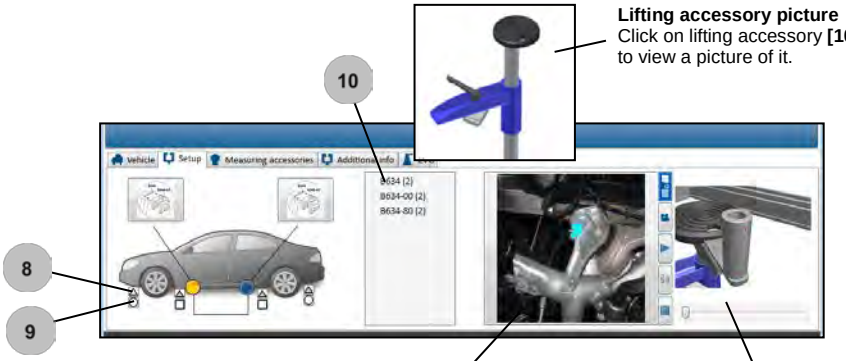
Clamping accessories
Click on clamping accessory **[5]** to view a picture of it.

Image zooming
Click on clamping image **[7]** for zooming.
In some DataSheets there are multiple clamping images.



"Additional info" sub tab
Here you find additional DataSheet information **[6]**.

Lifting mode



Lifting accessory picture
Click on lifting accessory **[10]** to view a picture of it.

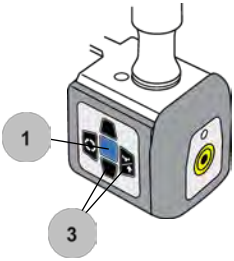
Recommended lifting points
Click on arrows **[8]** for photos of recommended lifting points. Click on boxes **[9]** to toggle lifting point photos with Parts In or Parts Out.

Multimedia presentation
Click on arrow **[8]** or box **[9]** to view multimedia presentation of lifting accessories assembly.

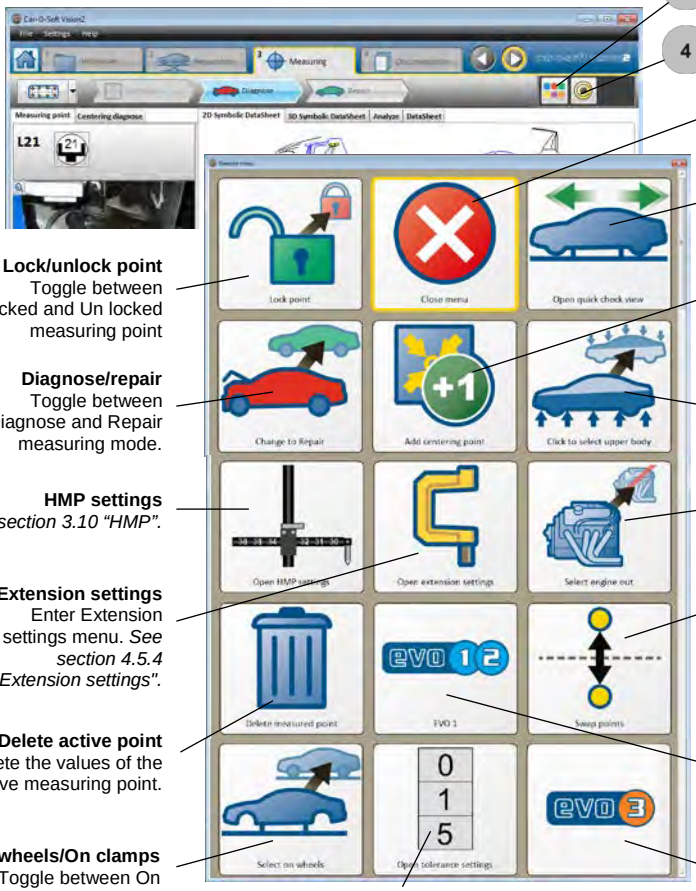
4.5 The Measuring tab

The key functions of all the Vision2 measuring methods are described in sections 4.5.1 - 4.5.13.

4.5.1 The “Remote menu” – Normal measuring



By clicking on the blue remote control button (1), or on the "Remote menu" button (2) you open up the "Remote menu”. In the "Remote menu" you have access to all the measuring functions. To find all functions in “Remote menu”, scroll with up/down buttons and right/left buttons (3) on the remote control. Select marked function by clicking on the blue remote control button.



2 ***"Toolbox":***
Remote menu button (3).
Target button (4)

Close menu
Return to "Measuring mode"

Quick check view.
See section 4.5.2 "Quick check".

Add centering point
See section 3.7 “Normal measurring method”.

Upper/Lower body
Toggle between Upper/Lower body.

Engine in/out
Toggle between Engine in/Engine out.

Swap points
Swap between left and right measuring points. Som points may vary on LHD/RHD vehicles.

EVO 1-2
For EVO 1-2 applications, *see section 10.1 "EVO 1-2".*

EVO 3
For EVO 3 applications, *see section 10.2 "EVO 3".*

Lock/unlock point
Toggle between Locked and Un locked measuring point

Diagnose/repair
Toggle between Diagnose and Repair measuring mode.

HMP settings
See section 3.10 “HMP”.

Extension settings
Enter Extension settings menu. *See section 4.5.4 "Extension settings".*

Delete active point
To delete the values of the active measuring point.

On wheels/On clamps
Toggle between On wheels/On clamps.

Tolerance settings
for measuring values, *see chapter 5 Settings*

4.5.2 The “Remote menu” – Other measuring methods

Absolute and Comparative measuring

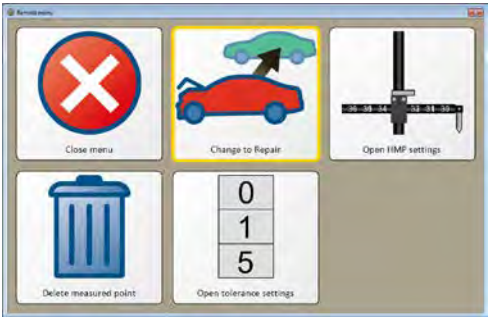
These are the functions in the remote menus for the Absolute and Comparative measuring.

Point-to-point (P2P) measuring

These are the functions in the remote menu for the P2P measuring.

Suspension check

These are the functions in the remote menu for the Suspension check measuring.
In the **3D Surface measuring**, the only function available is the HMP settings.



NOTE: The Remote menu can not be operated with the Car-O-Tronic Classic remote control.

4.5.3 Normal measuring method

The key functions of the Normal measuring method are described in sections 4.5.3 – 4.5.7

4.5.4 Quick check

”**Quick check**” is a function that allows you to easily check if the vehicle has moved in the bench mountings since the centering was last completed.

The”**Quick check**“is performed as follows:

Make sure that the vehicle is centered normally.
In the”Normal measuring” menu, click on the”**Quick check**“ button.
The”**Quick check**” single point presentation will now appear on the screen.

Select freely a point (the”**Quick check point**”). The point should be accessed easy and should not normally move during a pull, e.g. a measuring point somewhere between the clamps.

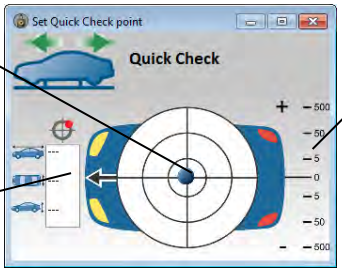
Register the selected point with **Target button** on the Remote control or in the software ”Tool box”. The numbers to the left in the ”**Quick check single point presentation**” will then go to zero which means that the ”**Quick check**” is ready for use.

Check if the vehicle has been moved, by performing any of the following procedures:

- If the system is unlocked, the **Quick check point** will appear when you come close to it again.
- Activate the **Quick check** . The number to the left of the ”**Quick check single point presentation**” shows you the distance from the vehicles original position to the present position. E.g. “0, 0, 0” (length = 0, width = 0 and height = 0) means that it is in the same position and “25, 0, 0” means that it has moved 25 mm in length from its original position.

Difference in measuring point values
Shows the difference in length an width between the DataSheet reference values and the measured point. When the blue point is in “Bulls eye” there is no difference between the DataSheet reference values and the measured values (Vertical placement = difference **in width, horizontal placement = difference in length).**

Difference in measuring point values
Numerically shows the difference between the DataSheet and the measured values (length, width and height).

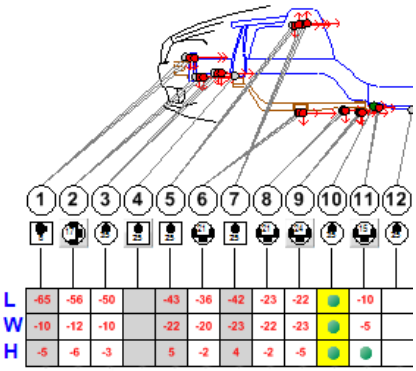


Difference in height
Shows the difference in height between the DataSheet reference values and the measured point.

4.5.5 Tolerance

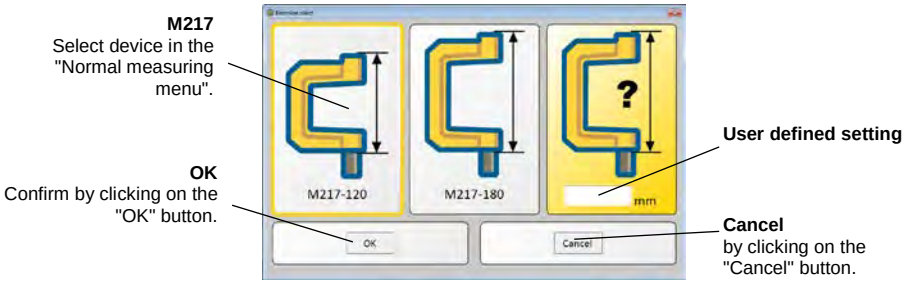
For tolerance setup, *see section 5 Settings.*

When setting Measuring - Presentation - Graphical presentation is selected (as seen in the picture to the rigth), red arrows appear on the Symbolic DataSheet where the measuring values are out of tolerance.



4.5.6 Extension settings

The M217 extension devices can be attached to the measuring slide to get around obstacles in order to reach the measuring point. When the M217 is attached, the measuring point is locked and the measuring value is compensated for the length of the M217. The M217 icon is now displayed in the lower status bar. When the measuring point is unlocked, the compensation is removed and the M217 icon disappears. To enter the setup menu for extensions, click on the “Extension settings” button in the “Remote menu”.



4.5.7 Normal measuring information in lower status bar

Work order
Shows name of active Work order.

Unlock / Lock
If the system is "Unlocked", the closest point to the measuring slide is always the active point. If the system is "Locked" it is necessary to select the point by clicking on the measuring points dimension box on the screen.

Engine In/out
Click on the icon to toggle between Engine In and Engine out.

No communication
No communication between the measuring slide and the PC.

handEye indicator
Shows if software is connected to the handEye unit.

Diagnose/Repair measuring mode
Click on the icon to toggle between Diagnose and Repair mode.

Centering OK/not OK
Click on the icon to view quality value of the centering.

No measuring tube
Indicates that no measuring tube is attached.

Battery indicator
Indicates the battery capacity in a range between 15-100%

On clamps/ On wheels
Click on the icon to toggle between On clamps and On wheels.

Delete active point
Click on the icon to delete the values of the active measuring point.

Extension indicator
Shows if Extension is being used.

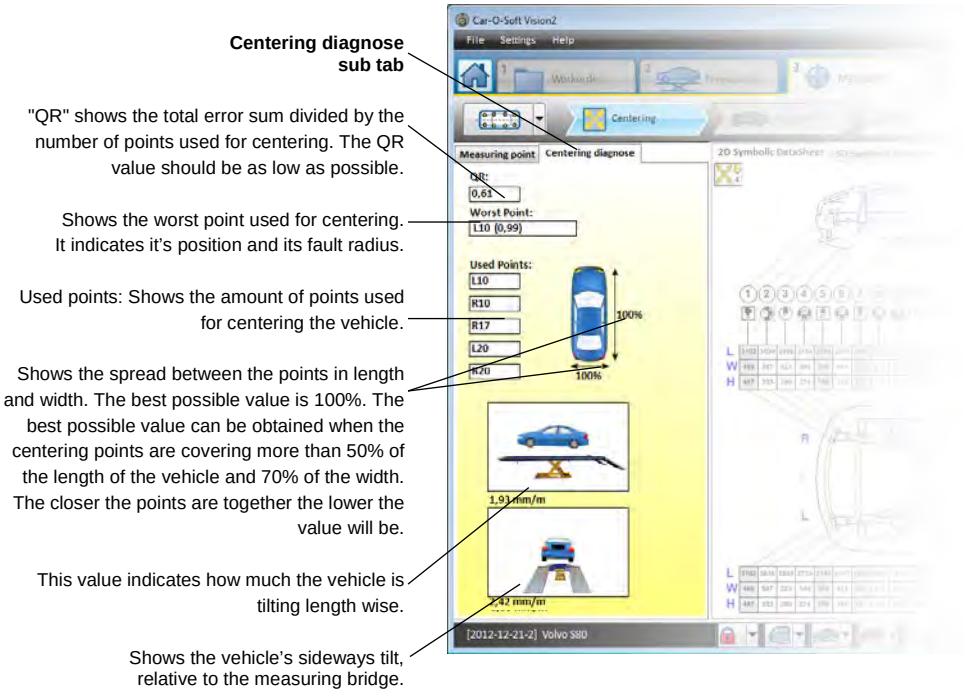
Reset measuring slide
Indicates that measuring slide needs resetting.

4.5.8 Information in the Normal Measuring sub tabs

Centering diagnose

Center the vehicle by registering 4-5 undamaged points. The centering quality value can be seen when you click on the green quality icon in the lower status line.

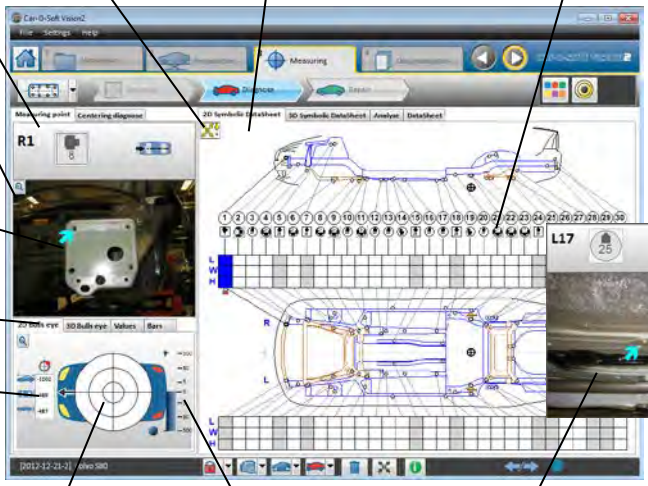
The centering procedure is thoroughly described in section 3.5 The "Normal mesuring" method.



For setting of number of centering points, *see chapter 5 Settings.*

Symbolic DataSheet – 2D measuring

The 2D Symbolic DataSheet helps you to find the measuring points of the vehicle.



Centering points
Shows the number of centerings points that are left for a successful centering.

2D Symbolic DataSheet
Gives you a "live" view of your chosen measuring points.

Select parts in /parts out
Toggle by clicking on the adapter symbol beneath the measuring point number.

Measuring point sub tab

Zoom in
Click on magnifying glass to enlarge photo and Bulls eye sub tab.

Photo of chosen measuring point
helps you to locate the right measuring point

2D Bulls eye sub tab

Difference in measuring point values
Numerically shows the difference between the DataSheet values and the measured values (length, width and height).

2D Bulls eye
Visually shows the difference in length and width between the DataSheet values and the measured point. When the blue point is in "Bulls eye" there is no difference between the DataSheet values and the measured values. (Vertical placement = difference in width, horizontal placement = difference in length).

Difference in height
Visually shows the difference in height between the DataSheet values and the measured point.

Measuring point preview
See previews of measuring points without selecting a specific measuring point by placing the marker on a measuring point.

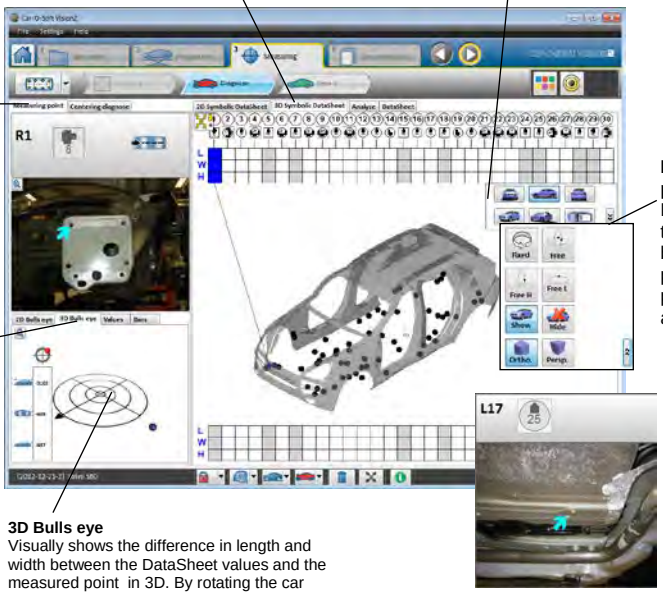
Symbolic DataSheet – 3D measuring

The 3D Symbolic DataSheet helps you to find the measuring by rotating the 3D car body to the desired angle.

3D Symbolic DataSheet
Free rotation of the vehicle body by clicking on the vehicle body and drag to desired angle.

Postions of the 3D vehicle body
By clicking on the pictures you select a desired preset position of the vehicle body.

Measuring point sub tab
Difference in measuring point values and Difference in height information same as in 2D measuring.



Perspective presentations
By clicking on the arrow button, optional perspective presentations are available.

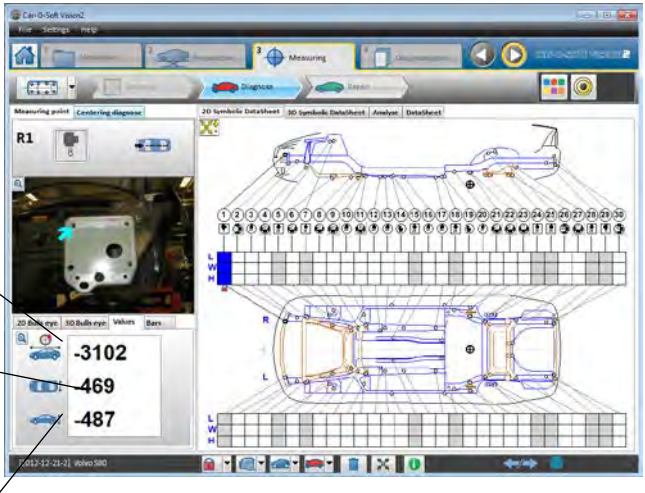
3D Bulls eye sub tab
When clicking on this sub tab you will see the Bulls eye in 3D.

3D Bulls eye
Visually shows the difference in length and width between the DataSheet values and the measured point in 3D. By rotating the car body in the 3D Symbolic DataSheet the 3D bulls eye automatically rotates.

Measuring point preview
Same function as in 2D Symbolic DataSheet.

Values

The “Values“, under the "Measuring point" sub tab, numerically shows the difference between the DataSheet reference values and the measured values in length, width and height.



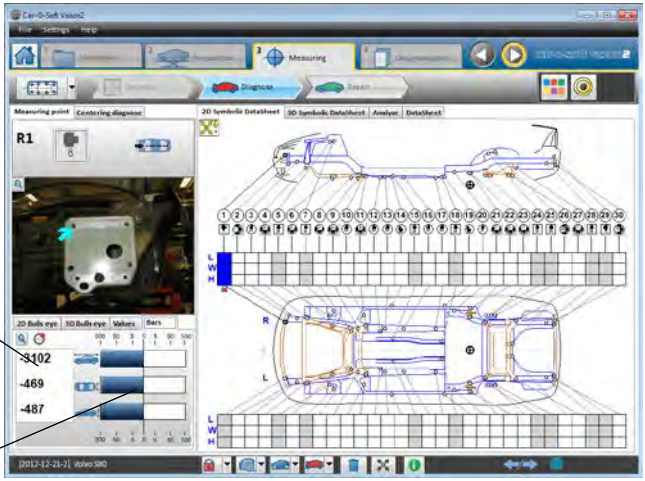
Difference in length value
Numerically shows the difference between the DataSheet length values and the measured length values.

Difference in width value
Numerically shows the difference between the DataSheet width values and the measured width values.

Difference in height value
Numerically shows the difference between the DataSheet height values and the measured height values.

Bars

The “Bars“, under the "Measuring point" sub tab, graphically illustrates how the measuring point values deviates from the DataSheet reference values.

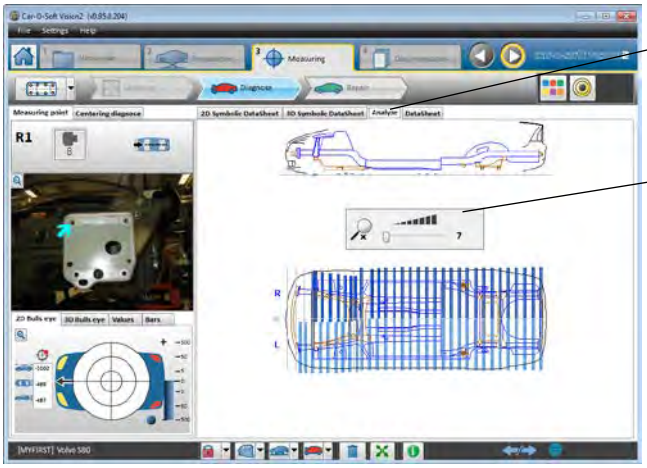


Difference in measuring point values – Numerical presentation
Numerically shows the difference between the DataSheet values and the measured values (length, width and height).

Difference in measuring point values – Graphical presentation
Graphically shows the difference between the DataSheet values and the measured values (length, width and height).

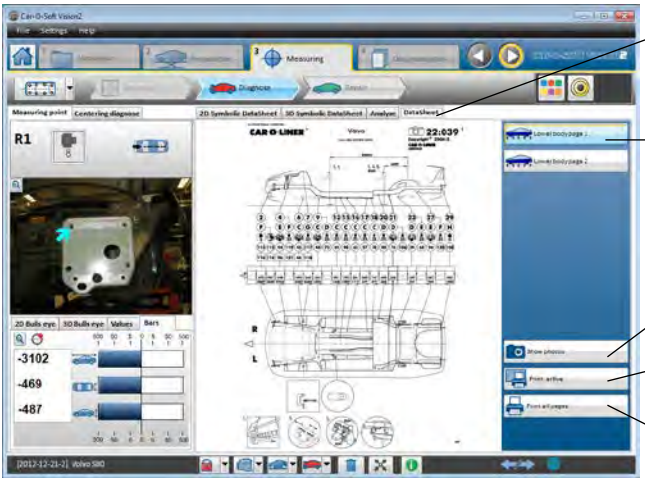
Analyze

The “Analyze“ mode shows a simplified graphic display of the vehicle damage, which you can magnify to more easily see the extent of the damage.

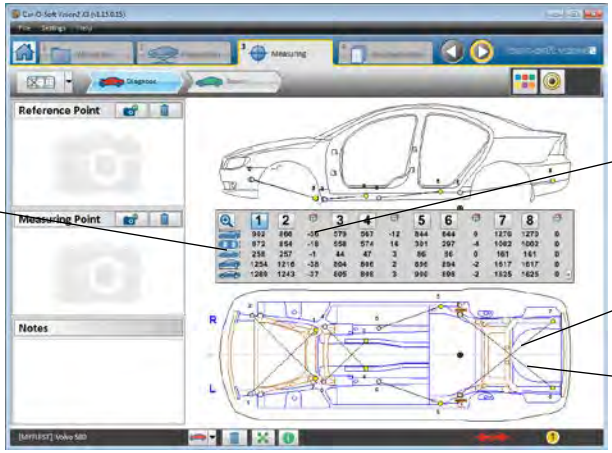


DataSheet

In the “DataSheet“ mode you can see the actual DataSheet and view photos for help in locating the correct measuring point. DataSheet and photos can be printed.



4.5.9 Absolute measuring



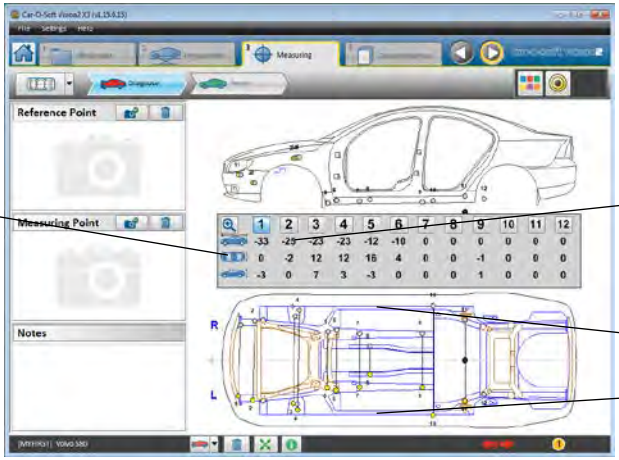
Difference in length, width and height. Projected distance. Absolute distance.

Difference between two measured identical distances.

Measured first distance.

Measured identical distance.

4.5.10 Comparative measuring



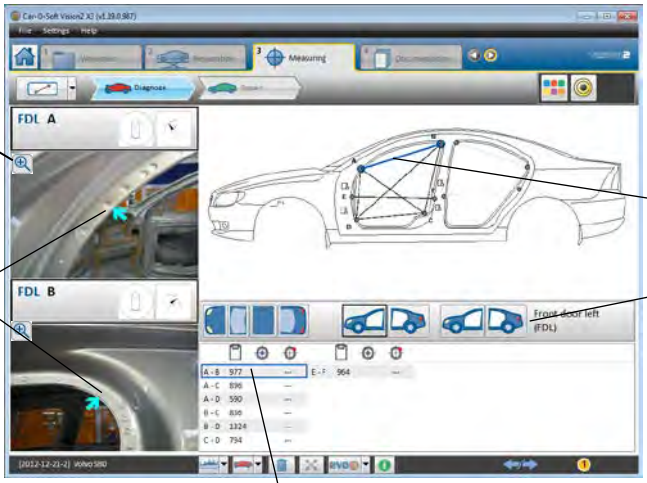
Difference in length, width and height between reference point and mesuring point.

Difference between measured distance on right side and left side.

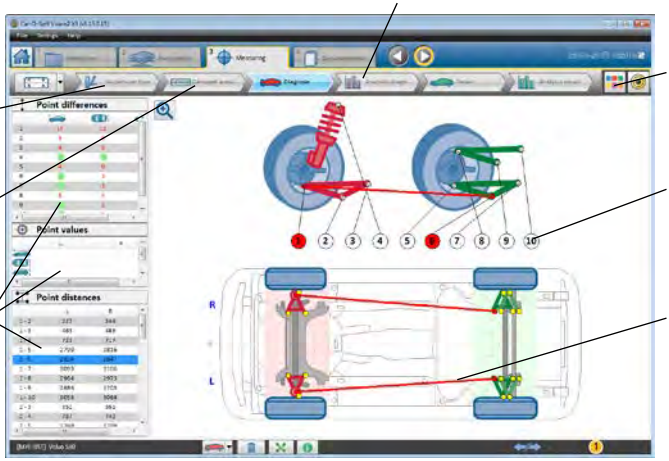
Measured distance on right side.

Measured identical distance on left side.

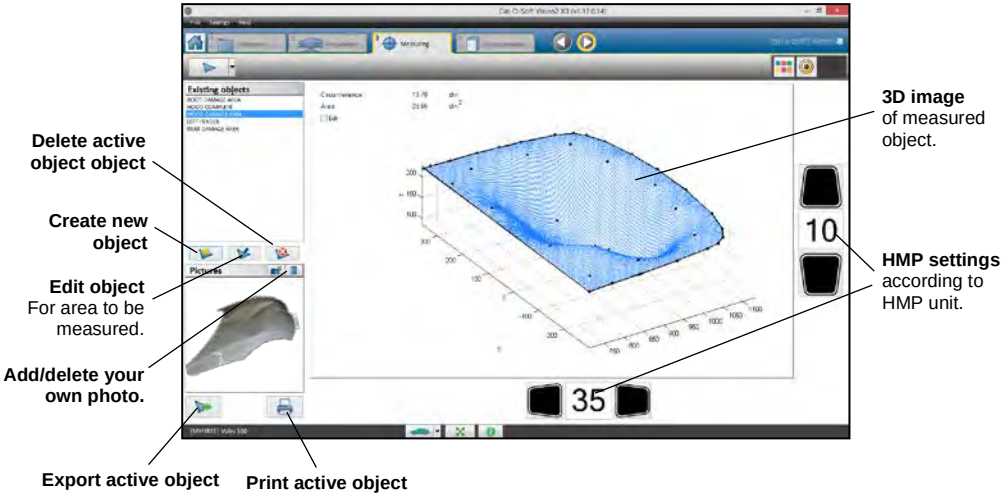
4.5.11 Point-to-point (P2P) measuring



4.5.12 Suspension check

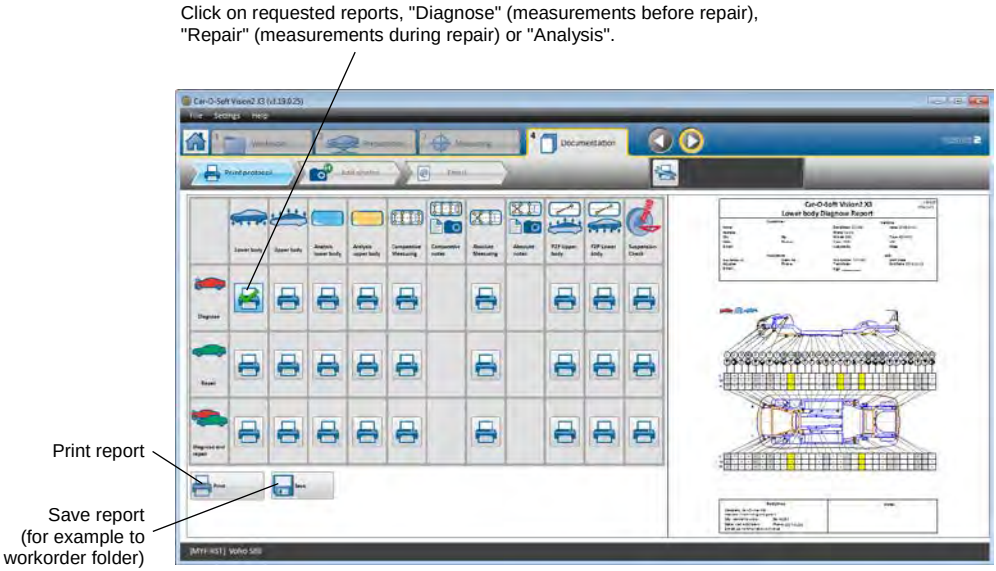


4.5.13 Surface measuring

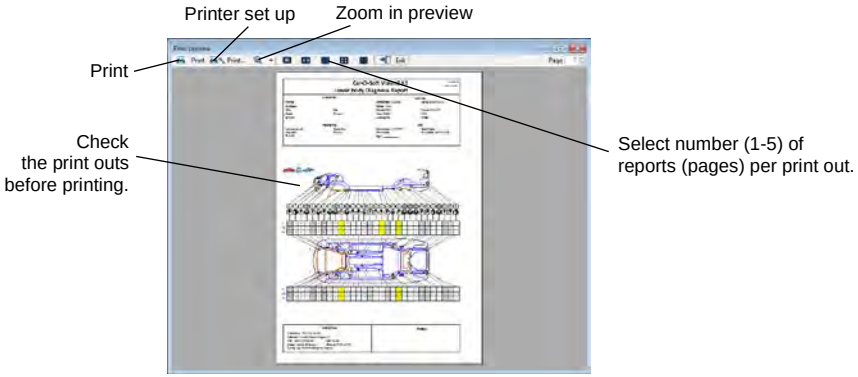


4.6 The Documentation tab

Under the "Documentation" tab you will find the "Print report" function which enables you to print out your requested reports.



4.6.1 Print preview



For printer settings, *see chapter 5 Settings.*

5 Settings

In the black upper bar you will find settings for the followingVision2 Software functions. These setting options are available continuously (and are also found in the Vision2 Software Setup, *see bottom of this page*):

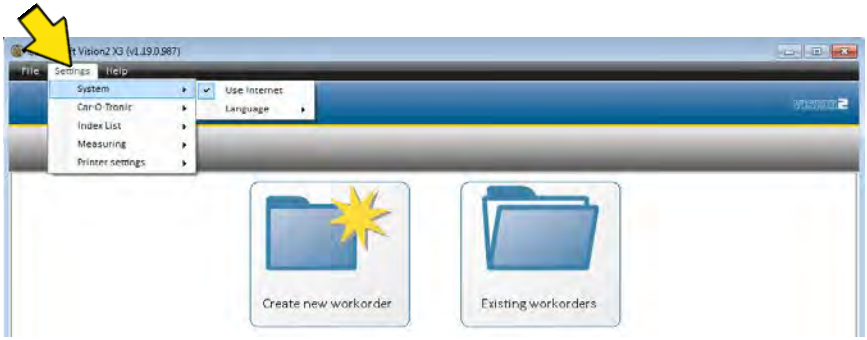
System - select language and internet connection

Car-O-Tronic – COM port

Index list - model translation

Measuring – show measuring point preview

Printer settings - show print preview



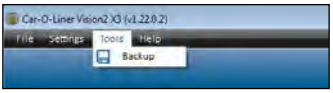
For setup of "Centering", "Measuring", "EVO", "Export", "Backup", "E-mail", "handEye" and "Network" go to Vision2 Software Setup: **Start > All programs > Vision2 > Utilities > Vision2 Setup**

For more information regarding Vision2 Software Setup, *see Car-O-Tronic Vision2 Start Up guide section 4.4" Vision2 Software Setup"*.

6 Tools

6.1 Backup workorder

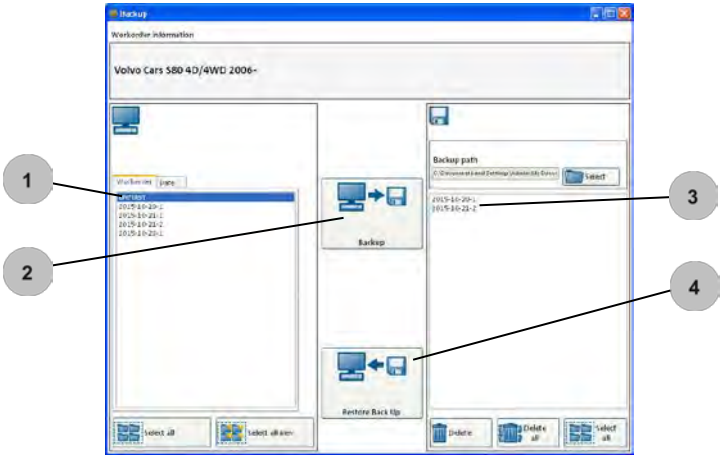
To help ensure that you don´t lose your files, you should back them up regularly. In Vision2 Software you can set up automatic backup or manually back up files by following the instructions in this section.
To activate the Backup function, select “Backup” under the Tools tab.



Select Backup function under Tools tab in software upper bar.

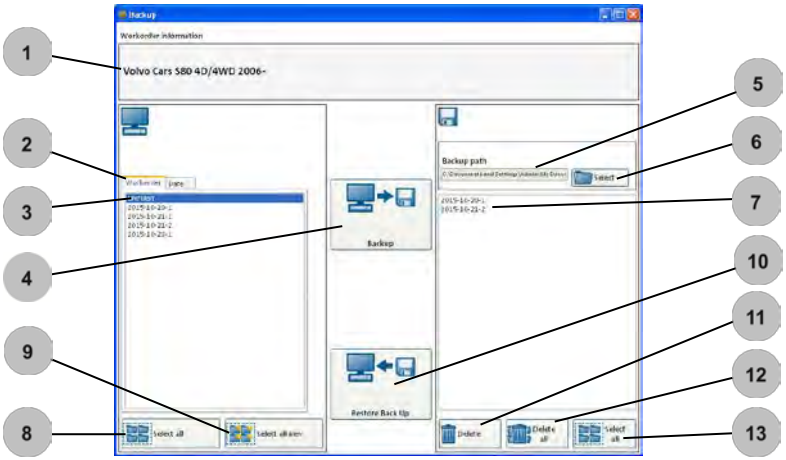
Backup workorders:

1. Select one or more workorders to be backed up.
2. Click in the “Backup” field.
3. Workorders are now transferred from computer to backup.
4. To restore a lost workorder on your computer, select a backed up file [3] and click in the “Restore back up” field.



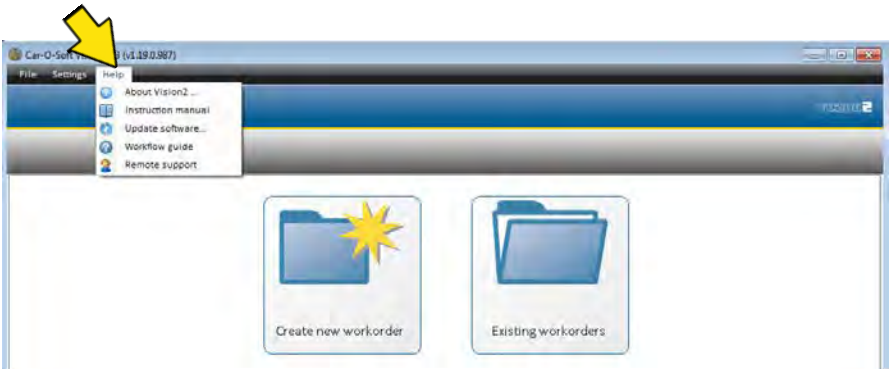
Backup workorder key functions:

1. Active workorder information.
2. Workorder list on your computer sorted by name or date.
3. Workorders to be backed up.
4. Click in the “Backup” field.
   Workorders are now transferred from computer to backup [5].
5. Site where your backed up workorders are saved.
6. You can also select an optional site for backed up files.
7. Backed up workorders.
8. Select all wokorders on your harddrive.
9. Select all workorders on your harddrive created after last backup.
10. To restore a lost workorder on your computer, select a backed up file [7] and click in the “Restore back up” field.
    Backed up workorders are now transferred to the computer [3].
11. Delete selected backed up workorder.
12. Delete all backed up workorders.
13. Select all backed up workorders.



7 Help functions

Under “Help“ in the black upper bar you will find all the necessary help functions for the Vision2 Software. The Help functions are available continuously.



The available help functions for Vision2 Software:

About Vision2 Software - CD key and Machine ID codes

Instruction manual - pdf of instruction manual

Update software - text translations, OEM links and index updates

Workflow guide - activate workflow guide when inactivated

Remote support – help solving problems from Car-O-Liner support office

8 Vision Measuring System Diagnose

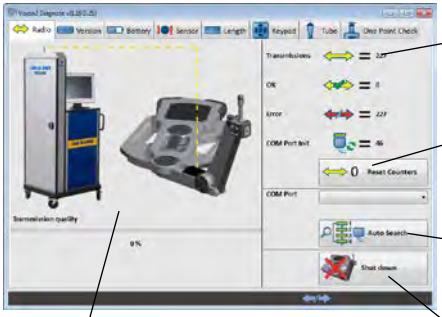
The "**Vision Diagnose**"menu helps the user to diagnose the measuring slide if something is malfunctioning.

NOTE: Before starting Vision2 Diagnose, please exit and close Vision2 Software.

To start Vision Diagnose go to:
Start > All programs > Vision2 > Utilities > Vision2 Diagnose

8.1 Vision2 Measuring System Diagnose > Communication

The "**Communication**"menu tests the communication between the PC and the measuring slide. The menu can also be used to turn off the power to the measuring slide.



Counters
Counts the number of attempts to get communication between the PC and the measuring slide.

Zero-set
Click on the button to to zero-set the number of attempts to send transmissions to the measuring slide.

Search COM port
Performs an automatic search to determine which COM port is used.

MS. power off
Click on the button to turn of the measuring slide.

Radio quality
Shows the quality of the communication between the PC and the measuring slide.

7.2 Vision2 Measuring System Diagnose > Version

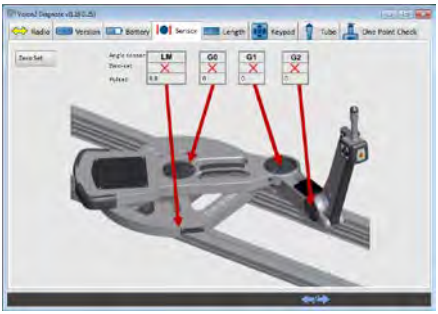
The “**Version**“menu gives information about version numbers and serial numbers, etc.

8.3 Vision2 Measuring System Diagnose > Battery

The “**Battery**“menu gives information about the battery voltage, etc.

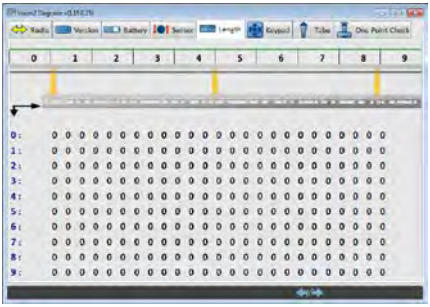
8.4 Vision2 Measuring System Diagnose > Sensor

The “**Sensor**“menu gives information about the angle sensors and the reset value for the measuring slide.



8.5 Vision2 Measuring System Diagnose > Length

The “**Length**“menu gives information about the length scale on the measuring bridge.



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8.6 Vision2 Measuring System Diagnose > Keypad

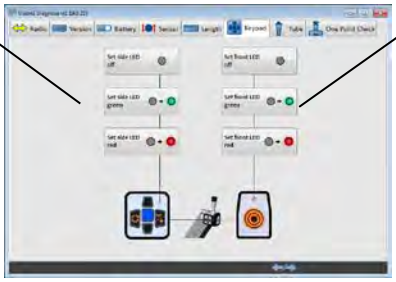
The “Keypad“menu tests the LEDs on the measuring slide and also verifies the communication between the measuring slide and the computer. The measuring slide must be zero-set and fitted with an adapter.

Remote control buttons
Press on buttons to test the LED on the remote control.

Click on the green button to test the green LED.

Click on the red button to test the red LED.

Click on the grey button to turn off the LED after you have clicked on either the red or green LED.



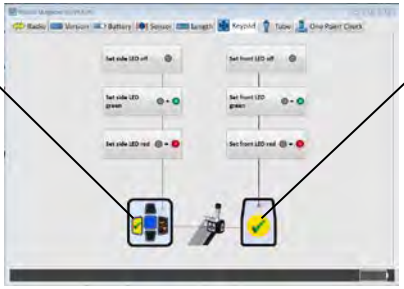
Target button
Press on buttons to test the LED of the Trigger button.

Click on the green button to test the green LED.

Click on the red button to test the red LED.

Click on the grey button to turn off the LED after you have clicked on either the red or green LED.

OK symbol
Press on the remote control buttons on the measuring slide to test the communication between the remote control. and the PC.



OK Symbol
Press the Target button on the measuring slide to test the communication between the target button and the PC.

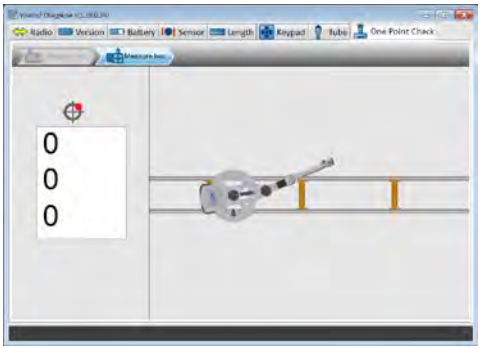
Test that the buttons on the measuring slide can communicate with the PC by pressing each button. If the button is OK it will recieve the symbol as shown in the top figure of this page. If you do not receive the symbol something is wrong. Please contact you local Car-O-Liner distributor.

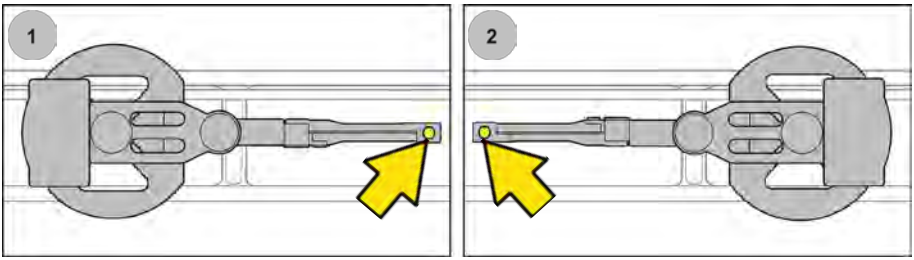
8.7 Vision2 Measuring System Diagnose > Measuring tubes

The “**Measuring tube**“ menu gives information about the tubes.

8.8 Vision2 Measuring System Diagnose > One Point Check

Perform "**One Point Check**" to check if measuring slide is measuring correct. How to perform "One Point Check", *see bottom of this page.*





1. Register one measuring point.

2. Turn Car-O-Tronic 180º around, register the same measuring point and check if measuring value is the same.

How to read DataSheets

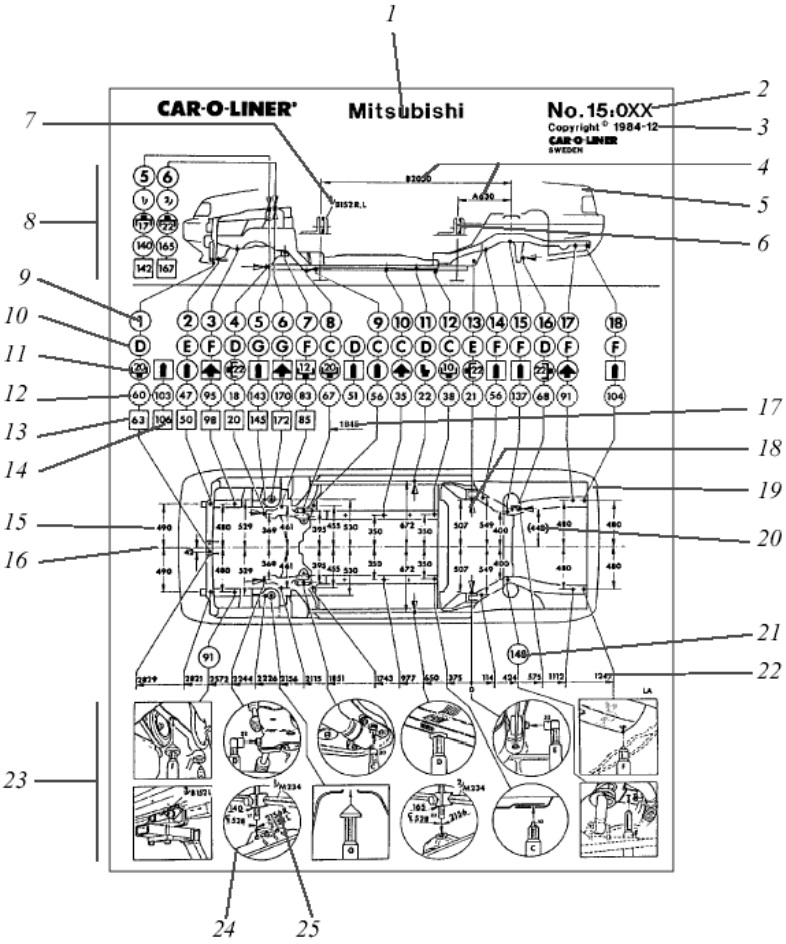
8.9 General

This chapter provides necessary information on Car-O-Liner DataSheets. The manufacturers and the work shops demand efficient and fast collision repairs. To fulfil these demands, Car-O-Liner has developed and refined the DataSheets over the years. Therefore, the look of the DataSheets has changed and we have assigned them different versions. In this chapter, we explain the most common versions of DataSheets. The years stated for each version generally indicate the years when the layout was most commonly used.

The DataSheets provide information on measuring data for both the upper and lower body of a vehicle. The DataSheets show the height, length and width dimensions of specified measuring points on a vehicle. DataSheets also provide information on adapters and methods for measuring specific points on the vehicle. The dimensions given must be regarded as guidelines since dimensions may vary slightly between vehicles of the same model, due to manufacturing tolerances or previous repair work. The upper diagram on the DataSheet shows the left side of the vehicle, with the position of the chassis clamps (expressed as A and B) from the center of the rear axle to the center of the clamp. The diagrams of the chassis clamps indicate where the toothed jaw segments are to be attached to the angle of the clamp or to the mounting plate. The drawing in the center of the DataSheet shows the vehicle as seen from above. Near the bottom of the page are explanatory drawings of the measuring points, showing special clamps or measuring devices and setups if required. (All displayed from the left side of the vehicle.)

8.10 Lower Body DataSheets

8.10.1 Version 1

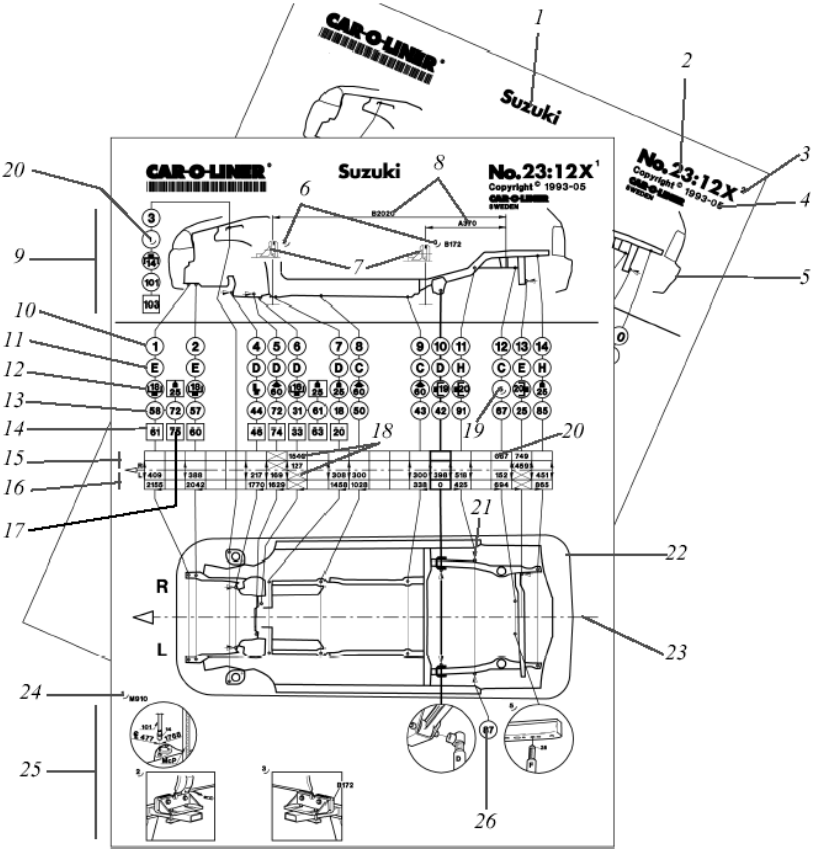


Version 1 – Lower body DataSheet (–1993).

1 Make
2 DataSheet number
3 DataSheet issue
4 Distance of clamps from rear axle center
5 Side view, left side (contour may vary)
6 Position of clamping jaws
7 Special chassis clamps. R = right, L = left
8 Adapter type. Height M234 HMP (M910 HMP)
9 Measuring point number
10 Height tube M40. Different length B, C, D, etc.
11 Type of measuring adapter. Circle = assembled, Square = dismantled
12 Height dimension
13 Height dimensions with engine removed
14 Parts out branch
15 Width dimension from center line
16 Vehicle center line
17 Length dimension right side of vehicle (for asymmetrical lengths, right side-left side)
18 Measuring direction (if not from underneath)
19 Vehicle viewed from above
20 Dimension in bracket = major deviations between vehicles of the same model
21 Height dimension left side for asymmetrical vertical dimension
22 Length dimensions from zero point
23 Explanatory drawings for measuring points. Circle = assembled, Square = dismantled
24 Dimensions for M234 HMP (M910 HMP) in the illustration
25 Length dimensions for M234 HMP (M910 HMP),R = right, L = length

Version 1 – Lower body DataSheet (–1993).

8.10.2 Version 2

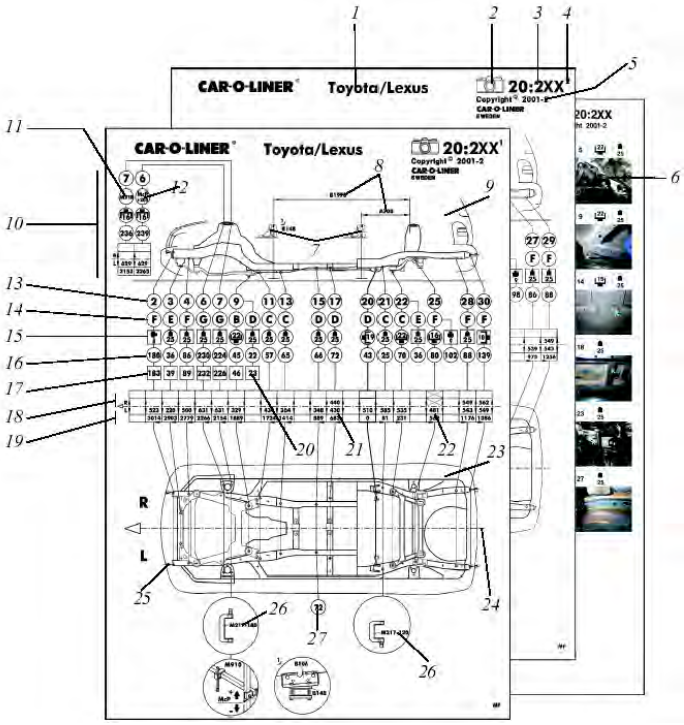


Version 2 – Lower body DataSheet (1994–).

1 Make
2 DataSheet number.
3 Page
4 DataSheet issue date
5 Side view, left side (contour may vary)
6 Special chassis clamps. R = right, L = left
7 Position of clamping jaws
8 Distance of clamps from rear axle center
9 Measuring points measured from above with M910 HMP (M234 HMP)
10 Measuring point number
11 Height tube M40. Different length B, C, D, etc.
12 Type of measuring adapter. Circle = assembled, Square = dismantled
13 Height dimension
14 Height dimensions with engine removed
15 Right length and width dimensions (if not symmetrical)
16 Left and right length and width dimensions (if symmetrical)
17 Parts out branch
18 Point only exists on right side
19 See explanatory drawing
20 Different length dimensions but equal width dimensions
21 Measuring direction (if not from underneath)
22 Vehicle viewed from above
23 Vehicle center line
24 Dimensions for M910 HMP
25 Explanatory drawings for measuring points. Circle = assembled, Square = dismantled
26 Height dimension left side for asymmetrical height dimension

Version 2 – Lower body DataSheet (1994–).

8.10.3 Version 3



Version 3 - Lower Body photo DataSheet (1999–).

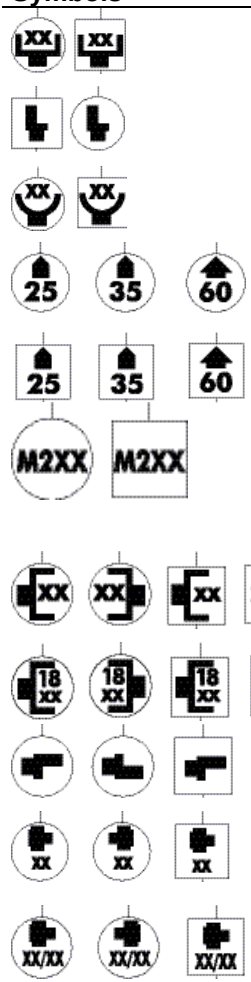
1 Make
2 Symbol for version 3 (Photo DataSheet)
3 DataSheet number.
4 Page
5 DataSheet issue date
6 Page 3 with explanatory photos is only available by printing the photos from the Vision2 Software “View Photo“ window
7 Position of clamping jaws.
8 Distance of clamps from rear axle center
9 Side view, left side (contour may vary)
10 Measuring points measured from above with M910 HMP
11 A symbol for the M910 measuring system HMP
12 This symbol is used when the crossbeam needs to be lowered (-) or raised (+). The measurement dimension is shown in the symbol and also as a standard illustration (M910, HMP)
13 Measuring point number
14 Height tube M40. Different lengths B, C, D, etc.
15 Type of measuring adapter. Circle = assembled, Square = dismantled
16 Height dimension
17 Height dimensions with engine removed
18 Right length and width dimensions (if not symmetrical)
19 Left and right length and width dimensions (if symmetrical)
20 Parts out branch
21 Different width dimensions but equal length dimensions
22 Point only exists on left side
23 Vehicle viewed from above
24 Vehicle center line
25 Measuring direction (if not from underneath)
26 Explanatory illustration for extraordinary measuring adapter (accessory). Circle = assembled, Square = dismantled
27 Height dimension, left side for asymmetrical height dimension

Version 3 - Lower Body photo DataSheet (1999–).

8.11 Adapter Symbols

On the DataSheets, the adapters below are only indicated with a symbol. Therefore, the adapters are not shown in any explanatory illustrations on the DataSheets. The symbols to the left symbolize the required adapters that are shown to the right. If the symbol is turned 90°  , the adapter is fitted with M104 (as shown on page 114).

Symbols **Adapter examples**



The following adapter frames are used in the DataSheets:

Dismantled (Parts out) – An assembly or component needs to be removed to reach the measuring point (for example strut, suspension, bumper).

Assembled (Parts in) – No assembly or component needs to be removed to reach the measuring point (but some items may need to be removed to reach the point, for example exhaust, heat shield, plastic cover).

Clamp Replacement Chart

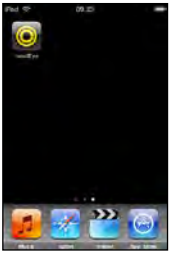
The chart below indicates how the new-style clamps supersede or replace the previous-style clamps.

NOTE: Previous-style clamps may not work in place of current style clamps.

	Current clamp	Previous-style clamps (out of production)			
Standard clamps	**B106**	B105	B103	B102	
	B223	B219	B218		
	B256	B239	B222		
	B245	B134	B139		
BMW (B331)					
Base	**B248**	B244	B153		
Bottom pin	**B248-A1**	B237	B204		
Side pin + Holder	**B248-B1 + C1**	B236	B202		
Mercedes (B330)					
Base	**B248**	B244	B153	B143	B137
Bottom pin	**B248-A2**	B142	B142	B142	B142
Bottom pin	**B248-A3**	B138	B138	B142	B142
Side pin + Holder	**B248-B2 + C2**	B207	B207	B125	B126
Frame vehicle kit	**B250, E1, H2**	B161 + B212			
	B250, E1, H2, B213	B161 + B212 + B213			
	B260, E4	B240		B156	
	B260, E5	B240 + B213		B156 + B213	
	B260, E5, B213	B240 + B212		B156 + B212	
B156 Adapters and Cup replacements	**B156-A6**	A1			
	B156-A8	A4			
	B156-A14	A7 + A9			
	B156-B6	B2			
	B156-B9	B4			
	B156-B11	B8			

Clamp replacement chart

9 handEye *Vision2 X3*



9.1 Set up/Sync mode

9.1.1 Start the handEye

Start the handEye by tapping the “Bulls Eye” icon.

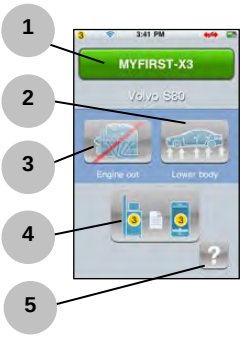
9.1.2 Select a Vision station

Select a Vision2 station by tapping the server icon (marked as ”3”), or go back to Workorder view by tapping the Cancel button.

9.1.3 Connect to Vision2 Software

Now tap the OK button to connect to Vision2 Software and go to Workorder view.

9.1.4 Workorder view



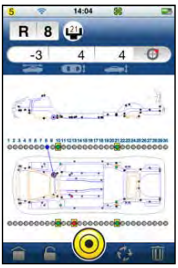
1. To the measuring view. The button will be green and enabled if Vision2 is in measuring mode. It will be yellow and disabled if Vision2 is not in measuring mode, but still connected. It will be red if disconnected.
2. Toggle between upper body/lower body.
3. Toggle between engine in/engine out.
4. Change Vision2 station. Will also show which station you are connected to and if there is a connection.
5. To the Help Function – with detailed information about views, functions and icons.

9.1.5 Transferring workorder files to handEye

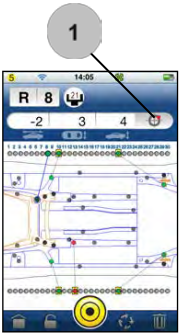
This dialogue is displayed when Vision2 is transferring necessary workorder files to the HandEye.

9.2 User mode

9.2.1 Data sheet view



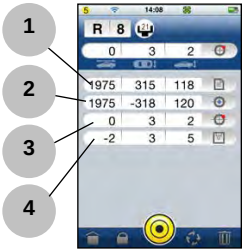
Displays the number of points 1-30, for current lower or upper body datasheet.
Gray: regular reference point, no stored value
Yellow: measured point, tolerance off
Green: measured point tolerance on, all 3 values within tolerance range
Red: measured point tolerance on, some or all values outside tolerance range
Blue: active point
Yellow square behind a point marks a centering point.
Car-O-Tronic aimpoint(1) marks the current position of the Car-O-Tronic.



9.2.2 Data sheet view – zoomed in

Double-tap on either top or side view of the vehicle to zoom in. Double-tap again to zoom out.
When zoomed in: press finger on screen to scroll vehicle left or right.

9.2.3 Measuring values view

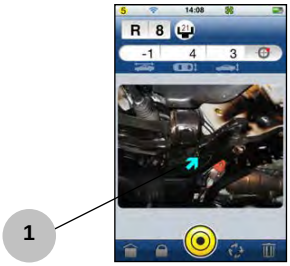


1. Datasheet reference values.
2. Car-O-Tronic values.
3. Diff values.
4. Stored/saved values

9.2.4 The Bulls Eye view

Same function as in Vision2 Software.

9.2.5 Current measuring point view



Tap the button (currently showing ”R8”) to open the Active Point view. On certain points the adapter icon next to it can also be selected. The three numbers below this row shows the diff values (length, width, height).

1. Photo showing the active point

9.2.6 The active point view

Here you can set (lock) the active point.

1. The left top button lets you toggle between left (L) and right (R) side.
2. The button next to it toggles between low (L) and high (H) measuring points.

This view displays the number of points for lower or upper body. If any points have been measured, colored dots will appear on corresponding buttons. If currently the right side button is pressed only right side points will show, and vice versa.
Tap a number button and then OK to lock onto a desired point. Tapping the Cancel button will ignore any changes made and display the default measuring view again.
Blue background: current selection
Yellow background: centering point
Yellow background, with blue border: centering point currently selected
Yellow dot: measured point, tolerance off
Green dot: measured point, tolerance on - all 3 values within tolerance range
Red dot: measured point, tolerance on - some or all values outside tolerance range.

9.2.7 High measuring points (HMP) view

Displays the current settings for high measuring points. The active choice is marked with a blue border. Tap on any of the 5 different images to edit the desired setting. The new value is immediately visible. Tap OK to confirm current settings, or Cancel to abort any changes made.

10 The EVO System *Vision2 X3*

EVO, the universal anchoring and holding system, is supported by Vision2 Software *X3*.

10.1 EVO 1 and EVO 2

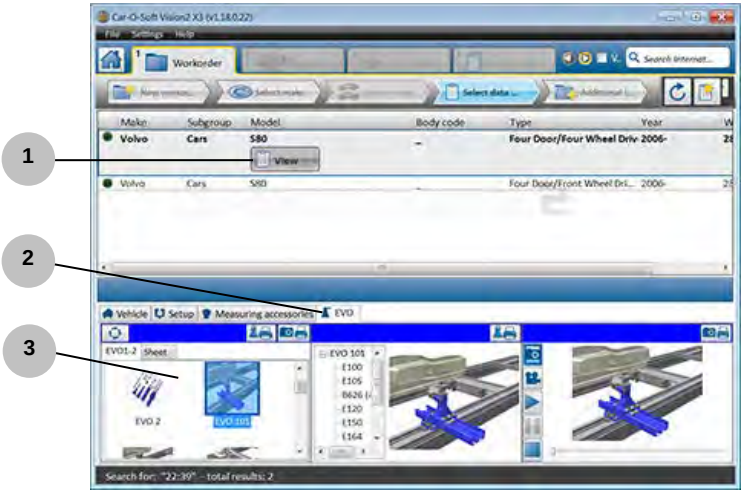
EVO 1 is a basic anchoring kit and EVO 2 is the extension kit to EVO1.

IMPORTANT: During pulling, the vehicle must be secured to the bench when using EVO on anchoring points.

Operation: *In Index list*

You can find EVO information and presentation for a specific vehicle by selecting the DataSheet in the index list.

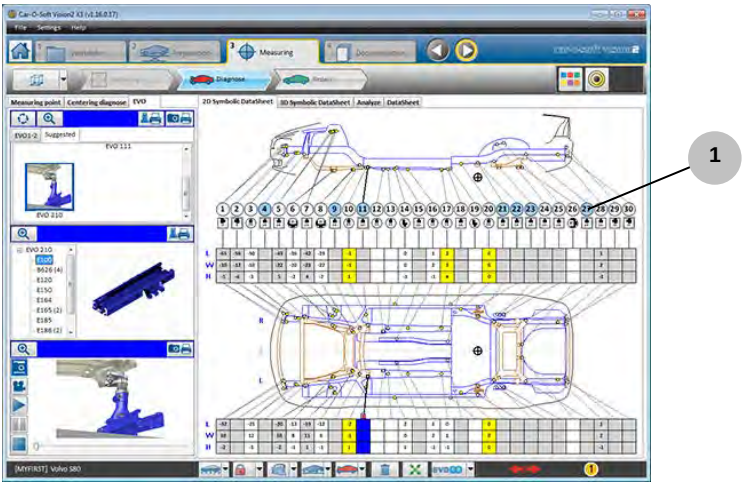
1. Click on a downloaded DataSheet in the Index list.
2. Click on the EVO sub tab in the Info center.
3. EVO information will be presented.



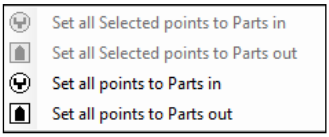
Operation: *EVO Anchoring points in DataSheet*

1. Recommended EVO 1-2 anchoring points are marked blue, and can be used depending on type of damage. 9

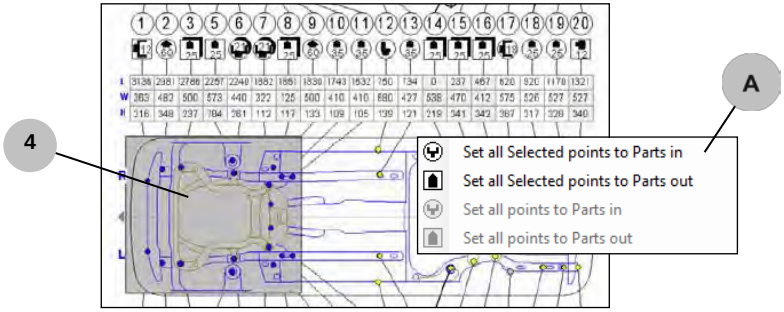
2. Mandatory EVO 1-2 anchoring points are marked blue with a red circle. These anchoring points shall be used to hold the body in the Z-direction depending on type of damage. The reason is to anchor the body when not using the B106 clamp. 4
   When you click on a blue marked number the EVO presentation windows opens up on the left side (for more information regarding EVO presentation windows, *see the "EVO Presentation windows" section*).



3. Grey marked points have recommended EVO information. You need to toggle "**Parts in/ parts out**" to get the EVO point information. Or by right clicking on the mouse. 9



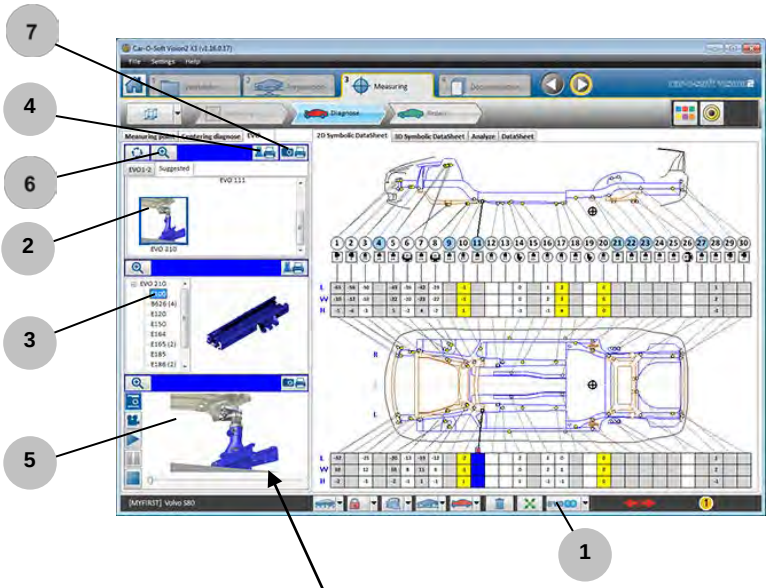
4. You can select Parts in/Parts out for specific areas of the vehicle by using the mouse. Click, hold down, move and release, to highlight the area you want to change settings for. Select points Parts in/Parts out (A).



The EVO information is also possible to activate and navigate by using the ***remote control*** buttons on the Car-O-Tronic Vision2 measuring slide.

Operation: *EVO Presentation windows*

1. For EVO 1-2 presentation, click the “EVO 1-2” icon in the lower status bar.
2. The upper window has two viewing modes: The “EVO 1-2” tab displays the entire library of EVO applications and the “Suggested” tab displays the EVO application suggested for a selected measuring pointt.
3. The middle window presents a contents list of parts for the selected EVO application. Click on the ***part number*** in the list to view the specific part.
4. Click for printout of the selected application, with all parts included.
5. The lower window presents pictures and videos of how to assemble the selected application.
6. Click on the magnifying glass icon for full screen mode of each EVO window.
7. Click for printouts including all pictures of an application presentation.
8. You can close the EVO mode by clicking on the closing icon in the upper left corner of the upper window. You will then be automatically transferred to “Measuring point” mode in the presentation window.



Printouts with all pictures of the selected application presentation.

Play control. Manual option for playing the animation forward or backwards.

10.2 EVO 3

EVO 3 is a universal holding and fixturing kit.

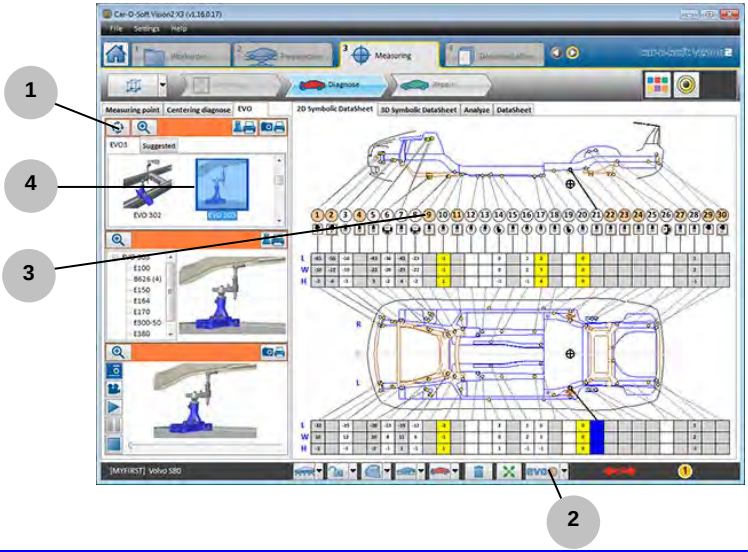
Operation

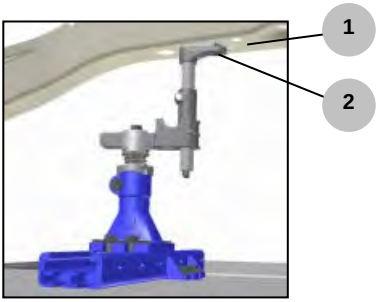
The EVO 3 application functions are similar to EVO 1 and 2 but the points, icons and the bar are marked orange.

To activate an EVO 3 application

1. Toggle between EVO 1-2 and EVO 3 presentation. The colour for EVO 3 is orange.
2. Alternative toggle between EVO 1-2 and EVO 3.
3. Click on recommended orange point. 

The EVO 3 presentation window at the left side, displays the EVO 3 information for point number 9.
4. A ***blue frame*** around the application picture means that the application is preselected but NOT active. To activate, click one more time on the application picture. The EVO presentation window changes back to measuring presentation.





1. The EVO3 application fixates the new body part in the right position.
2. Place the Car-O-Tronic measuring adapter in the socket beneath the measuring point.
3. If the EVO 3 application affects the DataSheet reference value, the measuring panel changes to orange.
4. The orange measuring panel indicates that the DataSheet reference value changes to EVO data. The software automatically compensates the EVO 3 point displacement caused by the EVO application.
5. In this example we have 10 mm affect in height. The point number is highlighted. To deactivate the high lighted EVO 3 point, click on the point number.

NOTE! Deactivate the point when you have finished and removed the EVO 3 application.

11 Maintenance

WARNING: All electrical connections must be carried out by a qualified electrician. Risk for electrical shock.

WARNING: Most service must be carried out by Car-O-Liner service personnel and service support. Risk for electrical shock.

WARNING: Never remove any covers or perform any work to the equipment without unplugging it from the wall outlet. Risk for electrical shock.

WARNING: Unplug the equipment from the wall outlet before servicing, cleaning or maintenance. Risk for electrical shock.

11.1 Hardware Car-O-Tronic Vision2

11.1.1 Charging measuring slide battery

The battery used with the Car-O-Tronic is lithium-ION. In order to insure long life cycle of the battery, they require special charging procedures. The battery should be removed from the measuring slide before charging due to heat build up. Once the battery has been discharged it takes several hours before you have any capacity in the battery and 6-8 hours to reach full charge. (The capacity of the battery is continuously displayed in the *Lower status bar* of *Vision2 Software*. The range displayed is 15-100 %.)

There is no point in charging the battery for just 1 hour now and then as it only shortens the life span of the battery. The best thing to do is to have two batteries to insure that you always have one battery fully charged and ready for usage.

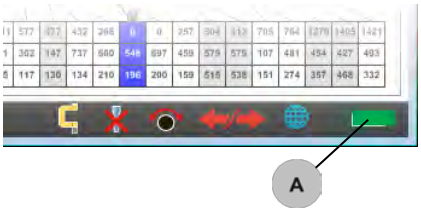
WARNING: Do not disassemble or short circuit the battery. Do not overcharge or put it into a fire. Risk for injuries.

IMPORTANT: The battery should not be exposed to severe heat. During charging in particular, the battery should be protected from excessive heat, as this adversely affects its ability to absorb the charge.

NOTE: Short charges will shorten the usage time and life span of the battery. Therefore, it is important only to charge for a short while when it is absolutely necessary.

NOTE: It is recommended to fully discharge the battery on a weekly basis.

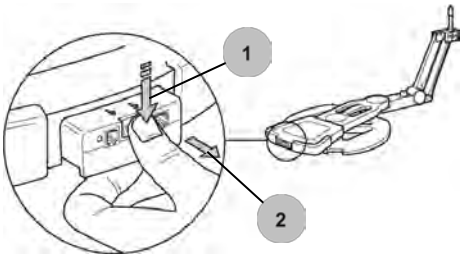
Check the capacity of the battery in the lower right corner of Vision2 Software (A).



Remove the battery from the measuring slide in the following way:

1. Press the button on the back of the battery downwards to release the lock.

2. Pull the battery outwards.



When the charger is connected the diode starts blinking fast. During charging, the green LED on the measuring slide is shining with a fixed light.

NOTE: During charging, the green LED on the charger is blinking. When the battery is fully charged the LED is shining with a fixed light.

11.1.2 Cleaning

Car-O-Tronic is a precise measuring tool and should be treated as such. Therefore, care should be used when cleaning the Car-O-Tronic.

IMPORTANT: No strong solvents should be exposed to the measuring slide or the measuring bridge.

Clean compressed low pressure air should be used to remove dust from the electronic sensor on the measuring slide.

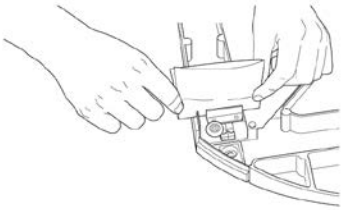
Care should also be taken to maintain the PC unit of your system. Make sure both PC and printer stay as clean as possible.

The equipment can be cleaned by using air. Canned air can be purchased at any office supply store.

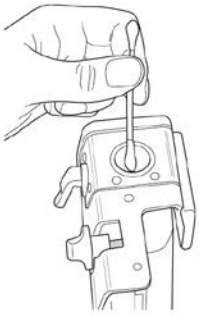
11.1.3 Cleaning the measuring slide

In order to always receive the correct measurement data you once in a while have to clean the “Length Measuring Head” and the measuring tube holder.

- Clean the “**Length Measuring Head**” by pulling a clean piece of folded cloth back and forth (see picture to the right).



- Clean the “**Measuring tube holder**” with a clean q-tip (see picture to the right).



NOTE: Do not use water or any other type of solvent when cleaning the measuring tube holder.

12 Trouble shooting

The troubleshooting instructions in this chapter will help you to quickly find and correct the most common faults that may occur when using Car-O-Tronic and Vision2 Software.

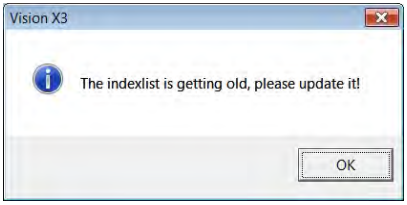
WARNING: All electrical modifications must be carried out by a qualified electrician. Risk for electrical shock.

WARNING: Unplug the equipment from the wall outlet before servicing, cleaning or maintenance. Risk for electrical shock.

WARNING: Never remove any covers or perform any work to the equipment without unplugging the heater from the wall outlet. Risk for electrical shock.

The troubleshooting schematic is a useful tool when tracing problems with **Car-O-Tronic**, **Vision2 Software** and **Car-O-Data**. The schematic presents the most common problems and their possible causes.

When this warning is displayed, it is time to update **Vision2 Software** and/or **Car-O-Data**.



12.1 Checklist

If you find the instructions in the checklist below insufficient, please contact your Car-O-Liner distributor.

1 What version of *Vision2 Software* is installed on the computer?

_____
Version of Vision2 Software

2 What version of *Car-O-Data Update* is installed on the computer?

_____
Version of Car-O-Data Update

3 What is the DataSheet number, issue date and copyright date of the faulty DataSheet you are using. (For locating this information, see *section 8 "How to read data sheets"*.)

_____
DataSheet number

_____
Issue date

_____
Copyright date

The information in points 4-9 are required only if the problem concerns faulty measuring values.

4 Which measuring points are not correct?

_____
Faulty measuring points

5 What is the difference in height, length and width between the correct DataSheet measuring points and the faulty points being measured?

_____
Height

_____
Length

_____
Width

6 Which centering points have you used?

_____
Centering points

7 What is the make of car and what is the model?

_____
Make of car

_____
Model

8 In what year was the vehicle manufactured?

_____
Manufacturing year

9 What is the wheelbase (distance from the center of the front wheel to the center of the rear wheel) of the vehicle?

_____
Wheelbase

12.2 Wrong communication parameters PC - Measuring slide

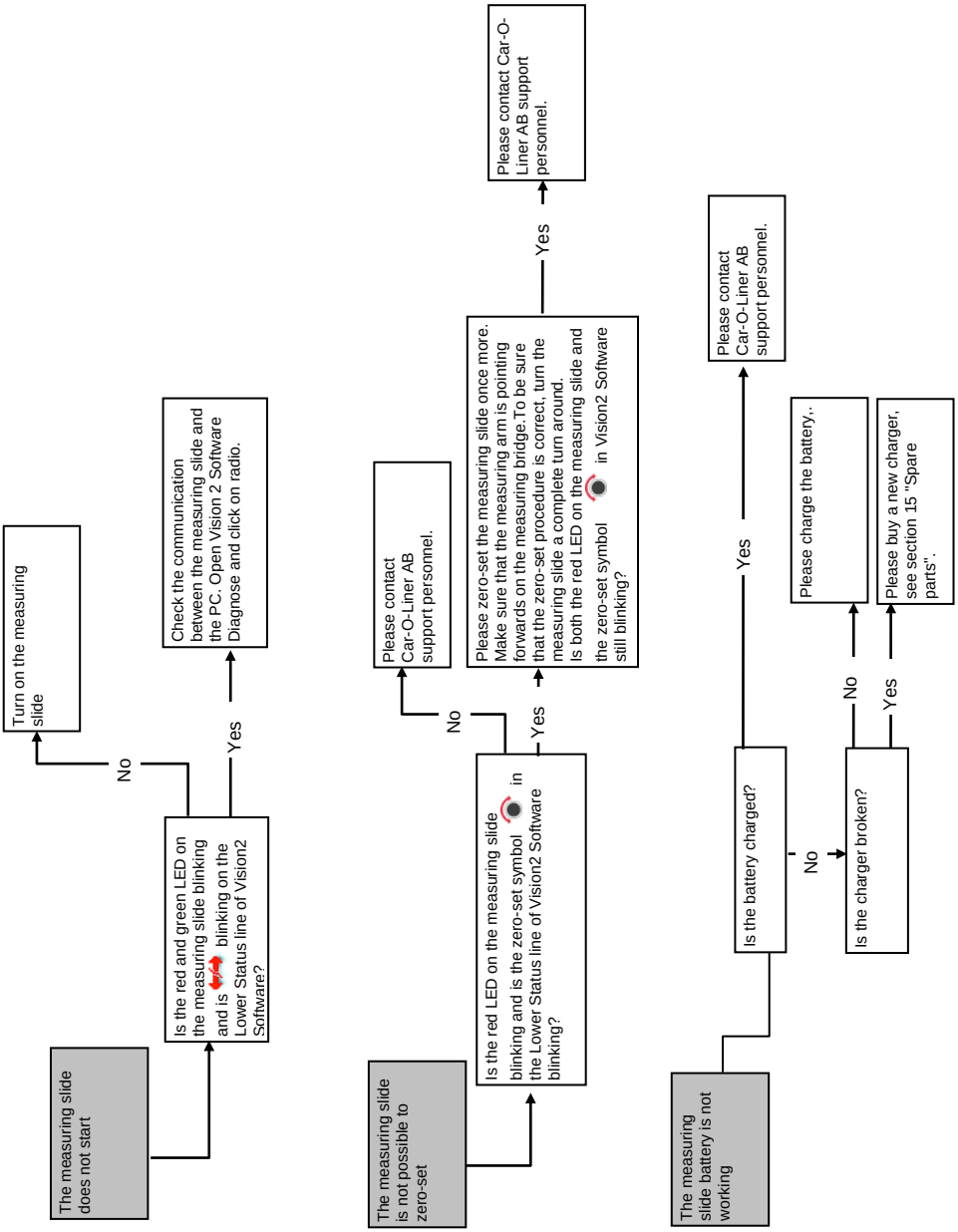
If you experience problems in the communication between the PC and the measuring slide, please check the communication port:

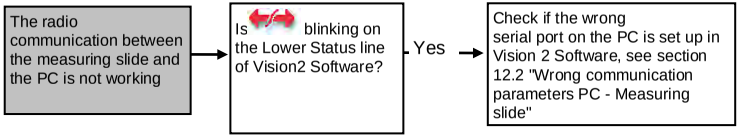
- Open **Vision2 Software Diagnose** and click on "**Radio**" to check that **Vision2 Software** is set to communicate to the same COM port as the bluetooth unit is connected to. Click on the "**Search"** button to make Vision2 Software search for the correct COM port.

12.3 Trouble shooting schematics

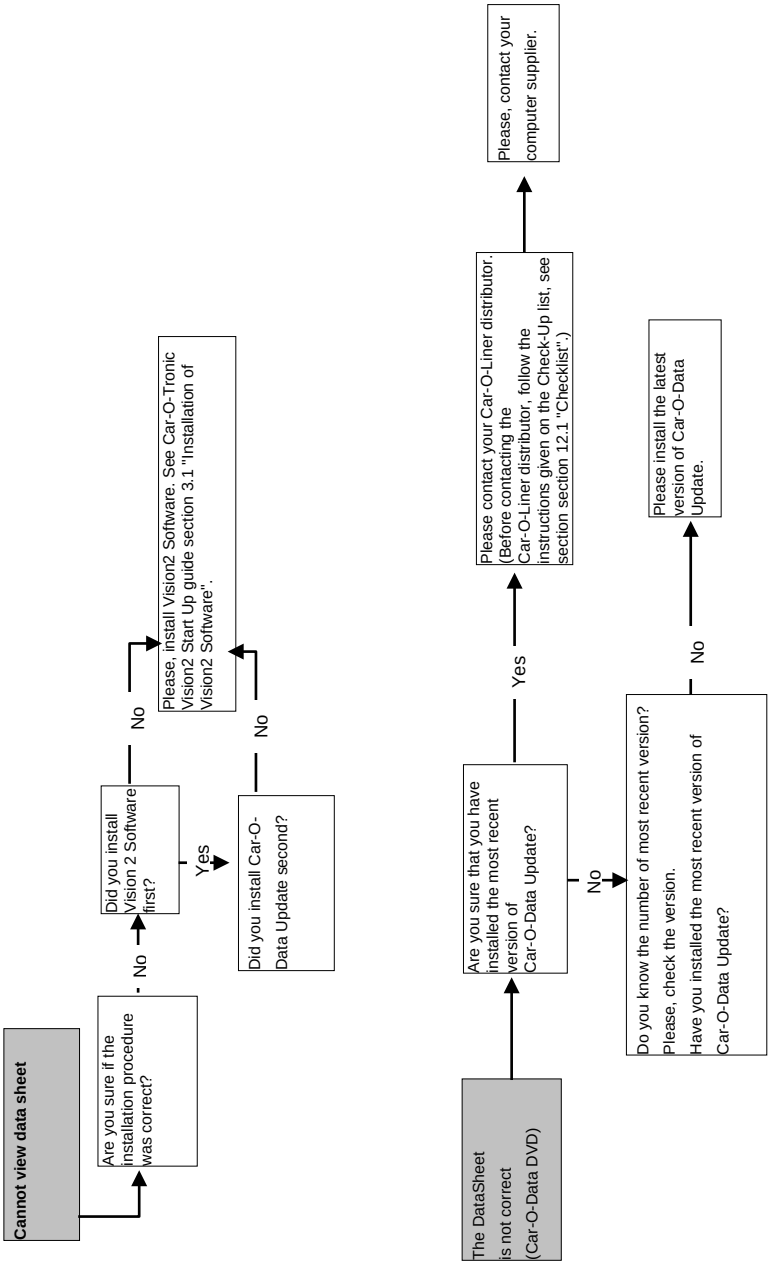
The trouble shooting schematic is a useful tool when tracing problems with Car-O-Tronic, Vision2 Software and Car-O-Data. The schematic presents the most common problems and their possible causes.

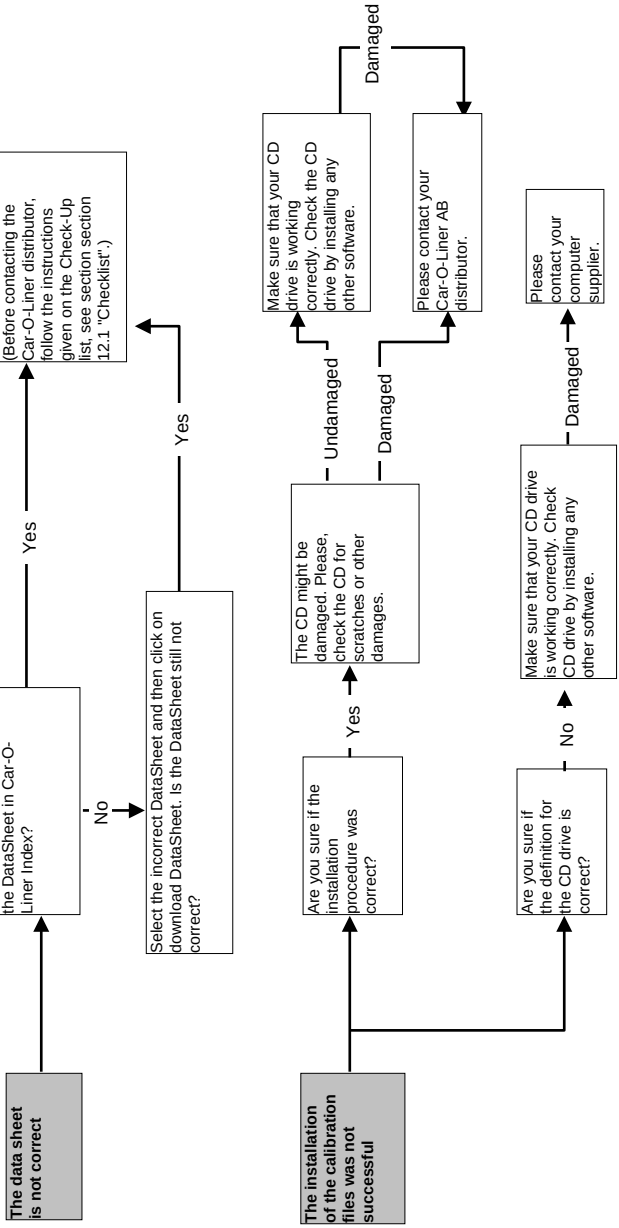
Problems with the hardware

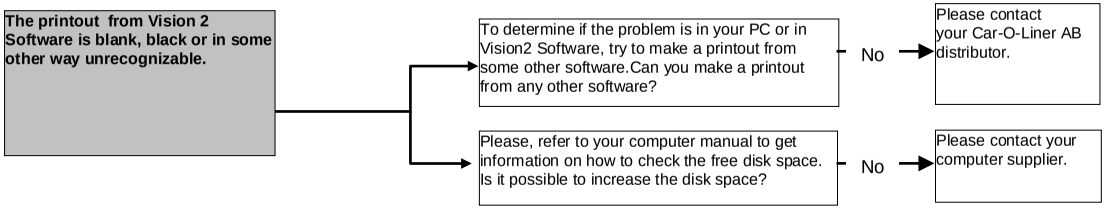


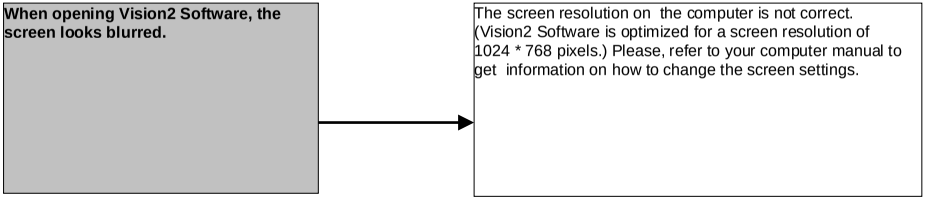

The radio communication between the measuring slide and the PC is not working
Is blinking on the Lower Status line of Vision2 Software?
Yes
Check if the wrong serial port on the PC is set up in Vision 2 Software, see section 12.2 "Wrong communication parameters PC - Measuring slide"

Problems with the software

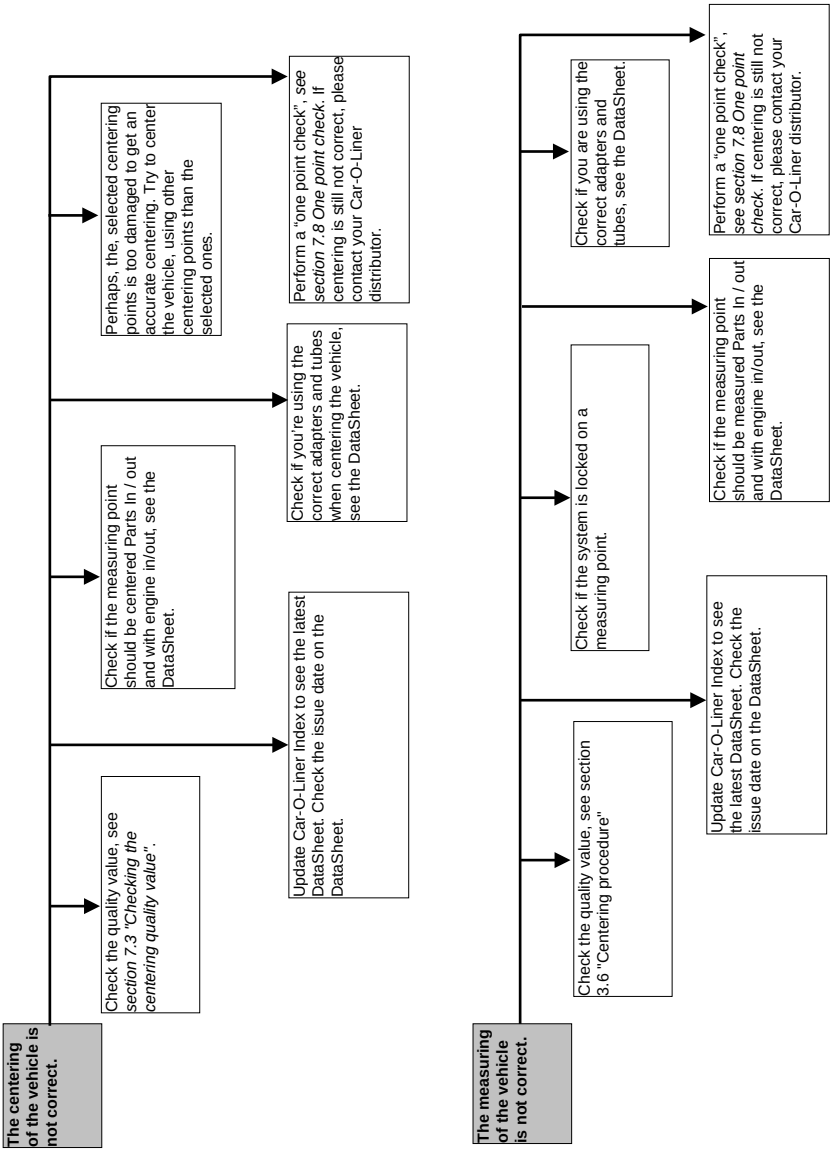



The data sheet is not correct
Is there a green dot next to the DataSheet in Car-O-Liner Index?
No
Select the incorrect DataSheet and then click on download DataSheet. Is the DataSheet still not correct?
Yes
Please contact your Car-O-Liner distributor. (Before contacting the Car-O-Liner distributor, follow the instructions given on the Check-Up list, see section section 12.1 "Checklist".)
Yes
The installation of the calibration files was not successful
Are you sure if the installation procedure was correct?
Yes
The CD might be damaged. Please, check the CD for scratches or other damages.
Undamaged
Make sure that your CD drive is working correctly. Check the CD drive by installing any other software.
Damaged
Please contact your Car-O-Liner AB distributor.
Damaged
Are you sure if the definition for the CD drive is correct?
No
Make sure that your CD drive is working correctly. Check CD drive by installing any other software.
Damaged
Please contact your computer supplier.


The printout from Vision 2 Software is blank, black or in some other way unrecognizable.
To determine if the problem is in your PC or in Vision2 Software, try to make a printout from some other software.Can you make a printout from any other software?
No
Please contact your Car-O-Liner AB distributor.
Please, refer to your computer manual to get information on how to check the free disk space. Is it possible to increase the disk space?
No
Please contact your computer supplier.


When opening Vision2 Software, the screen looks blurred.
The screen resolution on the computer is not correct. (Vision2 Software is optimized for a screen resolution of 1024 * 768 pixels.) Please, refer to your computer manual to get information on how to change the screen settings.

Problems when centering and or measuring the vehicle



13 Dismantling and Salvage

IMPORTANT: For the sake of the environment, it is important that the equipment is dismantled in an environmentally friendly way.

To limit strain on the environment and its natural resources, it is important that the various parts of the equipment are recycled.

Mechanical components, electrical components, plastic hoses, and steel and aluminium should be sorted for material recycling.

13.1 Battery

The battery in the measuring slide must be recycled or disposed of properly.

14 Technical Specifications

14.1 Computer requirements

The Vision2 Software minimum system requirements are:

- Intel® Pentium® 4 (2.4 GHz processor), Intel Core™ Duo processor or newer, AMD XP2500+ or newer AMD processor
- 1GB RAM (32-bit) or 2GB RAM (64-bit)
- 20GB of available hard-disk space (additional free space required during installation)
- 1024x768 monitor resolution with 32-bit video card
- Microsoft mouse or compatible pointing device
- Speakers
- USB ports
- CD/DVD-ROM drive for software and Car-O-Data installation
- Internet connection (recommended)
- Operating system
  - Microsoft® 32bit Windows XP SP3 Professional
  - Microsoft® 32 and 64bit Windows Vista Premium, Business, Ultimate or Enterprise
  - Microsoft® 32 and 64bit Windows7 Professional or Ultimate
  - Microsoft® 32 and 64bit Windows8, Windows8 Pro or Windows8 Enterprise

14.2 Vision2 Software

Software features:

- Self checking centering (up to 5 points)
- Measuring with DataSheet (Lower body)
- 3D presentation of measuring points
- Damage analysis
- Multi function printouts

14.3 Software Versions

14.3.1 Vision2 Software

The **Vision2 Software** CD contains the original software. Updates of **Vision2 Software** are included on the DVDs called **Car-O-Data Update**. Each time the software is updated (using Car-O-Data Update or VisionData), the version number of **Vision2 Software** is increased.

The actual version number of Vision2 Software can be found in "About Vision2 Software", *see section 6 Help.*

14.3.2 Car-O-Data

DVD subscribers get their updates of **Car-O-Data** (Index list and DataSheets) on the Car-O-Data Update DVD which is shipped 4 times each year.

Car-O-Data subscribers can download the updated index list and DataSheets via the internet immediately after they are released.

Every time **Car-O-Data** is updated (**Car-O-Data Update DVD** or **Internet**), the index list date of **Car-O-Data** is changed.

The actual index list date of **Car-O-Data** can be found in "Update software", *see section 6 Help*

14.4 Car-O-Tronic (and Car-O-Tronic Classic)

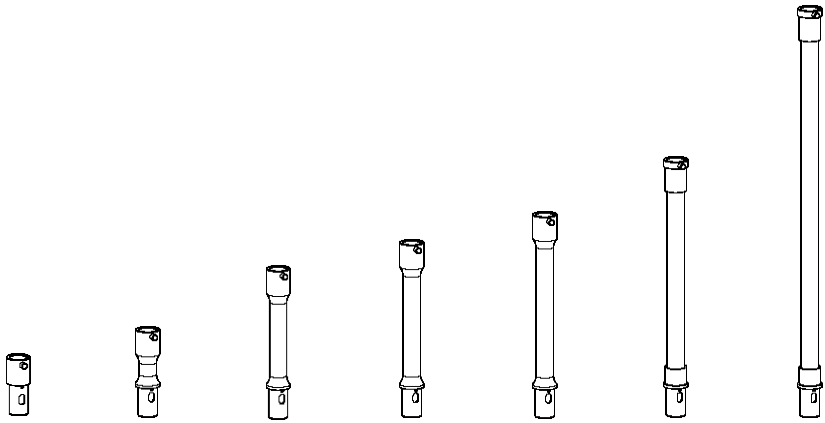
Supply voltage	Input: AC 100-240 V, 800 mA 50-60 Hz Output: DC 15 V 2.2 mA
Display resolution	± 0.5 mm
Working area (Upper body capability): Length Width Height	 5,720 / 6,720 mm 2,120 mm 1,985 mm
Measuring slide power Working time Recharging	Rechargeable batteries 6-8 hours 2-3 hours (80%) 6 hours (100%)
Weight measuring slide	18 kg
Calibration	Individual calibration with full traceability to international/national standards of length. (Certificate of calibration is included, see enclosure.)
Communication between the measuring slide and the PC	Bluetooth, Class 1
Output power	Max +6dBm
Frequencies for communication between the measuring slide and the PC	2.4 GHz
Hardware features	- Measuring during pulling - Easy to use on other benches - Upper body capability - Measuring slide can be moved between workstations without recalibration - Smart LED
Quality certificate, Car-O-Liner AB	ISO9001, ISO14001

15 Spare parts

The spare parts required for the maintenance of Car-O-Tronic Vision2 are listed in the tables below.

NOTE: Use only genuine Car-O-Liner AB spare parts.
To order, contact your local Car-O-Liner distributor.

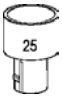
15.1 Measuring tubes

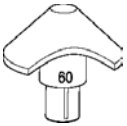
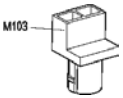


Object	**M701-25** Measuring tube L=25	**M701-60** Measuring tube L=60	**M701-100** Measuring tube L=100	**M701-180** Measuring tube L=180	**M701-270** Measuring tube L=270	**M701-360** Measuring tube L=360	**M701-600** Measuring tube L=600
Quantity	1	1	1	1	1	1	1
Art. No	31260	31261	31271	31262	31263	31264	31268

15.2 Measuring adapters

							
Object	**M100-8** Adapter Ø8	**M100-10** Adapter Ø10	**M100-12** Adapter Ø12	**M100-14** Adapter Ø14	**M100-15** Adapter Ø15	**M100-16** Adapter Ø16	**M100-17** Adapter Ø17
Quantity	1	1	1	1	1	1	1
Art. No	30200	30208	30209	30210	30205	30211	30206

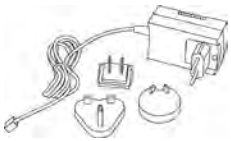
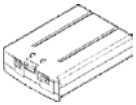
							
Object	**M100-18** Adapter Ø18	**M100-19** Adapter Ø19	**M100-20** Adapter Ø20	**M100-21** Adapter Ø21	**M100-22** Adapter Ø22	**M100-24** Adapter Ø24	**M100-25** Adapter Ø25
Quantity	2	1	1	1	1	1	1
Art. No	30212	30741	30213	30742	30214	30215	30207

						
Object	**M100-26** Adapter Ø26	**M100-28** Adapter Ø28	**M101-25** Stud Ø25	**M101-35** Stud Ø35	**M101-60** Stud Ø60	**M103** Angle stud
Quantiy	1	1	1	1	1	1
Art. No	30216	30217	30198	30199	30241	30226

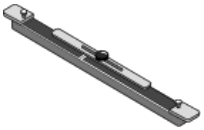
							
Object	**M104** Adapter	**M201-6** Adapter Ø6	**M201-8** Adapter Ø8	**M201-9** Adapter Ø9	**M201-10** Adapter Ø10	**M201-12** Adapter Ø12	**M201-13** Adapter Ø13
Quantity	2	1	1	1	1	1	1
Art. No	30227	30202	30222	30228	30223	30231	30204

						
Object	**M201-14** Adapter Ø14	**M201-15** Adapter Ø15	**M201-18** Adapter Ø18	**M217-120** Measuring gauge	**M217-180** Measuring gauge	**M235** Angle measuring
Quantity	1	1	1	1	1	1
Art. No	30203	30225	30220	30257	30256	30764

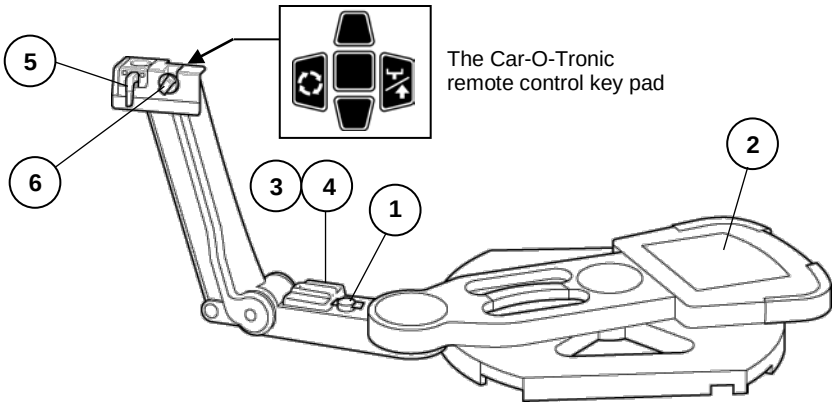
15.3 Car-O-Tronic, miscellaneous

Object		Quantity	Art. No
	**M300** Allen screw driver	1	30467
	**Charger** (including adapters)	1	33493
	**Battery**	1	35365

15.4 Measuring bridge support

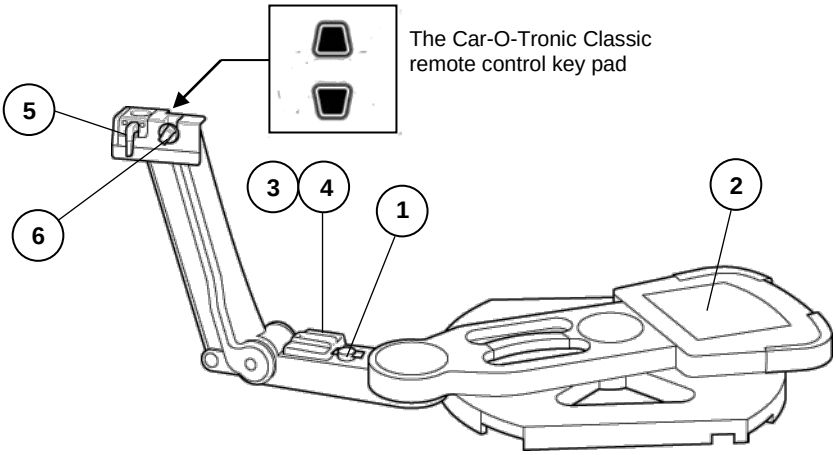
Object		Quantity	Art. No
	**M722 Measuring bridge support**	1	34730

15.5 Measuring slide Car-O-Tronic (II M90)



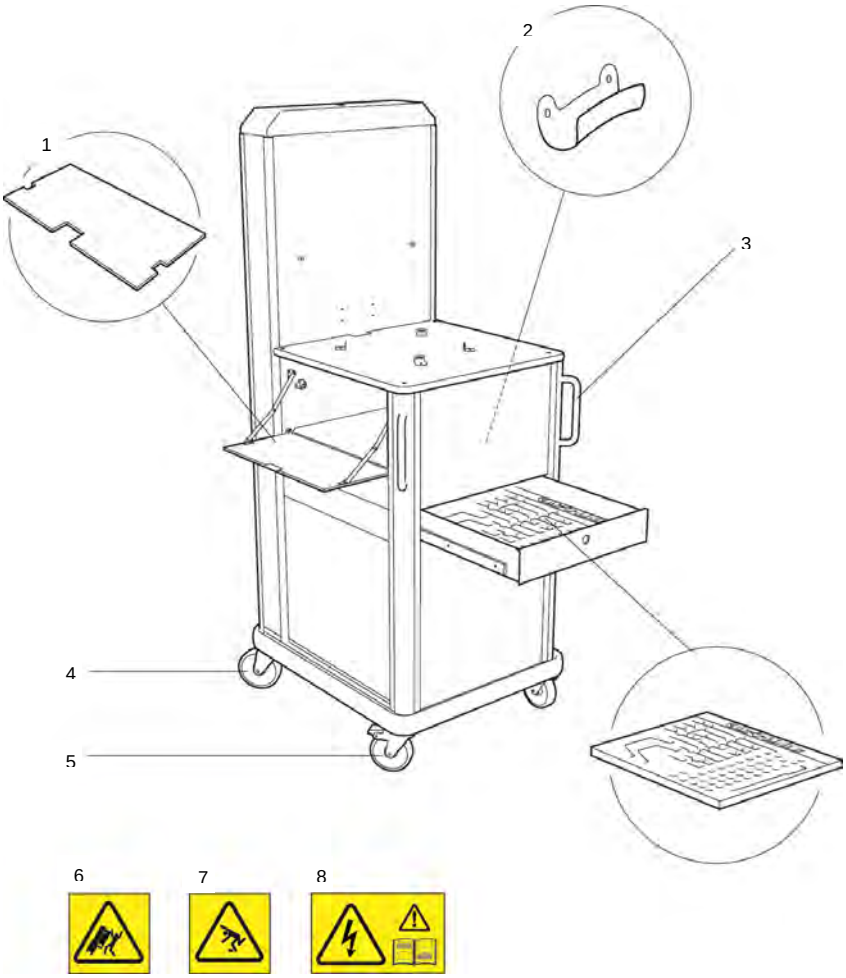
Position	Object	Quantity	Art. No
1	Locking screw	1	33641
2	Electronic box cover	1	36378
3	32bits Bluetooth kit	1	34399
4	32 and 64bits Bluetooth kit (Supported from Vision version 4.40)	1	44514
5	Locking handle	1	33556
6	Locking knob	1	33555

15.6 Measuring slide Car-O-Tronic Classic (II)



Position	Object	Quantity	Art. No
1	Locking screw	1	31130
2	Electronic box cover	1	33454
3	32bits Bluetooth kit	1	34399
4	32 and 64bits Bluetooth kit (Supported from Vision version 4.40)	1	44514
5	Locking handle	1	36324
6	Locking knob	1	33641

15.7 Cabinet M81 spare parts



Position	Object	Quantity	Art. No
1	Mouse-pad	1	32971
2	Holder	1	36625
3	Handle	1	31791
4	Wheel without brake	1	30479
5	Wheel with brake	1	30490
6	Safety sign “Risk of cabinet overturning”.	1	31893
7	Safety sign “Risk of tripping on loose hoses, etc. “	1	31892
8	Safety sign “All electrical modifications must be made by a qualified electrician. “	1	31907

Car-O-Liner® is a Leading Global Provider of Assured and Profitable Alignment Processes to the Automotive Industry, including Technical Development, Training and Service. Over 55 000 Car-O-Liner Collision Repair Systems are in use worldwide. Car-O-Liner runs operations of its own in Scandinavia, USA, UK, France, Germany, Singapore, India and China and sells through local distributors in more than 60 countries.

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